

Annual Environmental Monitoring Report – 2024-25

Woodvale Evaporation
Pond Complex
Victoria

Prepared for:



Prepared by:



September 2025



Document Control

PROJECT DETAILS

Project No.	PTY.05582
Report Revision No.	Rev.01
Date of Issue	18 September 2025
Project Manager	Matthew Russ
Project Director	Chris Smitt

REPORT DETAILS

Title	Annual Environmental Monitoring Report – 2024-25
Document No.	PTY.05582_Annual_Environmental_Monitoring_Report_WEPC_Rev.01
Main Author(s)	Matthew Russ
Approved By	Alex Schiavoni
Client	Department of Energy, Environment and Climate Action (DEECA) Earth Resource Regulator (ERR)
Client Contact	Nick Tuohey

DISTRIBUTION LIST

Date	No. of Copies	Revision	Company/ Organisation	Name	Issue Type
13 August 2025	1 – Draft	DRAFT	DEECA ERR	Nick Tuohey	(e)
18 August 2025	1 – Draft	DRAFT	CDM Smith	Christian Wallis	(e)
18 September 2025	1	Rev.01	DEECA ERR CDM Smith BlueSphere	Nick Tuohey Christian Wallis Daniel Hirth	(e)

Note:

(e) electronic file

SIGNATORIES

Primary Author	Project Manager	Technical Peer Review	Project Director
			
Matthew Russ <i>Senior Environmental Engineer</i>	Matthew Russ <i>Senior Environmental Engineer</i>	Alex Schiavoni <i>Director – Principal Hydrogeologist</i>	Chris Smitt <i>Director – Principal Hydrogeologist</i>

This document may only be used for the purpose for which it was commissioned and in accordance with the Terms of Engagement for the commission. Any third party that receives a copy of this document does so subject to the limitations referred to herein.

Reproduction of this document is prohibited without the express, written approval of EHS Support Pty Ltd.



Table of Contents

Executive Summary.....	vii
1 Introduction.....	1
1.1 Background.....	1
1.2 Objectives.....	1
1.3 Scope of Works.....	1
1.4 Supporting Information.....	3
2 Site Description and Environmental Setting	5
2.1 Site Identification Information	5
2.2 Topography.....	6
2.3 Surface Conditions and Vegetation.....	6
2.4 Climate and Weather	6
2.5 Pond Network.....	8
2.6 Hydrology	8
2.7 Geology.....	9
2.8 Hydrogeology	9
2.8.1 Shallow and Intermediate Aquifers (Shepparton Formation).....	9
2.8.2 Deep Lead.....	10
2.8.3 Bedrock (Castlemaine Group)	11
2.8.4 Summary of Hydrogeology.....	11
2.9 Existing Groundwater Monitoring Well Network.....	12
2.10 Groundwater Interception Borefield Scheme	13
3 Preliminary Conceptual Site Model.....	14
3.1 Potential Sources of Contamination and Contaminants of Potential Concern	14
3.2 Potentially Affected Media and Transport and Migration Mechanisms.....	14
3.3 Potential Receptors	15
3.3.1 Environmental Values – Water.....	15
3.3.2 Environmental Values – Air	16
4 Environmental Monitoring Plan.....	17
5 Adopted Environmental Objectives	20
5.1 Adopted Surface Water Criteria	20
5.2 Adopted Groundwater Criteria	20
5.3 Adopted Dust Monitoring Criteria.....	21
5.3.1 Depositional Dust Criteria	21
5.3.2 Real-Time Dust Monitoring Criteria	22
6 Results – Surface Water Monitoring Program.....	23
6.1 Field Observations.....	23
6.2 Water Quality Parameters.....	23
6.3 Surface Water Analytical Results.....	24
6.4 Discussion	26
6.4.1 Salinity	26
6.4.2 pH	27



6.4.3	Sulphate.....	28
6.4.4	Arsenic.....	29
6.4.5	Other Metals	30
7	Results – Groundwater Monitoring Program.....	31
7.1	Down-Hole Camera Survey.....	31
7.2	Groundwater Levels and Flow Direction	32
7.3	In-situ Measured Field Parameters	35
7.4	Groundwater Analytical Results	37
7.5	Discussion.....	38
7.5.1	Groundwater Flow and Interactions	38
7.5.2	¹⁸ O and ² H Isotope Analysis	42
7.5.3	Major Cations and Anions	43
7.5.4	Sodium Chloride Ratio.....	44
7.5.5	Salinity	45
7.5.6	pH	49
7.5.7	Sulphate.....	51
7.5.8	Arsenic.....	53
7.5.9	Other Metals	53
7.5.10	Summary of Groundwater Conditions	57
8	Results – Dust Monitoring Program	61
8.1	Depositional Dust Monitoring	61
8.1.1	Depositional Dust Analytical Results – Total Insoluble Solids	61
8.1.2	Depositional Dust Analytical Results – Ash and Combustible Material Content.....	62
8.1.3	Depositional Dust Analytical Results – Metals and Inorganics.....	65
8.2	Real-Time Dust Monitoring	68
8.2.1	Real-Time Dust Monitor Operational Performance	68
8.2.2	Real-Time Dust Monitoring – PM _{2.5} and PM ₁₀ Trends.....	69
8.2.3	Real-Time Dust Monitoring Exceedances.....	70
8.2.4	Percentage Metals in PM ₁₀	74
9	Summary of Potential Risk to Environmental Values	78
9.1	Surface Water.....	78
9.2	Groundwater	78
9.3	Dust	82
10	Conclusions and Recommendations.....	83
10.1	Surface Water.....	83
10.2	Groundwater	83
10.3	Dust	85
11	Limitations.....	86
12	References.....	87



List of Tables

Table 1-1	Summary of Supporting Information
Table 2-1	Site Identification Information
Table 2-2	Summary of Pond Network
Table 2-3	Summary of Geology
Table 2-4	Summary of Hydrogeology and Surrounding Groundwater Bores
Table 2-5	WEPC – Groundwater Monitoring Well Network
Table 3-1	Summary of Potentially Impacted Media and Transport and Migration Mechanisms
Table 4-1	Summary of Environmental Monitoring Program
Table 5-1	Surface Water – Summary of Proposed Environmental Objectives (Criteria)
Table 5-2	Groundwater – Summary of Proposed Environmental Objectives (Criteria)
Table 5-3	Real-Time Dust Monitoring Criteria
Table 5-4	Nuisance Dust Trigger Levels
Table 6-1	Summary of Water Quality Parameters – Surface Water
Table 6-2	Summary of Exceedances – Surface Water Monitoring
Table 7-1	Summary of Groundwater Gauging Events
Table 7-2	Summary of Water Quality Parameters – Groundwater
Table 7-3	Summary of Exceedances - Groundwater
Table 7-4	Summary of Groundwater Elevation and Vertical Gradients Between Shallow and Intermediate Aquifers
Table 7-5	Summary of TDS Concentration in Groundwater
Table 7-6	Maximum Metal Concentration in Groundwater
Table 7-7	Summary of Groundwater Conditions
Table 8-1	Depositional Dust Monitoring Results – Total Insoluble Solids
Table 8-2	Summary of Real-Time Dust Monitor Performance
Table 8-3	Summary of Maximum Daily and Yearly Rolling Averages for PM _{2.5} and PM ₁₀
Table 8-4	Summary of Real-Time Dust Exceedance Events – PM ₁₀ Nuisance Dust Criteria
Table 8-5	Estimated Analyte Concentrations in Air Based on Depositional Dust and PM ₁₀ Concentrations
Table 9-1	Summary of Potential Risk to Environmental Values of Groundwater

List of Charts

Chart 2-1	Monthly Temperature and Rainfall
Chart 2-2	Annual Wind Rose
Chart 6-1	TDS – Ponds 1A, 1B, 2, 3, 6, and 7 (Annual Monitoring Period)
Chart 6-2	TDS – Ponds 1A, 1B, 2, 3, 6, and 7 (All Data)
Chart 6-3	pH – Ponds 1A, 1B, 2, 3, 6, and 7 (All Data)
Chart 6-4	Sulphate - Ponds 1A, 1B, 2, 3, 6, and 7 (Annual Monitoring Period)
Chart 6-5	Sulphate - Ponds 1A, 1B, 2, 3, 6, and 7 (All Data)
Chart 6-6	Dissolved Arsenic - Ponds 1A, 1B, 2, 3, 6, and 7 (Annual Monitoring Period)
Chart 6-7	Dissolved Arsenic - Ponds 1A, 1B, 2, 3, 6, and 7 (All Data)
Chart 7-1	Groundwater Elevation Trends in Shallow, Intermediate, Deep Lead, and Bedrock Aquifers
Chart 7-2	Groundwater Elevation in Monitoring Wells Screened Between 2-4 m bgl (SD10 and SD12) vs. 5-7 m bgl (SD09 and SD11)
Chart 7-3	Difference in Groundwater Elevations Between Shallow and Intermediate Aquifers
Chart 7-4	Comparison of ¹⁸ O and ² H Isotope Analysis in Groundwater Monitoring Wells
Chart 7-5	Piper Plots for Shallow, Intermediate, Deep Lead, and Bedrock Aquifers
Chart 7-6	Comparison of Na/Cl Ratios
Chart 7-7	TDS Time Series Graphs for Shallow, Intermediate, Deep Lead, and Bedrock Aquifer
Chart 7-8	pH Time Series Graphs for Shallow, Intermediate, Deep Lead, and Bedrock Aquifer
Chart 7-9	Sulphate Time Series Graphs for Shallow, Intermediate, Deep Lead, and Bedrock Aquifer



Chart 7-10	Metal Concentrations in Unimpacted Wells vs. Impacted Wells – Shallow Aquifer
Chart 7-11	Metal Concentrations in Unimpacted Wells vs. Impacted Wells – Intermediate Aquifer
Chart 8-1	Summary of Total Insoluble Solids at WVDD01 and WVDD07-BG
Chart 8-2	% Ash Content in Total Insoluble Solids
Chart 8-3	Ash Content and Combustible Matter Compared to Insoluble Solids
Chart 8-4	% Metals in Depositional Dust at Background Location vs. Boundary Locations
Chart 8-5	WV-RTD-01 24-hour rolling averages for PM _{2.5} and PM ₁₀
Chart 8-6	WV-RTD-02 24-hour rolling averages for PM _{2.5} and PM ₁₀

List of Appended Figures

Figure 1	WEPC Site Location and Current Site Features
Figure 2	WEPC Surface Water Monitoring Locations
Figure 3	WEPC Groundwater Monitoring Locations
Figure 4	WEPC Depositional and Real-Time Dust Monitoring Locations
Figure 5a	Shallow Aquifer – Groundwater Elevation Contours (July 2024)
Figure 5b	Shallow Aquifer – Groundwater Elevation Contours (October 2024)
Figure 5c	Shallow Aquifer – Groundwater Elevation Contours (January 2025)
Figure 5d	Shallow Aquifer – Groundwater Elevation Contours (April 2025)
Figure 6a	Intermediate Aquifer – Groundwater Elevation Contours (July 2024)
Figure 6b	Intermediate Aquifer – Groundwater Elevation Contours (October 2024)
Figure 6c	Intermediate Aquifer – Groundwater Elevation Contours (January 2025)
Figure 6d	Intermediate Aquifer – Groundwater Elevation Contours (April 2025)
Figure 7a	Bedrock Aquifer – Groundwater Elevation Contours (July 2024)
Figure 7b	Bedrock Aquifer – Groundwater Elevation Contours (October 2024)
Figure 7c	Bedrock Aquifer – Groundwater Elevation Contours (January 2025)
Figure 7d	Bedrock Aquifer – Groundwater Elevation Contours (April 2025)
Figure 8a	Shallow Aquifer – Groundwater TDS Concentrations (July 2024)
Figure 8b	Intermediate Aquifer – Groundwater TDS Concentrations (July 2024)
Figure 8c	Deep Lead Aquifer – Groundwater TDS Concentrations (July 2024)
Figure 8d	Bedrock Aquifer – Groundwater TDS Concentrations (July 2024)

List of Appended Tables

Table 1	Surface Water Analytical Results
Table 2	Groundwater Gauging Results
Table 3	Groundwater Analytical Results
Table 4	Depositional Dust Analytical Results
Table 5	Real-Time Dust Monitoring Results Summary
Table G1	QA/QC - RPDs - Surface Water and Groundwater Monitoring Programs
Table G2	QA/QC - Blanks - Surface Water and Groundwater Monitoring Programs

List of Appendices

Appendix A	Photolog
Appendix B	Weather Data
Appendix C	Field Methodology
Appendix D	Calibration Certificates
Appendix E	Field Notes (Water Quality Parameters, Gauging Records, etc.)
Appendix F	NATA-Accredited Laboratory Reports
Appendix G	QA/QC Summary



Acronyms

ADWG	Australian Drinking Water Guidelines
AHD	Australian Height Datum
ANZECC	Australian and New Zealand Environment and Conservation Council
ANZG	Australian and New Zealand Guidelines
APACs	Air pollution assessment criteria
AS/NZS	Australian Standard/New Zealand Standard
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure
BOM	Bureau of Meteorology
CoPC	Contaminant of potential concern
CSM	Conceptual Site Model
DEECA	Department of Energy, Environment and Climate Action
DO	Dissolved oxygen
DWER	Department of Water and Environmental Regulation
EC	Electrical conductivity
EHS Support	EHS Support Pty Ltd
EMP	Environmental Monitoring Plan
EPA	Environment Protection Authority
ERR	Earth Resource Regulator
ERS	Environmental Reference Standard
GIBS	Groundwater interception borefield scheme
GMA	Groundwater management area
GME	Groundwater monitoring event
GMWL	Global meteoric water line
HHRA	Human Health Risk Assessment
HVAS	High volume air sampling
LOR	Limit of reporting
m bgl	Metres below ground level
m BTOC	Metres below top of casing
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
NHMRC	National Health and Medical Research Council
NTU	Nephelometric turbidity unit
QA/QC	Quality Assurance/Quality Control
SWL	Standing water level
TDS	Total dissolved solids
WEPC	Woodvale Evaporation Pond Complex

Trademarks, trade names, company, or product names referenced herein are used for identification purposes only and are the property of their respective owners.



Units of Measure

Area	
ha	hectare
m ²	square metres
Density	
kg/m ³	kilograms per cubic metre
Electrical Conductance	
µS/cm	microsiemen per centimetre
dS/m	decisiemen per metre
mS/cm	millisiemen per centimetre
mV	millivolt
Length	
µm	micrometres
cm	centimetres
km	kilometres
m	metres
mm	millimetres
Mass	
µg	micrograms
g	grams
kg	kilograms
mg	milligrams
t	metric tonnes
Concentration by Mass	
µg/kg	microgram per kilogram
mg/kg	milligram per kilogram

Pressure	
kPa	kilopascals
Pa	Pascals
Temperature	
°C	degrees Celsius
°F	degrees Fahrenheit
K	kelvin
Velocity	
m/s	metres per second
Volume	
µL	microlitres
cL	centilitres
cm ³	cubic centimetre
GL	gigalitre
L	litres
m ³	cubic metre
mL	millilitres
ML	megalitre
Concentration by Volume	
µg/L	microgram per litre
mg/L	milligram per litre
ppmv	parts per million by volume
ppbv	parts per billion by volume



Executive Summary

EHS Support Pty Ltd (“EHS Support”) was engaged by the Department of Energy, Environment and Climate Action (DEECA)/Earth Resource Regulator (ERR) to undertake environmental monitoring at the Woodvale Evaporation Pond Complex (WEPC), located in Woodvale, Victoria (herein referred to as the ‘site’).

This Annual Environmental Monitoring Report outlines the results of the environmental monitoring completed at the site between 1 June 2024 and 31 May 2025 (12 months). The environmental monitoring conducted at the site is described in detailed in “*Environmental Monitoring Plan – Woodvale Evaporation Pond Complex, Woodvale, Victoria*” dated 13 May 2024 (EHS Support, 2024).

Based on the results of the environmental monitoring completed between June 2024 and May 2025, the following key conclusions and recommendations are made:

Surface Water

- Ponds 1A, 1B, 2 and 3 all contained water from the New Moon Treatment Plant during the annual monitoring period. Pond 6 and 7 were predominantly dry, with the exception of a pool of accumulated rainwater in the western portion of Pond 6.
- Surface water sampling from pond water indicates that the pond water contained elevated concentrations of various metals including arsenic, iron and molybdenum, and total dissolved solids (TDS), sulphate, pH, and turbidity. Concentrations of arsenic, TDS, sulphate, and pH were typically within historical ranges (albeit generally lower).
- As the ponds are considered artificial waterways in accordance with the Environmental Reference Standard (ERS) 2021, the environmental values of water are not considered to be relevant.
- During the annual reporting period, no water was present in Nuggety Gully or the Unnamed Creek and therefore no surface water sampling was completed. There is no known direct hydraulic connection between the ponds and these waterbodies (i.e., either via overland flow or groundwater migration).
- Several recommendations have been provided in relation to the surface water monitoring program including a reduction to the frequency of surface water sampling from the ponds from quarterly to biannually, surface water sampling from Nuggety Gully and the Unnamed Creek following sufficient rainfall and ongoing inspections by DEECA.

Groundwater

- Groundwater elevation in the shallow, intermediate, deep lead and bedrock aquifers during the annual reporting period were within historical groundwater elevations ranges recorded at the site.
- Groundwater flow direction in the shallow and intermediate aquifers is considered to be in a west to northwest direction towards Myers Creek. Localised groundwater mounding predominantly in the shallow aquifer is evident immediately to the west of the site likely due to seepage.
- Groundwater flow direction in the deep lead aquifer cannot be confirmed based on the available groundwater monitoring well network, however, as the deep lead is limited and discontinuous this is not considered significant. In the bedrock aquifer, flow is regionally expected to be in a northeast direction however groundwater monitoring completed indicates that groundwater flow direction in this aquifer may be variable.
- Based on the multiple lines of evidence (i.e., isotope analysis, major cation and anion analysis, Na/Cl ratios and salinity), seepage appears to have impacted groundwater in the shallow, intermediate and deep lead aquifers. Seepage has resulted in elevated concentrations of some metals (namely iron and manganese), TDS, sulphate, chloride, and sodium variably above the adopted criteria for environmental values of groundwater.



- The groundwater monitoring well network in the shallow and intermediate aquifers is generally considered sufficient for delineating seepage impacts. Impacts in the shallow and intermediate aquifers have been delineated and appear to be confined to within a few hundred meters of the site. The extent of impacts in the deep lead aquifer has not been determined or delineated due to a lack of groundwater monitoring wells which screen this aquifer, however, previous investigations indicate that the deep lead aquifer is discontinuous to the west of the site. The bedrock aquifer is not considered to be impacted based on previous investigations, although only limited wells screen this aquifer.
- Based on the delineated extent of impacts from seepage in the shallow and intermediate aquifers, the discontinuous nature of the deep lead aquifer, the distance to the point of groundwater discharge (Myers Creek, approximately 500 m from the site), the natural variability of groundwater quality and yield, the absence of nearby registered existing groundwater users and the low likelihood of potential groundwater uses been realised in the future, the risk to environmental values of groundwater due to seepage is considered likely to be low.
- Several recommendations have been provided in relation to the groundwater monitoring program including a reduction to the frequency of groundwater sampling from quarterly to biannually, completion of an updated survey of all existing groundwater monitoring wells by a licensed surveyor and continued liaison with the property owner to the west of the site to ensure groundwater is not used for extractive purposes.

Dust

- Continuous real-time dust monitoring at the site did not identify elevated concentrations of PM_{2.5} or PM₁₀ above air quality criteria defined in the ERS, 2021. There were isolated exceedances of the Environment Protection Authority (EPA) Publication 1961 criteria for nuisance dust criteria, however, these were relatively short lived and did not correspond to any activity been undertaken at the site to warrant the implementation of adaptive dust mitigation measures.
- Exceedances of total insoluble solids in depositional dust gauges were only reported at WVDD01 (south of the site). Prevailing wind directions during months when exceedances were reported was generally from the south, suggesting that deposited matter may be from regional sources.
- Analysis of depositional dust samples reported arsenic, barium, chromium, copper, lead, iron, manganese, nickel, vanadium, zinc, sulphate, and cyanide above the laboratory limit of reporting. Although the reported results for barium, chromium, copper, lead, iron, manganese, zinc, and sulphate were subject to greater variability in boundary dust monitoring gauges results were generally consistent with the background location.
- Detections of cyanide only occurred on two occasions and was unexpected. Speciation analysis completed indicates that cyanide is present as free cyanide rather than associated with complexes (which is unusual in the context of the matrix). Based on the available dataset the detection of cyanide in depositional dust is considered an anomaly, however, ongoing monitoring will continue to confirm this.
- Concentrations of metals, sulphate and cyanide in air was estimated based on the depositional dust monitoring results and PM₁₀ concentrations reported by the real-time dust monitors. All estimated air concentrations were below the human health and environmental criteria defined in EPA Publication 1961. Estimated concentrations in air were also lower than the concentrations adopted as part of the modelling conducted during the Human Health Risk Assessment (HHRA) (CDM Smith, 2023).
- Overall, based on the depositional dust and real-time dust monitoring obtained during this monitoring period, combined with the results of previous environmental investigations, the current understanding of the risk posed to receptors due to dust has not changed and is generally considered low.
- Several recommendations have been provided in relation to the dust monitoring program at the site, including relocation of WV-RTD-02, continuation of real-time and depositional dust monitoring, and consideration of undertaking an additional tank water and dam/pool water sampling event prior to commencement of rehabilitation activities.



1 Introduction

EHS Support Pty Ltd (“EHS Support”) was engaged by the Department of Energy, Environment and Climate Action (DEECA)/Earth Resource Regulator (ERR) to undertake environmental monitoring at the Woodvale Evaporation Pond Complex (WEPC), located in Woodvale, Victoria (herein referred to as the ‘site’).

The environmental monitoring program is described in detailed in “*Environmental Monitoring Plan – Woodvale Evaporation Pond Complex, Woodvale, Victoria*” dated 13 May 2024 (EHS Support, 2024).

The following Annual Environmental Monitoring Report outlines the results of the monitoring completed between 1 June 2024 and 31 May 2025 (12 months). This document must be read in conjunction with the assumptions and limitations outlined in **Section 11** and throughout this report.

1.1 Background

Kralcopic Pty Ltd (Kralcopic) had historically held mining licenses across the Bendigo region, including at the WEPC. Following the liquidation of Kralcopic in 2021, ERR inherited the responsibility to manage and rehabilitate the site under Section 83 of the *Mineral Resources (Sustainable Development) Act 1990*.

DEECA/ERR has engaged an independent Environmental Auditor to review rehabilitation plans for the WEPC, and several environmental assessments have been completed to inform the rehabilitation plan for the site.

Whilst the development of the rehabilitation plans are underway to manage potential impacts associated with the site prior to, during, and after rehabilitation, DEECA/ERR require environmental monitoring of surface water, groundwater, and dust to be undertaken at the site. This is required to ensure that DEECA/ERR are meeting its environmental duties specified in the Environment Protection Act (2017) including the general environmental duty and duty to manage contaminated land.

In May 2024, EHS Support prepared an Environmental Monitoring Plan (EMP) for the site titled “*Environmental Monitoring Plan – Woodvale Evaporation Pond Complex, Woodvale, Victoria*” dated 13 May 2024 (EHS Support, 2024). The EMP provides a framework for environmental monitoring which is currently completed at the site to ensure that potential risk to the environment are appropriately monitored.

1.2 Objectives

The objective of the environmental monitoring completed at the site is to monitor and manage potential environmental risk associated with the site prior to, during and after rehabilitation.

1.3 Scope of Works

The following environmental monitoring activities were undertaken during this annual reporting period (June 2024 – May 2025):

- **Surface Water Monitoring** undertaken quarterly in July 2024, October 2024, January 2025, and April 2025, including:
 - Collection and analysis of one (1) sample per pond, with a total of 7 pond samples (Pond 1A, Pond 1B, Pond 2, Pond 3, Pond 6, and Pond 7 [7E and 7W]);
 - Collection and analysis of an upgradient, downgradient and a site sample from Nuggety Creek/Gully (total of 3 samples), when water was present;
 - Collection and analysis of an upgradient, downgradient and a site sample from an unnamed creek (total of 3 samples) when water was present;



- Collection of field water quality parameters during sampling using a calibrated water quality meter including pH, electrical conductivity (EC), total dissolved solids (TDS), redox potential, dissolved oxygen, turbidity, and temperature; and
- Analysis of all surface water samples for cyanide, sulphate, alkalinity, and dissolved and total metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, tin, vanadium, and zinc).
- **Groundwater Monitoring** undertaken quarterly in July 2024, October 2024, January 2025, and April 2025, including:
 - Downhole camera survey of accessible wells prior to first groundwater monitoring event (GME);
 - Groundwater gauging, sampling, and analysis of all 33 existing monitoring wells during the first GME undertaken in July 2024 using low flow sampling methods (where groundwater was present);
 - Groundwater gauging from 33 monitoring wells, and sampling and analysis from 18 monitoring wells during subsequent quarterly GMEs using HydraSleeves methods (where groundwater was present);
 - Collection of field water quality parameters during sampling using a calibrated water quality meter including pH, EC, TDS, redox potential, dissolved oxygen, turbidity, and temperature; and
 - Analysis of all groundwater samples for dissolved metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, tin, vanadium, and zinc), cyanide, major anions, and cations (sulphate, chloride, calcium, magnesium, sodium, potassium), alkalinity. Analysis of stable isotopes ^{18}O and ^2H was also completed during the July 2024 GME.
- **Depositional and Real-Time Dust Monitoring, including:**
 - Monthly depositional dust monitoring from seven (7) existing dust deposition gauges. Depositional dust samples were analysed for metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, tin, vanadium, and zinc), sulphate, cyanide, and deposited dust (ash content, combustible material, total insoluble solids, soluble solids, and total solids); and
 - Establishment and continuous real-time dust monitoring at two (2) locations and monitoring for PM_{10} and $\text{PM}_{2.5}$.

The monitoring was undertaken in accordance with the following legislation, regulations, guidelines, and standard (to the extent possible based on the scope):

- General legislation, regulations, guidelines, and standards:
 - Environment Protection Act (2017).
 - Environment Protection Regulations (2021).
 - National Environment Protection Council (NEPC) (2013). *National Environment Protection (Assessment of Site Contamination) Measure, 2013 Amended*. National Environment Protection Council Service Corporation, Canberra, A.C.T.
 - Standards Australia (2005). *AS 4482.1-2005 Guide to the investigation and sampling of sites with potentially contaminated soil Part 1: Non-volatile and semi-volatile compounds*. Standards Australia, Sydney, N.S.W. (Note: this standard has now been superseded, however several other guidance documents continue to reference this standard).
 - Victorian Government (2021). *Environmental Reference Standard*, Gazette No. S245 Wednesday 26 May 2021, 2021.
- Surface Water/Groundwater related legislation, regulations, guidelines, and standards:
 - Australian and New Zealand Environment and Conservation Council Guidelines for Fresh and Marine Water Quality (2000).
 - Australian and New Zealand Guidelines (2018).
 - Environment Protection Authority (EPA) (2022). *Groundwater Sampling Guidelines*.



- Dust monitoring related legislation, regulations, guidelines, and standards:
 - EPA (2002). A Guide to the Sampling and Analysis of Air Emissions and Air Quality (Publication 440.1).
 - EPA (2007). Protocol for Environmental Management: Mining and Extractive Industries (Publication 1191).
 - EPA (2022). Guideline for Assessing and Minimising Air Pollution (Publication 1961).
 - Standards Australia (2016). *AS/NZS 3580.10.1-2016 – Methods for Sampling and Analysis of Ambient Air: Method 10.1: Determination of Particulate Matter – Deposited Matter – Gravimetric Method*. Standards Australia, Sydney, N.S.W.
 - Standards Australia (2014). *AS/NZS 3580.9.15-2014 – Methods for Sampling and Analysis of Ambient Air: Determination of Suspended Particulate Matter – Particulate Metals High or Low Volume Sampler Gravimetric Collection – Inductively Coupled Plasma (ICP) Spectrometric Method*. Standards Australia, Sydney, N.S.W.

1.4 Supporting Information

Several previous environmental investigations have been completed at the site. Information provided in the following reports was used during the preparation of this report.

Table 1-1 Summary of Supporting Information

Consultant	Year	Report Title	Reference
HLA-Envirosciences Pty Ltd	2007	Supplementary Groundwater Investigations	HLA, 2007
Jacobs Group Pty Ltd	2015	Pre-Feasibility Assessment of Interim and Longer-Term Options to Manage Mine Void Water	Jacobs, 2015
Senversa Pty Ltd	2015	Environmental Site Assessment – Woodvale Evaporation Ponds Complex.	Senversa, 2015
Arcadis Australia Pacific Pty Ltd	2017	Human Health Risk Assessment – Woodvale Evaporation Pond Complex.	Arcadis, 2017
GHD Pty Ltd	2017	GBM Gold Ltd – Woodvale Evaporation Ponds Complex Annual Hydrogeological Review 2016/17.	GHD, 2017
Peter J Ramsay & Associates Pty Ltd	2018	Kralcopic Pty Ltd – Environmental Audit of the Risk of any Possible Harm or Detriment to the Environment Pursuant to Part IXD (Section 53V) of the Environment Protection Act 1970 – Woodvale Evaporation Ponds Complex, Dalys Road, Woodvale, Victoria. (EPA Reference: 61207-2 [8005644]).	PJRA, 2018
Edwards Environmental Pty Ltd	2019	WEPC Rehabilitation Project, Annual Soil Sampling 2019 – WEPC, Woodvale, Victoria	Edwards, 2019
CDM Smith Australia Pty Ltd	2023	Department of Energy, Environment and Climate Action, Preliminary Human Health Risk Assessment – Dust: Woodvale Evaporation Ponds Audit, 2023	CDM Smith, 2023
ServiceStream Pty Ltd	2023	Bendigo GWTP Operational Management Plan	ServiceStream, 2023
Australian Laboratory Services Pty Ltd	2024	Department of Energy, Environment and Climate Action – Woodvale Dust Monitoring Report Q1 2024	ALS, 2024
Goulburn-Murray Water	2024	West Campaspe – Groundwater Management Area – Local Management Plan	GMW, 2024



Consultant	Year	Report Title	Reference
BlueSphere Environmental Pty Ltd	2025	Environmental Assessment, Woodvale Evaporation Pond Complex	BlueSphere, 2025



2 Site Description and Environmental Setting

2.1 Site Identification Information

The site is located approximately 145 km north of Melbourne Central Business District and 14 km north of Bendigo in the regional town of Woodvale, Victoria.

The site has historically been used to store and manage groundwater produced during dewatering activities associated with mining operations in the area. It is understood that the evaporation of mine water ceased in circa 2016. Since DEECA/ERR took responsibility for the site it is understood that groundwater extracted from beneath Bendigo is transferred to the New Moon Treatment Facility, and then following treatment is pumped via pipeline to the site for evaporation and to support dust mitigation.

A summary of important site information is presented in **Table 2-1** below. The location of the site is shown in **Figure 1** (appended). A photolog of the site is provided in **Appendix A**.

Table 2-1 Site Identification Information

Items	Details
Site Address¹	Part of Dalys Road, Woodvale, Victoria, 3556
Parcels	1\TP225951, 13-5\PP3301, 13A-5\PP3301, 13B-5\PP3301, 14-5\PP3301, 14A-5\PP3301, 14B-5\PP3301, 14C-5\PP3301, 14E-5\PP3301, and 14G-5\PP3301.
Local Government Administration (LGA)	Greater Bendigo
Zoning of Site and Surrounding Area	The site is zoned Farming Zone – Schedule 1 (FZ1). The surrounding land zoning varies and includes Farming Zone – Schedule 1 (FZ1), Rural Conservation Zone – Schedule 1 (RCZ1) and Public Conservation and Resource Zone (PCRZ).
Site Overlays	The following overlays exists at the site: • Bushfire Management Overlay (BMO); • Environmental Significance Overlay (ESO)- Nuggety Gully Only; and • Land Subject to Inundation Overlay (LSIO). Areas along Nuggety Gully are also identified as areas of Aboriginal cultural heritage sensitivity.
Current Site Use	Treated water is currently transported to ponds west of Dalys Road for evaporation and to assist with dust mitigation. The remaining areas of the site are unused.
Current Site Features	Key existing site features include the evaporation pond network, which comprises eight ponds referred to as Ponds 1A, 1B, 2, 3, 4/5, 6, and 7. All Ponds still remain with the exception of Ponds 4/5 which have been capped and rehabilitated. Ponds 1A, 1B, 2, and 3 currently receive treated water from the New Moon Treatment Plan.
Future Site Use	EHS Support understands that following rehabilitation the site may be used for agricultural purposes (grazing) or parkland, however, the final end use is still being determined in consultation with key stakeholders.
Adjacent Site Uses	• North: Rural residential and agricultural/farming land uses. • East: Greater Bendigo National Park. • South: Rural residential and agricultural/farming land uses. • West: Bendigo – Pyramid Road, followed by rural residential and agricultural/farming land uses.



2.2 Topography

Based on topographical maps, the site is relatively flat with a slight slope from the south-east portion of the site to the north-west and has an elevation of approximately 150 – 160 metres Australian Height Datum (mAHD). Some localised slopes and undulating areas are located throughout the site which form the banks of the evaporation ponds.

On a regional scale, the land slopes gently to the west with areas of higher elevation located to the east of the site within the Greater Bendigo National Park.

2.3 Surface Conditions and Vegetation

The site is unsealed and predominantly occupied by the footprint of the evaporation pond network. Vegetation across the site is generally sparse and includes tall grasses, low lying native trees, and bushes. Ecological Vegetation Classes (EVCs) modelled by the DEECA indicate that the site is characterised by Grassy Woodland (EVC: 175, Victorian Riverina Bioregion) and Plain Woodland (EVC: 803, Victorian Riverina Bioregion).

2.4 Climate and Weather

A weather monitoring station (Site Number - 407810A) was installed at WEPC in 2023. The station is located along the eastern site boundary and measures rainfall, wind direction, wind speed, air temperature and relative humidity. On-site weather data is not available for May 2025 due to vandalism of the weather station. Instead, data from Bureau of Metrology (BOM), Bendigo Airport Weather Station (081123) has been used for May 2025.

During quarterly monitoring events, data from the weather monitoring station was downloaded. A detailed summary of weather monitoring data including monthly summaries of temperature, humidity, rainfall and wind speed and directions (including monthly wind roses) are provided in **Appendix B**.

Monthly rainfall and temperatures recorded during the annual monitoring period are shown in **Chart 2-1** below. Highest monthly rainfall typically occurred between June and November 2024, with May 2025 receiving the lowest total rainfalls of 1.0 mm.

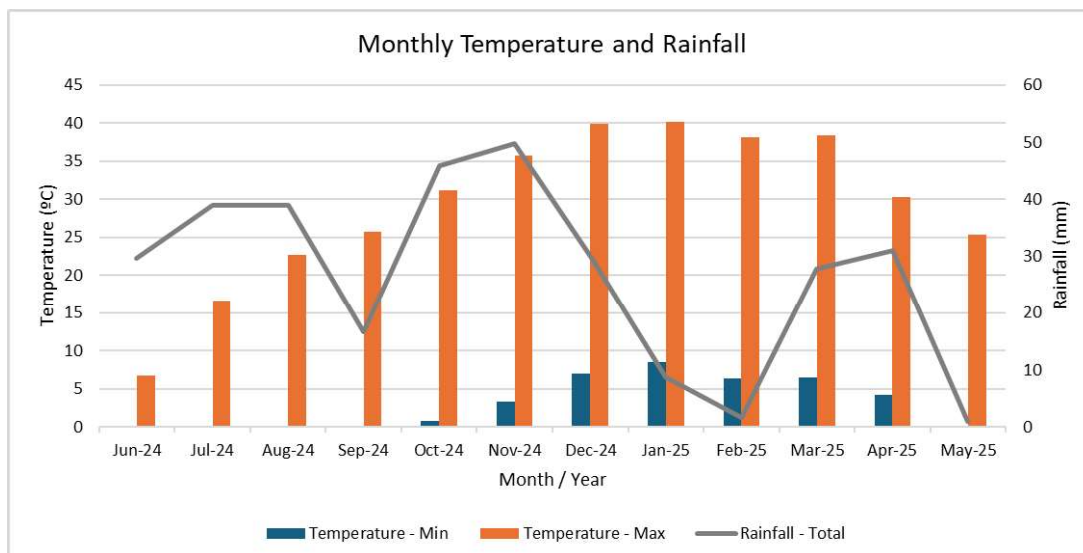


Chart 2-1 Monthly Temperature and Rainfall

Monthly prevailing wind direction was typically from a southerly direction (i.e., either south-southwest, southwest, south, south-southeast, and east-southeast) during the reporting period, with the exception of September 2024 where the prevailing wind direction was from the northwest. Based on the monthly wind roses, prevailing wind direction typically occurred less than 15% of the time, and therefore other dominate wind directions occur throughout the month. Based on the measured wind speed, winds from a northerly direction were generally stronger with wind speeds of up to approximately 10.5 m/s, compared to winds coming from the south which reported wind speeds typically less than 2 m/s.

Based on the annual wind rose (refer to **Chart 2-2**) the prevailing annual wind direction is south-southeast, however, only for 11% of the time. Nevertheless, other dominate wind directions are generally from the south.

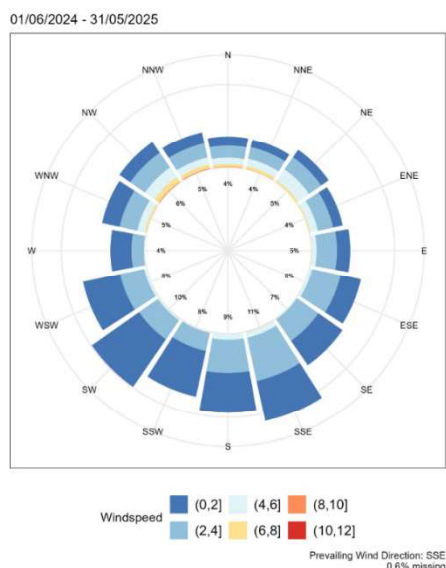


Chart 2-2 Annual Wind Rose



2.5 Pond Network

The pond network at the site is summarised in **Table 2-2**. This includes a construction date, a summary of available construction information and current status of each pond.

Table 2-2 Summary of Pond Network

Pond	Summary
Ponds 1A, 1B, 2, 3, 4, and 5	Ponds 1-5 are understood to have been originally constructed in late 1980s by the Western Mining Corporation using in-situ materials. Historical repairs undertaken to the pond embankments in circa 2000 indicate that the embankments comprising of top soils and gravelly clays rather than uniform, low permeability material increasing the risk for leakages to occur. Between circa 1986 and 1988, water extracted from the New Moon Shaft was transferred to WEPC via Dead Horse Gully and then to Sidney Creek. Water was captured in a holding point located to the west of Bendigo-Pyramid Hill Road, before being pumped into the pond networks. From circa 1998, groundwater was transferred to the WEPC from the New Moon Shaft via a pipelines. In 2005, rehabilitation works were undertaken on Ponds 1, 2 and 3 to improve the liner integrity. These ponds continue to receive treated water from the New Moon Treatment Plant. Pond 4 and 5 were decommissioned with an engineered cap in circa 2008/2009.
Pond 6	Pond 6 was constructed in circa 2000 using both in-situ and imported clay materials used as liners. The geometric mean of the permeability testing results was reported to be 1.8×10^{-9} m/second. Pond 6 received water until circa 2009. During the annual reporting period, this pond has largely been dry with the exception of accumulated rainwater in the western portions of the pond.
Pond 7	Pond 7 was constructed in 2005 and incorporated a terrace design to increase evaporation rates. It is understood that Pond 7 received water until circa 2015. During the annual reporting period, this pond has largely been dry, with only a small volume of water been available for sampling during the July 2024 monitoring event.

2.6 Hydrology

Surface water across the site is understood to be directed towards existing ponds and other informal drainage channels, and flows in a south-east to north-west direction.

With the exception of the on-site ponds, the nearest surface water bodies to the site are:

- Nuggety Gully (on-site) – ephemeral creek which flows from the north-east along the northern portions of the site before eventually discharging into Myers Creek (refer to below).
- Unnamed Creek (on-site) – ephemeral creek which flows from the east through the southern portions of the site. It is understood that this creek has historically been diverted around the existing ponds. This creek also eventually discharges into Myers Creek (refer to below).
- Sidney Creek (off-site) – creek which flows east and is located approximately 200 m south of the site at its closest point before eventually discharging into Myers Creek (refer to below).
- Myers Creek (off-site) – creek which flows south to north and is located approximately 500 m west of the site at its closest point.
- Several private dams are present on surrounding farmland.

Surface water bodies both on and off-site are shown in **Figure 2** (appended).



2.7 Geology

According to the 1:250,000 Geological Map Series, Raywood Map, the majority of the site is underlain by the Shepparton Formation, Deep Lead sediments and the Castlemaine Group. A summary of the underlying geology is provided in **Table 2-3**.

The Shepparton Formation comprises more recent (Quaternary – Neogene) aged alluvial and colluvial sediments such as fine-grained sands, silts, and clays. The Shepparton Formation is underlain by Deep Lead sediments (formed by a palaeochannel), however, investigations at the site indicate that the Deep Lead is discontinuous at the site. The deep lead sediments comprise of ferruginised mature quartz gravels, sands, and clays. The Castlemaine Group forms the bedrock across the site and comprises sandstone, mudstone, black shale, conglomerate, often stratified and cross-laminated. The Castlemaine Group outcrops at the site

More recent Quaternary aged colluvium and gully alluvium formations may also exist at the site and in the surrounding area, however, these formations are likely discontinuous and localised near adjacent creeks and gullies.

Table 2-3 Summary of Geology

Age	Formation/Unit	Description
Quaternary	Colluvium and gully alluvium (Qc)	Colluvium and gully alluvium: clay, silt, sand, gravel, rubble; poorly sorted; variably consolidated.
Quaternary - Neogene	Shepparton Formation (NSW)	Prior stream deposits and minor alluvium: shoestring channel sand deposits, fine-grained sandy clay; levee bank deposits: clay, silt. Fine- to coarse-grained sand/sandstone of quartz, mica, feldspar, and ironstone; quartz gravel/conglomerate; well to poorly sorted, variably consolidated.
Ordovician	Castlemaine Group (Occ)	Deep-marine turbidites and hemipelagic sediments: sandstone, mudstone, black shale, minor granule quartz conglomerate; sandstone mostly thick-bedded, coarse- to fine-grained, often graded, diffusely stratified to cross-laminated, moderately to well sorted; black shale richly fossiliferous with graptolites and phyllocarids.

2.8 Hydrogeology

A generalised summary of the site and regional hydrogeology is provided in **Table 2-4**. Four key aquifers units are known to be present at the site based on previous investigations:

- Shallow Aquifer (inferred to be formed in the upper 7 m of the Shepparton Formation and/or Alluvium and Colluvium Formations, comprising fine grained sediments with occasional sand lenses);
- Intermediate Aquifer (typically between 8 and 20 m bgl, comprising of sandier sediments of the Shepparton Formation);
- Basal Sand and Gravel / Deep Lead Aquifer (comprising of deep lead sediments typically greater than 20 m bgl); and
- Bedrock Aquifer (former in fractured rock of the Castlemaine Group).

2.8.1 Shallow and Intermediate Aquifers (Shepparton Formation)

The shallow and intermediate aquifers are inferred to be formed by the Shepparton Formation and are characterised as an unconfined to semi-confined aquifers. Groundwater in the Shepparton Formation is broadly known to be variable, and yield is largely dependent on individual lithological layers within the formation (such as sandy lenses) in a specific area. Groundwater flow and storage within this aquifer is predominantly via primary porosity in porous sand lenses, with silty clay and clay matrix within the



formation forming confining or low porosity layers. Previous investigations indicate that surface water and groundwater interactions (seepage) at the site between water in the evaporation ponds and groundwater within the shallow and intermediate aquifer has occurred, resulting in groundwater mounding and increased salinity within this aquifer. Furthermore, the presence of water within the shallow intervals is highly variable, and in some areas attributed to recharge from seepage and others to rainfall.

Groundwater flow direction in the Shepparton Formation varies, and in the Bendigo region flow direction is largely dictated by both topography and discharge zones (such as deep creeks or rivers). At the site, previous groundwater investigations have concluded that groundwater flow direction in the Shepparton Formation is in a west to north-westerly direction, towards Myers Creek. However, groundwater mounding from seepage resulting in localised variable flow directions is also evident.

Previous literature studies indicate that groundwater salinity in the Shepparton Formation is variable, even on a local scale, due to the largely heterogenous nature of its individual sandy lenses which hold relatively fresh groundwater compared to the silty clay lenses which hold more saline water (Tickell & Humphrys, 1987). Regionally, salinity is inferred to range from as low as 1,000 m/L to as high as 13,000 mg/L across the formation, with higher salinities generally reported north towards the Murray River.

The West Campaspe Groundwater Management Area (GMA) Plan, 2024 (GMW, 2024) indicates that groundwater salinity across the West Campaspe GMA (which includes WEPC) is likely too high for irrigation without the removal of salts. Previous studies also indicate that groundwater salinity within the Shepparton Formation generally increases with depth in the Goulburn, Murray, Campaspe, and Loddon Valleys with lower salinity occurring in the vicinity of groundwater recharge sources such as losing creeks or current and historical irrigation areas (Tickell & Humphrys, 1987).

During the annual reporting period, groundwater salinity (as indicated by TDS concentrations) ranged between 847 mg/L to 27,318 mg/L within the shallow and intermediate aquifers (formed by the Shepparton Formation). Salinity in all aquifers as it relates to seepage from the ponds is further discussed in **Section 7.5.5**, however, wells which screen the shallow aquifer and were considered not impacted by seepage reported a TDS of 847 mg/L to 2,005 mg/L, whilst non impacted wells in the intermediate aquifer reported a TDS of 15,148 mg/L and 16,237 mg/L.

2.8.2 Deep Lead

Underlying the shallow and intermediate aquifers is the deep lead aquifer. Previous investigations have characterised this aquifer as semi-confined and hydraulically connected to the shallower aquifers and impacted by seepage from the evaporation ponds. Groundwater flow and storage within this aquifer is also predominantly via primary porosity in porous sand lenses. Of note, previous investigations (HLA, 2007) indicate that this aquifer is limited in extent and discontinuous beneath the site and off-site areas.

Similar to the Shepparton Formation, groundwater flow direction in this aquifer (where present) is inferred to be in a west to north-west direction, and salinity is variable ranging from 4,700 mg/L to 9,600 mg/L, reported near Huntly, Victoria (GMW, 2024). During the annual reporting period, groundwater salinity ranged between 14,053 mg/L to 16,035 mg/L within the deep lead aquifer, noting that only two monitoring wells screen this aquifer due to its discontinuous nature, and both are inferred to be impacted by seepage.



2.8.3 Bedrock (Castlemaine Group)

Underlying the deep lead aquifer is a bedrock aquifer, located in the Castlemaine Group of sediments. This is considered the regional aquifer and is characterised as both unconfined (in areas where it outcrops) and semi-confined to confined. Groundwater flow and storage within this aquifer is via both primary porosity through permeable sandstone layers and secondary porosity between fractures and turbiditic layers. This aquifer is generally considered low yielding, with saline groundwater (> 4,000 mg/L, with as high as 20,000 mg/L reported in the Bendigo area [Tickell & Humphrys, 1987]). TDS in this aquifer ranged between 4,928 mg/L to 17,758 mg/L during the annual reporting period.

Previous investigations have not concluded that this aquifer has been impacted by seepage from the evaporation ponds.

2.8.4 Summary of Hydrogeology

Table 2-4 Summary of Hydrogeology and Surrounding Groundwater Bores

Item	Details
Depth to water	Variable, ranges from approximately 2.7 m BTOC to 15.9 m BTOC.
Aquifer(s)	Main aquifers are considered to be the shallow and intermediate aquifers (formed by the Shepparton Formation), deep lead aquifer, and bedrock aquifer (formed by the Castlemaine Group).
Groundwater flow direction	Groundwater flow direction in the shallow, intermediate and deep lead aquifers is expected to be in a west to north-westerly direction towards Myers Creek; however, localised variations in groundwater flow direction exist due to the influenced of seepage from the evaporation ponds, topography, and seasonality. Groundwater monitoring completed during the annual monitoring period confirmed that groundwater flow in the shallow and intermediate aquifers is in a west to north-westerly direction. The flow direction in the bedrock aquifer is regionally expected to be in a northeast direction. However, groundwater monitoring completed during the annual monitoring period indicates that groundwater flow direction in the bedrock aquifer may be variable. This is discussed further in Section 7 .
Groundwater salinity and segment ¹	Shallow Aquifer: 847 mg/L to 27,318 mg/L (Segment A2) Intermediate Aquifer: 10,795 and 16,237 mg/L (Segment F) Deep Lead: 14,053 mg/L to 16,035 mg/L (Segment E) (note that both wells screening this aquifer are impacted by seepage, and TDS based on literature studies is expected to range from 4,700 mg/L to 9,600 mg/L [Segment C]) Bedrock: 4,928 mg/L to 17,758 mg/L (Segment C) The impacts of seepage on groundwater salinity are further discussed in in Section 7 .
Point of groundwater discharge	Based on the groundwater flow direction measured in the Shepparton Formation at the site, groundwater may potentially discharge into Myers Creek, located approximately 500 m to the west of the site.
Surrounding groundwater bores (within a 4 km radius) ²	- Approximately 8 registered groundwater bores within 4 km radius of the site. - Four of these groundwater bores are associated with groundwater investigations undertaken at the site and/or dewatering, and are installed between 15 – 29 m bgl. - Other bores within a 4 km radius have been installed to depth of between 1.8 m and 90 m bgl. Lithology encountered in these bores comprised of quartz and ironstone, mudstone, sandstone, and slate (indicative of Castlemaine Group). The location of surrounding registered groundwater bores is shown in Figure 3 (appended).
Surrounding groundwater uses	- Dewatering/Observation (4). - Domestic and stock (3). - Not known (1).



Item	Details
Nearest extractive use	Three surrounding groundwater bores are registered for an extractive use (Domestic and Stock). Bore 85592 is located approximately 750 m to the east of the site and appears to be installed in the Castlemaine Group (based on installed depth of 88 m bgl) and lithology). Bore WRK120528 is located approximately 1.6 km southeast of the site and also appeared to be installed in the Castlemaine Group (based on installed depth of 90 m bgl). Bore 85588 is located approximately 2.7 km west of the site and appears to be installed in a shallow aquifer, potentially the Shepparton Formation (based on installed depth of 1.8 m bgl).

Table Notes:

¹ Groundwater salinity based on measured TDS concentrations during the annual groundwater monitoring period.

² Registered groundwater bores based on a search of the Victorian Governments Water Measurement Information System conducted on 28 July 2025.

2.9 Existing Groundwater Monitoring Well Network

As a result of the previous investigations completed at the site, several groundwater monitoring wells are present at the site and in the surrounding areas. It is understood that these bores were constructed in the early 2000s by URS Pty Ltd and Australian Tailings Consultants. A summary of the existing groundwater monitoring well network is provided in **Table 2-5**. The location of existing groundwater monitoring wells is shown in **Figure 3** (appended).

Available survey data had previously been collected using a now outdated/less common datum (Australian Geodetic Datum 1966). EHS Support has converted the historical survey coordinates to the current Geocentric Datum of Australia, 2020. No survey data for elevation of top of casing (TOC) is available, rather, elevation of TOC has previously been calculated by using the surveyed ground elevation at the monitoring well plus length of the casing stick-up. Although this does create a degree of uncertainty, due to the distribution of wells across a relatively large areas it is unlikely to materially impact on the interpretation of water level monitoring data.

Prior to the first monitoring event completed during the annual reporting period, EHS Support undertook a downhole camera survey of the majority of accessible monitoring wells. A summary of the down-hole camera survey is provided in **Section 7.1**.

Table 2-5 WEPC – Groundwater Monitoring Well Network

Well ID	Aquifer	Easting (m)	Northing (m)	Top of Casing (m AHD)	Total Depth (m BTOC)	Screen Interval (m bgl)
MW01	Bedrock	250864.058	5940104.636	159.9	38.4	30.0-36.0
MW02	Bedrock	252206.009	5940086.548	169.95	32.7	29.7-32.7
MW03	Bedrock	251113.711	5940847.138	161.03	21.50	18.0-21.0
MW04	Bedrock	250198.092	5940381.630	158.17	31.89	29.7-32.7
SD01	Shallow	250166.813	5940701.020	154.49	8.55	5.0-7.0
SD02	Shallow	250183.083	5940704.090	154.48	8.54	5.0-7.0
SD03	Shallow	250205.003	5940818.060	154.67	8.45	5.0-7.0
SD04	Shallow	250187.343	5940819.760	154.56	8.67	5.0-7.0
SD05	Shallow	250239.554	5940902.831	154.79	8.51	5.0-7.0
SD06	Shallow	250228.604	5940905.531	154.65	8.63	5.0-7.0
SD07	Shallow	250251.293	5940684.711	154.99	8.33	5.0-7.0



Well ID	Aquifer	Easting (m)	Northing (m)	Top of Casing (m AHD)	Total Depth (m BTOC)	Screen Interval (m bgl)
SD08 ¹	Shallow	250249.982	5940680.529	154.94	5	2.0-4.0
SD09	Shallow	250278.954	5940793.691	155.25	8.93	5.0-7.0
SD10	Shallow	250279.834	5940797.051	155.11	5	2.0-4.0
SD11	Shallow	250305.104	5940891.051	155.07	8	5.0-7.0
SD12	Shallow	250306.034	5940894.021	155.23	5	2.0-4.0
SD13	Shallow	250473.156	5941036.203	156.19	8	5.0-7.0
SD14	Shallow	250479.016	5941054.803	155.97	8.49	5.0-7.0
SD15	Shallow	250484.296	5941073.343	155.99	8	5.0-7.0
WMW22	Intermediate	251005.720	5940479.197	158.096	12.56	8.0-13.0
WMW23	Shallow	251004.540	5940475.767	158.255	6.11	2.0-5.0
WMW26	Intermediate	250315.034	5940921.081	155.118	17.58	9.0-16.0
WMW28	Shallow	250314.144	5940918.051	155.072	5.41	2.0-5.0
WMW34	Intermediate	250171.003	5940843.730	154.701	19.52	10.0-18.0
WMW38	Intermediate	250220.314	5940929.661	154.802	16.38	11.0-16.0
WMW39	Deep Lead	250264.724	5940730.741	154.948	26.22	16.0-25.0
WMW45	Intermediate	250161.623	5940756.750	154.661	13.69	13.0-16.5
WMW52	Intermediate	250009.832	5940909.109	154.392	17.50	13.0-16.5
WMW55	Deep Lead	250259.544	5940713.321	154.966	24.65	19.0-25.0
WMW56	Intermediate	250263.684	5940727.381	155.293	14	11.0-14.0
WMW57	Intermediate	250276.794	5940777.231	155.091	14.74	12.0-15.0
LD0-8A ²	Intermediate	251039.570	5940611.827	158.72	12	7.5-10.5
LD0-8B ²	Shallow	251040.200	5940612.537	158.76	5	1.8-4.8

Table Notes:

m bgl: Metres below ground level

m BTOC: Metres below top of casing

¹ Survey data for SD08 appears to be incorrect in historical reports. Coordinates are listed based on estimated location and field coordinates collected using a hand held mobile GPS (+/- 3-5 m).

² Historical reports indicate that LD0-8A and LD0-8B may screen multiple aquifers and are considered compromised. Although these monitoring wells are gauged as part of the groundwater monitoring event, their data has been excluded when interpreting groundwater elevation and flow direction.

2.10 Groundwater Interception Borefield Scheme

A groundwater interception borefield scheme (GIBS) was constructed and installed along the western boundary of the site in 2010 to intercept saline groundwater associated with seepage from the ponds. The bores where extraction occurred were historically referred to as WPB01 – WPB04, and screened between approximately 15-27 m, targeting the deep lead and bedrock aquifers.

Although little information is available regarding the total volume of groundwater extracted, it is understood that extraction ceased in 2013 as ongoing extraction was not considered warranted at the time. Groundwater elevation in several groundwater monitoring wells recovered following cessation of the extraction.



3 Preliminary Conceptual Site Model

The requirement for the development of a conceptual site model (CSM) is provided in Schedule B2 and B4 of the National Environment Protection Measure (NEPM) (NEPC, 2013). The CSM represents site-related information regarding contamination sources, migration pathways, and receptors.

The development of a CSM is a dynamic process and information and assessments relevant to the site model should be used to update and review the current CSM. The essential elements of an initial CSM are:

- Known and potential sources of contamination and contaminants of concern;
- Potentially affected media (soil, sediment, groundwater, surface water, indoor and ambient air) and contaminant transport and migration mechanisms;
- Potential human and ecological receptors; and
- Potential exposure pathways.

The following sections provide a summary of the CSM for the site as it relates to the segments of the environment assessed as part of the environmental monitoring program (i.e., surface water, groundwater, and dust).

3.1 Potential Sources of Contamination and Contaminants of Potential Concern

The key potential source or activity of contamination at the site overall is historical dewatering activities and storage of dewatered groundwater. This was undertaken at the site as part of historical mining operations between circa 1987 and 2016 by various mining companies. Based on a review of previous environmental investigation reports, the following analytes are considered to represent contaminants of potential concern (CoPCs):

- Heavy metals (namely arsenic, barium, chromium, cobalt, manganese, nickel, and zinc);
- Cyanide;
- Sulphate; and
- Salinity.

Although rehabilitation of the WEPC is unlikely to represent a significant source/activity of potential contamination, appropriate management controls are required to prevent rehabilitation activities mobilising existing contamination at the site.

3.2 Potentially Affected Media and Transport and Migration Mechanisms

A summary of potentially affected media and transport and migration mechanisms is outlined below in **Table 3-1**.

Table 3-1 Summary of Potentially Impacted Media and Transport and Migration Mechanisms

Media	Transport and Migration Mechanisms
Sediment/Soils	It is understood BlueSphere Pty Ltd have recently completed detailed site investigations assessing soils and sediments at the base of the ponds and potential risk to receptors. Although EHS Support has not assessed soil or sediment as part of the environmental monitoring program, as the contamination status of soils and sediments can influence and inform risk associated with dust generation, this media has been listed. Sediment/soils at the base of the ponds may potentially be impacted due to precipitation and evaporation which results in the accumulation of heavy metals and other contaminants of potential concern (CoPCs) at the base of the ponds.



Media	Transport and Migration Mechanisms
Groundwater	Where ponds are not appropriately lined, CoPCs may also impact groundwater via two primary transport mechanisms: 1. Infiltration and vertical migration of pond water which may contain CoPCs through the subsurface lithology and then eventually into the naturally occurring aquifer system impacting groundwater quality (seepage); and 2. Leaching of CoPCs into subsurface lithology and then vertical migration into the naturally occurring aquifer system impacting groundwater quality (leaching).
Surface Water	As no direct discharge from the ponds to adjacent surface water bodies occurs (i.e., via overland flow), transport and migration of CoPCs to surface water bodies may only potentially occur via lateral migration of potentially impacted groundwater. Surrounding surface water bodies may also be impacted due to increased erosion risk impacts due to soil structure and stability from saline soils.
Dust	During dry and windy periods, CoPCs within the pond footprints may be mobilised impacting air quality and/or be deposited on surrounding soil surface and/or on surrounding surface water bodies such as dams. CoPCs may also be transported via dust and deposited on rooftops which in turn may potentially impact drinking water (if rainwater tanks are present) or stormwater.

