Iluka Resources Limited
Mineral Sands By-Product Disposal

Planning Permit 15-105

Crown Allotments 91, 94, 95, 96
Parish of Telangatuk

Environmental Management Plan and Rehabilitation Performance Report – 2018

Iluka Ref: UDOCS 0058-1414587248-202

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Document control

Revision	Details of review or changes	Prepared by	Date created
0	Final draft	S. Alexander	10-04-2019
1.0	Report issued to external auditor	N. Travers	15-04-2019
1.1	Amendment addressing external auditor feedback	S. Alexander	22-05-2019
1.2	Amendment addressing external auditor feedback	S. Alexander	27-05-2019

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1 Executive Summary

Iluka Resources Limited (Iluka) operates the Pit 23 by-products disposal facility located at the Douglas Mine in the Kanagulk area and within the municipality of the Horsham Rural City.

Pursuant to Planning Permit 15-105 issued by Horsham Rural City Council (HRCC), and the subsidiary Pit 23 Incoming Waste Monitoring Plan (IWMP), the Pit 23 facility is approved for the disposal of mineral separation by-products and used dust filter bags from the Iluka Hamilton Mineral Separation (MSP) which contain or are contaminated with Naturally Occurring Radioactive Material (NORM), and concrete and steel which contains or is contaminated with NORM associated with plant and infrastructure from nominated Iluka sites within Victoria.

Complementing the IWMP are the endorsed Pit 23 Environmental Management Plan (EMP) which addresses the identification, management and monitoring of environmental risks associated with the approved development and use; and the endorsed Rehabilitation and Vegetation Management Plan (R&VMP) which addresses the future rehabilitation of the Pit 23 facility including infrastructure decommissioning, landform reinstatement and end land use.

This report is submitted in accordance with Section 12.2 of the endorsed Iluka Pit 23 EMP and outlines the results of monitoring and management actions undertaken during the period 1st January 2018 to 31st December 2018.

Key commentary on environmental monitoring outcomes and performance against compliance objectives in the Pit EMP for the 2018 reporting period:

- No noise complaints were received;
- There were no exceedances of the PM_{10} dust limit attributable to Pit 23 operations;
- There were no exceedances of the air concentration limits for Radon and Thoron;
- There were no exceedances of applicable limits for radionuclides in groundwater;
- There were no exceedances of applicable limits for radionuclides in surface water;
- There were no surface water discharges from the Pit 23 disturbance area;
- An exception report was submitted to HRRC on 3^1st^ October 2018 following an indication of potential groundwater seepage from Pit 23 and expression in surface waters at McGlashin's Swamp (DUSW24) in Q3 2018 based on observed pH and total nitrogen concentrations exceeding the natural background upper limits for this location. This followed similar exceedances at McGlashin's Swamp in the 2017 reporting period.

  As reported to HRCC on 30th November 2018 via the Iluka Pit 23 2017 Interim Performance Report, detailed investigation by an external consultant (*'Pit 23 Groundwater – Assessment of Seepage Indicator Exceedances'*, EMM 2018) attributed these observations to natural phenomena (evapoconcentration and photosynthetic effects) as supported by similar observations in analogue monitoring locations in the region and nil observed trends of concern in groundwater and surface water monitoring points between McGlashin's Swamp and Pit 23. On this basis no corrective or remedial actions applied.

  Further to the seepage impact assessment Iluka also commissioned an update of the hydrogeological model which will seek to validate existing groundwater model predictions. This work is in-progress at time of reporting and is scheduled for completion in Q2 2019;
- Updated groundwater level contours and flow-paths show no material change from the hydrogeological model contours developed in 2015 by CDM Smith; and
- A reported non-compliance relates to missed monitoring of uranium 238 at two surface water monitoring locations in Q1 2018.

Detailed assessment of compliance, key results and management actions are provided in Section 4 and 5 of the enclosed report.

2 Introduction

Iluka Resources Limited (Iluka) operates the Pit 23 by-products disposal facility located at the Douglas Mine in the Kanagulk area and within the municipality of the Horsham Rural City (Figure 1 and Figure 2).

Pursuant to Planning Permit 15-105 issued by Horsham Rural City Council (HRCC), and the subsidiary Pit 23 Incoming Waste Monitoring Plan (IWMP), the Pit 23 facility is approved for the disposal of mineral separation by-products and used dust filter bags from the Iluka Hamilton Mineral Separation (MSP) which contain or are contaminated with Naturally Occurring Radioactive Material (NORM), and concrete and steel which contains or is contaminated with NORM associated with plant and infrastructure from nominated Iluka sites within Victoria.

