

## WINDIMURRA VANADIUM PROJECT

Licence L8314/2008/3  
Annual Environmental Report 2020-2021

**FINAL**

December 2021

**Disclaimer**

This document has been prepared for the sole use of the authorised recipient and this document may not be used, copied or reproduced in whole or part for any purpose other than that for which it was supplied by Umwelt (Australia) Pty Ltd (Umwelt). No other party should rely on this document without the prior written consent of Umwelt.

Umwelt undertakes no duty, nor accepts any responsibility, to any third party who may rely upon or use this document. Umwelt assumes no liability to a third party for any inaccuracies in or omissions to that information. Where this document indicates that information has been provided by third parties, Umwelt has made no independent verification of this information except as expressly stated.

**©Umwelt (Australia) Pty Ltd**

**Document Status**

Rev No.	Reviewer		Approved for Issue	
	Name	Date	Name	Date
V1	Rob Karelse	23 December 2021	Rob Karelse	23 December 2021

# Table of Contents

<b>1.0</b>	<b>Introduction</b>	<b>1</b>
1.1	History and Current Status of Operations	1
1.2	Location and Ownership	1
1.3	Purpose of Report	1
<b>2.0</b>	<b>Compliance</b>	<b>6</b>
2.1	Incidents	6
2.2	Complaints	6
2.3	Annual Audit Compliance Report	6
<b>3.0</b>	<b>Environmental Monitoring</b>	<b>7</b>
3.1	Point Source Emissions to Air	7
3.2	Point Source Emissions to Land	7
	3.2.1 Summary of Monitoring Undertaken During the Reporting Period	7
	3.2.2 Wastewater Quality	7
	3.2.3 Wastewater Volume	8
3.3	Ambient Groundwater Quality	8
	3.3.1 Summary of Monitoring Undertaken During the Reporting Period	8
	3.3.2 Groundwater Quality	11
	3.3.3 Summary of Groundwater Quality Monitoring Outcomes	16
	3.3.4 Groundwater Levels	18
3.4	Updates Relating to Contaminated Sites Investigation Work	18
3.5	Groundwater Monitoring Summary 2020	18
<b>4.0</b>	<b>Conclusion</b>	<b>19</b>
<b>5.0</b>	<b>References</b>	<b>20</b>

## Figures

Figure 1.1	Windimurra Vanadium Project Location Plan	3
Figure 1.2	Project Site Layout and Tenements	4
Figure 1.3	Windimurra Vanadium Project Site Infrastructure Layout Plan	5
Figure 3.1	Locations of Waste Stream Monitoring Bores	10

## Tables

Table 3.1	Results from Analysis of Water Quality of WWTP	7
Table 3.2	Results from On-Site Analysis for Water Quality of WWTP	8
Table 3.3	Monitored Mining Facilities and Current Waste Stream Monitoring Bores	8
Table 3.4	Summary of Waste Stream Bore Water Quality Monitoring Results for the Reporting Period	11

## Appendices

Appendix A	Annual Audit Compliance Report 2020-21
Appendix B	Village Waste Water Testing Procedure
Appendix C	Waste Stream Bores – Tabulated Water Quality Monitoring Results
Appendix D	Waste Stream Bores – Standing Water Level Monitoring Results

# 1.0 Introduction

## 1.1 History and Current Status of Operations

The Windimurra Vanadium Project (the Project) has been operated semi-continuously by various owners since 1999. Most recently, on 26 May 2016, a new wholly-owned subsidiary of Atlantic Ltd, Atlantic Vanadium Pty Ltd (AVPL) completed the acquisition of the Windimurra Vanadium Project assets, which included the mining tenements of M58/178-I, M58/275, M58/276, M58/277, M58/278, M58/279-I, M58/280-I, M58/281, M58/282 and associated miscellaneous leases, from the Receivers and Managers appointed of Midwest Vanadium Pty Ltd.

The site has been in care and maintenance since 2014, when fire damaged a section of the magnetic separation plant during maintenance activities. Since February 2015, activities on site have been reduced to a small crew undertaking care and maintenance activities, with typically 2-3 people on site at any one time.

During the 2019-2020 reporting period, AVPL was granted a Works Approval by the Department of Water and Environmental Regulation (DWER) permitting the recommencement of vanadium mining and processing activities at the Project (W6265/2019/1). This Works Approval, together with the approval of an updated Mining Proposal and Mine Closure Plan by the Department of Mines, Industry Regulation and Safety (DMIRS) and the approval of an amendment to Ministerial Statements 481 and 773 by the Environmental Protection Authority (EPA) during the previous reporting period, permits the construction of a new beneficiation plant, minor changes to the existing plant design, deepening and widening the previously approved pit shell and the construction and expansion of waste rock stockpiles at the Project.

The approved construction and mining activities have not yet commenced. The site has remained on care and maintenance throughout the 2020-2021 reporting period.

It is AVPL's intention to indefinitely postpone the mining and processing of vanadium ore to capitalise on an opportunity to receive, store, and process a vanadium bearing commodity called petroleum coke (petcoke) cinder from an off-site source which will result in the production of vanadium pentoxide. These activities will require the construction of a new leaching circuit, minor changes to the currently approved processing plant design, and changes to barren liquor and calcine tailings waste stream characteristics. The necessary approvals for these proposed activities are currently being prepared and are expected to be submitted in early 2022.

## 1.2 Location and Ownership

The Project is located approximately 80 kilometres (km) east-south-east of the town of Mount Magnet in the Midwest Region of Western Australia (**Figure 1.1**). The Project is wholly owned and operated by AVPL (ABN 65 610 583 090).

The Project area and site tenement plan is illustrated in **Figure 1.2** and the layout of infrastructure within the Project site is shown in **Figure 1.3**.

## 1.3 Purpose of Report

The DWER Licence to Operate L8314/2008/3 for the Project requires an Annual Environmental Report (AER) and an Annual Audit Compliance Report (AACR) to be prepared and submitted within 90 calendar days after the end of each annual report period. The annual period ends 30 September; therefore, the due date for the annual report is 29 December 2021.

This AER has been prepared in accordance with reporting conditions 4.2.1 and 4.2.2 in licence L8314/2008/3 issued 19 February 2015 and amended 28 August 2016 and 14 May 2018. An AACR has also been prepared for the Project (see **Section 2.3**). The AER and AACR present information relating to the reporting period 1 October 2020 to 30 September 2021.

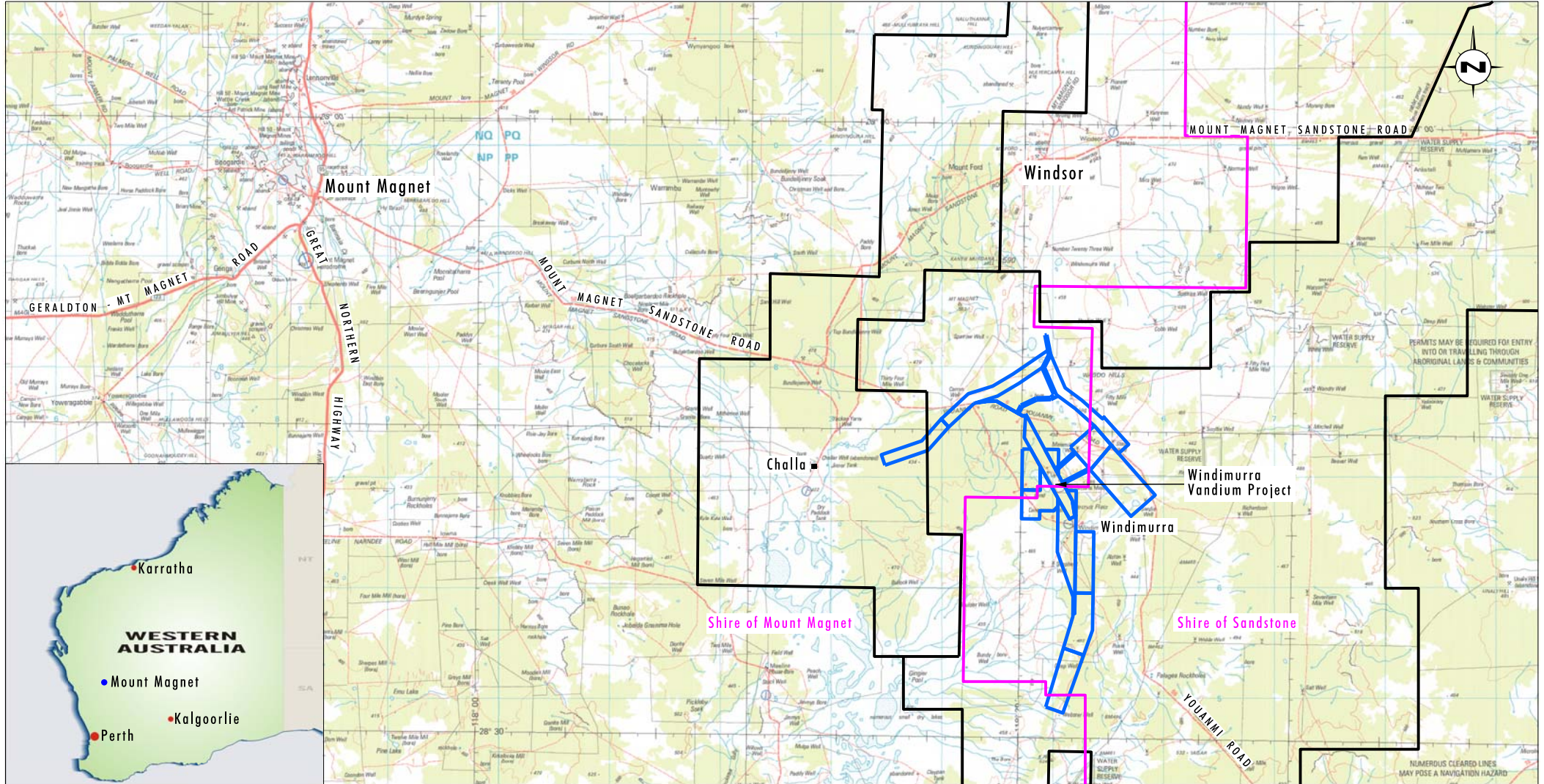


Image Source: Department of Land Information (2006)  
 Data Source: ATC Williams (2013), LPMA (2006)

- Legend**
- ▭ Mining Tenement Boundary
  - ▭ Shire Boundary
  - Pastoral Station Boundary

FIGURE 1.1

Windimurra Vanadium Project  
 Location Plan

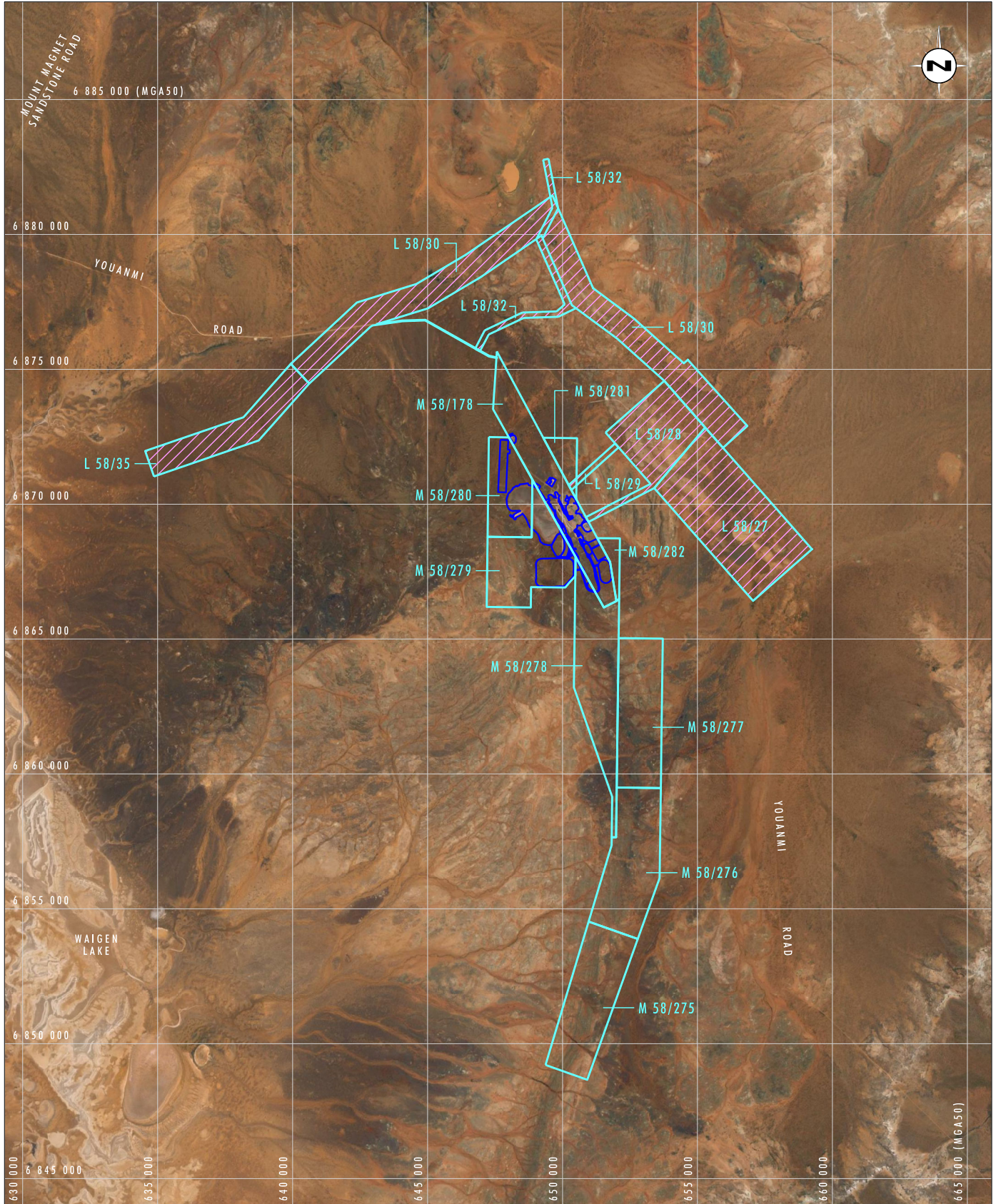
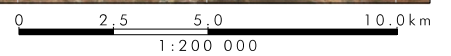


Image Source: Google Earth - DigitalGlobe (2015), CNES / Astrium (2015)  
 Data Source: ATC Williams (2013)

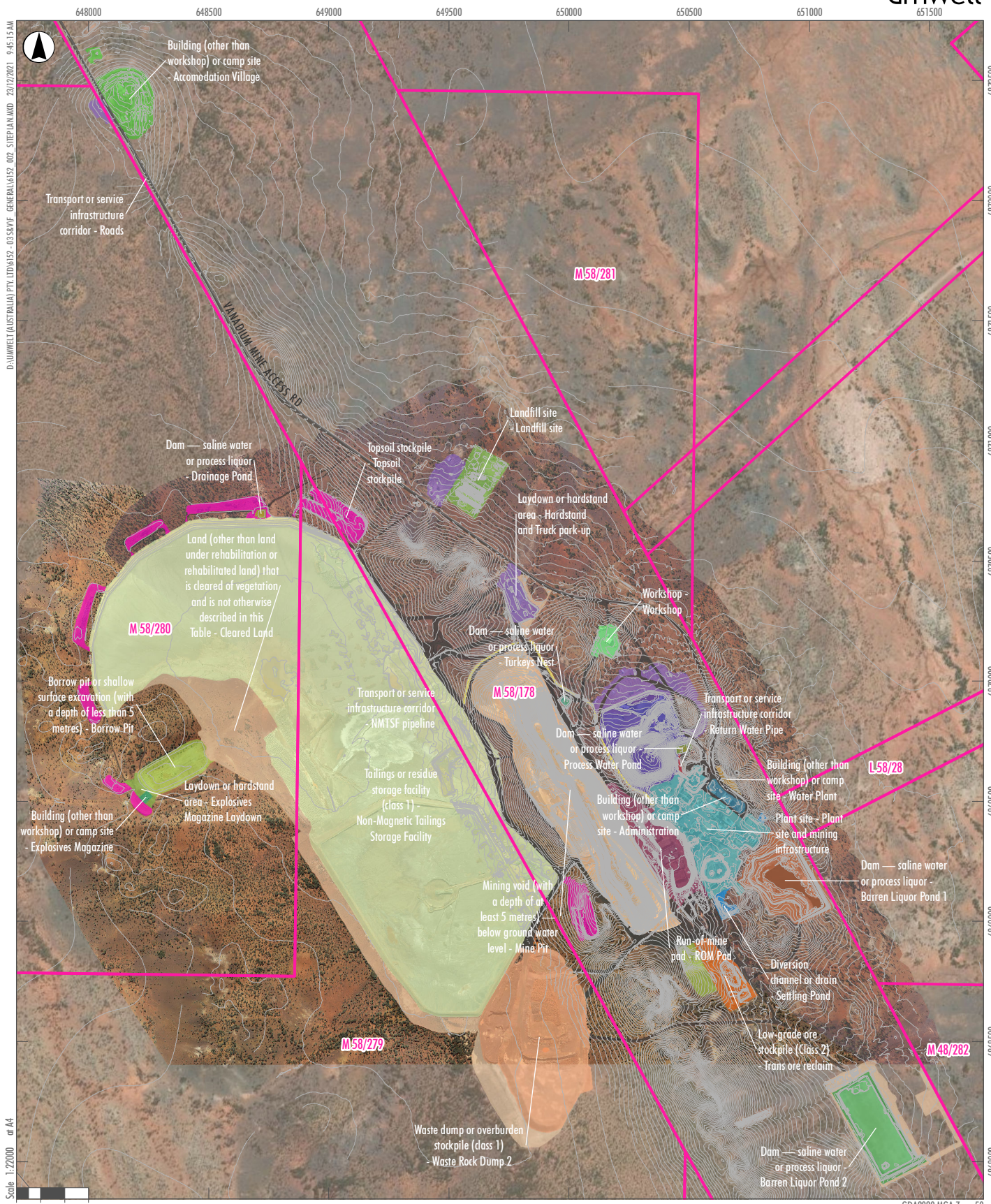


**Legend**

- Approved Area of Land Clearing, Ministerial Statement 773, Approval Date 10/12/2019
- Mining Tenement Boundary
- Borefield

**FIGURE 1.2**

**Windimurra Vanadium Project  
 Mining Tenements and Borefield**



**Legend**

Tenement Boundaries	Barren Liquor Pond 1	Explosives Magazine Laydown	Topsoil stockpile
0.5m Contours	Barren Liquor Pond 2	Hardstand and Truck park-up	NMTSF pipeline
Roads	Drainage Pond	Trans ore reclaim	Return Water Pipe
Borrow Pit	Process Water Pond	Mine Pit	Roads
Accomodation Village	Turkeys Nest	Plant site and mining infrastructure	Waste Rock Dump 2
Administration	Settling Pond	ROM Pad	Workshop
Explosives Magazine	Cleared Land	Calcine Tailings Storage Facility	
Water Plant	Landfill site	Magnetic Tailings Storage Facility	

**FIGURE 1.3**  
**Site Plan**

## 2.0 Compliance

### 2.1 Incidents

One incident occurred on 10 January 2021 when a kangaroo was discovered by a plant technician in leach vat one during their daily check. Water was provided to the animal before it was humanely euthanised and removed the next day. No other incidents occurred between 1 October 2020 to 30 September 2021.

### 2.2 Complaints

No environmental or community complaints were recorded from 1 October 2020 to 30 September 2021.

### 2.3 Annual Audit Compliance Report

An Annual Audit Compliance Report (AACR) has been prepared for the period 1 October 2020 to 30 September 2021 and is provided in **Appendix A**.

The AACR has been prepared based on an audit against the conditions in the licence L8314/2008/3 issued on 19 February 2015 and amended on 28 August 2016 and 14 May 2018.

Non-compliances against the licence conditions are summarised below.