3.3 Potential Receptors

Potential receptors at the site which need to be considered are based on the environmental values of the environment, as defined by the Environmental Reference Standard (ERS) (2021). Environmental Values are discussed in the following sections.

3.3.1 Environmental Values – Water

The ERS (2021) details the environmental values of water (groundwater and surface water) to be protected. The environmental values for groundwater which must be protected are based on the groundwater salinity and the groundwater segment applicable. The relevant segment of groundwater which is applicable at the site is confounded by the variable natural water quality and evidence of historical seepage from the evaporation ponds. EPA guidelines specify that when determining groundwater segments, the most conservative salinity outside the influence of anthropogenic impacts (i.e., seepage from the evaporation ponds) should be used.

Based on Statewide groundwater salinity maps and TDS concentrations reported during the annual reporting period, the most conservative groundwater segment at the site is Segment A2. This is based on TDS measured in shallow monitoring wells which are not indicated to be impacted by seepage.

Segment A2 is likely only relevant for the shallow aquifer, with natural salinity known to increase with depth within the Shepparton Formation and naturally saline conditions known to exist within the deep lead sediments and the bedrock aquifer. The environmental values of groundwater requiring protection for the most conservative Segment of groundwater (i.e., Segment A2) are:

- Water dependent ecosystems (Murray and Western Catchment – slightly to moderately modified);
- Potable water supply (acceptable);
- Potable mineral water supply;
- Agriculture and irrigation (irrigation);
- Agricultural and irrigation (stock watering);
- Industrial and commercial use;
- Water-based recreation (primary contract recreation);
- Traditional owners cultural values;



- Cultural and spiritual values;
- Buildings and structures; and
- Geothermal properties.

The environmental value of water dependent ecosystems is applicable at the point of groundwater discharge. Based on groundwater flow direction, groundwater at the site is assumed to discharge to Myers Creek.

As the site and immediate surrounding areas is not located in a recognised mineral water production area, the environmental value of potable mineral water supply is not considered applicable. As the site and depth to water are not located in an area of geothermic importance (i.e., temperatures of groundwater are unlikely to be between 30-70 degrees Celsius), the environmental value of geothermal properties is also not considered relevant. These environmental values are not discussed further.

For environmental values of surface water (or inland waters), the environmental values are based on the geographic region of the surface water body. The site is considered to be located within the Murray and Western Plains segment. The following environmental values for surface water are potentially relevant to this segment:

- Water dependent ecosystems (slightly to moderately modified);
- Agriculture and irrigation;
- Human consumption of aquatic foods;
- Industrial and commercial;
- Water-based recreation (primary, secondary contact, and aesthetic enjoyment); and
- Traditional owners cultural values.

In accordance with the ERS (2021), the environmental values of surface water do not apply to constructed waterways which may include the evaporation ponds present at the site. For the purpose of the Environmental Monitoring Plan (EHS Support, 2024), environmental values of surface water are only considered to apply at surrounding natural water ways including Nuggety Gully, Myers Creek, and others (such as the unnamed creek). However, given that Nuggety Gully and the unnamed creek to the south are ephemeral waterways, the flow of water through these water bodies is unlikely to sustain certain environmental values.

The relevance of environmental values of water is further discussed in **Section 8.2.4**.

3.3.2 Environmental Values – Air

The ERS (2021) also outlines environmental values of air. These include:

- Life, health, and well-being of humans;
- Life, health, and well-being of other forms of life, including the protection of ecosystems and biodiversity;
- Local amenity and aesthetic enjoyment;
- Visibility;
- The useful life and aesthetic appearance of buildings, structures, property, and materials; and
- Climate systems that are consistent with human development; the life, health, and well-being of humans; and the protection of ecosystems and biodiversity.

For the purpose of the Environmental Monitoring Plan (EHS Support, 2024), the environmental values of air have only been considered as they relate to potential dust generation at the site and the deposition of potentially contaminated dust will be evaluated with consideration to the environmental values of land and water.



4 Environmental Monitoring Plan

The environmental monitoring program is described in detailed in “*Environmental Monitoring Plan – Woodvale Evaporation Pond Complex, Woodvale, Victoria*” dated 13 May 2024 (EHS Support, 2024). This includes a rational for sampling locations, analytical program and field methods used.

Table 4-1 below provides a high-level summary of the environmental monitoring program. The field methodology adopted during the program is provided in **Appendix C**.

Table 4-1 Summary of Environmental Monitoring Program

Item		Description
Surface Water Monitoring Program		
Monitoring Locations and Number of Samples		Surface water monitoring locations are shown in Figure 2 (appended). Ponds (Pond 1A, 1B, 2, 3, 6 and 7) (note two samples are collected from Pond 7 when water is present (7W and 7E) (7 samples). Nuggety Creek Gully (3 samples). Unnamed Creek (3 samples). Surface water samples only collected when water present.
Frequency		Quarterly (July 2024, October 2024, January 2025, and April 2025).
Field Dates		5 July 2024. 9 October 2024. 15 January 2025. 2 April 2025.
Analytical Program	Primary Samples	All surface water samples are analysed for cyanide, sulphate, alkalinity, and total and dissolved metals.
	Quality Assurance / Quality Control (QA/QC)	Field Duplicate: dissolved metals and cyanide. Field Triplicate: dissolved metals and cyanide. Rinsate Blank: dissolved metals and cyanide. Field Blank: dissolved metals and cyanide.
Deviation from Environmental Monitoring Plan		None with the exception of collecting two samples from Pond 7 (one in the eastern portion where the former inlet was located and one in the western portion [when water present]) and analysing surface water samples for both total and dissolved metals.
Groundwater Monitoring Program		
Gauging Locations (33)		MW01, MW02, MW03, MW04, SD01, SD02, SD03, SD04, SD05, SD06, SD07, SD09, SD11, SD12, SD14, WMW22, WMW23, WMW26, WMW28, WMW34, WMW38, WMW39, WMW45, WMW52, WMW55, WMW56, WMW57, LD0-8A, LDO-8B, SD08, SD10, SD13, SD15. Groundwater monitoring locations are shown in Figure 3 (appended).
Sampling Locations during first GME (July 2024) (26)		MW01, MW02, MW03, MW04, SD02, SD03, SD04, SD05, SD06, SD07, SD09, SD11, SD12, SD15, WMW22, WMW23, WMW26, WMW28, WMW34, WMW38, WMW39, WMW45, WMW52, WMW55, WMW56, WMW57, (if water present).
Sampling Locations during subsequent GMEs (18)		MW01, MW02, MW03, MW04, SD02, SD03, SD07, SD09, SD15, WMW23, WMW26, WMW28, WMW34, WMW38, WMW39, WMW45, WMW52, WMW57 (if water present).



Item		Description
Rationale for well selection		During the July 2024 monitoring event, a total of 26 monitoring wells were sampled (remaining wells were either dry or water was within the sump). During the subsequent monitoring event, the number of groundwater monitoring wells was reduced based on the well location, presence of water, screening interval/target aquifer, availability of historical data and location of potential receptors.
Frequency		Quarterly (July 2024, October 2024, January 2025, and April 2025).
Field Dates		2-4 July 2024. 8-10 October 2024. 14-16 January 2025. 31 March – 2 April 2025.
Analytical Program	Primary Samples	Dissolved metals, cyanide, major anions and cations, alkalinity, and stable isotopes ^{18}O and ^2H .
	QA/QC	Field Duplicates: dissolved metals and cyanide. Field Triplicates: dissolved metals and cyanide. Rinsate Blanks: dissolved metals and cyanide. Field Blank: dissolved metals and cyanide.
Deviation from Environmental Monitoring Plan		None with the exception of increasing the number of monitoring wells gauged and sampled during each event. Originally only 15 monitoring wells were proposed to be sampled, however, 18 are now routinely sampled.
Depositional Dust Monitoring Program		
Monitoring Locations (7)		Boundary Dust Gauges: WVDD01, WVDD02, WVDD03, WVDD04, WVDD05, WVDD08. Background Dust Gauge: WVDD07-BG Depositional dust monitoring locations are shown in Figure 4 (appended).
Frequency		Monthly (July 2024 - June 2025).
Field Dates		1 July 2024, 1 August 2024, 29 August 2024, 30 September 2024, 30 October 2024, 29 November 2024, 31 December 2024, 30 January 2024, 28 February 2024, 31 March 2024, 30 April 2024, 30 May 2024, and 30 June 2025.
Analytical Program		Ash content, combustible matter, total insoluble matter, soluble matter, and total matter. Soluble and insoluble metals, cyanide, and sulphate.
QA/QC		Internal Laboratory QA/QC only.
Deviation from Environmental Monitoring Plan		None.
Real-Time Dust Monitoring Program		
Monitoring Locations (2)		WV-RTD-01 and WV-RTD-02. Real-time dust monitoring locations are shown in Figure 4 (appended).
Parameters Monitored		TSP, PM ₁₀ and PM _{2.5}
Frequency		Monitors analyse dust concentrations approximately every second, however, the data is reported based on the average recorded over a 60 second period. Appropriate rolling averages are then calculated automatically from the dataset and reported via cloud based technology.
Field Dates		Continuous remote monitoring.



Item	Description
QA/QC	None applicable apart from regular inspections, replacement of filters and annual calibration by manufacture.
Deviation from Environmental Monitoring Plan	Relocation of WV-RTD-01 from original proposed location along Meurillion Road to north of Pond 6 due to risk of vandalism and theft. This occurred in June 2024 shortly following initial placement of the monitors.
QA/QC Program	
Quality assurance and quality control (QA/QC)	A comprehensive QA/QC program was adopted during the works consistent with requirements of Section 19 of Schedule B2 of the National Environment Protection (Assessment of Site Contamination) Measure (ASC NEPM) 2013 and AS 4482.1-2005. This included: • Collection of intra and inter laboratory duplicates at a minimum frequency of 5 % to confirmed accuracy and precision of laboratory analytical results. • Collection of rinsate blank samples (where required) to confirm that decontamination procedures limit the potential for cross contamination to have occurred between sampling points. • Collection of trip blank samples to confirm cross contamination has not occurred during sample transport and handling. • A review of internal laboratory QA/QC results A Summary of the QA/QC program is provided in Appendix G.

Table Notes:

Field Parameters (all locations) – pH, EC, TDS, redox potential, dissolved oxygen, turbidity, and temperature

Metals – antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, tin, vanadium, and zinc.

Cyanide – total cyanide

Sulphate – Reported as sulphate as SO₄

Alkalinity – speciated (CO₃, HCO₃, OH⁻, total alkalinity as CaCO₃)

Anion and Cations – sulphate, chloride, calcium, magnesium, sodium, potassium



5 Adopted Environmental Objectives

The environmental objectives (criteria) and indicators used to assess potential impacts to relevant environmental values are defined in the ERS, 2021 for each segment of the environment (i.e., surface water, groundwater, and air [dust]).

5.1 Adopted Surface Water Criteria

A summary of the criteria that was adopted during the surface water monitoring program is outlined in **Table 5-1**. Although the environmental values are not applicable within the ponds, analytical surface water results from the ponds have been conservatively compared to the criteria below.

Table 5-1 Surface Water – Summary of Proposed Environmental Objectives (Criteria)

Environmental Values	Criteria
Water dependent ecosystems and species (slightly to moderately modified)	Australian and New Zealand Environment and Conservation Council Guidelines for Fresh and Marine Water Quality 2000 (ANZECC & ARMCANZ, 2000) / Australian and New Zealand Guidelines 2018 (ANZG, 2018) – 95% freshwater trigger values
Human consumption after appropriate treatment	National Health and Medical Research Council (NHMRC) (2008), Health and aesthetic criteria, Australian Drinking Water Guidelines (ADWG), 2011
Agriculture and irrigation	ANZECC & ARMCANZ (2000), Irrigation criteria (Long-term trigger values). ANZECC & ARMCANZ (2000), Stock Watering criteria.
Human consumption of aquatic foods	Australia New Zealand Food Standard Code (2016), <i>Schedule 19, Maximum Levels of Contaminants and Natural Toxicants</i> .
Industrial and commercial	No specific guidance for industrial and commercial water use is available because industrial water requirements are varied. Given that no industrial or commercial use of surface water is known to occur, this environmental value has been assessed with consideration to the objectives of other environmental values
Water based recreation	NHMRC (2008), Health and aesthetic criteria, ADWG, 2011
Traditional Owner cultural values	The ERS (2021) does not provide specific environmental quality indicators or objectives for these environmental values, as consultation with Traditional Owners is required to confirm the objectives. Initially during the program, this environmental value will be assessed using the objectives for water dependent ecosystems and species. As the project progresses and rehabilitation plans are finalised, other objectives may be adopted.

5.2 Adopted Groundwater Criteria

A summary of the criteria adopted during the groundwater monitoring program is outlined in **Table 5-2**.

Table 5-2 Groundwater – Summary of Proposed Environmental Objectives (Criteria)

Environmental Values (where relevant)	Criteria
Water Dependent ecosystems and species	Australian and New Zealand Environment and Conservation Council Guidelines for Fresh and Marine Water Quality 2000 (ANZECC & ARMCANZ, 2000) / Australian and New Zealand Guidelines 2018 (ANZG, 2018) – 95% freshwater trigger values



Environmental Values (where relevant)	Criteria
Potable water supply (acceptable)	National Health and Medical Research Council (NHMRC) (2008), Health and aesthetic criteria, Australian Drinking Water Guidelines (ADWG), 2011
Agriculture and irrigation (irrigation)	ANZECC & ARMCANZ (2000), Irrigation criteria (Long-term trigger values). ANZG (2024), Primary industries – irrigation guidelines (currently in draft). Note, criteria of relevant analytes in this guideline are consistent with those in ANZECC & ARMCANZ 2000.
Agriculture and irrigation (stock watering)	ANZECC & ARMCANZ (2000), Stock Watering criteria.
Industrial and commercial use	No specific guidance for industrial and commercial water use is available because industrial water requirements are varied. Given that no industrial or commercial use of groundwater water is known to occur, this environmental value has been assessed with consideration to the objectives of other environmental values
Water-based recreation (primary contact recreation)	NHMRC (2008), Health and aesthetic criteria, ADWG, 2011
Traditional Owner cultural values	The ERS (2021) does not provide specific environmental quality indicators or objectives for these environmental values, as consultation with Traditional Owners is required to confirm the objectives. Initially during the program, this environmental value will be assessed using the objectives for water dependent ecosystems and species. As the project progressors and rehabilitation plans are finalised, other objectives may be adopted.
Building and structures	Australian Standard AS2159-2009 (Piling – Design and Installation).

5.3 Adopted Dust Monitoring Criteria

5.3.1 Depositional Dust Criteria

The adopted criteria for depositional dust monitoring is based on the ERS (2021), EPA Publication 1191 and EPA Publication 1961. EPA Publication 1191 (which is further adopted in EPA Publication 1961) defines a threshold criterion of up to 4 g/m²/month (no more than 2 g/m²/month above background) for dust (measured as total insoluble matter/solids).

EPA Publication 1961 also refers to air pollution assessment criteria (APACs) which are risk-based criteria to assess potential risk due to dust generation. Health-based APACs assess potential risk to human health, whereas environmental APACs are protective of environmental values including protection of ecosystems and agricultural uses of land. APACs are available for a range of averaging time periods including 1 hour, 1 day (24 hours) and annually. This corresponds to assessing acute, short-term, and chronic risk, respectively. The APACs and respective averaging time periods are varied depending on the contaminant of concern and associated risk. For example, acute exposure to arsenic at high concentrations can result in respiratory irritation whilst chronic exposure at lower concentrations can result in intellectual function, and hence an APAC exists for a 1 hour average time period (acute) and annual average time period (chronic).

APACs have not previously been used to assess dust as part of environmental investigations at the site as the averaging time for the APACs provided in EPA Publication 1961 for CoPCs do not correspond to the same sampling time previous dust investigations have adopted. Rather, previous investigations have converted depositional dust monitoring results into a concentrations presented as mg/kg (by dividing the



total soluble and insoluble metal concentrations by the total solids accumulated). The concentrations have then been compared to human health and ecological investigations levels (HILs and EILs) for sensitive land uses defined in the ASC NEPM (2013). This approach is not considered appropriate as it often result in over exaggeration of soil concentrations and previous environmental investigations conducted at the site have not identified elevated concentrations in soils of CoPCs outside of the pond footprint (Senversa, 2015, Edwards, 2019, BlueSphere, 2025).

In consultation with the Environmental Auditor, EHS Support has used the percentage of metals in depositional dust to estimate concentrations of metals in respiratory dust (PM₁₀) based on the results of the real-time dust monitoring. The estimated concentrations have then been compared to available APACs in order to assess potential risk to human health and the environment. Where APACs were not available for a certain analyte, West Australian air quality guidelines (Department of Water and Environmental Regulation [DWER], 2019) were adopted.

5.3.2 Real-Time Dust Monitoring Criteria

Results of real-time air monitoring were compared to criteria outlined in the ERS (2021). A summary of the criteria is provided in **Table 5-3** below.

EPA Publication 1961 also includes nuisance dust criteria for PM₁₀ which can be adopted during rehabilitation activities to support adaptive management of dust emissions. This criteria will mainly be relevant once rehabilitation activities commence.

Table 5-3 Real-Time Dust Monitoring Criteria

Analyte	Averaging Period	Criteria (µg/m ³)
PM _{2.5} (maximum concentration)	1 Day	25
	1 Year	8
PM ₁₀ (maximum concentration)	1 Day	50
	1 Year	20

Table 5-4 Nuisance Dust Trigger Levels

Analyte	Averaging Period	Trigger Levels (µg/m ³)
PM ₁₀	10 minutes	165
	15 minutes	150
	30 minutes	120
	1 Hour	80



6 Results – Surface Water Monitoring Program

6.1 Field Observations

During all monitoring events, all ponds with the exception of Pond 7 were observed to be holding sufficient water for sampling. Pond 6 was noted to be almost dry during all monitoring events with only a large pool of water near the outlet along the western bank. Pond 7 only had a small volume of water during the July 2024 monitoring event. As Pond 6 and 7 no longer receive water, any water present in these ponds is considered to be accumulated rainwater.

The proposed sampling locations upstream, on-site, and downstream from Nuggety Gully Creek and the Unnamed Creek were observed to be dry in all four quarterly monitoring events. The individual proposed sample locations are inspected during each quarter and photographed for record. A copy of the photolog is provided in **Appendix A**.

In addition to quarterly inspections, immediately following significant rainfall events DEECA representatives inspect Nuggety Gully Creek and the Unnamed Creek on behalf of EHS Support to assess whether flow has occurred which would trigger a mobilisation to site for sampling. During the annual monitoring period, no flow has been observed to warrant sampling.

6.2 Water Quality Parameters

During surface water sampling, water quality parameters are measured from the ponds using a calibrated water quality meter. Water quality parameters are summarised in **Table 6-1** below. Field sheets and records are provided in **Appendix E**.

In general, pond water can be broadly characterised as saline, slightly alkaline with reducing conditions. Turbidity was notably higher in the various ponds during the July 2024 monitoring event. It is possible that the elevated turbidity was a result of dry conditions during the previous months which may have resulted in low volumes and more turbid water present in the ponds.

Table 6-1 Summary of Water Quality Parameters – Surface Water

Pond	Event	Temp (°C)	pH (pH Units)	EC (µS/cm)	TDS (mg/L) ¹	DO (mg/L)	Redox (mV)	Turbidity (NTU)
Pond 1A	July	7.7	8.99	19,354	12,386	10.88	90.0	507
	October	17.3	8.76	18,857	12,068	- ²	72.6	2.16
	January	26.0	8.58	30,393	19,451	6.02	143.6	6.2
	April	18.3	7.59	51,822	33,166	4.88	73.2	7.5
Pond 1B	July	6.2	9.07	9,634	6,165	11.13	67.8	319
	October	25.9	8.72	23,257	14,884	- ²	86.0	43.46
	January	24.8	8.73	22,703	14,529	7.12	159.7	2.66
	April	18.3	8.91	29,016	18,570	6.25	-2.2	4.7
Pond 2	July	6.6	9.04	8,879	5,682	10.85	46.7	9574
	October	26.0	8.64	19,346	12,381	- ²	80.4	172.1
	January	25.0	8.73	15,218	9,739	8.31	114.7	4.23
	April	18.8	8.91	20,895	13,372	7.13	7.1	6.2



Pond	Event	Temp (°C)	pH (pH Units)	EC (µS/cm)	TDS (mg/L) ¹	DO (mg/L)	Redox (mV)	Turbidity (NTU)
Pond 3	July	5.7	9.01	6,534	4,181	11.99	83.5	13,489
	October	18.4	8.76	7,257	4,644	- ²	-16.0	5.61
	January	26.0	8.56	8,616	5,514	7.78	151.0	8.16
	April	19.6	8.56	8,893	5,691	6.7	-13.0	22.7
Pond 6	July	7.7	9.05	3,340	2,138	12.28	47.2	16,787
	October	20.4	9.35	3,661	2,343	- ²	68.4	125.37
	January	26.0	8.97	8,871	5,677	8.99	85.8	32.02
	April	21.5	8.44	18,007	11,524	4.1	-22.1	95
Pond 7	July	7.3	9.15	1,119	716	11.68	34.5	-

Table Notes:

DO: Dissolved oxygen

NTU: Nephelometric turbidity unit

¹ TDS based on EC conversion (TDS = 0.64 x EC).

² DO probe during October 2024 monitoring event not functioning.

6.3 Surface Water Analytical Results

Analytical surface waters results compared to the adopted criteria are provided in **Table 1** (appended). A copy of National Association of Testing Authorities (NATA) accredited analytical laboratory reports are provided in **Appendix F**.

A summary of analytes which exceeded the adopted criteria are presented in **Table 6-2**. All other analytes were reported either below the adopted criteria or below the laboratory limit of reporting.

Table 6-2 Summary of Exceedances – Surface Water Monitoring

Pond	Exceedance
Pond 1A	- Elevated total and dissolved arsenic (up to 2.4 mg/L) and total zinc (up to 0.028 mg/L) above the adopted criteria for maintenance of aquatic ecosystem and species; - Elevated TDS (up to 33,166 mg/L), pH (up to 8.99), sulphate (up to 1,400 mg/L) and arsenic (up to 2.4 mg/L) above the adopted criteria for human consumption after appropriate treatment; - Elevated total and dissolved arsenic (up to 2.4 mg/L) above the adopted criteria for agriculture and irrigation (irrigation); - Elevated TDS (up to 33,166 mg/L), sulphate (up to 1,400 mg/L) and total and dissolved arsenic (up to 2.4 mg/L) above the adopted criteria for agriculture and irrigation (stock watering); and - Elevated TDS (up to 33,166 mg/L), sulphate (up to 1,400 mg/L), and total and dissolved arsenic (up to 2.4 mg/L) above the adopted criteria for water-based recreation.
Pond 1B	- Elevated total and dissolved arsenic (up to 0.78 mg/L), total and dissolved copper (up to 0.003 mg/L), and total zinc (up to 0.027 mg/L) above the adopted criteria for maintenance of aquatic ecosystem and species; - Elevated TDS (up to 18,570 mg/L), pH (up to 9.07), sulphate (up to 720 mg/L), and total and dissolved arsenic (up to 0.78 mg/L) above the adopted criteria for human consumption after appropriate treatment; - Elevated pH (up to 9.07), total and dissolved arsenic (up to 2.4 mg/L), total iron (up to 0.012 mg/L), total and dissolved molybdenum (up to 0.012 mg/L) above the adopted criteria for agriculture and irrigation (irrigation);



Pond	Exceedance
	- Elevated TDS (up to 18,570 mg/L) and total and dissolved arsenic (up to 0.78 mg/L) above the adopted criteria for agriculture and irrigation (stock watering); and - Elevated TDS (up to 18,570 mg/L), pH (up to 9.07), sulphate (up to 720 mg/L), and total and dissolved arsenic (up to 0.782 mg/L) above the adopted criteria for water-based recreation.
Pond 2	- Elevated total and dissolved arsenic (up to 0.66 mg/L), total copper (up to 0.003 mg/L), and total zinc (up to 0.045 mg/L) above the adopted criteria for maintenance of aquatic ecosystem and species; - Elevated TDS (up to 13,372 mg/L), pH (up to 9.04), sulphate (up to 480 mg/L), turbidity (up to 9,574 NTU) and total and dissolved arsenic (up to 0.66 mg/L) above the adopted criteria for human consumption after appropriate treatment; - Elevated pH (up to 9.04) and total and dissolved arsenic (up to 0.66 mg/L) above the adopted criteria for agriculture and irrigation (irrigation); - Elevated TDS (up to 13,372 mg/L) and total and dissolved arsenic (up to 0.66 mg/L) above the adopted criteria for agriculture and irrigation (stock watering); and - Elevated TDS (up to 13,372 mg/L), pH (up to 9.04), sulphate (up to 480 mg/L), turbidity (up to 9,574 NTU) and total and dissolved arsenic (up to 0.66 mg/L) above the adopted criteria for water-based recreation.
Pond 3	- Elevated total and dissolved arsenic (up to 0.56 mg/L), total copper (up to 0.002 mg/L), and total zinc (up to 0.033 mg/L) above the adopted criteria for maintenance of aquatic ecosystem and species; - Elevated TDS (up to 5,691 mg/L), pH (up to 9.01) and total and dissolved arsenic (up to 0.56 mg/L) above the adopted criteria for human consumption after appropriate treatment; - Elevated pH (up to 9.01) and total and dissolved arsenic (up to 0.56 mg/L) above the adopted criteria for agriculture and irrigation (irrigation); - Elevated TDS (up to 5,691 mg/L) and total and dissolved arsenic (up to 0.56 mg/L) above the adopted criteria for agriculture and irrigation (stock watering); and - Elevated TDS (up to 5,691 mg/L), pH (up to 9.01) and total and dissolved arsenic (up to 0.56 mg/L) above the adopted criteria for water-based recreation.
Pond 6	- Elevated total and dissolved arsenic (up to 0.28 mg/L), total copper (up to 0.003 mg/L), and total zinc (up to 0.031 mg/L) above the adopted criteria for maintenance of aquatic ecosystem and species; - Elevated TDS (up to 11,524 mg/L), pH (up to 9.35), sulphate (up to 270 mg/L), turbidity (up to 16,787 NTU) and total and dissolved arsenic (up to 0.28 mg/L) above the adopted criteria for human consumption after appropriate treatment; - Elevated pH (up to 9.35), total and dissolved arsenic (up to 0.28 mg/L), total iron (up to 0.87 mg/L) and total and dissolved molybdenum (up to 0.03 mg/L) above the adopted criteria for agriculture and irrigation (irrigation); - Elevated TDS (up to 11,524 mg/L) above the adopted criteria for agriculture and irrigation (stock watering); and - Elevated TDS (up to 11,524 mg/L), pH (up to 9.35), sulphate (up to 270 mg/L), turbidity (up to 16,787 NTU), total and dissolved arsenic (up to 0.28 mg/L) and total iron (up to 0.87 mg/L) above the adopted criteria for water-based recreation.
Pond 7	- Elevated total and dissolved arsenic (up to 0.08 mg/L), total and dissolved copper (up to 0.006 mg/L), and total and dissolved zinc (up to 0.009 mg/L) above the adopted criteria for maintenance of aquatic ecosystem and species; - Elevated TDS (up to 716 mg/L), pH (up to 9.15), turbidity (up to 10,239.3 NTU) and total arsenic (up to 0.08 mg/L) above the adopted criteria for human consumption after appropriate treatment; - Elevated pH (up to 9.15), total and dissolved iron (up to 6.6 mg/L) above the adopted criteria for agriculture and irrigation (irrigation); and - Elevated TDS (up to 716 mg/L), pH (up to 9.15), turbidity (up to 10,239.3 NTU) and total and dissolved iron (up to 6.6 mg/L) above the adopted criteria for water-based recreation.



6.4 Discussion

6.4.1 Salinity

Time series plots for TDS in pond water are shown in **Chart 6-1** and **Chart 6-2**. TDS concentrations typically fluctuated during the annual monitoring period, however, were within and generally lower than historical ranges. The fluctuations are attributed to filling and evaporation cycles, and rainfall. During the reporting period, Ponds 1A, 1B, 2 and 3 received water from the New Moon Treatment Plant at an average rate of approximately 1.2 M/day. Although water is treated prior to entering the ponds, salts may remain with the expected TDS concentration following treatment to be approximately 4,500 mg/L (ServiceStream, 2023).

Treated water enters the site via Pond 3, and then flows west through Pond 2 and 1B and 1A. TDS concentrations are lowest in Pond 3 (4,181 – 5,691 mg/L during reporting period) and were typically subject to less fluctuations suggesting that the TDS concentration in Pond 3 are likely moderated by the inflow of treated water. As the treated water settles and evaporates through each pond, TDS concentrations increase with TDS been greatest in Pond 1A (12,068 – 33,166 mg/L during reporting period).

Although no frequent pond depths are recorded by EHS Support, it is understood that over the dryer and warmer periods between November 2024 and April 2025 water levels in Ponds 1A, 1B, 2 and 3 reduced significantly, likely due to a combination of increased evaporation rates and decrease rainfall. The reduction in pond levels corresponded to an increase in TDS in pond water during the January and April 2025 monitoring events. Although not within this annual monitoring period, monitoring in July 2025 following an increase in monthly rainfall indicates that TDS reduced, particularly in Pond 1A (reduced from 33,166 mg/L in April 2025 to 6,165 mg/L in July 2025).

Pond 6 and 7 do not receive any treated water, however, these ponds hold a small amount of accumulated rainwater. TDS concentrations in Pond 6 ranged from 3,137 – 11,524 mg/L during the reporting period, and water was only present in Pond 7 in July 2024 and reported a TDS of 716 mg/L. Although the reported TDS in Pond 6 is higher than expected for rainwater, this is likely due to interaction between the rainwater and soils resulting in dissolution and mobilisation of salts within the surface soils of this pond.

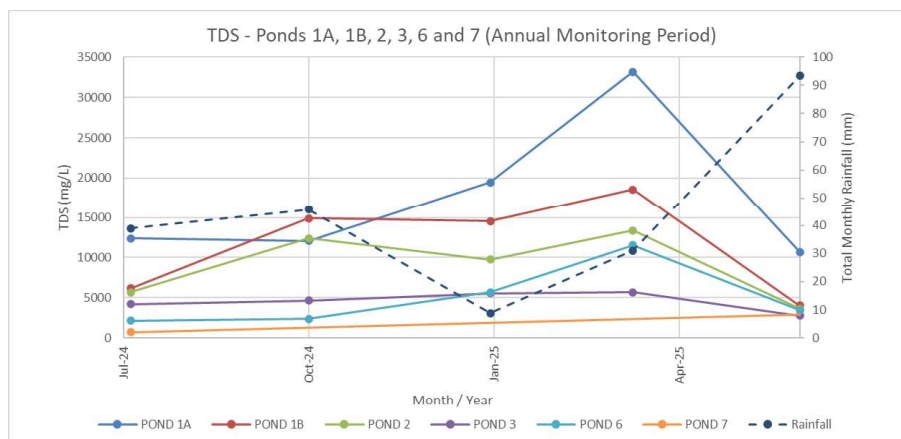


Chart 6-1 TDS – Ponds 1A, 1B, 2, 3, 6, and 7 (Annual Monitoring Period)

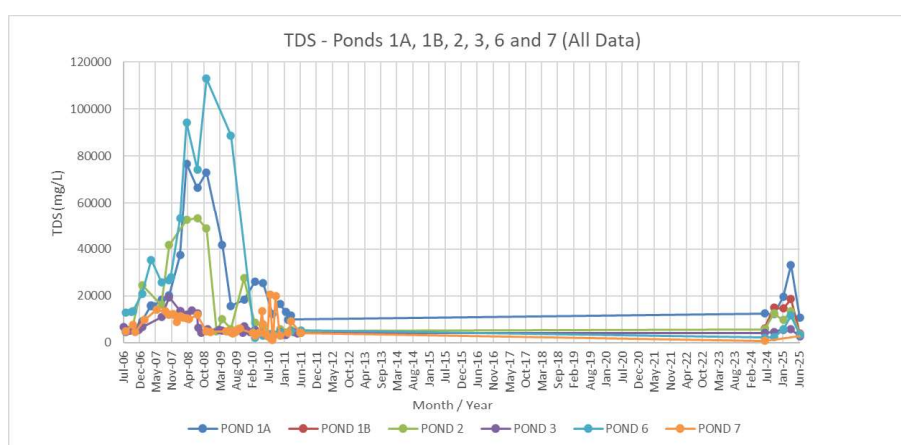


Chart 6-2 TDS – Ponds 1A, 1B, 2, 3, 6, and 7 (All Data)

6.4.2 pH

pH in the ponds is typically slightly alkaline, with pH ranging between 9.3 (Pond 6) and 7.59 (Pond 1A). Results during this annual monitoring period are generally consistent with historical results. The pH of treated water from the New Moon Treatment Plant is expected to range between 7.2 – 8.5 (ServiceStream, 2023). pH trends are shown in **Chart 6-3**.

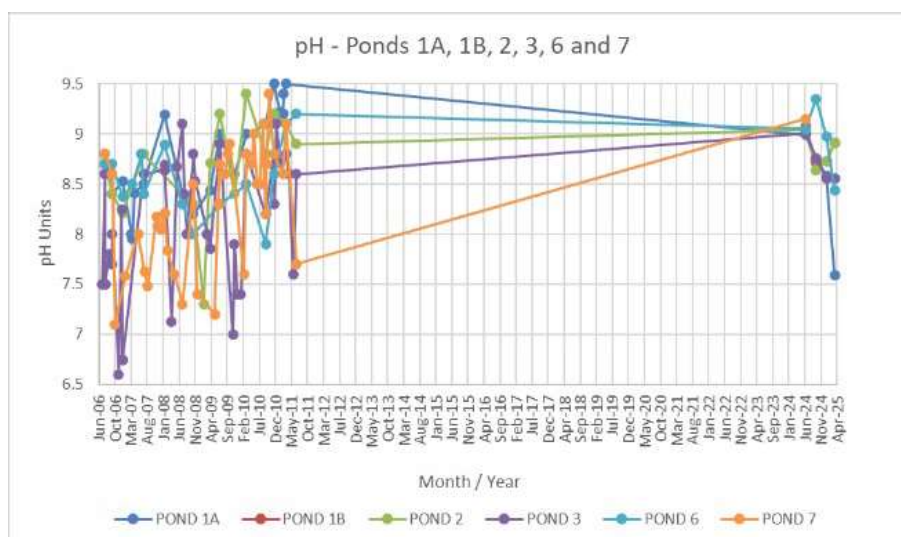


Chart 6-3 pH – Ponds 1A, 1B, 2, 3, 6, and 7 (All Data)



6.4.3 Sulphate

Time series plots for sulphate in pond water are shown in **Chart 6-4** and **Chart 6-5**. Sulphate concentrations in the ponds ranged between 6.4 mg/L in Pond 6 to 1,400 mg/L in Pond 1A during the annual monitoring period. Sulphate concentrations have significantly reduced in pond water during the annual monitoring period when compared to historical monitoring results.

Elevated sulphate within the pond water has historically likely occurred as a result of oxidation of sulphide minerals within the source rock where dewatering activities were undertaken. As the extracted groundwater is now treated before entering the site, similar to TDS, sulphate concentrations are likely to continue to reduce overtime.

Although the Pond 6 sulphate concentration is typically higher than what would naturally occur in accumulated rainwater, similar to salinity, it is likely interactions between salts within the surface soils and the rainwater collected in the pond are resulting in higher sulphate concentrations (for example, due to dissolution of sodium sulphate).

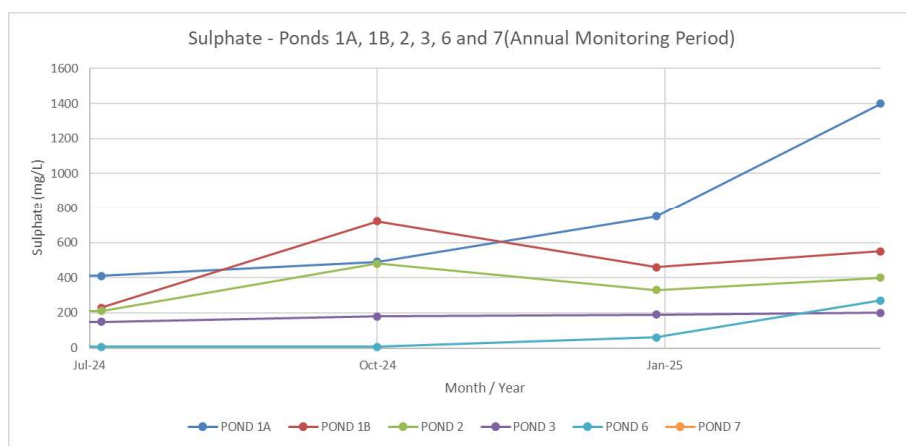


Chart 6-4 Sulphate - Ponds 1A, 1B, 2, 3, 6, and 7 (Annual Monitoring Period)

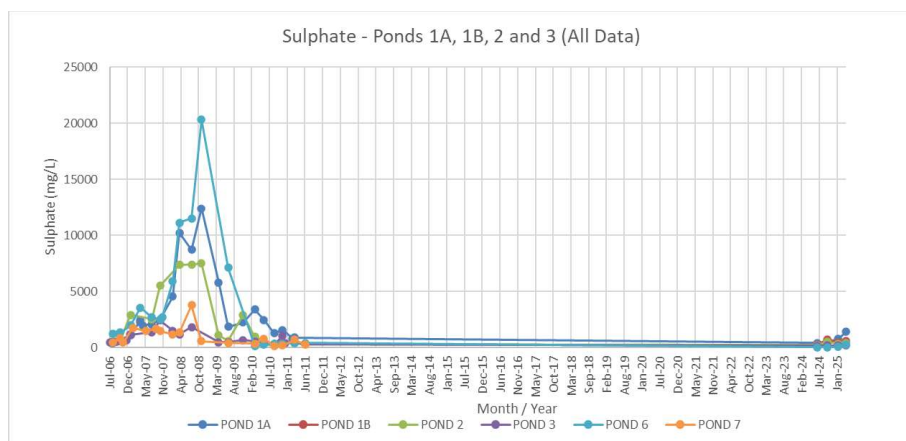


Chart 6-5 Sulphate - Ponds 1A, 1B, 2, 3, 6, and 7 (All Data)



6.4.4 Arsenic

Time series plots for dissolved arsenic for pond water are shown in **Chart 6-6** (Ponds 1A, 1B, 2 and 3), and **Chart 6-7** (Ponds 6 and 7). Elevated arsenic concentrations have historically been reported in pond water at the site (up to 43.8 mg/L in October 2008 in Pond 6). Analytical results indicate that arsenic predominantly exists as dissolved arsenic, with little to no difference between total and dissolved arsenic concentrations. During the annual reporting period although dissolved arsenic concentrations were still elevated, concentrations appear to have decreased when compared to historical results and ranged between 0.21 mg/L at Pond 3 to 2.4 mg/L at Pond 1A.

The notable reduction in dissolved arsenic concentrations is likely due to extracted groundwater been treated at the New Moon Treatment Plant prior to entering the site. It is understood that the maximum arsenic concentration in treated water leaving the treatment plant is expected to be 0.27 mg/L (ServiceStream, 2023).

Arsenic mobility is significantly influenced by pH and redox conditions. In general, inorganic arsenic species (referred to as arsenate (As(V)) and arsenite (As(III))) are the dominate species in water. Under oxidizing and aerated conditions, the predominate form of arsenic in water (and soils) is arsenate (As(V)). Under reducing and waterlogged conditions (typically <100 mV), arsenite (As(III)) is the predominate species.

Arsenic sorption (and desorption) to underlying clays/soils is controlled by pH (among other things). With increasing pH, arsenite tends to become the more mobile species, however, mobility of both arsenate and arsenite increases with increasing pH due to desorption of arsenic from surfaces of clays (iron oxyhydroxides). Mobility of arsenic is also dependent on the presence of other compounds and minerals that compete for mineral sorption sites, including organic matter, phosphate, and silicate.

Given the slightly alkaline conditions of the pond water, although concentrations of arsenic in Ponds 1A, 1B, 2 and 3 remain above the expected concentration of the treated water entering the site, this is likely attributable to desorption of arsenic from clays suspended in the pond water.

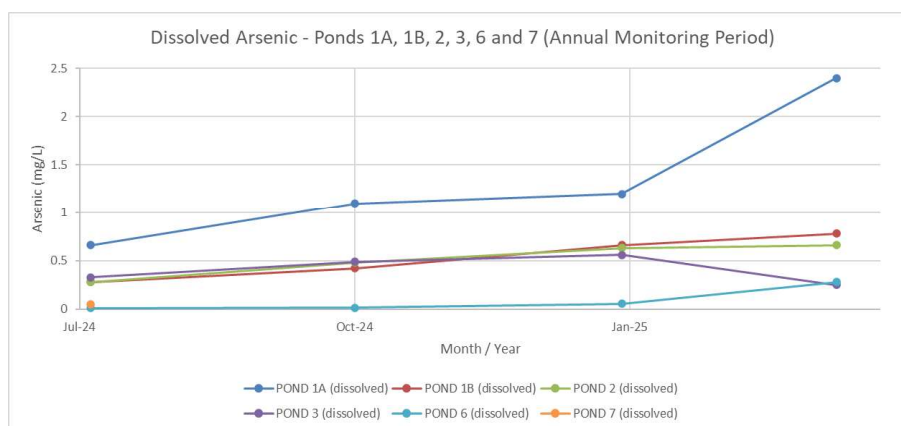


Chart 6-6 Dissolved Arsenic - Ponds 1A, 1B, 2, 3, 6, and 7 (Annual Monitoring Period)

Dissolved arsenic concentrations in Ponds 6 and 7 are generally less than those reported in Ponds 1A, 1B, 2 and 3, and ranged between 0.011 – 0.28 mg/L in Pond 6, and 0.0052 mg/L in Pond 7. As water in these ponds is assumed to be accumulated groundwater, similar to other ponds the elevated arsenic concentrations are likely attributable to interactions between surface water and underlying clays.

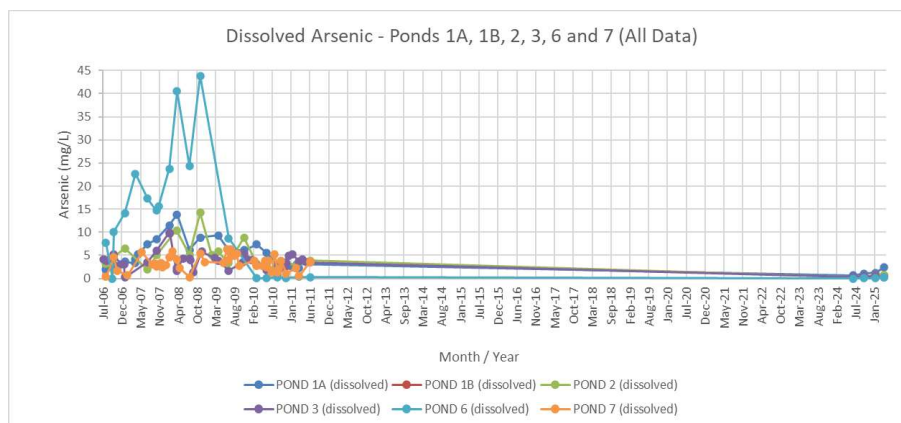


Chart 6-7 **Dissolved Arsenic - Ponds 1A, 1B, 2, 3, 6, and 7 (All Data)**

6.4.5 Other Metals

Elevated concentrations of copper, iron, molybdenum, and zinc also exceeded the adopted criteria for one or more environmental values of water.

Although no historical data exists for these analytes, concentrations of copper, iron and zinc are likely attributed to sediments and suspended colloidal matter within the pond water as these predominantly exists in total concentrations rather than dissolved concentrations. Elevated concentrations of molybdenum are also likely associated with the sediments, and similar to arsenic molybdenum desorption from clays occurs in neutral to alkaline waters.



7 Results – Groundwater Monitoring Program

7.1 Down-Hole Camera Survey

Prior to the first quarterly monitoring event, EHS Support undertook a downhole camera survey of the majority of the available groundwater monitoring well network. The following wells were included in the downhole survey:

- Shallow Aquifer: SD01, SD02, SD03, SD04, SD05, SD07, SD08, SD09, SD10, SD1211, SD12, SD13, SD14, SD15, WMW23, WMW28, LD0-8B
- Intermediate Aquifer: WMW22, WMW26, WMW34, WMW38, WMW45, WMW56, WMW57, LD0-8A
- Deep Lead Aquifer: WMW39, WMW55
- Bedrock Aquifer: MW03, MW04

The objective of the downhole camera survey was to assess well conditions and well construction details. Copy of photographs from the down-hole camera survey are shown in **Appendix A**. The majority of wells were in good condition and considered functional for the groundwater monitoring program. The following key issues were identified which have been taken into account when interpreting groundwater monitoring data:

- Groundwater monitoring wells MW03 and MW04 which screen the bedrock aquifer appear to be constructed with makeshift screens (i.e., casings with holes drilled into them). This can result in an increase in silt ingress with some silting evident in these wells. In addition, MW04 had a hairline fracture in the casing just above the standing water level (SWL). This increases the potential for cross connectivity between the different aquifer units. MW01 and MW02 were assumed to be decommissioned at the time of the survey however were later found. It is assumed these wells are also constructed with a makeshift screen.
- The majority of groundwater wells exhibited minor to moderate biofouling beneath the SWL, however, the screen intervals were generally observable and appeared to be sufficient to allow the flow of water into the wells. Silt ingress was evident in several wells, however, silt was mainly present within the sumps at the base of the wells.
- Significant biofouling was evident in SD09 and WMW23.
- Tree roots were present in the following wells and in some cases prevented the total depth of the well been reached by the down-hole camera: SD07, SD08, SD12, SD13 and WMW28. The tree roots were removed manually prior to the first quarterly monitoring event. Although tree roots may still remain, the manual removal of the tree roots was sufficient to allow the total depth of the wells to be reached by sampling equipment.
- SD06 monument cover had been knocked over (possibly by a truck) and rainwater may have been able to enter the well. The monument was removed during the October 2024 monitoring event and a new flush gatic was installed. Although sampling of this well was undertaken during the July 2024 monitoring event, during the subsequent monitoring events following repair, this groundwater monitoring well was either dry or water was only present at the base of the sump.
- Once the stick-up height was accounted for, the well construction details inferred from the down-hole camera survey were generally +/- 0.5 m of the construction details documented in historical reports (refer to **Section 2.9**). Discrepancies existed at MW04 (2 m shallower than expected due to silt ingress), WMW45 (screen interval approximately 4 m shallower than documented) and LD08-8A/LD08-8B (up to 1 m shallow than expected). These discrepancies are unlikely to impact on the interpretation of the results, with the exception of the discrepancy at WMW45 which has been taken into account when interpreting data.



Consideration was given to redeveloping the monitoring wells prior to the first GME in July 2024. However, given the cost associated with this activity, and based on the results of the downhole camera survey and analytical results of the monitoring completed which indicates contaminant concentrations are generally within historical ranges, redeveloping the monitoring wells is not considered warranted.

7.2 Groundwater Levels and Flow Direction

A summary of the groundwater gauging events is presented in **Table 7-1**. A detailed summary of groundwater gauging events are provided in **Table 2** (appended). Field Sheets are provided in **Appendix E**. Groundwater contour maps have been prepared for each monitoring event for each aquifer, and are shown in **Figure 5** to **Figure 7** (appended).

When preparing contour maps, groundwater monitoring wells where water was only present in the sump were excluded from the dataset (this only is relevant to some monitoring wells screened in the shallow aquifer: SD04, SD05, SD06, SD08, SD13 and SD14). Furthermore, LD08-8A/LD08-8B were excluded from the dataset as previous investigations have concluded that these are potentially compromised and screen multiple aquifer units.

Overall, groundwater elevations reported during the annual monitoring period in each aquifer unit were within historical ranges (refer to **Chart 7-1**) and groundwater flow direction is inferred to generally be in a west to northwest direction towards Myers Creek.

Mann-Kendall trend analysis indicates groundwater elevation is generally stable or decreasing in the shallow aquifer, decreasing in the intermediate aquifer, variable in the deep lead aquifer, and variable in the bedrock aquifer. Caution should be applied when using Mann-Kendall trend analysis to assess trend in groundwater elevation at this particular site as it doesn't taken into account potential influences that water levels in the ponds have on the occurrence of seepage.

Notwithstanding the Mann Kendall trend analysis, in the deep lead aquifer groundwater elevation appears to have increased since 2013. Previous investigations have attributed this increase to cessation of the GIBS in 2013. Groundwater flow and interaction between aquifers is discussed in **Section 7.5.1**.



Table 7-1 Summary of Groundwater Gauging Events

Aquifer	GME	SWL (m BTOC)	Groundwater Elevation (m AHD)	Mann-Kendall Trend Analysis
Shallow ¹	July 2024	2.118 (SD10) – 5.127 (SD07)	149.456 (SD03) – 156.01 (WMW23)	Wells which screen the shallow aquifer generally exhibit either a stable or decreasing groundwater elevation trends. The exception to this is SD02 and SD03 which reported an increasing trend.
	October 2024	1.929 (SD10) – 5.074 (SD07)	149.422 (SD03) – 156.027 (WMW23)	
	January 2025	1.954 (SD10) – 5.104 (SD03)	149.566 (SD03) – 156.081 (WMW23)	
	April 2025	2.36 (SD10) – 5.084 (SD03)	149.586 (SD03) – 155.735 (WMW23)	
Intermediate	July 2024	3.201 (WMW22) – 13.507 (WMW52)	140.885 (WMW52) – 154.895 (WMW22)	With the exception of WMW56 and WMW57, wells which screen the intermediate aquifer exhibit decreasing trends.
	October 2024	3.233 (WMW22) – 13.449 (WMW52)	140.943 (WMW52) – 154.863 (WMW22)	
	January 2025	3.11 (WMW22) – 13.223 (WMW52)	141.169 (WMW52) – 154.986 (WMW22)	
	April 2025	3.327 (WMW22) – 13.299 (WMW52)	141.093 (WMW52) – 154.769 (WMW22)	
Deep Lead	July 2024	4.859 (WMW55) – 5.051 (WMW39)	149.897 (WMW39) – 150.107 (WMW55)	WMW39 exhibits decreasing trend whilst WMW55 exhibits increasing trend. This difference is associated with the limited data set available in WMW55 prior to 2009.
	October 2024	4.811 (WMW55) – 5.000 (WMW39)	149.948 (WMW39) – 150.154 (WMW55)	
	January 2025	4.594 (WMW55) – 4.785 (WMW39)	150.162 (WMW39) – 150.371 (WMW55)	
	April 2025	4.914 (WMW55) – 5.104 (WMW39)	149.844 (WMW39) – 150.052 (WMW55)	
Bedrock	July 2024	8.065 (MW03) – 24.687 (MW02)	143.031 (MW04) – 152.964 (MW03)	MW01 and MW02 exhibit increasing trends, whilst MW03 and MW04 exhibit decreasing trends.
	October 2024	8.196 (MW03) – 24.630 (MW02)	143.095 (MW04) – 152.834 (MW03)	
	January 2025	8.418 (MW03) – 24.600 (MW02)	143.248 (MW04) – 152.612 (MW03)	
	April 2025	9.010 (MW03) – 24.706 (MW02)	143.075 (MW04) – 152.02 (MW03)	

Table Notes:

¹ SD01 and SD14 were dry. SWL in SD04, SD05, SD06, SD08 and SD13 was generally within the sump.

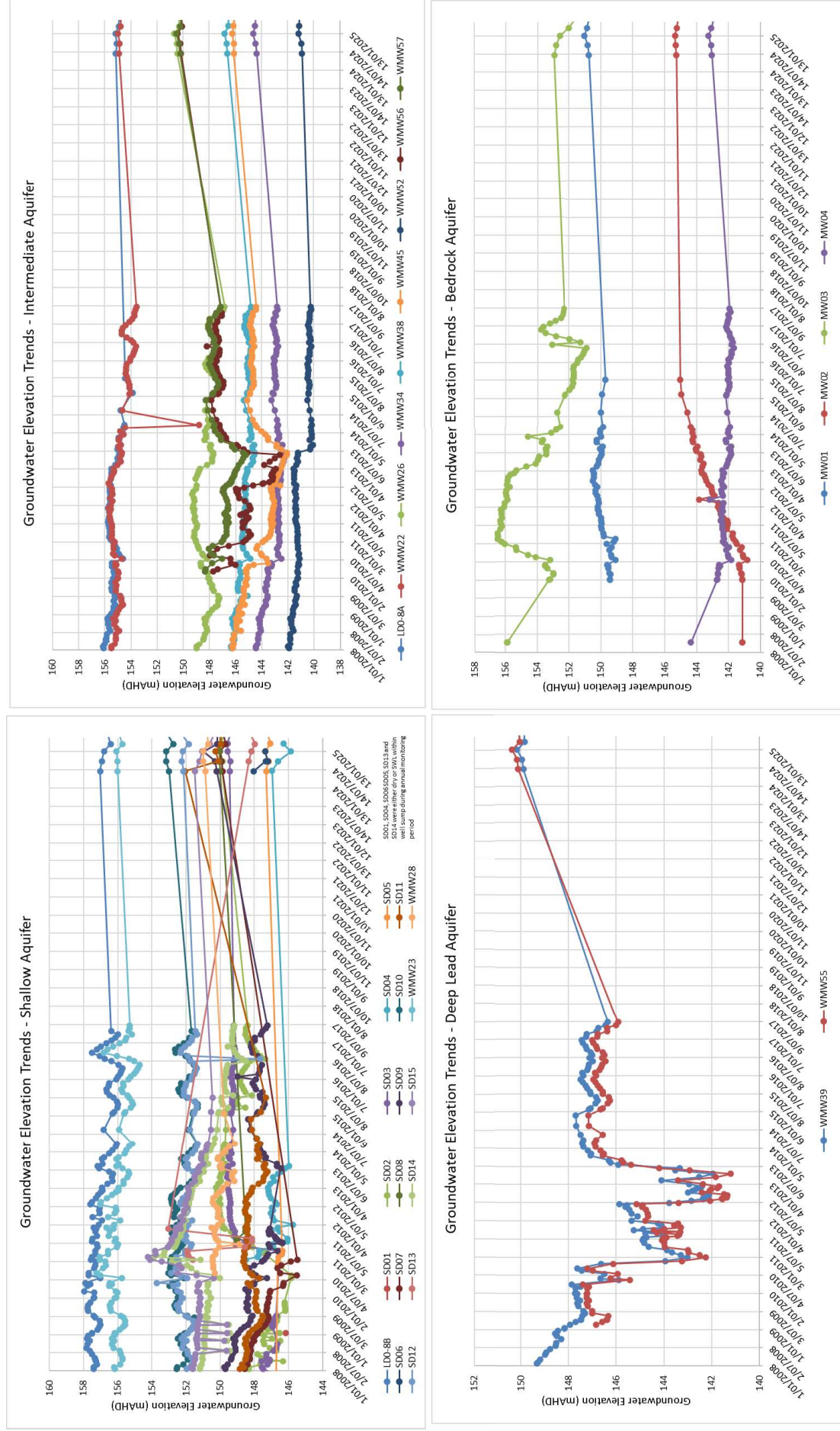


Chart 7-1 Groundwater Elevation Trends in Shallow, Intermediate, Deep Lead, and Bedrock Aquifers



7.3 In-situ Measured Field Parameters

Prior to groundwater sampling, each groundwater monitoring well was purged using low flow sampling methods (July 2024 monitoring event). During subsequent monitoring events, sampling was completed using a HydraSleeve. Water quality parameters were measured using a calibrated water quality meter. A summary of the stabilised water quality parameters and field observations are outlined in **Table 7-2**. A copy of groundwater purge field sheets are provided in **Appendix E**.



Table 7-2 Summary of Water Quality Parameters – Groundwater

Aquifer	GME	Temp (°C)	pH (pH Units)	EC (µS/cm)	DO (mg/L)	Redox (mV)	Turbidity (NTU)	TDS (mg/L) ¹
Shallow Interval	July	14 – 18.4	3.85 – 7.5	1,324 – 39,266	0.07 – 10.41	-199.9 – 198.8	3 – 1.785.06	847 – 25,130
	October	16.2 – 19.5	4.7 – 7.35	1,441 – 36,089	2.21 – 8.98	-99.4 – 177.2	141.07 – 257.13	922 – 23,096
	January	17.2 – 21.5	4.59 – 7.31	1,586 – 41,520	1.79 – 6.69	-147.2 – 156.4	4.62 – 50.95	1,015 – 26,572
	April	16.5 – 21.4	4.18 – 7.31	2,369 – 42,685	0.77 – 3.71	-83 – 115.5	4.9 – 9.1	1,516 – 27,318
Intermediate Interval	July	16.3 – 18.7	2.75 – 4.99	16,868 – 23,670	0.05 – 4.95	-7.9 – 517.2	16.89 – 224.11	10,795 – 15,148
	October	17.7 – 21.3	3.4 – 5.26	19,231 – 23,806	2.18 – 6.8	263 – 397.5	169.54 – 814.14	12,307 – 15,235
	January	17.2 – 24.2	3.51 – 4.98	20,251 – 25,371	1 – 5.95	169.2 – 371.9	35.44 – 430.52	12,960 – 16,237
	April	16.9 – 19.8	3.51 – 4.94	20,148 – 25,266	0.74 – 3.96	47.1 – 143.1	20.5 – 880	12,894 – 16,170
Deep Lead	July	18.0 – 18.1	4.08 – 5.15	22,940 – 23,834	0.1 – 0.2	38.56 – 161	26 – 259.88	14,681 – 15,253
	October	18.3	4.02	21,959	2.08	332.7	243.16	14,053
	January	18.5	4.14	23,242	1.95	229.8	196.85	14,874
	April	19.2	4.0	25,055	0.7	54.5	47.9	16,035
Bedrock	July	15.8 – 17.5	6.26 – 7.64	12,516 – 24,700	0.04 – 2.44	-202.4 – 158.7	4.71 – 620	8,010 – 15,808
	October	15.7 – 16	5.92 – 7	7,700 – 22,250	3.89 – 7.46	168.1 – 390	31 – 664.37	4,928 – 14,240
	January	21.8 – 22.2	6.19 – 6.43	13,876 – 27,096	1.55 – 2.49	147.1 – 229.2	68.38 – 110.05	8,880 – 17,341
	April	19.5 – 23.2	6.2 – 6.54	13,790 – 27,747	0.54 – 2.14	-171.5 – 46.5	5.9 – 28.1	8,825 – 17,758

Table Notes:

¹ TDS based on conversion of EC (TDS = EC x 0.64)



7.4 Groundwater Analytical Results

Analytical groundwater results compared to the adopted criteria are provided in **Table 3** (appended). NATA-accredited analytical laboratory reports are provided in **Appendix F**.