2.1 Planning Permit 15-105

Under the Horsham Planning Scheme the subject land is in the Farming Zone and under the provisions of that zone a permit is required for use and development for Industry (Refuse Disposal). On 25th February 2017 Planning Permit 15-105, (the Permit) was issued by the Horsham Rural City Council as the Responsible Authority to allow:

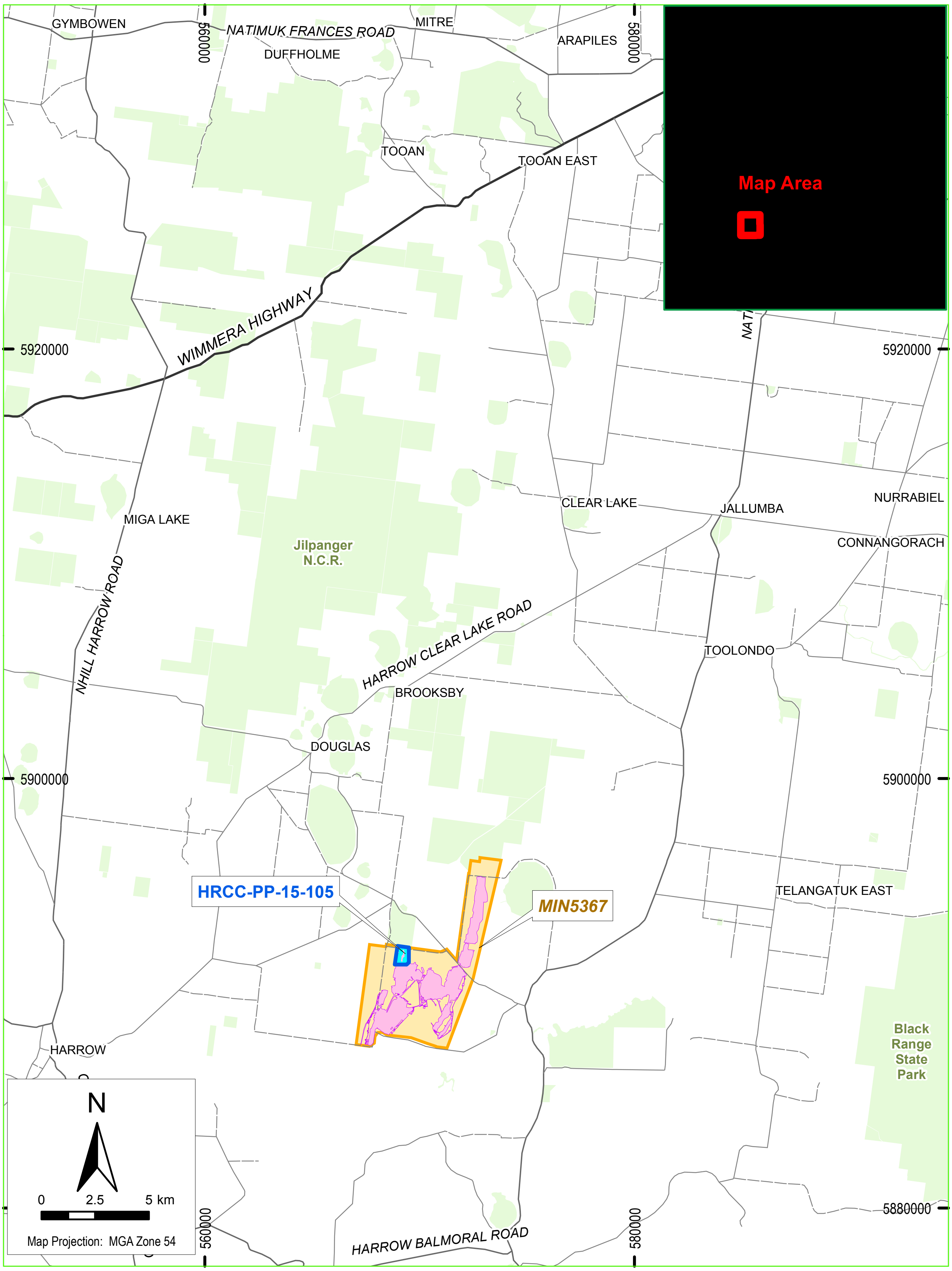
> *Use and development of the land for the disposal of waste by-products associated with or sourced through mineral sands processing undertaken at the Hamilton Mineral Separation Plant (MSP), including waste by-products and contaminated materials resulting from the processing and transport operations as follows:*
>
> - *By-products from the processing of heavy mineral concentrate at the Hamilton MSP;*
> - *used dust filter bags from the Hamilton MSP; and*
> - *Other chemically inert material contaminated with naturally occurring radioactive material.*
>
> *in accordance with the endorsed plans.*