Non-compliance: The putrescible waste trench in the landfill facility was not covered fortnightly throughout the reporting period. Condition 1.2.2 of the Operating Licence requires AVPL to:

*Cover putrescible waste in the landfill fortnightly.*

The putrescible landfill trench is covered approximately monthly rather than fortnightly due to minimal rubbish being deposited and an absence of suitable machinery for this task due to the site being in care and maintenance. The landfill facility will continue to be regularly monitored to ensure the less frequent covering of the trench does not attract wildlife and does not cause trench contents to become windblown and leave the landfill facility.

Non-compliance: Sampling was not completed for any analytes in bore EP2MB1 located near barren liquor pond 1 for a single quarter during the 2020-2021 reporting period. Condition 3.4.1 of the Operating Licence requires AVPL to:

*Undertake quarterly monitoring of parameters outlined in Table 3.4.1 at the specified bore sites.*

Monitoring for bore EP2MB1, listed in Table 3.4.1 of licence L8314/2008/3, was not completed in the first quarter of 2021 due to human error as reported by AVPL. Monitoring was completed for this site in the subsequent quarters and site staff have been alerted of the non-compliance to avoid similar issues in future.

## 3.0 Environmental Monitoring

### 3.1 Point Source Emissions to Air

Monitoring of point source emissions to air relates to emissions from components of the processing plant, including stacks and bag houses. No monitoring of emissions to air from power generation is required by the licence.

The May 2018 licence amendment has changed the required frequency of monitoring point source emissions to air from 'annually' to 'annually when in operation'. As the processing plant was not operational throughout the reporting period no monitoring of point source emissions to air monitoring was required or undertaken.

### 3.2 Point Source Emissions to Land

Monitoring of point source emissions to land relates to the discharge from the wastewater treatment plant (WWTP) near the accommodation village, which is irrigated onto a fenced sprayfield area near the WWTP. The sections below provide a summary of monitoring undertaken and results.

#### 3.2.1 Summary of Monitoring Undertaken During the Reporting Period

A daily log sheet for the WWTP was completed and includes checks for any alarms, leaks, overflow, other unusual occurrences and the cumulative flow meter reading.

The log sheet is also used to record weekly on-site monitoring of the WWTP which measures diluted settled sludge volume (%), residual chlorine (mg/L), turbidity (cm), dissolved oxygen (%sat), biochemical oxygen demand (BOD) (mg/L), calibration of the BOD meter, comments about the addition of chlorine to the wastewater treatment plant and whether any pooling was observed in the irrigation spray field. The WWTP monitoring procedure, including calibration procedure for the BOD test instrument is provided in **Appendix B**.

Samples from the WWTP were collected quarterly and sent to a laboratory for analysis of total phosphorus (TP), total nitrogen (TN), total suspended solids (TSS).

#### 3.2.2 Wastewater Quality

Results of laboratory and in situ analysis of water quality from the WWTP are presented in **Table 3.1** and **Table 3.2**. Copies of the laboratory reports are available upon request. There are no limits or criteria specified for WWTP effluent parameters in the prescribed premises licence. The wastewater is discharged to an irrigation area, and inspections of the irrigation area did not detect any significant pooling or discharge of treated wastewater outside of the irrigation area. The range of TSS and total phosphorus concentrations were more stable compared to the previous two reporting periods. Total nitrogen was similar to previous reporting periods.

**Table 3.1 Results from Analysis of Water Quality of WWTP**

Parameter	Units	November 2020	February 2021	May 2021	August 2021
TSS	mg/L	33	28	45	94
TP		6.5	12	6.2	8.9

Parameter	Units	November 2020	February 2021	May 2021	August 2021
TN		15	12	45	56

**Table 3.2 Results from On-Site Analysis for Water Quality of WWTP**

Parameter	Units	October 2020	February 2021	May 2021	August 2021
BOD	mg/L	8.01	5.47	6.16	6.91
Residual Chlorine		20	20	20	20

### 3.2.3 Wastewater Volume

The volume of wastewater discharged from 1 October 2020 to 30 September 2021 was 161.5 m<sup>3</sup>.

## 3.3 Ambient Groundwater Quality

Monitoring of ambient groundwater quality requires collection of samples from the “waste stream bores” located around the plant, tailings storage facilities and barren liquor ponds. The sections below provide a summary of monitoring undertaken and results.

### 3.3.1 Summary of Monitoring Undertaken During the Reporting Period

Quarterly sampling and analysis of ambient groundwater was undertaken throughout the reporting period. Samples and field data were collected by AVPL site-based personnel. Samples were collected in accordance with the Sampling Analysis Quality Plan (SAQP) (Umwelt (Australia) Pty Limited, 2017) for the Project, which is aligned with the appropriate Australian Standards.

The locations of the waste stream (ambient groundwater) monitoring bores are shown in **Figure 3.1**.

The mining facilities that are monitored and the monitoring bores relevant to each facility are summarised in **Table 3.3**.

**Table 3.3 Monitored Mining Facilities and Current Waste Stream Monitoring Bores**

Site Facility	Facility Acronym	Waste Stream Monitoring Bores
Barren liquor pond 1 (out of service)	BLP1	EPMB1-5
Barren liquor pond 2 (constructed and in care and maintenance)	BLP2	EP2MB1-5
Calcine tailings storage facility (in care and maintenance)	CTSF	CTMB1-4
Non-magnetic tailings storage facility (in care and maintenance)	NMTSF	TSMB1, 5, 7, 8 and 9, GATB4
Plant area (in care and maintenance)	-	PSMB1, 4, 7, 8

All samples were analysed by SGS Australia’s Perth facility, a NATA accredited laboratory, for the analytes listed in table 3.4.1 of the licence. As permitted by the licence, pH was measured in-field. ChemCentre was used to measure oxalate concentrations as SGS Laboratories do not provide this service. ChemCentre is a reputable laboratory with appropriate quality control measures and demonstrated competency in the

analysis of soluble oxalate as required by condition 3.4.1 of the licence. We are not aware of any laboratories in Australia that are NATA-accredited for analysis of oxalate.

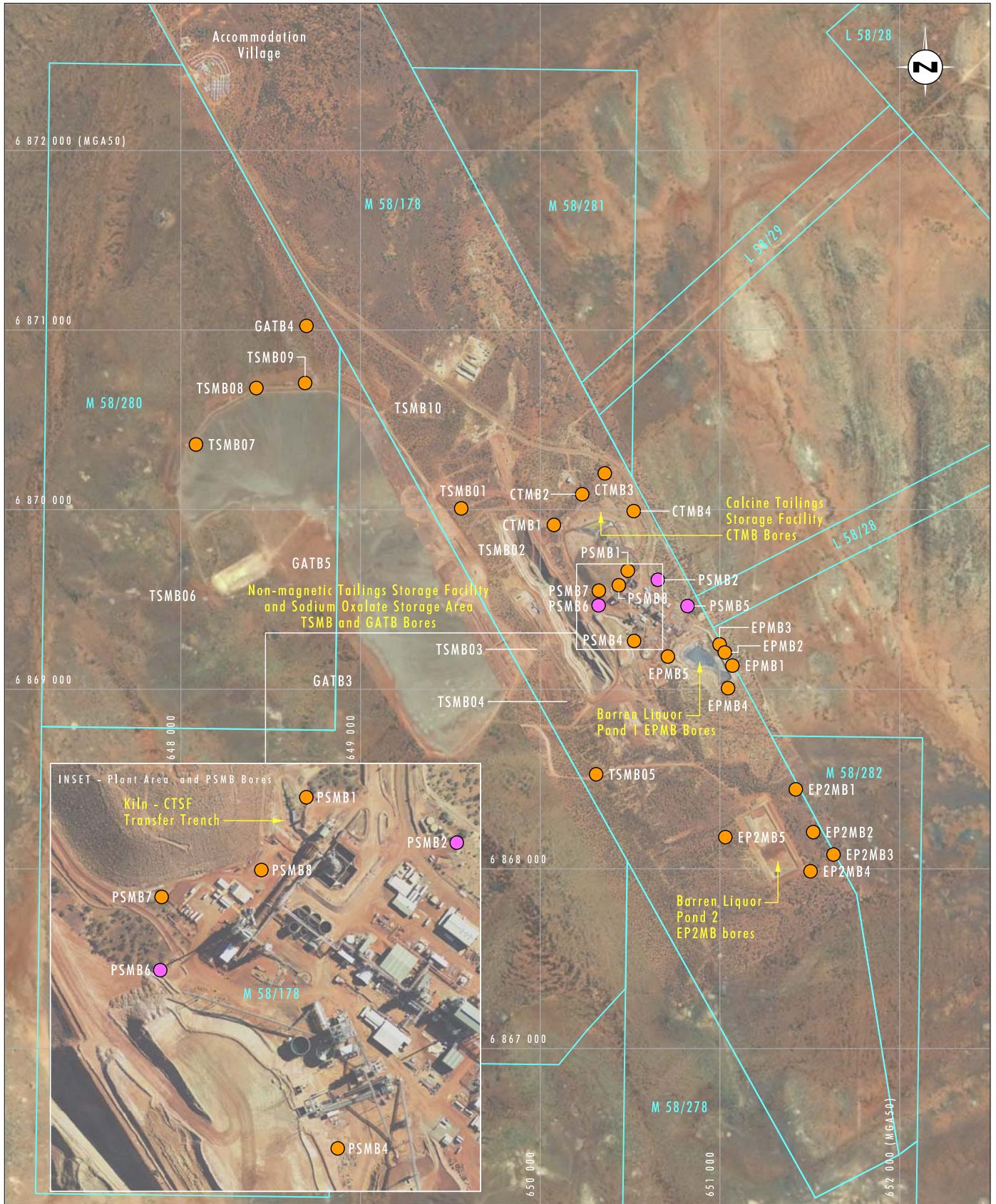
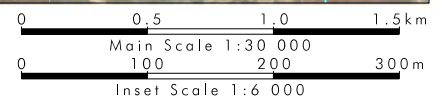


Image Source: Midwest Vanadium Pty Ltd, Google Earth (2005)



**Legend**

- Mining Tenement Boundary
- Waste Stream Monitoring Bores
- Historic Waste Stream Monitoring Bores (no longer operational)

**FIGURE 3.1**

**Windimurra Vanadium Project Locations of Waste Stream Monitoring Bores**

### 3.3.2 Groundwater Quality

Tables summarising all water quality monitoring results for the reporting period are provided in **Appendix C**. Copies of the laboratory reports are available upon request.

A summary of water quality recorded in the waste stream bores during the reporting period and how the results compare to relevant trigger levels is provided below in **Table 3.4**. No limits are specified for groundwater quality in the DWER Licence. The table includes all water quality parameters specified in the DWER Licence, as well as additional parameters that are included in the SAQP (Umwelt (Australia) Pty Limited, 2017) for the Project. One objective of the SAQP is to undertake additional targeted groundwater quality monitoring for areas and contaminants of concern.

**Table 3.4 Summary of Waste Stream Bore Water Quality Monitoring Results for the Reporting Period**

Parameter	Summary of Results	Comparison to Trigger Levels, Trends and Implications
<b>Parameters specified in Licence L8314/2008/3 Table 3.4.1</b>		
<b>Aluminium</b>	<p><b>Waste Stream Bores:</b> Dissolved ranged from &lt;0.005 – 0.05 mg/L Average: 0.010 mg/L</p> <p><b>CTSF leachate:</b> &lt;0.5 – 1 mg/L</p> <p><b>BLP1 liquor:</b> 12 – 150 mg/L</p> <p><b>BLP2 liquor:</b> 0.95 – 2.20 mg/L</p>	<p>All waste stream bore results below stock drinking water trigger level (5 mg/L).</p> <p>At most sites, the dissolved aluminium remains below the limit of detection.</p>
<b>Bicarbonate</b>	<p><b>Waste Stream Bores:</b> Dissolved ranged from 94 – 410 mg/L Average: 237 mg/L</p> <p><b>CTSF leachate:</b> &lt;5 – 5,200 mg/L</p> <p><b>BLP1 liquor:</b> &lt;5 - 42 mg/L</p> <p><b>BLP2 liquor:</b> &lt;5 - 150</p>	<p>All waste stream bore results were below the trigger level which, in the absence of a trigger level for bicarbonate in the stock water guidelines, is the maximum background concentration in station wells (600 mg/L).</p>
<b>Boron</b>	<p><b>Waste Stream Bores:</b> Dissolved ranged from 0.29 – 8.1 mg/L Average: 1.82 mg/L</p> <p><b>CTSF leachate:</b> 84 – 270 mg/L</p> <p><b>BLP1 liquor:</b> 780– 1,700 mg/L</p> <p><b>BLP2 liquor:</b> 140 - 240 mg/L</p>	<p>Bores PSMB4 and PSMB7 exceeded the trigger level for protection of stock drinking water (5 mg/L). These bores are located in the south-east and north-west part of the plant area respectively. The highest concentration was in PSMB7.</p> <p>Boron concentration in the ambient groundwater monitoring bores remains many orders of magnitude lower than in the waste liquids in lined facilities.</p> <p>The source of boron is not expected to be the nearby BLP1 lined waste storage facility, particularly as many other metals that are elevated in the BLP1 liquor are not present in the groundwater in elevated concentrations (such as arsenic, cobalt, fluoride, manganese, molybdenum and uranium).</p>

Parameter	Summary of Results	Comparison to Trigger Levels, Trends and Implications
<b>Calcium</b>	<p><b>Waste Stream Bores:</b> Dissolved ranged from 22 – 2,500 mg/L Average: 872 mg/L</p> <p><b>CTSF leachate:</b> &lt;10 mg/L – 22 mg/L</p> <p><b>BLP1 liquor:</b> 60 - 74 mg/L</p> <p><b>BLP2 liquor:</b> 61 - 170 mg/L</p>	<p>The water quality in bores EPMB1 – EPMB4, CTMB1 – CTMB3, TSMB8, PSMB1, PSMB4, PSMB7 and PSMB8 exceeded the guideline for stock drinking water (1,000 mg/L) during the reporting period.</p> <p>Calcium concentration fluctuated in some bores, overall was similar to the previous 2018-19 monitoring period, and the maximum concentration was 100mg/L lower than during the previous reporting period.</p> <p>Calcium in the waste stream bores was generally higher than the waste liquids in lined facilities and is attributed to saline water infiltration.</p>
<b>Chloride</b>	<p><b>Waste Stream Bores:</b> Dissolved ranged from 120 – 12,000 mg/L Average: 2,806 mg/L</p> <p><b>CTSF leachate:</b> 110,000 – 120,000 mg/L</p> <p><b>BLP1 liquor:</b> 150,000 - 160,000 mg/L (highly enriched)</p> <p><b>BLP2 liquor:</b> 110,000 – 170,000 mg/L</p>	<p>CTMB2, TSMB8, PSMB4, PSMB7, and PSMB8 met or exceeded the maximum historical background concentration in station wells (4,800 mg/L) during the reporting period. Bores EPM1 - 5, CTMB1, CTMB3, PSMB1, and PSMB4 exceeded the baseline concentration in waste stream bores (1,700 mg/L).</p> <p>However, chloride concentration in most bores remains similar at the end of this reporting period compared to 2019-2020.</p> <p>Chloride in the waste stream bores also remains more than two orders of magnitude lower than samples from waste liquids in lined facilities.</p>
<b>Chromium</b>	<p><b>Waste Stream Bores:</b> Dissolved ranged from &lt;0.001 – 0.14 mg/L Average: 0.06 mg/L</p> <p><b>CTSF leachate:</b> &lt;0.1 – 0.28mg/L</p> <p><b>BLP1 liquor:</b> 9 – 19 mg/L (high)</p> <p><b>BLP2 liquor:</b> 0.014 – 0.1</p>	<p>Most waste stream bore results were below the limit of detection, and consequently all waste stream bores were below the stock drinking water trigger level (1 mg/L).</p> <p>Chromium is elevated in BLP1 liquor; there is no indication of elevated chromium in the monitoring bores near BLP1.</p>
<b>Copper</b>	<p><b>Waste Stream Bores:</b> Dissolved ranged from &lt;0.001 – 0.033 mg/L Average: 0.005 mg/L</p> <p><b>CTSF leachate:</b> 0.018 – 0.12 mg/L</p> <p><b>BLP1 liquor:</b> 0.95 – 2.3 mg/L</p> <p><b>BLP2 liquor:</b> 0.025 – 0.1 mg/L</p>	<p>All waste stream bore results were below stock (cattle) drinking water trigger level (1 mg/L).</p> <p>Dissolved concentration in each bore was comparable across the reporting period. Copper was below the limit of detection in many bores.</p> <p>Concentration of copper in the BLP1 waste liquid remains slightly elevated above the stock (cattle) drinking water trigger level.</p>
<b>Iron</b>	<p><b>Waste Stream Bores:</b> Dissolved ranged from &lt;0.006 – 0.043 mg/L Average: 0.012 mg/L</p> <p><b>CTSF leachate:</b> 0.63 – 1.8 mg/L</p> <p><b>BLP1 liquor:</b> 12 – 22 mg/L</p> <p><b>BLP2:</b> &lt;0.5 – 1 mg/L</p>	<p>Iron is not toxic to livestock. The only trigger value is for non-potable groundwater use (0.3 mg/L). The trigger value was not exceeded at any bore during the reporting period.</p> <p>Most sites had no detectable soluble iron; historical results indicate that most iron is present in insoluble form.</p>

Parameter	Summary of Results	Comparison to Trigger Levels, Trends and Implications
<b>Magnesium</b>	<p><b>Waste Stream Bores:</b> Dissolved ranged from 13 – 5,000 mg/L Average: 408 mg/L</p> <p><b>CTSF leachate:</b> &lt;5</p> <p><b>BLP1 liquor:</b> 460 – 570 mg/L</p> <p><b>BLP2 liquor:</b> 430 - 570 mg/L</p>	<p>Magnesium concentration in waste stream bore CTMB2 was elevated above the trigger level (2,000 mg/L) for protection of stock (cattle) drinking water) in the first quarter of 2021 (5000 mg/L), however reduced to 1000 mg/L for the remainder of the reporting period.</p> <p>Concentrations in bores EPMB1 – EPMB4, CTMB1 – CTMB3, TSMB8, PSMB1, PSMB4, PSMB7 and PSMB8 were elevated above the maximum background concentration in the station wells (420 mg/L).</p> <p>Magnesium concentration in most bores was similar at the end of the reporting period compared to 2019-2020.</p>
<b>Nickel</b>	<p><b>Waste Stream Bores:</b> Dissolved ranged from &lt;0.001 – 0.085 mg/L Average: 0.016 mg/L</p> <p><b>CTSF leachate:</b> 0.071 – 0.1 mg/L</p> <p><b>BLP1 liquor:</b> 10 – 17 mg/L</p> <p><b>BLP2 liquor:</b> 8 – 31 mg/L</p>	<p>All waste stream bore results were below the stock drinking water trigger level (1.0 mg/L).</p> <p>Nickel concentration in most bores was similar at the end of this reporting period compared to same period in 2019-2020.</p> <p>Nickel is elevated in BLP1 and BLP2 liquor; there is no indication of high concentrations of nickel in the monitoring bores near BLP1 or BLP2.</p>
<b>Soluble Oxalate</b>	<p><b>Waste Stream Bores:</b> All below limit of detection (&lt;0.1 mg/L)</p> <p><b>CTSF leachate:</b> 26 -200 mg/L</p> <p><b>BLP1 liquor:</b> 2,200 – 4,000 mg/L</p> <p><b>BLP2 liquor:</b> &lt;5 - 10 mg/L</p>	<p>No soluble oxalate was detected in groundwater, despite soluble oxalate at high concentration in CTSF leachate and BLP1 liquor. The limit of detection in groundwater was 0.1 mg/L.</p>
<b>pH (field)</b>	<p><b>Waste Stream Bores:</b> Ranged from 6.49 – 9.47 Average: 7.56 mg/L</p> <p><b>CTSF leachate and BLP1 liquor:</b> not tested as interferes with accuracy of pH meter</p>	<p>No trigger level specified.</p> <p>All bores experienced an average pH during the third sampling period of approximately 1 unit greater than the long-term average. As the increase was across all bores, the error is likely to be related to a calibration issue. The pH across all bores returned to near the long-term average during the final sampling period.</p>
<b>Potassium</b>	<p><b>Waste Stream Bores:</b> Ranged from 3.3 – 57 mg/L Average: 11.25 mg/L</p> <p><b>CTSF leachate:</b> 140 – 610 mg/L</p> <p><b>BLP1 liquor:</b> 1,200 – 1,800 mg/L (enriched)</p> <p><b>BLP2 liquor:</b> 860 - 1900 mg/L</p>	<p>No trigger in relevant guidelines. All waste stream bores remain below the maximum background concentration in station wells (130 mg/L).</p> <p>Potassium concentration at CTMB2 and TSMB8 were elevated compared to other bores and compared to maximum baseline concentration in waste stream monitoring bores. CTMB2 experienced higher potassium concentrations compared to the previous reporting period otherwise no significant changes occurred overall.</p> <p>Potassium in ambient groundwater monitoring bores is one to two orders less than the waste liquids in lined facilities.</p>