A summary of the analytes which exceeded the adopted criteria are provided in **Table 7-3**. The summary below excludes exceedances reported in SD04, SD05, SD06 as although these wells were sampled in July 2024, water was only present within the sump of the wells and not considered representative of aquifer conditions.

Table 7-3 Summary of Exceedances - Groundwater

Aquifer	Analytes above Adopted Criteria (Maximum Concentration)	Environmental Values
Shallow	- Metals including cobalt (up to 0.075 mg/L), copper (up to 0.037 mg/L), lead (0.008 mg/L), iron (up to 25 mg/L), manganese (up to 12 mg/L), nickel (up to 0.18 mg/L), selenium (up to 0.09 mg/L) and zinc (up to 0.032 mg/L) TDS (up to 27,318 mg/L) pH (3.5 – 7.5) - Major ions including chloride (16,000 mg/L), sodium (8,700 mg/L), and sulphate (up to 2,900 mg/L).	- Maintenance of Aquatic Ecosystem and Species. - Potable Water Supply (Desirable). - Agriculture And Irrigation (Irrigation). - Agriculture And Irrigation (Stock Water). - Water-Based Recreation. - Buildings And Structures.
Intermediate	- Metals including cadmium (up to 0.005 mg/L), copper (up to 0.11 mg/L), lead (up to 0.082 mg/L), iron (up to 1.1 mg/L), manganese (up to 1.1 mg/L), nickel (up to 0.19 mg/L) and zinc (up to 0.12 mg/L) TDS (up to 16,237 mg/L) pH (2.75 – 6.58) - Major ions including chloride (9,200 mg/L), sodium (5,000 mg/L), and sulphate (up to 2,200 mg/L)	
Deep Lead	- Metals including cobalt (up to 0.13 mg/L), cadmium (up to 0.0007 mg/L), copper (up to 0.035 mg/L), lead (up to 0.014 mg/L), iron (up to 0.48 mg/L), manganese (up to 0.68 mg/L), nickel (up to 0.051 mg/L) and zinc (up to 0.065 mg/L) TDS (up to 16,035 mg/L) pH (4 – 5.15) - Major ions including chloride (8,600 mg/L), sodium (4,900 mg/L), and sulphate (up to 1,400 mg/L).	
Bedrock	- Metals including cobalt (up to 0.059 mg/L), cadmium (up to 0.0044 mg/L), copper (up to 0.016 mg/L), manganese (up to 1.9 mg/L), nickel (up to 0.048 mg/L), selenium (up to 0.015 mg/L) and zinc (up to 0.16 mg/L) TDS (up to 17,758 mg/L) pH (5.92 – 7.64) - Major ions including chloride (9,300 mg/L), sodium (5,100 mg/L), and sulphate (up to 2,700 mg/L).	



7.5 Discussion

7.5.1 Groundwater Flow and Interactions

7.5.1.1 Shallow Aquifer

Consistent with previous investigations, groundwater flow direction in this aquifer is considered to be west to northwest towards Myers Creek. Groundwater mounding resulting in variable localised flow directions is evident along the western side of Pond 1A, likely due to the occurrence of seepage from the ponds. Previous investigations have also suggested that the occurrence of groundwater in the shallow aquifer is directly related to both seepage and rainfall.

To further assess this, groundwater elevation in monitoring wells which screen the shallow aquifer at nested depths (2-4 m bgl and 5-7 m bgl) positioned along the western site boundary were compared to one another. As shown in **Chart 7-2**, groundwater elevation in wells which screen the 2-4 m bgl (SD10 and SD12) are generally less variable compared to groundwater elevation in wells which screen 5-7 m bgl (SD09 and SD11). Furthermore, groundwater elevation in the wells which screen 5-7 m bgl show some correlation to rainfall following a lag period, whereas wells screened between 2-4 m bgl show little response to rainfall likely due to moderation and recharge via seepage water. This recharge is resulting in the mounding effect evident in the groundwater elevation contour plans.

Given that both the 2-4 m bgl and 5-7 m bgl screened wells are inferred to be impacted by seepage, they are likely hydraulically connected and therefore little to no difference between the groundwater elevations would be expected. The difference in elevation observed on a localised scale suggest that the natural variability of the screen lithology is influencing groundwater pressures in individual wells. Furthermore, the difference in groundwater elevation also suggests that seepage may only occur under certain environmental conditions and only in certain areas of the pond footprint, and its occurrence is dictated by variables such as the volume of water in the pond which would influence the driving pressure head.

Overall, and consistent with previous investigations, it is likely that groundwater within wells screened between 2-4 m bgl represent an artificial and discontinuous perched system formed through the occurrence of seepage, whereas groundwater in wells screen 5-7 m bgl represent the aquifer formed naturally by rainwater recharge in the upper sections of the Shepparton Formation.

It is expected that the presence of groundwater in wells which screen between 2-4 m bgl (i.e., the artificial perched system) will reduce and ultimately dry with time once the ponds are rehabilitated.

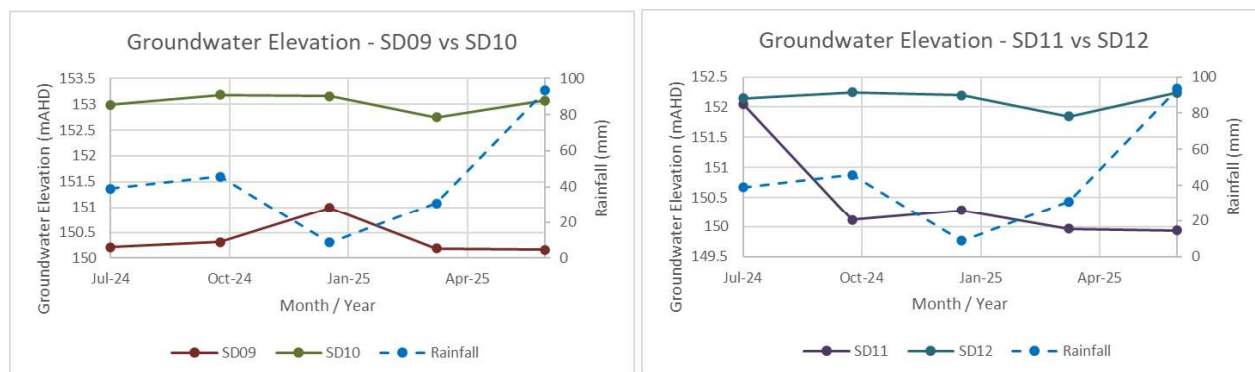


Chart 7-2 Groundwater Elevation in Monitoring Wells Screened Between 2-4 m bgl (SD10 and SD12) vs. 5-7 m bgl (SD09 and SD11)

Note: Although not included within this annual monitoring period, gauging and rainfall from July 2025 monitoring event have been included in this chart.



7.5.1.2 Intermediate Aquifer

In the intermediate aquifer, groundwater flow direction is also inferred to be in a west to northwest direction towards Myers Creek.

A review of groundwater elevations in nested bores is provided in **Table 7-4** and **Chart 7-3** below. Elevation data at nested bores indicates that groundwater elevation within wells which screen the intermediate aquifer are similar to that of groundwater wells which screen between 5-7 m bgl of the shallow aquifer closer to the ponds. However, the groundwater elevation difference increases with distance away from the ponds.

A review of vertical hydraulic gradient between the shallow and intermediate aquifers suggest that nearer to the ponds the groundwater elevation between the two aquifers is more closely aligned suggesting that they are likely hydraulically connected resulting in a flatter vertical hydraulic pressure inferring a primary horizontal/lateral flow mechanism. As groundwater in the two aquifers migrate further from the ponds, the vertical hydraulic gradient increases, suggesting a higher degree of vertical separation.

This is particularly evident in transect 2 (refer to **Table 7-4**) which compares nested bores SD09 and WMW57 which are located approximately 15 m from the ponds, with nested bores SD03 and WMW34 which are located greater than 95 m from the ponds. In this case, the nested set located 15 m from the ponds reported a vertical gradient of 0.0009 suggesting that groundwater elevations are similar, compared to 0.63 greater than 95 m from the ponds suggesting a larger degree of separation exists. A similar trend is also observed in transect 3.

Overall, the data suggest that the effects of seepage nearer to the ponds may be influencing groundwater elevation and vertical hydraulic gradients nearer to the ponds, however, this influence reduces with distance.



Table 7-4 Summary of Groundwater Elevation and Vertical Gradients Between Shallow and Intermediate Aquifers

Plan View	Transect	Nested Wells	Approx. Distance from Ponds (m)	Aquifer	Screen Interval (m bgl)	Groundwater Elevation (m AHD) ¹	Vertical Gradient
	1	SD11	15	Shallow	5-7	152.051	0.247
		WMW26		Intermediate	9-16	150.443	
		SD05	>80	Shallow	5-7	147.31	0.095
		WMW38		Intermediate	11-16	146.596	
	2	SD09	15	Shallow	5-7	150.216	0.0009
		WMW57		Intermediate	12-15	150.223	
		SD03	>95	Shallow	5-7	149.456	0.63
		WMW34		Intermediate	10-18	144.372	
	3	SD07	<25	Shallow	5-7	149.863	0.045
		WMW56		Intermediate	11-14	150.159	
		SD02	>95	Shallow	5-7	149.889	0.43
		WMW45		Intermediate	13-16.5	146.109	

Table Notes:

¹ Groundwater elevation based on July 2024 Groundwater Monitoring Event.



Increasing Distance From Ponds

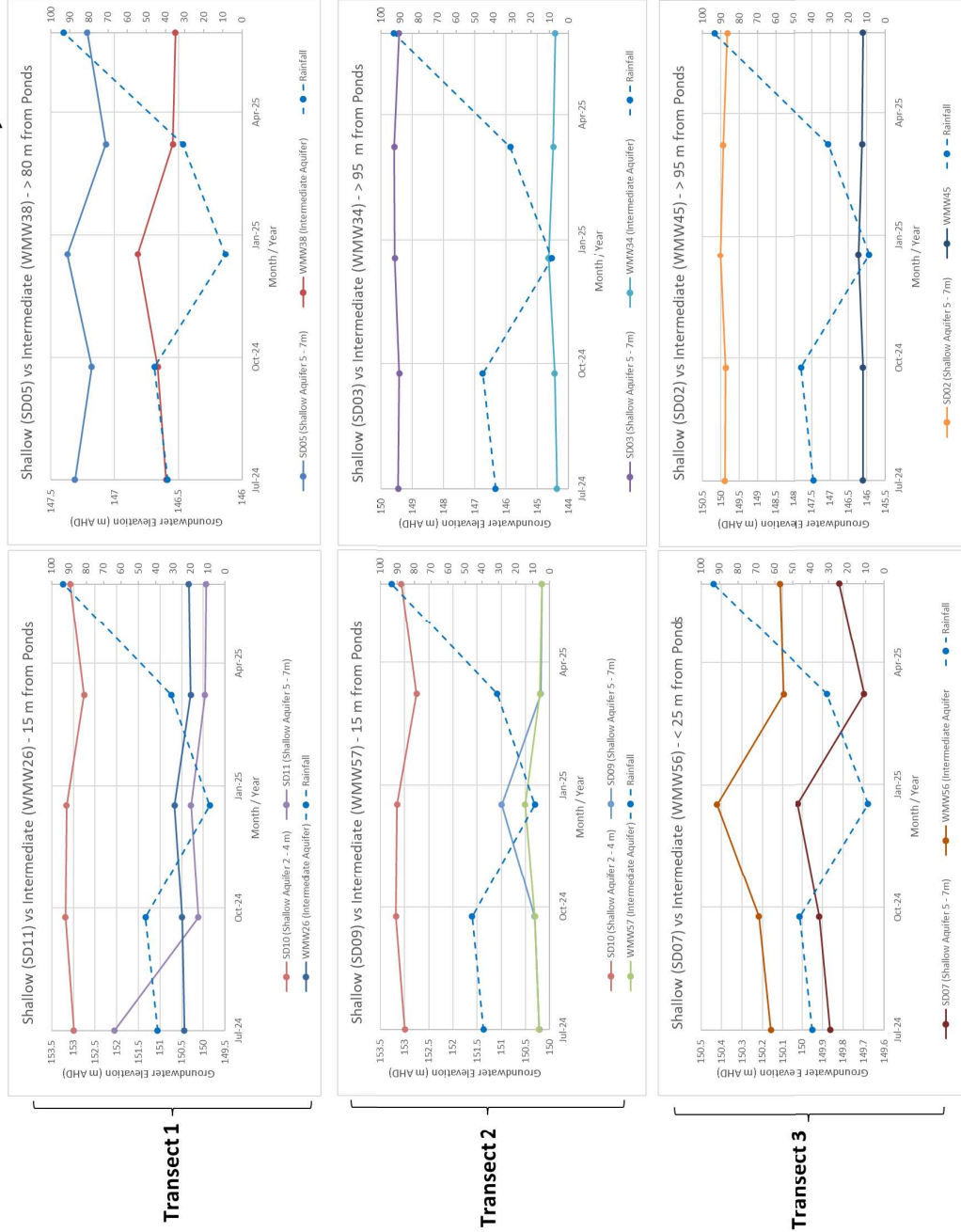


Chart 7-3 Difference in Groundwater Elevations Between Shallow and Intermediate Aquifers
Note: Although not included within this annual monitoring period gauging and rainfall from July 2025 monitoring event have been included in this chart.



7.5.1.3 Deep Lead Aquifer

Only two existing groundwater monitoring wells screen the deep lead aquifer (WMW39 and WMW55), however previous investigations (HLA, 2007) indicate that the deep lead sediments are limited in extent and discontinuous at the site. The monitoring wells which screen the deep lead aquifer are directly adjacent to the western bank of Pond 1A.

A review of groundwater elevation data in the deep lead aquifer suggests similar groundwater elevation to the shallow and intermediate aquifers, and appears to be influenced by seepage. This further supports previous findings that the shallow, intermediate and deep lead aquifers are hydraulically connected.

7.5.1.4 Bedrock Aquifer

In the bedrock aquifer, groundwater flow contours suggest that a groundwater flow divide exists along Dalys Road. A review of historical elevation data from these wells generally show the same groundwater divide, however, this has not been discussed previously.

Historical groundwater elevations reported between 2010 – 2015 indicates that elevation in MW02 was consistently rising during this period whilst the groundwater elevation in MW01, MW03 and MW04 was generally declining during the same period. MW02 is located in an area where the Castlemaine Group is inferred to outcrop and therefore within a recharge zone, however, typically the same increasing trend (albeit less pronounced) would be observed in downgradient wells unless an external influence was occurring. Based on this, and due to the condition and nature of the well construction of MW01 – MW04, it is possible that this divide is not representative of true conditions.

Due to the positioning of the existing monitoring wells which screen the bedrock aquifer, the influence (if any) that seepage may be having on groundwater elevation locally near the ponds is unclear. However, previous environmental investigations have concluded that the bedrock aquifer is unlikely to be impacted as it appears hydraulically separated from the shallower units.

7.5.2 *¹⁸O and ²H Isotope Analysis*

Stable isotope analysis for oxygen-18 (¹⁸O) deuterium (²H) was undertaken at all groundwater monitoring well as part of the July 2024 monitoring event. Isotopic signatures of groundwater can be used to understand the source of groundwater and potential influences evaporation may have. As evaporation impacts the isotopic signature of water, by comparing isotopic ratios in groundwater monitoring wells with the global meteoric water line (GMWL) (which represents the global average relationship between ¹⁸O and ²H isotopes of rainfall), groundwater wells potentially impacted by seepage of evaporation water from the ponds can be identified.

A comparison of the isotopic signature in individual groundwater monitoring wells compared to the GMWL is provided in **Chart 7-4**. The data suggest that seepage from the evaporation ponds may have impacted groundwater in the shallow (SD07, SD09, SD11, SD12, WMW23, WMW28), intermediate (WMW22, WMW26, WMW45, WMW56, WMW57) and deep lead aquifers (WMW39 and WMW55). This is consistent with historical investigations.

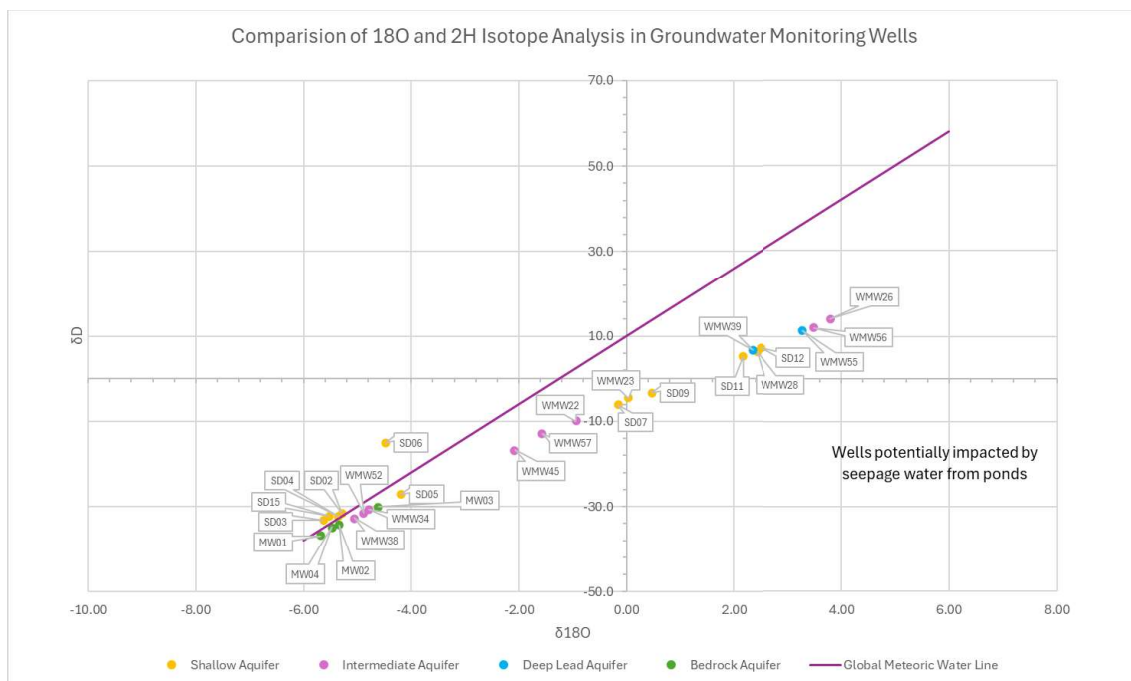


Chart 7-4 Comparison of ^{18}O and ^2H Isotope Analysis in Groundwater Monitoring Wells

7.5.3 Major Cations and Anions

Major cation and anion analysis provides additional information regarding the groundwater composition and characteristics at the site. Piper plots have been prepared based on the results from the July 2024 groundwater monitoring event and are shown in **Chart 7-5**.

Based on cation and anion analysis, groundwater at the site can be broadly considered sodium chloride type groundwater. The distribution of cations and anions is more variable in the shallow interval, likely due to influences caused by seepage from the ponds.

In the shallow aquifer, SD02, SD03, SD04 and SD15 demonstrate a sodium bicarbonate groundwater type. This corresponds to the isotope analysis which suggest these wells have not been impacted by seepage from the ponds, along with lower TDS concentrations (refer to **Section 7.5.4**).

In the intermediate and deep lead aquifers, all bores demonstrate a sodium chloride type groundwater and little differentiation can be made between bores inferred to be impacted by seepage based on the isotope analysis.

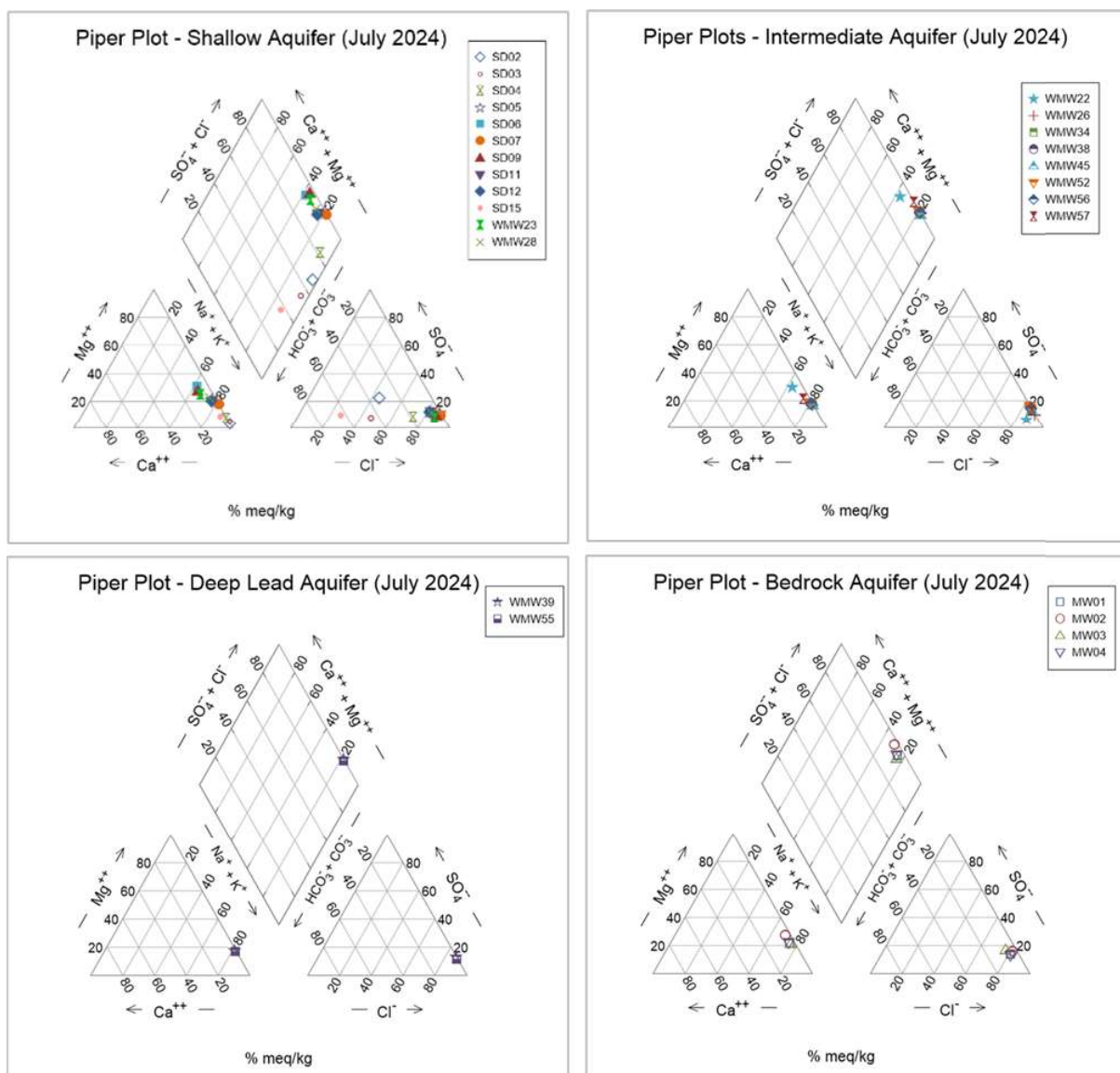


Chart 7-5 Piper Plots for Shallow, Intermediate, Deep Lead, and Bedrock Aquifers

7.5.4 Sodium Chloride Ratio

Sodium chloride ratios (Na/Cl) in groundwater can provide information regarding the source of groundwater and potential influences on its geochemistry. Although this approach is not definitive, it can provide a line of evidence to indicate which wells may be impacted by seepage and which are representative of natural aquifer conditions.

The ratio of Na/Cl compared to total chloride is presented in **Chart 7-6** based on the July 2024 monitoring event. In general, an Na/Cl ratio of 0.86 is representative of sea water or saline intrusion and Na/Cl ratios below 0.86 may suggest chloride enrichment, potentially due to evaporation. An Na/Cl ratio of 1 is indicative of halite dissolution and an Na/Cl ratio of 1.2 is indicative of rainwater (excluding coastal rainfall). Na/Cl ratio of greater than 1 indicates possible ion exchanges, weathering of other rocks and minerals or other influences.

Based on historical monitoring data, Pond 1 had a Na/Cl ratio of 0.84 in 2013 which is what would be expected for surface waters influenced by evaporation. The Na/Cl ratio of groundwater monitoring wells which screen the shallow interval indicate that wells SD05, SD07, SD09, SD11, SD12, WMW23, WMW28 are close to or less than 1, potentially suggesting chloride enrichment associated with seepage of evaporation



water or groundwater mixing. With the exception of SD05 (which has only reported water within the sump during the monitoring period), these wells are the same wells inferred to be impacted by seepage water based on the isotope analysis.

In the intermediate aquifer, wells WMW22, WMW26, WMW34, WMW38, WMW45 and WMW57 have an Na/Cl near 0.86, suggesting potential impacted by seepage water. Na/Cl ratio in well WMW52 and WMW56 are generally equal to or greater than 1. This generally is consistent with interpretation of the isotope analysis, with the exception for WMW34 and WMW38 which are not inferred to be impacted based on isotope analysis.

In the bedrock aquifer, the Na/Cl ratio MW01, MW02, and MW04 indicate enrichment of chloride, whilst MW03 is indicative of halite dissolution. Although this may suggest potential impact due to seepage, this is unlikely given that the consistent Na/Cl ratio reported between MW01, MW02 and MW04 which are in both up and down inferred hydraulic gradients of the ponds. Marine based sediments such as the Castlemaine Group generally have high chloride concentrations potentially explaining the low Na/Cl ratio observed in the bedrock aquifer.

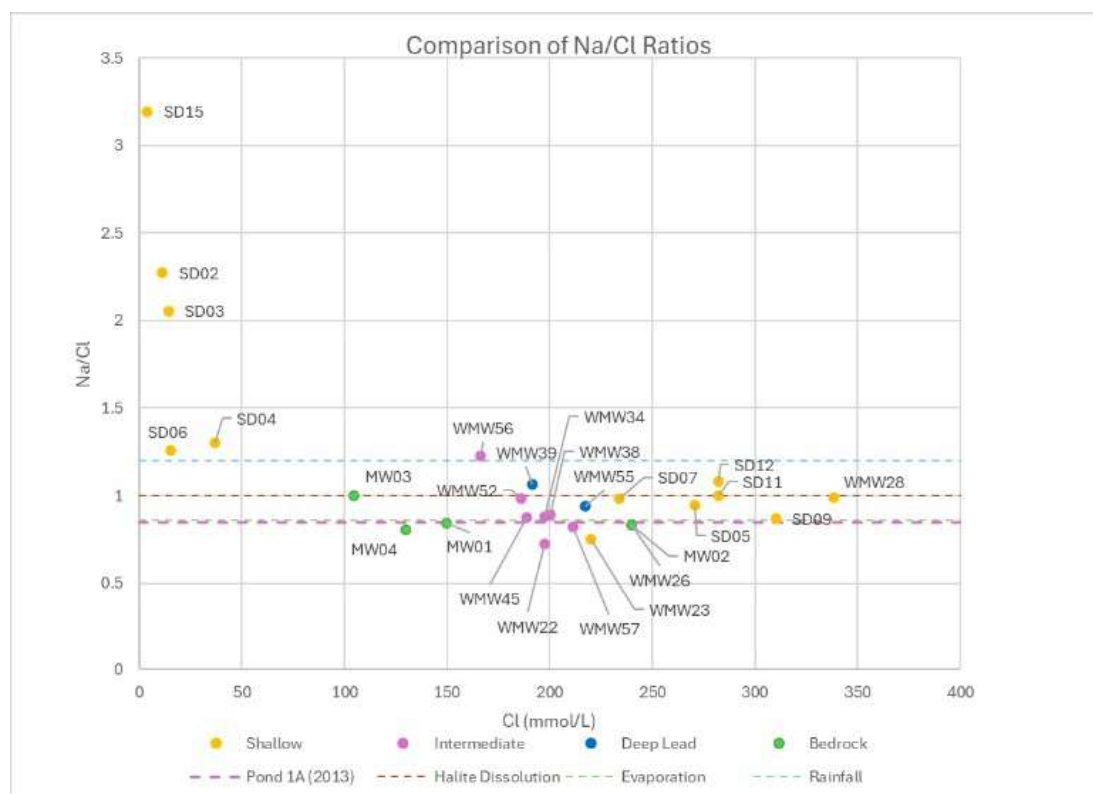


Chart 7-6 Comparison of Na/Cl Ratios

7.5.5 Salinity

A summary of TDS concentrations in groundwater is presented in **Table 7-5**. Time series plots for TDS is provided in **Chart 7-7**. TDS concentrations based on the July 2024 monitoring event are shown in **Figure 8A – Figure 8D** (appended). TDS concentrations in all monitoring wells were generally consistent with historical monitoring and within historical ranges.

TDS ranged from 847 mg/L to 27,318 mg/L in the shallow aquifer during the annual reporting period. TDS concentrations generally decrease further from the site, and groundwater monitoring wells SD02, SD03, SD04, SD05, SD06, SD14, and SD15 have consistently had significantly lower TDS concentrations than remaining monitoring wells (noting that SD04, SD05, SD06, SD14 have only had water within the sump). When combined



with the results of the isotopic analysis, piper plots and Na/Cl ratios, these wells are inferred to not be impacted by seepage water. Therefore, the TDS reported in SD02, SD03 and SD15 are likely to represent the natural salinity of the shallow interval and ranged between 847 mg/L to 2,005 mg/L (Segment A2).

TDS within the intermediate aquifer ranged from 10,795 and 16,237 mg/L. The TDS concentrations in this aquifer appears to decrease with distance from the site, however, the presence of naturally saline waters does mask this trend. Of the monitoring wells which screen the intermediate aquifer, isotope analysis and review of Na/Cl ratios indicates that WMW52 has not been impacted by seepage from the ponds and therefore may be representative of the natural salinity of the intermediate aquifer (or at least representative on a localised scale). TDS in this well ranged between 12,576 and 13,642 mg/L during the annual reporting period (Segment F). The higher natural salinity in the intermediate aquifer compared to the shallow aquifer is consistent with literature studies which suggest that salinity increases with depth within the Shepparton Formation in the region (refer to **Section 2.8**).

In the deep lead aquifer, TDS ranged between 14,053 – 16,035 mg/L during the annual reporting period. Both of the monitoring wells which screen the deep lead aquifer are inferred to be impacted by seepage water based on the isotope analysis. Due to the limited number of monitoring wells which screen the deep lead aquifer, the natural salinity of this formation cannot be confirmed.

TDS in the bedrock aquifer was highly variable and ranged between 4,928 mg/L to 17,758 mg/L (Segment C). MW02 displayed the highest TDS concentration during the annual reporting period. This is unexpected as this monitoring well is located to the east of the site where the bedrock is assumed to outcrop and therefore represent a recharge zone. Regardless, the TDS concentration in these monitoring wells is likely variable due to the condition and nature of the well construction.

Table 7-5 Summary of TDS Concentration in Groundwater

Wells Unlikely to be Impacted by Seepage (inferred background) ¹	TDS Concentration Range (mg/L)	Mann-Kendall Trend Analysis	Wells Impacted by Seepage ¹	TDS Concentration Range (mg/L)	Mann-Kendall Trend Analysis
Shallow					
SD02, SD03 and SD15	847 – 2,005	Decreasing or stable trend	SD07, SD09, SD11, SD12, WMW23, WMW28	12,992 – 27,318	Increasing or stable (noting that increasing trends were only reported in wells directly adjacent to the western bank of the ponds and is expected for those impacted by seepage).
Intermediate					
WMW52	12,576 – 13,642	Decreasing	WMW22, WMW26, WMW34 ² , WMW38 ² , WMW45, WMW56, WMW57	10,795 – 16,237	Stable trends at all wells except WMW22, WMW26 and WMW56 which reported increasing trends. These wells are located directly adjacent to the western bank of the ponds and therefore trend is expected. Furthermore, trends may be a function of natural salinity.



Wells Unlikely to be Impacted by Seepage (inferred background) ¹	TDS Concentration Range (mg/L)	Mann-Kendall Trend Analysis	Wells Impacted by Seepage ¹	TDS Concentration Range (mg/L)	Mann-Kendall Trend Analysis
Deep Lead					
-	-	-	WMW39, WMW55	14,054 – 16,035	WMW39 reported increasing trends whilst WMW55 reported stable trends. The difference in trends is likely attributable to the expected natural salinity.
Bedrock					
MW01, MW02, MW03, MW04	4,928 – 17,758	Stable trend with the exception of MW03, which reported a decreasing trend.	-	-	-

Table Notes:

¹ Based on the isotope analysis, cation and anion analysis, Na/Cl ratios and TDS concentrations

² WMW34 and WMW38 are only inferred to be impacted based on the Na/Cl ratios.

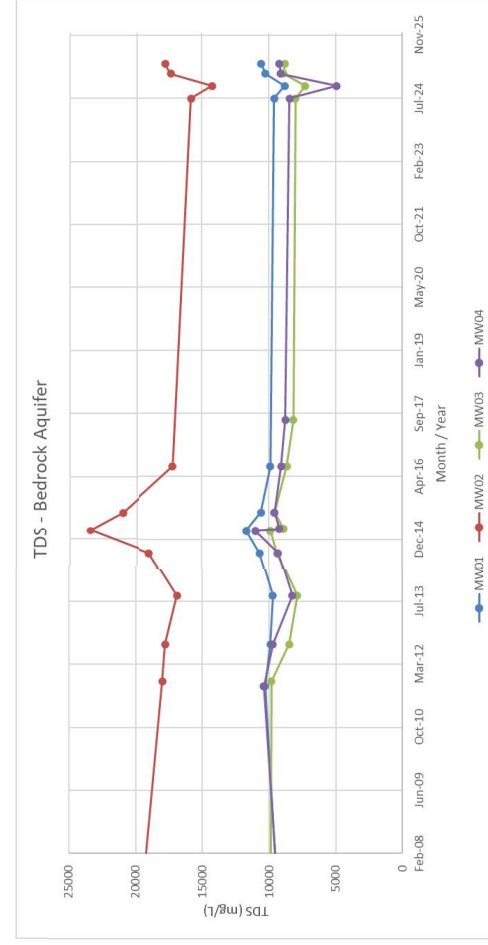
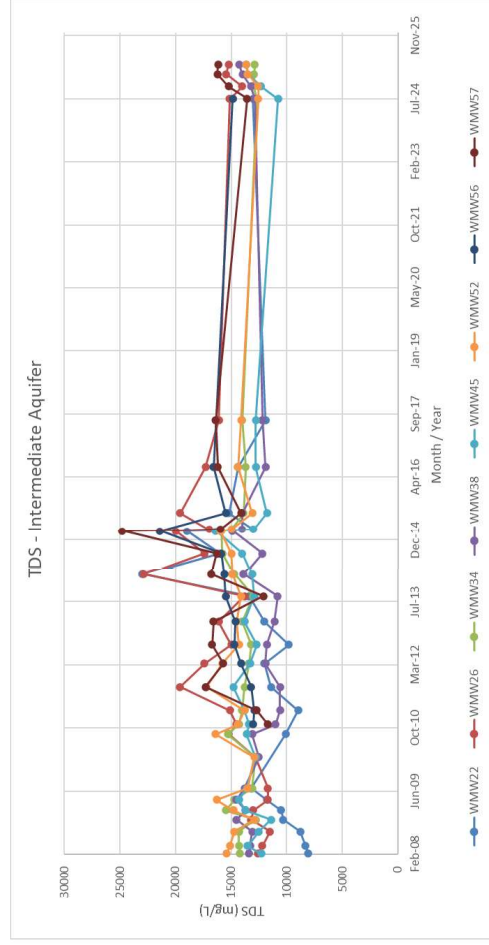


Chart 7-7



7.5.6 pH

Time series plots for pH in groundwater monitoring wells are provided in **Chart 7-8**. pH values reported during the annual monitoring period were generally consistent with historical results.

In the shallow aquifer, pH ranged between 4.18-7.5 (excludes wells where water was only present in the sump). SD07 usually has slightly acid groundwater conditions compared to the remaining monitoring wells, which typically report near neutral pH. It should be noted that the lowest pH of 4.18 which was reported at SD09 in April 2025 is likely a field error. This is based on data from July 2025, which will be included in the next annual monitoring report.

In the intermediate aquifer (and the deep lead aquifer), pH was acidic compared to the shallow aquifer and ranged between 2.75-6.58 during the annual reporting period. The highest pH was reported during the July 2024 monitoring event at WMW22 which is located along Dalys Road. All other monitoring wells to the west of the site reported a pH of between 2.75-5.26. The reported pH in the intermediate aquifer were generally within historical ranges. The previous environmental audit completed at the site (PJRA, 2018) attributed the low pH in the intermediate aquifers as a natural characteristic potentially due to the presence of sulphide minerals.

pH in the bedrock aquifer is generally neutral and ranged between 5.92-7.64 during the annual reporting period.

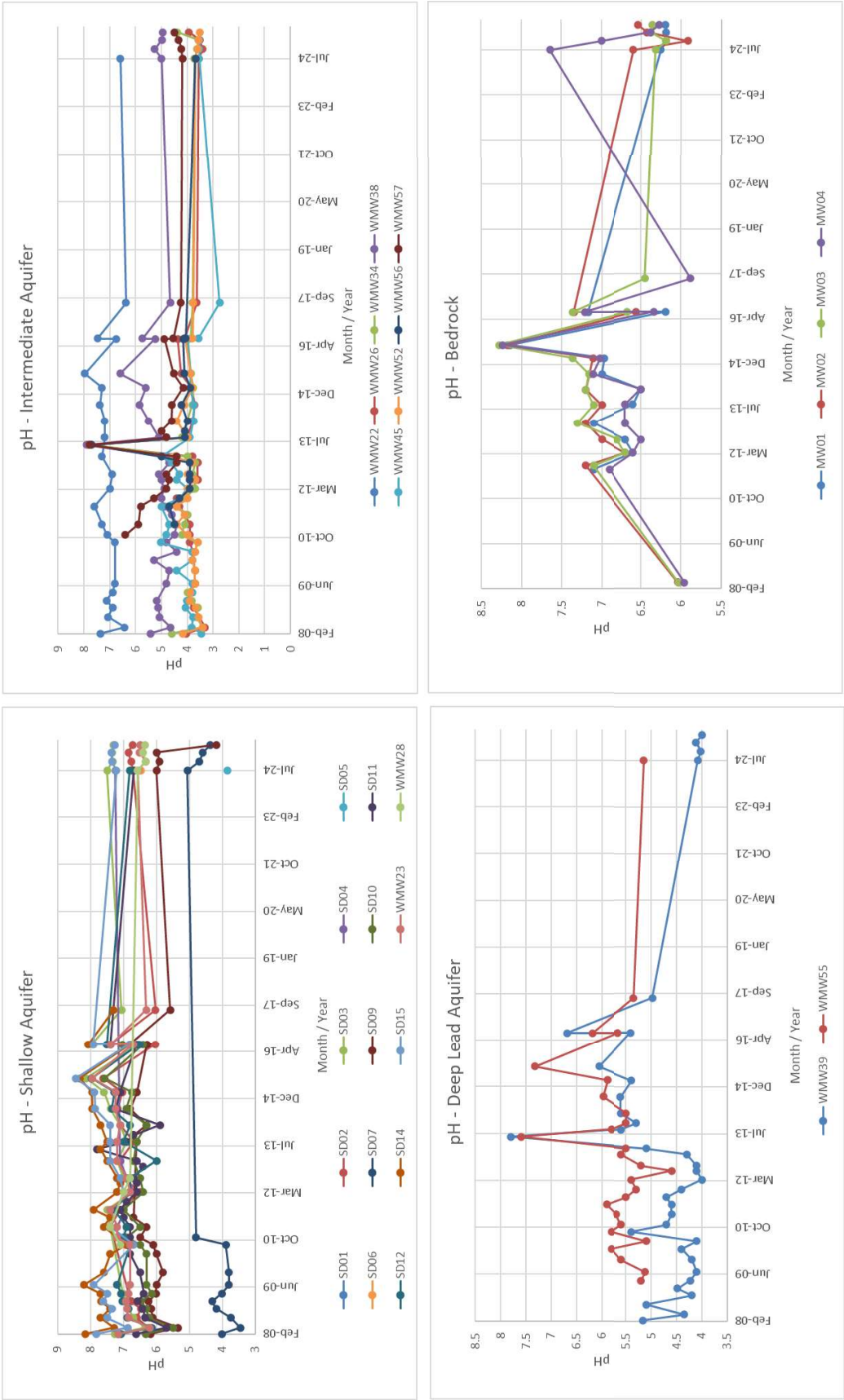


Chart 7-8 pH Time Series Graphs for Shallow, Intermediate, Deep Lead, and Bedrock Aquifer



7.5.7 Sulphate

Time series plots for sulphate in groundwater monitoring wells are provided in **Chart 7-9**. Sulphate concentrations are generally within historical ranges (noting that there was a significant increase in sulphate concentrations from circa 2011).

In the shallow aquifer sulphate concentrations ranged between 50 mg/L to 2,900 mg/L (excludes wells where water was only present in the sump). Sulphate concentrations follow similar trends to that of TDS, which is to be expected, and wells SD02, SD03 and SD15 which do not appear to be impacted by seepage reported a sulphate range of 50 mg/L to 360 mg/L, which potentially represents the natural background aquifer concentrations within the shallow aquifer.

In the intermediate aquifer sulphate concentrations ranged between 700 mg/L to 2,200 mg/L, and similar concentrations were also reported in the deep lead aquifer which ranged between 1,300 – 1,400 mg/L.

WMW52 which is not inferred to be impacted by seepage water reported sulphate concentrations ranging between 1,700 – 1,900 mg/L, suggesting that elevated sulphate concentrations reported in other wells which screen the intermediate aquifer near the site are indicative of both seepage and natural background aquifer conditions.

Sulphate concentrations in the bedrock aquifer ranged between 920 mg/L – 2,700 mg/L. Similar to TDS, MW02 reported notably higher sulphate concentrations when compared to other wells which screen the bedrock aquifer. The variability in sulphate concentrations is likely attributable to the nature of the well construction of these bores.

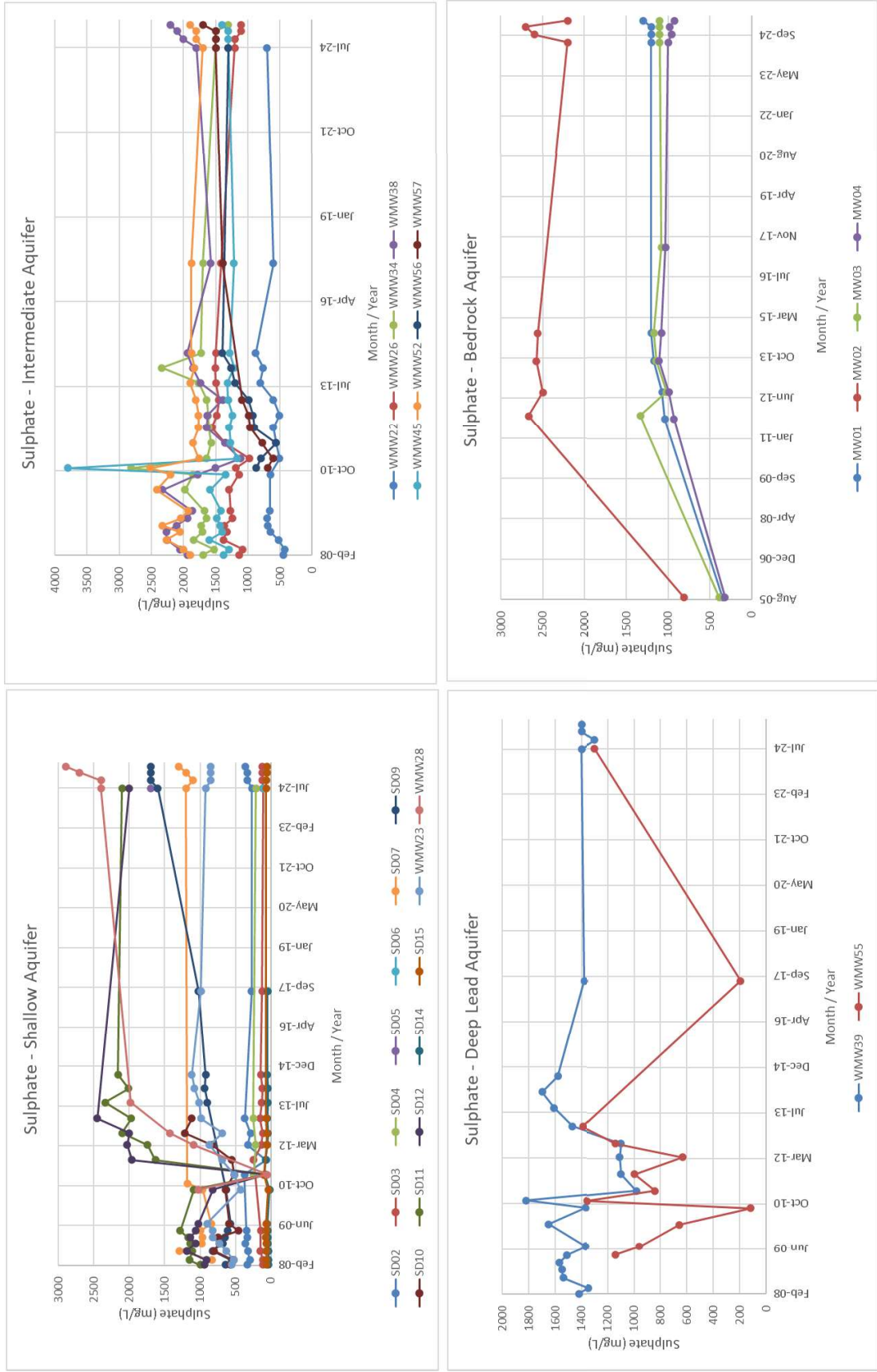


Chart 7-9 Sulphate Time Series Graphs for Shallow, Intermediate, Deep Lead, and Bedrock Aquifer



7.5.8 Arsenic

Dissolved arsenic concentrations in monitoring wells across all aquifers was generally low and below the adopted criteria. Concentrations ranged between below the laboratory limit of reporting up to 0.007 mg/L. A concentration of 0.022 mg/L was reported in July 2024 at MW04 (bedrock aquifer) which is above the adopted criteria, however, elevated concentrations were not reported during the subsequent monitoring events.

Historical investigations have concluded that although arsenic concentrations are elevated in the pond water and sediments, migration of arsenic to underlying groundwater via seepage is inhibited by adsorption of arsenic to iron oxides and clays within the underlying lithology. This is consistent with the results of the groundwater monitoring undertaken during the annual monitoring period.

7.5.9 Other Metals

Groundwater monitoring reported various other metals above the adopted criteria, including cadmium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, and zinc. A summary of the maximum concentration of metals reported in each aquifer unit compared to the adopted criteria is provided in **Table 7-6**.

Table 7-6 Maximum Metal Concentration in Groundwater

Analyte	Criteria/Environmental Value					Maximum Concentrations (mg/L)			
	Maintenance of Aquatic Ecosystems and Species	Agriculture and Irrigation – Irrigation	Agriculture and Irrigation – Stock Water	Drinking Water (Acceptable)	Water Based Recreation	Shallow Aquifer	Intermediate Aquifer	Deep Lead Aquifer	Bedrock Aquifer
Arsenic	0.013	0.1	0.5	0.01	<u>0.1</u>	0.007	0.005	0.003	0.022
Cadmium	0.0002	0.01	0.01	0.002	<u>0.02</u>	<LOR	0.0005	0.0007	0.0044
Cobalt		0.05	1			0.075	0.1	0.13	0.059
Copper	0.0014	0.2	0.4	2 / 1	<u>20/1</u>	0.037	0.11	0.035	0.016
Iron		0.2		0.3	<u>0.3</u>	25	0.81	0.48	0.73
Lead	0.0034	2	0.1	0.01	<u>0.1</u>	0.008	0.082	0.014	<LOR
Manganese	1.9	0.2		0.5/0.1	<u>5/0.1</u>	12	1.1	0.68	1.9
Mercury	0.0006	0.002	0.002	0.001	<u>0.01</u>	<LOR	0.0008	0.0001	0.0006
Nickel	0.011	0.2	1	0.02	<u>0.2</u>	0.18	0.19	0.051	0.048
Selenium	0.011	0.02	0.02	0.01	<u>0.1</u>	0.09	0.002	0.002	0.015
Zinc	0.008	2				0.032	0.12	0.065	0.16

Table Notes:

LOR: Limit of Reporting

No routine monitoring of these metals in groundwater at the site is known to have occurred previously.



With the exception of copper, iron and zinc, no other metals were reported to be elevated in the pond water, noting that extracted groundwater is now treated prior to entering the site which may remove some metal concentrations. Prior to receiving treated water, the ponds received untreated groundwater extracted from various shafts. Historical water quality data from the Central Deborah Shaft and New Moon Shaft (Jacobs, 2015 and Visualising Victoria Groundwater Website (2023 data)) provide some information regarding the historical quality of groundwater that entered the site, and untreated water likely comprised of elevated concentrations of arsenic, copper, iron, lead, manganese, mercury, nickel, and zinc.

The migration of seepage water from the ponds can result in elevated metals in groundwater via two primary transport pathways. Firstly, seepage water can mobilise metals within the sediment and underlying soils as it moves through the unsaturated zone (i.e., leaching). Metals within these sediments and soils may either be naturally occurring or have precipitated out of the pond water over time.

Desorption of metals from clay (iron oxyhydroxides) is highly dependent on pH (among other variables). Monitoring of the pH in pond water, extracted untreated groundwater and recent soil sampling at the site indicates that pond water and underlying soils are slightly alkaline with a pH of generally greater than 7. Metals which usually are subject to desorption from clays in an alkaline setting and become more soluble include arsenic, selenium, and vanadium (if present as negatively charged species (for example SeO_4^{2-})). With the exception of selenium, elevated concentrations of these metals have not been reported in groundwater at the site, suggesting that this transport mechanism may not be the primary source of elevated concentrations of metals in groundwater.

Metals may also migrate with seepage water vertically to groundwater. Some metals would sorb to clay complexes within the underlying sediments and subsurface (as is evidently the case for arsenic), whilst others would remain in solution. This is likely the primary transport mechanism that has occurred historically.

Naturally elevated metal concentrations in the aquifer also need to be considered when assessing the groundwater monitoring data. In an acidic environment positively charged species of metals such as cadmium, chromium, copper, lead, mercury, nickel, and zinc often undergo desorption from clays and become more mobile. These metals were observed to be elevated in groundwater and groundwater at the site is naturally acidic (potentially due to high concentrations of iron and sulfides), particularly in the deeper aquifer of the Castlemaine Group.

Distinguishing between concentrations of metals that are indicative of natural aquifer conditions compared to impacts by seepage water at the site is confounded by various factors including location of existing groundwater monitoring wells, the variable natural water quality of the Shepparton Formation and Castlemaine Group, and the fact that the majority of monitoring wells which screen the shallow, intermediate and deep lead aquifers are inferred to be impacted by seepage water.

Furthermore, the geological setting also limits the ability for on-site background metal data to be obtained, mainly due to the fact that the Shepparton Formation is not present to the east (and up gradient) of the ponds where the Castlemaine Group outcrops, and the deep lead sediments are limited and discontinuous.

Although not ideal, in lieu of background metal concentration in groundwater in the Woodvale area metal concentrations in wells which are inferred to be unimpacted by seepage based on the isotope analysis, cation and anion analysis, Na/Cl ratios and TDS concentrations may potentially be representative of natural conditions.

Chart 7-10 shows the difference in metal concentrations in SD02, SD03 and SD15 which screen the shallow aquifer and are inferred not to be impacted by seepage, compared to other wells which screen the shallow aquifer which are inferred to be impacted.



The data distribution suggest that elevated concentrations of copper, lead and zinc reported in the shallow aquifer are indicative or within the range of natural background aquifer conditions, however, concentrations are subject to a higher degree of variability in wells inferred to be impacted by seepage. Concentrations of cobalt and nickel are generally higher in impacted wells compared to unimpacted wells, however, both of these metals appear to be naturally elevated in the intermediate aquifer which is hydraulically connected and in the same geological unit as the shallow aquifer (Shepparton Formation). Concentrations of iron and manganese are notably higher in wells inferred to be impacted by seepage, and therefore they may be representative of site derived impacts. These analytes are delineated in the shallow aquifer down gradient of the site by SD02, SD03 and SD15. Of note, selenium concentrations are only elevated in wells inferred not to be impacted by seepage suggesting selenium concentrations are also representative of natural background conditions.

In the intermediate aquifer, WMW52 is the only monitoring wells which is inferred to not be impacted by seepage, and as such, only a limited dataset is available. **Chart 7-11** shows the difference in metal concentrations in WMW52 compared to the remaining wells which screen the intermediate aquifer and are inferred to be impacted. In general, although there is greater variability in metal concentrations in the monitoring wells which are inferred to be impacted by seepage, concentrations of metals including cobalt, copper, lead, nickel, and zinc are comparable to the concentrations reported in WMW52. Concentrations of iron and manganese are generally higher in wells inferred to be impacted and may be representative of site derived impacts. Of note, mercury concentrations are only elevated in WMW52 suggesting mercury concentrations are representative of natural background conditions.

For the deep lead aquifer, metal data is only available in two monitoring wells of which both are inferred to be impacted with seepage. As such, metal concentrations have not been able to be compared to concentrations in an unimpacted well. Given that the deep lead aquifer is likely limited and discontinuous at the site based on previous investigations, the absence of background data is not considered significant.

Finally, as the bedrock aquifer is not inferred to be impacted by seepage water metal concentrations reported in MW01 – MW04 may potentially represent natural background aquifer conditions within the Castlemaine Group on a local scale. However, due to the nature of the condition and construction of these wells and the variability in concentration data particularly at MW02, there is some uncertainty whether the concentrations are truly representative.

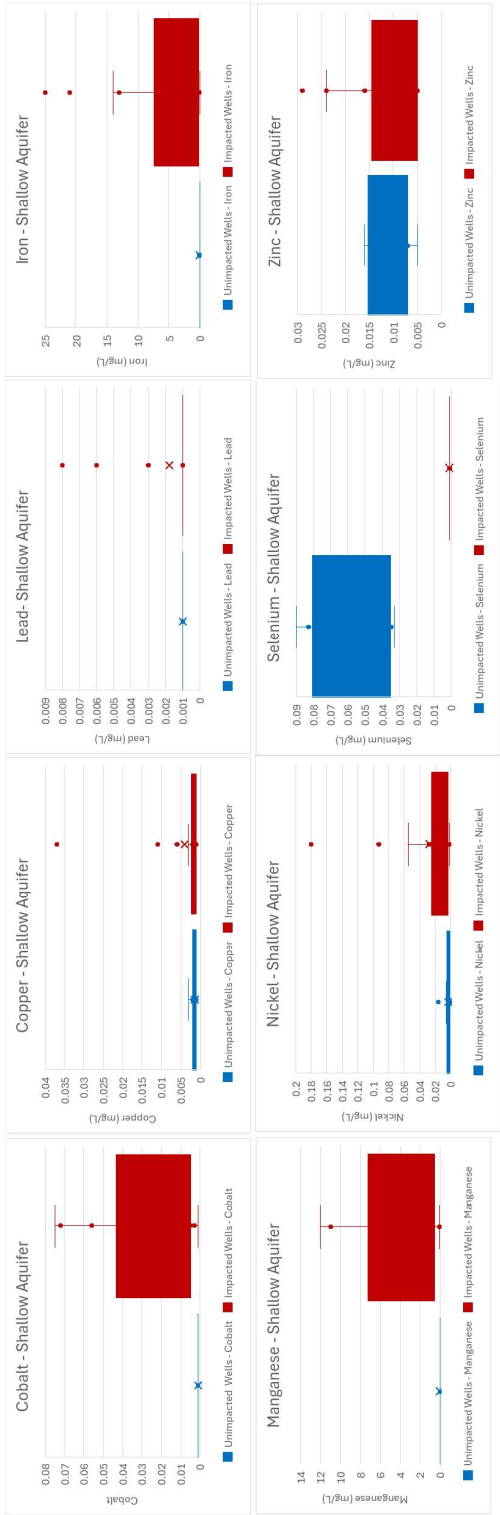


Chart 7-10 Metal Concentrations in Unimpacted Wells vs. Impacted Wells – Shallow Aquifer

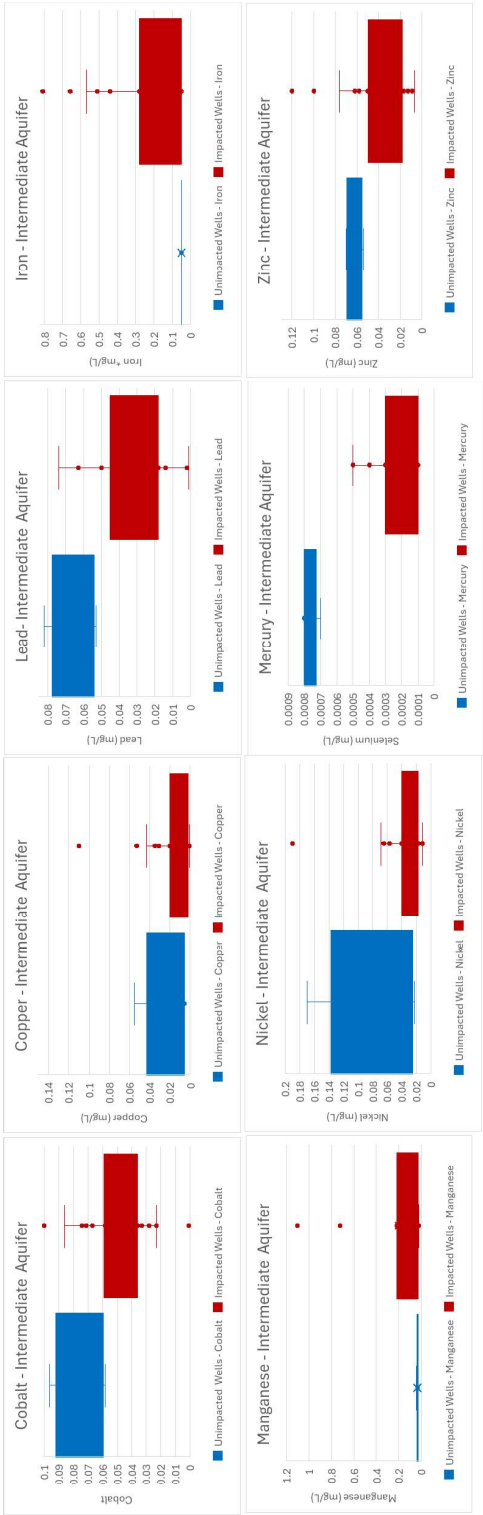


Chart 7-11 Metal Concentrations in Unimpacted Wells vs. Impacted Wells – Intermediate Aquifer



7.5.10 Summary of Groundwater Conditions

A summary of the groundwater conditions at the site which includes monitoring wells which are inferred to be impacted by seepage from the ponds, contaminant concentration ranges in unimpacted wells (which may be representative of natural background conditions) and contaminant concentrations in impacted wells is provided in **Table 7-7**.