2.2 Commencement of the Permit

Condition 1 of the Permit states:

> *This permit does not come into operation until:*
>
> a. *Iluka has applied to the Department of Economic Development, Jobs, Transport and Resources to vary the 2003 Work Plan to identify a new endues utilisation of Pit 23 and to vary the rehabilitation plan; and*
> b. *Iluka has applied to the Minister to surrender part of MIN 5367 (Pit 23); and*
> c. *The Department of Economic Development, Jobs, Transport and Resources has approved the Work Plan Variation; and*
> d. *The Minister has registered the partial surrender of MIN 5367.*
>
> *The permit comes into operation on the same day the Work Plan Variation is approved, and the partial surrender of MIN 5367 is registered.*

The Variation to the 2003 Douglas Mine Work Plan was approved on the 13th April 2017, and the partial surrender of MIN5367 was registered on 11th May 2017, this being the date of commencement of the Permit.



Legend

- Douglas mine
- Pit 23
- HRCC-PP-15-105
- MIN5367 tenement

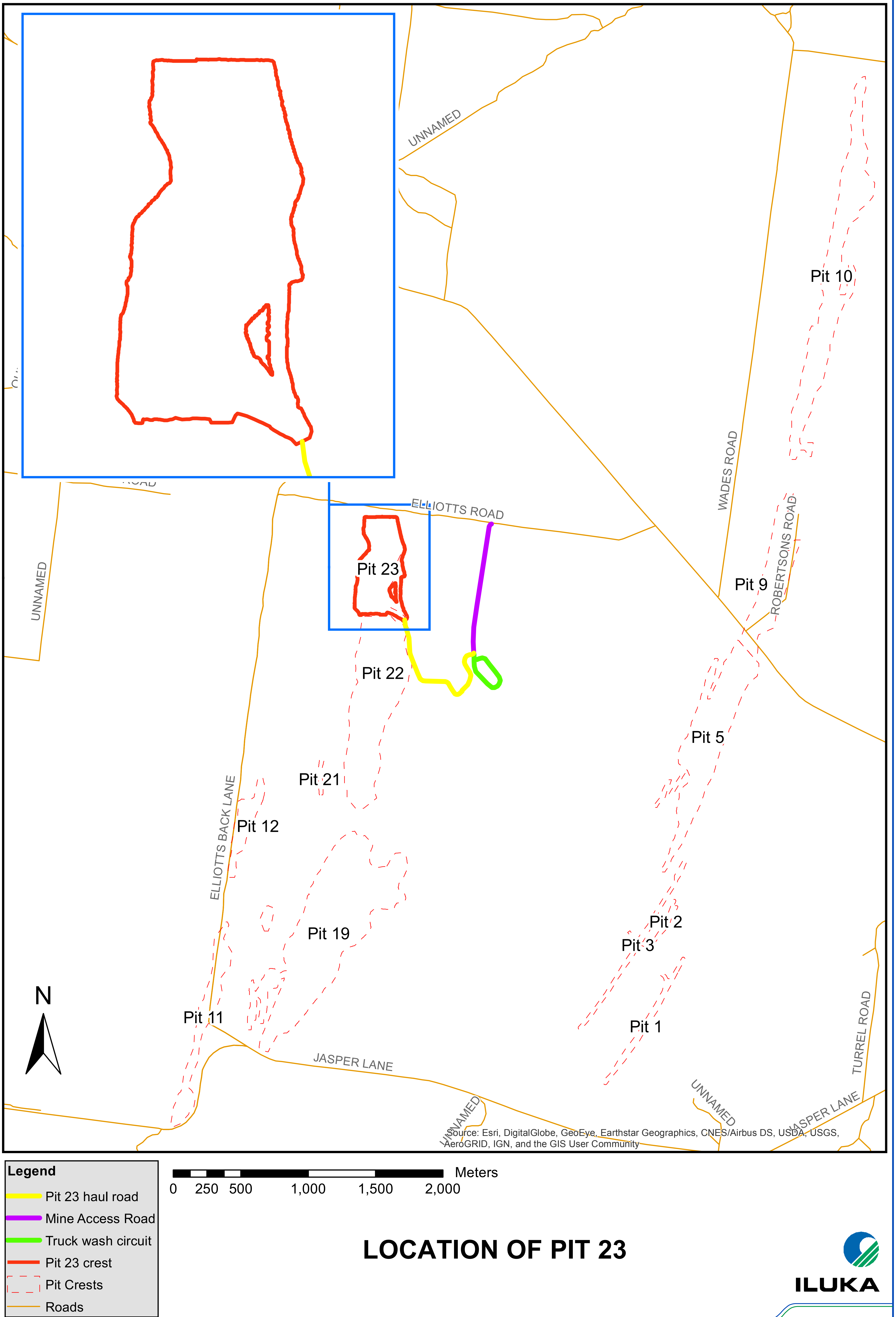
DOUGLAS

LOCATION PLAN

ILUKA

ORIG: N.Travers DRAWN: D.G.S. SCALE: 1:250,000 (A4) DATE: May 2018 DWG No: 247670 ver.00

FIGURE: 1



LOCATION OF PIT 23

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DATE:26/06/2018

FIGURE: 2

2.3 Endorsed Plans

Conditions 2, 3, 9, 14, 16 and 34 of the Permit relate to various management plans that once approved by the Responsible Authority will be endorsed to form part of the Permit, which includes:

- Incoming Waste Monitoring Plan (IWMP);
- Environmental Management Plan (EMP), incorporating;
  - Groundwater Monitoring and Management Plan (GWMMP);
  - Surface Water Monitoring and Management Plan (SWMMP);
  - Air Quality/Dust Control Plan (AQMP); and
- Rehabilitation and Vegetation Management Plan (R&VMP)

The plans were endorsed by Horsham Rural City Council on 17th July 2017.

2.4 Performance reporting

Section 12.2 of the endorsed EMP outlines the routine reporting requirements for the mineral sands by-product disposal operations which are:

> *A review of the performance will be completed and an EMP and Rehabilitation Performance report prepared annually, or less frequently as may be agreed with the Responsible Authority.*
>
> *Each EMP and Rehabilitation Performance Report will include, at least:*
>
> - *for the period from the previous EMP and Rehabilitation Performance Report:*