Parameter	Summary of Results	Comparison to Trigger Levels, Trends and Implications
<b>Selenium</b>	<p><b>Waste Stream Bores:</b> Dissolved ranged from 0.001 – 0.22 mg/L Average: 0.032 mg/L</p> <p><b>CTSF leachate:</b> 0.4 – 2 mg/L</p> <p><b>BLP1 liquor:</b> 12 – 19 mg/L</p> <p><b>BLP2 liquor:</b> 3 – 6 mg/L</p>	<p>Bores EPMB1 – EPMB4, CTMB1 – CTMB2, PSMB1, PSMB4, PSMB7 and PSMB8 exceeded the trigger level for stock drinking water (0.02 mg/L), with the highest concentration recorded at EPMB1 (0.220 mg/L).</p> <p>Bores with elevated concentrations of selenium also had elevated concentrations of salts, suggesting that selenium may originate from the same source (thought to be saline groundwater from the borefields used in crushing and beneficiation). Selenium has not previously been analysed in saline groundwater from the deep palaeochannel aquifer.</p> <p>Concentration of selenium in the waste stream bores is one to four orders of magnitude lower than the waste liquid in lined facilities.</p>
<b>Sodium</b>	<p><b>Waste Stream Bores:</b> Ranged from 84 – 5,300 mg/L Average: 804.5 mg/L</p> <p><b>CTSF leachate:</b> 91,000 – 140,000 mg/L</p> <p><b>BLP1 liquor:</b> 40,000 – 59,000 mg/L</p> <p><b>BLP2 liquor:</b> 56,000 – 71,000 mg/L</p>	<p>Waste stream bores PSMB4 and PSMB7 equalled or exceeded the maximum background concentration of sodium in station wells (2,400 mg/L). Additionally, EPMB5, CTMB1, CTMB2, TSMB8 and PSMB4 had sodium concentration equal to or above the maximum baseline concentration in waste stream bores (950 mg/L). These bores have all exceeded the maximum baseline concentration in previous years. There are no applicable trigger levels for sodium related to the protection of stock water.</p> <p>Concentration of sodium in ambient groundwater monitoring bores was one to three orders of magnitude lower than waste liquids in lined facilities.</p>
<b>Sulphate</b>	<p><b>Waste Stream Bores:</b> 14 – 3,200 mg/L Average: 1,072 mg/L</p> <p><b>CTSF leachate:</b> 33,000 – 58,000 mg/L</p> <p><b>BLP1 liquor:</b> 88,000 – 110,000 mg/L</p> <p><b>BLP2 liquor:</b> 86,000 – 96,000 mg/L</p>	<p>EPMB1 – EPMB5, CTMB1, CTMB2, TSMB8, PSMB4, PSMB7 and PSMB8 exceeded the trigger level for stock drinking water during the reporting period (1,000 mg/L). The concentration of sulphate in all bores for this reporting period is comparable to the previous reporting period.</p> <p>Stock can adapt to concentrations up to 2,000 mg/L. EPMB5, TSMB8, PSMB4, and PSMB7 also exceeded this concentration.</p>
<b>Total dissolved solids (lab)</b>	<p><b>Waste Stream Bores:</b> Ranged from 430 – 14,000 mg/L Average: 6,423 mg/L</p> <p><b>CTSF leachate:</b> 320,000 – 480,000 mg/L</p> <p><b>BLP1 liquor:</b> 200,000 – 250,000 mg/L</p> <p><b>BLP2 liquor:</b> 190,000 – 300,000 mg/L</p>	<p>EPMB1 – EPMB5, CTMB1 – CTMB3, TSMB8, PSMB1, PSMB4, PSMB7 and PSMB8 exceeded the trigger level for stock drinking water (cattle and horses) during the reporting period (5,000 mg/L). Sheep may tolerate up to 10,000 mg/L, which was also exceeded in most of these bores.</p> <p>TDS has been gradually declining in most bores since a peak when monitoring recommenced in 2016.</p> <p>TDS in ambient groundwater monitoring bores was one to three orders of magnitude lower than waste liquids in lined facilities.</p>

Parameter	Summary of Results	Comparison to Trigger Levels, Trends and Implications
<b>Vanadium</b>	<p><b>Waste Stream Bores:</b> Dissolved ranged from 0.005 – 57 mg/L Average: 2.08 mg/L</p> <p><b>CTSF leachate:</b> 23,000 – 61,000 mg/L</p> <p><b>BLP1 liquor:</b> 670 – 1,400 mg/L</p> <p><b>BLP2 liquor:</b> 5 – 9 mg/L</p>	<p>The threshold for protection of stygofauna (1.87 mg/L) was exceeded in all quarters during the reporting period at PSMB1 (39 – 57 mg/L). Habitat for stygofauna is not present near this bore; this limit is used as stygofauna habitat is present in other parts of the site.</p> <p>Whilst the concentration of vanadium in PSMB1 remains 3-5 orders of magnitude lower than in the waste liquids, it continues to be elevated and action is required.</p>
<b>Zinc</b>	<p><b>Waste Stream Bores:</b> Dissolved ranged from &lt;0.005 – 0.087 mg/L Average: 0.02 mg/L</p> <p><b>CTSF leachate:</b> &lt;0.5– 0.57 mg/L</p> <p><b>BLP1 liquor:</b> 9– 18 mg/L</p> <p><b>BLP2 liquor:</b> 44 – 82 mg/L</p>	<p>All waste stream bore results were below the stock drinking water trigger level (20 mg/L). Many waste stream bores were below the limit of detection (&lt;0.005 mg/L).</p> <p>Concentration of zinc in ambient groundwater monitoring bores was many orders of magnitude lower than waste liquids in lined facilities.</p>
<b>Additional parameters monitored as part of SAQP</b>		
<b>Arsenic</b>	<p><b>Waste Stream Bores:</b> Dissolved ranged from &lt;0.001 – 0.01 mg/L Average: 0.002 mg/L</p> <p><b>CTSF leachate:</b> 8 – 23 mg/L</p> <p><b>BLP1 liquor:</b> 0.07 – 0.21 mg/L</p> <p><b>BLP2 liquor:</b> 0.35 – 0.47 mg/L</p>	<p>Arsenic concentrations in waste stream bores remained below the trigger level for protection of stock drinking water (0.5 mg/L).</p> <p>Concentration was relatively consistent in each bore over the four monitoring events. Concentration of arsenic remains high CTSF leachate and is therefore sampled as part of the SAQP for the Project.</p> <p>There continues to be no evidence of groundwater contamination from arsenic.</p>
<b>Cobalt</b>	<p><b>Waste Stream Bores:</b> Dissolved ranged from &lt;0.001 – 0.012 mg/L Average: 0.006 mg/L</p> <p><b>CTSF leachate:</b> &lt;0.1 – 0.2 mg/L</p> <p><b>BLP1 liquor:</b> 7 – 11 mg/L</p> <p><b>BLP2 liquor:</b> 19 – 34 mg/L</p>	<p>No waste stream bores exceeded the trigger level for stock drinking water (1 mg/L).</p> <p>Concentration was below the limit of detection for most waste stream bores for the four monitoring events.</p> <p>Concentration of cobalt remains high in BLP1 and BLP2 liquor and is therefore sampled as part of the SAQP for the Project.</p> <p>There continues to be no evidence of groundwater contamination from cobalt.</p>
<b>Fluoride</b>	<p><b>Waste Stream Bores:</b> Ranged from &lt;0.1 – 0.6 mg/L Average: 0.28 mg/L</p> <p><b>CTSF leachate:</b> 38 – 110 mg/L</p> <p><b>BLP1 liquor:</b> 27 – 33 mg/L</p> <p><b>BLP2 liquor:</b> 5 – 5.4 mg/L</p>	<p>All waste stream bores remained below the trigger level for stock drinking water (2 mg/L).</p> <p>Concentration of fluoride remains high in BLP1 and BLP2 liquor and CTSF leachate and is therefore sampled as part of the SAQP for the Project.</p> <p>There continues to be no evidence of groundwater contamination from fluoride.</p>

Parameter	Summary of Results	Comparison to Trigger Levels, Trends and Implications
<b>Manganese</b>	<p><b>Waste Stream Bores:</b> Dissolved ranged from &lt;0.001 – 0.11 mg/L Average: 0.019 mg/L</p> <p><b>CTSF leachate:</b> &lt;0.1 – 0.13 mg/L</p> <p><b>BLP1 liquor:</b> 27 – 38 mg/L</p> <p><b>BLP2 liquor:</b> 19 – 23 mg/L</p>	<p>No waste stream bores exceeded the trigger level for non-potable groundwater use (5 mg/L).</p> <p>Similar to last reporting period, the concentration was variable at individual bores for the four monitoring events.</p> <p>Concentration of manganese remains high in BLP1 and BLP2 liquor and is therefore sampled as part of the SAQP for the Project.</p> <p>There is no evidence of groundwater contamination from manganese.</p>
<b>Molybdenum</b>	<p><b>Waste Stream Bores:</b> Dissolved ranged from &lt;0.001 – 0.19 mg/L Average: 0.017 mg/L</p> <p><b>CTSF leachate:</b> 30 – 66 mg/L</p> <p><b>BLP1 liquor:</b> 0.650 – 1.2 mg/L</p> <p><b>BLP2 liquor:</b> &lt;0.1 – 0.25 mg/L</p>	<p>Bore PSMB1 exceeded the trigger level (0.15 mg/L) for stock drinking water on one occasion during the reporting period (0.19 mg/L). Molybdenum concentration at PSMB1 was more stable during the reporting period compared to 2019-2020 but exceeded the trigger level during the final two quarters.</p> <p>Inconsistent exceedance of triggers levels is not considered an indication of groundwater contamination, although ongoing monitoring and review is warranted.</p> <p>Concentration of molybdenum remains elevated in BLP1 and BLP2 liquor and CTSF leachate and is therefore sampled as part of the SAQP for the Project.</p> <p>There is no evidence of groundwater contamination from molybdenum.</p>
<b>Uranium</b>	<p><b>Waste Stream Bores:</b> Dissolved ranged from &lt;0.001 – 0.037 mg/L. Average: 0.009 mg/L</p> <p><b>CTSF leachate:</b> 0.43 – 1.5 mg/L</p> <p><b>BLP1 liquor:</b> 0.56 – 1 mg/L</p> <p><b>BLP2 liquor:</b> 0.005 – 0.1mg/L</p>	<p>Bores EPMB5 and EP2MB5 exceeded the trigger level (0.017 mg/L) for drinking water (human health). While groundwater from the mine area is not used for drinking water, there is a risk of exposure via accidental intake (for example, when undertaking monitoring). Appropriate PPE and controls are specified in the groundwater monitoring procedure to manage this risk.</p> <p>Similar to last reporting period, bores SD1 and SD2 also exceeded the trigger level for drinking water. These bores are reference bores in the borefields and are not impacted by mining activities, indicating that there may be naturally occurring high concentrations of uranium in the groundwater. Groundwater from the borefields is treated through a reverse osmosis plant before being used for potable water at the mine. N.b. concentration measured from the Mess Tap was &lt;0.001 mg/L throughout the monitoring period.</p> <p>Concentration of uranium remains elevated in BLP1 liquor and CTSF leachate and is therefore sampled as part of the SAQP for the Project.</p>

### 3.3.3 Summary of Groundwater Quality Monitoring Outcomes

The concentrations recorded for most parameters in the groundwater have been relatively stable during the previous four years of monitoring.

One bore (CTMB2) exceeded the trigger level for magnesium concentration during the first quarter of 2021, but all other bores returned similar concentration ranges as the 2019-2020 reporting period.

The effectiveness of lined waste storage facilities is confirmed by parameters that are present in waste liquids at high concentrations (more than one order of magnitude greater than the relevant trigger level) but have no evidence of contamination in the groundwater. These parameters are:

- DWER-prescribed parameters: Aluminium, bicarbonate, chromium, copper, iron, nickel, oxalate, potassium, and zinc.
- SAQP monitoring parameters: Arsenic, cobalt, fluoride, manganese. These parameters are included in the SAQP for ongoing monitoring to detect any possible future contamination.

In contrast, calcium is a parameter that is present at elevated levels (above the relevant trigger level) in the groundwater but has relatively low concentrations in waste liquids, demonstrating that the source of calcium is not the waste liquids.

Parameters detected from groundwater sampling that are present in waste liquids in high concentrations (one or more orders of magnitude higher than the relevant trigger levels) are: salts (TDS, chloride, sodium, and sulphate), boron, molybdenum, selenium, vanadium, and uranium. The metals boron and uranium were elevated in one to two bores each but not in any of the same bores. Salts and selenium were elevated in monitoring bores surrounding BLP1, CTSF and some plant site bores, while vanadium and molybdenum are elevated at a single bore (PSMB1) near the plant site. Further information about each of these parameters is described below. Ongoing sampling and analysis of these parameters will continue to be undertaken as per the prescribed premises licence and the SAQP, which will detect any further changes.

Vanadium concentrations measured at PSMB1 remain consistently elevated above the threshold for protection of stygofauna during the 2020-2021 reporting period (1.87 mg/L<sup>1</sup>) and exceeded the maximum level observed over the past four years during the final quarter of this reporting period by 23%. Although there is no stygofauna habitat in this location, this is the most applicable trigger threshold as there is stygofauna habitat present elsewhere within the site. PSMB1 is located adjacent to the kiln within the processing plant area and the contamination source is understood to be soluble vanadium contained in particulate emissions generated by previous processing activities. Following the 2019-2020 reporting period, AVPL proposed to prevent spreading of the contaminated water from this location into surrounding areas by installing a solar-powered pump at the location and pumping the contaminated groundwater into the lined leachate pond adjacent to the existing calcine tailings storage facility. Planning for this activity is currently being undertaken to better understand its feasibility.

Salt concentrations (TDS, Chloride, sodium, and sulphate), while elevated above trigger thresholds at some sample sites, remain within similar ranges as the previous four years. The averages of concentrations across plant bore sites for the current reporting period is also lower than the past four years for all salts, except TDS which experienced a slightly lower average in 2017-2018. Those bore sites with elevated salt concentrations remain one to three orders of magnitude lower than levels measured in the waste liquid storage facilities with concentrations highest at PSMB7 located on the southern perimeter of the calcine tailing's storage facility.

Elevated selenium concentrations ranged from one to two magnitudes higher than the relevant trigger level with the highest concentrations recorded at EPMB1. During the final quarter, this bore site returned

---

<sup>1</sup> LC<sub>50</sub> for the amphipod crustacean *Hyalella azteca* (occurring in freshwater sediment, closest data comparable to stygofauna) was determined as 1.87 mg/L in sediment pore water, with no significant sub-lethal effects identified (Bennett, 2016).

concentrations twice as high as the maximum recorded in the previous four years but average concentrations across all plant bore sites remain comparatively similar. EPMB1 is located on the northeast side of barren liquor pond 2 and the selenium concentrations recorded also remain one to two magnitudes lower than samples from the waste storage facilities.

### 3.3.4 Groundwater Levels

Standing water level (SWL) monitoring results are tabulated in **Appendix D**. Standing water level ranged from 424 mAHD (EPMB2) to 440 mAHD (TSMB7). There has been little variation in standing water level for the waste stream monitoring bores during the reporting period and when compared to the previous reporting period.

## 3.4 Updates Relating to Contaminated Sites Investigation Work

Contaminated sites investigation work during the reporting period has been limited to the completion and submission of compulsory regulatory reporting. This is largely due to limited site resources whilst the site continues to be in care and maintenance.

## 3.5 Groundwater Monitoring Summary 2020

The *Groundwater Monitoring Summary, Windimurra Vanadium Project Jan 2020 – Dec 2020* (Umwelt, 2020) required by the Project's groundwater abstraction licences (GWL161706(4) and GWL161714(4)) and the *Groundwater Licence Operating Strategy* (Midwest Vanadium Pty Ltd, 2013) was submitted as required to DWER in March 2021. The report contains a summary of the Project groundwater abstraction and monitoring data for borefield monitoring bores and station wells for the 2020 calendar year.

The report concluded that groundwater monitoring results collected throughout the reporting period do not indicate that water abstraction has impacted groundwater quantity or quality.

High salinity (EC and TDS) was recorded at Brailia Well and Sandie Well during the reporting period and is consistent with historical monitoring results for these areas. The absence of high salinity results in the other bores accessing the shallow alluvial aquifer implies that this salinity is not due to mining activities. Water quality monitoring of the deep monitoring bores continues to demonstrate that groundwater in the deep palaeochannel aquifer is highly saline.

As per the recommendations of this report, flow meters on any production bores to be used during the current reporting period will be calibrated and replaced (with prior DWER authorisation) as required, and a new baseline environmental monitoring program to measure SWL and water quality using available bores will be undertaken throughout the borefields prior to any construction activities associated with the recommencement of operations. A review of the annual groundwater sampling plan has already been completed to ensure all requirements of Groundwater Licence Operating Strategy are accurately recorded to prevent omission of sampling during future reporting periods.

## 4.0 Conclusion

A high level of environmental compliance has been demonstrated at the Windimurra Vanadium Project during the reporting period. One environmental incident resulting in no environmental impacts to the receiving environment, no environmental or community complaints, and two minor non-compliances against licence L8314/2008/3 were recorded from 1 October 2020 to 30 September 2021.

The monitoring results for this reporting period show groundwater quality and wastewater treatment plant discharge quality remains generally stable. Analytes that exceeded trigger levels in groundwater have highest concentrations near the plant area and are also elevated near the CTSF and BLP1. The plant area is thought to be the source of these analytes. The elevated vanadium concentrations recorded at PSMB1 over the past five years is intended to be addressed through the installation of a solar-powered pump at this location and pumping the contaminated groundwater to the lined leachate pond adjacent to the existing calcine tailings storage facility. Planning for this activity is currently being undertaken.