Table 7-7 Summary of Groundwater Conditions

Analyte	Wells unlikely to be Impacted by Seepage (inferred background) ¹	Concentration Range (mg/L)	Wells Impacted by Seepage ¹	Concentration Range (mg/L)	Comments	
Shallow						
Salinity (TDS)	SD02, SD03 and SD15	847 -2,005	SD07, SD09, SD11, SD12, WMW23, WMW28	12,992 – 27,318	Concentrations of TDS, sulphate, chloride, and sodium are higher in impacted wells compared to unimpacted wells and this is directly attributable to seepage from the ponds. Elevated concentrations of cobalt, copper and lead above the concentrations reported in unimpacted wells were only reported in SD07, SD09 and SD11 which are located directly adjacent to the western bank of Pond 1. These analytes are naturally elevated in the intermediate aquifer (refer to below), and as previous investigations indicate that the shallow and intermediate aquifer are hydraulically connected it is likely that the reported concentrations are representative of natural background conditions. Elevated nickel and zinc concentrations in wells inferred to be impacted by seepage are similar to concentrations reported in unimpacted wells, suggesting reported concentrations of these metals are representative of natural background conditions. Elevated selenium concentrations only exceeded criteria in unimpacted wells, suggesting concentrations are representative of natural background conditions. Concentrations of iron and manganese are elevated in wells inferred to be impacted by seepage compared to concentrations in unimpacted wells and are therefore potentially indicative of site derived impacts. However, elevated concentrations of iron and manganese are delineated by SD02, SD03 and SD15.	
Sulphate		50 - 360		850 – 2,900		
Chloride		140 - 510		7100 - 14,000		
Sodium		290 - 740		3,500 - 8,700		
pH		6.72 – 7.5		4.18 – 6.81		
Cobalt		<LOR		<LOR – 0.075		
Copper		<LOR – 0.003		<LOR – 0.037		
Iron		<LOR		<LOR – 25		
Lead		<LOR		<LOR – 0.008		
Manganese		<LOR		0.1 - 12		
Nickel		<LOR – 0.016		0.002 – 0.093	Concentrations of salinity, sulphate, chloride, and sodium in wells inferred to be impacted by seepage are similar to concentrations reported in unimpacted wells, suggesting these analytes are naturally elevated in the intermediate aquifer of the Shepparton Formation. Concentrations of cobalt, copper, lead, nickel, and zinc in wells inferred to be impacted by seepage are similar to concentrations reported in unimpacted wells, suggesting reported concentrations of these metals are representative of natural background conditions.	
Selenium		0.033 - 0.09		<LOR – 0.002		
Zinc		<LOR – 0.032		<LOR – 0.029		
Intermediate						
Salinity (TDS)	WMW52	12,576 – 13,642	WMW22, WMW26, WMW34 ² , WMW38 ² , WMW45, WMW56, WMW57	10,795 - 16,237		
Sulphate		1,700 - 1,900		700 – 2,200		
Chloride		6,300 – 7,100		5,900 – 9,200		
Sodium		4,000 – 4,500		3,300 – 5,000		
pH		3.51 – 3.67		2.75 – 5.26		



Analyte	Wells unlikely to be Impacted by Seepage (inferred background) ¹	Concentration Range (mg/L)	Wells Impacted by Seepage ¹	Concentration Range (mg/L)	Comments
Cobalt		0.08 – 0.096		<LOR – 0.086	Elevated mercury concentrations only exceeded criteria in unimpacted wells, suggesting concentrations are representative of natural background conditions. Concentrations of iron and manganese are elevated in wells inferred to be impacted by seepage compared to concentrations in unimpacted wells and are therefore potentially indicative of site derived impacts. However, elevated concentrations of iron and manganese are delineated by WMW52.
Copper		0.006 - 0.055		<LOR – 0.053	
Lead		0.053 – 0.082		<LOR – 0.074	
Iron		<LOR		<LOR-0.81	
Manganese		0.029 – 0.042		0.022 – 1.1	
Nickel		0.023 – 0.17		0.012 – 0.19	
Mercury		0.0007 – 0.0008		<LOR – 0.0005	
Zinc		0.054 – 0.07		0.007 – 0.12	
Deep Lead					
Salinity (TDS)	-	-	WMW39 and WMW55	14,054 – 16,035	Background data is not available for the deep lead aquifer, however, as previous investigations indicate that the deep lead is limited and discontinuous, the absence of background data is unlikely to be significant with respect to assessing potential risk. Of note, with the exception of cadmium, iron, manganese, concentrations of all other metals in the deep lead aquifer were similar to concentrations reported in unimpacted wells in the shallow and intermediate aquifers of the Shepparton Formation. As the deep lead and Shepparton Formation are likely hydraulically connected, the reported metal concentrations (and salinity, sulphate, chloride, and sodium) may be representative of natural background conditions. In regards to cadmium, as elevated concentrations of cadmium were not reported in the shallow or intermediate aquifers it is likely that cadmium is attributable to natural background conditions associated with the deep lead sediments.
Sulphate		1,300 – 1,400			
Chloride		6,800 – 8,600			
Sodium		4,300 – 4,900			
pH		4 – 5.15			
Cadmium		0.0002 – 0.0007			
Cobalt		0.033 – 0.13			
Copper		0.004 – 0.035			
Lead		0.002 – 0.014			
Iron		<LOR – 0.48			
Manganese		0.22 – 0.68			
Nickel		0.02 – 0.051			
Zinc		0.018 – 0.065			



Analyte	Wells unlikely to be Impacted by Seepage (inferred background) ¹	Concentration Range (mg/L)	Wells Impacted by Seepage ¹	Concentration Range (mg/L)	Comments
Bedrock					
Salinity (TDS)	MW01, MW02, MW03, MW04	4,928 - 17,758	-	-	As the bedrock aquifer is not inferred to be impacted by seepage from the ponds metal concentrations reported in MW01 – MW04 may potentially represent natural background aquifer conditions within the Castlemaine Group on a local scale. However, due to the nature of the condition and construction of these wells and the variability in concentration data particularly at MW02, there is some uncertainty whether the concentrations are truly representative.
Sulphate		920– 2,700			
Chloride		3,700 - 9,300			
Sodium		2,400 – 5,100			
pH		5.92-7.64			
Arsenic		<LOR – 0.022			
Cadmium		<LOR – 0.0044			
Cobalt		<LOR – 0.059			
Copper		<LOR – 0.016			
Manganese		<LOR – 1.9			
Nickel		0.003 – 0.048			
Selenium		0.002 – 0.015			
Zinc		<LOR – 0.16			

Table Notes:

¹ Based on the isotope analysis, cation and anion analysis, Na/Cl ratios and TDS concentrations

² WMW34 and WMW38 are only inferred to be impacted based on the Na/Cl ratios.



8 Results – Dust Monitoring Program

8.1 Depositional Dust Monitoring

A copy of the depositional dust analytical results is provided in **Appendix F**. A summary table is provided in **Table 4** (appended). The following sections summarise the key findings of the depositional dust monitoring program.

8.1.1 Depositional Dust Analytical Results – Total Insoluble Solids

Total insoluble solids (or total insoluble matter) were compared to the threshold criterion of up to 4 g/m²/month (no more than 2 g/m²/month above background) defined in EPA Publication 1191 (which is further adopted in EPA Publication 1961). Importantly, this criterion does not necessarily indicate an unacceptable risk to receptors.

A summary of the reported exceedances at WEPC is provided in **Table 8-1**. Exceedances were only reported at WVDD01 during the reporting period. WVDD01 is located off-site adjacent to the southern site boundary. The monitor is located in a large, exposed paddock with sparse vegetation (mainly weeds and small native shrubs/grasses), near the corner of two unsealed roads (Meurillion and Dalys Road). Although the paddock is not used for cropping, on occasion it is used to hold stock. Bird faeces is often on this depositional dust gauge despite the presence of a bird deterrent. These factors may increase the amount of material that is deposited in this particular gauge.

Prevailing wind direction during months when exceedances were reported was generally from a southerly direction, suggesting that deposited matter collected in WVDD01 may be from ambient regional sources (such as agricultural activities) rather than derived from dust generated from the site. When compared to the monthly weather monitoring data, there appears to be no direct correlation between the total insoluble solid results at WVDD01 (or the background location) and total monthly rainfall and maximum wind speed.

Historically, WVDD01 has reported exceedances of the adopted criteria for insoluble solids (refer to **Chart 8-1**), and with the exception of July 2024, results are generally consistent with historical results.

Table 8-1 Depositional Dust Monitoring Results – Total Insoluble Solids

Month	Gauges Where Exceedance Reported	Result (g/m ² /month)	Background Results (WVDD07-BG) (g/m ² /month)	Prevailing Wind Direction (% of time)	Maximum Wind Velocity (m/s)	Monthly Rainfall (mm)
June 2024	WVDD01 (Southern Boundary)	14	0.42	Southwest (12%), South-Southwest (12%), South (12%)	6.7	29.6
July 2024		84	6	South-Southeast (12%)	9.74	39
August 2024		14	0.17	East-Southeast (15%)	10.32	31.8
September 2024		2.9 ¹	0.5	Northwest (15%)	10.43	16.6



Month	Gauges Where Exceedance Reported	Result (g/m ² /month)	Background Results (WVDD07-BG) (g/m ² /month)	Prevailing Wind Direction (% of time)	Maximum Wind Velocity (m/s)	Monthly Rainfall (mm)
November 2024		3.4 ¹	0.91	South-Southeast (13%)	9.1	49.8
December 2024		10	8.0	Southwest (14%)	10.38	30
March 2025		11	4.2	South (15%)	8.35	27.8

Table Notes:

¹ Although total insoluble solids were below 4 g/m²/month, results were greater than 2 g/m²/month compared to the background location.

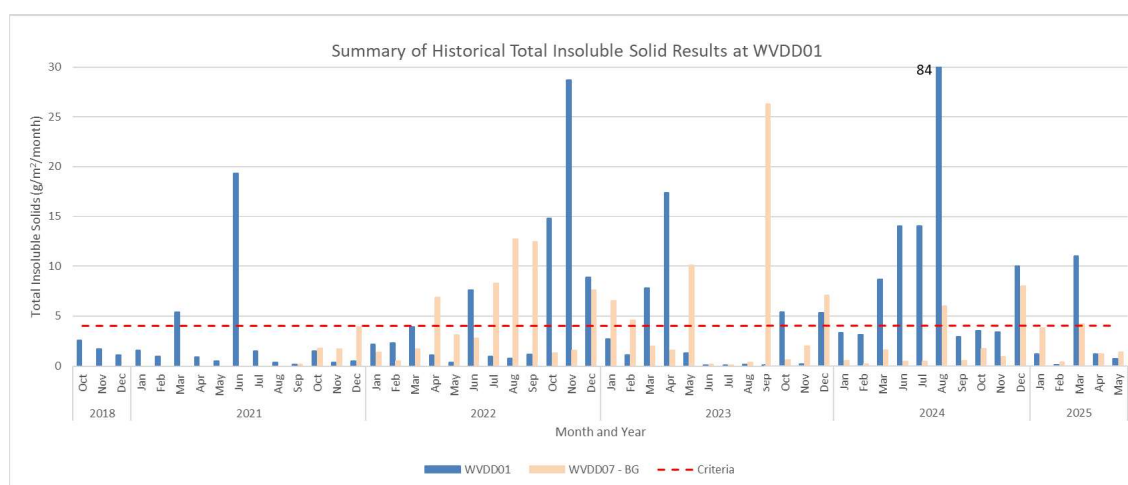


Chart 8-1 Summary of Total Insoluble Solids at WVDD01 and WVDD07-BG

8.1.2 Depositional Dust Analytical Results – Ash and Combustible Material Content

As part of the depositional dust analysis, ash content and combustible matter is determined from the insoluble portion of the material that has been collected in the gauge. The ash content is the remaining material after the sample has been combusted. The ash content provides an indication of the mineral content, as it removes combustible materials such as organics from the deposited matter. This is an important measure as it provides an indication of the amount of deposited matter that may be derived from soils generated either from on-site or off-site areas. Caution should be applied when assuming that the ash content is directly equal to the portion of dust attributable to soils, as soils contain some combustible materials such as organic matter. Nevertheless, it does provide an indication regarding the composition of the dust.

Chart 8-2 shows the percentage of the insoluble solids which is attributed to ash (i.e., soil) of the depositional dust gauges situated on the boundaries of the site compared to the background location. Based on the data, the proportion of the insoluble solids due to soils (as inferred by the ash content) varied and fluctuated over the annual reporting period with no discernible trend. At some monitoring locations, ash content appeared to increase during the warmer and drier months (December – April) when conditions are more conducive for dust generation. However, this was not always the case.

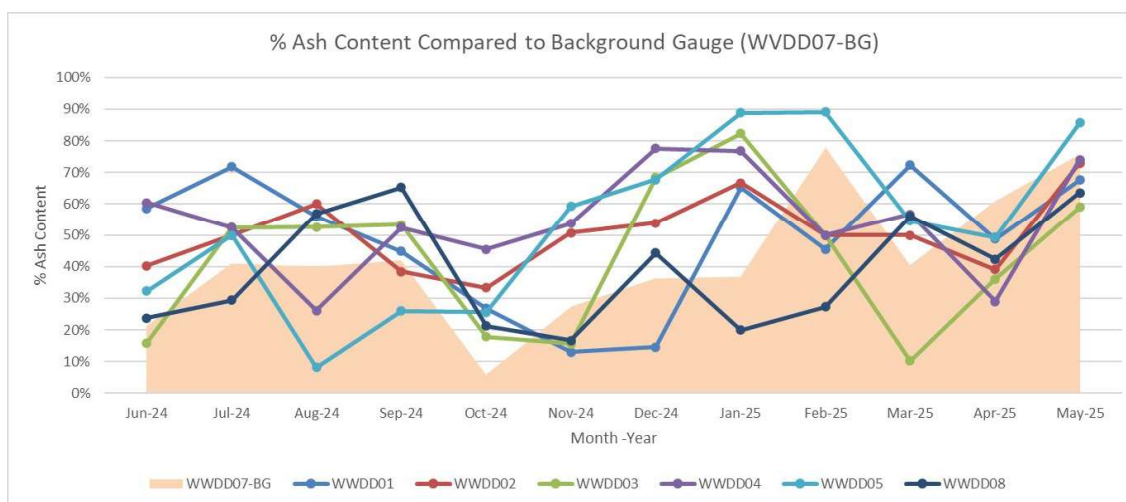


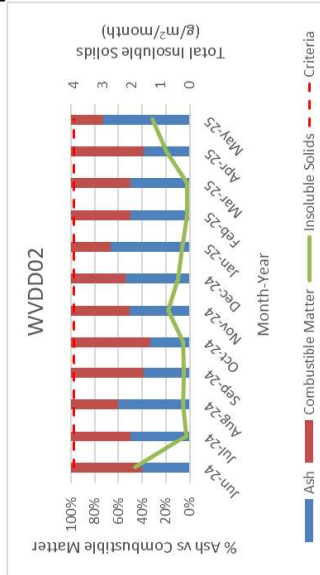
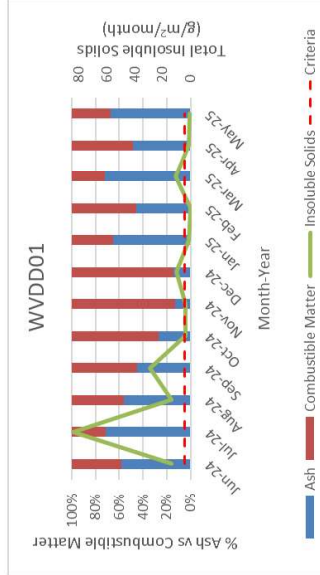
Chart 8-2 % Ash Content in Total Insoluble Solids

From a qualitative perspective, the fluctuations (i.e., peaks and troughs on **Chart 8-2**) in ash content appears to generally be consistent between the boundary depositional dust gauges and the background gauge (WVDD07-BG), however, the proportion of ash was typically reported higher in boundary gauges. This does not necessarily mean that dust containing soils generated from the site are contributing to the increase in ash content, as the trend could also be attributable to differences in conditions between the site and background monitoring location and/or off-site sources of dust containing soils (such as agricultural activities).

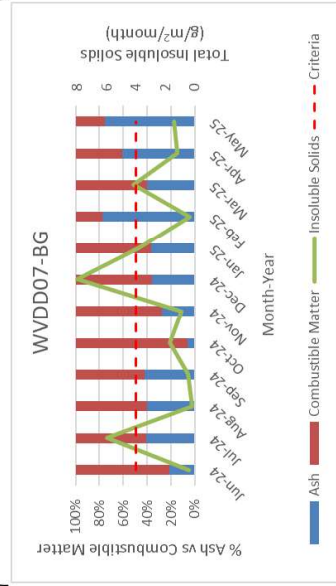
To assess the relationship between when an exceedance of total insoluble solids occurred against changes in ash composition, the percentage of the insoluble solids which is attributed to ash (i.e., soil) verses combustible matter (organic materials within the soils etc) was compared to total insoluble solids (**Chart 8-3**). There appears to be no definitive relationship between when insoluble solids exceeded the adopted criteria of 4 g/m²/month and an increase in ash content. The exception to this is the exceedance of insoluble solids reported in July 2024 at WVDD01 which corresponded to a large increase in the portion of ash content within the deposited matter.



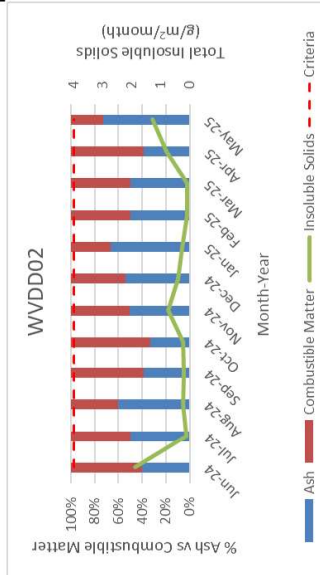
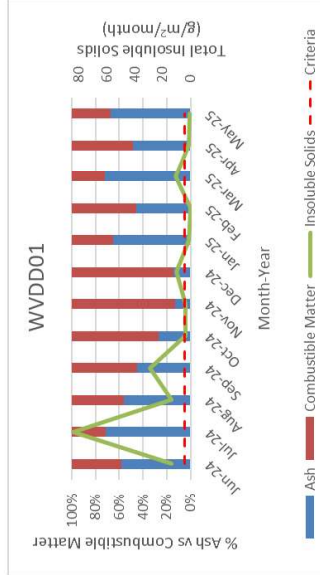
Boundary Depositional Dust Gauges



Background Depositional Dust Gauge



Boundary Depositional Dust Gauges



Background Depositional Dust Gauge

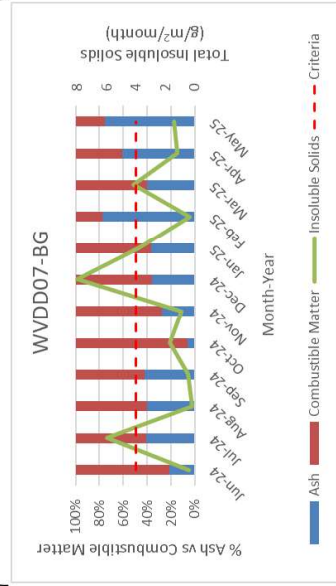
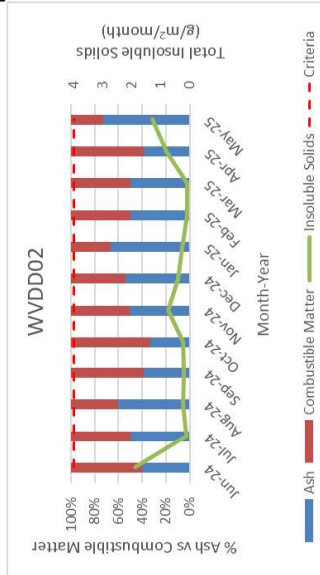
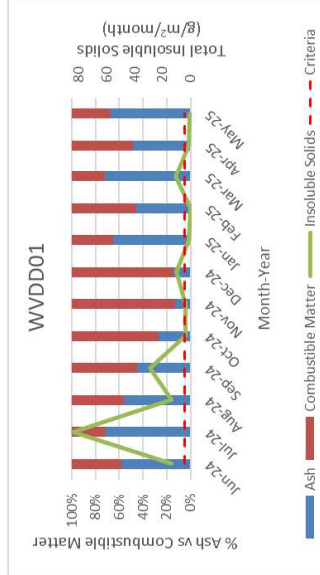
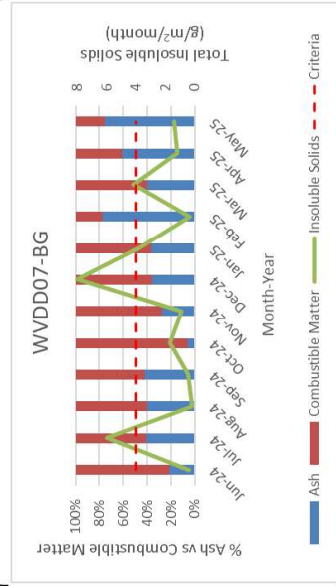


Chart 8-3

Ash Content and Combustible Matter Compared to Insoluble Solids



8.1.3 Depositional Dust Analytical Results – Metals and Inorganics

Deposited matter collected in depositional dust gauges were also analysed for soluble and insoluble metals, cyanide, and sulphate. No NATA-accredited method exists for this analysis; however, this analysis provides quantitative information regarding the composition of the depositional dust. Due to the nature of dust analysis, the limits of laboratory reporting that can be achieved vary from month to month depending on the amount of deposited matter present in each individual gauge.

Based on the analytical results, the following analytes have been reported above the laboratory limit of reporting during the annual monitoring period:

- Soluble **arsenic** (up to 0.0039 mg/m²/month) reported once in December 2024 at WVDD01.
- Insoluble and soluble **barium** (up to 39 and 0.0025 mg/m²/month, respectively) reported variably during all months at all locations including at the background gauge (WVDD07-BG).
- Insoluble **chromium** (up to 0.0063 mg/m²/month) variably at all locations including the background gauge (WVDD07-BG) during June 2024, February 2025, and March 2025.
- Insoluble and soluble **copper** (up to 4.2 and 0.14 mg/m²/month, respectively) variably during all months at all locations including at the background gauge (WVDD07-BG).
- Insoluble **lead** (up to 0.0088 mg/m²/month) variably at WVDD02, WVDD03 and the background gauge (WVDD07-BG) in June 2024, December 2024, and March 2025.
- Insoluble and soluble **iron** (up to 16 and 0.033 mg/m²/month, respectively) variably during all months at all locations including at the background gauge (WVDD07-BG).
- Insoluble and soluble **manganese** (up to 0.22 and 0.0054 mg/m²/month, respectively) variably during all months at all locations including at the background gauge (WVDD07-BG).
- Insoluble **nickel** (up to 0.019 mg/m²/month) variably at WVDD01, WBDD04 and WVDD08 in June 2024, September 2024, and October 2024.
- Insoluble **vanadium** (up to 0.0068 mg/m²/month) at WVDD01 in June 2024 and March 2025
- Insoluble and soluble **zinc** (up to 30 and 0.094 mg/m²/month, respectively) variably during all months at all locations including at the background gauge (WVDD07-BG).
- Insoluble and soluble **sulphate** (up to 2 and 1.7 mg/m²/month, respectively) variably during all months at all locations including at the background gauge (WVDD07-BG).
- Insoluble and soluble **cyanide** (up to 1.5 and 0.01 mg/m²/month, respectively) at WVDD01 and WVDD03 in July 2024 and October 2024, respectively.

All other analytes were reported below the laboratory limit of reporting.

Barium, chromium, copper, lead, iron, manganese, zinc, and sulphate were all reported in depositional dust at both the background location (WVDD07-BG) and boundary locations. **Chart 8-4** shows the difference in distribution of % of these analytes in depositional dust between the background location (WVDD07-BG) and monitoring locations situated along the boundaries of the site (WVDD01, WVDD02, WVDD03, WVDD04, WVDD05, WVDD08). For barium, copper, iron, manganese, zinc, and sulphate, although the % of these analytes in deposited dust at the boundary locations are subject to greater variability with several outliers observed in the data set, % of these analytes are generally consistent with the background location. The variability suggested by the data is likely an artifact of the number of boundary locations compared to the single background location. Additional background locations would provide additional data and certainty regarding the occurrence of these analytes.

For chromium and lead, these analytes have only been detected above the limit of reporting on isolated occasions and therefore only a limited dataset is available. In general, % of chromium and lead is consistent between the boundary and background monitoring locations when detections occurred, with some variability across the different boundaries.



Arsenic, nickel, vanadium, and cyanide were only reported at select boundary locations during select months. None of these analytes were reported at the background location. Arsenic, nickel, and vanadium are all naturally occurring metals in soils, however, arsenic is known to be elevated in soils on-site and regionally across Bendigo due to historical activities associated with mining. Therefore, although it is possible that these metals are attributable to depositional dust generated from the site, the presence of these metals in ambient depositional dust cannot be excluded.

Detections of cyanide in WVDD01 in July 2024 and WVDD03 in October 2024 is unexpected. Speciation analysis completed at WVDD01 in July 2024 indicates that cyanide is present as free cyanide rather than associated with complexes (which is unusual in the context of the matrix). At this stage, based on the available dataset the detection of cyanide in depositional dust is considered an anomaly. This is based on the following lines of evidence:

- Historically, gold was extracted from ore using a carbon in leach process, which includes the use of a cyanide solution. This was a practice adopted at the Kangaroo Flat Former Gold Mine, however, was not undertaken at WEPC.
- Previous regional groundwater assessments conducted across Bendigo has not identified cyanide as a potential contaminant of concern in groundwater which has been extracted and historically transported to WEPC for evaporation.
- Recent soil and sediment assessments completed at the site have not identified elevated concentrations of cyanide (BlueSphere, 2025).
- A review of field and QA/QC procedures have not identified any anomalies which would contribute to a detection occurring (this is further discussed in **Appendix G**).

Overall, although cyanide has been detected it is possible that the detections are false positives given that no known source of cyanide exists on the site or within the surrounding area. Analyses of this analyte should continue to occur to confirm this assumption.

No criteria are known to exist for metals, cyanide, or sulphate in depositional dust in Australia (or internationally), however, when combined with the real-time dust monitoring results the percentage of these analytes within the depositional dust can be used to assess potential risk to receptors. This is further discussed in the following sections.

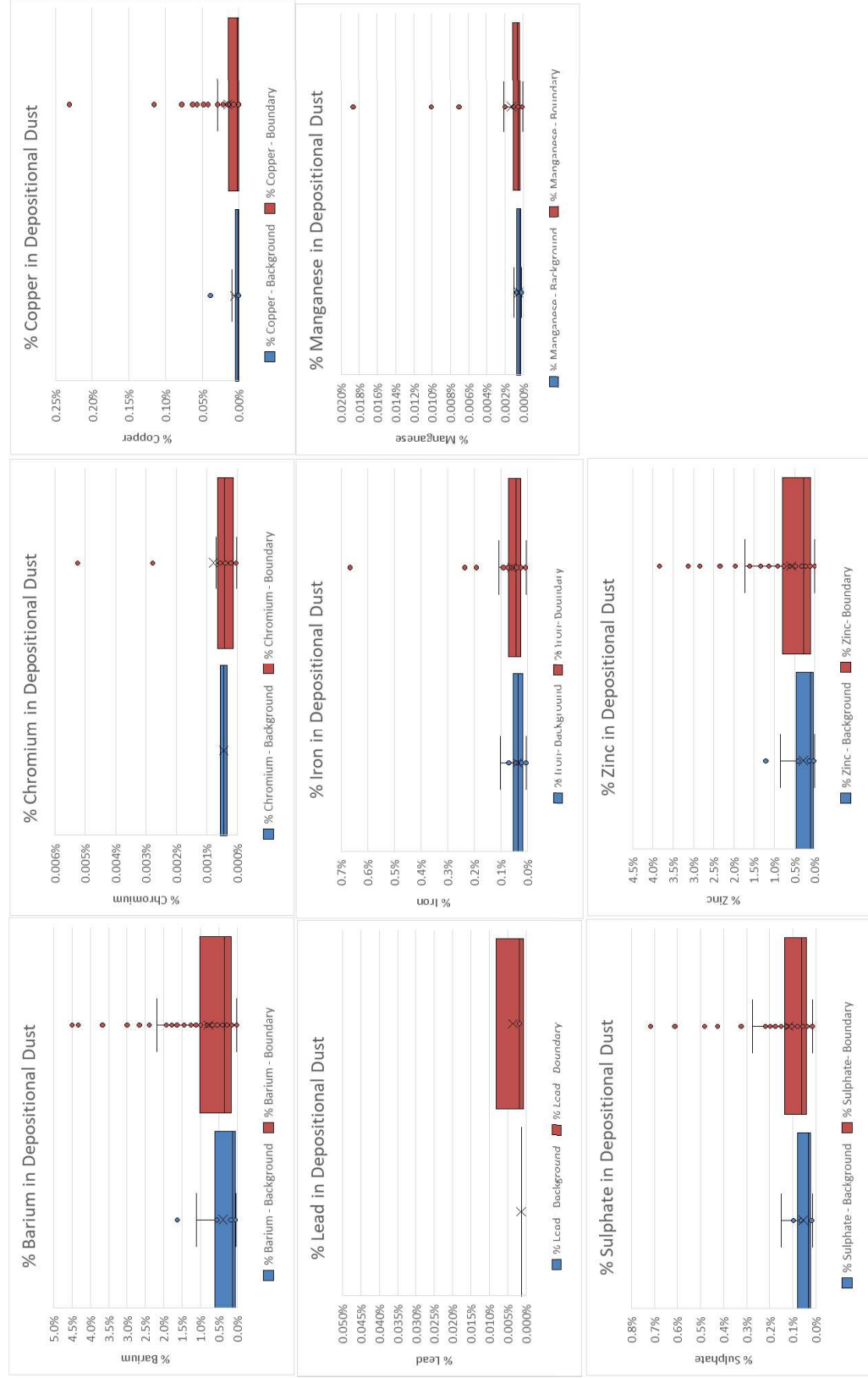


Chart 8-4 % Metals in Depositional Dust at Background Location vs. Boundary Locations



8.2 Real-Time Dust Monitoring

A summary table is provided in **Table 5** (appended). The following sections summarise the key and findings of the real-time dust monitoring program.

8.2.1 Real-Time Dust Monitor Operational Performance

A summary of the estimated runtime of the individual real-time dust monitors positioned across the site is provided in **Table 8-2**. As the monitors are programmed to upload dust data every 1 minute, runtime was estimated by comparing the number of data points uploaded with the total number of minutes available for that particular month.

Across the annual reporting period, the real-time dust monitors were operational for between 94% and 98% of the time. Non-operational time were generally limited, and included:

- Automated shutdowns due to loss of power following consecutive days of poor weather reducing solar exposure and therefore battery life. This mainly occurred immediately following deployment as the batteries were building a baseload of charge.
- Loss of communication (i.e., due to Telstra network upgrades etc). Technically, the monitor is still recording data so this is not considered a true “down-time”. Once the connection is re-established the monitoring data collected during the communication blackout is processed and uploaded.
- Damage due to insects resulting in an error to the automated pumping/flow controller. This occurred in spring/summer resulting in “down-time” between December 2024 and January 2025 for WV-RTD-01. The monitor was sent back to the manufacture and repaired. WV-RTD-02 remained operational during this period.
- Minor shutdowns (i.e., 10-15 minutes) for routine ad-hoc maintenance completed quarterly.

Table 8-2 Summary of Real-Time Dust Monitor Performance

Month	WV-RTD-01		WV-RTD-02	
	% Run-Time	Downtime (minutes)	% Run-Time	Downtime (minutes)
June 2024	99.8	85	98.2	780
July 2024	99.7	98	99.8	91
August 2024	97.3	1202	95.7	1995
September 2024	98.9	265	99.3	264
October 2024	97.7	1030	97.4	1167
November 2024	99.6	160	97.1	1254
December 2024	59.1	18270	97	1336
January 2025	80.9	8519	97.5	1124
February 2025	97.9	832	99.8	62
March 2025	97.9	925	98	884
April 2025	99.9	1	99.9	8
May 2025	99.4	237	99.4	228
Annual (2024-2025)	94	31,624	98	9,193



8.2.2 Real-Time Dust Monitoring – PM_{2.5} and PM₁₀ Trends

PM_{2.5} and PM₁₀ concentration trends during the annual reporting period are shown below in **Chart 8-5** and **Chart 8-6**. Concentrations of these dust fractions fluctuated throughout the year and concentrations were generally within similar ranges at each monitoring location (approximately 5-10 µg/m³). The maximum concentration reported at WV-RTD-01 was generally higher than that reported at WV-RTD-02, although this may be attributable to some generation of dust at the site, it may also be attributable to subtle difference in the surrounding environment at each monitoring location (i.e., presence/absence of vegetation, topography, etc.).

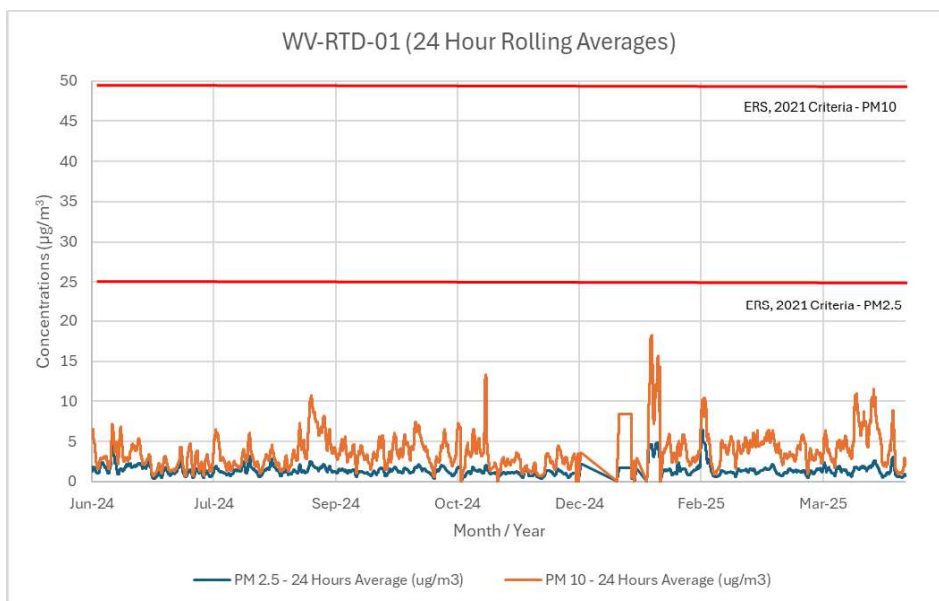


Chart 8-5 WV-RTD-01 24-hour rolling averages for PM_{2.5} and PM₁₀

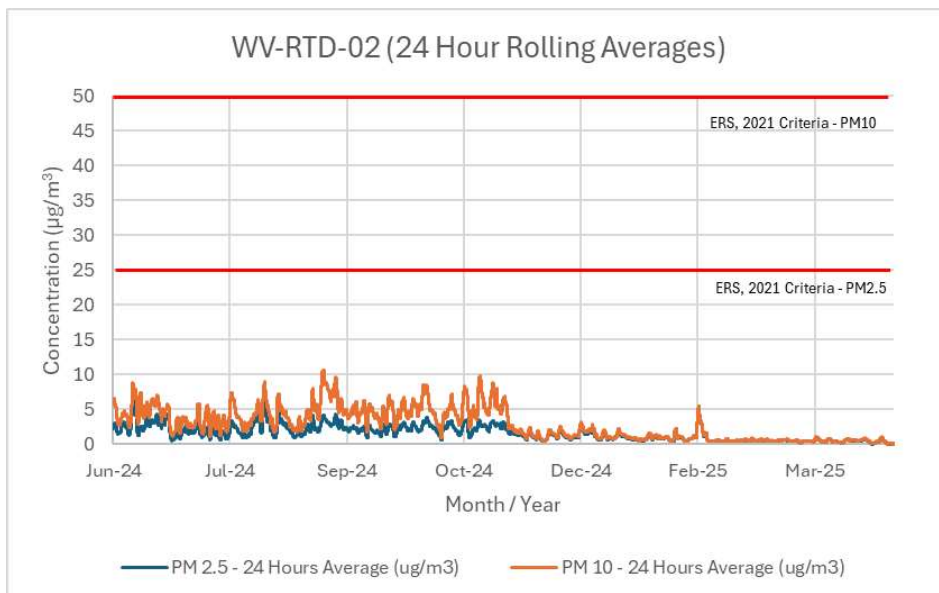


Chart 8-6 WV-RTD-02 24-hour rolling averages for PM_{2.5} and PM₁₀



8.2.3 Real-Time Dust Monitoring Exceedances

Real-time dust monitoring results were compared to the criteria outlined in **Section 5**. A summary of the monthly maximum daily and yearly rolling average for PM_{2.5} and PM₁₀ compared to the criteria defined in the ERS, 2021 is provided in table below.

No exceedances were reported during the annual monitoring period.

Table 8-3 Summary of Maximum Daily and Yearly Rolling Averages for PM_{2.5} and PM₁₀

Month	PM _{2.5}		PM ₁₀	
	Maximum Daily Rolling Average	Yearly Rolling Average	Maximum Daily Rolling Average	Yearly Rolling Average
Criteria (ERS, 2021)	25	8	50	20
June 2024	5.75	-	7.15	-
July 2024	3.4	-	6.5	-
August 2024	3.2	-	10.72	-
September 2024	2.1	-	8.19	-
October 2024	2.14	-	7.44	-
November 2024	2.09	-	13.31	-
December 2024	2.1	-	4.47	-
January 2025	4.86	-	18.27	-
February 2025	6.52	-	10.46	-
March 2025	2.43	-	6.45	-
April 2025	1.0	-	1.05	-
May 2025	0.64	-	1.76	-
Annual	-	1.53	-	4.09

PM₁₀ concentrations were also compared to nuisance dust criteria defined in EPA Publication 1961. This criteria can be used to support adaptive management of dust emissions during a particular activity.

A summary of the exceedances of PM₁₀ reported during the annual monitoring period and a description of each exceedance event is provided below in **Table 8-4**. Overall, as exceedances were short-lived (<0.5 hours) and no activities were occurring at the site when the exceedances occurred, no adaptive dust management controls were considered warranted in response to the exceedances.



Table 8-4 Summary of Real-Time Dust Exceedance Events – PM₁₀ Nuisance Dust Criteria

Date and Time of Exceedance	Monitoring Location	Maximum PM ₁₀ Concentration (1-minute average)	Exceedances of EPA Publication 1961 Nuisance Dust Criteria	Discussion
09/08/2024 23:17-23:28	WV-RTD-02	296.4 µg/m ³	10-minute rolling average (165 µg/m³): up to 191.21 µg/m³ reported between 23:17 and 23:26. 15-minute rolling average (150 µg/m³): up to 165.77 µg/m³ reported between 23:18 and 23:28.	No activities were occurring at the site at the time of the exceedance. DEECA notified the property owners where WV-RTD-02 is located. Property owners advised that the paddock where the monitor is located had just been ploughed for agricultural purposes prior to the exceedance. A review of on-site weather monitoring data indicates that the wind direction was shifting between a southeasterly, southerly, and south-westerly direction, however, generally comprised of calm conditions (i.e., < 1 m/s). As no activities which would exacerbate dust generation was occurring at the site and exceedances were short lived (< 30 minutes) and attributable to a recent change to surface conditions on the off-site property, no action was considered warranted.
09/11/2024 00:39-03:27	WV-RTD-01	458.52 µg/m ³	10-minute rolling average (165 µg/m³): up to 305.56 µg/m³ reported between 00:39 and 00:44 and then again at 02:17-2:48. 15-minute rolling average (150 µg/m³): up to 305.56 µg/m³ reported between 00:42 and 00:48 and then again at 02:20-02:50. 30-minute rolling average (120 µg/m³): up to 308.99 µg/m³ reported between 02:25 and 2:57. 1-hour rolling average (80 µg/m³): up to 308.99 µg/m³ reported between 02:27 and 03:27.	No activities were occurring at the site at the time of the exceedance and a review of on-site weather monitoring data indicates the wind direction shifting between a southeasterly, southerly, and south-westerly direction, however, generally comprised of calm conditions (i.e., < 1 m/s). As this exceedance could not be attributed to any activities or weather event and exceedances were short lived, no immediate action was undertaken. This monitor was closely monitored during the subsequent 24-hour period with no other exceedances reported.



Date and Time of Exceedance	Monitoring Location	Maximum PM ₁₀ Concentration (1-minute average)	Exceedances of EPA Publication 1961 Nuisance Dust Criteria	Discussion
18/01/2025 22:43-23:42	WV-RTD-01	511.21 µg/m ³	10-minute rolling average (165 µg/m³): up to 229.94 µg/m³ reported between 22:43 and 22:53. 15-minute rolling average (150 µg/m³): up to 198.1 µg/m³ reported between 22:48 and 22:56. 1-hour rolling average (80 µg/m³): up to 97.35 µg/m³ reported between 23:27 and 23:42.	No activities were occurring at the site at the time of the exceedance. A review of on-site weather monitoring data indicates that wind direction shifted from a predominantly east and northeasterly direction to a southerly direction from approximately 21:00. Wind speed increased from calm with wind velocity between 0-0.6 m/s 2 hours before the exceedance, to light with a wind velocity between 0-3.16 m/s between 22:30-00:30. Based on the weather data it is possible that dust from was generated due to the change in wind direction, however, as the exceedances were relatively short in duration, no immediate action was considered warranted. This monitor was closely monitored during the subsequent 24-hour period with no other exceedances reported.
20/01/2025 06:37-07:42	WV-RTD-01	1843.28 µg/m ³	10-minute rolling average (165 µg/m³): up to 698.24 µg/m³ reported between 06:37 and 06:51. 15-minute rolling average (150 µg/m³): up to 508.33 µg/m³ reported between 06:39 and 06:56. 30-minute rolling average (120 µg/m³): up to 294.51 µg/m³ reported between 06:40 and 07:11. 1-hour rolling average (80 µg/m³): up to 165.4 µg/m³ reported between 06:41 and 07:42.	No activities were occurring at the site at the time of the exceedance. A review of on-site weather monitoring data indicates that wind direction was generally consistent 2 hours prior to and during the exceedance event and was southerly to southeasterly. Wind speeds did increase from < 1 m/s in the 2 hours leading up to the exceedances to up to 3.6 m/s during the period when the exceedances were reported. Although there was an increase in wind speed, a wind velocity of 3.6 m/2 is still considered a light wind. As the exceedances were relatively short in duration, no immediate action was considered warranted. This monitor was closely monitored during the subsequent 24 hours period with no other exceedances reported.



Date and Time of Exceedance	Monitoring Location	Maximum PM_{10} Concentration (1-minute average)	Exceedances of EPA Publication 1961 Nuisance Dust Criteria	Discussion
17/02/2025 06:45-06:46	WV-RTD-01	325.43 $\mu\text{g}/\text{m}^3$	• 10-minute rolling average (165 $\mu\text{g}/\text{m}^3$): up to 252.86 $\mu\text{g}/\text{m}^3$ reported between 06:37 and 06:51. • 15-minute rolling average (150 $\mu\text{g}/\text{m}^3$): up to 156.7 $\mu\text{g}/\text{m}^3$ reported between 06:45 and 06:46.	No activities were occurring at the site at the time of the exceedance. A review of on-site weather monitoring data indicates that wind direction was generally consistent 2 hours prior to the exceedance event and was from a southerly, southeasterly, and south-westerly direction. Approximately 30 minutes prior to the exceedance the wind shifted to a northerly, however, wind speeds were considered calm. As the exceedances were relatively short in duration, no immediate action was considered warranted. This monitor was closely monitored during the subsequent 24 hours period with no other exceedances reported.



8.2.4 Percentage Metals in PM₁₀

As previously outlined, there is no known criteria for metals in depositional dust. However, when used with the concentrations of PM₁₀ obtained from the real-time dust monitors the percentage of metals and other inorganics in the depositional dust can be used to estimate concentrations in air (µg/m³) of the respective analyte, which can then be compared to the APACs outlined in EPA Publication 1961.

The following approach was adopted to convert metals in depositional dust to a concentration in PM₁₀:

- Step 1: The percentage of a particular metal in depositional dust was calculated using the following formula: $\% \text{ Metal} = (\text{insoluble metal} + \text{soluble metal}) / \text{total solids} \times 100$. This was completed for all analytes, at all monitoring locations, across all months, regardless of whether metals were detected above the laboratory limit of reporting. For analytes reported below the limit of reporting, the limit of reporting was adopted as the result.
- Step 2: Determine the maximum percentage of a particular analyte reported during the annual monitoring period.
- Step 3: The maximum percentage of a particular analyte was then multiplied by the maximum PM₁₀ concentrations to estimate a concentration in air in µg/m³. This was completed for various different time averages (1 hour, 24 hour and 1 year).
- Step 4: Review APACs available in EPA Publication 1961 and other available criteria for various metals in air across several time averages including 1 hour, 24 hour and 1 year.
- Step 5: Compare the resultant analyte concentration in air against the APAC to identify whether exceedances exist.
- Step 6: If an exceedance occurred, confirm whether the maximum % metal and the maximum PM₁₀ concentration occurred during the same period to assess whether it is considered a “true” exceedance.

In addition to comparing the resultant estimated concentration in air to available APACs, concentrations were also compared to the concentrations adopted as part of the Human Health Risk Assessment (HHRA) (CDM Smith, 2023) based on the previous high volume air sampling (HVAS) completed at the site.

This overall approach is considered indicative only, is likely very conservative and is subject to several assumptions and limitation including the following:

- This approach assumes that all insoluble and soluble analytes exist within the PM₁₀ dust fraction, which may not be the case. However, PM₁₀ is considered an appropriate measure as dust particles of this size have the potential to enter the respiratory system of a receptor (human).
- By using the maximum percentage of a particular metal and the maximum PM₁₀ concentrations recorded during the annual reporting period, it assumes that these conditions occurred at the same time. This is unrealistic, however, it is representative of a worst-case scenario.
- This approach assumes that the PM₁₀ concentrations recorded by the real-time dust monitors are representative of the PM₁₀ concentration at the depositional dust gauge where the maximum percentage metal was reported. Only WV-RTD-01 is positioned adjacent to an existing depositional dust monitoring gauge (WVDD05).
- The laboratory limit of reporting was used to calculate % metals for metals which were below the laboratory limit of reporting.
- % of a particular analyte can be exaggerated in instances where the total solids results are low but the laboratory limit of reporting is high. This is particularly true for cyanide.
- The results are relevant only to locations where monitoring equipment is positioned.

A summary of the data is provided in **Table 8-5**. The estimated concentration of all analytes in PM₁₀ with the exception of barium and beryllium were below the adopted APACs.



Barium (estimated to be up to $7.4 \mu\text{g}/\text{m}^3$) exceeded the APAC defined in EPA Publication 1961 of $5 \mu\text{g}/\text{m}^3$ for a 1 hour rolling average. Based on a review of the data, the greatest % of barium was reported in March 2025. The maximum 1 hour rolling average for PM_{10} recorded during March 2025 was $23.96 \mu\text{g}/\text{m}^3$ resulting in an estimated barium concentration of approximately $1.0782 \mu\text{g}/\text{m}^3$ for that period. In view of this, the conditions in which the estimated barium concentration would exceed the adopted APAC did not occur and is therefore not representative of a true exceedance.

In regards to beryllium, concentrations of these this analyte have not been reported above the laboratory limit of reporting and therefore the reported % beryllium is likely exaggerated. Similar to barium, the maximum % of beryllium did not correspond to the period in which the maximum PM_{10} concentration was reported, and therefore this is not representative of a true exceedance.

When compared to the concentrations adopted as part of the HHRA (CDM Smith, 2023), the estimated annual air concentrations were generally lower (in some cases several orders of magnitude lower). This is likely due to the limited dataset that was available at the time of the HHRA, resulting in the HHRA adopting averages estimated based on HVAS resulted completed over irregular intervals (for example weekly periods for a maximum of 16 weeks in a particular year). This does suggest that the resultant modelled concentrations outlined in the HHRA for various pathways are likely overestimated.



Table 8-5 **Estimated Analyte Concentrations in Air Based on Depositional Dust and PM10 Concentrations**

Analyte	% based on Depositional Dust	1 hour (µg/m³)				24 Hours (µg/m³)				1 year (µg/m³)				
		Max PM ₁₀ Con. ¹	APAC EPA 1961	DWER 2019	Estimated Analyte Conc. ²	Max PM ₁₀ Con. ¹	APAC EPA 1961	DWER 2019	Estimated Analyte Conc. ²	Max PM ₁₀ Con. ¹	APAC EPA 1961	DWER 2019	Estimated Analyte Con. ²	HHRA Estimated Conc. ³
Antimony	0.044%	165.40	-	0.82	0.073	19.35	1	-	0.009	4.01	0.3	0.027	0.00176	0.016
Arsenic	0.022%	165.40	9.9	0.09	0.036	19.35	-	0.027	0.004	4.01	0.007	0.0027	0.00087	0.01
Barium	4.500%	165.40	5	9	7.443	19.35	-	-	0.871	4.01	-	-	0.18045	0.78
Beryllium	0.004%	165.40	-	0.004	0.007	19.35	-	-	0.001	4.01	0.001	-	0.00018	-
Cadmium	0.004%	165.40	18	0.018	0.007	19.35	0.03	-	0.001	4.01	0.005	-	0.00018	0.0007
Chromium	0.005%	165.40	1.3	0.09	0.009	19.35	-	-	0.001	4.01	0.005	0.00018	0.00022	0.06
Cobalt	0.004%	165.40	-	-	0.007	19.35	-	0.092	0.001	4.01	-	0.092	0.00018	-
Copper	0.231%	165.40	10	18	0.382	19.35	-	-	0.045	4.01	-	0.92	0.00926	0.009
Iron	0.761%	165.40	-	-	1.259	19.35	-	-	0.147	4.01	-	-	0.03052	-
Lead	0.013%	165.40	-	-	0.021	19.35	-	-	0.002	4.01	0.5	-	0.00052	0.013
Manganese	0.019%	165.40	9.1	-	0.032	19.35	-	-	0.004	4.01	0.15	0.14	0.00078	0.006
Mercury	0.000%	165.40	-	0.18	0.001	19.35	-	-	0.000	4.01	1	0.18	0.00002	-
Molybdenum	0.013%	165.40	-	-	0.021	19.35	-	11	0.002	4.01	-	-	0.00052	-
Nickel	0.009%	165.40	0.2	0.18	0.015	19.35	-	0.14	0.002	4.01	0.01	0.003	0.00035	0.014
Selenium	0.044%	165.40	-	0.92	0.073	19.35	-	-	0.009	4.01	-	-	0.00176	-
Tin	0.022%	165.40	-	-	0.036	19.35	-	-	0.004	4.01	-	-	0.00087	-
Vanadium	0.009%	165.40	-	-	0.015	19.35	-	0.92	0.002	4.01	-	-	0.00035	-
Zinc	3.833%	165.40	20	-	6.340	19.35	-	46	0.742	4.01	2	-	0.15370	0.5



Analyte	% based on Depositional Dust	1 hour (µg/m ³)			24 Hours (µg/m ³)			1 year (µg/m ³)						
		Max PM ₁₀ Con. ¹	APAC EPA 1961	DWER 2019	Estimated Analyte Conc. ²	Max PM ₁₀ Con. ¹	APAC EPA 1961	DWER 2019	Estimated Analyte Conc. ²	Max PM ₁₀ Con. ¹	APAC EPA 1961	DWER 2019	Estimated Analyte Conc. ²	HHRA Estimated Conc. ³
Sulphate	0.720%	165.40	-	-	1.191	19.35	-	-	0.139	4.01	-	-	0.02887	-
Cyanide	5.522%	165.40	-	90	9.133	19.35	-	-	1.069	4.01	-	-	0.22143	-

Table Notes:

¹ Maximum PM₁₀ concentration reported as part of the real-time dust monitoring program

² Estimated analyte concentration in air based on % analyte informed by the depositional dust analysis and the maximum PM₁₀ concentration reported during real-time dust monitoring

³ Maximum ambient air averages adopted during the HHRA (CDM Smith, 2023) to model concentrations via different transport pathways.

APAC EPA 1961 – Air Pollution Assessment Criteria (APAC) outlined in EPA Publication 1961

DWER 2019 – Western Australian Department of Water and Environmental Regulations – Guidelines – Air Emissions, 2019



9 Summary of Potential Risk to Environmental Values

9.1 Surface Water

Elevated concentrations of various metals (arsenic, copper, iron, molybdenum, and zinc), TDS, sulphate and pH exceeded the adopted criteria for environmental values of water. As outlined in **Section 5**, in accordance with the ERS (2021) the environmental values of surface water do not apply to constructed waterways which may include the evaporation ponds present at the site. The exception to this may be the environmental value of maintenance of aquatic ecosystems and species as these may form overtime within the ponds.

As rehabilitation of the ponds is proposed to occur which will likely include excavation and capping of sediments, land reforming and re-establishment of native vegetation, and as no ongoing source of water will be provided to the ponds, the risk to ecological receptors is not considered relevant.

Environmental values of surface water are considered to apply at surrounding natural water ways including Nuggety Gully and the unnamed creek. These water bodies represent ephemeral waterways, and flow of water through these water bodies is unlikely to sustain certain environmental values. No water was observed to flow in Nuggety Gully or the unnamed creek during the annual monitoring period.

Overall, risk to environmental values of water based on the surface water monitoring program is considered low.

9.2 Groundwater

Based on the multiple lines of evidence (i.e., isotope analysis, major cation and anion analysis, Na/Cl ratios and salinity), seepage appears to have impacted groundwater in the shallow, intermediate and deep lead aquifers. Seepage has resulted in elevated concentrations of some metals, TDS, sulphate, chloride, and sodium variably above the adopted criteria for environmental values of groundwater.

Seepage appears to be impacting monitoring wells in the shallow aquifer directly adjacent to the ponds, but not in wells located approximately 95 m west of the ponds (delineated by SD02, SD03, SD15). In the intermediate aquifer, seepage appears to be impacting wells immediately adjacent to the ponds, and potentially in wells located off-site approximately 130 m from the ponds (WMW45, and potential WMW34 and WMW38), but not in a well located approximately 320 m west of the site (WMW52). Seepage also appears to be impacting the deep lead aquifer directly adjacent to the ponds however this has not been delineated off-site due to a lack of groundwater monitoring wells which screen this aquifer. The bedrock aquifer is not inferred to be impacted based on previous investigations, although only limited wells screen this aquifer.

A summary of potential risk to environmental values of groundwater at the site is presented in **Table 9-1**. For simplicity, the most conservative segment of groundwater has been adopted and the table does not differentiate between analytes which were only reported in certain aquifers (either naturally or due to seepage).

In accordance with EPA Publication 2001, when considering the risk of harm from groundwater contamination, both existing and potential environmental values should be regarded. Existing environmental values are those that currently exists in the vicinity of the site (for example a creek which receives groundwater or a bore that is used for irrigation). A potential environmental value is one that could be supported by the background groundwater quality. A potential environmental value of groundwater is considered likely in circumstances where groundwater is used for that value in the same hydrogeological setting or the existing and likely future land uses are compatible with the environmental value.



Therefore, although the environmental value of groundwater to be protected are determined by the segment of groundwater regardless of the land use and hydrogeological properties, these should be taken into account when identifying 'potential' environmental value of groundwater which may be applicable.

Surrounding land use is predominantly used for farming and agricultural purpose or for public parks and recreation (National Park). These land uses support the use of groundwater for extractive uses such as potable water supply, agriculture, and irrigation – irrigation and agriculture and irrigation – stock water, however these are unlikely to be realised on a local scale based on the following:

- Hydraulic conductivity and aquifer yield within the Shepparton Formation can be highly variable. Previous investigations have estimated conductivity within this unit of 0.03 m/day (HLA, 2007). In the intermediate and deep lead aquifers, yield is more favourable with hydraulic conductivities ranging between 0.2 – 0.8 m/day.
- A search of registered groundwater monitoring bores indicates that only three registered bores exist within a 4 km radius of the site are inferred to be used for extractive purposes (domestic and stock). Of which, two of the bores are inferred to be installed within the bedrock aquifer (Castlemaine Group) whilst the other is inferred to be installed within a shallow interval (1.8 m bgl) of the Shepparton Formation. These registered bores are located beyond the inferred extent of seepage impacts.
- Groundwater quality in both the Shepparton Formation and Bedrock Aquifers is known to be highly variable. The West Campaspe GMA Plan (GMW, 2024) indicates that groundwater salinity across the West Campaspe GMA (which includes WEPC) is likely too high for irrigation without treatment. This may imply that the groundwater management authority considers the use of groundwater for extractive purpose not to be supported by the natural water quality.



Table 9-1 Summary of Potential Risk to Environmental Values of Groundwater

Environmental Value	Potential Existing and Future Receptors		Contaminants above Criteria Due to Seepage	Potentially Naturally Elevated Analytes above Criteria	Environmental Value Likely to be Precluded by Contamination from Site
	On-site	Off-site			
Water dependent ecosystems (slightly to moderately modified)	No	Yes	Iron and manganese	Cobalt, cadmium, copper, lead, mercury, nickel selenium and zinc	Unlikely – No receiving water bodies are known to exist at the site. Furthermore, the elevated concentrations of metals attributed to seepage are unlikely to reach the receiving water body at appreciable concentration due to the effects of adsorption and dilution in the aquifer.
Potable water supply (acceptable)	Potentially (but unlikely)	Potentially (but unlikely)	TDS, chloride, sodium, sulphate, iron, and manganese	TDS, chloride, sodium, sulphate, pH, cadmium cobalt, copper, lead, mercury, nickel, and selenium	Unlikely – Although the proposed future land use at the site may potentially support these environmental values, these are unlikely to be realised on-site in the future due to, the expected low aquifer yield and variable natural water quality which may naturally preclude groundwater being used for this particular environmental value. Furthermore, once the site is rehabilitated and assuming the land does not become freehold, any groundwater extraction at the site can likely be managed/restricted by DEECA or the relevant government organisation who takes on the management of the land (i.e., Parks Victoria, DEECA, etc).
Agriculture and irrigation (irrigation)	Potentially (but unlikely)	Potentially (but unlikely)	Iron and manganese	pH, cobalt, selenium, and zinc	Regarding off-site extractive uses, the nearest registered bore registered for extractive purposes is located greater than 750 m from the site and therefore appreciable concentrations of contaminants are unlikely to reach existing off-site bores used for extractive uses. Although there is a potential that this environmental value will be realised closer to the site in the future, this is unlikely due to the availability of recirculated water supply in certain areas, expected low aquifer yield and variable natural water quality which may naturally preclude groundwater been used for these particular environmental values.
Agriculture and irrigation (stock watering)	Potentially (but unlikely)	Potentially (but unlikely)	TDS, sulphate, and manganese	TDS, sulphate, and selenium	
Industrial and commercial use	Potentially (but unlikely)	Potentially (but unlikely)	-	-	
Water-based recreation (primary contract recreation)	Potentially (but unlikely)	Potentially (but unlikely)	TDS, chloride, sodium, sulphate, iron, manganese	TDS, chloride, sodium, sulphate, pH	
Traditional owners cultural and spiritual values	Refer to Water dependent ecosystems (slightly to moderately modified) and Water-based recreation (primary contract recreation).				