>   - *the total tonnage of materials disposed of;*
>   - *the average and maximum number of deliveries of materials disposed of per day; and*
>   - *the results of all measurements of:*
>   - *noise levels made in response to a complaint regarding noise;*
>   - *PM10 concentrations in air at sensitive receptors;*
>   - *environmental radiation monitoring results in accordance with the approved Radiation Management Plan, which will generally include:*
>   - *radon concentration in air;*
>   - *gross alpha activity concentration of airborne dust; and*
>   - *radionuclide concentrations in groundwater and surface water;*
>   - *discussion of any implications of the results of groundwater level monitoring on groundwater flow paths from Pit 23; and*
>   - *descriptions of any model review and recalibration completed and the results of subsequent model re-runs;*
> - *the maximum elevation of the upper surface of materials disposed of at the end of the reporting period;*
> - *a detailed discussion of all non-compliant events including progress toward resolution;*
> - *a summary of comments and complaints received and resulting actions;*
> - *plans for the next year; and*

- *discussion on other matters considered relevant by the Responsible Authority or Iluka.*

Deficiencies identified in an EMP and Rehabilitation Performance Report that can be addressed without amendment of this plan will be addressed as soon as practicable.

Per Section 13.2 of the EMP, the EMP and Rehabilitation Performance Reports will be subject to review by an independent auditor prior to submission to the Responsible Authority.

2.5 Rehabilitation and Vegetation Management Plan

Due to continued operations within Pit 23 no actions relevant to rehabilitation and vegetation management were undertaken in the 2018 reporting period.

3 Delivery and Disposal of Materials into Pit 23

The tonnages of materials disposed into Pit 23 in accordance with the Incoming Waste Monitoring Plan (IWMP) are shown in Table 1 below.

Table 1: Production figures for the Iluka Murray Basin operations 2018

Product	Product (tonnes)	Th (ppm)	U (ppm)
Dry circuit rejects	0	NA	NA
Wet circuit rejects	361.44	264	153
Baghouse dust filter bags	0	NA	NA
Total	**361.44**		

For the reporting period the average and maximum number of deliveries of materials for disposal per day was 3.3 and 4 respectively.