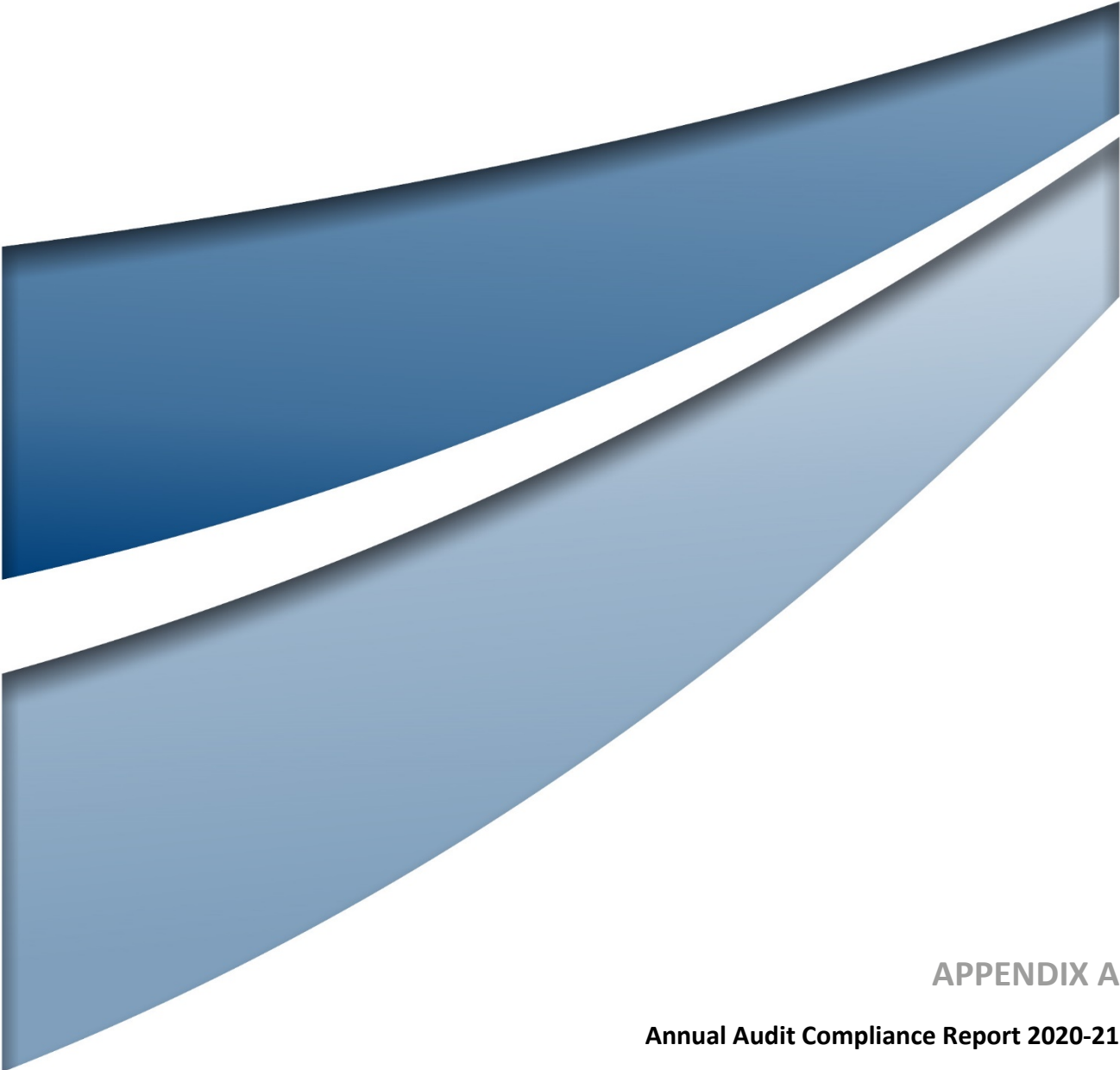
Remaining analytes found at high concentrations in CTSF leachate, BLP1 liquor and BLP2 liquor are in low concentrations in samples from the surrounding waste stream bores. This indicates that CTSF, BLP1 and BLP2 waste facilities are successfully containing waste liquids and no contamination of the surrounding groundwater aquifers is occurring.

There also remains little variation in standing water level for the waste stream monitoring bores during the reporting period and when compared to the previous reporting period.

A groundwater monitoring summary for the period of January 2020 - December 2020 was provided to DWER in March of 2021 and indicates that water abstraction had no impact on groundwater quantity or quality during this time. Future activities during the 2021-2022 reporting period will be focused on continuing collection of quality groundwater monitoring data, management of vanadium in groundwater at PSMB1, and seeking approval for the processing of petcoke cinder rather than vanadium ore.

## 5.0 References

- ANZECC & ARMCANZ. (2000). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*.
- Midwest Vanadium Pty Ltd. (2013). *Groundwater Licence Operating Strategy*.
- Umwelt (Australia) Pty Limited. (2017). *Sampling and Analysis Quality Plan Windimurra Vanadium Project*.
- Umwelt (Australia) Pty Ltd. (2019). *Groundwater Monitoring Review, Windimurra Vanadium Project Jan 2016 – Dec 2019*.
- Umwelt. (2020). *Groundwater Monitoring Summary, Windimurra Vanadium Project 1 Jan - 31 Dec 2020*.



**APPENDIX A**

**Annual Audit Compliance Report 2020-21**



## Annual Audit Compliance Report Form

Environmental Protection Act 1986, Part V

Section A – Licence Details			
Licence number:	L8314/2008/3	Licence file number:	2012/008859
Licence holder:	Atlantic Vanadium Pty Ltd		
Trading as:	Atlantic Vanadium Pty Ltd		
ACN:	610 583 090		
Registered address:	Level 6, 40 The Esplanade Perth WA 6000 Mailing address: PO Box Z5431, St Georges Tce Perth WA 6831		
Reporting period:	1 / 10 / 2020 to 30 / 09 / 2021		

Section B – Statement of Compliance with Licence Conditions
Did you comply with all of your licence conditions during the reporting period? (please tick the appropriate box)
<input type="checkbox"/> Yes – please complete: <ul style="list-style-type: none"><li>• section C;</li><li>• section D if required; and</li><li>• sign the declaration in Section F.</li></ul>
<input checked="" type="checkbox"/> No – please complete: <ul style="list-style-type: none"><li>• section C;</li><li>• section D if required;</li><li>• section E; and</li><li>• sign the declaration at Section F.</li></ul>

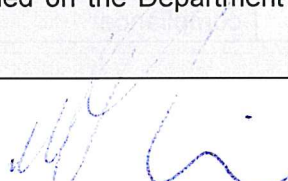
Section C – Statement of Actual Production	
Provide the actual production quantity for this reporting period. Supporting documentation is to be attached.	
Prescribed Premises Category	Actual Production Quantity
5 – processing or beneficiation of ore	0 tonnes
7 – vat or in situ leaching of metal	0 tonnes
44 – metal smelting or refining	0 tonnes
64 – class II or III putrescible landfill	1.1 tonnes
84 – electric power generation	0.5 MW
85 – sewage facility	161.5 m <sup>3</sup>

Section D – Statement of Actual Part 2 Waste Discharge Quantity	
Provide the actual Part 2 waste discharge quantity for this reporting period. Supporting documentation is to be attached.	
Prescribed Premises Category	Actual Part 2 Waste Discharge Quantity
5 – processing or beneficiation of ore	0 tonnes of tailings

Section E – Details of Non-Compliance with Licence Condition			
Please use a separate page for each condition with which the licence holder was non-compliant at a time during the reporting period.			
Condition no:	1.2.2	Date(s) of non-compliance:	01/10/2020 – 30/09/2021
Details of non-compliance:			
Putrescible waste trench in the landfill facility was not covered fortnightly as required by condition 1.2.2 of the Operating Licence.			
What was the actual (or suspected) environmental impact of the non-compliance?			
<b>NOTE</b> – please attach maps or diagrams to provide insight into the precise location of where the non-compliance took place.			
No actual environmental impact detected or suspected.			
Cause (or suspected cause) of non-compliance:			
Landfill trench covered less frequently due to minimal rubbish being deposited and an absence of suitable machinery for this task due to the site being in care and maintenance.			
Action taken to mitigate any adverse effects of non-compliance and prevent recurrence of the non-compliance:			
The landfill facility will continue to be regularly monitored to ensure the less frequent covering of the trench does not attract wildlife and does not cause trench contents to become windblown and leave the landfill facility.			
Was this non-compliance previously reported to DWER?			
<input type="checkbox"/> Yes, and		<input checked="" type="checkbox"/> No	
<input type="checkbox"/> Reported to DER verbally		Date: / /	
<input type="checkbox"/> Reported to DER in writing		Date: / /	

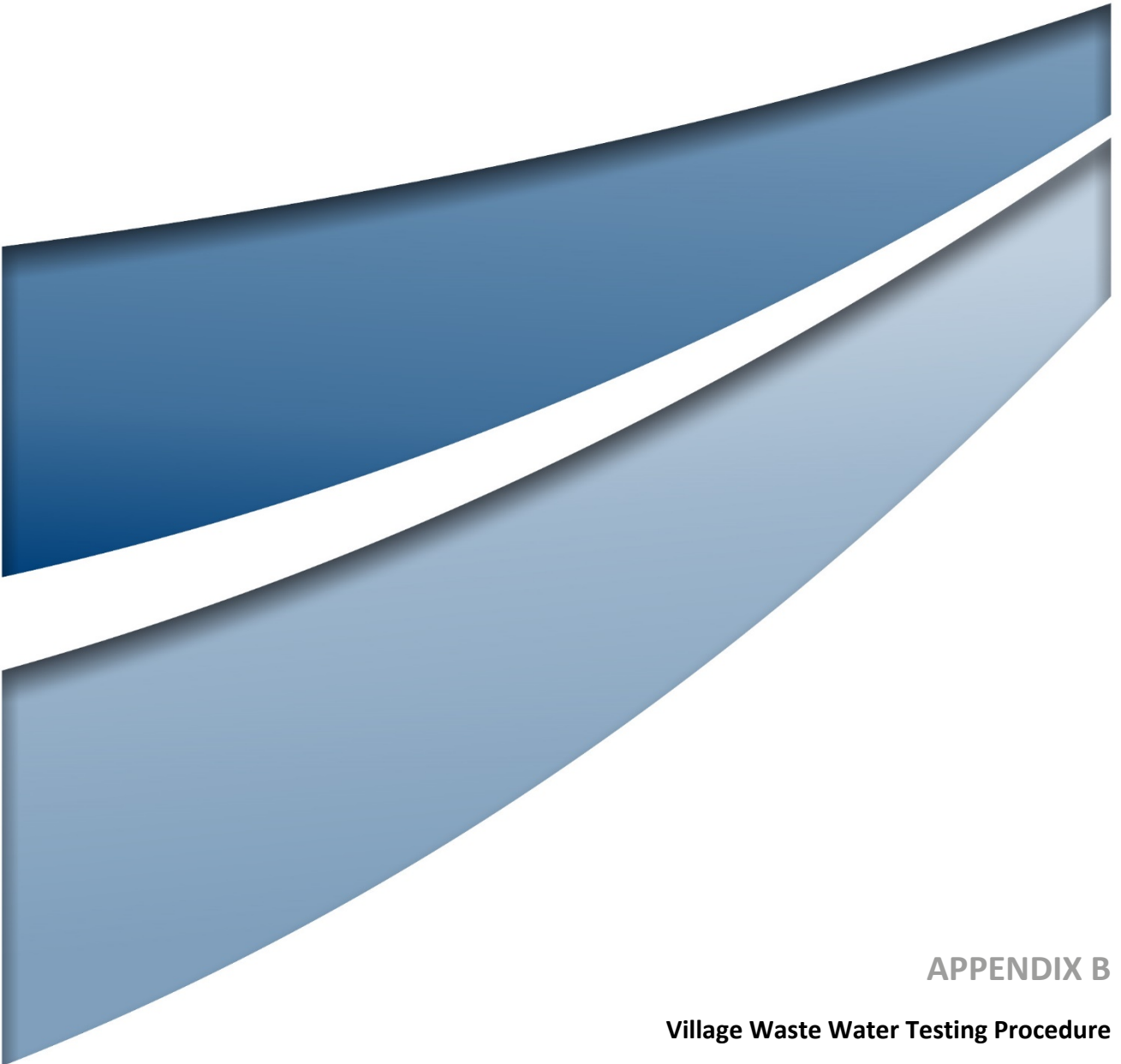
Section E – Details of Non-Compliance with Licence Condition			
Please use a separate page for each condition with which the licence holder was non-compliant at a time during the reporting period.			
Condition no:	3.4.1	Date(s) of non-compliance:	01/10/2020 – 30/09/2021
Details of non-compliance:			
Bore EP2MB1, which is located near barren liquor pond 1, was not sampled in the first quarter of 2021 for any parameters as required by license condition 3.4.1.			
What was the actual (or suspected) environmental impact of the non-compliance?			
<p><b>NOTE</b> – please attach maps or diagrams to provide insight into the precise location of where the non-compliance took place.</p>			
No actual environmental impact detected or suspected as concentrations for all parameters at EP2MB1 remained stable in the following quarters except for pH which was elevated across all bore sites in quarter three due to a meter calibration issue that has now been resolved.			
Cause (or suspected cause) of non-compliance:			
According to the field data sheet, the non-sampling of EP2MB1 in this quarter was a result of human error.			
Action taken to mitigate any adverse effects of non-compliance and prevent recurrence of the non-compliance:			
Sampling staff were alerted to the non-compliance. The bore site EP2MB1 was sampled for the remaining quarters of this reporting period.			
Was this non-compliance previously reported to DWER?			
<input type="checkbox"/> Yes, and		<input checked="" type="checkbox"/> No	
<input type="checkbox"/> Reported to DER verbally	Date: / /		
<input type="checkbox"/> Reported to DER in writing	Date: / /		

**Section F – Declaration**

I/We declare that the information in this Annual Audit Compliance Report is true and correct and is not false or misleading in a material particular <sup>1</sup> . I/We consent to the Annual Audit Compliance Report being published on the Department of Water and Environmental Regulation's (DWER) website.			
Signature <sup>2</sup> :		Signature:	
Name: (printed)	Tony Veitch	Name: (printed)	
Position:	Director	Position:	
Date:	23/12/21	Date:	
Seal (if signing under seal):			

<sup>1</sup> It is an offence under section 112 of the *Environmental Protection Act 1986* for a person to give information on this form that to their knowledge is false or misleading in a material particular.

<sup>2</sup> AACRs can only be signed by the licence holder or an authorised person with the legal authority to sign on behalf of the licence holder.



**APPENDIX B**

**Village Waste Water Testing Procedure**



**ATLANTIC**  
VANADIUM PTY LTD

---

**Windimurra Mine Site**

**Environmental Procedure  
Village Waste Water  
Monitoring Procedure**

**01-EHS-EN-PRO-0001**

**Atlantic Vanadium Pty Ltd** ABN: 18 610 583 090

<b>Rev</b>	<b>Description</b>	<b>By</b>	<b>Check</b>	<b>Approved</b>	<b>Date</b>
A	Issued for Review			D. Bougourd	12/12/19
0	Issued for use			D. Bougourd	18/3/20
B	Updated for use	D Bougourd		D. Bougourd	28/10/20

## CONTENTS

1.	PURPOSE .....	3
2.	SCOPE .....	3
3.	DEFINITIONS .....	3
4.	ROLES AND RESPONSIBILITIES.....	4
5.	PROCEDURE .....	4
5.1	Equipment Required.....	4
5.2	Hazard Identification .....	4
5.3	Schedule.....	5
5.4	Inspection of plant.....	5
5.5	Testing and Monitoring procedure.....	6
5.6	Other specific inspections .....	8
6.	COMMUNICATION / TRAINING .....	8
7.	REFERENCES .....	8
8.	DOCUMENTS AND RECORDS .....	9
9.	APPENDIX.....	9
9.1	Screen Filter clean.....	9
9.2	Floating Decant Take-off clean.....	9
9.3	WWTP Inspection Log Sheet .....	10

Author/Reviewer:	Dave Bougourd	Date due for Review:		Document No.:	01-EAC-EN-PRO-0001
Approver:		THIS DOCUMENT IS UNCONTROLLED IN HARD COPY FORMAT		Revision:	0
Page No.	Page 2 of 10			Revision Date:	28/10/2020

### 1. PURPOSE

This procedure has been prepared to provide directions on how and when to conduct inspections and testing on the Windimurra Mine accommodation village Waste Water Treatment Plant (WWTP).

### 2. SCOPE

This procedure applies to all personnel who are conducting the task of accommodation village waste water monitoring.

### 3. DEFINITIONS

AVPL	Atlantic Vanadium Pty Ltd
BOD	Biochemical Oxygen Demand. Amount of oxygen demanded for aerobic organisms to break down organic matter. Usually expressed in mg / L
Chlorine	Chemical used to disinfect and kill microorganisms. In waste water this is used to sterilise the effluent.
Competent Person	A person who has acquired the relevant skills, qualifications and knowledge through adequate training and experience to perform a specific task correctly
Contractor	Contractors, contractor management and supervision, contractor employees, subcontractors and suppliers assigned to carry out contract works on the Windimurra site
Desludge	Desludge of the aeration tanks occurs when the solids level in the tank gets too high. This is generally considered to be above 50% or so. When this occurs a controlled waste contractor will remove the excess solids. For more information see section 5.5.3 of this document.
DSSV	Diluted Settled Sludge Volume. Diluted measure of SSV for more concentrated liquors.
Employee	Any person directly employed by AVPL
Employer	Atlantic Vanadium Pty Ltd and all Contractors, subcontractors and suppliers assigned to carry out contract works on the Windimurra site
Hanna	Manufacturer of BOD measurement instrument.
Hazard	A source or situation with a potential to cause harm in terms of human injury or ill-health, damage to property, damage to the environment, or a combination of these
Hazard Identification	The process of recognizing that a hazard exists, and defining its characteristics
Hazard Management	The identification of hazards, assessment of risk associated with the hazard, control of the risk and monitoring of the effectiveness of the controls
Personal Locks	As defined in 01-OHS-SA-PRO-091 - Isolation
Risk	The combination of the likelihood of occurrence of an unwanted event, and potential consequence/s of the unwanted event should it occur
Risk Assessment	The overall process of estimating the magnitude of risk, and deciding what actions will be taken

Author/Reviewer:	Dave Bougourd	Date due for Review:		Document No.:	01-EAC-EN-PRO-0001
Approver:		<b>THIS DOCUMENT IS UNCONTROLLED IN HARD COPY FORMAT</b>		Revision:	0
Page No.	Page 3 of 10			Revision Date:	28/10/2020

SSV	Settled Sludge Volume. Measure of the progress of sewage digestion
Sewage	Effluent from the village. Most of the effluent is in fact shower, laundry, hand basin or kitchen waste. However it is all mixed in together and contaminated with Ablution waste.
Site	Windimurra Vanadium Operations

#### 4. ROLES AND RESPONSIBILITIES

The Registered Manager, Project Manager and/or Construction Manager shall allocate suitable resources to ensure the effective implementation of this procedure.

#### 5. PROCEDURE

##### 5.1 **Equipment Required**

PPE required for the task includes site standard PPE. Due to the biological hazards and chemicals that exist in the area water proof gloves are required, such as rubber or PVC (elbow length for direct contact with effluent). A face shield and PVC apron may also be required depending on conditions to control splash from fluids. A Take 5 must be conducted prior to commencing the task.

Other equipment required includes:

- WWTP Daily Log sheet.
- pH Test kit;
- One litre graduated measuring container;
- Isolation equipment as required;
- Fresh water – unchlorinated;
- Black electrical tape
- One litre measuring cylinder;
- BOD Meter, HI198193, in black case;
- BOD Calibration Solution, HI7040;
- Chlorine test kit and tablets; &
- Sodium Hypochlorite Solution (Store stock Number 31158).

##### 5.2 **Hazard Identification**

Potential hazards that exist for the task include:

HAZARD	Controls
Sodium Hypochlorite Solution	Consult MSDS follow directions. Avoid contact. Test safety shower and eye wash before use.
Raw Sewage	Wear appropriate PPE. Avoid contact. Test shower and eye wash before use.
Sudden Release of Energy	Follow procedure. Ensure compliance with Isolation procedure. Report any leaks or failures to Supervisor
Pinch points	Assess risk when doing job. Use PPE

Author/Reviewer:	Dave Bougourd	Date due for Review:		Document No.:	01-EAC-EN-PRO-0001
Approver:		<b>THIS DOCUMENT IS UNCONTROLLED IN HARD COPY FORMAT</b>		Revision:	0
Page No.	Page 4 of 10			Revision Date:	28/10/2020

Slips and trips	Maintain a good housekeeping standard. Address any hazards as found. Ensure light is operational in poor light conditions.
Fauna	Inspect area before work. Avoid any fauna in the area.