Environmental Value	Potential Existing and Future Receptors		Contaminants above Criteria Due to Seepage	Potentially Naturally Elevated Analytes above Criteria	Environmental Value Likely to be Precluded by Contamination from Site
	On-site	Off-site			
Buildings and structures	No	No	Chloride, sulphate	Chloride, sulphate	No – no buildings currently exist at the site. Furthermore, although some shallow groundwater is present in wells screened between 2-4 bgl, this is likely representative of an artificial perched aquifer which will likely dissipate with time following rehabilitation of the ponds. Furthermore, based on the nature of construction of existing surrounding buildings, it is unlikely that foundations would intercept the natural underlying groundwater.



9.3 Dust

Although depositional dust and real-time dust monitoring provides some information regarding the concentration and composition of dust, direct measurement of potentially impacted media (i.e., soil, tank water) provides the most reliable assessment of the risk to environmental values.

The key transport mechanisms for dust to impact receptors includes inhalation by adjacent residents or on-site workers, deposition of dust onto soils and direct contact by ecological and human health receptors, deposition of dust onto roofs and accumulation in tank water potentially used for drinking water, and deposition into surrounding water bodies or swimming pools used for recreation.

The risk to environmental values due to dust emissions generated from the site is considered likely low based on the current understanding of the site and the following multiple lines of evidence:

- Although the real-time dust monitoring program has reported PM₁₀ concentrations above nuisance dust criteria for adaptive management, occurrence have been isolated, short lived and not associated with any activity occurring at the site. PM_{2.5} and PM₁₀ concentrations have not exceeded health-based criteria defined in the ERS, 2021.
- Based on previous environmental investigation (Senversa, 2015, Edwards, 2019, BlueSphere 2025), soil sampling completed outside of the footprint of the ponds have not identified elevated concentrations of key contaminants of potential concern above Tier 1 HILs and EILs. Furthermore, modelled soil concentrations reported in the HHRA (CDM Smith, 2023) were below tier 1 criteria in soils. Therefore, receptors are unlikely to be impacted by dust via direct contact with deposited dust on soils.
- Based on the results of the real-time dust monitoring program, concentrations of PM_{2.5} and PM₁₀ were below the adopted ambient air indicators defined in the ERS 2021. Furthermore, when concentrations of analytes are estimated in air based on the PM₁₀ concentrations and depositional dust analysis, concentrations of all analytes were below the adopted human health and environmental criteria as defined in EPA Publication 1961 (and other guidelines). When combined with the results of the HHRA (CDM Smith, 2023), the data indicates that receptors are unlikely to be impacted by dust via direct inhalation.
- The HHRA (CDM Smith, 2023) modelled tank water and dam/swimming pool water concentrations to assess risk. The HHRA concluded that the potential risk to receptors via these pathways was likely low however required further review to confirm low risk. EHS Support notes that previous water tank sampling (Senversa, 2015) indicated that contaminants of potential concern were typically below the adopted drinking water guidelines in tank water, however, no sampling of swimming pools or dam water has been undertaken. The estimated concentrations in air based on the depositional dust results and real-time dust monitoring are generally lower than the concentrations adopted as part of the HHRA to model concentrations. Although developing updated modelled concentrations of analytes in tank water and dam water would likely results in lower modelled concentrations been estimated, this is unlikely to provide additional value as uncertainty will likely remain as direct measurement of these features is preferred.

Overall, based on the depositional dust data and real-time dust monitoring obtained during this monitoring period, the current understanding of the risk posed to receptors has not changed and is generally considered low. Although the risk is considered to likely be low, undertaking an additional round of tank water sampling, along with sampling of dam and pool water will address remaining uncertainties.



10 Conclusions and Recommendations

The following key recommendations are made based on the results of the environmental monitoring undertaken at the site between June 2024 and May 2025.

10.1 Surface Water

Based on the results of the surface water monitoring program, the following conclusions are made:

- Ponds 1A, 1B, 2 and 3 all contained water from the New Moon Treatment Plant during the annual monitoring period. Pond 6 and 7 were predominantly dry, with the exception of a pool of accumulated rainwater in the western portion of Pond 6.
- Surface water sampling from pond water indicates that the pond water contained elevated concentrations of various metals including arsenic, iron and molybdenum, and TDS, sulphate, pH, and turbidity. Concentrations of arsenic, TDS, sulphate, and pH were typically within historical ranges (albeit generally lower).
- As the ponds are considered artificial waterways in accordance with ERS, 2021, the environmental values of water are not considered to be relevant. The exception to this may be maintenance of aquatic ecosystems and species which may have formed in the ponds overtime. As no ongoing source of water will be provided to the ponds, and as the ponds are proposed to be rehabilitated the risk to these environmental values is not considered relevant.
- During the annual reporting period, no water was present in Nuggety Gully or the Unnamed Creek and therefore no surface water sampling was completed. There is no known direct hydraulic connection between the ponds and these waterbodies (i.e., either via overland flow or groundwater migration).

The following recommendations are provided in relation to the surface water monitoring program:

- As key contaminants of potential concern in surface water (namely TDS and arsenic) are generally within historical ranges and the site now receives treated water from the New Moon Treatment Plant, quarterly surface water sampling from pond water is unlikely to provide additional information regarding potential risk to environmental values. In view of this, the frequency of surface water monitoring should be reduced from quarterly to biannual, and then annually. The frequency should be reassessed again once rehabilitation activities commence.
- During the annual monitoring period, Nuggety Gully and the Unnamed Creek were dried and therefore no surface water samples were completed. At the time of preparing this report and following a significant rainfall event in late July 2025, surface water samples were able to be collected and the results will be documented in the next annual report. These adjacent creeks should continue to be monitored following sufficient rainfall in order to gain an understanding of potential risk to environmental values.
- It is recommended that DEECA continue to routinely inspect the site and manage water levels within Ponds 1A, 1B, 2 and 3 to ensure sufficient water is present to aid in dust mitigation, whilst ensuring pond water does not enter adjacent waterways via overland flow. Access to the site by general public or grazing stock should continue to be restricted.

10.2 Groundwater

Based on the results of the groundwater monitoring program, the following conclusions are made:

- Groundwater elevation in the shallow, intermediate, deep lead and bedrock aquifers during the annual reporting period are within historical groundwater elevations recorded at the site. There appears to have been continual recovery of groundwater elevations (primarily in the intermediate and deep lead aquifers) following the cessation of the GIBS in 2013.



- Groundwater flow direction in the shallow and intermediate aquifers is considered to be in a west to northwest direction towards Myers Creek. Localised groundwater mounding predominantly in the shallow aquifer is evident immediately to the west of the site likely due to seepage from the ponds.
- Groundwater flow direction in the Deep Lead aquifer cannot be confirmed based on the available groundwater monitoring well network, however, it is expected to be in a west to north-west direction. In the Bedrock aquifer, flow is regionally expected to be in a northeast direction. However, groundwater monitoring completed during the annual monitoring period indicates that groundwater flow direction in the bedrock aquifer may be variable, potentially due to the condition of the current monitoring well network which screens this aquifer.
- Based on the multiple lines of evidence (i.e., isotope analysis, major cation and anion analysis, Na/Cl ratios and salinity), seepage appears to have impacted groundwater in the shallow, intermediate and deep lead aquifers. Seepage has resulted in elevated concentrations of some metals (namely iron and manganese), TDS, sulphate, chloride, and sodium variably above the adopted criteria for environmental values (including maintenance of aquatic ecosystems and species, potable water supply (desirable), agriculture and irrigation (irrigation), agriculture and irrigation (stock water), water-based recreation and buildings and structures). However, TDS, sulphate, chloride, and sodium are also naturally elevated in the intermediate and deep lead aquifers.
- The groundwater monitoring well network in the shallow and intermediate aquifers is generally considered sufficient for delineating seepage impacts. Impacts in the shallow and intermediate aquifers have been delineated and appear to be confined to within a few hundred meters of the site. The extent of impacts in the deep lead aquifer has not been determined or delineated due to a lack of groundwater monitoring wells which screen this aquifer, however, previous investigations indicate that the deep lead aquifer is discontinuous to the west of the site. The bedrock aquifer is not considered to be impacted based on previous investigations, although only limited wells screen this aquifer.
- Based on the delineated extent of impacts from seepage in the shallow and intermediate aquifers, the discontinuous nature of the deep lead aquifer, the distance to the point of groundwater discharge (Myers Creek, approximately 500 m from the site), the natural variability of groundwater quality and yield, the absence of nearby registered existing groundwater users and the low likelihood of potential groundwater uses been realised in the future, the risk to environmental values of groundwater due to seepage is considered likely to be low.

The following recommendations are provided in relation to the groundwater monitoring program:

- As analytical results for groundwater are consistent with historical results, quarterly groundwater sampling is not considered warranted. Consideration should therefore be given to reducing the frequency of groundwater monitoring from quarterly to biannual, with the intent of reducing it too annually. The frequency should be reassessed once rehabilitation activities commence.
- Consider engaging a licensed surveyor to confirm elevation and location data of the existing groundwater monitoring well network. This will assist in confirming flow directions, particularly in the bedrock aquifer.
- The extent of impacts from seepage has not been fully investigated in the deep lead aquifer. Furthermore, although previous investigations have concluded that the bedrock aquifer is unlikely to be impacted by seepage, the nature of the construction and positioning of monitoring wells which screen this aquifer is not ideal. Given the expected natural variability groundwater quality of the deep lead and bedrock aquifers, risk to environmental values due to seepage is likely to be low. Additional groundwater monitoring wells which screen these aquifers would be required to confirm this conclusion.
- DEECA should continue to liaise with the property owner directly to the west and down inferred hydraulic gradient of the site to ensure groundwater is not used for extractive purposes in areas inferred to be impacted by seepage.



10.3 Dust

Based on the results of the dust monitoring program, the following conclusions are made:

- Continuous real-time dust monitoring at the site did not identify elevated concentrations of PM_{2.5} or PM₁₀ above air quality criteria defined in the ERS, 2021. There were isolated exceedances of the EPA Publication 1961 criteria for nuisance dust criteria, however, these were relatively short lived and did not correspond to any activity been undertaken at the site to warrant the implementation of adaptive dust mitigation measures.
- Several exceedances of total insoluble solids were reported during the depositional dust monitoring program at the site. Exceedances were only reported at WVDD01 (south of the site). Prevailing wind direction during months when exceedances were reported was generally from a southerly direction, suggesting that deposited matter collected in WVDD01 may be from ambient regional sources (such as agricultural activities) rather than derived from dust generated from the site.
- Analysis of depositional dust samples reported various metals (arsenic, barium, chromium, copper, lead, iron, manganese, nickel, vanadium, zinc), and sulphate and cyanide above the laboratory limit of reporting. Although the reported results for barium, chromium, copper, lead, iron, manganese, zinc, and sulphate were subject to greater variability in boundary dust monitoring gauges, results were generally consistent with the background location.
- Detections of cyanide only occurred on two occasions. Speciation analysis completed indicates that cyanide is present as free cyanide rather than associated with complexes (which is unusual in the context of the matrix). Based on the available dataset the detection of cyanide in depositional dust is considered an anomaly, however, ongoing monitoring should continue to confirm this.
- Concentrations of metals, sulphate and cyanide in air was estimated based on the depositional dust monitoring results and PM₁₀ concentrations reported by the real-time dust monitors. All estimated air concentrations were below the human health and environmental criteria defined in EPA Publication 1961. The estimated concentrations in air were also lower than the concentrations adopted as part of the modelling conducted during the HHRA to assess other transport pathways.
- Overall, based on the depositional dust and real-time dust monitoring obtained during this monitoring period, combined with the results of previous environmental investigations, the current understanding of the risk posed to receptors due to dust has not changed and is generally considered low.

The following recommendations are provided in relation to the dust monitoring program:

- Ongoing real-time dust monitoring for PM_{2.5} and PM₁₀ should continue. Based on the data obtained from WV-RTD-02, which indicates that the risk to off-site receptors in this area is low, this monitor should be relocated to the southern side of Ponds 6/7 to assess the potential generation of dust during summer months when stronger northerly winds occur. The monitoring network should continue to be reassessed once rehabilitation activities commence. This may include the establishment of additional real-time dust monitors to act as dynamic monitors that target particular rehabilitation activities at the site.
- Monthly depositional dust analysis should continue. Analysis of depositional dust should include total insoluble solids, soluble solids, total solids, ash matter, combustible matter and total and insoluble metals and cyanide. The need for cyanide analysis should continually be reassessed based on the results of the depositional dust data.
- Although the risk to environmental values due to dust is considered low, direct measurement of potentially impacted media (i.e., soil, tank water) provides the most reliable assessment of the risk to environmental values. In view of this, undertaking an additional round of tank water sampling along with dam or pool water sampling should be considered. Ideally, this should be completed prior to the commencement of rehabilitation activities, and then immediately following the completion of rehabilitation.



11 Limitations

EHS Support Pty Ltd (“EHS Support”) has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of DEECA (ERR) and only those third parties who have been authorised in writing by EHS Support to rely on the report. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report. It is prepared in accordance with the scope of work and for the purpose outlined in the Proposal dated December 2023 and subsequent variations.

The methodology adopted and sources of information used by EHS Support are outlined in this report. EHS Support has made no independent verification of this information beyond the agreed scope of works and EHS Support assumes no responsibility for any inaccuracies or omissions. No indications were found during our investigations that information contained in this report as provided to EHS Support was false.

This report was prepared in August 2025 and is based on the conditions encountered and information reviewed at the time of preparation. EHS Support disclaims responsibility for any changes that may have occurred after this time.

This report should be read in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties. This report does not purport to give legal advice. Legal advice can only be given by qualified legal practitioners.

Whilst to the best of our knowledge information contained in this report is accurate at the date of issue, subsurface conditions, including groundwater levels can change in a limited time. Therefore this document and the information contained herein should only be regarded as valid at the time of the investigation unless otherwise explicitly stated in this report.



12 References

- ANZECC & ARMCANZ. (2000). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand.
- ANZG. (2018). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia.
- Arcadis Australia Pacific Pty Ltd. (2017). *Human Health Risk Assessment – Woodvale Evaporation Pond Complex*.
- Australian Laboratory Services Pty Ltd. (2024). *Department of Energy, Environment and Climate Action – Woodvale Dust Monitoring Report Q1 2024*.
- BlueSphere Environmental Pty Ltd. (2025). *Environmental Assessment, Woodvale Evaporation Pond Complex*.
- CDM Smith Australia Pty Ltd. (2023). *Department of Energy, Environment and Climate Action, Preliminary Human Health Risk Assessment – Dust: Woodvale Evaporation Ponds Audit*.
- Edwards Environmental Pty Ltd. (2019). *WEPC Rehabilitation Project, Annual Soil Sampling 2019 – WEPC, Woodvale, Victoria*.
- EHS Support Pty Ltd. (2024). *Environmental Monitoring Plan – Woodvale Evaporation Pond Complex, Woodvale, Victoria*.
- Environment Protection Authority. (2009, 30 June). *Industrial Waste Resource Guidelines – Sampling and Analysis of Waters, Wastewaters, Soils and Waste (Publication IWRG701)*.
- Environment Protection Authority. (2022, February). *Groundwater Sampling Guidelines (Publication 669.1)*.
- Environmental Protection Agency. (2002, 5 December). *A Guide to the Sampling and Analysis of Air Emissions and Air Quality (Publication 440.1)*.
- Environmental Protection Agency. (2007, December). *Protocol for Environmental Management: Mining and Extractive Industries (Publication 1191)*.
- Environmental Protection Agency. (2022, 23 February). *Guidance for Assessing and Minimising Air Pollution (Publication 1961)*.
- FSANZ. (2016). *Australia New Zealand Food Standards Code, Schedule 19: Maximum levels of contaminants and natural toxicants*. Food Standards Australia and New Zealand.
- GHD Pty Ltd. (2017). *GBM Gold Ltd – Woodvale Evaporation Ponds Complex Annual Hydrogeological Review 2016/17*.
- Goulburn-Murray Water. (2024). *West Campaspe – Groundwater Management Area – Local Management Plan*.
- HLA-Envirosciences Pty Ltd. (2007). *Supplementary Groundwater Investigations*.



- Jacobs Group Pty Ltd. (2015). *Pre-Feasibility Assessment of Interim and Longer-Term Options to Manage Mine Void Water*.
- Kralcopic Pty Ltd. (2017). *Woodvale Evaporation Ponds Complex (WEPC) – MIN 5364 Work Plan Variation – Rehabilitation Plan*.
- NEPC. (2013). *National Environment Protection (Assessment of Site Contamination) Measure, 2013 Amended*. National Environment Protection Council Service Corporation, Canberra ACT, Australia.
- NHMRC. (2008). *Guidelines for Managing Risks in Recreational Water*. National Health and Medical Research Council, Canberra ACT, Australia.
- NHMRC. (2011). *Australian Drinking Water Guidelines*. National Health and Medical Research Council, Canberra ACT, Australia.
- Peter J Ramsay & Associates. (2018). *Kralcopic Pty Ltd – Environmental Audit of the Risk of any Possible Harm or Detriment to the Environment Pursuant to Part IXD (Section 53V) of the Environment Protection Act 1970 – Woodvale Evaporation Ponds Complex, Dalys Road, Woodvale, Victoria. (EPA Reference: 61207-2 (8005644))*.
- Senversa Pty Ltd. (2015). *Environmental Site Assessment – Woodvale Evaporation Ponds Complex*.
- ServiceStream Pty Ltd. (2023). *Bendigo GWTP Operational Management Plan*.
- Standards Australia. (2005). *AS 4482.1-2005 Guide to the investigation and sampling of sites with potentially contaminated soil Part 1: Non-volatile and semi-volatile compounds*.
(Note: This has now been superseded; however, several other guidance documents continue to reference this standard.)
- Standards Australia. (2009). *AS 2159-2009 Piling – Design and installation*.
- Standards Australia. (2014). *AS/NZS 3580.9.15-2014 – Methods for Sampling and Analysis of Ambient Air: Determination of Suspended Particulate Matter – Particulate Metals High or Low Volume Sampler Gravimetric Collection – Inductively Coupled Plasma (ICP) Spectrometric Method*.
- Standards Australia. (2016). *AS/NZS 3580.10.1-2016 – Methods for Sampling and Analysis of Ambient Air: Method 10.1: Determination of Particulate Matter – Deposited Matter – Gravimetric Method*.
- Tickell, S.J. & Humphrys, W.G. (1987). Groundwater resources and associated salinity problems of the Victorian part of the Riverine Plain. *Geological Survey of Victoria Report 84*. Department of Industry, Technology and Resources, Victoria, 203 pp.
- Victorian Government. (1990). Mineral Resources (Sustainable Development) Act.
- Victorian Government. (2017). Environment Protection Act.
- Victorian Government. (2021). Environment Protection Regulations.
- Victorian Government. (2021, 26 May). Environmental Reference Standard, Gazette No. S245.



Figures



LEGEND

Site Boundary

Ponds

Internal Document Control Information:
User Name: Danny.Barnes; Date and Time Printed: 25/06/24 4:41:09 PM; Document Path: J:\EHSS_GIS\AUS\06108_DEECAD1_ANALYSIS\20240429_FigureUpdates\Figure_LA3.mxd

Woodvale Evaporation Pond Complex (WEPC) Site Location and Current Site Features

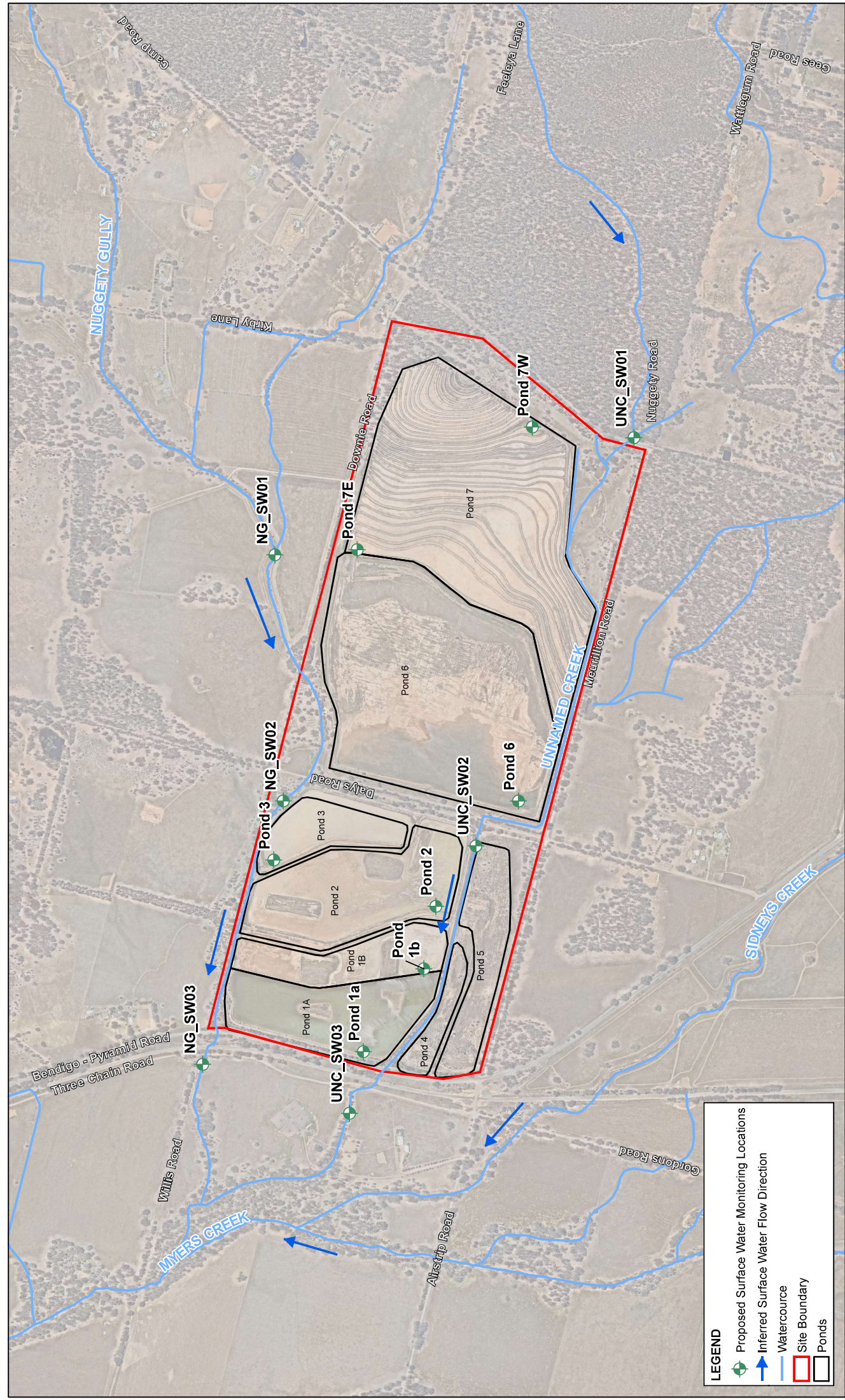
Woodvale Evaporation
Pond Complex
Environmental Monitoring

Figure 1

CREATED BY:	D. Barnes
APPROVED BY:	M. Russ
PROJECT REF. NO:	PTY05582
MAP PROJECTION:	Transverse Mercator
GRID/DATUM:	GDA2020 MGA Zone 55
SCALE:	1:10,000
AERIAL IMAGE	Nearmap PTY LTD
SOURCE:	

1 cm = 100 meters
0 0.25 0.5 1 1.5 2 Kilometers
(Page Size: A3)

While every care is taken by EHS Support to ensure the accuracy of the digital data, EHS Support makes no representation or warranty about its accuracy, reliability, completeness, suitability for any particular purpose and disclaims all responsibility and liability (including without limitation, liability in negligence for any expenses, losses, damages (including indirect or consequential damage) and costs which may be incurred as a result of data being inaccurate in anyway for any reason. Electronic files are provided for information only.



LEGEND

- Proposed Surface Water Monitoring Locations
- Inferred Surface Water Flow Direction
- Watercourse
- Site Boundary
- Ponds

Internal Document Control Information:
 User Name: Danny.Barnes; Date and Time Printed: 17/09/2025 1:30:50 PM; Document Path: Y:\GIS - Projects\SIDCEA\WEPC\2024\0429_FigureUpdates\Figure_LA3.mxd

Indicative Surface Water Monitoring Locations

**Woodvale Evaporation
 Pond Complex
 Environmental Monitoring**

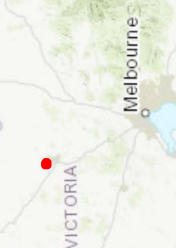
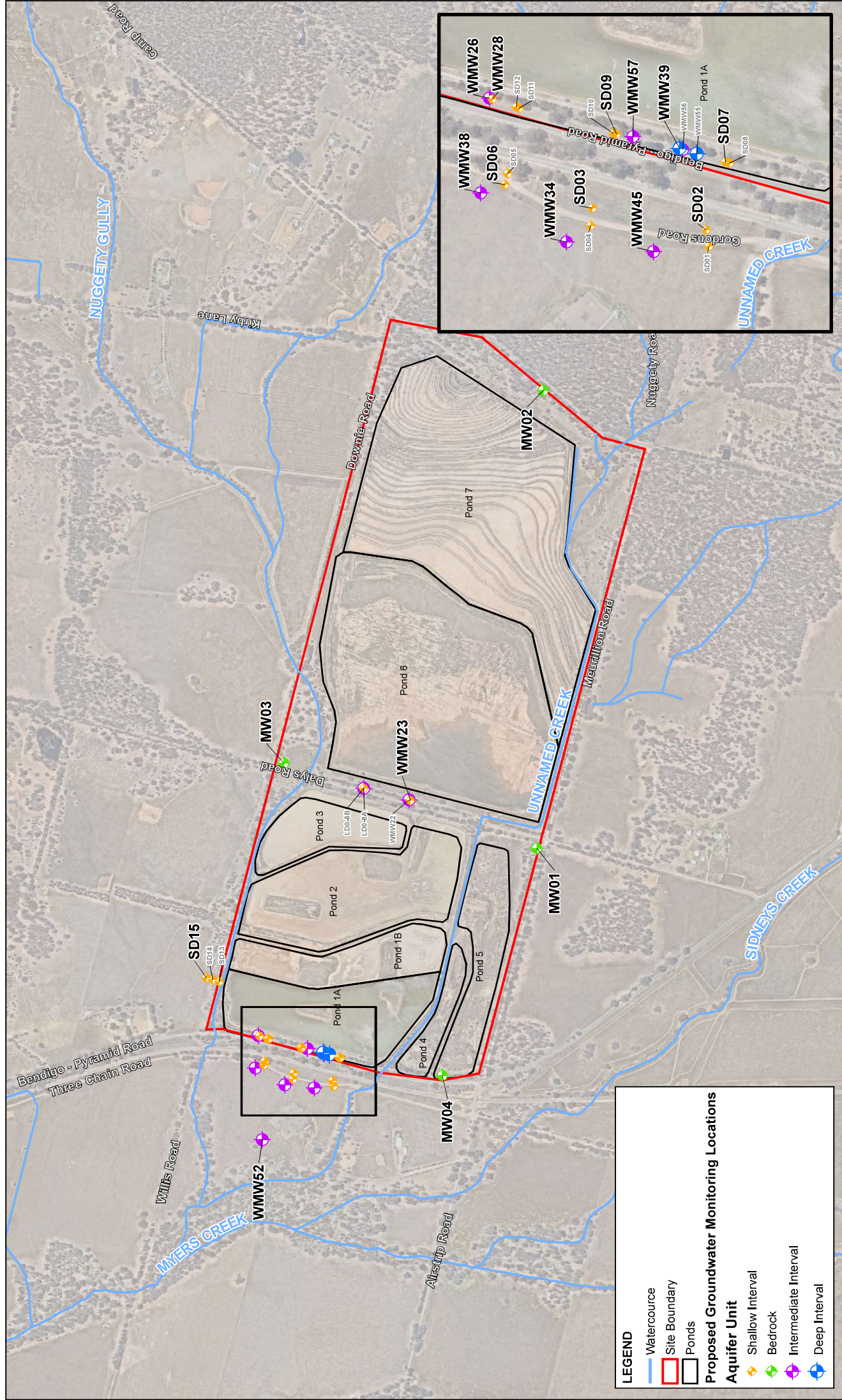


Figure 2

CREATED BY:	D. Barnes
APPROVED BY:	M. Russ
PROJECT REF. NO:	PTY05582
MAP PROJECTION:	Transverse Mercator
GRID/DATUM:	GDA2020 MGA Zone 55
SCALE:	1:10,000
AERIAL IMAGE	Source: Nearmap PTY LTD



While every care is taken by EHS Support to ensure the accuracy of the digital data, EHS Support makes no representation or warranties about its accuracy, reliability, completeness, suitability for any particular purpose and disclaims all responsibility and liability (including without limitation, liability in negligence for any expenses, losses, damages (including indirect or consequential damage) and costs which may be incurred as a result of data being inaccurate in any way for any reason. Electronic files are provided for information only.



CREATED BY:	D. Barnes
APPROVED BY:	M. Russ
PROJECT REF. NO:	PTY03582
MAP PROJECTION:	Transverse Mercator
GRID/DATUM:	GDA2020 MGA Zone 55
SCALE:	1:10,000
AERIAL IMAGE SOURCE:	Nearmap PTY LTD



Woodvale Evaporation
Pond Complex
Environmental Monitoring

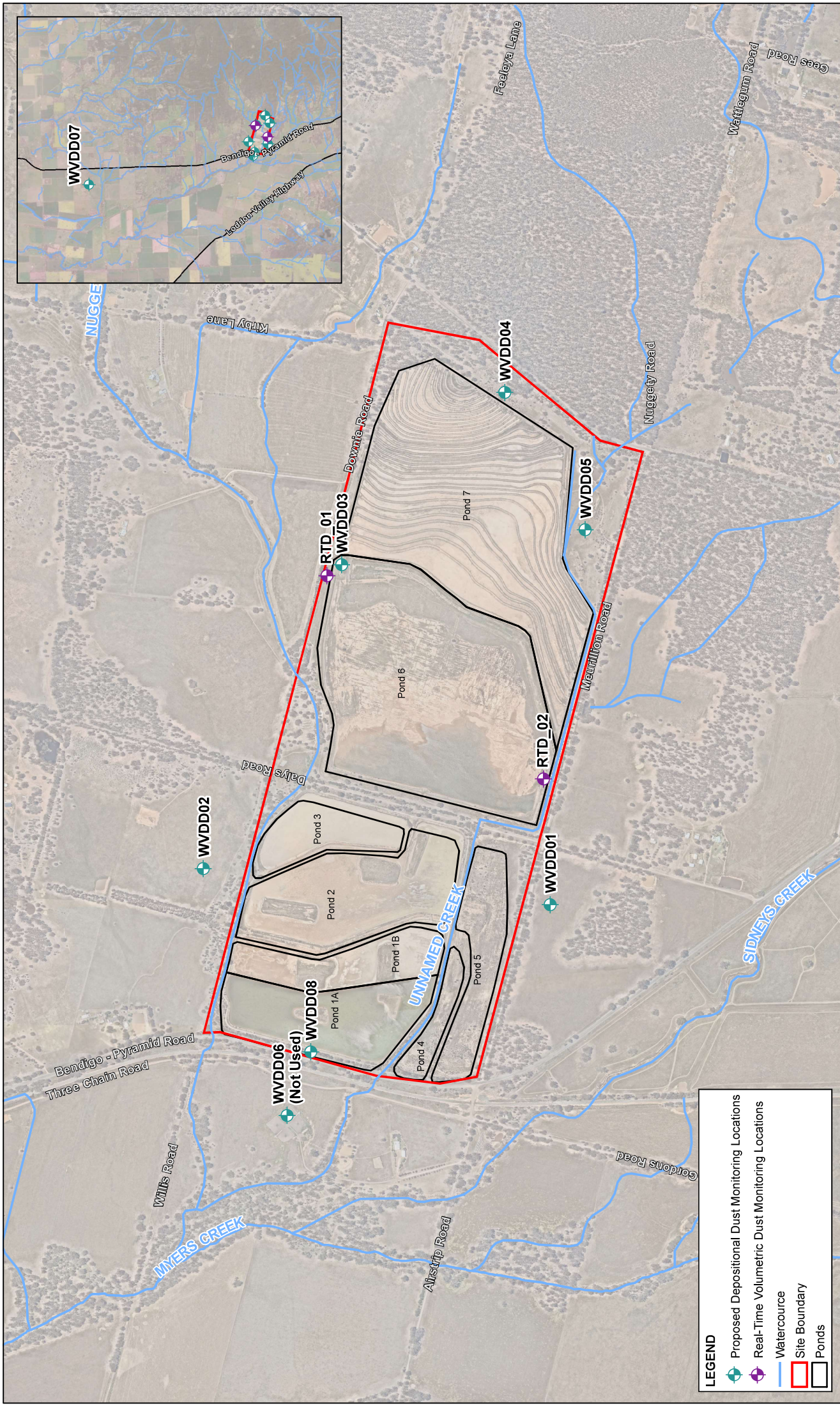
 EHS Support™

Indicative Groundwater Monitoring Locations

0 0.25 0.5 1 1.5 2 Kilometers

1 cm = 100 meters [Page Size: A3]

Whilst every care is taken by EFS Support to ensure the accuracy of the digital data, EFS Support makes no representation or warranties about its accuracy, reliability, completeness, suitability for any particular purpose and disclaims all responsibility and liability (including without limitation), liability in negligence for any expenses, losses, damages (including indirect or consequential damage) and costs which may be incurred as a result of data being inaccurate in anyway for any reason. Electronic files are provided for information only.



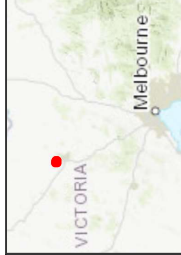
Indicative Dust Monitoring Locations

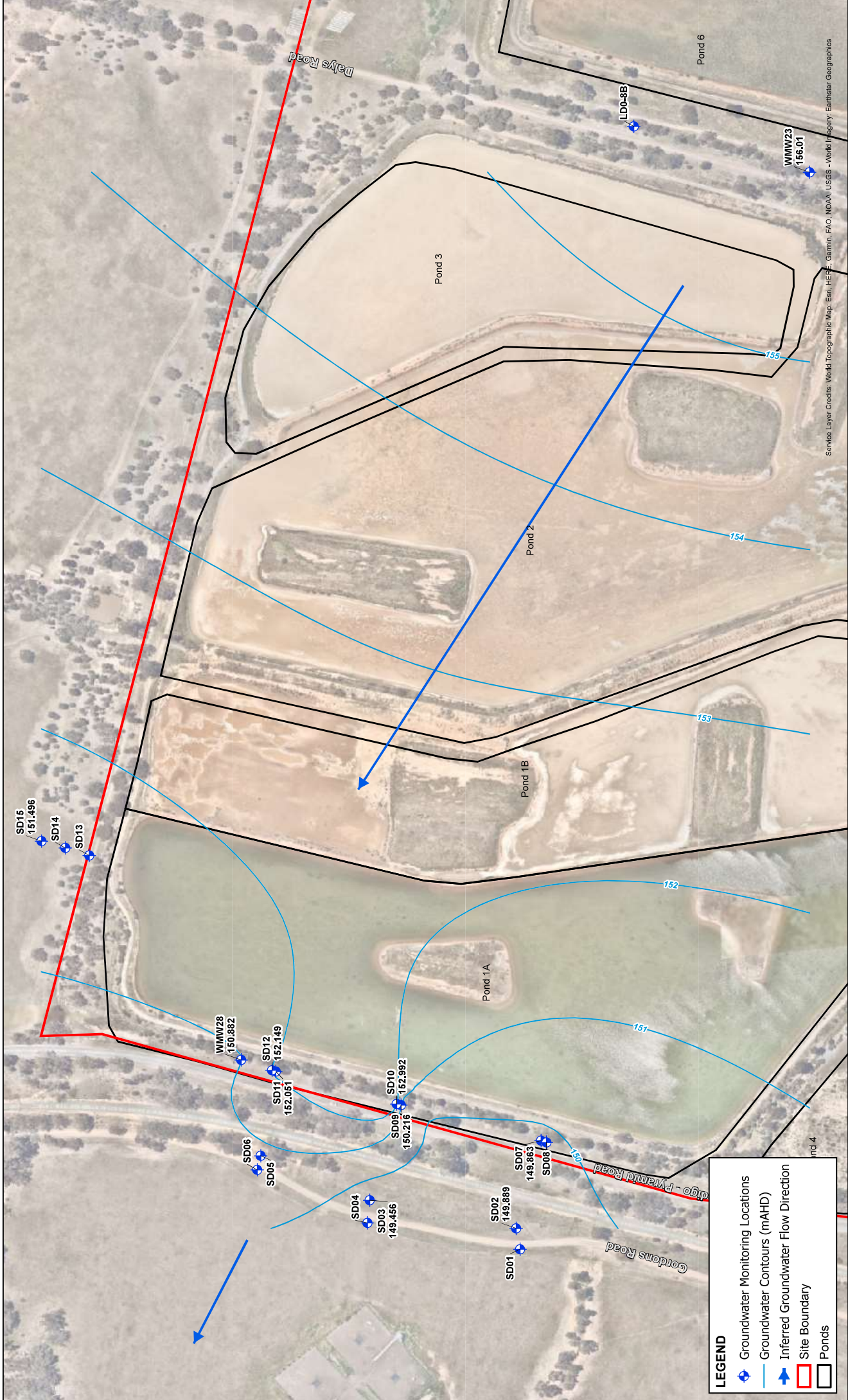
Woodvale Evaporation Pond Complex Environmental Monitoring



Figure 4

CREATED BY:	D. Barnes
APPROVED BY:	M. Russ
PROJECT REF. NO:	PTY05582
MAP PROJECTION:	Transverse Mercator
GRID/DATUM:	GDA2020 MGA Zone 55
SCALE:	1:10,000
AERIAL IMAGE SOURCE:	Nearmap PTY LTD





Internal Document Control Information:
User: Danni.Barnes; Date and Time Printed: 7/09/2025 1:47 PM; Document Path: Y:\GIS - Projects\DEECAN\PC\20240205EMP\03_Mapping\EMP_Contour_Series.aprx

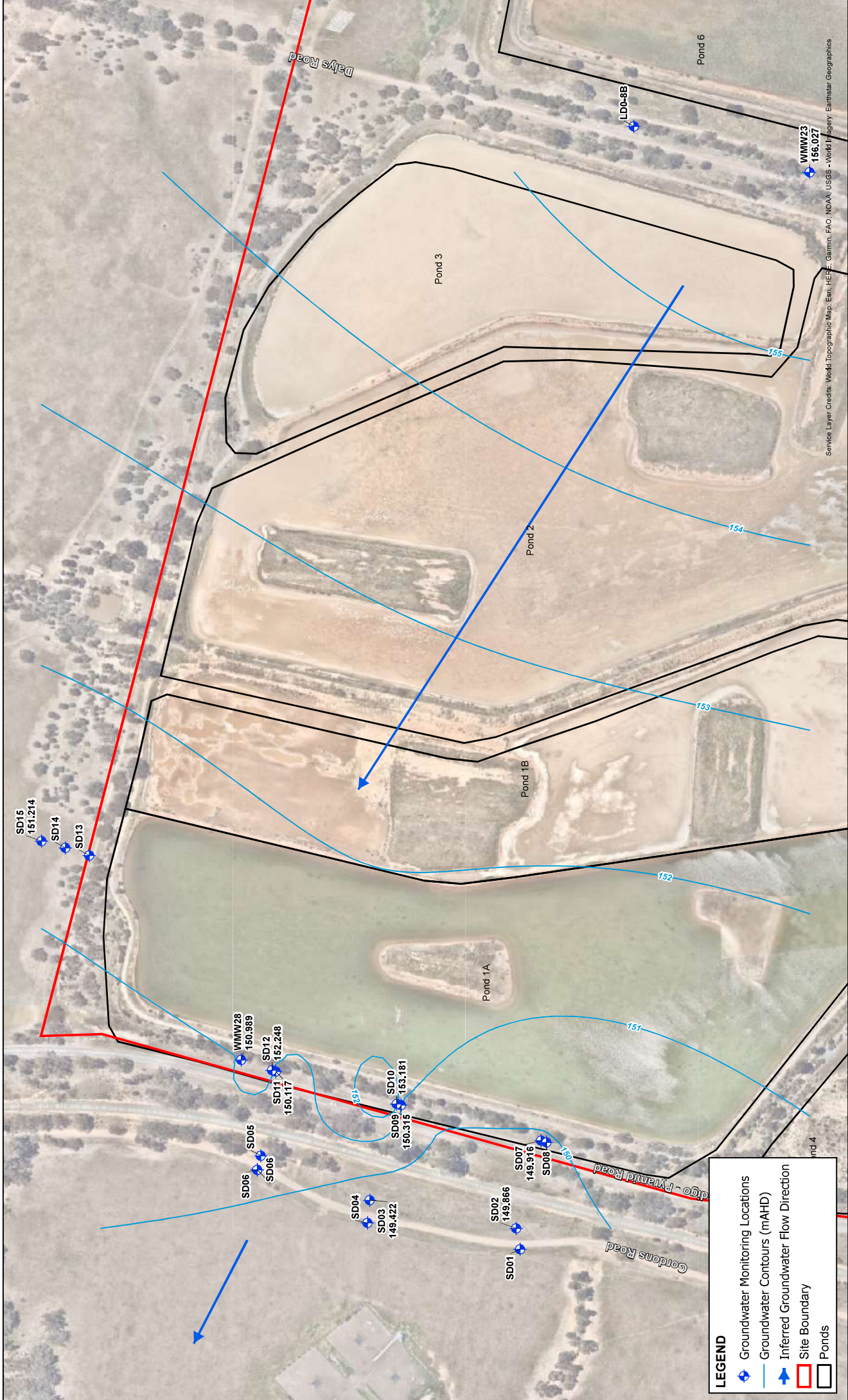
Shallow Aquifer - Groundwater Elevation Contours - July 2024

**Woodvale Evaporation
Pond Complex
Environmental Monitoring**



Figure 5A	
CREATED BY:	D. Barnes
APPROVED BY:	M. Russ
PROJECT REF. NO:	PTY05582
MAP PROJECTION:	Transverse Mercator
GRID/DATUM:	GDA2020 MGA Zone 55
SCALE:	1:2,672
AERIAL IMAGE	
SOURCE:	Neurmap PTY LTD

While every care is taken by EHS Support to ensure the accuracy of the digital data, EHS Support makes no representation or warranty about its accuracy, reliability, completeness, suitability for any particular purpose and disclaims all responsibility and liability (including without limitation) liability in negligence to any expenses, losses, damage (including indirect or consequential damage) and costs which may be incurred as a result of data being inaccurate in any way for any reason. Electronic data are provided for information only.



Internal Document Control Information:
User: Danni.Barnes; Date and Time Printed: 7/09/2025 1:47 PM; Document Path: Y:\GIS - Projects\DEECAN\EP03\2025\801_2024\2025EMP03_Mapping\EMP_Courtesy_Series.aprx

Shallow Aquifer - Groundwater Elevation Contours - October 2024

Woodvale Evaporation Pond Complex Environmental Monitoring

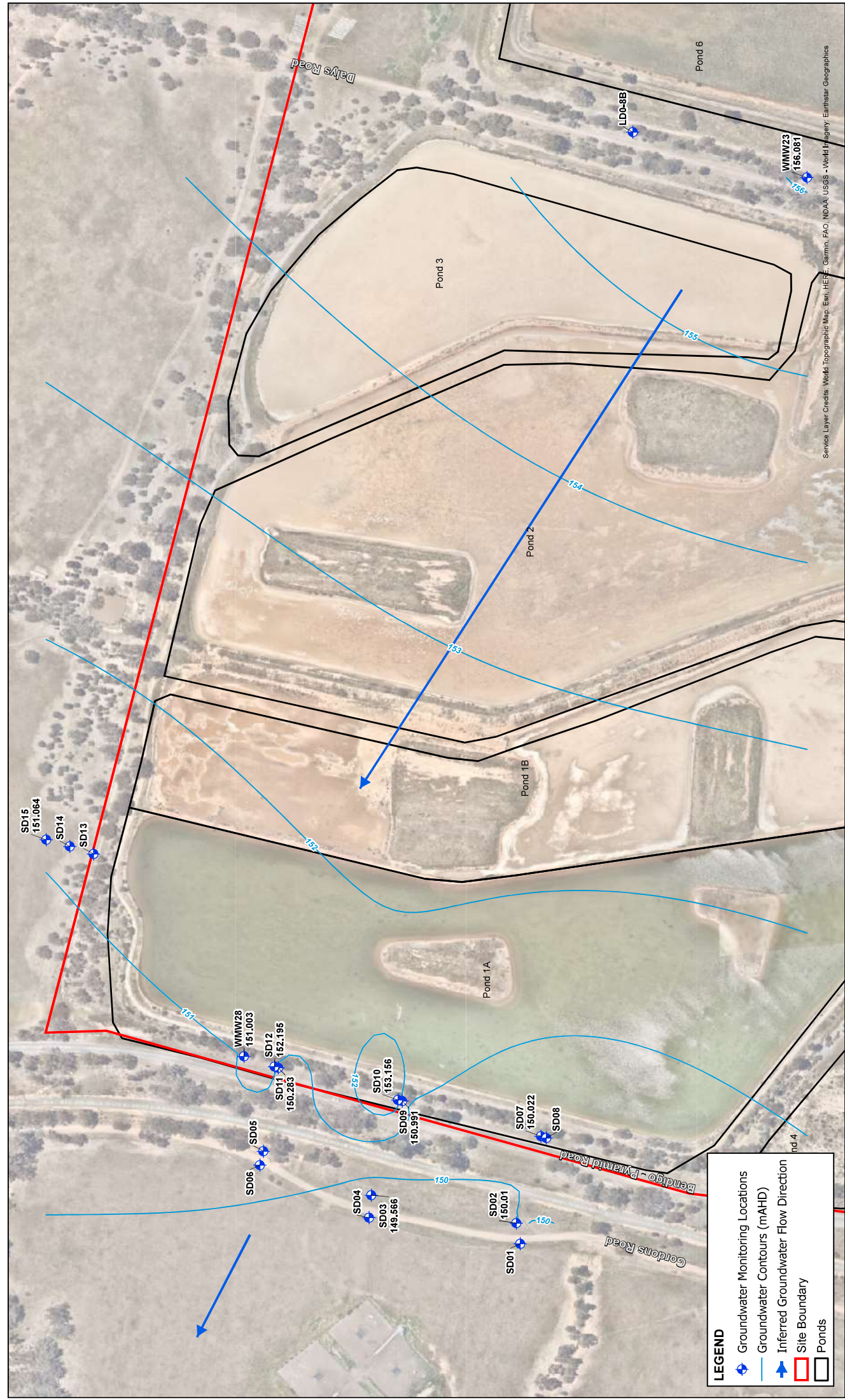




Figure 5B

CREATED BY:	D. Barnes
APPROVED BY:	M. Russ
PROJECT REF. NO:	PTY05582
MAP PROJECTION:	Transverse Mercator
GRID/DATUM:	GDA2020 MGA Zone 55
SCALE:	1:2,672
AERIAL IMAGE	Source: PTY LTD

While every care is taken by EHS Support to ensure the accuracy of the digital data, EHS Support makes no representation or warranty about its accuracy, reliability, completeness, suitability for any particular purpose and disclaims all responsibility and liability (including without limitation) liability in negligence to any expenses, losses, damage (including indirect or consequential damage) and costs which may be incurred as a result of data being inaccurate in any way for any reason. Electronic data are provided for information only.



Internal Document Control Information:
User: DanyBarnes; Date and Time Printed: 2/08/2025 1:47 PM; Document Path: Y:\GIS\Projects\DECA\VEP\2025\0801_2024\2025EMP\03_Mapping\EMP_Contour_Series.aprx

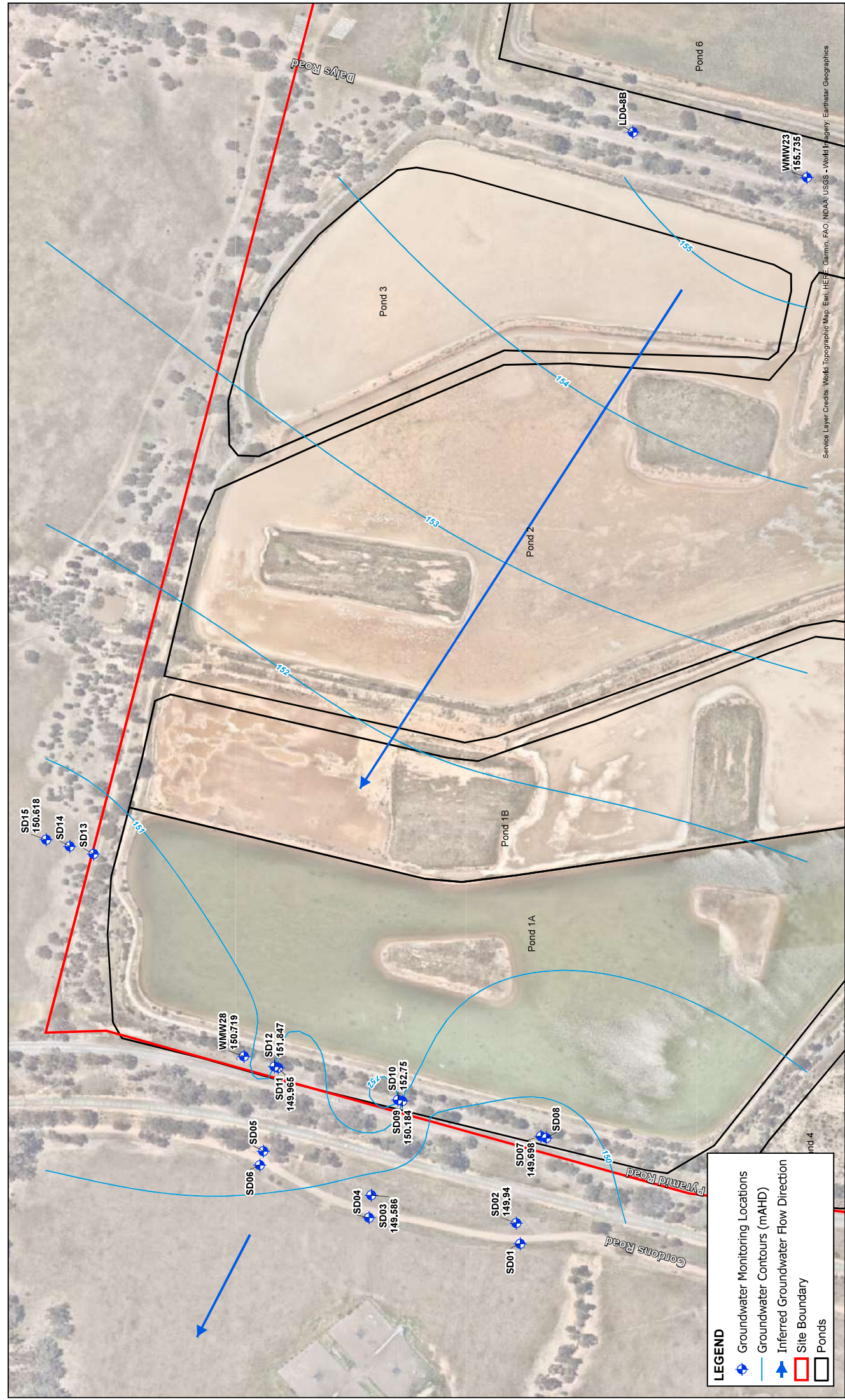
Shallow Aquifer - Groundwater Elevation Contours - January 2025

**Woodvale Evaporation
Pond Complex
Environmental Monitoring**



Figure 5C	
CREATED BY:	D. Barnes
APPROVED BY:	M. Russ
PROJECT REF. NO:	PTY05582
MAP PROJECTION:	Transverse Mercator
GRID/DATUM:	GDA2020 MGA Zone 55
SCALE:	1:2,672
AERIAL IMAGE	Source: PTY LTD

While every care is taken by EHS Support to ensure the accuracy of the digital data, EHS Support makes no representation or warranty about its accuracy, reliability, completeness, suitability for any particular purpose and disclaims all responsibility and liability (including without limitation) liability in negligence to any expenses, losses, damage (including indirect or consequential damage) and costs which may be incurred as a result of data being inaccurate in any way for any reason. Electronic data are provided for information only.



Internal Document Control Information:
User: Danni.Barnes; Date and Time Printed: 7/09/2025 1:47 PM; Document Path: Y:\GIS\Projects\DEECAN\VEPC\2025\801_2024\2025EMP\03_Mapping\EMP_Contour_Series.aprx

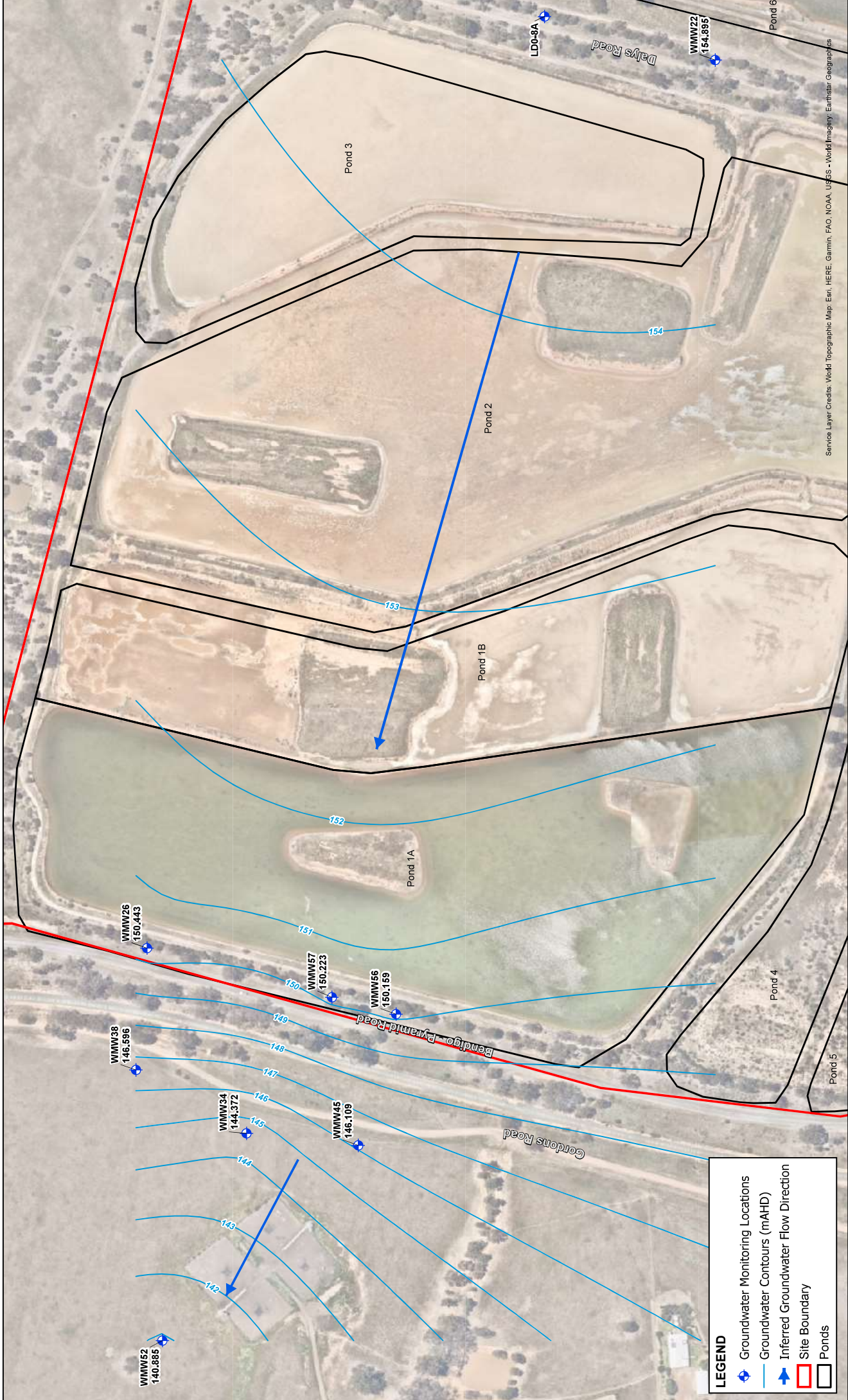
Shallow Aquifer - Groundwater Elevation Contours - April 2025

**Woodvale Evaporation
Pond Complex
Environmental Monitoring**



Figure 5D	
CREATED BY:	D. Barnes
APPROVED BY:	M. Russ
PROJECT REF. NO:	PTY05582
MAP PROJECTION:	Transverse Mercator
GRID/DATUM:	GDA2020 MGA Zone 55
SCALE:	1:2,672
AERIAL IMAGE	Source: Earthstar Geographics

While every care is taken by EHS Support to ensure the accuracy of the digital data, EHS Support makes no representation or warranty about its accuracy, reliability, completeness, suitability for any particular purpose and disclaims all responsibility and liability (including without limitation) liability in negligence to any expenses, losses, damage (including indirect or consequential damage) and costs which may be incurred as a result of data being inaccurate in any way for any reason. Electronic files are provided for information only.