4 Monitoring Results

4.1 Noise

In accordance with Section 10.1.4 of the endorsed EMP, noise level measurements will be undertaken in the unlikely event that noise complaints are received.

No noise related complaints were received during the reporting period, and hence no noise levels measurements were undertaken.

4.2 PM10 concentrations in air

In accordance with Sections 9.6 and 10.1.4 of the endorsed EMP, the concentration of PM_{10} dust in air at the Lyon's, Rises and Chadwick's residences is measured using high volume ('hi-vol') air samplers on a one-in-six day monitoring cycle. The location of these hi-vol air samplers relative to Pit 23 are shown in Figure 4.

The PM_{10} results and daily rainfall data for the monitoring period are shown in Figure 3 below indicating the expected year-on-year pattern of lower airborne PM10 concentrations in wetter winter months.

Average PM10 concentrations for the 2018 reporting period at Chadwick's, Lyons and Rises residences were 0.009 mg/m^3, 0.016 mg/m^3 and 0.012 mg/m^3 respectively.

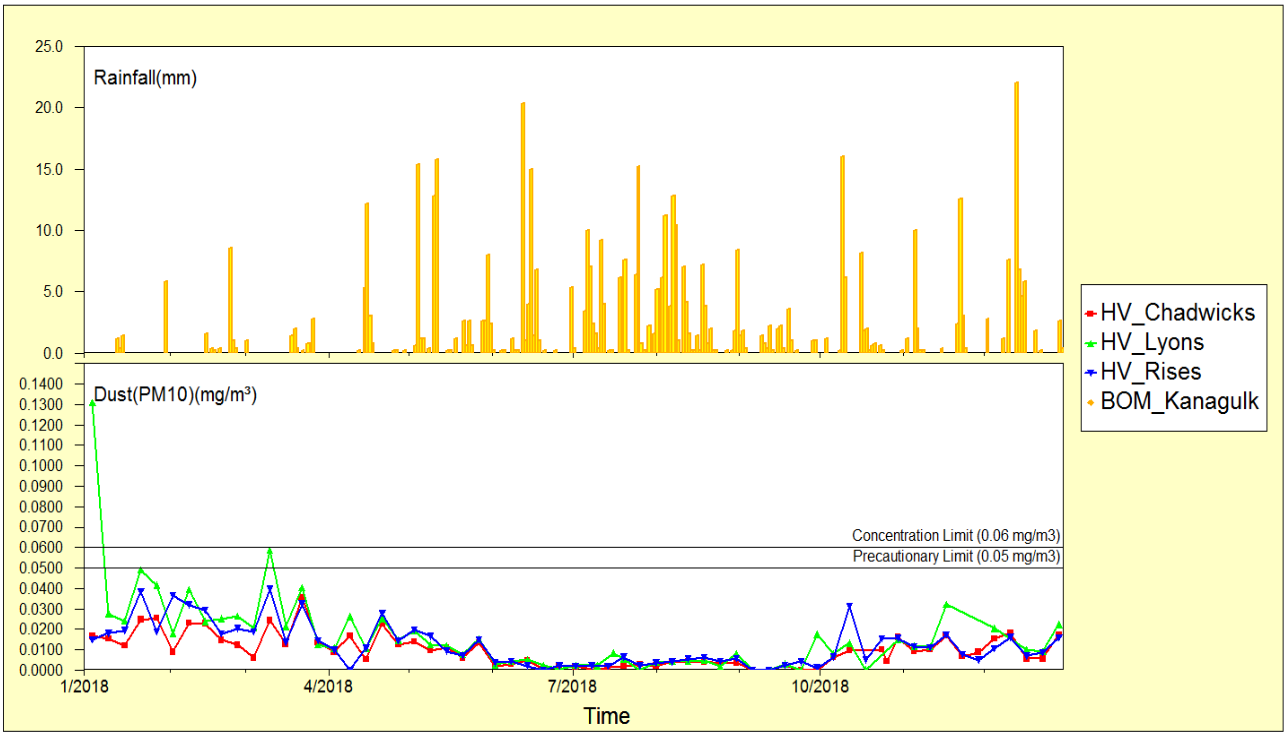


Figure 3: PM10 dust concentrations at neighbouring residences vs. daily rainfall

Two PM10 exceedances were recorded at the Lyons residence in Q1 2018:

- 1 x exceedance of the 0.06 mg/m^3 concentration limit on 3rd January 2018 at the Lyon's monitoring location; and
- 1 x exceedance of the 0.05 mg/m^3 precautionary limit was recorded on 10th March 2018.