### 5.3 **Schedule**

<b>Daily</b>	<ul style="list-style-type: none"> <li>• Inspect WWTP and spray fields as per Daily Log Sheet. (See section 5.6)</li> <li>• Check and record:             <ul style="list-style-type: none"> <li>○ Sodium Hypochlorite drum level (5.4.1)</li> <li>○ Effluent Totaliser reading (5.4.2)</li> </ul> </li> <li>• Hose out aerator tank and floating decant.</li> <li>• Add one scoop of sodium acetate or dog food to aerator tank.</li> </ul>
<b>Weekly</b>	<ul style="list-style-type: none"> <li>• During camp walk around (Weekly Utilities Operator Checks), inspect transfer sumps for signs of overflow and check functionality of pumps.</li> <li>• Inspect WWTP spray field irrigation area for signs of pooling</li> </ul>
<b>Monthly</b>	<ul style="list-style-type: none"> <li>• Sample and Record:             <ul style="list-style-type: none"> <li>○ SSV (5.5.3)</li> <li>○ Turbidity (5.5.4)</li> <li>○ Decant Chlorine (5.5.5)</li> <li>○ BOD (5.5.6)</li> </ul> </li> <li>• On completion of sampling, a scan of the log sheet is to be forwarded to the Site Environmental Advisor, who shall record this information on AVPL's systems. This data is legally required for the Annual Environmental Report that must be submitted to the Department of Water and Environmental Regulation (DWER) in December each year as per the requirements of the site's Operating Licence.</li> </ul>

### 5.4 **Inspection of plant**

- Mobilise to waste water plant located adjacent to the accommodation village north. Note that the waste water system also includes the three waste water sumps located in the village that transfer the waste water to the plant.
- Inspect the plant and surrounds including the spray field. Address any issues found and report any unusual noises or leaks so that appropriate maintenance can be conducted to repair the situation. Ensure that the foundations, walkways, stairs, steelwork and electrical equipment are in good working condition, including alarms. Report any issues.
- Hose sludge build up from inside the aeration tank, including instruments and spray bar and add one scoop of sodium acetate or dog food.

Author/Reviewer:	Dave Bougourd	Date due for Review:		Document No.:	01-EAC-EN-PRO-0001
Approver:		<b>THIS DOCUMENT IS UNCONTROLLED IN HARD COPY FORMAT</b>		Revision:	0
Page No.	Page 5 of 10			Revision Date:	28/10/2020

- When the spray field is going to be inspected put the irrigation pump into manual and run so that the sprinklers and lines can be checked for leaks or abnormal operation.
- The log sheet and test kits are located in the white box on the chemical storage cage. Fill out the log sheet as noted.

### 5.5 **Testing and Monitoring procedure**

NOTE all the following measurements require appropriate PPE to reduce the risks of contact with the materials.

#### 5.5.1 Sodium Hypochlorite.

Read the Sodium Hypochlorite SDS located next to the safety shower before checking the tank level. Use the dipstick to measure the active drum. Record the levels on the log sheet. When the drum volume reaches 20 percent add it to the order list for Murchison Hardware and pick up on next run into Mount Magnet. When replacing the drum with a new one, a risk assessment should be completed prior to carrying out the task.

#### 5.5.2 Effluent Totaliser.

Record the effluent totaliser reading on the log sheet. The totaliser is located on discharge line of the irrigation pump.

#### 5.5.3 Settled Sludge Volume, SSV

This test needs to be done while the aerators are running during the latter part of an aeration phase (i.e. when the distance from the top of the tank to the water level is less than about 300 mm).

Collect a sample from the aeration tank of exactly 1 litre of mixed liquor using the 1 litre measuring cylinder. Allow to settle in the shade for exactly 30 minutes and note the volume of sludge which should form a relatively clear boundary. Record this volume on the log sheet, as a percentage of 1000 mL, (eg 460 mL is 46 %).

If the SSV is over 20 %, (commonly for established plant), the SSV measurement carried out in the 1 litre measuring cylinder is not correct, due to differing settling characteristics from cylinder to the tank, so a DSSV measurement must be conducted.

DSSV is the same as SSV except the sample is diluted using the factor from the following chart. Follow the same process as the SSV and record the dilution factor used on the log sheet. The formula for DSSV is as follows:

$$\text{DSSV \%} = \text{Dilution Factor} \times \text{New SSV}$$

The trend of the DSSV is important to be able to predict when desludging is required. Desludging is when the residual solids that are undigested are removed. This critical point is around 50 % density.

Dispose of any testing materials back into the aeration tank.

Author/Reviewer:	Dave Bougourd	Date due for Review:		Document No.:	01-EAC-EN-PRO-0001
Approver:		<b>THIS DOCUMENT IS UNCONTROLLED IN HARD COPY FORMAT</b>		Revision:	0
Page No.	Page 6 of 10			Revision Date:	28/10/2020

SSV Reading	Dilution Factor	Procedure
20 – 45 %	2	500 ml mixed liquor made up to 1 litre
45 – 75 %	3	333 ml mixed liquor made up to 1 litre
Above 75 %	4	250 ml mixed liquor made up to 1 litre

- 5.5.4 Turbidity Measurement.  
 Use the 30 cm 1000 ml measuring cylinder for the test. Place a strip of 20 mm black insulation tape across the bottom of the cylinder so it can clearly be seen looking into the top of the cylinder.  
 In a separate container collect a same of about 1.5 litres of treated effluent being discharged during the decant cycle from the sample point. Ensure the decant cycle has been running for several minutes to collect a good sample.  
 While standing in open shade conditions pour the effluent gently into the measuring cylinder. Whilst pouring look into the top of the measuring cylinder and watch for when the black tape just disappears. Measure the height of the water and record in centimetres, not millilitres, on the log sheet.  
 Dispose of the samples into the aeration tank.

- 5.5.5 Decant Chlorine Level  
 During the decant cycle collect a small amount of liquor from the sample point. Dilute the sample down in the measuring cylinder at the rate of 10:1, i.e. 100 mL of sample made up with fresh unchlorinated water to 1,000 mL. Fill the test kit tube to the CL line and add a DPD tablet, taking care not to touch the tablet. Place a cap on the tube and invert several times to mix. Read the colour from the scale on the side of the tube. The result to record on the log sheet is this number multiplied by 10.

**CHLORINE ppm = Colour Scale Reading x 10**

Dispose of all effluent in the aeration tank.  
 If the chlorine is lower than 10, check that the sodium hypochlorite drum is not empty, or suction hose is not picking up. If it is still too low then the metering pump may need adjustment.

- 5.4.6 BOD measurement, (Biochemical Oxygen Demand)  
 Before measurement of the BOD a calibration is required. The calibration required is two steps and requires the zero calibration solution. If further details are required on this process consult the Hanna Manual, found in the instrument case. Note the probe is ready for use in the case.
- To begin the process, ensure the probe is connected to the meter, the membrane is full of electrolyte and the batteries are charged. Turn on the meter and allow to stabilise to ambient conditions, this is recommended for 15 minutes. To calibrate the zero point, pour some of

Author/Reviewer:	Dave Bougourd	Date due for Review:		Document No.:	01-EAC-EN-PRO-0001
Approver:		<i>THIS DOCUMENT IS UNCONTROLLED IN HARD COPY FORMAT</i>		Revision:	0
Page No.	Page 7 of 10			Revision Date:	28/10/2020

the HI7040 zero-oxygen solution into a small clean sample container sufficient to allow the probe to be covered. Submerge the probe in the zero-oxygen solution, stir gently for 2 – 3 minutes and allow to stabilise. Press CAL on the menu and select DO calibration. Once the reading has stabilised press CFM to confirm the calibration point, press ESC to leave calibration.

2. To calibrate the slope, allow the probe tip to dry in open air. Press CAL, then DO. The 100% saturation standard is selected, which is 8.26 mg/L. When the reading is stable press the CFM to confirm the slope calibration point. Once calibration is completed, record on the WWTP daily log sheet, see appendix 9.3. Record the calibration readings on the WWTP log sheet.

Collect a small sample from the final discharge line for the BOD measurement and place the probe into the solution. Stir for 2 – 3 minutes and allow the reading to stabilise. Record the BOD on the log sheet. Rinse the probe thoroughly after use to remove any effluent and replace in the case.

### 5.6 Other specific inspections

Inspect aeration tank 1 and ensure the liquor is a medium brown colour. The tank should also have no unpleasant smell, though there will be a slight earthy odour. There should be good bubble presentation in the surface showing good aeration. There should also be no floating sludge on the surface of the tanks. Record any issues on the log sheet.

Check the vents from the top of the aeration tanks. Air should be heard escaping the vents.

If screen filter cleaning is required follow the procedure in Appendix 9.1 (at the end of this procedure).

On occasion the floating decants become blocked and require cleaning, which slows the decant process. If the decant flow rate appears slower than normal, follow the procedure outlined in Appendix 9.2.

All controls should be in the auto position, unless there is a specific reason.

## 6. COMMUNICATION / TRAINING

Personnel will receive training in the application of this procedure. Personnel are required to be trained and competent Authorised Isolators for any sections where isolations are required. Personnel are to be familiarised with the area by an area competent person before conducting any section of this procedure alone.

## 7. REFERENCES



Western Australia Mines Safety and Inspection Act 1994

Western Australia Mines Safety and Inspection Regulations 1995

Western Australia Occupational Safety and Health Act 1984

Western Australia Occupational Safety and Health Regulations 1996

Hanna Instruments HI98193 Instruction Manual

AVPL Isolation Procedure (01-OHS-SA-PRO-0091)

AVPL Incident Reporting and Investigation Procedure (01-OHS-SA-PRO-0027)

Author/Reviewer:	Dave Bougourd	Date due for Review:		Document No.:	01-EAC-EN-PRO-0001
Approver:		<b>THIS DOCUMENT IS UNCONTROLLED IN HARD COPY FORMAT</b>		Revision:	0
Page No.	Page 8 of 10			Revision Date:	28/10/2020



AVPL Spill Response Procedure (01-EAC-EN-PRO-0013)

## 8. DOCUMENTS AND RECORDS

Documents and Records relating to this Procedure shall be maintained in accordance with company Document Control procedures and the SHMS Standard 2 – Legal Requirement.

## 9. APPENDIX

### 9.1 Screen Filter clean


1. Isolate the irrigation pump and prove zero energy state, as per AVPL Isolation Procedure 01-OHS-SA-PRO-0091. Note only appropriately Authorized Isolators are permitted to apply isolations. If unsure, contact supervisor before proceeding.
2. Ensure that the following additional PPE is worn by all personnel before proceeding: Face shield, elbow length PVC gloves, PVC apron.
3. Loosen and remove the strainer cover, then remove the strainer.
4. Clean the strainer in a bucket using the potable water hose. Also clean the strainer housing.
5. Replace the strainer and tighten the strainer cover.
6. Empty bucket into aerator tank and hose out.
7. De isolate the pump and return all valves to original positions.
8. Switch the pump to manual and check for leaks.
9. If leaks are found Isolate the Irrigation pump as above and inspect o rings, housing alignment etc. and repeat step 7 and 8.
10. If no leaks are found return the pump to auto.
11. Conduct housekeeping on area.

### 9.2 Floating Decant Take-off clean

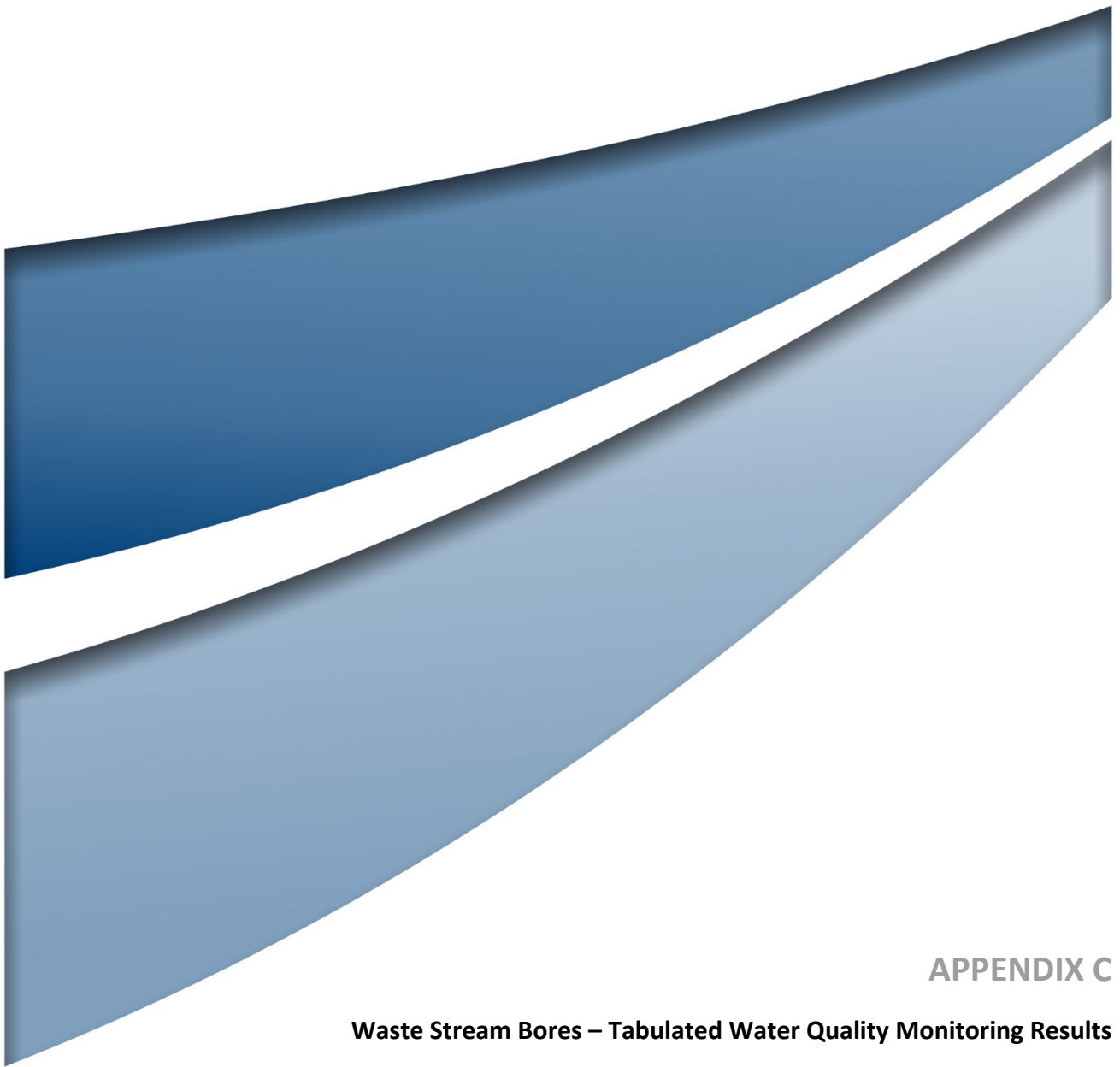
1. Confirm that the plant is not in decant mode and turn off aerator pump.
2. Ensure that the following additional PPE is worn by all personnel before proceeding: Face shield, elbow length PVC gloves, PVC apron.
3. Release one anchor cable and pull the take-off around to the edge of the tank near the access platform with the other cable.
4. Lift the end out of the effluent and inspect the induction slots.
5. If the slots are blocked, clean with a stiff broom and potable water jet.
6. Replace the take off in the effluent and confirm that bubbles emerge from the air vents on top as the trapped air escapes. If they appear to be blocked clean them with a potable water jet.
7. Re attach the anchor cable.
8. Turn aerator pump back to auto.
9. Housekeeping on area, hose off any effluent that has been spilled outside the tank.

Author/Reviewer:	Dave Bougourd	Date due for Review:		Document No.:	01-EAC-EN-PRO-0001
Approver:		<b>THIS DOCUMENT IS UNCONTROLLED IN HARD COPY FORMAT</b>		Revision:	0
Page No.	Page 9 of 10			Revision Date:	28/10/2020

**9.3 WWTP Inspection Log Sheet**

<b>WWTP Daily Log Sheet</b> 		Mon	Tues	Wed	Thurs	Fri	Sat	Sun
<b>Daily</b>	<b>Date &gt;&gt;</b>							
General Inspection Done	(Y/N)							
Transfer Sump & Pump OK	(Y/N)							
Mixed Liquor Colour OK	(Y/N)							
Odour OK	(Y/N)							
Surface Bubble Pattern OK	(Y/N)							
Qty Of Floating Sludge OK	(Y/N)							
Boom Air Vents Clear	(Y/N)							
Mixed Liquor Blending OK	(Y/N)							
Effluent Tanks Contents OK	(Y/N)							
RAB Tank Mixing OK	(Y/N)							
RAB Tank Level OK	(Y/N)							
Recycle To RAB Tank OK	(Y/N)							
Aeration Tank Level OK	(Y/N)							
All Float Sw itches OK	(Y/N)							
All Valves In Correct Position	(Y/N)							
All Sw itches In Correct Position	(Y/N)							
PPE Cabinet Contents OK	(Y/N)							
Test Safety Show er	(Y/N)							
Green Safety Light OK	(Y/N)							
Any Alarms Activated	(Y/N)							
Any Unusual Pump Noise	(Y/N)							
Any Evidence Of An Overflow	(Y/N)							
Any Leaks Detected	(Y/N)							
Chlorine Drum Volume	%							
Effluent Totaliser Reading								
Spray Fields OK	(Y/N)							
Screen Filter Clean	(Y/N)							
<b>Sunday Weekly *(DSSV, EFFLUENT CHLORINE AND TURBIDITY QUARTERLY)*</b>								
DSSV (Diluted settled sludge volume).	%							
Effluent Chlorine Level (Betw een 10-20).	mg/L							
Turbidity	cm							
Sod Hypo (Stock on Hand)	Drums							
Chlorine Test tablets	Qty							
Inspection of spray field for pooling of w ater (Y								
MSDS'S Present	(Y/N)							
<b>Operators Initials &gt;&gt;</b>								
Report any abnormalities to Supervisor immediately								
Refer to operation and maintenance manual for further information								
<i>Enter other comments/notes on reverse of this page:</i>								

<b>Author/Reviewer:</b>	Dave Bougourd	<b>Date due for Review:</b>		<b>Document No.:</b>	01-EAC-EN-PRO-0001
<b>Approver:</b>		<b>THIS DOCUMENT IS UNCONTROLLED IN HARD COPY FORMAT</b>		<b>Revision:</b>	0
<b>Page No.</b>	Page 10 of 10			<b>Revision Date:</b>	28/10/2020



## APPENDIX C

### Waste Stream Bores – Tabulated Water Quality Monitoring Results

Windimurra Vanadium Project Waste Stream Bores Groundwater Monitoring		Dissolved, field filter	Dissolved, field filter	Dissolved, field filter	Dissolved, field filter
Threshold/Trigger Level	Aluminium (Al) (mg/L)	2020 Q4	2021 Q1	2021 Q2	2021 Q3
5.00					
Notes	Bore ID	23/11/2020	16/02/2021	25/05/2021	14/08/2021
	EPMB1	<0.025	<0.025	<0.01	<0.01
LEGEND:	EPMB2	<0.025	<0.025	<0.01	<0.01
Exceeds trigger level	EPMB3	<0.025	<0.025	<0.01	<0.01
Below limit of detection	EPMB4	<0.025	<0.025	0	<0.01
Not monitored / dry	EPMB5	<0.025	<0.025	<0.01	<0.025
Data removed - outlier	EP2MB1			<0.005	<0.005
	EP2MB2	0.006	<0.005	<0.005	0.007
	EP2MB3	0.006	<0.005	<0.005	<0.005
	EP2MB4	<0.005	<0.005	<0.005	<0.005
	EP2MB5	0.011	0.012	0.009	0.009
	CTMB1	<0.05	<0.025	<0.01	<0.01
	CTMB2	<0.025	<0.05	<0.01	<0.01
	CTMB3	<0.005	<0.025	<0.01	<0.005
	CTMB4	<0.005	<0.005	<0.005	<0.005
	TSMB1	<0.005	<0.005	<0.005	<0.005
	TSMB5	<0.005	<0.005	<0.005	<0.005
	TSMB7	<0.005	0.006	<0.005	<0.005
	TSMB8	<0.025	<0.05	<0.025	<0.025
	TSMB9	<0.005	0.007	<0.005	<0.005
	PSMB1	<0.005	<0.025	<0.005	<0.005
	PSMB4	<0.05		<0.025	
	PSMB7	<0.05	<0.05	<0.025	<0.05
	PSMB8	<0.005	<0.025	<0.01	<0.01
	GATB4	<0.005	<0.005	<0.005	<0.005
Borefields	SD1	<0.005	<0.025	<0.005	<0.01
	SD2	<0.005	<0.005	<0.005	<0.005
Waste Liquids	BLP1 liquor	22.00	150.00	12.00	
	BLP2 liquor	2.20	<1	0.95	
	CTSF leachate	<0.5	<1	1	