Internal Document Control Information:
User Name: Danny.Barnes; Date and Time Printed: 7/09/2025 1:47 PM; Document Path: Y:\GIS Projects\DEECAN\EP03\2024\2025\EMP03_Mapping\EMP_Courtesy_Series.aprx

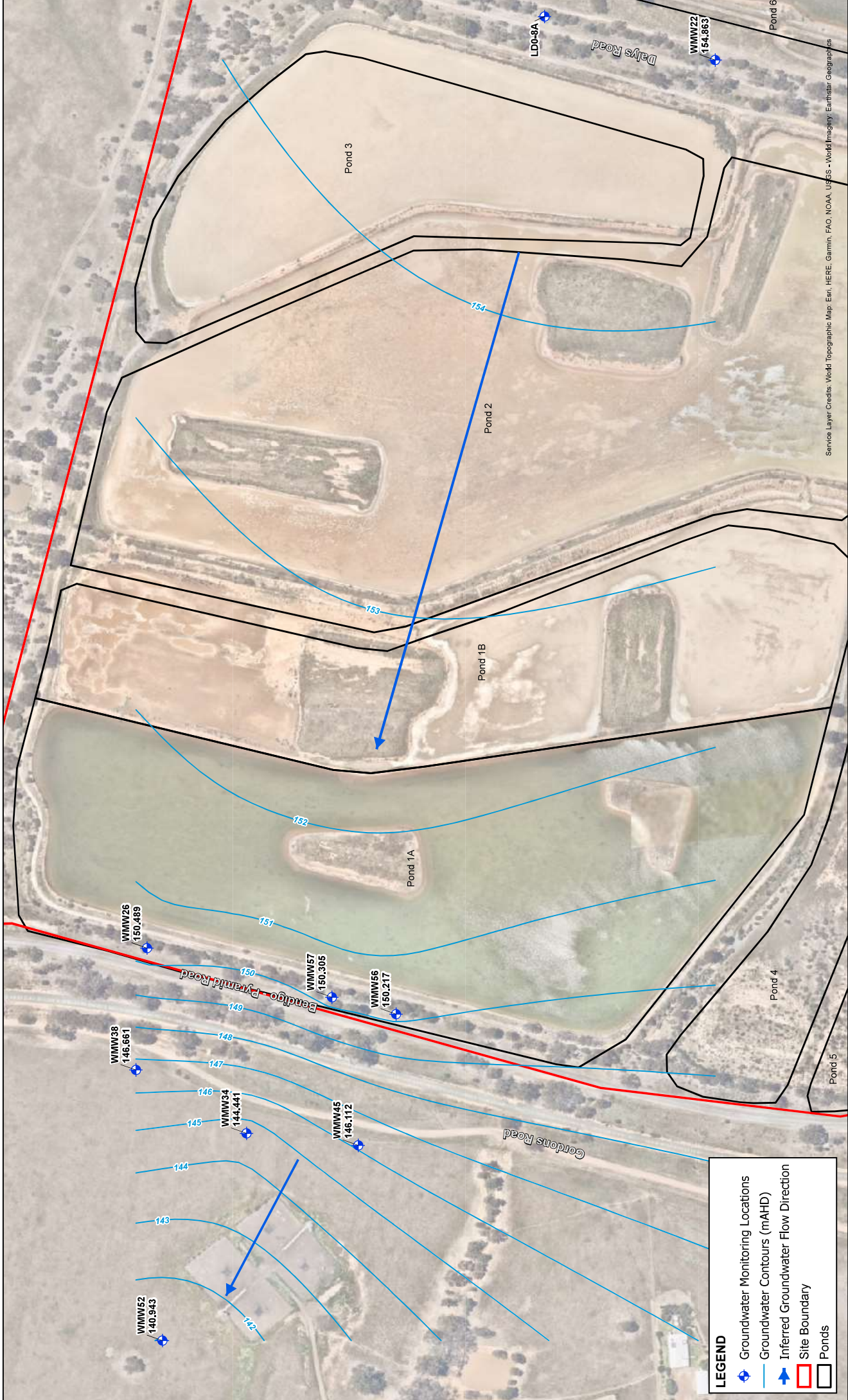
Intermediate Aquifer - Groundwater Elevation Contours - July 2024

**Woodvale Evaporation
Pond Complex
Environmental Monitoring**



Figure 6A	
CREATED BY:	D. Barnes
APPROVED BY:	M. Russ
PROJECT REF. NO:	PTY05582
MAP PROJECTION:	Transverse Mercator
GRID/DATUM:	GDA2020 MGA Zone 55
SCALE:	1:2,672
AERIAL IMAGE	
SOURCE:	Neurmap PTY LTD

While every care is taken by EHS Support to ensure the accuracy of the digital data, EHS Support makes no representation or warranty about its accuracy, reliability, completeness, suitability for any particular purpose and disclaims all responsibility and liability (including without limitation) liability in negligence to any expenses, losses, damage (including indirect or consequential damage) and costs which may be incurred as a result of data being inaccurate in any way for any reason. Electronic data are provided for information only.



Internal Document Control Information:
User Name: Danni.Barnes; Date and Time Printed: 7/09/2025 1:47 PM; Document Path: Y:\GIS Projects\DEECAN\EP03\2024\2025\EMP03_Mapping\EMP_Contour_Series.aprx

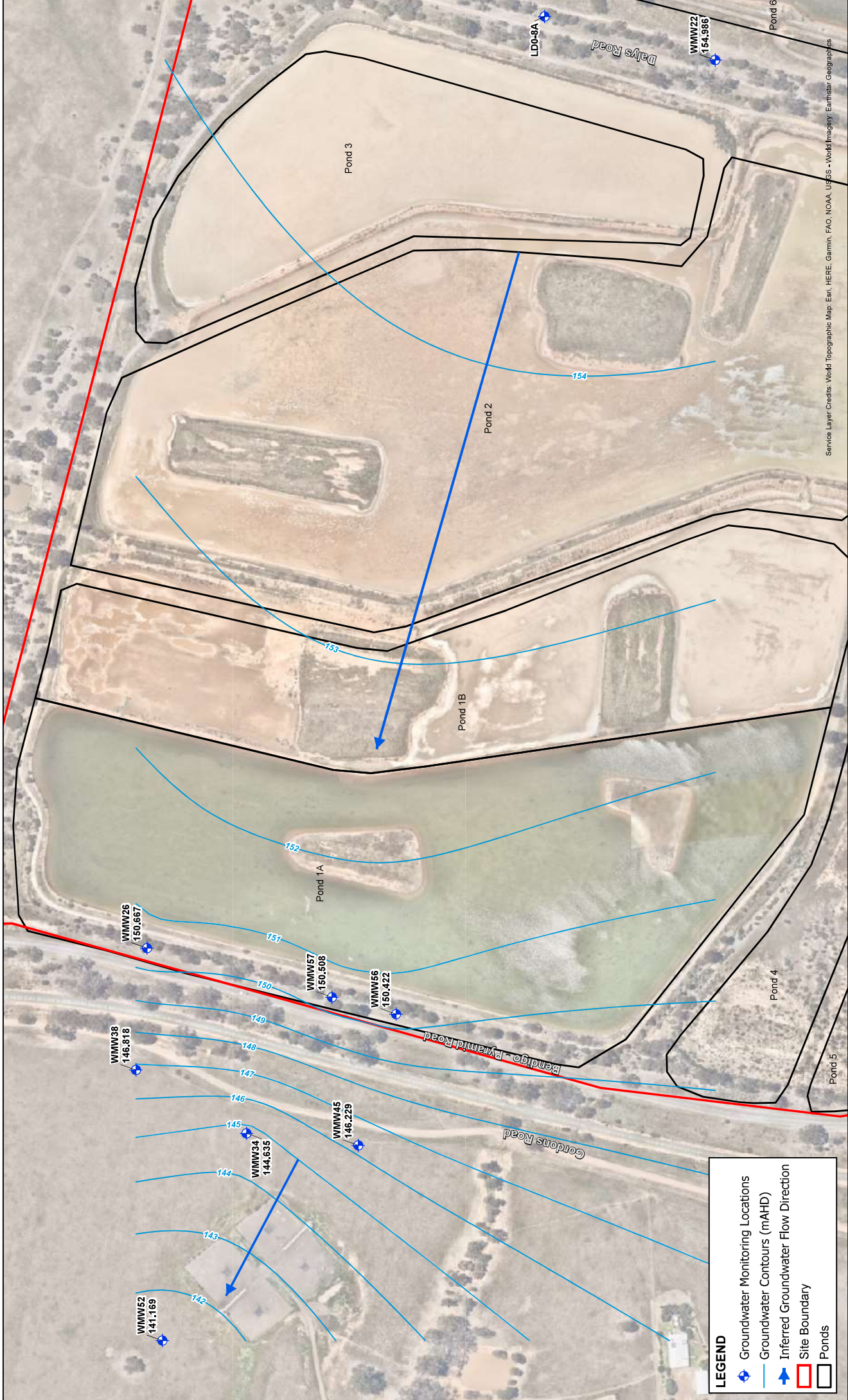
Intermediate Aquifer - Groundwater Elevation Contours - October 2024

**Woodvale Evaporation
Pond Complex
Environmental Monitoring**



Figure 6B	
CREATED BY:	D. Barnes
APPROVED BY:	M. Russ
PROJECT REF. NO:	PTY05582
MAP PROJECTION:	Transverse Mercator
GRID/DATUM:	GDA2020 MGA Zone 55
SCALE:	1:2,672
AERIAL IMAGE	
SOURCE:	Neurmap PTY LTD

Whilst every care is taken by EHS Support to ensure the accuracy of the digital data, EHS Support makes no representation or warranty about its accuracy, reliability, completeness, suitability for any particular purpose and disclaims all responsibility and liability (including without limitation) liability in negligence to any expenses, losses, damage (including indirect or consequential damage) and costs which may be incurred as a result of data being inaccurate in any way for any reason. Electronic data are provided for information only.



Internal Document Control Information:
User: D:\Barnes, Date and Time Printed: 7/09/2025 1:47 PM, Document Path: Y:\GIS, Project\DEECAN\EP03\2025\EMP03_Mapping\EMP_Contour_Series.aprx

Intermediate Aquifer - Groundwater Elevation Contours - January 2025

**Woodvale Evaporation
Pond Complex
Environmental Monitoring**

Figure 6C

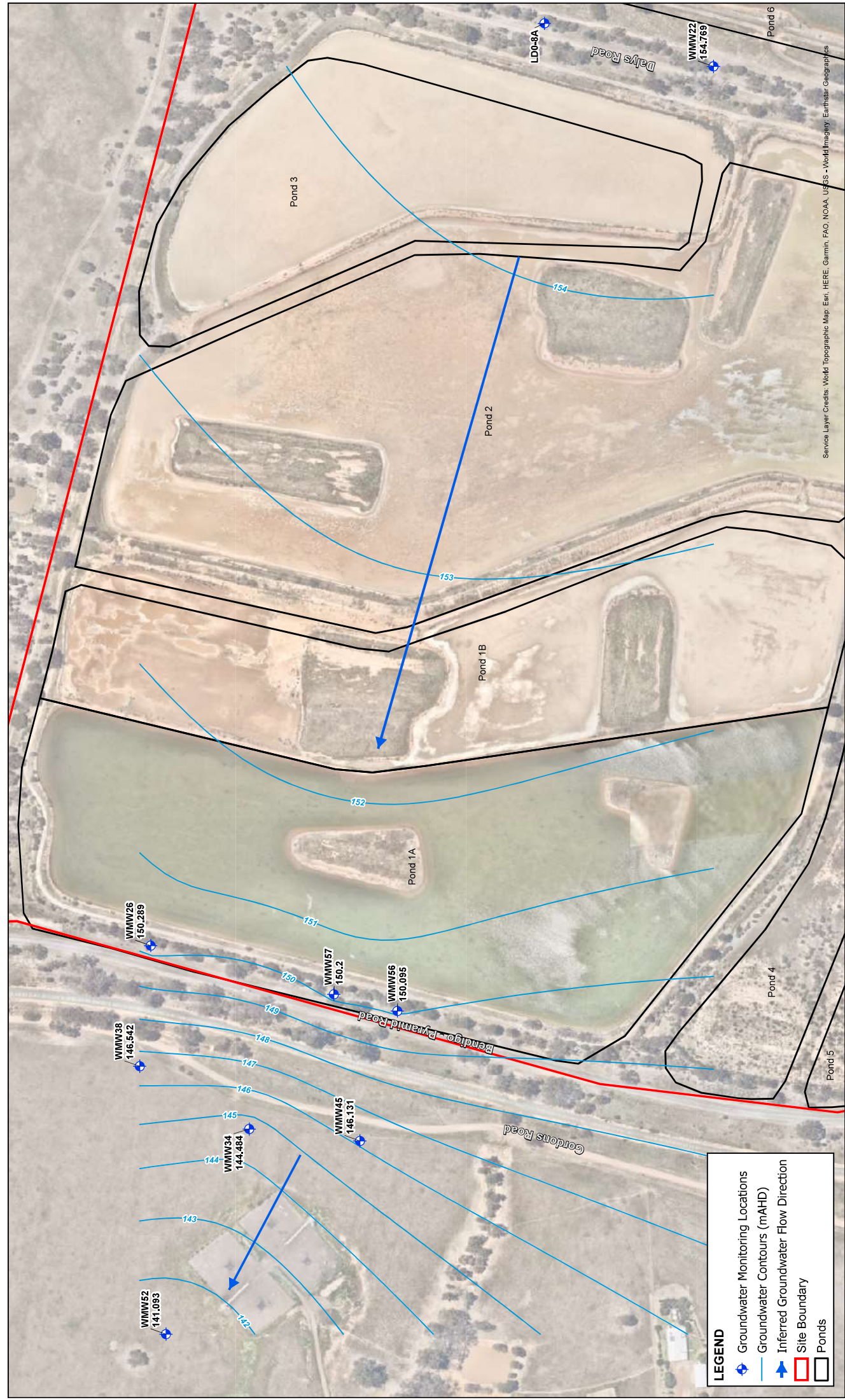
CREATED BY:	D. Barnes
APPROVED BY:	M. Russ
PROJECT REF. NO:	PTY05582
MAP PROJECTION:	Transverse Mercator
GRID/DATUM:	GDA2020 MGA Zone 55
SCALE:	1:2,672
AERIAL IMAGE	Neurmap PTY LTD
SOURCE:	

0 0.05 0.1 0.2 0.3 0.4 Kilometers

1:2,672

(Page Size: A3)

Whilst every care is taken by EHS Support to ensure the accuracy of the digital data, EHS Support makes no representation or warranty about its accuracy, reliability, completeness, suitability for any particular purpose and disclaims all responsibility and liability (including without limitation) liability in negligence to any expenses, losses, damage (including indirect or consequential damage) and costs which may be incurred as a result of data being inaccurate in any way for any reason. Electronic data are provided for information only.



Internal Document Control Information:
User Name: Danni.Barnes; Date and Time Printed: 7/09/2025 1:47 PM; Document Path: Y:\GIS Projects\DEECAN\EP03\2025\EMP03_Mapping\EMP_Contour_Series.aprx

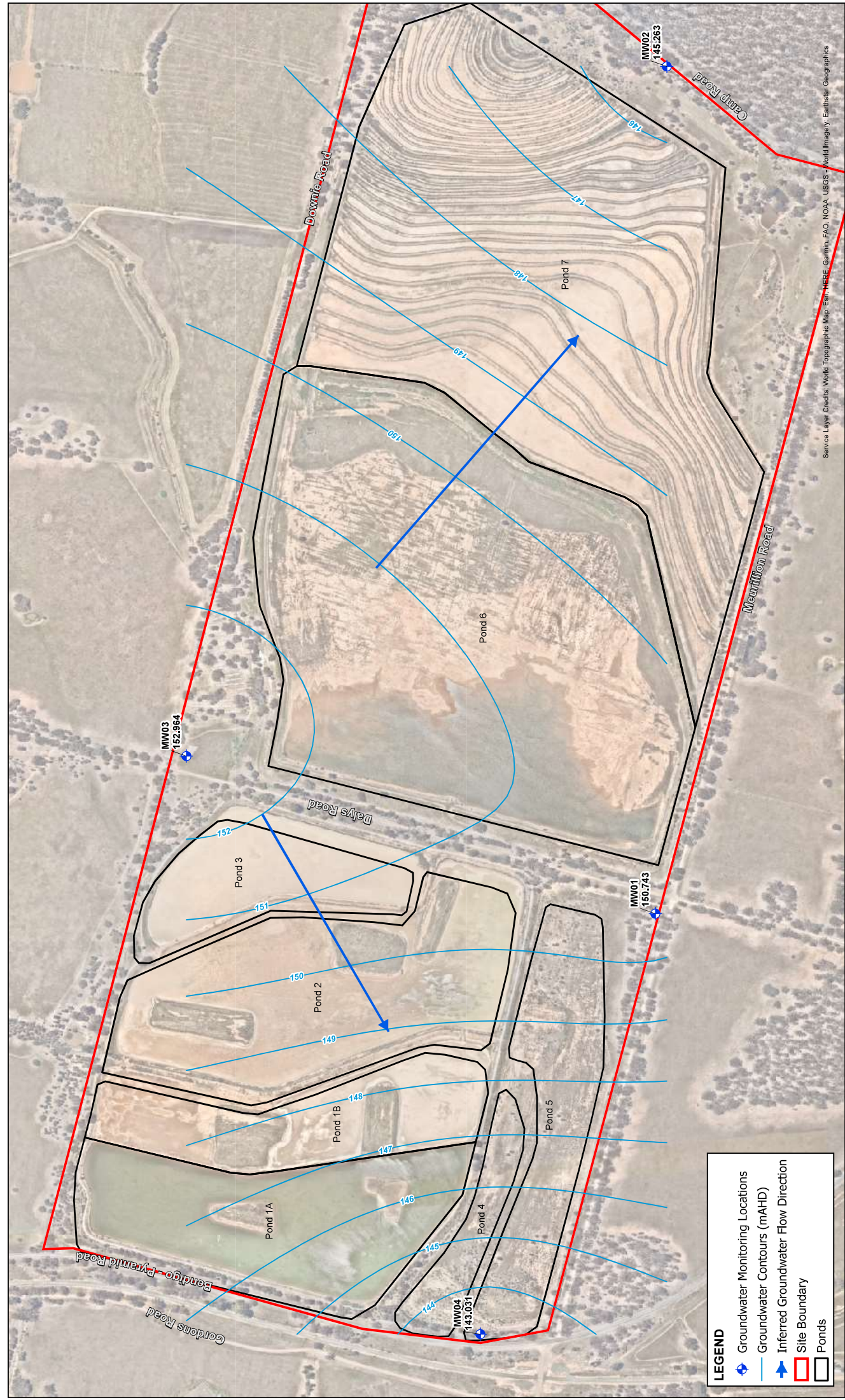
Intermediate Aquifer - Groundwater Elevation Contours - April 2025

**Woodvale Evaporation
Pond Complex
Environmental Monitoring**



Figure 6D				
CREATED BY:	D. Barnes			
APPROVED BY:	M. Russ			
PROJECT REF. NO:	PTY05582			
MAP PROJECTION:	Transverse Mercator			
GRID/DATUM:	GDA2020 MGA Zone 55			
SCALE:	1:2,672			
AERIAL IMAGE				
SOURCE:	Neurmap PTY LTD			

While every care is taken by EHS Support to ensure the accuracy of the digital data, EHS Support makes no representation or warranty about its accuracy, reliability, completeness, suitability for any particular purpose and disclaims all responsibility and liability (including without limitation) liability in negligence to any expenses, losses, damage (including indirect or consequential damage) and costs which may be incurred as a result of data being inaccurate in any way for any reason. Electronic files are provided for information only.



LEGEND

Groundwater Monitoring Locations

Groundwater Contours (mAHd)

Internal Document Control Information
User Name: Danny.Barnes; Date and Time Printed: 7/09/2025 1:47 PM; Document Path: Y:\GIS Projects\DECA\VEPC\20250801_20242025EMP\03_Mapping\EMP_Contour_Series.aprx

Bedrock Aquifer - Groundwater Elevation Contours - July 2024

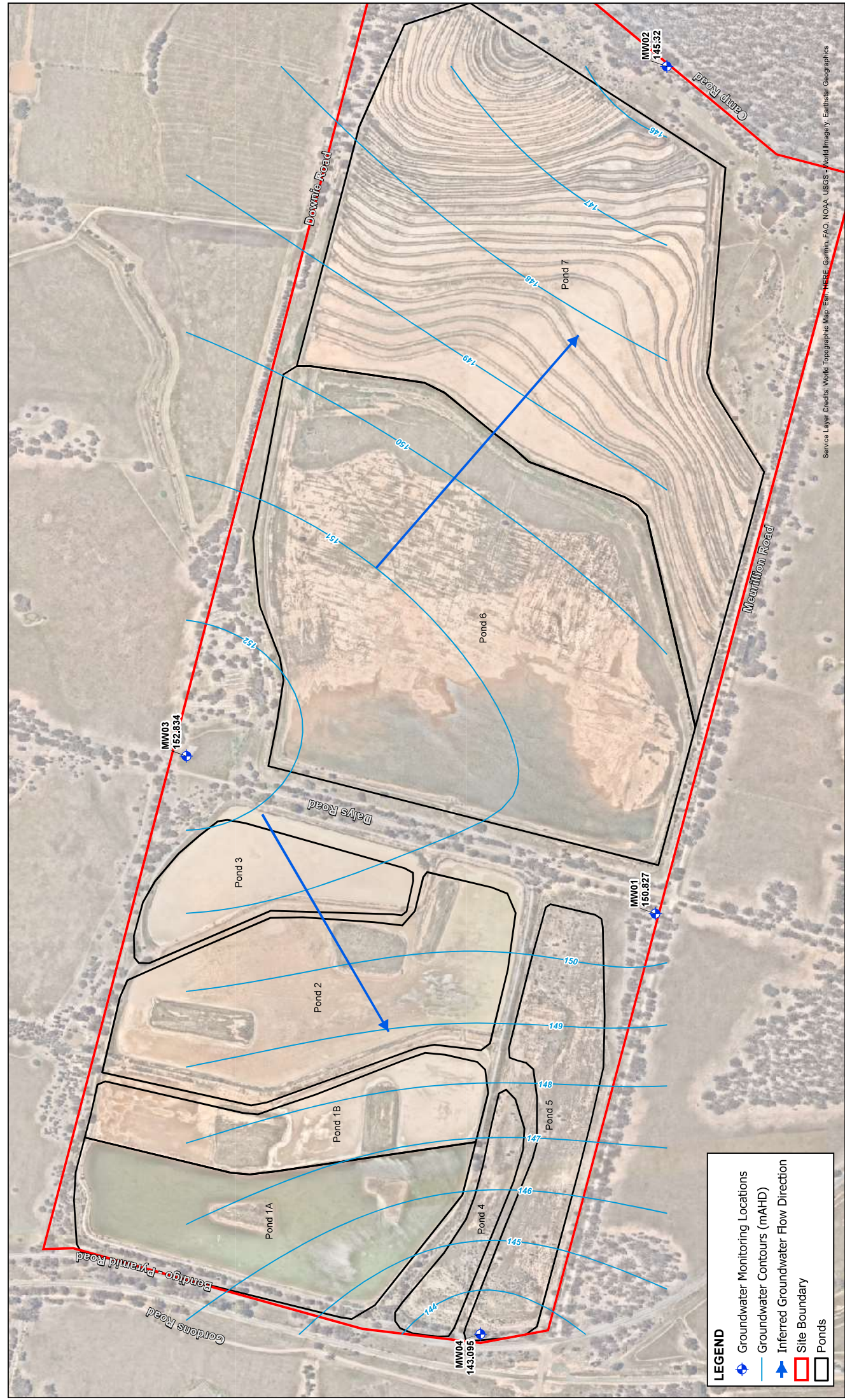
Woodvale Evaporation
Pond Complex
Environmental Monitoring



Figure 7A

CREATED BY:	D. Barnes
APPROVED BY:	M. Russ
PROJECT REF. NO:	PTY05582
MAP PROJECTION:	Transverse Mercator
GRID/DATUM:	GDA2020 MGA Zone 55
SCALE:	1:5,382
AERIAL IMAGE	
SOURCE:	Neurmap PTY LTD

While every care is taken by EHS Support to ensure the accuracy of the digital data, EHS Support makes no representation or warranty about its accuracy, reliability, completeness, suitability for any particular purpose and disclaims all responsibility and liability (including without limitation) liability in negligence to any expenses, losses, damage (including indirect or consequential damage) and costs which may be incurred as a result of data being inaccurate in any way for any reason. Electronic data are provided for information only.



LEGEND

Groundwater Monitoring Locations

Groundwater Contours (mAHd)

Inferred Groundwater Flow Direction

Site Boundary

Ponds

Internal Document Control Information:
 User Name: Danni.Barnes; Date and Time Printed: 7/09/2025 1:47 PM; Document Path: Y:\GIS Projects\DEECAN\EP03_2024\2025\EMP03_Mapping\EMP_Contour_Series.aprx

Bedrock Aquifer - Groundwater Elevation Contours - October 2024

Woodvale Evaporation
 Pond Complex
 Environmental Monitoring



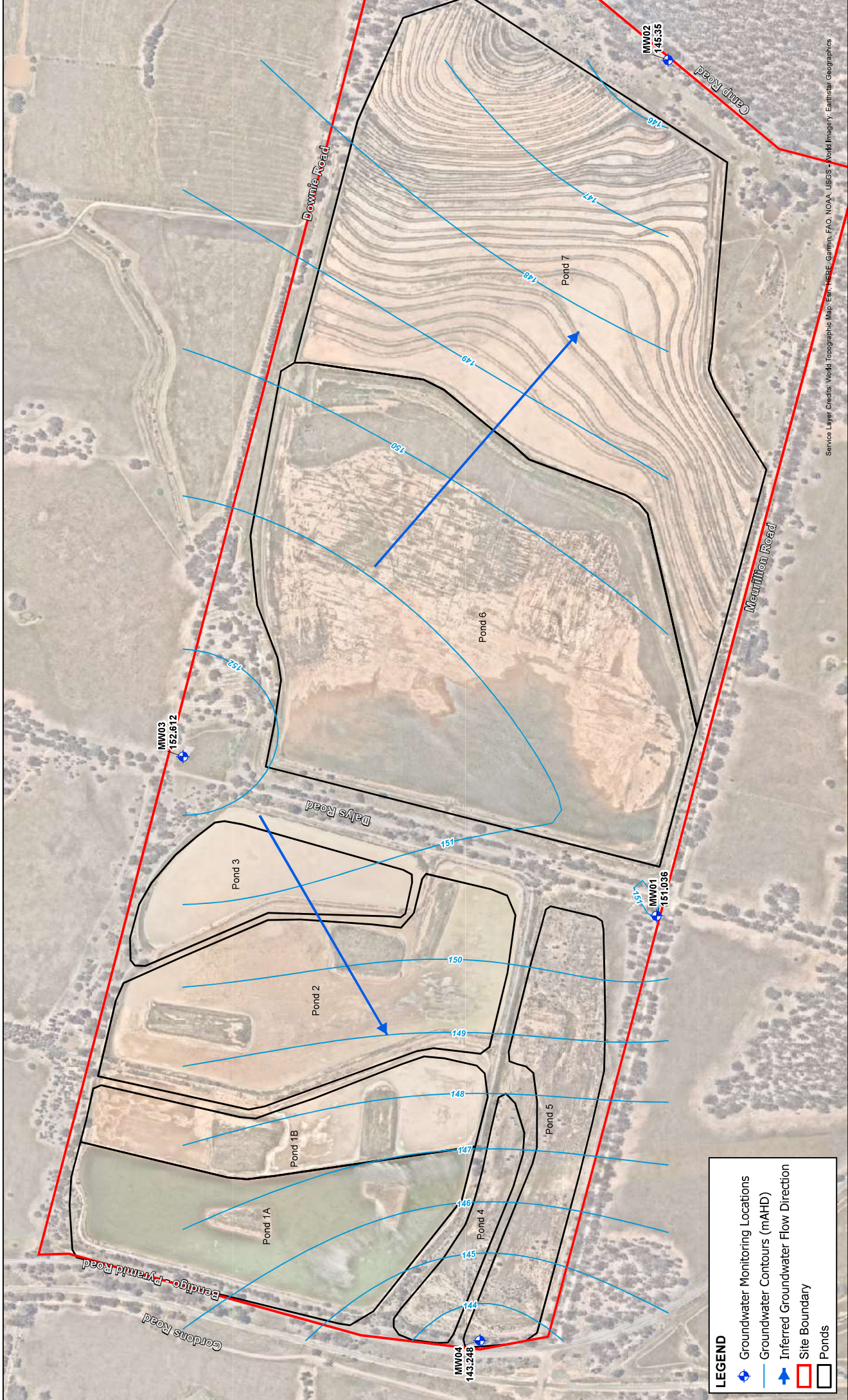
Figure 7B

CREATED BY:	D. Barnes
APPROVED BY:	M. Russ
PROJECT REF. NO:	PTY05582
MAP PROJECTION:	Transverse Mercator
GRID/DATUM:	GDA2020 MGA Zone 55
SCALE:	1:5,382
AERIAL IMAGE	
SOURCE:	Neurmap PTY LTD

0 0.13 0.25 0.5 0.75 1 Kilometers

While every care is taken by EHS Support to ensure the accuracy of the digital data, EHS Support makes no representation or warranty about its accuracy, reliability, completeness, suitability for any particular purpose and disclaims all responsibility and liability (including without limitation) liability in negligence to any expenses, losses, damage (including indirect or consequential damage) and costs which may be incurred as a result of data being inaccurate in any way for any reason. Electronic data are provided for information only.

Service Layer Credits: World Topographic Map: Esri HERE, Garmin, FAO, NOAA, USGS - World Imagery, Earthstar Geographics



Internal Document Control Information
User Name: Danni.Barnes; Date and Time Printed: 7/09/2025 1:47 PM; Document Path: Y:\GIS\Projects\DECA\VEP\2025\01_2024\2025EMP\03_Mapping\EMP_Contour_Series.aprx

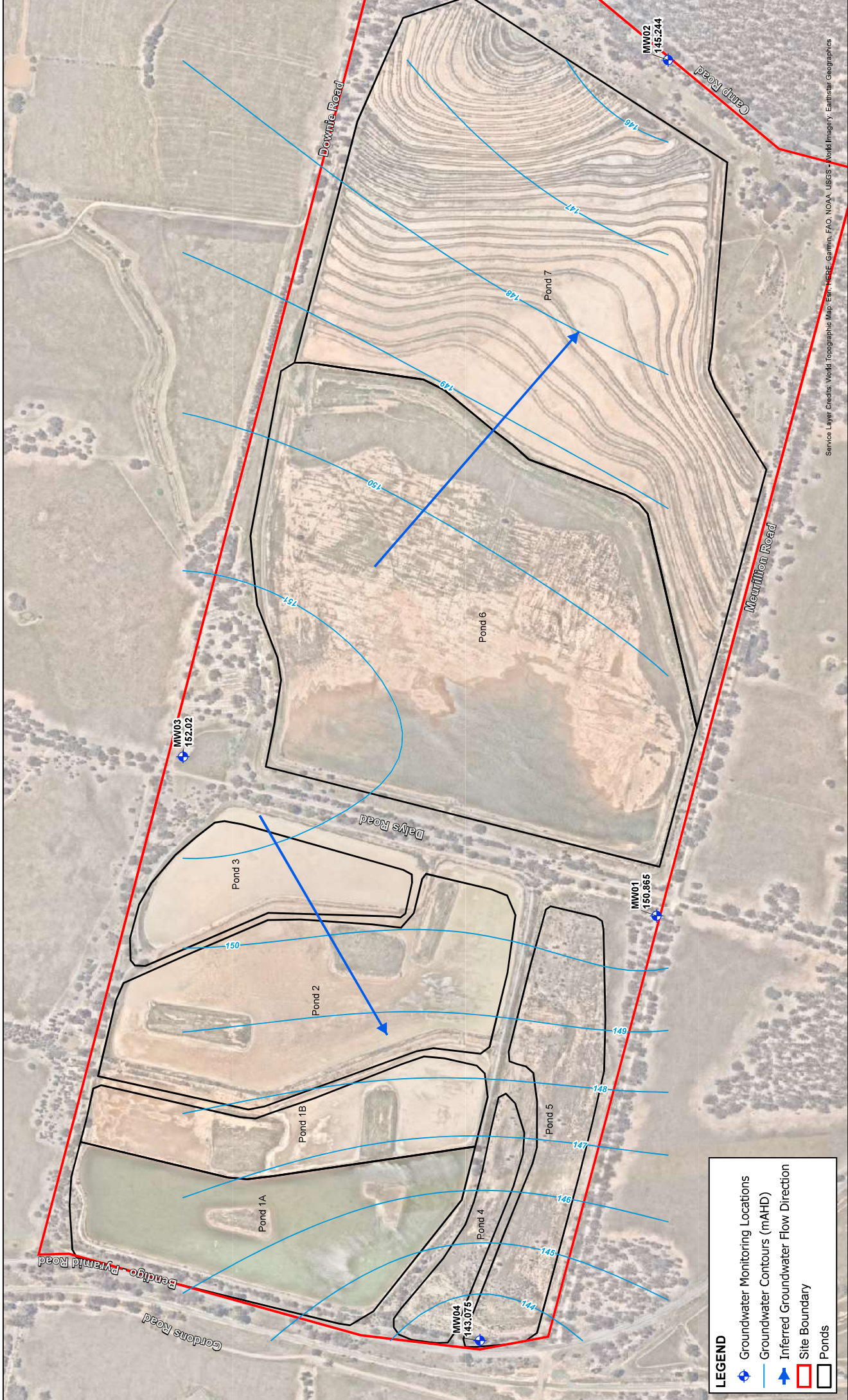
Bedrock Aquifer - Groundwater Elevation Contours - January 2025

**Woodvale Evaporation
Pond Complex
Environmental Monitoring**



Figure 7D	
CREATED BY:	D. Barnes
APPROVED BY:	M. Russ
PROJECT REF. NO:	PTY05582
MAP PROJECTION:	Transverse Mercator
GRID/DATUM:	GDA2020 MGA Zone 55
SCALE:	1:5,382
AERIAL IMAGE	Source: PTY LTD

While every care is taken by EHS Support to ensure the accuracy of the digital data, EHS Support makes no representation or warranty about its accuracy, reliability, completeness, suitability for any particular purpose and disclaims all responsibility and liability (including without limitation) liability in negligence to any expenses, losses, damage (including indirect or consequential damage) and costs which may be incurred as a result of data being inaccurate in any way for any reason. Electronic data are provided for information only.



Internal Document Control Information
User Name: DanyBarnes; Date and Time Printed: 7/09/2025 1:47 PM; Document Path: Y:\GIS - Projects\DEECAN\PC\2025\001_2024\2025EMP\03_Mapping\EMP_Contour_Series.aprx

**Woodvale Evaporation
Pond Complex
Environmental Monitoring**

Figure 7C

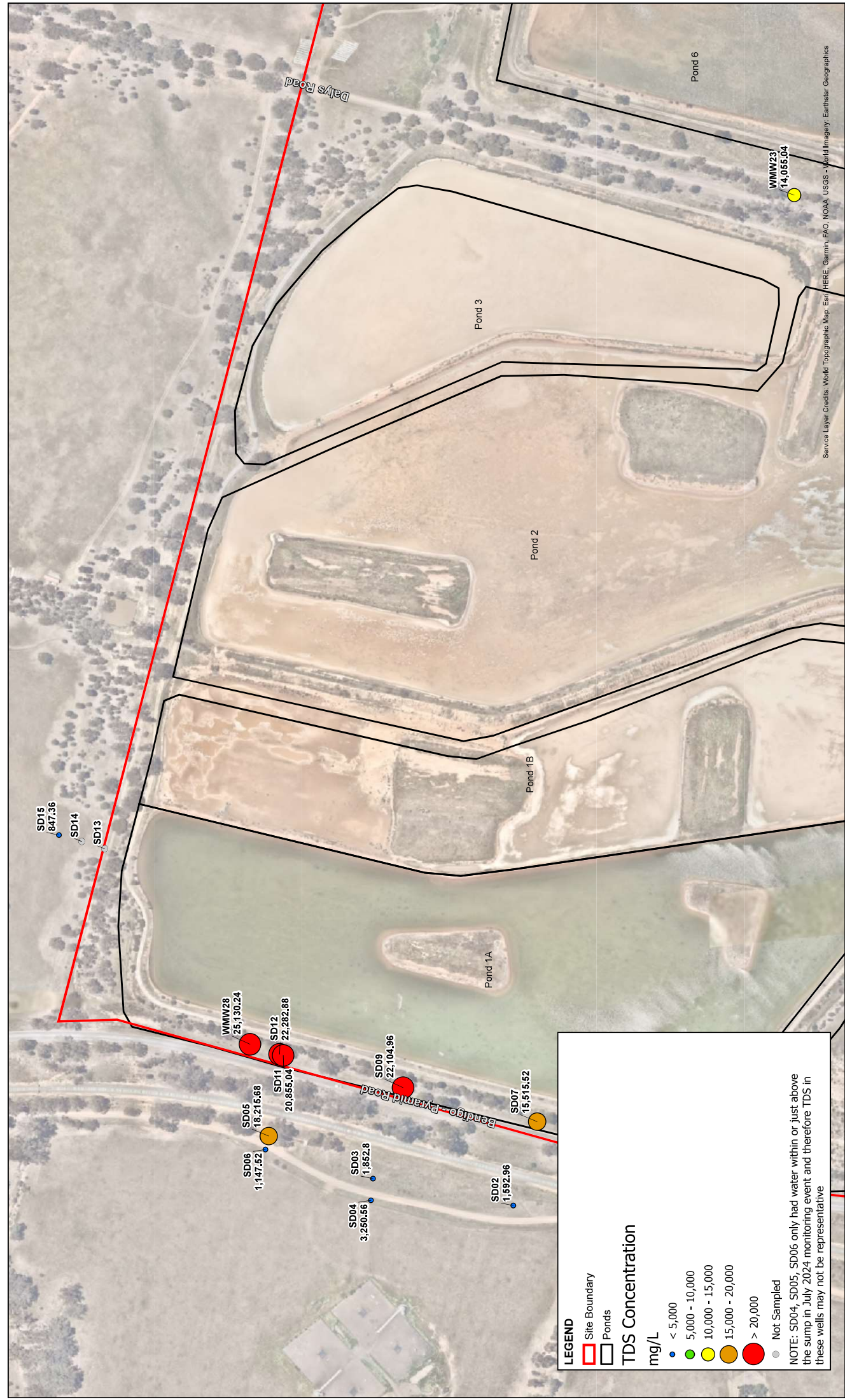
CREATED BY:	D. Barnes
APPROVED BY:	M. Russ
PROJECT REF. NO:	PTY05582
MAP PROJECTION:	Transverse Mercator
GRID/DATUM:	GDA2020 MGA Zone 55
SCALE:	1:5,387
AERIAL IMAGE	Source: PTY LTD

Bedrock Aquifer - Groundwater Elevation Contours - April 2025

1:5,387
0 0.13 0.25 0.5 0.75 1 Kilometers

(Page Size: A3)

We warrant every care is taken by EHS Support to ensure the accuracy of the digital data. EHS Support makes no representation or warranty about its accuracy, reliability, completeness, suitability for any particular purpose and disclaims all responsibility and liability (including without limitation) liability in negligence to any expenses, losses, damage (including indirect or consequential damage) and costs which may be incurred as a result of data being inaccurate in any way for any reason. Electronic data are provided for information only.



Internal Document Control Information: User: Name: Danni Barnes; Date and Time Printed: 11/08/2025 11:25 AM; Document Path: Y:\GIS - Projects\BDECA\WEMP\2024\2025\WEMP03_Mapping\EMP_Conbure_Series.aprx

Shallow Aquifer - Groundwater TDS Concentrations - July 2024

1:2,765 (Page Size: A3)

0 0.05 0.1 0.2 0.3 0.4 Kilometers

Woodvale Evaporation Pond Complex Environmental Monitoring

EHS Support

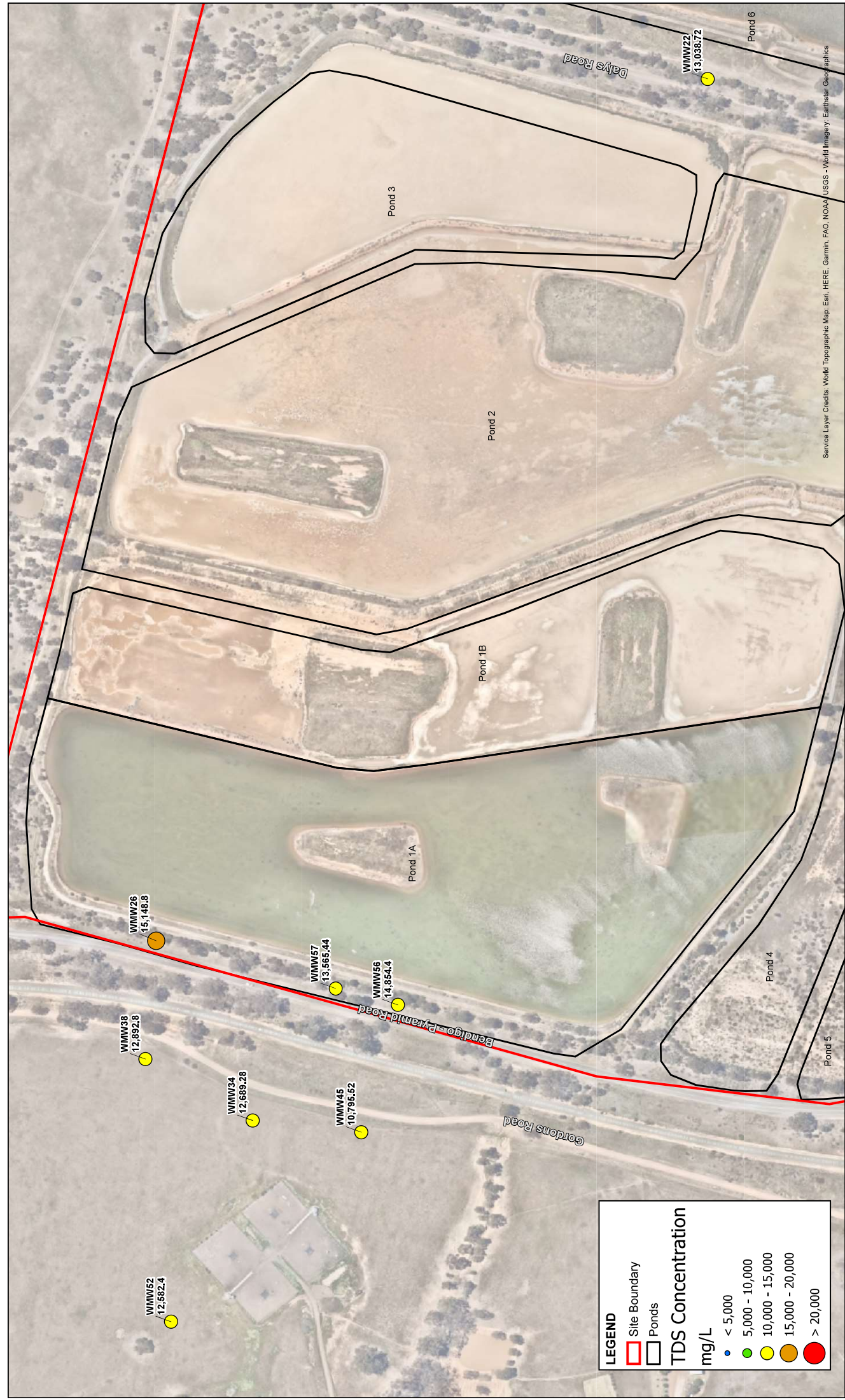
Figure 8A

CREATED BY:	D. Barnes
APPROVED BY:	M. Russ
PROJECT REF. NO:	PTY05582
MAP PROJECTION:	Transverse Mercator
GRID/DATUM:	GDA2020 MGA Zone 55
SCALE:	1:2,765
AERIAL IMAGE	Source: PTV LTD

Service Layer Credits: World Topographic Map: Esri; HERE; Garmin; FAO; NOAA; USGS - World Imagery; Earthstar Geographics

N

While every care is taken by EHS Support to ensure the accuracy of the digital data, EHS Support makes no representation or warranty about its accuracy, reliability, completeness, suitability for any particular purpose and disclaims all responsibility and liability (including without limitation) liability in negligence to any expenses, losses, damage (including indirect or consequential damage) and costs which may be incurred as a result of data being inaccurate in any way for any reason. Electronic files are provided for information only.



Internal Document Control Information:
User: Name: Danny Barnes; Date and Time Printed: 7/09/2025 2:05 PM; Document Path: Y:\GIS Projects\DEECAN\EP03\2024\2025EMP03_Mapping\EMP_Contour_Series.aprx

Intermediate Aquifer - Groundwater TDS Concentrations - July 2024

Woodvale Evaporation
Pond Complex
Environmental Monitoring

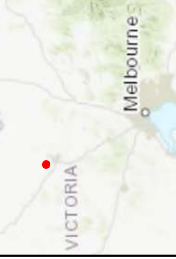


Figure 8B	
CREATED BY:	D. Barnes
APPROVED BY:	M. Russ
PROJECT REF. NO:	PTY05582
MAP PROJECTION:	Transverse Mercator
GRID/DATUM:	GDA2020 MGA Zone 55
SCALE:	1:2,726
AERIAL IMAGE	
SOURCE:	Neatmap PTY LTD

Whilst every care is taken by EHS Support to ensure the accuracy of the digital data, EHS Support makes no representation or warranty about its accuracy, reliability, completeness, suitability for any particular purpose and disclaims all responsibility and liability (including without limitation) liability in negligence to any expenses, losses, damage (including indirect or consequential damage) and costs which may be incurred as a result of data being inaccurate in any way for any reason. Electronic data are provided for information only.



LEGEND

Site Boundary

Ponds

TDS Concentration

mg/L

< 5,000

5,000 - 10,000

10,000 - 15,000

15,000 - 20,000

> 20,000

Internal Document Control Information:
User: Name: Danny Barnes; Date and Time Printed: 7/09/2025 2:05 PM; Document Path: \GIS\Projects\DEE\CA\WP03_2024\2025\WP03_Mapping\EMP_Colour_Series.aprx

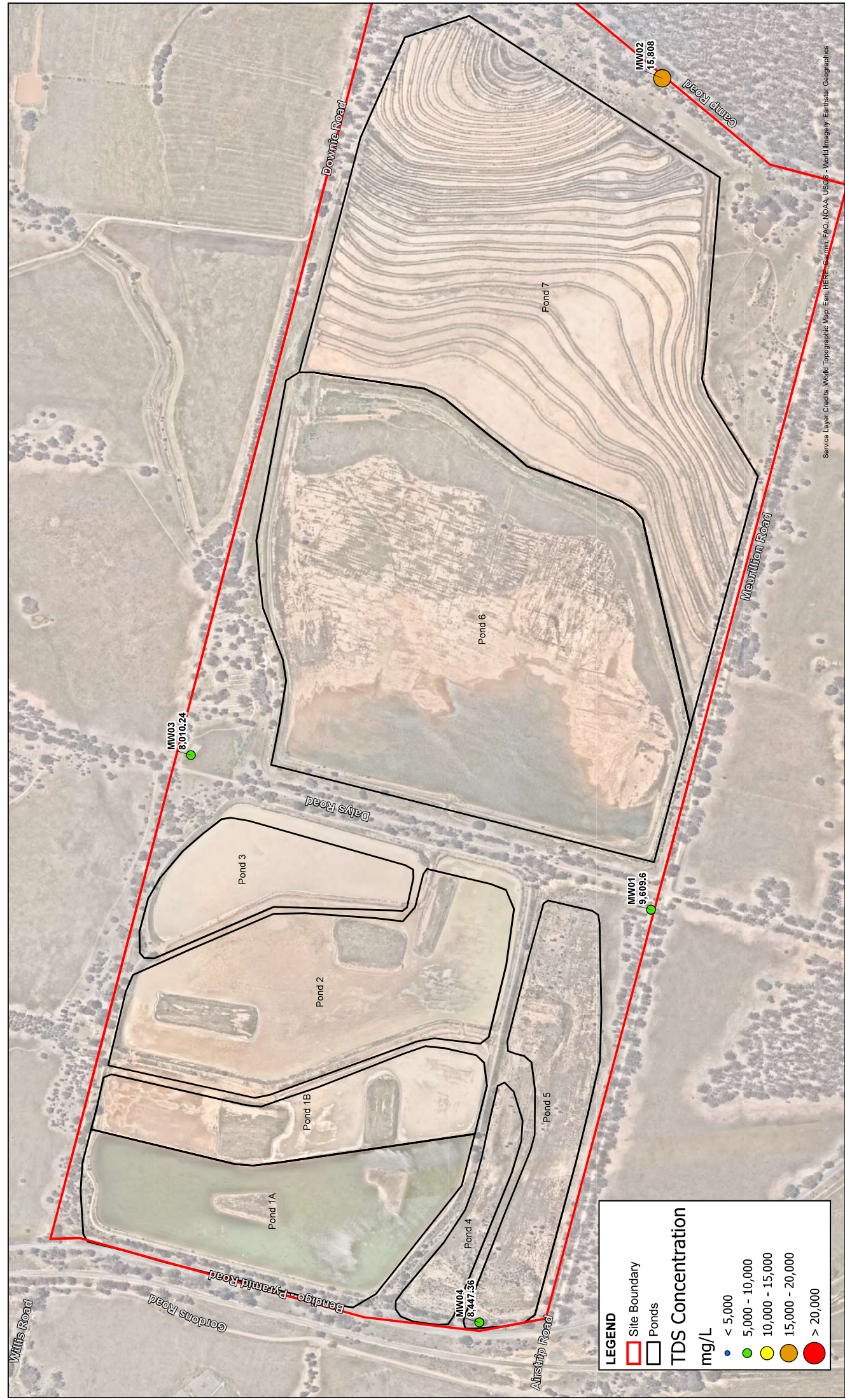
Deep Lead Aquifer - Groundwater TDS Concentrations - July 2024

Woodvale Evaporation
Pond Complex
Environmental Monitoring



Figure 8C	
CREATED BY:	D. Barnes
APPROVED BY:	M. Russ
PROJECT REF. NO:	PTY05582
MAP PROJECTION:	Transverse Mercator
GRID/DATUM:	GDA2020 MGA Zone 55
SCALE:	1:2,000
AERIAL IMAGE	
SOURCE:	Nearmap PTY LTD

While every care is taken by EHS Support to ensure the accuracy of the digital data, EHS Support makes no representation or warranty about its accuracy, reliability, completeness, suitability for any particular purpose and disclaims all responsibility and liability (including without limitation) liability in negligence to any expenses, losses, damage (including indirect or consequential damage) and costs which may be incurred as a result of data being inaccurate in any way for any reason. Electronic files are provided for information only.



Internal Document Control Information:
User: Name: Danni Barnes; Date and Time Printed: 7/09/2025 2:05 PM; Document Path: Y:\GIS\Projects\DEECAN\VEPC\2025\001_2024\2025EMP\03_Mapping\EMP_Contour_Series.aprx

Bedrock Aquifer - Groundwater TDS Concentrations - July 2024

Woodvale Evaporation
Pond Complex
Environmental Monitoring

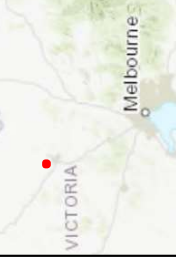


Figure 8D	
CREATED BY:	D. Barnes
APPROVED BY:	M. Russ
PROJECT REF. NO:	PTY05582
MAP PROJECTION:	Transverse Mercator
GRID/DATUM:	GDA2020 MGA Zone 55
SCALE:	1:5,489
AERIAL IMAGE	
SOURCE:	Neurmap PTY LTD

Whilst every care is taken by EHS Support to ensure the accuracy of the digital data, EHS Support makes no representation or warranty about its accuracy, reliability, completeness, suitability for any particular purpose and disclaims all responsibility and liability (including without limitation) liability in negligence to any expenses, losses, damage (including indirect or consequential damage) and costs which may be incurred as a result of data being inaccurate in any way for any reason. Electronic data are provided for information only.