Per Section 9.6 of the Pit 23 EMP, where an exceedance of a precautionary or upper concentration limit has occurred Iluka is to determine whether the elevated result is associated with the Pit 23 development and use. This determination requires comparison between measured

PM10 concentrations at the Chadwick's and Lyon's residences per the method outlined in Table 24 of the EMP, shown below:

Location	If measured concentration is		Associated?
Chadwick's	> Trigger Level	> Lyon's	Yes
Chadwick's	> Trigger Level	< Lyon's	No
Lyon's	> Trigger Level	> Chadwick's	No
Lyon's	> Trigger Level	< Chadwick's	Yes

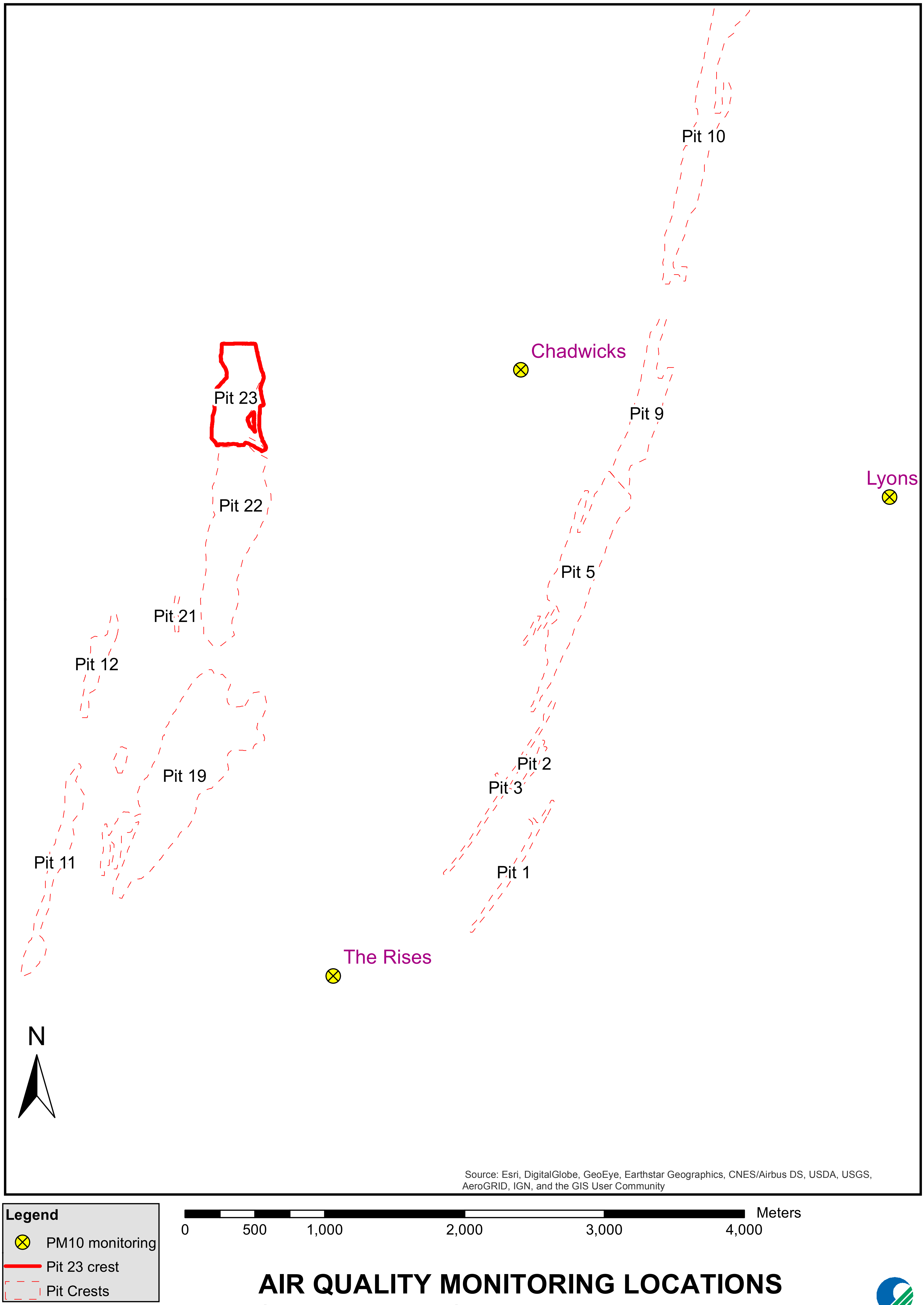
Assessment of Q1 2018 exceedances observed at the Lyon's residence based on the above protocol is given in Table 2 below.