Windimurra Vanadium Project Waste Stream Bore Groundwater Monitoring		Dissolved, field filter	Dissolved, field filter	Dissolved, field filter	Dissolved, field filter
Threshold/Trigger Level	Arsenic (As)	2020 Q4	2021 Q1	2021 Q2	2021 Q3
0.500	(mg/L)				
Notes	Bore ID	23/11/2020	16/02/2021	25/05/2021	14/08/2021
LEGEND:	EPMB1	<0.005	0.001	<0.002	<0.002
	EPMB2	<0.005	0.001	<0.002	<0.002
Exceeds trigger level	EPMB3	<0.005	<0.001	<0.002	<0.002
Below limit of detection	EPMB4	<0.005	<0.001	<0.002	<0.002
Not monitored / dry	EPMB5	<0.005	<0.001	<0.002	<0.005
Data removed - outlier	EP2MB1			<0.001	<0.001
	EP2MB2	0.001	0.001	0.001	<0.001
	EP2MB3	<0.001	<0.001	<0.001	<0.001
	EP2MB4	<0.001	<0.001	<0.001	<0.001
Greater than previous qtr by >1 Std Dev	EP2MB5	0.001	0.001	0.001	0.001
	CTMB1	<0.002	<0.001	<0.002	<0.002
	CTMB2	<0.005	0.003	0.002	0.002
	CTMB3	0.003	0.003	0.002	0.003
	CTMB4	0.001	<0.001	<0.002	0.001
	TSMB1	<0.001	<0.001	<0.001	<0.001
	TSMB5	<0.001	<0.001	<0.001	<0.001
	TSMB7	<0.001	<0.001	<0.001	<0.001
	TSMB8	<0.005	<0.001	<0.005	<0.005
	TSMB9	<0.001	<0.001	<0.001	<0.001
Previous name until 2008/2009 PS1	PSMB1	0.008	0.008	0.008	0.010
Previous name until 2008/2009 PS4	PSMB4	<0.01		<0.005	
Previous name until 2008/2009 PS7	PSMB7	<0.01	0.001	<0.005	<0.01
Previous name until 2008/2009 PS8	PSMB8	<0.001	<0.001	<0.002	<0.002
TSMB13	GATB4	<0.001	<0.001	<0.001	<0.001
Borefields	SD1	<0.001	0.001	0.001	<0.002
	SD2	0.001	0.001	<0.001	0.001
Waste liquids	BLP1 liquor	0.210	0.140	0.070	
	BLP2 liquor	0.420	0.350	0.470	
	CTSF leachate	17	23	8	

Windimurra Vanadium Project Waste Stream Bores Groundwater Monitoring					
Threshold/Trigger Level	Bicarbonate (HCO3)	2020 Q4	2021 Q1	2021 Q2	2021 Q3
600	(mg/L)				
Notes	Bore ID	25/11/2020	16/02/2021	25/05/2021	14/08/2021
	EPMB1	330.00	320.00	310.00	340.00
LEGEND:	EPMB2	340.00	310.00	270.00	340.00
Exceeds trigger level	EPMB3	360.00	410.00	340.00	340.00
Below limit of detection	EPMB4	310.00	330.00	310.00	310.00
Not monitored / dry	EPMB5	300.00	300.00	280.00	280.00
Data removed - outlier	EP2MB1			210.00	200.00
Exceeds secondary level: 440.000	EP2MB2	290.00	290.00	250.00	240.00
	EP2MB3	250.00	260.00	230.00	230.00
	EP2MB4	220.00	240.00	210.00	220.00
	EP2MB5	200.00	210.00	190.00	170.00
	CTMB1	150.00	150.00	140.00	140.00
	CTMB2	240.00	240.00	240.00	240.00
	CTMB3	240.00	230.00	240.00	230.00
	CTMB4	210.00	210.00	210.00	210.00
	TSMB1	110.00	100.00	98.00	94.00
	TSMB5	130.00	130.00	120.00	120.00
	TSMB7	250.00	260.00	250.00	250.00
	TSMB8	180.00	180.00	180.00	180.00
	TSMB9	210.00	210.00	210.00	210.00
Previous name until 2008/2009 PS1	PSMB1	390.00	390.00	380.00	370.00
Previous name until 2008/2009 PS4	PSMB4	180.00		150.00	
Previous name until 2008/2009 PS7	PSMB7	170.00	180.00	180.00	170.00
Previous name until 2008/2009 PS8	PSMB8	180.00	220.00	170.00	270.00
TSMB13	GATB4	270.00	280.00	270.00	270.00
Borefields	SD1	270.00	270.00	260.00	260.00
	SD2	290.00	290.00	280.00	280.00
Waste liquids	BLP1 liquor	42.00	<5	<5	
	BLP2 liquor	<5	150.00	<5	
	CTSF leachate	<5	<5	5200.00	

Windimurra Vanadium Project Waste Stream Bore Groundwater Monitoring		Dissolved, field filter	Dissolved, field filter	Dissolved, field filter	Dissolved, field filter
Threshold/Trigger Level	Boron (B) (mg/L)	2020 Q4	2021 Q1	2021 Q2	2021 Q3
5.00					
Notes	Bore ID	23/11/2020	16/02/2021	25/05/2021	14/08/2021
	EPMB1	2.90	2.80	2.90	4.20
LEGEND:	EPMB2	2.40	2.20	2.20	2.70
Exceeds trigger level	EPMB3	2.70	2.40	2.40	2.50
Below limit of detection	EPMB4	2.00	2.00	2.10	2.50
Not monitored / dry	EPMB5	4.80	4.30	4.20	4.30
Data removed - outlier	EP2MB1			0.510	0.550
	EP2MB2	0.72	0.72	0.73	0.75
	EP2MB3	0.61	0.58	0.60	0.60
	EP2MB4	0.59	0.59	0.62	0.58
Greater than previous qtr by >1 Std Dev	EP2MB5	0.70	0.71	0.76	0.70
	CTMB1	1.50	1.70	1.80	1.90
	CTMB2	1.00	1.20	1.30	1.30
	CTMB3	0.95	1.20	1.30	1.30
	CTMB4	0.57	0.59	0.43	0.58
	TSMB1	0.29	0.29	0.32	0.29
	TSMB5	0.52	0.51	0.51	0.50
	TSMB7	0.78	0.93	0.94	0.94
	TSMB8	1.70	1.70	2.00	1.90
	TSMB9	0.82	0.96	0.98	0.95
Previous name until 2008/2009 PS1	PSMB1	0.79	0.90	0.97	1.20
Previous name until 2008/2009 PS4	PSMB4	6.10		4.80	
Previous name until 2008/2009 PS7	PSMB7	6.60	7.40	7.60	8.10
Previous name until 2008/2009 PS8	PSMB8	1.70	2.20	2.20	2.40
TSMB13	GATB4	1.20	1.40	1.50	1.50
Borefields	SD1	2.70	2.60	2.60	2.50
	SD2	2.20	2.10	2.20	2.20
Waste liquids	BLP1 liquor	1700.00	1300.00	780.00	
	BLP2 liquor	240.00	210.00	140.00	
	CTSF leachate	270.00	160.00	84.00	

Windimurra Vanadium Project Waste Stream Bores Groundwater Monitoring					
Threshold/Trigger Level	Calcium (Ca)	2020 Q4	2021 Q1	2021 Q2	2021 Q3
1000	(mg/L)				
Notes	Bore ID	25/11/2020	16/02/2021	25/05/2021	14/08/2021
	EPMB1	1500.00	1600.00	1600.00	1800.00
LEGEND:	EPMB2	1500.00	1600.00	1600.00	1600.00
Exceeds trigger level	EPMB3	1400.00	1500.00	1500.00	1400.00
Below limit of detection	EPMB4	1700.00	1800.00	1800.00	1900.00
Not monitored / dry	EPMB5	800.00	820.00	830.00	940.00
Deleted - outlier	EP2MB1			87.00	89.00
	EP2MB2	55.00	56.00	54.00	60.00
	EP2MB3	49.00	50.00	49.00	55.00
	EP2MB4	130.00	140.00	130.00	130.00
	EP2MB5	70.00	73.00	71.00	71.00
	CTMB1	1300.00	1200.00	1300.00	1300.00
	CTMB2	2300.00	2400.00	2400.00	2500.00
	CTMB3	1400.00	1500.00	1500.00	1400.00
	CTMB4	600.00	590.00	550.00	620.00
	T SMB1	22.00	24.00	22.00	26.00
	T SMB5	34.00	36.00	34.00	37.00
	T SMB7	190.00	200.00	200.00	210.00
	T SMB8	1100.00	1100.00	1100.00	1100.00
	T SMB9	220.00	230.00	220.00	230.00
Previous name until 2008/2009 PS1	PSMB1	960.00	910.00	930.00	1100.00
Previous name until 2008/2009 PS4	PSMB4	1500.00		1200.00	
Previous name until 2008/2009 PS7	PSMB7	1500.00	1500.00	1500.00	1800.00
Previous name until 2008/2009 PS8	PSMB8	1800.00	1900.00	1900.00	1700.00
T SMB13	GATB4	70.00	72.00	67.00	72.00
Borefields	SD1	180.00	180.00	170.00	170.00
	SD2	160.00	160.00	150.00	160.00
Waste liquids	BLP1 liquor	74.00	74.00	60.00	
	BLP2 liquor	61.00	150.00	170.00	
	CTSF leachate	16.00	20.00	<10	

Windimurra Vanadium Project Waste Stream Bores Groundwater Monitoring					
Threshold/Trigger Level	Chloride (Cl) (mg/L)	2020 Q4	2021 Q1	2021 Q2	2021 Q3
4800		25/11/2020	16/02/2021	25/05/2021	14/08/2021
Notes	Bore ID				
	EPMB1	3,500	3,400	3,600	4,100
LEGEND:	EPMB2	3,500	3,400	3,500	3,600
Exceeds trigger level	EPMB3	3,300	3,300	3,400	3,400
Below limit of detection	EPMB4	3,800	3,600	3,700	4,500
Not monitored / dry	EPMB5	3,200	3,100	3,300	3,300
Data removed - outlier	EP2MB1			390	430
Exceeds secondary level:	EP2MB2	320	320	320	340
1700.0	EP2MB3	300	300	300	320
	EP2MB4	480	480	460	500
	EP2MB5	370	370	380	400
	CTMB1	4,100	4,100	4,100	4,500
	CTMB2	6,700	6,300	6,400	6,700
	CTMB3	3,600	3,400	3,500	3,700
	CTMB4	1,500	1,500	1,400	1,500
	TSMB1	130	130	120	130
	TSMB5	150	150	150	150
	TSMB7	1,200	1,300	1,300	1,300
	TSMB8	5,800	4,800	5,500	5,700
	TSMB9	910	1,000	960	990
Previous name until 2008/2009 PS1	PSMB1	2,000	1,900	2,000	2,300
Previous name until 2008/2009 PS4	PSMB4	7,500		5,700	
Previous name until 2008/2009 PS7	PSMB7	11,000	10,000	11,000	12,000
Previous name until 2008/2009 PS8	PSMB8	5,000	4,500	4,900	4,600
TSMB13	GATB4	410	410	380	410
Borefields	SD1	1,800	1,900	1,800	1,900
	SD2	1,500	1,600	1,600	1,300
Waste liquids	BLP1 liquor	160,000	150,000	160,000	
	Blp2 liquor	170,000	150,000	160,000	
	CTSF leachate	110,000	120,000	110,000	

Windimurra Vanadium Project Waste Stream Bore Groundwater Monitoring		Dissolved, field filter	Dissolved, field filter	Dissolved, field filter	Dissolved, field filter
Threshold/Trigger Level	Chromium (Cr) (mg/L)	2020 Q4	2021 Q1	2021 Q2	2021 Q3
1.000					
Notes	Bore ID	23/11/2020	16/02/2021	25/05/2021	14/08/2021
LEGEND:	EPMB1	<0.005	<0.001	<0.002	<0.002
Exceeds trigger level	EPMB2	<0.005	<0.001	<0.002	<0.002
Below limit of detection	EPMB3	<0.005	<0.001	<0.002	<0.002
Not monitored / dry	EPMB4	<0.005	<0.001	<0.002	<0.002
Data removed - outlier	EPMB5	<0.005	<0.001	<0.002	<0.005
	EP2MB1			<0.001	<0.001
	EP2MB2	<0.001	<0.001	<0.001	<0.001
	EP2MB3	<0.001	<0.001	<0.001	<0.001
	EP2MB4	<0.001	<0.001	<0.001	<0.001
Greater than previous qtr by >1 Std Dev	EP2MB5	<0.001	<0.001	<0.001	<0.001
	CTMB1	0.002	0.002	0.002	0.002
	CTMB2	<0.005	0.001	<0.002	<0.002
	CTMB3	<0.001	<0.001	<0.002	<0.001
	CTMB4	<0.001	<0.001	<0.001	<0.001
	TSMB1	<0.001	<0.001	<0.001	<0.001
	TSMB5	0.002	<0.001	<0.001	<0.001
	TSMB7	<0.001	<0.001	<0.001	<0.001
	TSMB8	0.011	0.009	0.012	0.014
	TSMB9	0.004	0.004	0.005	0.005
Previous name until 2008/2009 PS1	PSMB1	<0.001	<0.001	0.001	<0.001
Previous name until 2008/2009 PS4	PSMB4	<0.01		<0.005	
Previous name until 2008/2009 PS7	PSMB7	<0.01	0.004	<0.005	<0.01
Previous name until 2008/2009 PS8	PSMB8	<0.001	<0.001	<0.002	<0.002
TSMB13	GATB4	0.005	0.004	0.005	0.004
Borefields	SD1	<0.001	0.001	0.001	<0.002
	SD2	0.006	0.001	0.002	0.002
Waste liquids	BLP1 liquor	19	12	9	
	BLP2 liquor	<0.1	0.014	<0.1	
	CTSF leachate	<0.1	0.280	0.160	

Windimurra Vanadium Project Waste Stream Bores Groundwater Monitoring		Dissolved, field filter	Dissolved, field filter	Dissolved, field filter	Dissolved, field filter
Threshold/Trigger Level	Cobalt (Co) (mg/L)	2020 Q4	2021 Q1	2021 Q2	2021 Q3
1.00		23/11/2020	16/02/2021	25/05/2021	14/08/2021
Notes	Bore ID				
LEGEND:	EPMB1	<0.005	<0.005	<0.002	<0.002
Exceeds trigger level	EPMB2	<0.005	<0.005	<0.002	<0.002
Below limit of detection	EPMB3	<0.005	<0.005	<0.002	<0.002
Not monitored / dry	EPMB4	<0.005	<0.005	<0.002	<0.002
Data removed - outlier	EPMB5	0.009	0.010	0.010	0.012
	EP2MB1			<0.001	<0.001
	EP2MB2	<0.001	<0.001	<0.001	<0.001
	EP2MB3	<0.001	<0.001	<0.001	<0.001
	EP2MB4	<0.001	<0.001	<0.001	<0.001
Greater than previous qtr by >1 Std Dev	EP2MB5	<0.001	<0.001	<0.001	<0.001
	CTMB1	<0.002	<0.005	<0.002	<0.002
	CTMB2	<0.005	<0.01	<0.002	<0.002
	CTMB3	<0.001	<0.005	<0.002	0.001
	CTMB4	<0.001	<0.001	<0.001	<0.001
	TSMB1	<0.001	<0.001	<0.001	<0.001
	TSMB5	<0.001	<0.001	<0.001	<0.001
	TSMB7	<0.001	<0.001	<0.001	<0.001
	TSMB8	<0.005	<0.01	<0.005	<0.005
	TSMB9	<0.001	<0.001	<0.001	<0.001
Previous name until 2008/2009 P51	PSMB1	0.005	<0.005	<0.001	0.005
Previous name until 2008/2009 P54	PSMB4	<0.01		<0.005	
Previous name until 2008/2009 P57	PSMB7	<0.01	<0.01	<0.005	<0.01
Previous name until 2008/2009 P58	PSMB8	0.003	<0.005	<0.002	0.002
TSMB13	GATB4	<0.001	<0.001	<0.001	<0.001
Borefields	SD1	<0.001	<0.005	<0.001	<0.002
	SD2	<0.001	<0.001	<0.001	<0.001
Waste liquids	BLP1 liquor	11	7	7	
	BLP2 liquor	19	30	34	
	CTSF leachate	<0.1	<0.2	<0.1	

Windimurra Vanadium Project Waste Stream Bores Groundwater Monitoring		Dissolved, field filter	Dissolved, field filter	Dissolved, field filter	Dissolved, field filter
Threshold/Trigger Level	Copper (Cu)	2020 Q4	2021 Q1	2021 Q2	2021 Q3
1.000	(mg/L)				
Notes	Bore ID	23/11/2020	16/02/2021	25/05/2021	14/08/2021
	EPMB1	0.007	0.007	0.006	0.008
LEGEND:	EPMB2	0.007	0.009	0.006	0.010
Exceeds trigger level	EPMB3	0.005	0.005	0.006	0.004
Below limit of detection	EPMB4	0.006	0.004	0.004	0.006
Not monitored / dry	EPMB5	0.033	0.017	0.008	0.010
Data removed - outlier	EP2MB1			0.001	0.001
	EP2MB2	0.002	0.001	<0.001	<0.001
	EP2MB3	0.003	0.002	0.003	0.001
	EP2MB4	0.002	0.001	0.003	0.001
Greater than previous qtr by >1 Std Dev	EP2MB5	0.001	<0.001	0.001	0.002
	CTMB1	<0.002	0.002	0.002	0.002
	CTMB2	<0.005	0.003	0.005	0.004
	CTMB3	0.003	0.003	0.004	0.004
	CTMB4	0.002	0.002	0.002	0.002
	T SMB1	0.001	<0.001	<0.001	<0.001
	T SMB2				
	T SMB3				
	T SMB4				
	T SMB5	0.001	<0.001	<0.001	<0.001
	T SMB6				
	T SMB7	<0.001	<0.001	0.001	<0.001
	T SMB8	<0.005	<0.001	<0.005	<0.005
	T SMB9	<0.001	<0.001	<0.001	<0.001
	T SMB10				
Previous name until 2008/2009 PS1	PSMB1	0.011	0.011	0.011	0.012
Previous name until 2008/2009 PS4	PSMB4	<0.01		0.007	
Previous name until 2008/2009 PS7	PSMB7	<0.01	0.003	<0.005	<0.01
Previous name until 2008/2009 PS8	PSMB8	0.003	0.002	0.002	0.003
T SMB13	GATB4	<0.001	<0.001	<0.001	<0.001
Borefields	SD1	<0.001	<0.001	<0.001	<0.002
	SD2	<0.001	<0.001	<0.001	0.009
Waste liquids	BLP1 liquor	2.30	1.60	0.95	
	BLP2 liquor	<0.1	0.025	<0.1	
	CTSF leachate	0.120	0.018	<0.1	