Tables

Table 1 -
Surface Water Analytical Results

Analyte/Analyte Grouping	ANZG Toxicant Default Guideline Value - 95% Level of Species Protection - Freshwater	ANZECC Irrigation Water: Long-Term Trigger Values	ANZECC Livestock Drinking Water Quality Groundwater	NHMRC ADWG 2015 Health	NHMRC ADWG 2015 Aesthetics	NHMRC CLD, D. Lubina, Water Guidelines 2012	Location Name	Pond 1a				Pond 1b			
							Sample Date	05 Jul 2024	09 Oct 2024	14 Jan 2025	02 Apr 2025	05 Jul 2024	09 Oct 2024	14 Jan 2025	02 Apr 2025
							Unit								
FIELD															
Dissolved Oxygen	--	--	--	--	--	--	mg/L	10.88	--	6.02	4.88	11.13	--	7.12	6.25
Conductivity	--	--	--	--	--	--	us/cm	19354	18857	30953	5182	9834	23257	22703	29616
Total Dissolved Solids (Calculated)	--	--	2000	--	600	--	mg/L	12347	12664	19451	33166	6166	14884	14884	14529
Oxidation-Reduction Potential	--	--	--	--	--	--	mV	90	72.6	143.6	78.2	86	159.7	78.2	--
Turbidity	--	--	--	--	5000	--	NTU	507.56	2.16	7.5	319.07	43.46	2.66	4.7	8.91
pH: field	--	6-9	--	6.5-8.5	5-9	--	SI	8.99	8.76	8.58	7.59	9.07	8.72	8.73	8.91
GENERAL CHEMISTRY															
Cyanide	0.007	--	--	0.08	--	0.8	mg/L	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005
MAJOR IONS															
Alkalinity, Bicarbonate (As CaCO3)	--	--	--	--	--	--	mg/L	970	1200	1700	1900	720	1400	1100	1100
Alkalinity, Carbonate (As CaCO3)	--	--	--	--	--	--	mg/L	440	490	530	460	250	410	510	510
Alkalinity, Hydroxide (As CaCO3)	--	--	--	--	--	--	mg/L	<20	<20	<20	<20	<20	<20	<20	<20
Alkalinity, Total (As CaCO3)	--	--	--	--	--	--	mg/L	1400	1700	2300	2300	970	2100	1500	1700
Sulfate (As SO4)	--	--	1000	--	250	--	mg/L	410	490	750	1400	230	720	460	590
DISSOLVED METALS															
Antimony	--	--	--	0.003	--	--	mg/L	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005
Arsenic	0.013*	0.1	0.5	0.01	--	0.1	mg/L	0.66	1.1	1.2	2.4	0.48	0.64	0.66	0.78
Barium	--	--	--	2	--	20	mg/L	0.06	0.12	0.18	0.27	0.02	0.05	0.03	<0.01
Beryllium	--	0.1	--	0.006	--	--	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	0.0002	0.01	0.01	0.002	--	0.02	mg/L	<0.0002	<0.0002	<0.0002	<0.002	<0.0002	<0.0002	<0.0002	<0.0002
Chromium, total	--	1	--	--	--	0.1	mg/L	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001
Cobalt	--	0.05	1	--	--	--	mg/L	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001
Copper	0.0014	0.2	0.4	2	--	1	mg/L	<0.001	<0.001	<0.001	<0.01	0.002	0.002	0.001	<0.001
Cyanide	0.0004	2	0.1	0.01	0.1	0.1	mg/L	<0.001	<0.001	<0.001	<0.05	<0.005	<0.005	<0.005	<0.005
Lead	0.0034	2	0.1	0.01	0.1	0.1	mg/L	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001
Manganese	1.9	0.2	--	0.5	--	5	mg/L	<0.005	0.017	0.006	<0.05	<0.005	<0.005	<0.005	<0.005
Mercury	0.0006	0.002	0.002	0.001	--	0.01	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum	--	0.01	0.15	0.06	--	--	mg/L	<0.005	<0.005	0.006	<0.05	<0.005	<0.005	<0.005	<0.005
Nickel	0.011	0.2	1	0.02	--	0.2	mg/L	0.002	0.003	0.003	<0.01	0.002	0.004	0.003	0.004
Selenium	0.011	0.02	0.02	0.01	--	0.1	mg/L	<0.001	<0.001	0.002	<0.01	<0.001	<0.001	0.003	<0.001
Tin	--	--	--	--	--	--	mg/L	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005
Vanadium	--	0.1	--	--	--	--	mg/L	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005
Zinc	0.008	2	20	--	3	--	mg/L	<0.005	<0.005	<0.005	<0.05	0.006	<0.005	<0.005	<0.005
TOTAL METALS															
Antimony	--	--	--	0.003	--	--	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic	0.013*	0.1	0.5	0.01	--	0.1	mg/L	0.66	1.2	1.2	2.4	0.48	0.64	0.66	0.78
Barium	--	--	--	2	--	20	mg/L	0.06	0.13	0.18	0.27	0.02	0.06	0.03	<0.02
Beryllium	--	0.1	--	0.006	--	--	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	0.0002	0.01	0.01	0.002	--	0.02	mg/L	<0.0002	<0.0002	<0.0002	<0.002	<0.0002	<0.0002	<0.0002	<0.0002
Chromium, total	--	1	--	--	--	0.1	mg/L	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001
Cobalt	--	0.05	1	--	--	--	mg/L	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001
Copper	0.0014	0.2	0.4	2	--	1	mg/L	<0.001	<0.001	<0.001	<0.01	0.002	0.002	0.001	<0.001
Iron	--	0.2	--	0.1	--	0.1	mg/L	<0.05	<0.05	<0.05	0.11	<0.05	0.08	<0.05	<0.05
Lead	0.0034	2	0.1	0.01	--	0.1	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	1.9	0.2	--	0.5	0.1	0.1	mg/L	<0.005	0.019	0.006	<0.005	<0.005	<0.005	<0.005	<0.005
Mercury	0.0006	0.002	0.002	0.001	--	0.01	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum	--	0.01	0.15	0.06	--	--	mg/L	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel	0.011	0.2	1	0.02	--	0.2	mg/L	0.002	0.003	0.003	0.006	0.002	0.004	0.004	0.004
Selenium	0.011	0.02	0.02	0.01	--	0.1	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	0.002
Tin	--	--	--	--	--	--	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Vanadium	--	0.1	--	--	--	--	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	0.008	2	20	--	3	--	mg/L	<0.005	<0.005	<0.005	<0.005	0.006	0.027	0.007	<0.005

* Based on criteria for Aq(V)

Table 1 -
Surface Water Analytical Results

Analyte/Analyte Grouping	ANZS Toxicant Default Guideline Values - 95% Level of Species Protection - Freshwater	ANZECC Irrigation Water: Long-Term Trigger Values	ANZECC Livestock Drinking Water Quality Groundwater	NHMRC ADWG 2015 Health	NHMRC ADWG 2015 Aesthetics	NHMRC CLD, D. Lubiza, Water Guidelines 2012	Pond 2				Pond 3				
							Location Name Sample Date	05 Jul 2024	09 Oct 2024	14 Jan 2025	02 Apr 2025	05 Jul 2024	09 Oct 2024	14 Jan 2025	02 Apr 2025
FIELD							Unit								
Dissolved Oxygen	--	--	--	--	--	--	mg/L	10.85	--	8.31	7.13	11.99	--	7.78	6.7
Conductivity	--	--	--	--	--	--	µS/cm	8879	19346	15218	20895	6354	7257	8616	8893
Total Dissolved Solids (Calculated)	--	--	2000	--	600	--	mg/L	5083	19341	9739	19372	4182	4644	5514	3691
Oxidation-Reduction Potential	--	--	--	--	--	--	mV	46.7	80.4	114.7	7.1	85.4	-16	151	-13
Turbidity	--	--	--	--	5000	--	NTU	9574.3	172.1	4.23	6.21	13489.1	5.61	8.16	22.7
pH, field	--	6-9	--	6.5-8.5	5-9	--	SI	9.04	8.64	8.73	8.91	9.01	8.76	8.56	8.56
GENERAL CHEMISTRY															
Cyanide	0.007	--	--	0.08	--	0.8	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
MAJOR IONS															
Alkalinity, Bicarbonate (As CaCO3)	--	--	--	--	--	--	mg/L	800	1300	970	1100	700	830	770	1000
Alkalinity, Carbonate (As CaCO3)	--	--	--	--	--	--	mg/L	260	550	360	440	170	250	180	140
Alkalinity, Hydroxide (As CaCO3)	--	--	--	--	--	--	mg/L	<20	<20	<20	<20	<20	<20	<20	<20
Alkalinity, Total (As CaCO3)	--	--	--	--	--	--	mg/L	1100	1800	1300	1500	870	1100	950	1200
Sulfate (As SO4)	--	--	1000	--	250	--	mg/L	210	480	310	400	150	180	190	200
DISSOLVED METALS															
Antimony	--	--	--	0.003	--	--	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic	0.013*	0.1	0.5	0.01	--	0.1	mg/L	0.28	0.48	0.64	0.66	0.43	0.49	0.56	0.25
Barium	--	--	--	2	--	20	mg/L	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Beryllium	--	--	--	0.06	--	--	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	0.0002	0.01	0.01	0.002	--	0.02	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chromium, total	--	0.1	1	--	--	0.1	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	--	0.05	1	--	--	--	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	0.0014	0.2	0.4	2	--	1	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper, dissolved	--	0.2	--	0.3	--	--	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Iron	--	2	--	--	--	--	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	0.0034	2	0.1	0.01	--	0.1	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	1.9	0.2	--	0.5	--	5	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Mercury	0.0006	0.002	0.002	0.001	--	0.01	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum	--	0.01	0.15	0.05	--	--	mg/L	<0.005	0.008	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel	0.011	0.2	1	0.02	--	0.2	mg/L	0.002	0.003	0.002	0.003	0.002	0.002	0.002	0.002
Selenium	0.011	0.02	0.02	0.01	--	0.1	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Tin	--	--	--	--	--	--	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Vanadium	--	0.1	--	--	--	--	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	0.008	2	20	--	3	--	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
TOTAL METALS															
Antimony	--	--	--	0.003	--	--	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic	0.013*	0.1	0.5	0.01	--	0.1	mg/L	0.28	0.48	0.64	0.66	0.43	0.49	0.56	0.25
Barium	--	--	--	2	--	20	mg/L	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Beryllium	--	0.01	--	0.06	--	--	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	0.0002	0.01	0.01	0.002	--	0.02	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chromium, total	--	1	1	--	--	0.1	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	--	0.05	1	--	--	--	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	0.0014	0.2	0.4	2	--	1	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper, dissolved	--	0.2	--	0.3	--	--	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	0.0034	2	0.1	0.01	--	0.1	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	1.9	0.2	--	0.5	--	5	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Mercury	0.0006	0.002	0.002	0.001	--	0.01	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum	--	0.01	0.15	0.05	--	--	mg/L	<0.005	0.008	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel	0.011	0.2	1	0.02	--	0.2	mg/L	0.002	0.003	0.002	0.003	0.002	0.002	0.002	0.002
Selenium	0.011	0.02	0.02	0.01	--	0.1	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Tin	--	--	--	--	--	--	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Vanadium	--	0.1	--	--	--	--	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	0.008	2	20	--	3	--	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

* Based on criteria for Aq(V)

Table 1 -
Surface Water Analytical Results

Analyte/Analyte Grouping		ANZS Toxicant Default Guideline Values - 95% Level of Species Protection - Freshwater	ANZECC Irrigation Water: Long-Term Trigger Values	ANZECC Livestock Drinking Water Quality Groundwater	NHMRC ADWG 2015 Health	NHMRC ADWG 2015 Aesthetics	NHMRC CLD, Dublin, Water Guidelines 2012	Location Name			Unit	Sample Date			Pond 7E	Pond 5
								Sample Date				Sample Date				
FIELD																
Dissolved Oxygen	--	--	--	--	--	--	--	12.28	--	8.99	4.1	11.68				
Conductivity	--	--	--	--	--	--	--	3340	3661	8871	18007	1119				
Total Dissolved Solids (Calculated)	--	--	2000	--	600	--	--	2138	2343	5077	11324	716				
Oxidation-Reduction Potential	--	--	--	--	--	--	--	47.2	68.4	85.8	-22.1	34.5				
Turbidity	--	--	--	--	5000	--	--	16787	125.37	32.02	95	10239.3				
pH: field	--	6-9	--	--	6.5-8.5	5-9	--	9.05	9.35	8.97	8.44	9.45				
GENERAL CHEMISTRY																
Cyanide	0.007	--	--	--	0.08	--	--	<0.005	<0.005	<0.005	<0.005	<0.005				
MAJOR IONS																
Alkalinity: Bicarbonate (As CaCO3)	--	--	--	--	--	--	--	340	280	530	1000	320				
Alkalinity: Carbonate (As CaCO3)	--	--	--	--	--	--	--	47	200	150	130	32				
Alkalinity: Hydroxide (As CaCO3)	--	--	--	--	--	--	--	<20	<20	<20	<20	<20				
Alkalinity: Total (As CaCO3)	--	--	--	--	--	--	--	380	480	680	1100	350				
Sulfate (As SO4)	--	--	1000	--	250	--	--	6.4	7.5	61	210	10				
DISSOLVED METALS																
Antimony	--	--	--	--	0.003	--	--	<0.005	<0.005	<0.005	<0.005	<0.005				
Arsenic	0.013*	0.1	0.5	0.01	--	--	--	0.011	0.017	0.057	0.28	0.02				
Barium	--	--	--	--	2	--	--	0.18	0.17	0.74	1.7	0.02				
Beryllium	--	--	--	--	0.06	--	--	<0.001	<0.001	<0.001	<0.001	<0.001				
Cadmium	0.0002	0.01	0.01	0.002	--	--	--	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002				
Chromium, total	--	0.1	1	--	--	--	--	<0.001	<0.001	<0.001	<0.001	<0.001				
Cobalt	--	0.05	1	--	--	--	--	<0.001	<0.001	<0.001	<0.001	<0.001				
Copper	0.0014	0.2	0.4	2	--	1	20	0.002	0.001	<0.001	<0.001	0.006				
Cyanide	--	0.2	0.1	0.01	--	0.3	--	<0.005	<0.005	<0.005	<0.005	0.006				
Lead	0.0034	2	--	0.1	--	0.1	0.1	<0.001	<0.001	<0.001	<0.001	<0.001				
Manganese	1.9	0.2	--	--	0.5	--	3	<0.005	<0.005	<0.005	<0.005	<0.005				
Mercury	0.0006	0.002	0.002	0.001	0.001	--	0.01	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
Molybdenum	--	0.01	0.15	--	0.05	--	--	<0.005	<0.005	0.009	0.029	<0.005				
Nickel	0.011	0.2	1	--	0.02	--	0.2	<0.001	<0.001	0.002	0.004	0.001				
Selenium	0.011	0.02	0.02	0.01	--	--	0.4	0.001	<0.001	0.002	0.003	0.002				
Tin	--	--	--	--	--	--	--	<0.005	<0.005	<0.005	<0.005	<0.005				
Vanadium	--	0.1	--	--	--	--	--	<0.005	<0.005	<0.005	<0.005	<0.005				
Zinc	0.008	2	20	--	--	3	--	0.01	0.007	0.007	0.005	0.009				
TOTAL METALS																
Antimony	--	--	--	--	0.003	--	--	<0.005	<0.005	<0.005	<0.005	<0.005				
Arsenic	0.013*	0.1	0.5	0.01	--	--	--	0.011	0.022	0.057	0.28	0.08				
Barium	--	--	--	--	2	--	--	0.18	0.2	0.76	1.7	0.04				
Beryllium	--	0.1	--	--	0.06	--	--	<0.001	<0.001	<0.001	<0.001	<0.001				
Cadmium	0.0002	0.01	0.01	0.002	--	--	0.02	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002				
Chromium, total	--	0.1	1	--	--	--	0.3	<0.001	<0.001	<0.001	<0.001	<0.001				
Cobalt	--	0.05	1	--	--	--	2	<0.001	<0.001	<0.001	<0.001	<0.001				
Copper	0.0014	0.2	0.4	2	--	0.3	20	0.001	0.003	0.002	0.003	0.006				
Iron	--	0.2	--	--	--	--	--	<0.001	<0.001	<0.001	<0.001	<0.001				
Lead	0.0034	2	0.1	0.01	0.01	--	0.1	<0.001	<0.001	<0.001	<0.001	<0.001				
Manganese	1.9	0.2	0.1	0.15	0.05	--	0.1	<0.005	<0.005	0.006	0.007	0.006				
Mercury	0.0006	0.002	0.002	0.001	0.001	--	0.01	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
Molybdenum	--	0.01	0.15	--	0.05	--	--	<0.005	<0.005	0.009	0.014	0.03				
Nickel	0.011	0.2	1	--	0.02	--	0.2	<0.001	<0.001	0.003	0.005	0.003				
Selenium	0.011	0.02	0.02	0.01	--	--	0.4	<0.001	<0.001	0.002	0.003	0.003				
Tin	--	--	--	--	--	--	--	<0.005	<0.005	<0.005	<0.005	<0.005				
Vanadium	--	0.1	--	--	--	--	--	<0.005	<0.005	<0.005	<0.005	<0.005				
Zinc	0.008	2	20	--	--	3	--	0.01	0.031	0.021	0.008	0.016				

**Table 2 -
Groundwater Gauging Results**

Well ID	Date	SWL (m bTOC)	TOC (m AHD)	RWL (m AHD)
LD0-8A	1/07/2024	3.561	158.72	155.159
LD0-8A	8/10/2024	3.644	158.72	155.076
LD0-8A	14/01/2025	3.551	158.72	155.169
LD0-8A	31/03/2025	3.787	158.72	154.933
LD0-8B	1/07/2024	1.73	158.76	157.03
LD0-8B	8/10/2024	1.833	158.76	156.927
LD0-8B	14/01/2025	1.96	158.76	156.8
LD0-8B	31/03/2025	2.353	158.76	156.407
MW01	2/07/2024	9.157	159.9	150.743
MW01	8/10/2024	9.073	159.9	150.827
MW01	14/01/2025	8.864	159.9	151.036
MW01	31/03/2025	9.035	159.9	150.865
MW02	2/07/2024	24.687	169.95	145.263
MW02	8/10/2024	24.63	169.95	145.32
MW02	14/01/2025	24.6	169.95	145.35
MW02	31/03/2025	24.706	169.95	145.244
MW03	1/07/2024	8.066	161.03	152.964
MW03	8/10/2024	8.196	161.03	152.834
MW03	14/01/2025	8.418	161.03	152.612
MW03	31/03/2025	9.01	161.03	152.02
MW04	1/07/2024	15.139	158.17	143.031
MW04	8/10/2024	15.075	158.17	143.095
MW04	14/01/2025	14.922	158.17	143.248
MW04	31/03/2025	15.095	158.17	143.075
SD01	1/07/2024	DRY	154.49	DRY
SD01	8/10/2024	DRY	154.49	DRY
SD01	14/01/2025	DRY	154.49	DRY
SD01	1/04/2025	DRY	154.49	DRY
SD02	1/07/2024	4.591	154.48	149.889
SD02	8/10/2024	4.614	154.48	149.866
SD02	14/01/2025	4.47	154.48	150.01
SD02	1/04/2025	4.54	154.48	149.94
SD03	1/07/2024	5.214	154.67	149.456
SD03	8/10/2024	5.248	154.67	149.422
SD03	14/01/2025	5.104	154.67	149.566
SD03	1/04/2025	5.084	154.67	149.586
SD04	3/07/2024	7.594	154.56	146.966
SD04	8/10/2024	7.939	154.56	146.621
SD04	14/01/2025	8.695	154.56	145.865
SD04	1/04/2025	8.256	154.56	146.304
SD05	1/07/2024	7.48	154.79	147.31
SD05	8/10/2024	7.61	154.79	147.18
SD05	14/01/2025	7.421	154.79	147.369
SD05	1/04/2025	7.723	154.79	147.067
SD06	1/07/2024	6.609	154.65	148.041
SD06	8/10/2024	7.309	154.65	147.341
SD06	9/10/2024	7.44	154.65	147.21
SD06	14/01/2025	7.269	154.65	147.381
SD06	1/04/2025	DRY	154.65	DRY
SD07	1/07/2024	5.127	154.99	149.863
SD07	8/10/2024	5.074	154.99	149.916
SD07	14/01/2025	4.968	154.99	150.022
SD07	31/03/2025	5.292	154.99	149.698
SD08	1/07/2024	4.918	154.94	150.022
SD08	8/10/2024	4.898	154.94	150.042
SD08	14/01/2025	4.907	154.94	150.033
SD08	31/03/2025	4.918	154.94	150.022
SD09	1/07/2024	5.034	155.25	150.216
SD09	8/10/2024	4.935	155.25	150.315
SD09	14/01/2025	4.259	155.25	150.991
SD09	31/03/2025	5.066	155.25	150.184
SD10	1/07/2024	2.118	155.11	152.992
SD10	8/10/2024	1.929	155.11	153.181
SD10	14/01/2025	1.954	155.11	153.156
SD10	31/03/2025	2.36	155.11	152.75
SD11	1/07/2024	3.019	155.07	152.051
SD11	8/10/2024	4.953	155.07	150.117
SD11	14/01/2025	4.787	155.07	150.283
SD11	31/03/2025	5.105	155.07	149.965
SD12	1/07/2024	3.081	155.23	152.149

**Table 2 -
Groundwater Gauging Results**

Well ID	Date	SWL (m bTOC)	TOC (m AHD)	RWL (m AHD)
SD12	8/10/2024	2.982	155.23	152.248
SD12	14/01/2025	3.035	155.23	152.195
SD12	31/03/2025	3.383	155.23	151.847
SD13	1/07/2024	DRY	156.19	DRY
SD13	8/10/2024	7.856	156.19	148.334
SD13	14/01/2025	8	156.19	148.19
SD13	31/03/2025	8.215	156.19	147.975
SD14	1/07/2024	DRY	155.97	DRY
SD14	8/10/2024	DRY	155.97	DRY
SD14	14/01/2025	DRY	155.97	DRY
SD14	31/03/2025	DRY	155.97	DRY
SD15	1/07/2024	4.494	155.99	151.496
SD15	8/10/2024	4.776	155.99	151.214
SD15	14/01/2025	4.926	155.99	151.064
SD15	31/03/2025	5.372	155.99	150.618
WMW22	1/07/2024	3.201	158.096	154.895
WMW22	8/10/2024	3.233	158.096	154.863
WMW22	14/01/2025	3.11	158.096	154.986
WMW22	31/03/2025	3.327	158.096	154.769
WMW23	1/07/2024	2.245	158.255	156.01
WMW23	8/10/2024	2.228	158.255	156.027
WMW23	14/01/2025	2.174	158.255	156.081
WMW23	31/03/2025	2.52	158.255	155.735
WMW26	1/07/2024	4.675	155.118	150.443
WMW26	8/10/2024	4.629	155.118	150.489
WMW26	14/01/2025	4.451	155.118	150.667
WMW26	31/03/2025	4.829	155.118	150.289
WMW28	1/07/2024	4.19	155.072	150.882
WMW28	8/10/2024	4.083	155.072	150.989
WMW28	14/01/2025	4.069	155.072	151.003
WMW28	31/03/2025	4.353	155.072	150.719
WMW34	1/07/2024	10.329	154.701	144.372
WMW34	8/10/2024	10.26	154.701	144.441
WMW34	14/01/2025	10.066	154.701	144.635
WMW34	1/04/2025	10.217	154.701	144.484
WMW38	1/07/2024	8.206	154.802	146.596
WMW38	8/10/2024	8.141	154.802	146.661
WMW38	14/01/2025	7.984	154.802	146.818
WMW38	1/04/2025	8.26	154.802	146.542
WMW39	1/07/2024	5.051	154.948	149.897
WMW39	8/10/2024	5	154.948	149.948
WMW39	14/01/2025	4.786	154.948	150.162
WMW39	31/03/2025	5.104	154.948	149.844
WMW45	1/07/2024	8.552	154.661	146.109
WMW45	8/10/2024	8.549	154.661	146.112
WMW45	14/01/2025	8.432	154.661	146.229
WMW45	1/04/2025	8.53	154.661	146.131
WMW52	1/07/2024	13.507	154.392	140.885
WMW52	8/10/2024	13.449	154.392	140.943
WMW52	14/01/2025	13.223	154.392	141.169
WMW52	1/04/2025	13.299	154.392	141.093
WMW55	1/07/2024	4.859	154.966	150.107
WMW55	8/10/2024	4.812	154.966	150.154
WMW55	14/01/2025	4.595	154.966	150.371
WMW55	31/03/2025	4.914	154.966	150.052
WMW56	1/07/2024	5.134	155.293	150.159
WMW56	8/10/2024	5.076	155.293	150.217
WMW56	14/01/2025	4.871	155.293	150.422
WMW56	31/03/2025	5.198	155.293	150.095
WMW57	1/07/2024	4.868	155.091	150.223
WMW57	8/10/2024	4.786	155.091	150.305
WMW57	14/01/2025	4.583	155.091	150.508
WMW57	31/03/2025	4.891	155.091	150.2

Table 3 -
Groundwater Analytical Results

Analyte/Analyte Grouping										CAS Number	ANZG Toxicant Default Guideline Values - 95% Protection - Freshwater	ANZECC Irrigation Water: Long-Term Trigger Values	ANZECC Livestock Drinking Water Quality Groundwater	NHMRC ADWG 2015 Health	NHMRC ADWG 2015 Aesthetic	NHMRC IOx, Drinking Water, Guidelines 2019	AUS Standard Buildings and Structures Groundwater	Unit	SD02					Location ID	Aquifer	
																				04 Jul 2024	10 Oct 2024	14 Jan 2025	02 Apr 2025	03 Jul 2024	10 Oct 2024	
FIELD																										
Dissolved Oxygen										DIS5_OXYGEN	--	--	--	--	--	--	--	--	--	mg/L	8.86	7.12	5.66	3.42	5.81	8.15
Conductivity										COND	--	--	--	--	--	--	--	--	--	us/cm	2489	2640	2599	2862	2895	
Total Dissolved Solids (Calculated)										TDS_Calc	--	--	2000	--	600	--	--	--	--	mg/L	1593	1554	1690	1663	1853	1832
Oxidation-Reduction Potential										ORP	--	--	--	--	--	--	--	--	--	mV	121.4	84.1	121.1	61.3	117.2	110.3
Turbidity										TURB	--	--	--	--	5000	--	--	--	NTU	1785.06	257.13	12.82	20.5	42	172.81	
pH (Field)										pH_Field	--	6 - 9	--	6.5 - 8.5	5 - 9	--	--	--	--	SU	6.72	6.77	6.85	6.73	7.5	7.33
GENERAL CHEMISTRY																										
Cyanide										57-12-5	0.007	--	--	0.08	--	--	0.8	--	--	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
MAJOR IONS																										
Alkalinity, Bicarbonate (As CaCO3)										ALKB	--	--	--	--	--	--	--	--	--	mg/L	500	460	460	490	850	790
Alkalinity, Carbonate (As CaCO3)										ALKC	--	--	--	--	--	--	--	--	--	mg/L	<10	<10	<10	<10	<10	<10
Alkalinity, Hydroxide (As CaCO3)										ALKH	--	--	--	--	--	--	--	--	--	mg/L	<20	<20	<20	<20	<20	<20
Alkalinity, Total (As CaCO3)										ALK	--	--	--	--	--	--	--	--	--	mg/L	500	460	460	490	850	790
Calcium										7440-70-2	--	--	1000	--	--	--	--	--	--	mg/L	<0.5	<0.5	<0.5	1.2	<0.5	<0.5
Chloride (As Cl)										16887-00-6	--	--	--	--	250	--	--	6000	mg/L	400	400	400	420	510	500	
Magnesium										7439-95-4	--	--	2000	--	--	--	--	--	--	mg/L	9.7	11	13	13	17	16
Potassium										7440-09-7	--	--	--	--	--	--	--	--	--	mg/L	7	6	5.6	5.2	10	10
Sodium										7440-23-5	--	--	--	--	180	--	--	--	--	mg/L	590	610	580	680	680	749
Sulfate (As SO4)										14808-79-8	--	--	1000	--	250	5000	1000	--	mg/L	270	330	360	360	110	120	
Sulfide										18496-25-8	--	--	--	--	--	--	--	--	mg/L	--	<0.1	--	--	--	<0.1	
METALS																										
Antimony										7440-36-0	--	--	--	0.003	--	--	--	--	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Arsenic										7440-38-2	0.013*	0.1	0.5	0.01	--	0.1	--	--	mg/L	0.003	0.001	<0.001	<0.001	<0.001	<0.001	
Barium										7440-39-3	--	--	--	2	--	20	--	--	mg/L	<0.02	<0.02	<0.02	<0.02	0.02	0.03	
Beryllium										7440-41-7	--	0.1	--	0.06	--	5	--	--	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Cadmium										7440-43-9	0.0002	0.01	0.01	0.002	--	0.02	--	--	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	
Chromium, total										7440-47-3	--	0.1	--	--	--	0.5	--	--	mg/L	<0.001	<0.001	<0.001	<0.001	0.003	0.003	
Cobalt										7440-48-4	--	0.05	1	--	--	--	--	--	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Copper										7440-50-8	0.0014	0.2	0.4	2	1	20	--	--	mg/L	0.002	0.001	0.002	<0.001	0.003	<0.001	
Iron										7439-89-6	--	0.2	--	--	0.3	--	--	--	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Lead										7439-92-1	0.0034	2	0.1	0.01	--	0.1	--	--	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese										7439-96-5	1.9	0.2	--	0.5	--	5	--	--	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Mercury										7439-97-6	0.0006	0.002	0.002	0.001	--	0.01	--	--	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Molybdenum										7439-98-7	--	0.01	0.15	0.05	--	--	--	--	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Nickel										7440-02-0	0.011	0.2	1	0.02	--	0.2	--	--	mg/L	0.001	0.01	0.01	0.01	0.01	0.01	
Selenium										7782-49-2	0.011	0.02	0.02	0.01	--	0.1	--	--	mg/L	0.014	0.01	0.01	0.01	0.01	0.01	
Tin										7440-31-5	--	--	--	--	--	--	--	--	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Vanadium										7440-62-2	--	0.1	--	--	--	--	--	--	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Zinc										7440-66-6	0.008	2	20	--	3	--	--	--	mg/L	0.021	0.009	0.007	0.006	0.032	0.011	

* based on criteria for As(V)

Table 3 -
Groundwater Analytical Results

Aquifer														
Analyte/Analyte Grouping		CAS Number	ANZG Toxicant Default Guideline Values - 95% Protection - Freshwater	ANZECC Irrigation Water- Long Term Trigger Values	ANZECC Livestock Drinking Water Quality Groundwater	NHMRC ADWG 2015 Health	NHMRC ADWG 2015 Aesthetic	NHMRC IOx, Drinking Water, Guidelines 2019	AUS Standard Buildings and Structures Groundwater	Location ID03 Sample Date	SD04 03 Jul 2024	SD05 04 Jul 2024	SD06 04 Jul 2024	
FIELD									Unit					
DISS. OXYGEN			--	--	--	--	--	--	--	mg/L	7.53	4.18	10.41	0.45
Conductivity			--	--	--	--	--	--	--	us/cm	3134	5079	24242	1793
Total Dissolved Solids (Calculated)			--	--	2000	--	600	--	--	mg/L	3951	18216	1148	15516
Oxidation Reduction Potential			--	--	--	--	--	--	--	mV	135.1	198.8	146.8	18.1
Turbid			--	--	--	--	5000	--	--	NTU	11	39	427.5	61.5
pH (Field)			--	6-9	--	6.5-8.5	5-9	--	--	SD	7.25	3.85	6.47	5.06
GENERAL CHEMISTRY														
Cyanide		57-12-5	0.007	--	--	0.08	--	0.8	--	mg/L	<0.005	<0.005	<0.005	<0.005
MAJOR IONS														
Alkalinity, Bicarbonate (As CaCO3)		ALKB	--	--	--	--	--	--	--	mg/L	560	<20	76	92
Alkalinity, Carbonate (As CaCO3)		ALKC	--	--	--	--	--	--	--	mg/L	<10	<10	<10	<10
Alkalinity, Hydroxide (As CaCO3)		ALKH	--	--	--	--	--	--	--	mg/L	<20	<20	<20	<20
Alkalinity, Total (As CaCO3)		ALK	--	--	--	--	--	--	--	mg/L	560	<20	76	92
Calcium		7440-70-2	--	--	1000	--	250	--	--	mg/L	19	8.9	46	66
Chloride (As Cl)		16887-00-6	--	--	--	--	250	--	6000	mg/L	470	1300	540	5300
Magnesium		7439-95-4	--	--	2000	--	--	--	--	mg/L	21	49	800	120
Potassium		7440-09-7	--	--	--	--	--	--	--	mg/L	15	110	30	79
Sodium		7440-23-5	--	--	--	--	180	--	--	mg/L	670	1100	5900	440
Sulfate (As SO4)		14808-79-8	--	--	1000	--	250	5000	1000	mg/L	120	1700	100	1200
Sulfide		18496-25-8	--	--	--	--	--	--	--	mg/L	--	--	--	--
METALS														
Antimony		7440-36-0	--	--	--	0.003	--	--	--	mg/L	<0.005	<0.005	<0.005	<0.005
Arsenic		7440-38-2	0.013*	0.1	0.5	0.01	--	0.1	--	mg/L	<0.001	<0.001	<0.001	0.007
Barium		7440-39-3	--	--	--	2	--	20	--	mg/L	<0.02	<0.02	0.13	0.03
Beryllium		7440-41-7	--	0.1	--	0.06	--	5	--	mg/L	<0.001	<0.001	<0.001	0.003
Cadmium		7440-43-9	0.0002	0.01	0.01	0.002	--	0.02	--	mg/L	<0.002	<0.0002	<0.0002	<0.0002
Chromium, total		7440-47-3	--	0.1	1	--	--	0.5	--	mg/L	0.003	<0.001	<0.001	0.001
Cobalt		7440-48-4	--	0.05	1	--	--	--	--	mg/L	<0.001	<0.001	<0.001	0.02
Copper		7440-50-8	0.0014	0.2	0.4	2	1	20	--	mg/L	<0.001	0.013	0.016	0.002
Iron		7439-89-6	--	0.2	--	--	0.3	--	--	mg/L	<0.05	<0.05	<0.05	<0.001
Lead		7439-92-1	0.0034	2	0.1	0.01	--	0.1	--	mg/L	<0.001	<0.001	<0.001	25
Manganese		7439-96-5	1.9	0.2	--	0.5	--	5	--	mg/L	<0.005	<0.005	<0.005	0.1
Mercury		7439-97-6	0.0006	0.002	0.002	0.001	--	0.01	--	mg/L	<0.001	0.0013	<0.001	<0.001
Molybdenum		7439-98-7	--	0.01	0.15	0.05	--	--	--	mg/L	<0.005	<0.005	<0.005	<0.005
Nickel		7440-02-0	0.011	0.2	1	0.02	--	0.2	--	mg/L	0.014	0.12	0.003	0.093
Selenium		7782-49-2	0.011	0.02	0.02	0.01	--	0.1	--	mg/L	0.052	<0.001	<0.001	<0.001
Tin		7440-31-5	--	--	--	--	--	--	--	mg/L	<0.005	<0.005	<0.005	<0.005
Vanadium		7440-62-2	--	0.1	--	--	--	--	--	mg/L	<0.005	<0.005	<0.005	<0.005
Zinc		7440-66-6	0.008	2	20	--	3	--	--	mg/L	0.11	0.25	<0.005	0.029

* based on criteria for As(V)

Table 3 -
Groundwater Analytical Results

Aquifer										Shallow Aquifer			
Location ID		SD07				SD09							
Sample Date		10 Oct 2024	14 Jan 2025	01 Apr 2025	04 Jul 2024	10 Oct 2024	14 Jan 2025						
Analyte/Analyte Grouping		CAS Number	ANZG Toxicant Default Guideline Values - 95% Protection - Freshwater	ANZECC Irrigation Water: Long-Term Trigger Values	ANZECC Livestock Drinking Water Quality Groundwater	NHMRC ADWG 2015 Health	NHMRC ADWG 2015 Aesthetic	NHMRC IOx, Drinking Water, Guidelines 2019	AUS Standard Buildings and Structures Groundwater				
FIELD													
Dissolved Oxygen		DISS_OXYGEN	--	--	--	--	--	--	--				
Conductivity		COND	--	--	--	--	--	--	--				
Total Dissolved Solids (Calculated)		TDS_Calc	--	--	2000	--	600	--	--				
Oxidation-Reduction Potential		ORP	--	--	--	--	--	--	--				
Turbidity		TURB	--	--	--	--	5000	--	--				
pH (Field)		pH_Field	--	6 - 9	--	6.5 - 8.5	5 - 9	--	--				
GENERAL CHEMISTRY													
Cyanide		57-12-5	0.007	--	--	0.08	--	0.8	--				
MAJOR IONS													
Alkalinity, Bicarbonate (As CaCO3)		ALKB	--	--	--	--	--	--	--				
Alkalinity, Carbonate (As CaCO3)		ALKC	--	--	--	--	--	--	--				
Alkalinity, Hydroxide (As CaCO3)		ALKH	--	--	--	--	--	--	--				
Alkalinity, Total (As CaCO3)		ALK	--	--	--	--	--	--	--				
Calcium		7440-70-2	--	--	1000	--	--	--	--				
Chloride (As Cl)		16887-00-6	--	--	--	250	--	--	6000				
Magnesium		7439-95-4	--	--	2000	--	--	--	--				
Potassium		7440-09-7	--	--	--	--	--	--	--				
Sodium		7440-23-5	--	--	--	--	180	--	--				
Sulfate (As SO4)		14808-79-8	--	--	1000	--	250	5000	1000				
Sulfide		18496-25-8	--	--	--	--	--	--	--				
METALS													
Antimony		7440-36-0	--	--	--	0.003	--	--	--				
Arsenic		7440-38-2	0.013*	0.1	0.5	0.01	--	0.1	--				
Barium		7440-39-3	--	--	--	2	--	20	--				
Beryllium		7440-41-7	--	0.1	--	0.06	--	5	--				
Cadmium		7440-43-9	0.0002	0.01	0.01	0.002	--	0.02	--				
Chromium, total		7440-47-3	--	0.1	--	--	--	0.02	--				
Cobalt		7440-48-4	--	0.05	1	--	--	0.5	--				
Copper		7440-50-8	0.0014	0.2	0.4	2	1	20	--				
Iron		7439-89-6	--	0.2	--	--	0.3	--	--				
Lead		7439-92-1	0.0034	2	0.1	0.01	--	0.1	--				
Manganese		7439-96-5	1.9	0.2	--	0.5	0.1	5	--				
Mercury		7439-97-6	0.0006	0.002	0.002	0.001	--	0.01	--				
Molybdenum		7439-98-7	--	0.01	0.15	0.05	--	0.01	--				
Nickel		7440-02-0	0.011	0.2	1	0.02	--	0.2	--				
Selenium		7782-49-2	0.011	0.02	0.02	0.01	--	0.1	--				
Tin		7440-31-5	--	--	--	--	--	--	--				
Vanadium		7440-62-2	--	0.1	--	--	--	--	--				
Zinc		7440-66-6	0.008	2	20	--	3	--	--				

* based on criteria for As(V)

Table 3 -
Groundwater Analytical Results

Aquifer														
Location ID														
Sample Date														
SD11														
SD12														
SD15														
01 Apr 2025														
04 Jul 2024														
09 Oct 2024														
14 Jan 2025														
Unit														
mg/L														
us/cm														
mg/L														
mV														
NTU														
SU														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														
mg/L														

* based on criteria for As(V)

Table 3 -
Groundwater Analytical Results

WMW23																			
Analyte/Analyte Grouping		CAS Number		ANZG Toxicant Default Guideline Values - 95% Protection - Freshwater		ANZECC Irrigation Water: Long-Term Trigger Values		ANZECC Livestock Drinking Water Quality Groundwater		NHMRC ADWG 2015 Health		NHMRC ADWG 2015 Aesthetics		NHMRC IOx, Drinking Water, Guidelines 2019		AUS Standard Buildings and Structures Groundwater		Unit	
FIELD																			
	Dissolved Oxygen																		
	COND																		
	TDS_Calc																		
	Total Dissolved Solids (Calculated)																		
	ORP																		
	Oxidation-Reduction Potential																		
	Turbidity																		
	pH (Field)																		
	pH_Field																		
GENERAL CHEMISTRY																			
	Cyanide																		
	5712-5																		
MAJOR IONS																			
	Alkalinity, Bicarbonate (As CaCO3)																		
	ALKB																		
	Alkalinity, Carbonate (As CaCO3)																		
	ALKC																		
	Alkalinity, Hydroxide (As CaCO3)																		
	ALKH																		
	Alkalinity, Total (As CaCO3)																		
	ALK																		
	Calcium																		
	7440-70-2																		
	Chloride (As Cl)																		
	16887-00-6																		
	Magnesium																		
	7439-95-4																		
	Potassium																		
	7440-09-7																		
	Sodium																		
	7440-23-5																		
	Sulfate (As SO4)																		
	14808-79-8																		
	Sulfide																		
	18496-25-8																		
METALS																			
	Antimony																		
	7440-35-0																		
	Arsenic																		
	7440-38-2																		
	Barium																		
	7440-39-3																		
	Beryllium																		
	7440-41-7																		
	Cadmium																		
	7440-43-9																		
	Chromium, total																		
	7440-47-3																		
	Cobalt																		
	7440-48-4																		
	Copper																		
	7440-50-8																		
	Iron																		
	7439-89-6																		
	Lead																		
	7439-92-1																		
	Manganese																		
	7439-96-5																		
	Mercury																		
	7439-97-6																		
	Molybdenum																		
	7439-98-7																		
	Nickel																		
	7440-02-0																		
	Selenium																		
	7782-49-2																		
	Tin																		
	7440-31-5																		
	Vanadium																		
	7440-62-2																		
	Zinc																		
	7440-66-6																		
based on criteria for As(V)																			

* based on criteria for As(V)

Table 3 -
Groundwater Analytical Results

Analyte/Analyte Grouping		CAS Number	ANZG Toxicant Default Guideline Values - 95% Protection - Freshwater	ANZECC Irrigation Water: Long-Term Trigger Values	ANZECC Livestock Drinking Water Quality Groundwater	NHMRC ADWG 2015 Health	NHMRC ADWG 2015 Aesthetic	NHMRC IOx, Drinking Water, Guidelines 2019	AUS Standard Buildings and Structures Groundwater	WMW28				WMW22		WMW24	
										10 Oct 2024	14 Jan 2025	01 Apr 2025	02 Jul 2024	03 Jul 2024	10 Oct 2024		
FIELD																	
Dissolved Oxygen	DISS_OXYGEN	--	--	--	--	--	--	--	--	2.94	0.77	0.3	0	0	2.37	2.37	
Conductivity	COND	--	--	--	--	--	--	--	--	36089	42685	20373	23670	23670	21900	21900	
Total Dissolved Solids (Calculated)	TDS_Calc	--	--	2000	--	--	600	--	--	23097	27318	13039	15149	15149	14016	14016	
Oxidation-Reduction Potential	ORP	--	--	--	--	--	--	--	--	99.4	-147.2	96.8	119.1	119.1	362.6	362.6	
Turbidity	TURB	--	--	--	--	--	5000	--	--	141.07	22.47	11.8	135	135	238.96	238.96	
pH (Field)	pH_Field	--	6 - 9	--	--	6.5 - 8.5	5-9	--	--	6.33	6.34	6.58	3.55	3.55	3.4	3.4	
GENERAL CHEMISTRY																	
Cyanide	57-12-5	0.007	--	--	--	0.08	--	0.8	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
MAJOR IONS																	
Alkalinity, Bicarbonate (As CaCO3)	ALKB	--	--	--	--	--	--	--	--	1100	1200	980	< 20	< 20	< 20	< 20	
Alkalinity, Carbonate (As CaCO3)	ALKC	--	--	--	--	--	--	--	--	< 10	< 10	< 10	< 10	< 10	< 10	< 10	
Alkalinity, Hydroxide (As CaCO3)	ALKH	--	--	--	--	--	--	--	--	< 20	< 20	< 20	< 20	< 20	< 20	< 20	
Alkalinity, Total (As CaCO3)	ALK	--	--	--	--	--	--	--	--	1100	1200	980	< 20	< 20	< 20	< 20	
Calcium	7440-70-2	--	--	1000	--	--	--	--	--	310	320	320	32	32	33	33	
Chloride (As Cl)	16887-00-6	--	--	--	250	--	--	--	6000	16000	11000	2000	8500	8500	7400	7400	
Magnesium	7439-95-4	--	--	2000	--	--	--	--	--	1400	1500	820	500	500	510	510	
Potassium	7440-09-7	--	--	--	--	--	--	--	--	68	71	43	69	69	75	75	
Sodium	7440-23-5	--	--	--	--	--	180	--	--	8200	8700	3300	4600	4600	4500	4500	
Sulfate (As SO4)	14808-79-8	--	--	1000	--	250	5000	1000	--	< 0.1	--	--	1200	1200	700	700	
Sulfide	18496-25-8	--	--	--	--	--	--	--	--						< 0.1	< 0.1	
METALS																	
Antimony	7440-35-0	--	--	--	0.003	--	--	--	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
Arsenic	7440-38-2	0.013*	0.1	0.5	0.01	--	--	0.1	--	0.005	0.004	0.001	0.003	0.004	0.004	0.004	
Barium	7440-39-3	--	--	--	2	--	--	20	--	0.16	0.11	0.27	0.02	0.02	0.02	0.02	
Beryllium	7440-41-7	--	0.1	--	0.06	--	--	--	--	< 0.001	< 0.001	< 0.001	0.014	0.014	0.014	0.014	
Cadmium	7440-43-9	0.0002	0.01	0.01	0.002	--	--	0.02	--	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Chromium, total	7440-47-3	--	0.1	1	--	--	--	0.5	--	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
Cobalt	7440-48-4	--	0.05	1	--	--	--	--	--	0.027	0.011	0.007	0.001	0.001	0.067	0.067	
Copper	7440-50-8	0.0014	0.2	0.4	2	1	20	--	--	< 0.001	< 0.001	0.006	0.031	0.031	0.005	0.005	
Iron	7439-89-6	--	0.2	--	--	0.3	--	--	--	5.6	5.1	< 0.05	0.2	0.2	0.28	0.28	
Lead	7439-92-1	0.0034	2	0.1	0.01	--	0.1	--	--	< 0.001	< 0.001	< 0.001	0.063	0.063	0.046	0.046	
Manganese	7439-96-5	1.9	0.2	--	0.5	--	0.1	--	--	4.3	2.1	0.22	0.029	0.029	0.043	0.043	
Mercury	7439-97-6	0.0006	0.002	0.002	0.001	--	0.01	--	--	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
Molybdenum	7439-98-7	--	0.01	0.15	0.05	--	--	--	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
Nickel	7440-02-0	0.011	0.2	1	0.02	--	0.2	--	--	0.005	0.003	0.001	0.044	0.044	0.023	0.023	
Selenium	7782-49-2	0.011	0.02	0.02	0.01	--	0.1	--	--	< 0.001	0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	
Tin	7440-31-5	--	--	--	--	--	--	--	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
Vanadium	7440-62-2	--	0.1	--	--	--	--	--	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
Zinc	7440-66-6	0.008	2	20	--	--	3	--	--	0.014	0.006	0.013	0.062	0.062	0.022	0.022	

* based on criteria for As(V)

Table 3 -

* based on criteria for As(V)

Table 3 -
Groundwater Analytical Results

										WMW38					Intermediate Aquifer			WM
		Aquifer	Location ID	03 Jul 2024	10 Oct 2024	14 Jan 2025	02 Apr 2025	03 Jul 2024	10 Oct 2024									
			Sample Date															
Analyte/Analyte Grouping		CAS Number	ANZG Toxicant Default Guideline Values - 95% Protection - Freshwater	ANZECC Irrigation Water: Long-Term Trigger Values	ANZECC Livestock Drinking Water Quality Groundwater	NHMRC ADWG 2015 Health	NHMRC ADWG 2015 Aesthetic	NHMRC IOx, Drinking Water, Guidelines 2019	AUS Standard Buildings and Structures Groundwater	Unit								
FIELD																		
	Dissolved Oxygen	DISS_OXYGEN	--	--	--	--	--	--	--	mg/L	1.2	2.18	2.13	0.98	2.57		3.8	
	Conductivity	COND	--	--	--	--	--	--	--	us/cm	20145	20677	21853	22318	16868		19231	
	Total Dissolved Solids (Calculated)	TDS_Calc	--	--	2000	--	600	--	--	mg/L	12893	13233	13986	14284	10796		12408	
	Oxidation-Reduction Potential	ORP	--	--	--	--	5000	--	--	mV	517.2	275.6	371.9	124.4	351.1		397.5	
	Turbidity	TURB	--	--	--	--	5000	--	--	NTU	164.61	411.44	167.65	880	224.11		342.28	
	pH (Field)	pH_Field	--	6 - 9	--	6.5 - 8.5	5-9	--	--	SU	4.99	5.48	4.98	4.94	2.75		5.53	
GENERAL CHEMISTRY																		
	Cyanide	57-12-5	0.007	--	--	0.08	--	0.8	--	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	
MAJOR IONS																		
	Alkalinity, Bicarbonate (As CaCO3)	ALKB	--	--	--	--	--	--	--	mg/L	40	64	57	42	<20		<20	
	Alkalinity, Carbonate (As CaCO3)	ALKC	--	--	--	--	--	--	--	mg/L	<10	<10	<10	<10	<10		<20	
	Alkalinity, Hydroxide (As CaCO3)	ALKH	--	--	--	--	--	--	--	mg/L	<20	<20	<20	<20	<20		<20	
	Alkalinity, Total (As CaCO3)	ALK	--	--	--	--	--	--	--	mg/L	40	64	57	42	<20		<20	
	Calcium	7440-70-2	--	--	1000	--	--	--	--	mg/L	40	48	45	48	8		8.8	
	Chloride (As Cl)	16887-00-6	--	--	--	--	250	--	6000	mg/L	2100	6500	8000	6600	5700		5400	
	Magnesium	7439-95-4	--	--	2000	--	--	--	--	mg/L	490	570	500	570	410		430	
	Potassium	7440-09-7	--	--	--	--	--	--	--	mg/L	79	89	80	92	72		76	
	Sodium	7440-23-5	--	--	--	--	180	--	--	mg/L	4100	4600	4000	4500	3800		3900	
	Sulfate (As SO4)	14808-79-8	--	--	1000	--	250	5000	1000	mg/L	1800	2000	2100	2200	1300		1300	
	Sulfide	18496-25-8	--	--	--	--	--	--	--	mg/L	--	<0.1	--	--	--		<0.1	
METALS																		
	Antimony	7440-36-0	--	--	--	0.003	--	--	--	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	
	Arsenic	7440-38-2	0.013*	0.1	0.5	0.01	--	0.1	--	mg/L	<0.001	0.002	0.001	0.001	0.001		0.002	
	Barium	7440-39-3	--	--	--	2	--	20	--	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02		0.02	
	Beryllium	7440-41-7	--	0.1	--	0.06	--	--	--	mg/L	0.008	0.007	0.006	0.006	0.007		0.008	
	Cadmium	7440-43-9	0.0002	0.01	0.01	0.002	--	0.02	--	mg/L	0.0005	0.0005	0.0004	0.0005	<0.0002		0.0003	
	Chromium, total	7440-47-3	--	0.1	1	--	--	0.5	--	mg/L	<0.001	0.001	<0.001	<0.001	0.001		0.001	
	Cobalt	7440-48-4	--	0.05	--	--	--	--	--	mg/L	0.041	0.059	0.04	0.05	0.023		0.037	
	Copper	7440-50-8	0.0014	0.2	0.4	2	1	20	--	mg/L	0.02	0.002	0.002	0.002	0.11		0.002	
	Iron	7439-89-6	--	0.2	--	--	0.3	--	--	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	
	Lead	7439-92-1	0.0034	2	0.1	0.01	--	0.1	--	mg/L	0.019	0.014	0.018	0.023	0.026		0.016	
	Manganese	7439-96-5	1.9	0.2	--	0.5	0.1	5	--	mg/L	0.022	0.031	0.022	0.027	0.051		0.051	
	Mercury	7439-97-6	0.0006	0.002	0.002	0.001	--	0.01	--	mg/L	0.003	0.003	0.002	0.003	0.001		0.003	
	Molybdenum	7439-98-7	--	0.01	0.15	0.05	--	--	--	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	
	Nickel	7440-02-0	0.011	0.2	1	0.02	--	0.2	--	mg/L	0.005	0.026	0.018	0.023	0.019		0.018	
	Selenium	7782-49-2	0.011	0.02	0.02	0.01	--	0.1	--	mg/L	<0.001	<0.001	<0.001	0.001	<0.001		<0.001	
	Tin	7440-31-5	--	--	--	--	--	--	--	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	
	Vanadium	7440-62-2	--	0.1	--	--	--	--	--	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	
	Zinc	7440-66-6	0.008	2	20	--	3	--	--	mg/L	0.042	0.025	0.019	0.017	0.1		0.058	

* based on criteria for As(V)

Table 3 - Groundwater Analytical Results

Aquifer									
Location IDW45					WMW52				
Sample Date									
14 Jan 2025					02 Apr 2025				
14 Jan 2025					03 Jul 2024				
10 Oct 2024					14 Jan 2025				
02 Apr 2025					02 Apr 2025				
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									

Table 3 -
Groundwater Analytical Results

Analyte/Analyte Grouping	CAS Number	ANZG Toxicant Default Guideline Values - 95% Protection - Freshwater	ANZECC Irrigation Water: Long-Term Trigger Values	ANZECC Livestock Drinking Water Quality Groundwater	NHMRC ADWG 2015 Health	NHMRC ADWG 2015 Aesthetics	NHMRC IOx, Drinking Water, Guidelines 2019	AUS Standard Buildings and Structures Groundwater	Deep Lead Aquifer				MW		
									WMW39		WWW55		MW		
									10 Oct 2024	14 Jan 2025	01 Apr 2025	04 Jul 2024	02 Jul 2024	10 Oct 2024	
Sample Date															
Unit															
FIELD															
DISS_OXYGEN		--	--	--	--	--	--	--	2.08	1.95	0.7	25055	0.2	2.44	3.89
COND		--	--	--	--	--	--	--	21959	23242	15015	23834	15015	15015	13787
TDS_Calc		--	--	--	--	--	--	--	14654	14675	15254	16035	15254	9610	8824
Oxidation-Reduction Potential	ORP	--	--	--	--	--	--	--	332.7	229.8	161	54.5	161	148.7	168.1
TURB		--	--	--	--	--	--	--	243.16	196.85	47.9	259.88	10.32	664.37	
pH_Field		--	6 - 9	--	6.5 - 8.5	5-9	--	--	4.02	4.12	4	5.15	6.26	6.19	
GENERAL CHEMISTRY															
Cyanide	57-12-5	0.007	--	--	0.08	--	0.8	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
MAJOR IONS															
Alkalinity, Bicarbonate (As CaCO3)	ALKB	--	--	--	--	--	--	--	< 20	< 20	2200	110	570	570	570
Alkalinity, Carbonate (As CaCO3)	ALKC	--	--	--	--	--	--	--	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Alkalinity, Hydroxide (As CaCO3)	ALKH	--	--	--	--	--	--	--	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Alkalinity, Total (As CaCO3)	ALK	--	--	--	--	--	--	--	< 20	< 20	2200	110	570	570	570
Calcium	7440-70-2	--	--	1000	--	--	--	--	27	29	32	30	120	120	120
Chloride (As Cl)	16887-00-6	--	--	--	--	250	--	6000	2500	8600	7700	7700	5300	4900	4900
Magnesium	7439-95-4	--	--	2000	--	--	--	--	540	520	580	510	440	440	440
Potassium	7440-09-7	--	--	--	--	--	--	--	90	84	96	64	56	61	61
Sodium	7440-23-5	--	--	--	--	180	--	--	4700	4300	4900	4700	2800	2800	2800
Sulfate (As SO4)	14808-79-8	--	--	1000	--	250	5000	1000	1300	1400	1400	1300	1300	1300	1300
Sulfide	18496-25-8	--	--	--	--	--	--	--	< 0.1	--	--	--	--	--	< 0.1
METALS															
Antimony	7440-36-0	--	--	--	0.003	--	--	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Arsenic	7440-38-2	0.013*	0.1	0.5	0.01	--	0.1	--	0.003	0.002	0.001	0.001	< 0.001	< 0.001	< 0.001
Barium	7440-39-3	--	--	--	2	--	20	--	0.03	0.02	0.02	0.02	< 0.02	< 0.02	< 0.02
Beryllium	7440-41-7	--	0.1	--	0.06	--	5	--	0.038	0.015	0.015	0.016	0.002	< 0.001	< 0.001
Cadmium	7440-43-9	0.0002	0.01	0.01	0.002	--	0.02	--	0.0007	0.0005	0.0005	0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium, total	7440-47-3	--	0.1	1	--	--	0.5	--	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	7440-48-4	--	0.05	--	--	--	--	--	0.13	0.072	0.11	0.033	< 0.001	< 0.001	< 0.001
Copper	7440-50-8	0.0014	0.2	0.4	2	1	20	--	0.011	0.006	0.008	0.035	0.004	< 0.001	< 0.001
Iron	7439-89-6	--	0.2	--	--	0.3	--	--	0.48	0.4	0.43	< 0.05	< 0.05	< 0.05	< 0.05
Lead	7439-92-1	0.0034	2	0.1	0.01	--	0.1	--	0.008	0.01	0.014	0.022	< 0.001	< 0.001	< 0.001
Manganese	7439-96-5	1.9	0.2	--	0.5	--	5	--	0.68	0.43	0.5	0.22	0.009	0.01	0.01
Mercury	7439-97-6	0.0006	0.002	0.002	0.001	--	0.01	--	0.0001	0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001
Molybdenum	7439-98-7	--	0.01	0.15	0.05	--	--	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Nickel	7440-02-0	0.011	0.2	1	0.02	--	0.2	--	0.051	0.03	0.039	0.02	0.03	0.004	0.004
Selenium	7782-49-2	0.011	0.02	0.02	0.01	--	0.1	--	< 0.001	0.002	0.002	< 0.001	0.002	< 0.002	< 0.002
Tin	7440-31-5	--	--	--	--	--	--	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Vanadium	7440-62-2	--	0.1	--	--	--	--	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Zinc	7440-66-6	0.008	2	20	--	3	--	--	0.065	0.033	0.036	0.018	0.012	0.013	0.013

Table 3 -
Groundwater Analytical Results

Aquifer										Bedrock (Cast)							
Location ID/V01										MW02							
Sample Date										02 Jul 2024		14 Jan 2025		01 Apr 2025			
Unit																	
AUS Standard Buildings and Structures Groundwater																	
NHMRC ADWG, 2015 Health										NHMRC ADWG, 2015 Aesthetic		NHMRC IOx, Drinking Water, Guidelines 2019					
ANZECC Livestock Drinking Water Quality Groundwater																	
ANZECC Irrigation Water: Long-Term Trigger Values																	
ANZG Toxicant Default Guideline Values - 95% Protection - Freshwater																	
CAS Number																	
FIELD																	
Dissolved Oxygen										--		1.68		1.38		7.46	
Conductivity										--		16015		24700		22250	
Total Dissolved Solids (Calculated)										--		16500		24700		27096	
TDS Calc										--		10950		15808		17341	
Oxidation Reduction Potential										--		229.2		89.5		185.7	
ORP										--		30.3		147.1		171.5	
Turb										--		86.26		185.1		101.7	
pH (Field)										--		6.19		6.2		6.43	
pH Field										--		5.9		5.92		6.54	
GENERAL CHEMISTRY																	
Cyanide										--		< 0.005		< 0.005		< 0.005	
MAJOR IONS																	
Alkalinity, Bicarbonate (As CaCO3)										--		600		490		550	
ALKB										--		< 10		< 10		< 10	
Alkalinity, Carbonate (As CaCO3)										--		< 20		< 20		< 20	
ALKC										--		600		490		550	
Alkalinity, Hydroxide (As CaCO3)										--		< 20		< 20		< 20	
ALKH										--		670		490		590	
Alkalinity, Total (As CaCO3)										--		120		180		190	
ALK										--		330		180		200	
Calcium										6000		3500		2600		9300	
7440-70-2										--		5200		5000		5800	
Chloride (As Cl)										2000		440		960		1100	
16887-00-6										--		59		80		87	
Magnesium										--		440		960		1100	
7439-95-4										--		59		80		87	
Potassium										--		440		960		1100	
7440-09-7										--		59		80		87	
Sodium										180		2800		3100		4700	
7440-23-5										--		250		5000		5100	
Sulfate (As SO4)										1000		1200		2600		2700	
14808-79-8										--		250		5000		5100	
Sulfide										--		1300		2200		2200	
18496-25-8										--		--		< 0.1		--	
METALS																	
Antimony										--		< 0.005		< 0.005		< 0.005	
7440-36-0										--		< 0.005		< 0.005		< 0.005	
Arsenic										0.013*		< 0.001		< 0.001		0.004	
7440-38-2										0.5		< 0.001		< 0.001		0.002	
Barium										--		< 0.02		< 0.02		0.02	
7440-39-3										2		< 0.02		< 0.02		0.03	
Beryllium										--		< 0.001		< 0.001		< 0.001	
7440-41-7										0.1		< 0.001		< 0.001		< 0.001	
Cadmium										0.0002		< 0.0002		< 0.0002		< 0.0002	
7440-43-9										0.01		< 0.0002		< 0.0002		< 0.0002	
Chromium, total										--		< 0.001		< 0.001		< 0.001	
7440-47-3										1		< 0.001		< 0.001		< 0.001	
Cobalt										--		< 0.001		< 0.001		< 0.001	
7440-48-4										1		< 0.001		< 0.001		< 0.001	
Copper										0.0014		< 0.001		< 0.001		0.016	
7440-50-8										0.4		< 0.001		< 0.001		0.004	
Iron										--		< 0.05		< 0.05		0.07	
7439-89-6										0.2		< 0.05		< 0.05		0.73	
Lead										0.0034		< 0.001		< 0.001		< 0.001	
7439-92-1										2		< 0.001		< 0.001		< 0.001	
Manganese										1.9		0.02		0.01		0.81	
7439-96-5										0.2		0.02		0.01		0.53	
Mercury										0.0006		< 0.0001		< 0.0001		< 0.0001	
7439-97-6										0.002		< 0.0001		< 0.0001		< 0.0001	
Molybdenum										--		< 0.005		< 0.005		< 0.005	
7439-98-7										0.15		< 0.005		< 0.005		< 0.005	
Nickel										0.011		0.004		0.003		0.04	
7440-02-0										1		0.004		0.003		0.035	
Selenium										0.011		0.002		0.002		0.002	
7782-49-2										0.02		0.002		0.002		0.002	
Tin										--		< 0.005		< 0.005		< 0.005	
7440-31-5										--		< 0.005		< 0.005		< 0.005	
Vanadium										--		< 0.005		< 0.005		< 0.005	
7440-62-2										--		< 0.005		< 0.005		< 0.005	
Zinc										0.008		0.007		0.006		0.16	
7440-66-6										2		0.007		0.15		0.12	

* based on criteria for As(V)

Table 3 -
Groundwater Analytical Results

Aquifer (maine Group)									
Location ID		MW03			MW04		MW04		
Sample Date		10 Oct 2024		14 Jan 2025		01 Apr 2025		02 Jul 2024	
Sample Date		10 Oct 2024		14 Jan 2025		01 Apr 2025		02 Jul 2024	
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									
Unit									

Table 3 -
Groundwater Analytical Results

Analyte/Analyte Grouping	CAS Number	ANZG Toxicant Default Guideline Values - 95% Level of Species Protection - Freshwater	ANZECC Irrigation Water: Long-Term Trigger Values	ANZECC Livestock Drinking Water Quality Groundwater	NHMRC ADWG 2015 Health	NHMRC ADWG 2015 Aesthetic	NHMRC Tox. Drinking Water Guidelines 2019	AUS Standard Buildings and Structures Groundwater	Unit	Aquifer	
										Location ID	MW04
										Sample Date	
FIELD											
DISS_OXYGEN		--	--	--	--	--	--	--	mg/L	1.6	
COND		--	--	--	--	--	--	--	us/cm	14372	
TDS_Calc		--	--	2000	--	600	--	--	mg/L	9094	
Oxidation-Reduction Potential	ORP	--	--	--	--	--	--	--	mV	206.3	
Turbidity	TURB	--	--	--	--	5000	--	--	NTU	68.38	
pH (Field)	pH Field	--	6 - 9	--	6.5 - 8.5	5-9	--	--	SU	6.39	
GENERAL CHEMISTRY											
Cyanide	57-12-5	0.007	--	--	0.08	--	0.8	--	mg/L	<0.005	
MAJOR IONS											
Alkalinity, Bicarbonate (As CaCO3)	ALKB	--	--	--	--	--	--	--	mg/L	530	
Alkalinity, Carbonate (As CaCO3)	ALKC	--	--	--	--	--	--	--	mg/L	<10	
Alkalinity, Hydroxide (As CaCO3)	ALKH	--	--	--	--	--	--	--	mg/L	<20	
Alkalinity, Total (As CaCO3)	ALK	--	--	--	--	--	--	--	mg/L	530	
Calcium	7440-70-2	--	--	1000	--	--	--	--	mg/L	110	
Chloride (As Cl)	16887-00-6	--	--	--	--	250	--	6000	mg/L	4500	
Magnesium	7439-95-4	--	--	2000	--	--	--	--	mg/L	390	
Potassium	7440-09-7	--	--	--	--	--	--	--	mg/L	61	
Sodium	7440-23-5	--	--	--	--	180	--	--	mg/L	2400	
Sulfate (As SO4)	14808-79-8	--	--	1000	--	250	5000	1000	mg/L	980	
Sulfide	18496-25-8	--	--	--	--	--	--	--	mg/L	--	
METALS											
Antimony	7440-36-0	--	--	--	0.003	--	--	--	mg/L	<0.005	
Arsenic	7440-38-2	0.013*	0.1	0.5	0.01	--	0.1	--	mg/L	0.006	
Barium	7440-39-3	--	--	--	2	--	20	--	mg/L	0.03	
Beryllium	7440-41-7	--	0.1	--	0.06	--	--	--	mg/L	<0.001	
Cadmium	7440-43-9	0.0002	0.01	0.01	0.002	--	0.02	--	mg/L	<0.0002	
Chromium, total	7440-47-3	--	0.1	1	--	--	0.5	--	mg/L	<0.001	
Cobalt	7440-48-4	--	0.05	1	--	--	--	--	mg/L	<0.001	
Copper	7440-50-8	0.0014	0.2	0.4	2	1	20	--	mg/L	<0.001	
Iron	7439-89-6	--	0.2	--	--	0.3	--	--	mg/L	<0.05	
Lead	7439-92-1	0.0034	2	0.1	0.01	--	0.1	<0.001	mg/L	<0.001	
Manganese	7439-96-5	1.9	0.2	--	0.5	--	5	--	mg/L	0.012	
Mercury	7439-97-6	0.0006	0.002	0.002	0.001	--	0.01	<0.0001	mg/L	<0.0001	
Molybdenum	7439-98-7	--	0.01	0.15	0.05	--	--	--	mg/L	<0.005	
Nickel	7440-02-0	0.011	0.2	1	0.02	--	0.2	--	mg/L	0.007	
Selenium	7782-49-2	0.011	0.02	0.02	0.01	--	0.1	--	mg/L	0.002	
Tin	7440-31-5	--	--	--	--	--	--	--	mg/L	<0.005	
Vanadium	7440-62-2	--	0.1	--	--	--	--	--	mg/L	<0.005	
Zinc	7440-66-6	0.008	2	20	3	--	--	--	mg/L	0.022	
* based on criteria for As(V)											