Based on this assessment and with reference to field monitoring notes and weather data from the Kanagulk BOM station (Station # 079097) on these dates neither exceedance was associated with Pit 23.

In both instances the measured PM10 concentrations at the Chadwick's residence, which is sited upwind of the Lyon's property and closer to the Pit 23 facility, were lower than those measured at Lyon's residence and below the 0.06 mg/m^3 concentration limit at the same point in time. This is supported by field monitoring records and wind data which indicate dust sources un-related to Pit 23 use and development.

Table 2: Lyons Q1 2018 PM10 exceedance assessment

Date	Measured Concentration (mg/m^3)		Associated?	Comment
	Lyon's	Chadwick's		
3/1/2018	0.131	0.017	No	Sheep activity in vicinity of hi-volume air sampler unit during monitoring event.
10/3/2018	0.059	0.024	No	BOM station indicates predominantly N/NE winds during monitoring event (Pit 23 is sited to W/NW of Lyon's residence).



AIR QUALITY MONITORING LOCATIONS (PM10 - Hi Vols)

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DATE:26/06/2018

FIGURE: 4

4.3 Environmental radiation monitoring

It is a requirement of Iluka Radiation Management Licence 300042022 that works relating to the minerals sands by-product disposal into Pit 23 are conducted in accordance with a Radiation Management Plan (RMP) and a Radioactive Waste Management Plan (RWMP), including the monitoring programs under those plans, to ensure that radiation doses are below the prescribed limit.

Radiation monitoring relevant to this performance report includes:

- Radon concentrations in air;
- Gross alpha activity concentration of airborne dust; and
- Radionuclide concentrations in groundwater and surface water.

These monitoring results are presented in the followings sections.

4.3.1 Radon concentrations in air

Monitoring of radon concentrations in air is undertaken at four locations within and immediately adjacent to Pit 23 and at two residences east of Pit 23 (Chadwick's) and south of Pit 23 (Rises). Radon monitoring is undertaken using Landauer "Radtrak2" radon/thoron track etch detectors and the newer Rapidos High Sensitivity ("Rapidos HS") radon detectors (Figure 5).

The Rapidos HS detectors were implemented in Q4 2018 for side-by-side comparison with the existing Radtrak2 detectors, with initial results from the Rapidos HS detectors indicating that airborne radon levels are significantly lower than those indicated by the less sensitive Radtrak2 detectors, and therefore provide a more accurate measure of actual airborne radon levels in the vicinity of Pit 23 and at local residences. This side-by-side comparison will continue through 2019 to allow for meaningful statistical comparison of radon data between units over time.

No high-sensitivity thoron detectors are available and thoron monitoring will continue using the Radtrack2 detectors.

Radon and Thoron monitoring results for the reporting period are presented in Figure 6, Figure 7 and Table 3 and Table 4.

All measured radon and thoron levels in the 2018 reporting period were well below the reportable levels irrespective of the detectors used.

Figure 5: Radon and thoron detectors (left/middle: "Radtrak2", right: "Rapidos HS")

Table 3: Radon concentrations within Pit 23 for 2018

Location	Radon concentration in air (Bq/m^3) *Radtrak2 Detectors*							Rapidos HS Detectors
	Reportable level	May17 To Aug17	Aug17 To Dec17	Dec17 To Mar18	Mar18 To Jun18	Jun18 To Sep18	Oct 18 To Jan 19	Oct 18 To Jan 19
Pit 23 East	**100**	<20	<15	24 +/- 10	<15	<15	16 +/- 6	6 +/- 3
Pit 23 North	**100**	<15	<15	<15	15 +/- 10	<15	<15	7 +/- 3
Pit 23 West	**100**	<15	<15	33 +/- 10	22 +/- 10	17 +/- 12	<15	3 +/- 3
Pit 23 South	**100**	<15	<15	20 +/- 10	18 +/- 12	<15	<15	5 +/- 3
Chadwick's	**100**	<20	<15	<15	28 +/- 12	<15	<15	6 +/- 3
Rises	**100**	<15	<15	19 +/- 8	23 +/- 10	<20	<15	9 +/- 3