Windimurra Vanadium Project Waste Stream Bores Groundwater Monitoring					
Threshold/Trigger Level	Fluoride (F) (mg/L)	2020 Q4	2021 Q1	2021 Q2	2021 Q3
2					
Notes	Bore ID	25/11/2020	16/02/2021	25/05/2021	14/08/2021
	EPMB1	<0.5	<0.5	<0.5	<0.3
LEGEND:	EPMB2	<0.5	<0.5	<0.5	<0.3
Exceeds trigger level	EPMB3	<0.5	0.60	<0.5	<0.3
Below limit of detection	EPMB4	<0.5	<0.5	<0.5	<0.3
Not monitored / dry	EPMB5	<0.5	<0.5	<0.5	<0.3
Data removed - outlier	EP2MB1			0.20	0.20
Exceeds secondary level:	EP2MB2	0.30	0.30	0.20	0.20
	EP2MB3	0.30	0.20	0.30	0.20
	EP2MB4	0.20	0.20	0.20	0.30
	EP2MB5	0.20	0.20	0.20	0.20
	CTMB1	<1	<0.5	<0.5	<0.5
	CTMB2	<1	<0.5	<0.5	<5
	CTMB3	<1	<0.5	<0.5	<0.3
	CTMB4	<0.2	<0.2	<0.1	0.10
	TSMB1	<0.1	<0.1	<0.1	<0.1
	TSMB5	0.30	0.30	0.30	0.30
	TSMB7	<0.5	0.20	0.20	0.20
	TSMB8	<1	<0.5	<0.5	<0.5
	TSMB9	<0.5	0.20	0.20	0.20
Previous name until 2008/2009 PS1	PSMB1	<0.5	<0.1	<0.2	<0.2
Previous name until 2008/2009 PS4	PSMB4	<1		<0.5	
Previous name until 2008/2009 PS7	PSMB7	<1	<1	<1	<1
Previous name until 2008/2009 PS8	PSMB8	<1	<0.1	<0.5	<0.3
TSMB13	GATB4	0.50	0.50	0.60	0.60
Borefields	SD1	1.00	1.00	0.90	0.90
	SD2	0.90	0.90	0.80	0.90
Waste liquids	BLP1 liquor	29.00	33.00	27.00	
	BLP2 liquor	5.40	5.20	5.00	
	CTSF leachate	110.00	94.00	38.00	

Windimurra Vanadium Project Waste Stream Bore Groundwater Monitoring		Dissolved, field filter	Dissolved, field filter	Dissolved, field filter	Dissolved, field filter
Threshold/Trigger Level	Iron (Fe) (mg/L)	2020 Q4	2021 Q1	2021 Q2	2021 Q3
0.30					
Notes	Bore ID	23/11/2020	16/02/2021	25/05/2021	14/08/2021
	EPMB1	0.026	<0.025	0.013	<0.01
LEGEND:	EPMB2	<0.025	<0.025	0.014	<0.01
Exceeds trigger level	EPMB3	<0.025	<0.025	0.019	0.014
Below limit of detection	EPMB4	<0.025	<0.025	0.028	0.012
Not monitored / dry	EPMB5	<0.025	<0.025	0.011	<0.025
Data removed - outlier	EP2MB1			0.008	0.007
	EP2MB2	0.008	0.019	0.006	0.007
	EP2MB3	0.011	0.014	0.008	0.007
	EP2MB4	0.011	0.013	0.012	0.008
Greater than previous qtr by >1 Std Dev	EP2MB5	0.026	0.011	<0.005	0.008
	CTMB1	0.011	<0.025	0.011	<0.01
	CTMB2	<0.025	<0.05	0.025	0.019
	CTMB3	0.006	<0.025	0.019	0.009
	CTMB4	0.012	0.006	0.008	0.007
	TSMB1	0.009	0.012	0.009	0.021
	TSMB5	0.008	0.010	0.011	0.006
	TSMB7	0.006	0.008	0.006	0.008
	TSMB8	<0.025	<0.05	<0.025	<0.025
	TSMB9	0.010	0.007	0.006	0.006
Previous name until 2008/2009 PS1	PSMB1	0.043	0.030	0.014	0.016
Previous name until 2008/2009 PS4	PSMB4	<0.05		<0.025	
Previous name until 2008/2009 PS7	PSMB7	<0.05	<0.05	<0.025	<0.05
Previous name until 2008/2009 PS8	PSMB8	0.008	<0.025	0.014	<0.01
TSMB13	GATB4	<0.005	<0.005	<0.005	<0.005
Borefields	SD1	0.010	<0.025	0.013	<0.01
	SD2	0.010	0.008	0.009	0.007
Waste liquids	BLP1 liquor	22.000	16.000	12.000	
	BLP2 liquor	0.750	<1	<0.5	
	CTSF leachate	0.940	1.800	0.630	

Windimurra Vanadium Project Waste Stream Bores Groundwater Monitoring					
Threshold/Trigger Level	Magnesium (Mg) (mg/L)	2020 Q4	2021 Q1	2021 Q2	2021 Q3
2000					
Notes	Bore ID	25/11/2020	16/02/2021	25/05/2021	14/08/2021
	EPMB1	500.00	490.00	490.00	600.00
LEGEND:	EPMB2	510.00	490.00	490.00	540.00
Exceeds trigger level	EPMB3	480.00	470.00	470.00	480.00
Below limit of detection	EPMB4	650.00	630.00	640.00	740.00
Not monitored / dry	EPMB5	390.00	370.00	370.00	390.00
Deleted - outlier	EP2MB1			46.00	48.00
Exceeds secondary level:	EP2MB2	23.00	23.00	22.00	24.00
420.0	EP2MB3	24.00	24.00	24.00	28.00
	EP2MB4	71.00	71.00	69.00	67.00
	EP2MB5	45.00	47.00	47.00	46.00
	CTMB1	660.00	610.00	640.00	710.00
	CTMB2	1100.00	5000.00	1000.00	1000.00
	CTMB3	530.00	510.00	510.00	560.00
	CTMB4	210.00	210.00	200.00	230.00
	TSMB1	13.00	14.00	13.00	15.00
	TSMB5	15.00	16.00	15.00	16.00
	TSMB7	160.00	170.00	170.00	180.00
	TSMB8	660.00	620.00	620.00	650.00
	TSMB9	96.00	97.00	95.00	100.00
Previous name until 2008/2009 PS1	PSMB1	370.00	360.00	370.00	460.00
Previous name until 2008/2009 PS4	PSMB4	640.00		550.00	
Previous name until 2008/2009 PS7	PSMB7	880.00	900.00	900.00	1000.00
Previous name until 2008/2009 PS8	PSMB8	690.00	650.00	670.00	610.00
TSMB13	GATB4	41.00	41.00	38.00	38.00
Borefields	SD1	160.00	150.00	150.00	160.00
	SD2	140.00	140.00	130.00	140.00
Waste liquids	BLP1 liquor	550.00	570.00	460.00	
	BLP2 liquor	430.00	660.00	570.00	
	CTSF leachate	<5	<5	<5	

Windimurra Vanadium Project Waste Stream Bores Groundwater Monitoring		Dissolved, field filter	Dissolved, field filter	Dissolved, field filter	Dissolved, field filter
Threshold/Trigger Level	<i>Manganese (Mn)</i>	2020 Q4	2021 Q1	2021 Q2	2021 Q3
5	(mg/L)				
Notes	Bore ID	23/11/2020	16/02/2021	25/05/2021	14/08/2021
	EPMB1	<0.005	0.002	0.006	0.012
LEGEND:	EPMB2	0.026	0.032	<0.002	0.007
Exceeds trigger level	EPMB3	0.042	0.054	0.045	0.040
Below limit of detection	EPMB4	0.029	0.028	0.025	0.034
Not monitored / dry	EPMB5	0.027	0.027	0.019	0.022
Data removed - outlier	EP2MB1			<0.001	<0.001
	EP2MB2	<0.001	0.004	<0.001	0.002
	EP2MB3	0.002	0.010	0.002	0.003
	EP2MB4	0.001	0.004	<0.001	<0.001
Greater than previous qtr by >1 Std Dev	EP2MB5	0.008	0.005	<0.001	0.003
	CTMB1	<0.002	0.001	<0.002	<0.002
	CTMB2	0.033	0.029	0.019	0.033
	CTMB3	<0.001	<0.001	<0.002	<0.001
	CTMB4	0.004	0.008	0.002	0.008
	T SMB1	0.009	0.005	0.005	0.004
	T SMB5	<0.001	0.002	<0.001	<0.001
	T SMB7	0.001	0.003	0.001	<0.001
	T SMB8	<0.005	0.001	<0.005	<0.005
	T SMB9	<0.001	0.001	<0.001	<0.001
Previous name until 2008/2009 PS1	PSMB1	0.036	0.028	0.029	0.036
Previous name until 2008/2009 PS4	PSMB4	0.058		0.006	
Previous name until 2008/2009 PS7	PSMB7	<0.01	0.004	<0.005	<0.01
Previous name until 2008/2009 PS8	PSMB8	0.045	0.054	0.110	0.039
T SMB13	GATB4	<0.001	0.001	<0.001	0.002
Borefields	SD1	<0.001	<0.001	<0.001	<0.002
	SD2	<0.001	<0.001	<0.001	<0.001
Waste liquids	BLP1 liquor	38	28	27	
	BLP2 liquor	23	20	19	
	CTSF leachate	<0.1	0.097	0.130	

Windimurra Vanadium Project Waste Stream Bore Groundwater Monitoring		Dissolved, field filter	Dissolved, field filter	Dissolved, field filter	Dissolved, field filter
Threshold/Trigger Level	Molybdenum (Mo)	2020 Q4	2021 Q1	2021 Q2	2021 Q3
0.15	(mg/L)				
Notes	Bore ID	23/11/2020	16/02/2021	25/05/2021	14/08/2021
	EPMB1	<0.005	<0.005	0.003	0.003
	EPMB2	0.005	0.006	0.004	0.005
LEGEND:	EPMB3	<0.005	0.010	0.005	0.004
Exceeds trigger level	EPMB4	<0.005	<0.005	<0.002	<0.002
Below limit of detection	EPMB5	<0.005	0.007	0.003	<0.005
Not monitored / dry	EP2MB1			<0.001	<0.001
Data removed - outlier	EP2MB2	0.006	0.006	0.005	0.004
	EP2MB3	0.002	0.003	0.002	0.001
	EP2MB4	<0.001	0.002	0.003	<0.001
Greater than previous qtr by >1 Std Dev	EP2MB5	0.003	0.004	0.003	0.003
	CTMB1	<0.002	<0.005	<0.002	<0.002
	CTMB2	0.009	0.012	0.008	0.008
	CTMB3	0.005	<0.005	0.005	0.007
	CTMB4	<0.001	<0.001	0.001	0.003
	TSMB1	<0.001	<0.001	<0.001	<0.001
	TSMB5	<0.001	<0.001	<0.001	<0.001
	TSMB7	<0.001	<0.001	<0.001	<0.001
	TSMB8	<0.005	<0.01	<0.005	<0.005
	TSMB9	<0.001	<0.001	<0.001	<0.001
Previous name until 2008/2009 PS1	PSMB1	0.130	0.130	0.170	0.190
Previous name until 2008/2009 PS4	PSMB4	0.018		0.006	
Previous name until 2008/2009 PS7	PSMB7	<0.01	0.010	0.007	<0.01
Previous name until 2008/2009 PS8	PSMB8	0.002	<0.005	0.002	<0.002
TSMB13	GATB4	0.001	0.002	0.002	0.002
Borefields	SD1	0.013	0.012	0.014	0.013
	SD2	0.012	0.012	0.013	0.012
Waste liquids	BLP1 liquor	1.200	0.860	0.650	
	BLP2 liquor	<0.1	<0.2	0.250	
	CTSF leachate	62	66	30	

Windimurra Vanadium Project Waste Stream Bore Groundwater Monitoring		Dissolved, field filter	Dissolved, field filter	Dissolved, field filter	Dissolved, field filter
Threshold/Trigger Level	Nickel (Ni) (mg/L)	2020 Q4	2021 Q1	2021 Q2	2021 Q3
1.00					
Notes	Bore ID	23/11/2020	16/02/2021	25/05/2021	14/08/2021
	EPMB1	0.007	0.009	0.008	0.010
	EPMB2	0.007	0.008	0.006	0.007
LEGEND:	EPMB3	0.006	0.007	0.006	0.006
Exceeds trigger level	EPMB4	0.012	0.008	0.006	0.006
Below limit of detection	EPMB5	0.041	0.044	0.059	0.085
Not monitored / dry	EP2MB1			<0.001	<0.001
Data removed - outlier	EP2MB2	0.007	0.004	0.002	0.002
	EP2MB3	0.003	0.002	0.002	0.001
	EP2MB4	0.004	0.003	0.004	0.002
Greater than previous qtr by >1 Std Dev	EP2MB5	0.003	0.002	0.002	0.004
	CTMB1	0.011	0.006	0.009	0.007
	CTMB2	0.071	0.069	0.076	0.083
	CTMB3	0.005	0.005	0.006	0.005
	CTMB4	0.023	0.021	0.020	0.018
	TSMB1	<0.001	<0.001	<0.001	<0.001
	TSMB5	<0.001	<0.001	<0.001	<0.001
	TSMB7	<0.001	<0.001	0.001	<0.001
	TSMB8	<0.005	<0.001	<0.005	<0.05
	TSMB9	<0.001	<0.001	<0.001	<0.001
Previous name until 2008/2009 PS1	PSMB1	0.017	0.016	0.017	0.017
Previous name until 2008/2009 PS4	PSMB4	0.013		0.014	
Previous name until 2008/2009 PS7	PSMB7	<0.01	0.005	<0.005	<0.01
Previous name until 2008/2009 PS8	PSMB8	0.025	0.023	0.025	0.029
TSMB13	GATB4	<0.001	<0.001	<0.001	0.001
Borefields	SD1	<0.001	<0.001	<0.001	<0.02
	SD2	<0.001	<0.001	<0.001	<0.001
Waste liquids	BLP1 liquor	17	12	10	
	BLP2 liquor	8	29	31	
	CTSF leachate	<0.1	0.071	<0.1	

Windimurra Vanadium Project Waste Stream Bores Groundwater Monitoring		Chem Centre	Chem Centre	Chem Centre	Chem Centre
Threshold/Trigger Level	<u>Oxalate</u>	2020 Q4	2021 Q1	2021 Q2	2021 Q3
None	mg/L	Anions in water by ion chromatography	Anions in water by ion chromatography	Anions in water by ion chromatography	Anions in water by ion chromatography
		Notes	Bore ID	23/11/2020	16/02/2021
	EPMB1	<0.1	<0.1	<0.1	<0.1
	EPMB2	<0.1	<0.1	<0.1	<0.1
	EPMB3	<0.1	<0.1	<0.1	<0.1
	EPMB4	<0.1	<0.1	<0.1	<0.1
	EPMB5	<0.1	<0.1	<0.1	<0.1
	EP2MB1			<0.1	<0.1
	EP2MB2	<0.1		<0.1	<0.1
	EP2MB3	<0.1		<0.1	<0.1
	EP2MB4	<0.1		<0.1	<0.1
	EP2MB5	<0.1		0.20	<0.1
	CTMB1	<0.1	<0.1	<0.1	<0.1
	CTMB2	<0.1	<0.1	<0.1	<0.1
	CTMB3	<0.1	<0.1	<0.1	<0.1
	CTMB4	<0.1	<0.1	<0.1	<0.1
	T SMB1	<0.1	<0.1	<0.1	<0.1
	T SMB5	<0.1	<0.1	<0.1	<0.1
	T SMB6				
	T SMB7	<0.1	<0.1	<0.1	<0.1
	T SMB8	<0.1	<0.1	<0.1	<0.1
	T SMB9	<0.1	<0.1	<0.1	<0.1
	PSMB4			<0.1	
	GATB4	<0.1	<0.1	<0.1	<0.1
Waste liquids	BLP1 liquor	4,000	3,900	2,200.00	
	BLP2 liquor	<5	<10	<10	
	CTSF leachate pond	200.00	100.00	26.00	

Windimurra Vanadium Project Waste Stream Bores Groundwater Monitoring					
Threshold/Trigger Level	Field pH	2020 Q4	2021 Q1	2021 Q2	2021 Q3
None	(pH Units)				
Notes	Bore ID	25/11/2020	16/02/2021	25/05/2021	14/08/2021
	EPMB1	7.08	6.85	8.51	6.51
LEGEND:	EPMB2	7.05	6.94	8.45	6.49
Exceeds trigger level	EPMB3	7.11	6.93	7.91	6.63
Below limit of detection	EPMB4	6.89	7.19	8.51	6.68
Not monitored / dry	EPMB5	7.23	6.56	8.21	6.83
Data removed - outlier	EP2MB1			9.22	7.30
pH varies by >1	EP2MB2	7.62	7.19	8.92	7.69
pH varies by >0.5	EP2MB3	7.55	7.50	8.70	7.49
	EP2MB4	7.60	6.91	8.62	7.29
	EP2MB5	7.01	7.27	9.00	7.73
	CTMB1	7.37	7.35	8.53	6.87
	CTMB2	7.05	7.24	8.66	6.49
	CTMB3	7.24	8.02	9.01	6.60
	CTMB4	7.24	7.51	8.75	6.82
	TSMB1	7.82	8.00	9.47	7.36
	TSMB5	7.47	7.86	9.23	7.38
	TSMB7	7.32	7.75	8.44	6.92
	TSMB8	7.20	7.60	8.00	6.61
	TSMB9	7.46	8.24	8.74	6.94
Previous name until 2008/2009 PS1	PSMB1	6.93	7.43	7.43	6.69
Previous name until 2008/2009 PS4	PSMB4	7.13	7.06	8.00	
Previous name until 2008/2009 PS7	PSMB7	7.05	6.83	7.91	6.64
Previous name until 2008/2009 PS8	PSMB8	7.26	7.25	8.67	7.04
TSMB13	GATB4	7.39	7.71	8.77	7.20
Borefields	SD1	7.68	6.68	8.46	7.13
	SD2	7.72	6.70	8.43	7.04

Windimurra Vanadium Project Waste Stream Bores Groundwater Monitoring					
Threshold/Trigger Level	Potassium [K] (mg/L)	2020 Q4	2021 Q1	2021 Q2	2021 Q3
130					
Notes	Bore ID	25/11/2020	16/02/2021	25/05/2021	14/08/2021
	EPMB1	9.00	8.60	8.80	9.80
LEGEND:	EPMB2	7.90	7.50	7.60	7.90
Exceeds trigger level	EPMB3	9.40	9.30	9.10	9.20
Below limit of detection	EPMB4	7.70	7.40	7.70	8.00
Not monitored / dry	EPMB5	12.00	11.00	12.00	11.00
Data removed - outlier	EP2MB1			5.10	4.90
Exceeds secondary level: 22.000	EP2MB2	8.50	8.40	8.00	7.80
	EP2MB3	4.60	4.10	4.20	4.10
	EP2MB4	7.00	6.90	7.10	6.70
	EP2MB5	3.90	4.00	4.70	4.20
	CTMB1	8.20	7.80	8.00	8.00
	CTMB2	6.40	29.00	5.90	5.70
	CTMB3	7.30	6.90	7.10	7.10
	CTMB4	4.50	4.40	4.30	4.30
	TSMB1	3.30	3.30	3.30	3.40
	TSMB5	7.40	7.50	7.50	7.40
	TSMB7	18.00	19.00	19.00	18.00
	TSMB8	54.00	53.00	53.00	57.00
	TSMB9	16.00	17.00	17.00	16.00
Previous name until 2008/2009 PS1	PSMB1	6.90	6.70	7.00	7.60
Previous name until 2008/2009 PS4	PSMB4	19.00		13.00	
Previous name until 2008/2009 PS7	PSMB7	13.00	13.00	14.00	14.00
Previous name until 2008/2009 PS8	PSMB8	12.00	12.00	12.00	11.00
TSMB13	GATB4	16.00	16.00	16.00	16.00
Borefields	SD1	55.00	56.00	55.00	52.00
	SD2	50.00	51.00	50.00	50.00
Waste liquids	BLP1 liquor	1800.00	1700.00	1200.00	
	BLP2 liquor	1900.00	1400.00	860.00	
	CTSF leachate	610.00	330.00	140.00	