Table 4 - Depositional Dust Analytical Results

Analyte/Analyte Grouping		EPA Publication 1961	Unit	WVDD01												
				Southern Boundary												
Location / Boundary		Sample ID	Sample Date	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	
DUST FRACTIONS																
Sa-Ash				8.2	61	8	1.3	0.95	0.45	1.5	0.79	<0.1	7.6	0.58	0.48	
Sc-Combustible Matter			g/m2/month	5.8	24	6.3	1.6	2.6	3	8.8	0.42	0.12	2.9	0.61	0.23	
Si-Insoluble Solids	4		g/m2/month	14	84	14	2.9	3.5*	3.4*	10	1.2	0.12	11	1.2	0.7	
Ss-Soluble Matter			g/m2/month	24	44	34	10	1.7	2.2	12	0.17	0.88	2.9	0.12	0.35	
Sr-Total Solids			g/m2/month	38	130	48	13	5.2	5.6	22	1.4	1	13	1.3	1.1	
INSOLUBLE ANALYTES																
Antimony, Insoluble			mg/m2/month	<0.0053	<0.44	<0.18	<0.11	<0.057	<0.028	<0.21	<0.014	<0.029	<0.027	<0.028	<0.028	
Arsenic, Insoluble			mg/m2/month	<0.0027	<0.22	<0.091	<0.053	<0.028	<0.014	<0.11	<0.071	<0.015	<0.014	<0.014	<0.014	
Barium, Insoluble			mg/m2/month	5.5	34	16	10	7.5	2.1	39	1.5	6.2	3.1	2.1	3.5	
Beryllium, Insoluble			mg/m2/month	<0.00053	<0.044	<0.018	<0.011	<0.0057	<0.0028	<0.021	<0.014	<0.0029	<0.0027	<0.0028	<0.0028	
Cadmium, Insoluble			mg/m2/month	<0.00053	<0.044	<0.018	<0.011	<0.0057	<0.0028	<0.021	<0.014	<0.0029	<0.0027	<0.0028	<0.0028	
Chromium, Insoluble			mg/m2/month	0.0037	<0.044	<0.018	<0.011	<0.0057	<0.0028	<0.021	<0.014	0.0047	0.0058	<0.0028	0.0028	
Cobalt, Insoluble			mg/m2/month	<0.00053	<0.044	<0.018	<0.011	<0.0057	<0.0028	<0.021	<0.014	<0.0029	<0.0027	<0.0028	<0.0028	
Copper, Insoluble			mg/m2/month	0.0065	0.074	4.2	0.36	0.12	0.11	0.99	0.94	0.059	0.012	0.034	0.053	
Iron, Insoluble			mg/m2/month	2.1	16	9.9	4.2	0.85	0.51	1.7	0.36	0.66	3.4	0.53	0.82	
Lead, Insoluble			mg/m2/month	<0.0016	<0.13	<0.055	<0.032	<0.017	<0.0085	<0.064	<0.042	<0.0088	<0.0082	<0.0085	<0.0085	
Manganese, Insoluble			mg/m2/month	0.018	0.22	0.19	0.07	0.037	0.017	0.13	0.057	0.031	0.087	0.048	0.0099	
Mercury, Insoluble			mg/m2/month	<0.0021	<0.0022	<0.0073	<0.0042	<0.0011	<0.0085	<0.0085	<0.0057	<0.0012	<0.0011	<0.0011	<0.0011	
Molybdenum, Insoluble			mg/m2/month	<0.0016	<0.13	<0.055	<0.032	<0.017	<0.0085	<0.064	<0.042	<0.0088	<0.0082	<0.0085	<0.0085	
Nickel, Insoluble			mg/m2/month	0.0012	<0.088	<0.036	<0.021	<0.011	<0.0057	<0.042	<0.0059	<0.0055	<0.0057	<0.0057	<0.0057	
Selenium, Insoluble			mg/m2/month	<0.0053	<0.44	<0.18	<0.11	<0.057	<0.028	<0.21	<0.014	<0.029	<0.027	<0.028	<0.028	
Sulfur, Insoluble			mg/m2/month	0.53	4.7	2.8	2.1	1.2	0.45	2.6	0.22	0.3	0.38	0.17	0.16	
Sulphate by calculation, insoluble			mg/m2/month	--	14	8.5	6.2	3.5	1.3	7.8	0.65	0.89	1.1	0.5	0.49	
Tin, Insoluble			mg/m2/month	<0.0027	<0.22	<0.091	<0.053	<0.028	<0.014	<0.11	<0.071	<0.015	<0.014	<0.014	<0.014	
Vanadium, Insoluble			mg/m2/month	0.0025	<0.088	<0.036	<0.021	<0.011	<0.0057	<0.042	<0.0028	<0.0059	0.0068	<0.0057	<0.0057	
Zinc, Insoluble			mg/m2/month	4.1	24	13	7.9	6	0.048	30	1.1	4.8	2.5	1.6	2.7	
Cyanide, weak acid dissociable, Insoluble			mg/m2/month	--	1.3	--	--	--	--	--	--	--	--	--	--	
Cyanide, free Insoluble			mg/m2/month	--	1.4	--	--	--	--	--	--	--	--	--	--	
Cyanide, Insoluble			mg/m2/month	<11	1.3	<6.1	<2.7	<5.7	<0.28	<0.27	<2.8	<2.9	<5.5	<5.7	<5.7	
SOLUBLE ANALYTES																
Antimony, Soluble			mg/m2/month	<0.0053	<0.011	<0.061	<0.0027	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057	
Arsenic, Soluble			mg/m2/month	<0.0027	<0.0955	<0.003	<0.0013	<0.0028	<0.0028	0.0039	<0.0014	<0.0015	<0.0027	<0.0028	<0.0028	
Barium, Soluble			mg/m2/month	0.0025	0.0025	0.0012	0.0029	<0.0057	<0.0057	0.0085	<0.0028	0.0097	0.001	<0.0057	<0.0057	
Beryllium, Soluble			mg/m2/month	<0.00053	<0.0011	<0.0061	<0.0027	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057	
Cadmium, Soluble			mg/m2/month	<0.00053	<0.0011	<0.0061	<0.0027	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057	
Chromium, Soluble			mg/m2/month	<0.00053	<0.0011	<0.0061	<0.0027	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057	
Cobalt, Soluble			mg/m2/month	<0.00053	<0.0011	<0.0061	<0.0027	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057	
Copper, Soluble			mg/m2/month	<0.00053	<0.0011	0.11	0.001	0.0058	0.0062	0.0045	0.0086	0.0073	0.0019	<0.0057	0.00091	
Iron, Soluble			mg/m2/month	0.029	0.033	0.025	0.0076	0.0018	0.0022	0.011	0.0023	0.0082	0.006	<0.0011	<0.0011	
Lead, Soluble			mg/m2/month	<0.0016	<0.0033	<0.0018	<0.0008	<0.0017	<0.0017	<0.0016	<0.0088	<0.0016	<0.0017	<0.0017	<0.0017	
Manganese, Soluble			mg/m2/month	0.0047	0.0054	0.0049	0.0011	0.00079	0.0012	0.0012	0.0051	<0.0055	<0.0057	<0.0057	<0.0057	
Mercury, Soluble			mg/m2/month	<4.2e-005	<4.4e-005	<2.4e-005	<0.0011	<0.0023	<2.3e-005	<0.0021	<0.00085	<0.00012	<0.00022	<0.00023	<0.00023	
Molybdenum, Soluble			mg/m2/month	<0.0016	<0.0033	<0.0018	<0.0008	<0.0017	<0.0017	<0.0016	<0.00088	<0.00088	<0.0016	<0.0017	<0.0017	
Nickel, Soluble			mg/m2/month	<0.0011	<0.0022	<0.0012	<0.00053	<0.0011	<0.0011	<0.0011	<0.00057	<0.00059	<0.0011	<0.0011	<0.0011	
Selenium, Soluble			mg/m2/month	<0.0053	<0.011	<0.0061	<0.0027	<0.0057	<0.0057	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057	<0.0057	
Tin, Soluble			mg/m2/month	<0.0027	<0.0055	<0.003	<0.0013	<0.0028	<0.0028	<0.0027	<0.014	<0.0015	<0.0027	<0.0028	<0.0028	
Vanadium, Soluble			mg/m2/month	<0.0011	<0.0022	<0.0012	<0.00053	<0.0011	<0.0011	<0.0011	<0.00057	<0.00059	<0.0011	<0.0011	<0.0011	
Zinc, Soluble			mg/m2/month	0.002	0.0062	0.0044	0.0021	<0.0011	0.0048	0.0083	0.006	0.001	<0.0011	0.0022	0.0058	
Sulfur, Soluble			mg/m2/month	0.52	1.4	0.57	0.37	0.1	0.18	0.44	0.094	0.12	0.27	<0.028	<0.028	
Sulphate by calculation, soluble			mg/m2/month	--	4.2	1.7	1.1	0.31	0.54	1.3	0.28	0.37	0.81	<0.085	<0.085	
Cyanide, free soluble			mg/m2/month	--	0.0091	--	--	--	--	--	--	--	--	--	--	
Cyanide, Soluble			mg/m2/month	<0.021	0.01	<0.0012	<0.011	<0.011	<0.011	<0.011	<0.011	<0.023	<0.011	<0.011	<0.011	
Cyanide, weak acid dissociable, soluble			mg/m2/month	--	0.01	--	--	--	--	--	--	--	--	--	--	

Table 4 - Depositional Dust Analytical Results

Analyte/Analyte Grouping		EPA Publication 1961	Unit	WVDD02															
				Location / Boundary		Northern Boundary (Ponds 1-3)													
				Sample Date	Sample ID	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25		
DUST FRACTIONS																			
4	SP-Ash		g/m2/month	0.74	<0.1	<0.1	0.15	<0.1	<0.1	<0.1	0.38	0.21	0.2	<0.1	<0.1	0.32	0.92		
	SC-Combustible Matter		g/m2/month	1.1	<0.1	0.16	<0.1	0.16	0.2	0.37	0.18	0.39	<0.1	<0.1	0.5	0.81	1.3		
	SI-Insoluble Solids		g/m2/month	1.9	0.11	0.23	0.19	0.23	0.25	0.76	0.39	0.25	<0.1	<0.1	0.81	1.3			
	SI-Soluble Matter		g/m2/month	<0.1	0.14	0.59	0.13	0.14	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.11			
	SI-Total Solids		g/m2/month	1.9	0.25	0.81	0.32	0.36	0.81	0.46	0.34	0.46	0.12	<0.1	0.88	1.4			
INSOLUBLE ANALYTES																			
	Antimony, Insoluble		mg/m2/month	<0.0053	<0.055	<0.027	<0.03	<0.027	<0.014	<0.028	<0.028	<0.027	<0.014	<0.015	<0.027	<0.028	<0.042		
	Arsenic, Insoluble		mg/m2/month	<0.0027	<0.027	<0.013	<0.015	<0.013	<0.014	<0.014	<0.014	<0.013	<0.0071	<0.0073	<0.014	<0.014	<0.021		
	Barium, Insoluble		mg/m2/month	7.7	6	3.6	4.2	3.6	4.1	1.9	4.7	1.4	3.6	4.5	2.4	5.7			
	Beryllium, Insoluble		mg/m2/month	<0.0053	<0.055	<0.027	<0.003	<0.027	<0.028	<0.028	<0.028	<0.027	<0.014	<0.015	<0.027	<0.028	<0.042		
	Cadmium, Insoluble		mg/m2/month	<0.0053	<0.055	<0.027	<0.003	<0.027	<0.028	<0.028	<0.028	<0.027	<0.014	<0.015	<0.027	<0.028	<0.042		
	Chromium, Insoluble		mg/m2/month	0.0023	<0.0053	<0.027	<0.003	<0.027	<0.028	<0.028	<0.028	<0.027	<0.0014	0.0063	<0.027	<0.028	<0.042		
	Cobalt, Insoluble		mg/m2/month	<0.0053	<0.055	<0.027	<0.003	<0.027	<0.028	<0.028	<0.028	<0.027	<0.014	<0.015	<0.027	<0.028	<0.042		
	Copper, Insoluble		mg/m2/month	0.0037	0.12	0.0056	0.18	0.0037	0.0037	0.31	0.14	0.13	0.13	0.006	0.21	<0.028	0.013		
	Iron, Insoluble		mg/m2/month	0.15	0.11	0.35	0.17	0.19	0.19	0.3	0.35	0.35	0.23	0.23	0.76	0.43	0.72		
	Lead, Insoluble		mg/m2/month	<0.016	<0.016	<0.008	<0.0091	<0.008	<0.0085	<0.0085	<0.0088	<0.0042	<0.0044	<0.0088	<0.0085	<0.013			
	Manganese, Insoluble		mg/m2/month	0.0026	<0.055	0.0027	<0.003	0.0027	0.0048	<0.028	0.0048	0.0034	0.0022	0.0088	0.0057	0.0076			
	Mercury, Insoluble		mg/m2/month	<0.0021	<0.0022	<0.0011	<0.0012	<0.0011	<0.0011	<0.0011	<0.0011	<0.0057	<5.9e-005	<0.0011	<0.0011	<0.011			
	Molybdenum, Insoluble		mg/m2/month	<0.016	<0.016	<0.008	<0.0091	<0.008	<0.0085	<0.0085	<0.0088	<0.0042	<0.0044	<0.0082	<0.0085	<0.013			
	Nickel, Insoluble		mg/m2/month	<0.011	<0.011	<0.0053	<0.0061	<0.0053	<0.0057	<0.0057	<0.0053	<0.0029	<0.0029	<0.0055	<0.0057	<0.0085			
	Selenium, Insoluble		mg/m2/month	<0.0053	<0.055	<0.027	<0.003	<0.027	<0.028	<0.028	<0.027	<0.014	<0.015	<0.027	<0.028	<0.042			
	Sulfur, Insoluble		mg/m2/month	0.37	0.38	0.47	0.22	0.19	0.24	0.24	0.3	0.24	0.11	0.31	0.19	0.27			
	Sulphate by calculation, Insoluble		mg/m2/month	--	1.1	0.58	0.66	0.71	1.4	0.71	0.91	0.4	0.33	0.94	0.56	0.81			
	Tin, Insoluble		mg/m2/month	<0.027	<0.027	<0.013	<0.015	<0.013	<0.014	<0.014	<0.013	<0.0071	<0.0073	<0.014	<0.014	<0.021			
	Vanadium, Insoluble		mg/m2/month	<0.011	<0.011	<0.0053	<0.0061	<0.0053	<0.0057	<0.0057	<0.0053	<0.0038	<0.0039	<0.0055	<0.0057	<0.0085			
	Zinc, Insoluble		mg/m2/month	5.7	4.3	2.7	3.2	2.7	3.3	0.016	3.7	1	2.8	3.8	1.8	4.6			
	Cyanide, weak acid dissociable, Insoluble		mg/m2/month	--	--	--	--	--	--	--	--	--	--	--	--	--			
	Cyanide, free Insoluble		mg/m2/month	--	--	--	--	--	--	--	--	--	--	--	--	--			
	Cyanide, Insoluble		mg/m2/month	<11	<11	<2.7	<6.1	<2.7	<5.7	<0.28	<0.27	<2.8	<2.9	<5.5	<5.7	<5.7			
SOLUBLE ANALYTES																			
	Antimony, Soluble		mg/m2/month	<0.0053	<0.011	<0.0027	<0.0061	<0.0027	<0.0057	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0085		
	Arsenic, Soluble		mg/m2/month	<0.0027	<0.0055	<0.0013	<0.003	<0.0013	<0.0028	<0.0028	<0.0027	<0.0014	<0.0015	<0.0029	<0.0028	<0.0057	<0.0085		
	Barium, Soluble		mg/m2/month	<0.0053	<0.011	<0.0061	<0.0027	<0.0057	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0085			
	Beryllium, Soluble		mg/m2/month	<0.0053	<0.011	<0.0061	<0.0027	<0.0057	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0085			
	Cadmium, Soluble		mg/m2/month	<0.0053	<0.011	<0.0061	<0.0027	<0.0057	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0085			
	Chromium, Soluble		mg/m2/month	<0.0053	<0.011	<0.0061	<0.0027	<0.0057	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0085			
	Cobalt, Soluble		mg/m2/month	<0.0053	<0.011	<0.0061	<0.0027	<0.0057	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0085			
	Copper, Soluble		mg/m2/month	0.023	0.023	0.037	0.037	<0.0027	<0.0057	0.047	0.001	0.014	0.0056	0.021	<0.0057	0.0012			
	Iron, Soluble		mg/m2/month	<0.011	<0.022	<0.012	<0.0012	<0.0011	<0.011	<0.011	<0.011	<0.0017	<0.0059	<0.011	<0.011	<0.017			
	Lead, Soluble		mg/m2/month	<0.016	<0.033	<0.018	<0.0018	<0.008	<0.017	<0.017	<0.016	<0.0085	<0.0088	<0.016	<0.017	<0.025			
	Manganese, Soluble		mg/m2/month	<0.0053	<0.011	<0.0061	<0.0027	<0.0057	<0.0057	<0.0057	<0.0053	0.0037	0.0064	0.0013	0.0068	<0.0085			
	Mercury, Soluble		mg/m2/month	<4.2e-005	<4.4e-005	<2.4e-005	<0.0011	<0.0011	<0.0023	<2.3e-005	<0.0021	<0.0011	<0.0012	<0.0022	<0.0023	<0.0023			
	Molybdenum, Soluble		mg/m2/month	<0.016	<0.033	<0.018	<0.0018	<0.008	<0.017	<0.017	<0.016	<0.0085	<0.0088	<0.016	<0.017	<0.025			
	Nickel, Soluble		mg/m2/month	<0.011	<0.022	<0.012	<0.0012	<0.0053	<0.011	<0.011	<0.011	<0.0057	<0.0059	<0.011	<0.011	<0.017			
	Selenium, Soluble		mg/m2/month	<0.0053	<0.011	<0.0061	<0.0027	<0.0057	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0085			
	Tin, Soluble		mg/m2/month	<0.027	<0.055	<0.003	<0.003	<0.013	<0.028	<0.028	<0.027	<0.014	<0.015	<0.027	<0.028	<0.042			
	Vanadium, Soluble		mg/m2/month	<0.011	<0.022	<0.012	<0.0012	<0.0053	<0.011	<0.011	<0.011	<0.0057	<0.0059	<0.011	<0.011	<0.017			
	Zinc, Soluble		mg/m2/month	0.0038	0.0039	0.0015	0.0012	0.0023	0.0023	0.016	0.0082	0.0085	0.0095	0.033	0.012	0.014			
	Sulfur, Soluble		mg/m2/month	<0.027	<0.055	<0.003	<0.003	0.017	0.11	<0.028	<0.027	<0.014	<0.015	<0.028	<0.028	<0.042			
	Sulphate by calculation, Soluble		mg/m2/month	--	<0.16	<0.091	0.052	0.34	0.34	<0.085	<0.08	<0.042	<0.044	0.17	<0.085	<0.13			
	Cyanide, free Soluble		mg/m2/month	--	--	--	--	--	--	--	--	--	--	--	--	--			
	Cyanide, Soluble		mg/m2/month	<0.021	<0.022	<0.012	<0.0012	<0.011	<0.011	<0.011	<0.011	<0.011	<0.023	<0.022	<0.011	<0.011			
	Cyanide, weak acid dissociable, Soluble		mg/m2/month	--	--	--	--	--	--	--	--	--	--	--	--	--			

Table 4 - Depositional Dust Analytical Results

Sample ID			WVDD03													
Location / Boundary			Northern Boundary (Ponds 6 and 7)													
Sample Date			Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25		
Analyte/Analyte Grouping	EPA Publication 1961	Unit														
DUST FRACTIONS																
Sr-Ash		g/m2/month	<0.1	0.11	0.51	0.24	0.15	<0.1	1.9	0.79	<0.1	0.31	1.3	0.72		
Sc-Combustible Matter		g/m2/month	0.53	<0.1	0.46	0.21	0.69	0.88	0.88	0.17	<0.1	2.7	0.54	2.3		
Si-Insoluble Solids	4	g/m2/month	0.58	0.18	0.97	0.45	0.84	0.6	2.8	0.96	<0.1	3	3.6	1.2		
Sr-Soluble Matter		g/m2/month	<0.1	0.12	0.45	<0.1	<0.1	<0.1	<0.1	<0.1	0.12	0.91	<0.1	0.12		
Si-Total Solids		g/m2/month	0.59	0.3	1.4	0.48	0.91	0.62	2.8	0.99	0.18	3.9	3.7	1.3		
INSOLUBLE ANALYTES																
Antimony, Insoluble		mg/m2/month	<0.0053	<0.055	<0.03	<0.027	<0.028	<0.028	<0.027	<0.014	<0.029	<0.027	<0.028	<0.028		
Arsenic, Insoluble		mg/m2/month	<0.0027	<0.027	<0.015	<0.013	<0.014	<0.014	<0.013	<0.0071	<0.015	<0.014	<0.014	<0.014		
Barium, Insoluble		mg/m2/month	7.9	5.8	4.1	3.9	4.3	2.2	3.6	1.5	6.6	4.1	2	2.6		
Beryllium, Insoluble		mg/m2/month	<0.0053	<0.055	<0.003	<0.027	<0.028	<0.028	<0.027	<0.0014	<0.029	<0.027	<0.028	<0.028		
Cadmium, Insoluble		mg/m2/month	<0.0053	<0.055	<0.003	<0.027	<0.028	<0.028	<0.027	<0.0014	<0.029	<0.027	<0.028	<0.028		
Chromium, Insoluble		mg/m2/month	0.0028	<0.0053	<0.003	<0.027	<0.028	<0.028	<0.027	<0.0014	0.005	0.0027	<0.028	<0.028		
Cobalt, Insoluble		mg/m2/month	<0.0053	<0.055	<0.003	<0.027	<0.028	<0.028	<0.027	<0.0014	<0.029	<0.027	<0.028	<0.028		
Copper, Insoluble		mg/m2/month	0.0055	0.3	0.16	0.042	0.071	0.16	0.066	0.47	<0.027	0.27	0.0037	0.0038		
Iron, Insoluble		mg/m2/month	0.45	0.13	0.27	0.22	0.29	0.32	0.61	0.41	1.2	1.3	0.77	0.34		
Lead, Insoluble		mg/m2/month	0.046	<0.016	<0.0091	<0.008	<0.0085	<0.0085	<0.008	<0.0042	<0.0088	<0.0082	<0.0085	<0.0085		
Manganese, Insoluble		mg/m2/month	0.0068	<0.055	0.0033	<0.027	0.0093	0.014	0.01	0.0052	0.012	0.031	0.013	0.004		
Mercury, Insoluble		mg/m2/month	<0.0021	<0.0022	<0.0012	<0.0011	<0.0011	<0.0011	<0.0011	<0.0057	<5.9e-005	<0.0011	<0.0011	<0.0011		
Molybdenum, Insoluble		mg/m2/month	<0.0016	<0.016	<0.0091	<0.008	<0.0085	<0.0085	<0.008	<0.0042	<0.0088	<0.0082	<0.0085	<0.0085		
Nickel, Insoluble		mg/m2/month	<0.0011	<0.011	<0.0061	<0.0053	<0.0057	<0.0057	<0.0057	<0.0028	<0.0059	<0.0057	<0.0057	<0.0057		
Selenium, Insoluble		mg/m2/month	<0.0053	<0.055	<0.003	<0.027	<0.028	<0.028	<0.027	<0.0014	<0.029	<0.027	<0.028	<0.028		
Sulfur, Insoluble		mg/m2/month	0.37	0.3	0.24	0.19	1.2	1.4	0.21	0.14	0.37	0.53	0.25	0.15		
Sulphate by calculation, insoluble		mg/m2/month	--	0.9	0.71	0.56	3.6	4.2	0.62	0.42	1.1	1.6	0.76	0.44		
Tin, Insoluble		mg/m2/month	<0.027	<0.027	<0.015	<0.013	<0.014	<0.014	<0.013	<0.0071	<0.015	<0.014	<0.014	<0.014		
Vanadium, Insoluble		mg/m2/month	<0.0011	<0.011	<0.0061	<0.0053	<0.0057	<0.0057	<0.0053	<0.0028	<0.0059	<0.0057	<0.0057	<0.0057		
Zinc, Insoluble		mg/m2/month	5.9	4.2	3.2	2.9	3.4	0.0093	2.9	1.1	5.1	3.8	1.7	2.1		
Cyanide, weak acid dissociable, Insoluble		mg/m2/month	--	--	--	--	--	--	--	--	--	--	--	--		
Cyanide, free Insoluble		mg/m2/month	--	--	--	--	--	--	--	--	--	--	--	--		
Cyanide, Insoluble		mg/m2/month	<11	<11	<6.1	<2.7	1.5	<0.28	<0.27	<2.8	<2.9	<5.5	<5.7	<5.7		
SOLUBLE ANALYTES																
Antimony, Soluble		mg/m2/month	<0.0053	<0.011	<0.0061	<0.0027	<0.0028	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057		
Arsenic, Soluble		mg/m2/month	<0.0027	<0.027	<0.003	<0.0013	<0.0028	<0.0028	<0.0027	<0.0014	<0.0015	<0.0027	<0.0028	<0.0028		
Barium, Soluble		mg/m2/month	<0.0053	<0.055	<0.0061	<0.0027	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	0.0006	<0.0057	<0.0057		
Beryllium, Soluble		mg/m2/month	<0.0011	<0.011	<0.0061	<0.0057	<0.0057	<0.0057	<0.0053	<0.0028	<0.0059	<0.0055	<0.0057	<0.0057		
Cadmium, Soluble		mg/m2/month	<0.0053	<0.055	<0.003	<0.027	<0.028	<0.028	<0.0053	<0.0028	<0.0059	<0.0055	<0.0057	<0.0057		
Chromium, Soluble		mg/m2/month	<0.0053	<0.055	<0.0061	<0.0027	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057		
Cobalt, Soluble		mg/m2/month	<0.0053	<0.055	<0.0061	<0.0027	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057		
Copper, Soluble		mg/m2/month	0.0096	0.048	0.22	<0.0027	<0.0057	0.019	<0.0053	0.0075	<0.0029	0.013	<0.0057	<0.0057		
Iron, Soluble		mg/m2/month	<0.0011	<0.011	<0.0061	<0.0053	<0.0057	<0.0057	<0.0053	<0.0028	<0.0059	<0.0057	<0.0057	<0.0057		
Lead, Soluble		mg/m2/month	<0.016	<0.033	<0.018	<0.008	<0.017	<0.017	<0.0061	<0.0085	<0.0088	<0.0016	<0.0057	<0.0057		
Manganese, Soluble		mg/m2/month	<0.0053	<0.055	<0.0061	<0.0027	<0.0057	<0.0057	<0.0053	<0.0028	0.0007	0.0036	<0.0057	<0.0057		
Mercury, Soluble		mg/m2/month	<4.2e-005	<4.2e-005	<4.2e-005	<0.0011	<0.0023	<2.3e-005	<0.0011	<0.0012	<0.0012	<0.0022	<0.0023	<0.0023		
Molybdenum, Soluble		mg/m2/month	<0.016	<0.033	<0.018	<0.008	<0.017	<0.017	<0.0061	<0.0085	<0.0088	<0.0016	<0.0057	<0.0057		
Nickel, Soluble		mg/m2/month	<0.0011	<0.011	<0.0061	<0.0053	<0.0057	<0.0057	<0.0053	<0.0028	<0.0059	<0.0055	<0.0057	<0.0057		
Selenium, Soluble		mg/m2/month	<0.0053	<0.055	<0.0061	<0.0027	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057		
Tin, Soluble		mg/m2/month	<0.027	<0.027	<0.015	<0.013	<0.014	<0.014	<0.013	<0.0071	<0.015	<0.027	<0.028	<0.028		
Vanadium, Soluble		mg/m2/month	<0.0011	<0.011	<0.0061	<0.0053	<0.0057	<0.0057	<0.0053	<0.0028	<0.0059	<0.0057	<0.0057	<0.0057		
Zinc, Soluble		mg/m2/month	0.022	0.077	0.062	0.028	0.032	0.032	0.017	<0.0057	0.0055	0.015	0.0036	0.0019		
Sulfur, Soluble		mg/m2/month	<0.027	<0.027	<0.015	<0.013	<0.014	<0.014	<0.013	0.023	<0.015	0.097	<0.038	0.071		
Sulphate by calculation, soluble		mg/m2/month	--	<0.16	<0.091	0.066	0.89	0.27	0.092	0.068	<0.044	0.29	<0.085	0.21		
Cyanide, free soluble		mg/m2/month	--	--	--	--	--	--	--	--	--	--	--	--		
Cyanide, Soluble		mg/m2/month	<0.021	<0.022	<0.012	<0.011	0.0034	0.0034	<0.011	<0.011	<0.023	<0.022	<0.011	<0.011		
Cyanide, weak acid dissociable, soluble		mg/m2/month	--	--	--	--	--	--	--	--	--	--	--	--		

Table 4 - Depositional Dust Analytical Results

Sample ID			WVDD04											
Location / Boundary			Eastern Boundary (Ponds 6 and 7)											
Sample Date			Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25
Unit														
DUST FRACTIONS														
Sa-Ash		g/m2/month	0.32	0.11	0.12	0.11	<0.1	0.43	0.45	0.76	<0.1	0.55	0.45	0.57
Sc-Combustible Matter		g/m2/month	0.21	<0.1	0.34	<0.1	0.12	0.37	0.13	0.23	<0.1	0.42	0.3	0.2
Si-Insoluble Solids	4	g/m2/month	0.53	0.15	0.46	0.19	0.12	0.8	0.57	0.99	0.18	0.96	1.6	0.77
Sc-Soluble Matter		g/m2/month	<0.1	0.1	0.72	0.16	0.17	0.11	<0.1	<0.1	<0.1	<0.1	1.8	<0.1
Sc-Total Solids		g/m2/month	0.53	0.25	1.2	0.34	0.29	0.92	0.63	1	0.26	0.97	3.4	0.78
INSOLUBLE ANALYTES														
Antimony, Insoluble		mg/m2/month	<0.0053	<0.055	<0.03	<0.027	<0.028	<0.028	<0.027	<0.014	<0.015	<0.027	<0.028	<0.028
Arsenic, Insoluble		mg/m2/month	<0.0027	<0.027	<0.015	<0.013	<0.014	<0.014	<0.013	<0.0071	<0.0073	<0.014	<0.014	<0.014
Barium, Insoluble		mg/m2/month	8.7	5.5	4.1	3.4	4.2	3.2	4.5	1.5	3.2	4.2	2.4	1.8
Beryllium, Insoluble		mg/m2/month	<0.00053	<0.0055	<0.003	<0.0027	<0.0028	<0.0028	<0.0027	<0.0014	<0.0015	<0.0027	<0.0028	<0.0028
Cadmium, Insoluble		mg/m2/month	<0.00053	<0.0055	<0.003	<0.0027	<0.0028	<0.0028	<0.0027	<0.0014	<0.0015	<0.0027	<0.0028	<0.0028
Chromium, Insoluble		mg/m2/month	0.0024	<0.0055	<0.003	<0.0027	<0.0028	<0.0028	<0.0027	<0.0014	0.0018	<0.0027	<0.0028	<0.0028
Cobalt, Insoluble		mg/m2/month	<0.00053	<0.0055	<0.003	<0.0027	<0.0028	<0.0028	<0.0027	<0.0014	<0.0015	<0.0027	<0.0028	<0.0028
Copper, Insoluble		mg/m2/month	0.0025	0.067	0.097	0.032	0.21	0.14	0.029	0.011	0.0025	0.046	0.0028	0.0071
Iron, Insoluble		mg/m2/month	0.13	0.12	0.16	0.19	0.24	0.39	0.43	0.37	0.61	0.84	0.37	0.29
Lead, Insoluble		mg/m2/month	<0.0016	<0.016	<0.0091	<0.008	<0.0085	<0.0085	<0.008	<0.0042	<0.0044	<0.0082	<0.0085	<0.0085
Manganese, Insoluble		mg/m2/month	0.0023	<0.0055	<0.003	<0.0027	0.004	0.034	0.064	0.035	0.005	0.0079	0.0037	0.0031
Mercury, Insoluble		mg/m2/month	<0.00021	<0.0022	<0.0012	<0.0011	<0.0011	<0.0011	<0.0011	<0.00057	<5.9e-005	<0.00011	<0.00011	<0.0011
Molybdenum, Insoluble		mg/m2/month	<0.00016	<0.016	<0.0091	<0.008	<0.0085	<0.0085	<0.008	<0.0042	<0.0044	<0.0082	<0.0085	<0.0085
Nickel, Insoluble		mg/m2/month	<0.0011	<0.011	<0.0061	0.019	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	<0.0057	<0.0057	<0.0057
Selenium, Insoluble		mg/m2/month	<0.0053	<0.055	<0.003	<0.027	<0.028	<0.028	<0.027	<0.014	<0.015	<0.027	<0.028	<0.028
Sulfur, Insoluble		mg/m2/month	0.27	0.19	0.2	0.2	0.31	0.19	0.14	0.079	0.13	0.22	0.28	<0.14
Sulphate by calculation, insoluble		mg/m2/month	--	<0.83	0.6	0.6	0.94	0.58	0.42	0.24	0.39	0.66	0.83	<0.42
Tin, Insoluble		mg/m2/month	<0.0027	<0.027	<0.015	<0.013	<0.014	<0.014	<0.013	<0.0071	<0.0073	<0.014	<0.014	<0.014
Vanadium, Insoluble		mg/m2/month	<0.0011	<0.011	<0.0061	<0.0053	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057
Zinc, Insoluble		mg/m2/month	6.4	4	3.2	2.6	3.3	0.03	3.6	1.1	2.4	3.5	1.9	1.4
Cyanide, weak acid dissociable, Insoluble		mg/m2/month	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide, free Insoluble		mg/m2/month	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide, Insoluble		mg/m2/month	<11	<11	<6.1	<2.7	<5.7	<0.28	<0.27	<2.8	<2.9	<5.5	<5.7	<5.7
SOLUBLE ANALYTES														
Antimony, Soluble		mg/m2/month	<0.0053	<0.011	<0.0061	<0.0027	<0.0028	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057
Arsenic, Soluble		mg/m2/month	<0.0027	<0.0055	<0.003	<0.0013	<0.0028	<0.0028	<0.0027	<0.0014	<0.0015	<0.0027	<0.0028	<0.0028
Barium, Soluble		mg/m2/month	<0.0053	<0.011	<0.0061	<0.0027	<0.0028	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057
Beryllium, Soluble		mg/m2/month	<0.00053	<0.011	<0.0061	<0.0027	<0.0028	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057
Cadmium, Soluble		mg/m2/month	<0.00053	<0.011	<0.0061	<0.0027	<0.0028	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057
Chromium, Soluble		mg/m2/month	<0.00053	<0.011	<0.0061	<0.0027	<0.0028	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057
Cobalt, Soluble		mg/m2/month	<0.00053	<0.011	<0.0061	<0.0027	<0.0028	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057
Copper, Soluble		mg/m2/month	0.0016	0.066	0.015	<0.0027	0.016	0.016	0.0031	0.0054	<0.0029	0.0025	<0.0057	0.00068
Iron, Soluble		mg/m2/month	<0.0011	<0.022	<0.0012	<0.0053	<0.011	<0.011	<0.011	<0.0057	<0.0059	<0.011	<0.011	<0.011
Lead, Soluble		mg/m2/month	<0.0016	<0.033	<0.0018	<0.008	<0.017	<0.017	<0.016	<0.0085	<0.0088	<0.016	<0.017	<0.017
Manganese, Soluble		mg/m2/month	<0.00053	<0.011	<0.0061	<0.0027	<0.0028	<0.0057	0.0053	0.0037	0.0061	0.0071	<0.0057	<0.0057
Mercury, Soluble		mg/m2/month	<4.2e-005	<4.4e-005	<2.4e-005	<0.0011	<0.0023	<2.3e-005	<0.0021	<0.0011	<0.0012	<0.0022	<0.0023	<0.0023
Molybdenum, Soluble		mg/m2/month	<0.0016	<0.033	<0.0018	<0.008	<0.017	<0.017	<0.016	<0.0085	<0.0088	<0.016	<0.017	<0.017
Nickel, Soluble		mg/m2/month	<0.0011	<0.022	<0.0012	<0.0053	<0.011	<0.011	<0.011	<0.0057	<0.0059	<0.011	<0.011	<0.011
Selenium, Soluble		mg/m2/month	<0.0053	<0.011	<0.0061	<0.0027	<0.0028	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057
Tin, Soluble		mg/m2/month	<0.0027	<0.0055	<0.003	<0.013	<0.028	<0.028	<0.027	<0.014	<0.015	<0.027	<0.028	<0.028
Vanadium, Soluble		mg/m2/month	<0.0011	<0.022	<0.0012	<0.0053	<0.011	<0.011	<0.011	<0.0057	<0.0059	<0.011	<0.011	<0.011
Zinc, Soluble		mg/m2/month	0.071	0.064	0.0029	0.0061	0.037	0.03	0.014	0.088	0.014	0.07	0.013	0.033
Sulfur, Soluble		mg/m2/month	0.23	<0.85	<0.63	<0.13	<0.28	0.03	<0.27	<0.14	<0.15	0.039	0.086	<0.28
Sulphate by calculation, soluble		mg/m2/month	--	<0.16	<0.091	<0.04	<0.085	0.091	<0.08	<0.042	<0.044	0.12	0.26	<0.085
Cyanide, free soluble		mg/m2/month	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide, Soluble		mg/m2/month	<0.021	<0.022	<0.0012	<0.011	<0.011	<0.011	<0.011	<0.011	<0.023	<0.022	<0.011	<0.011
Cyanide, weak acid dissociable, soluble		mg/m2/month	--	--	--	--	--	--	--	--	--	--	--	--

Table 4 - Depositional Dust Analytical Results

Analyte/Analyte Grouping		EPA Publication 1961	Unit	WVDD05														
				Eastern/Southern Boundary (Ponds 6 and 7)														
				Location / Boundary	Sample Date	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	
DUST FRACTIONS																		
4	Se-Ash		g/m2/month	<0.1	<0.1	0.15	0.13	0.13	<0.1	0.29	0.21	0.88	0.66	0.37	0.66	0.66	0.37	0.66
	Se-Combustible Matter		g/m2/month	0.21	<0.1	1.7	0.37	0.37	0.29	0.2	<0.1	0.11	0.55	0.38	0.11	0.55	0.38	0.11
	Si-Insoluble Solids		g/m2/month	0.27	0.15	1.8	0.5	0.5	0.31	0.5	0.28	0.99	1.2	0.76	0.77	1.2	0.76	0.77
	Se-Soluble Matter		g/m2/month	<0.1	<0.1	0.18	<0.1	<0.1	<0.1	0.48	<0.1	<0.1	<0.1	1.1	<0.1	<0.1	<0.1	<0.1
	Se-Total Solids		g/m2/month	0.27	0.15	2	0.56	0.56	0.54	0.97	0.35	1.1	1.3	1.9	0.83	1.3	1.9	0.83
INSOLUBLE ANALYTES																		
	Antimony, Insoluble		mg/m2/month	<0.0053	<0.055	<0.03	<0.027	<0.027	<0.028	<0.028	<0.027	<0.014	<0.015	<0.027	<0.027	<0.027	<0.028	<0.028
	Arsenic, Insoluble		mg/m2/month	<0.0027	<0.027	<0.015	<0.013	<0.013	<0.014	<0.014	<0.013	<0.0071	<0.0073	<0.014	<0.014	<0.014	<0.014	<0.014
	Barium, Insoluble		mg/m2/month	7.2	6.5	4.3	3.8	4.4	4.4	2.9	4.4	1.5	3.1	4.3	2.4	2.4	2.4	3
	Beryllium, Insoluble		mg/m2/month	<0.0053	<0.055	<0.03	<0.027	<0.027	<0.028	<0.028	<0.027	<0.014	<0.015	<0.027	<0.027	<0.027	<0.028	<0.028
	Cadmium, Insoluble		mg/m2/month	<0.0053	<0.055	<0.03	<0.027	<0.027	<0.028	<0.028	<0.027	<0.014	<0.015	<0.027	<0.027	<0.027	<0.028	<0.028
	Chromium, Insoluble		mg/m2/month	0.0018	<0.0055	<0.003	<0.0027	<0.0027	<0.0028	<0.0028	<0.0027	<0.0014	0.0019	<0.0027	<0.0028	<0.0028	<0.0028	<0.0028
	Cobalt, Insoluble		mg/m2/month	<0.0053	<0.055	<0.003	<0.027	<0.027	<0.028	<0.028	<0.027	<0.014	<0.015	<0.027	<0.027	<0.028	<0.028	<0.028
	Copper, Insoluble		mg/m2/month	0.0036	0.022	0.012	0.0056	0.0031	0.0031	0.027	0.0048	0.12	0.0028	<0.0027	0.0057	0.0057	0.0057	0.15
	Iron, Insoluble		mg/m2/month	0.12	0.34	0.14	0.34	0.34	0.21	0.39	0.36	0.084	0.21	0.18	0.48	0.76	0.48	0.5
	Lead, Insoluble		mg/m2/month	<0.0016	<0.016	<0.0091	<0.008	<0.008	<0.0085	<0.0085	<0.008	<0.0042	<0.0044	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085
	Manganese, Insoluble		mg/m2/month	0.0022	0.028	0.003	0.037	0.028	0.028	0.037	0.005	0.034	0.066	0.068	0.051	0.068	0.051	0.054
	Mercury, Insoluble		mg/m2/month	<0.0021	<0.0022	<0.0012	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0057	<5.9e-005	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011
	Molybdenum, Insoluble		mg/m2/month	<0.0016	<0.016	<0.0091	<0.008	<0.008	<0.0085	<0.0085	<0.008	<0.0042	<0.0044	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085
	Nickel, Insoluble		mg/m2/month	<0.0011	<0.011	<0.0061	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057
	Selenium, Insoluble		mg/m2/month	<0.0053	<0.055	<0.003	<0.027	<0.027	<0.028	<0.028	<0.027	<0.014	<0.015	<0.027	<0.028	<0.028	<0.028	<0.028
	Sulfate by calculation, Insoluble		mg/m2/month	0.26	0.4	0.32	0.38	0.24	0.23	0.2	0.23	0.084	0.084	0.21	0.18	0.21	0.18	<0.14
	Sulfate by calculation, Insoluble		mg/m2/month	--	1.2	0.97	0.98	0.72	0.72	0.6	0.68	0.25	0.25	0.64	0.54	0.64	0.54	<0.42
	Tin, Insoluble		mg/m2/month	<0.0027	<0.027	<0.015	<0.013	<0.013	<0.014	<0.014	<0.013	<0.0071	<0.0073	<0.014	<0.014	<0.014	<0.014	<0.014
	Vanadium, Insoluble		mg/m2/month	<0.0011	<0.011	<0.0061	<0.0053	<0.0053	<0.0057	<0.0057	<0.0053	<0.0038	<0.0039	<0.0055	<0.0057	<0.0057	<0.0057	<0.0057
	Zinc, Insoluble		mg/m2/month	5.5	4.7	3.3	2.9	3.5	3.5	0.068	3.5	1.1	2.4	3.5	1.8	2.4	1.8	2.4
	Cyanide, weak acid dissociable, Insoluble		mg/m2/month	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Cyanide, free Insoluble		mg/m2/month	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Cyanide, Insoluble		mg/m2/month	<11	<11	<6.1	<2.7	<5.7	<5.7	<0.28	<0.27	<2.8	<2.9	<5.5	<5.7	<5.7	<5.7	<5.7
SOLUBLE ANALYTES																		
	Antimony, Soluble		mg/m2/month	<0.0053	<0.011	<0.0061	<0.0027	<0.0027	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057	<0.0057	<0.0057
	Arsenic, Soluble		mg/m2/month	<0.0027	<0.055	<0.003	<0.0013	<0.0013	<0.0028	<0.0028	<0.0027	<0.0014	<0.0015	<0.0028	<0.0028	<0.0028	<0.0028	<0.0028
	Barium, Soluble		mg/m2/month	<0.0053	<0.011	<0.0061	<0.0027	<0.0027	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057	<0.0057	<0.0057
	Beryllium, Soluble		mg/m2/month	<0.0053	<0.011	<0.0061	<0.0027	<0.0027	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057	<0.0057	<0.0057
	Cadmium, Soluble		mg/m2/month	<0.0053	<0.011	<0.0061	<0.0027	<0.0027	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057	<0.0057	<0.0057
	Chromium, Soluble		mg/m2/month	<0.0053	<0.011	<0.0061	<0.0027	<0.0027	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057	<0.0057	<0.0057
	Cobalt, Soluble		mg/m2/month	<0.0053	<0.011	<0.0061	<0.0027	<0.0027	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057	<0.0057	<0.0057
	Copper, Soluble		mg/m2/month	0.0036	0.024	0.0067	<0.0027	<0.0027	<0.0057	<0.0057	<0.0053	0.0069	<0.0029	<0.0055	<0.0057	<0.0057	<0.0057	<0.0057
	Iron, Soluble		mg/m2/month	<0.0011	<0.0022	<0.0012	<0.0053	<0.0011	<0.0011	<0.0011	<0.0011	<0.0057	<0.0029	<0.0055	<0.0057	<0.0057	<0.0057	0.03
	Lead, Soluble		mg/m2/month	<0.0016	<0.0033	<0.0018	<0.0008	<0.0008	<0.0017	<0.0017	<0.0016	<0.0085	<0.0088	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017
	Manganese, Soluble		mg/m2/month	<0.0053	<0.011	<0.0061	<0.0027	<0.0027	<0.0057	<0.0057	<0.0053	0.0031	0.0044	0.0055	<0.0057	<0.0057	<0.0057	<0.0057
	Mercury, Soluble		mg/m2/month	<4.2e-005	<4.4e-005	<2.4e-005	<0.0011	<0.0023	<0.0023	<2.3e-005	<0.0021	<0.0011	<0.0012	<0.0023	<0.0023	<0.0023	<0.0023	<0.0023
	Molybdenum, Soluble		mg/m2/month	<0.0016	<0.0033	<0.0018	<0.0008	<0.0008	<0.0017	<0.0017	<0.0016	<0.0085	<0.0088	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017
	Nickel, Soluble		mg/m2/month	<0.0011	<0.0022	<0.0012	<0.0053	<0.0011	<0.0011	<0.0011	<0.0011	<0.0057	<0.0059	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011
	Selenium, Soluble		mg/m2/month	<0.0053	<0.011	<0.0061	<0.0027	<0.0027	<0.0057	<0.0057	<0.0053	<0.0028	<0.0029	<0.0055	<0.0057	<0.0057	<0.0057	<0.0057
	Tin, Soluble		mg/m2/month	<0.0027	<0.0055	<0.003	<0.0013	<0.0013	<0.0028	<0.0028	<0.0027	<0.0014	<0.0015	<0.0028	<0.0028	<0.0028	<0.0028	<0.0028
	Vanadium, Soluble		mg/m2/month	<0.0011	<0.0022	<0.0012	<0.0053	<0.0011	<0.0011	<0.0011	<0.0011	<0.0057	<0.0059	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011
	Zinc, Soluble		mg/m2/month	<0.0011	<0.0022	<0.0012	0.0015	0.0035	0.0035	0.068	0.029	0.058	0.051	0.02	0.094	0.02	0.094	0.094
	Sulfate by calculation, soluble		mg/m2/month	<0.027	<0.055	<0.03	0.048	<0.028	<0.028	<0.028	0.029	<0.014	<0.015	<0.028	<0.028	<0.028	<0.028	<0.028
	Sulfur, Soluble		mg/m2/month	--	<0.16	<0.091	0.14	<0.085	<0.085	<0.085	0.088	<0.042	<0.044	<0.082	<0.085	<0.085	<0.085	<0.085
	Sulphate by calculation, soluble		mg/m2/month	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Cyanide, free soluble		mg/m2/month	<0.021	<0.0022	<0.0012	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.023	<0.011	<0.011	<0.011	<0.011	<0.011
	Cyanide, Soluble		mg/m2/month	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Cyanide, weak acid dissociable, soluble		mg/m2/month	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

* total Insoluble solids more than 2g/m2/month above background location

Table 4 - Depositional Dust Analytical Results

Analyte/Analyte Grouping	EPA Publication 1961	Unit	WVDD08													
			Location / Boundary		Western Boundary (Ponds 1-3)											
			Sample Date	Sample ID	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25
DUST FRACTIONS	4	g/m2/month	<0.1	<0.1	0.29	0.45	<0.1	<0.1	<0.1	0.55	<0.1	0.32	1.2	0.5	0.75	
		g/m2/month	0.32	0.24	0.22	0.24	0.37	0.5	0.69	0.4	0.85	0.94	0.68	0.43		
		g/m2/month	0.37	0.24	0.38	0.54	1.2	0.52	1.2	0.42	1.2	2.1	1.2	1.2		
		g/m2/month	<0.1	<0.1	<0.1	0.13	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.9	<0.1		
		g/m2/month	0.38	0.24	0.57	0.82	0.48	0.59	1.3	0.45	2.1	3	1.3			
INSOLUBLE ANALYTES																
Antimony, Insoluble		mg/m2/month	<0.0053	<0.055	<0.03	<0.027	<0.028	<0.028	<0.027	<0.014	<0.029	<0.027	<0.028	<0.028		
Arsenic, Insoluble		mg/m2/month	<0.027	<0.027	<0.015	<0.013	<0.014	<0.014	<0.013	<0.0271	<0.015	<0.014	<0.014	<0.014		
Barium, Insoluble		mg/m2/month	6.8	6.5	4.3	4.1	3.9	2	4.4	1.5	7.1	4.6	2.3	2.9		
Beryllium, Insoluble		mg/m2/month	<0.0053	<0.055	<0.03	<0.027	<0.028	<0.028	<0.027	<0.014	<0.029	<0.027	<0.028	<0.028		
Cadmium, Insoluble		mg/m2/month	<0.0053	<0.055	<0.03	<0.027	<0.028	<0.028	<0.027	<0.014	<0.029	<0.027	<0.028	<0.028		
Chromium, Insoluble		mg/m2/month	0.0021	<0.0053	<0.003	<0.0027	<0.0028	<0.0028	<0.0027	<0.0014	0.005	0.0027	<0.0028	<0.0028		
Cobalt, Insoluble		mg/m2/month	<0.0053	<0.055	<0.03	<0.027	<0.028	<0.028	<0.027	<0.014	<0.029	<0.027	<0.028	<0.028		
Copper, Insoluble		mg/m2/month	0.0026	0.16	0.11	0.0037	0.0045	0.081	0.032	0.27	0.0076	0.49	<0.0028	0.038		
Iron, Insoluble		mg/m2/month	0.13	0.16	0.29	0.24	0.34	0.53	0.5	0.48	1.1	0.93	0.4	0.61		
Lead, Insoluble		mg/m2/month	<0.016	<0.016	<0.091	<0.098	<0.085	<0.085	<0.068	<0.042	<0.088	<0.082	<0.085	<0.085		
Manganese, Insoluble		mg/m2/month	0.0021	<0.055	0.003	0.034	0.096	0.048	0.064	0.047	0.029	0.096	0.037	0.068		
Mercury, Insoluble		mg/m2/month	<0.0021	<0.022	<0.012	<0.011	<0.011	<0.011	<0.0057	<0.0012	<0.0011	<0.0011	<0.0011	<0.0011		
Molybdenum, Insoluble		mg/m2/month	<0.0016	<0.016	<0.091	<0.098	<0.085	<0.085	<0.068	<0.042	<0.088	<0.082	<0.085	<0.085		
Nickel, Insoluble		mg/m2/month	<0.011	<0.011	<0.061	<0.053	0.012	<0.057	<0.053	<0.0028	<0.059	<0.055	<0.057	<0.057		
Selenium, Insoluble		mg/m2/month	<0.0053	<0.055	<0.03	<0.027	<0.028	<0.028	<0.027	<0.014	<0.029	<0.027	<0.028	<0.028		
Sulfur, Insoluble		mg/m2/month	0.35	0.28	0.2	0.16	0.31	0.37	0.23	0.15	0.37	0.23	0.17	0.18		
Sulphate by calculation, insoluble		mg/m2/month	--	0.83	0.6	0.48	0.92	1.1	0.7	0.44	1.1	0.69	0.5	0.54		
Tin, Insoluble		mg/m2/month	<0.027	<0.027	<0.015	<0.013	<0.014	<0.014	<0.013	<0.0271	<0.015	<0.014	<0.014	<0.014		
Vanadium, Insoluble		mg/m2/month	<0.011	<0.011	<0.061	<0.053	<0.057	<0.057	<0.053	<0.0028	<0.059	<0.055	<0.057	<0.057		
Zinc, Insoluble		mg/m2/month	5.1	4.7	3.3	3	3.1	0.011	3.5	1	5.4	3.7	1.7	2.4		
Cyanide, weak acid dissociable, insoluble		mg/m2/month	--	--	--	--	--	--	--	--	--	--	--	--		
Cyanide, free insoluble		mg/m2/month	--	--	--	--	--	--	--	--	--	--	--	--		
Cyanide, Insoluble		mg/m2/month	<11	<11	<6.1	<2.7	<5.7	<0.28	<0.27	<2.8	<2.9	<5.5	<5.7	<5.7		
SOLUBLE ANALYTES																
Antimony, Soluble		mg/m2/month	<0.0053	<0.011	<0.061	<0.027	<0.057	<0.057	<0.053	<0.0028	<0.029	<0.055	<0.057	<0.057		
Arsenic, Soluble		mg/m2/month	<0.027	<0.055	<0.03	<0.013	<0.028	<0.028	<0.027	<0.014	<0.015	<0.027	<0.028	<0.028		
Barium, Soluble		mg/m2/month	<0.0053	<0.011	<0.061	<0.027	<0.057	<0.057	<0.053	<0.0028	<0.029	<0.055	<0.057	<0.057		
Beryllium, Soluble		mg/m2/month	<0.0053	<0.011	<0.061	<0.027	<0.057	<0.057	<0.053	<0.0028	<0.029	<0.055	<0.057	<0.057		
Cadmium, Soluble		mg/m2/month	<0.0053	<0.011	<0.061	<0.027	<0.057	<0.057	<0.053	<0.0028	<0.029	<0.055	<0.057	<0.057		
Chromium, Soluble		mg/m2/month	<0.0053	<0.011	<0.061	<0.027	<0.057	<0.057	<0.053	<0.0028	<0.029	<0.055	<0.057	<0.057		
Cobalt, Soluble		mg/m2/month	<0.0053	<0.011	<0.061	<0.027	<0.057	<0.057	<0.053	<0.0028	<0.029	<0.055	<0.057	<0.057		
Copper, Soluble		mg/m2/month	<0.0053	0.035	0.025	<0.0027	<0.0057	0.0052	<0.0053	0.014	<0.0029	0.024	<0.0057	0.002		
Iron, Soluble		mg/m2/month	<0.011	<0.022	<0.012	<0.0053	<0.011	<0.011	<0.011	<0.0057	<0.0059	<0.011	<0.011	<0.011		
Lead, Soluble		mg/m2/month	<0.016	<0.033	<0.018	<0.008	<0.017	<0.017	<0.016	<0.0085	<0.0088	<0.016	<0.017	<0.017		
Manganese, Soluble		mg/m2/month	<0.0053	<0.011	<0.061	<0.027	<0.057	0.0062	<0.0053	0.0048	0.0024	0.014	<0.0057	<0.0057		
Mercury, Soluble		mg/m2/month	<4.2e-005	<4.4e-005	<2.4e-005	<0.0011	<0.0023	<2.3e-005	<0.0021	<0.0011	<0.0012	<0.0022	<0.0023	<0.0023		
Molybdenum, Soluble		mg/m2/month	<0.016	<0.033	<0.018	<0.008	<0.017	<0.017	<0.016	<0.0085	<0.0088	<0.016	<0.017	<0.017		
Nickel, Soluble		mg/m2/month	<0.0011	<0.022	<0.012	<0.0053	<0.011	<0.011	<0.011	<0.0057	<0.0059	<0.011	<0.011	<0.011		
Selenium, Soluble		mg/m2/month	<0.0053	<0.011	<0.061	<0.027	<0.057	<0.057	<0.053	<0.0028	<0.029	<0.055	<0.057	<0.057		
Tin, Soluble		mg/m2/month	<0.027	<0.055	<0.03	<0.013	<0.028	<0.028	<0.027	<0.014	<0.015	<0.027	<0.028	<0.028		
Vanadium, Soluble		mg/m2/month	<0.011	<0.022	<0.012	<0.0053	<0.011	<0.011	<0.011	<0.0057	<0.0059	<0.011	<0.011	<0.011		
Zinc, Soluble		mg/m2/month	<0.011	<0.022	0.0061	0.031	0.031	0.011	0.032	0.043	0.026	0.027	0.01	0.013		
Sulfur, Soluble		mg/m2/month	<0.027	<0.055	<0.03	<0.013	0.033	0.033	<0.027	0.014	<0.015	0.034	<0.028	<0.028		
Sulphate by calculation, soluble		mg/m2/month	--	<0.16	<0.091	<0.04	0.1	0.094	<0.08	0.043	<0.044	0.1	<0.085	<0.085		
Cyanide, free soluble		mg/m2/month	--	--	--	--	--	--	--	--	--	--	--	--		
Cyanide, Soluble		mg/m2/month	<0.021	<0.022	<0.012	<0.011	<0.011	<0.011	<0.011	<0.011	<0.023	<0.022	<0.011	<0.011		
Cyanide, weak acid dissociable, soluble		mg/m2/month	--	--	--	--	--	--	--	--	--	--	--	--		

Table 4 - Depositional Dust Analytical Results

Analyte/Analyte Grouping		EPA Publication 1961	Unit	WVDD07 - BG															
				Location / Boundary		Background													
				Sample Date	Sample ID	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25		
DUST FRACTIONS																			
		4																	

Table 5 - Real-time Dust Monitoring Results Summary

Month/Year	Operational Summary		Fraction	PM 2.5										PM 10																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	% Run time	Downtime (minutes)		1 minute					30 minute					24 hour					1 minute					30 minute					24 hour																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
				average	average	average	average	average	average	average	average	average	average	average	average	average	average	average	average	average	average	average	average	average	average	average	average	average	average	average	average																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
WVRI-D-01 [E0024022]	Jun-24	99.8%	85	Criteria	0.35	0.35	0.35	0.35	0.35	0.38	0.35	0.37	0.38	0.46	0.48	0.73	Minimum	18.87	15	13.97	12.02	10.46	5.75	26.59	18.09	17.01	14.77	13.71	7.15	Maximum	1.78	1.74	1.74	1.74	1.74	3.10	3.10	3.10	3.10	3.10	3.16	Average	0	0	0.02	0.03	0.43	0	0.09	0.17	0.21	0.67																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
	Jul-24	99.7%	98	Criteria	0.35	0.35	0.35	0.35	0.35	0.38	0.35	0.37	0.38	0.46	0.48	0.73	Minimum	31.65	11.0	10.0	9.0	8.0	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3

10 min, 15 min, 30 min and 1 hr rolling average criteria for PM₁₀ based on EPA Publication 1961
24 hr and annual rolling average criteria for PM_{2.5} and PM₁₀ based on ENS, 2021