Windimurra Vanadium Project Waste Stream Bores Groundwater Monitoring		Dissolved, field filter	Dissolved, field filter	Dissolved, field filter	Dissolved, field filter
Threshold/Trigger Level	Selenium (Se)	2020 Q4	2021 Q1	2021 Q2	2021 Q3
0.02	(mg/L)				
Notes	Bore ID	23/11/2020	16/02/2021	25/05/2021	14/08/2021
	EPMB1	0.140	0.150	0.150	0.220
	EPMB2	0.085	0.084	0.100	0.100
	EPMB3	0.046	0.045	0.053	0.065
	EPMB4	0.067	0.066	0.100	0.160
	EPMB5	0.015	0.017	0.012	0.013
	EP2MB1			0.003	0.003
	EP2MB2	<0.001	0.001	<0.001	0.001
	EP2MB3	0.004	0.003	0.004	0.003
	EP2MB4	0.004	0.004	0.003	0.005
	EP2MB5	0.003	0.002	0.002	0.003
Greater than previous qtr by >1 Std Dev	CTMB1	0.034	0.032	0.029	0.043
	CTMB2	0.021	0.021	0.019	0.027
	CTMB3	0.011	0.010	0.014	0.015
	CTMB4	0.008	0.010	0.008	0.007
	TSMB1	<0.001	<0.001	<0.001	<0.001
	TSMB5	<0.001	<0.001	<0.001	<0.001
	TSMB7	0.004	0.005	0.005	0.006
	TSMB8	0.018	0.019	0.018	0.015
	TSMB9	0.003	0.003	0.002	0.003
Previous name until 2008/2009 P51	PSMB1	0.031	0.027	0.029	0.039
Previous name until 2008/2009 P54	PSMB4	0.066		0.059	
Previous name until 2008/2009 P57	PSMB7	0.025	0.030	0.027	0.038
Previous name until 2008/2009 P58	PSMB8	0.014	0.020	0.022	0.019
TSMB13	GATB4	0.003	0.003	0.004	0.003
Borefields	SD1	0.010	0.008	0.007	0.009
	SD2	0.009	0.008	0.008	0.007
Waste liquids	BLP1 liquor	17	19	13	
	BLP2 liquor	6	3	4	
	CTSF leachate	2	1	0.40	

Windimurra Vanadium Project Waste Stream Bores Groundwater Monitoring					
Threshold/Trigger Level	Sodium (Na)	2020 Q4	2021 Q1	2021 Q2	2021 Q3
2400	(mg/L)				
Notes	Bore ID	25/11/2020	16/02/2021	25/05/2021	14/08/2021
	EPMB1	520	510	490	580
LEGEND:	EPMB2	550	530	490	540
Exceeds trigger level	EPMB3	710	680	640	660
Below limit of detection	EPMB4	350	360	350	370
Not monitored / dry	EPMB5	1,900	1,800	1,900	1,900
Data removed - outlier	EP2MB1			230	250
Exceeds secondary level: 950.0	EP2MB2	270	270	260	290
	EP2MB3	250	250	250	270
	EP2MB4	240	240	240	240
	EP2MB5	270	290	280	260
	CTMB1	1,200	1,200	1,200	1,200
	CTMB2	490	2,400	460	480
	CTMB3	390	380	370	400
	CTMB4	200	210	200	220
	T SMB1	90	84	91	93
	T SMB5	99	97	100	110
	T SMB7	430	450	440	470
	T SMB8	2,200	2,100	2,100	2,200
	T SMB9	320	330	320	340
Previous name until 2008/2009 PS1	PSMB1	250	250	250	300
Previous name until 2008/2009 PS4	PSMB4	2,800		2,100	
Previous name until 2008/2009 PS7	PSMB7	4,600	4,700	4,900	5,300
Previous name until 2008/2009 PS8	PSMB8	910	910	920	880
T SMB13	GATB4	250	260	240	250
Borefields	SD1	930	930	940	990
	SD2	780	790	790	830
Waste liquids	BLP1 liquor	55,000	59,000	40,000	
	BLP2 liquor	56,000	58,000	71,000	
	CTSF leachate	140,000	130,000	91,000	

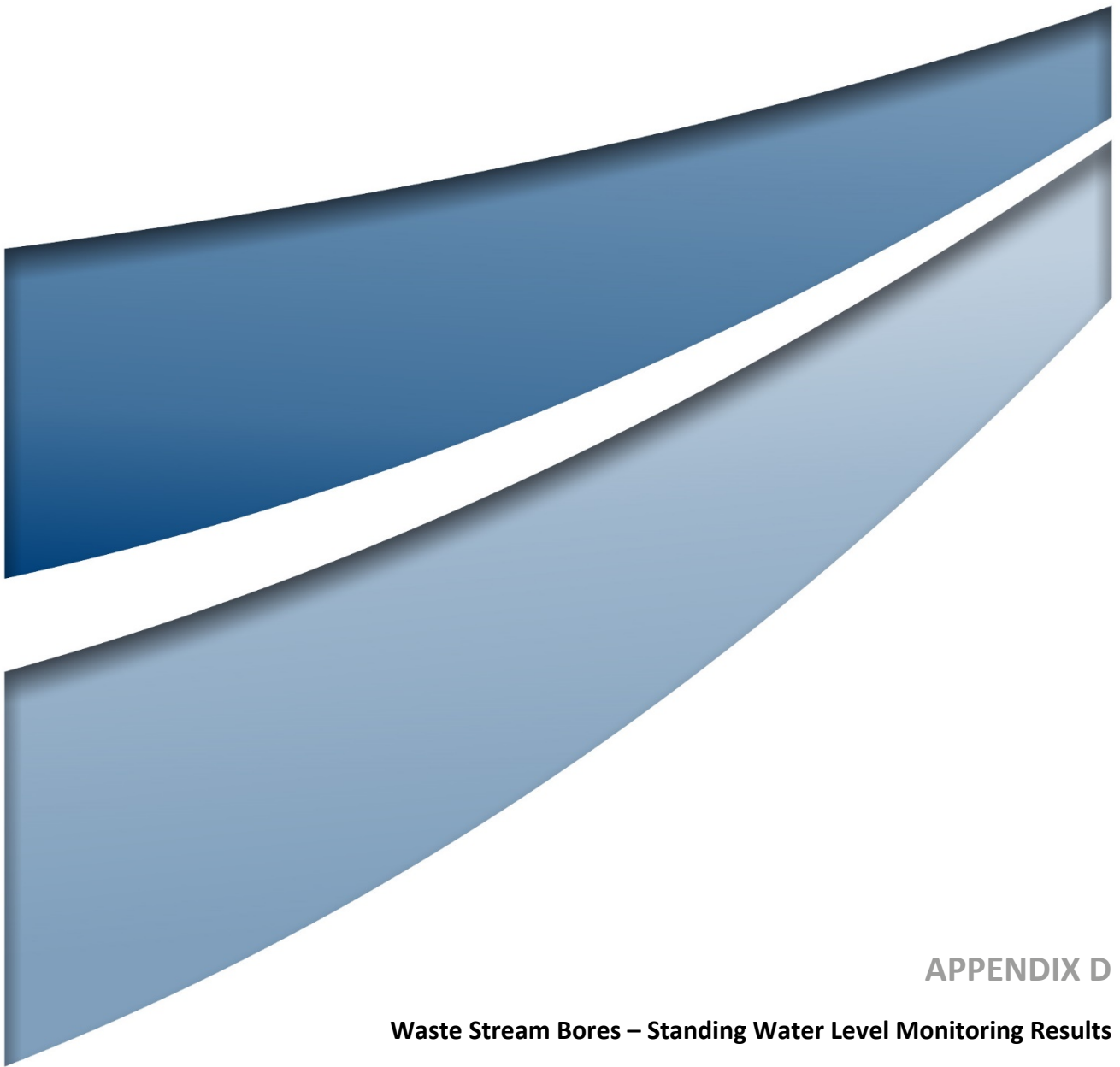
Windimurra Vanadium Project Waste Stream Bores Groundwater Monitoring					
Threshold/Trigger Level	Sulphate (SO4)	2020 Q4	2021 Q1	2021 Q2	2021 Q3
1000	(mg/L)				
Notes	Bore ID	25/11/2020	16/02/2021	25/05/2021	14/08/2021
	EPMB1	1,300	1,300	1,400	1,300
LEGEND:	EPMB2	1,300	1,400	1,300	1,400
Exceeds trigger level	EPMB3	1,600	1,700	1,600	1,600
Below limit of detection	EPMB4	1,600	1,600	1,600	1,600
Not monitored / dry	EPMB5	2,900	3,000	2,800	2,800
Data removed - outlier	EP2MB1			120	120
Exceeds secondary level:	EP2MB2	200	200	200	200
480,000	EP2MB3	120	120	110	110
	EP2MB4	230	240	230	230
	EP2MB5	270	280	280	250
	CTMB1	2,000	1,700	1,900	2,000
	CTMB2	1,500	1,600	1,500	1,400
	CTMB3	990	890	1,000	950
	CTMB4	420	430	410	400
	T SMB1	14	14	14	14
	T SMB5	22	22	22	22
	T SMB7	220	240	240	240
	T SMB8	2,300	1,900	2,300	2,200
	T SMB9	100	110	110	110
Previous name until 2008/2009 PS1	PSMB1	980	1,000	930	1,000
Previous name until 2008/2009 PS4	PSMB4	2,100		1,800	
Previous name until 2008/2009 PS7	PSMB7	3,000	3,200	3,100	2,900
Previous name until 2008/2009 PS8	PSMB8	1,600	1,700	1,600	1,600
T SMB13	GATB4	99	97	92	94
Borefields	SD1	550	500	580	590
	SD2	450	470	490	480
Waste liquids	BLP1 liquor	110,000	96,000	88,000	
	BLP2 liquor	96,000	95,000	86,000	
	CTSF leachate	33,000	58,000	36,000	

Windimurra Vanadium Project Waste Stream Bores Groundwater Monitoring					
Threshold/Trigger Level	Lab TDS	2020 Q4	2021 Q1	2021 Q2	2021 Q3
5,000	(mg/L)				
Notes	Bore ID	25/11/2020	16/02/2021	25/05/2021	14/08/2021
	EPMB1	9,800	8,900	9,300	10,000
LEGEND:	EPMB2	9,400	9,200	8,400	9,300
Exceeds trigger level	EPMB3	9,700	9,400	8,600	9,100
Below limit of detection	EPMB4	10,000	9,800	9,500	11,000
Not monitored / dry	EPMB5	10,000	9,300	9,900	9,600
Data removed - outlier	EP2MB1			1,200	1,200
	EP2MB2	1,100	1,100	1,100	1,000
	EP2MB3	1,000	1,000	1,100	1,100
	EP2MB4	1,600	1,600	1,400	1,500
	EP2MB5	1,300	1,300	1,400	1,300
	CTMB1	10,000	10,000	9,700	11,000
	CTMB2	14,000	14,000	13,000	13,000
	CTMB3	9,000	8,500	7,900	8,800
	CTMB4	3,600	3,400	3,300	3,800
	TSMB1	440	460	430	440
	TSMB5	520	530	580	510
	TSMB7	2,700	2,600	3,200	2,800
	TSMB8	13,000	12,000	13,000	13,000
	TSMB9	2,200	2,200	2,100	2,200
Previous name until 2008/2009 PS1	PSMB1	5,200	5,100	4,100	6,300
Previous name until 2008/2009 PS4	PSMB4	17,000		13,000	
Previous name until 2008/2009 PS7	PSMB7	23,000	23,000	21,000	24,000
Previous name until 2008/2009 PS8	PSMB8	12,000	12,000	10,000	11,000
TSMB13	GATB4	1,200	1,200	1,100	1,100
Borefields	SD1	3,800	4,000	4,200	4,300
	SD2	3,400	3,400	3,600	3,600
Waste liquids	BLP1 liquor	200,000	210,000	250,000	
	BLP2 liquor	190,000	220,000	300,000	
	CTSF leachate	460,000	480,000	320,000	

Windimurra Vanadium Project Waste Stream Bores Groundwater Monitoring		Dissolved, field filter	Dissolved, field filter	Dissolved, field filter	Dissolved, field filter
Threshold/Trigger Level	Uranium (U) (mg/L)	2020 Q4	2021 Q1	2021 Q2	2021 Q3
0.017		23/11/2020	16/02/2021	25/05/2021	14/08/2021
Notes	Bore ID				
LEGEND:	EPMB1	0.011	0.008	0.010	0.012
Exceeds trigger level	EPMB2	0.012	0.007	0.008	0.011
Below limit of detection	EPMB3	0.016	0.011	0.013	0.013
Not monitored / dry	EPMB4	0.011	0.008	0.010	0.011
Data removed - outlier	EPMB5	0.037	0.027	0.030	0.033
Exceeds secondary level: 0.170	EP2MB1			<0.001	0.001
Greater than previous qtr by >1 Std Dev	EP2MB2	0.017	0.012	0.014	0.014
	EP2MB3	0.002	0.002	0.002	0.002
	EP2MB4	0.001	<0.001	0.001	0.001
	EP2MB5	0.023	0.017	0.019	0.017
	CTMB1	<0.002	0.001	<0.002	<0.002
	CTMB2	0.005	0.003	0.004	0.003
	CTMB3	0.007	0.006	0.006	0.006
	CTMB4	0.005	0.004	0.004	0.004
	TSMB1	<0.001	<0.001	<0.001	<0.001
	TSMB5	<0.001	<0.001	<0.001	<0.001
	TSMB7	0.001	0.001	<0.001	<0.001
	TSMB8	<0.005	0.002	<0.005	<0.005
	TSMB9	<0.001	<0.001	<0.001	<0.001
Previous name until 2008/2009 P51	PSMB1	0.005	0.004	0.005	0.005
Previous name until 2008/2009 P54	PSMB4	0.015		0.011	
Previous name until 2008/2009 P57	PSMB7	<0.01	0.003	<0.005	<0.01
Previous name until 2008/2009 P58	PSMB8	0.012	0.009	0.009	0.012
TSMB13	GATB4	0.001	<0.001	<0.001	<0.001
Borefields	SD1	0.130	0.092	0.110	0.130
	SD2	0.140	0.120	0.110	0.150
Waste liquids	BLP1 liquor	1	0.560	0	
	BLP2 liquor	<0.1	0.005	<0.1	
	CTSF leachate	0.210	0.430	1.500	

Windimurra Vanadium Project Waste Stream Bore Groundwater Monitoring		Dissolved, field filter	Dissolved, field filter	Dissolved, field filter	Dissolved, field filter
Threshold/Trigger Level	Vanadium (V) (mg/L)	2020 Q4	2021 Q1	2021 Q2	2021 Q3
1.87					
Notes	Bore ID	23/11/2020	16/02/2021	25/05/2021	14/08/2021
	EPMB1	0.044	0.046	0.044	0.042
	EPMB2	0.028	0.032	0.037	0.037
LEGEND:	EPMB3	0.036	0.130	0.037	0.033
Exceeds trigger level	EPMB4	0.028	0.045	0.047	0.052
Below limit of detection	EPMB5	0.029	0.056	0.045	0.030
Not monitored / dry	EP2MB1			0.081	0.078
Data removed - outlier	EP2MB2	0.012	0.015	0.012	0.009
Exceeds secondary level:	EP2MB3	0.046	0.066	0.062	0.064
0.100	EP2MB4	0.060	0.064	0.084	0.073
	EP2MB5	0.013	0.017	0.051	0.012
Greater than previous qtr by >1 Std Dev	CTMB1	0.032	0.031	0.039	0.043
	CTMB2	0.660	0.600	0.660	0.730
	CTMB3	1.500	1.300	1.200	1.300
	CTMB4	0.040	0.018	0.037	0.034
	TSMB1	0.027	0.062	0.027	0.024
	TSMB5	0.008	0.018	0.010	0.008
	TSMB7	0.015	0.014	0.020	0.017
	TSMB8	0.008	<0.01	0.013	0.010
	TSMB9	0.020	0.020	0.023	0.021
Previous name until 2008/2009 PS1	PSMB1	40.00	39.00	43.00	57.00
Previous name until 2008/2009 PS4	PSMB4	0.037		0.031	
Previous name until 2008/2009 PS7	PSMB7	0.035	0.094	0.110	0.120
Previous name until 2008/2009 PS8	PSMB8	0.012	0.029	0.013	0.017
TSMB13	GATB4	0.005	0.005	0.005	0.005
Borefields	SD1	0.035	0.031	0.038	0.038
	SD2	0.031	0.029	0.034	0.033
Waste liquids	BLP1 liquor	1,400	1,100	670	
	BLP2 liquor	5	9	9	
	CTSF leachate	39,000	61,000	23,000	

Windimurra Vanadium Project Waste Stream Bores Groundwater Monitoring		Dissolved, field filter	Dissolved, field filter	Dissolved, field filter	Dissolved, field filter
Threshold/Trigger Level	Zinc (Zn) (mg/L)	2020 Q4	2021 Q1	2021 Q2	2021 Q3
20					
Notes	Bore ID	23/11/2020	16/02/2021	25/05/2021	14/08/2021
	EPMB1	<0.025	0.018	<0.01	<0.01
	EPMB2	<0.025	0.026	<0.01	0.018
	EPMB3	<0.025	0.040	0.018	0.014
	EPMB4	<0.025	0.020	0.011	0.026
	EPMB5	0.042	0.036	0.046	0.040
	EP2MB1			<0.005	<0.005
	EP2MB2	0.005	<0.005	<0.005	0.006
	EP2MB3	0.023	0.009	0.016	0.011
	EP2MB4	0.006	0.008	0.011	0.008
	EP2MB5	<0.005	<0.005	0.005	0.008
	CTMB1	<0.01	0.014	0.013	0.016
	CTMB2	<0.025	0.050	0.031	0.029
	CTMB3	<0.005	0.012	<0.01	<0.005
	CTMB4	0.014	0.012	0.010	0.013
	TSMB1	0.019	0.011	0.010	0.009
	TSMB5	0.015	0.010	0.006	0.010
	TSMB7	0.006	0.006	0.008	0.009
	TSMB8	<0.025	0.017	<0.025	<0.025
	TSMB9	<0.005	<0.005	<0.005	<0.005
Previous name until 2008/2009 PS1	PSMB1	0.063	0.087	0.068	0.070
Previous name until 2008/2009 PS4	PSMB4	<0.05		<0.025	
Previous name until 2008/2009 PS7	PSMB7	<0.05	0.022	<0.025	<0.05
Previous name until 2008/2009 PS8	PSMB8	<0.005	0.012	<0.01	0.011
TSMB13	GATB4	<0.005	0.014	<0.005	<0.005
Borefields	SD1	<0.005	0.012	0.007	<0.01
	SD2	<0.005	0.005	<0.005	<0.005
Waste liquids	BLP1 liquor	18	17	9	
	BLP2 liquor	72	82	44	
	CTSF leachate	0.550	0.570	<0.5	



## APPENDIX D

### Waste Stream Bores – Standing Water Level Monitoring Results

Windimurra Vanadium Project Waste Stream Bores Groundwater Monitoring						
Threshold/Trigger Level		Standing Water Level	2020 Q4	2021 Q1	2021 Q2	2021 Q3
None		(m (AHD))				
Notes	Collar (RL)	Bore ID	25/11/2020	16/02/2021	25/05/2021	14/08/2021
	454.920	EPMB1	435.80	435.71	435.71	435.70
	454.860	EPMB2	424.91	435.72	435.66	435.70
	456.370	EPMB3	435.85	435.73	435.69	435.78
	458.318	EPMB4	436.22	436.17	436.11	436.23
	463.576	EPMB5	438.60	438.46	438.94	439.84
	453.342	EP2MB1	436.90	436.84	436.78	436.81
	453.123	EP2MB2	436.90	436.69	433.42	436.70
	451.734	EP2MB3	437.26	437.18	436.98	437.18
	452.829	EP2MB4	437.49	437.43	437.48	437.54
	460.174	EP2MB5	436.58	435.77	427.07	430.38
	456.470	CTMB1	433.25	433.09	433.08	432.67
	452.820	CTMB2	434.83	434.74	434.66	434.72
	451.110	CTMB3	434.90	434.80	434.72	434.80
	455.120	CTMB4	435.15	435.04	434.80	435.06
	464.982	T SMB1	431.87	431.78	431.81	431.71
	473.718	T SMB5	437.70	437.58	437.76	437.67
	457.152	T SMB7	440.97	440.90	440.89	440.75
	453.576	T SMB8	439.99	439.87	439.82	439.75
	451.854	T SMB9	433.65	433.70	433.67	433.59
	465.630	PSMB1	435.06	434.96	434.89	435.09
	464.680	PSMB4	438.02	434.75	437.12	440.21
	467.600	PSMB7	436.00	435.40	435.48	437.01
	469.240	PSMB8	434.64	434.35	434.37	434.84
	450.186	GATB4	435.40	435.32	435.28	435.70