Table 4: Thoron concentrations within Pit 23 for 2018

Location	Thoron concentration in air (Bq/m^3) *Radtrak2 Detectors*						
	Reportable level	May17 To Aug17	Aug17 To Dec17	Dec17 To Mar18	Mar18 To Jun18	Jun18 To Sep18	Oct18 To Jan19
Pit 23 East	**1000**	34 +/- 24	21 +/- 18	285 +/- 52	72 +/- 30	77 +/- 32	40 +/- 20
Pit 23 North	**1000**	24 +/- 18	<20	41 +/- 36	<30	<40	<20
Pit 23 West	**1000**	47 +/- 20	102 +/- 18	50 +/- 32	55 +/- 32	<40	132 +/- 32
Pit 23 South	**1000**	64 +/- 20	111 +/- 26	115 +/- 34	103 +/- 36	92 +/- 34	162 +/- 28
Chadwick's	**1000**	<30	<20	<30	<40	<40	21 +/- 16
Rises	**1000**	<20	<20	<30	<40	<40	<20

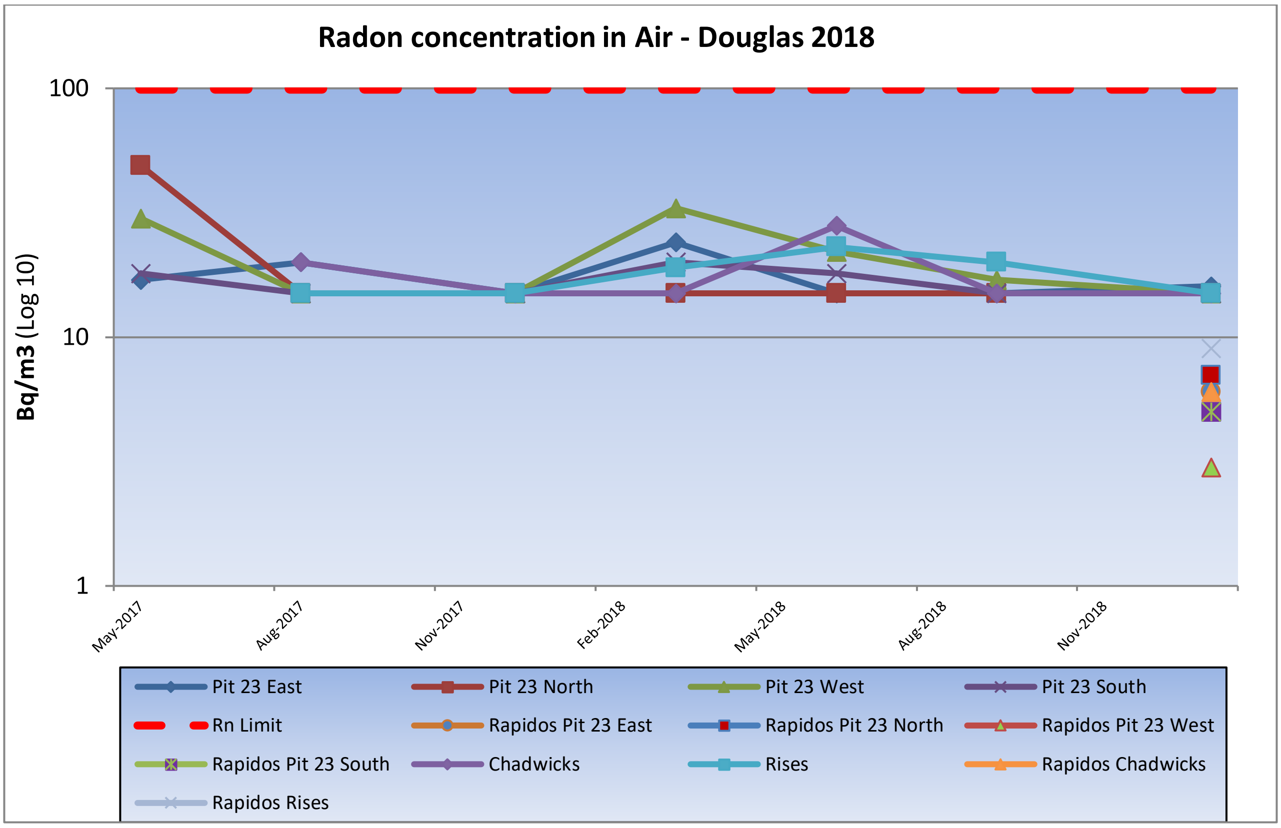


Figure 6: Radon concentration in air, 2018

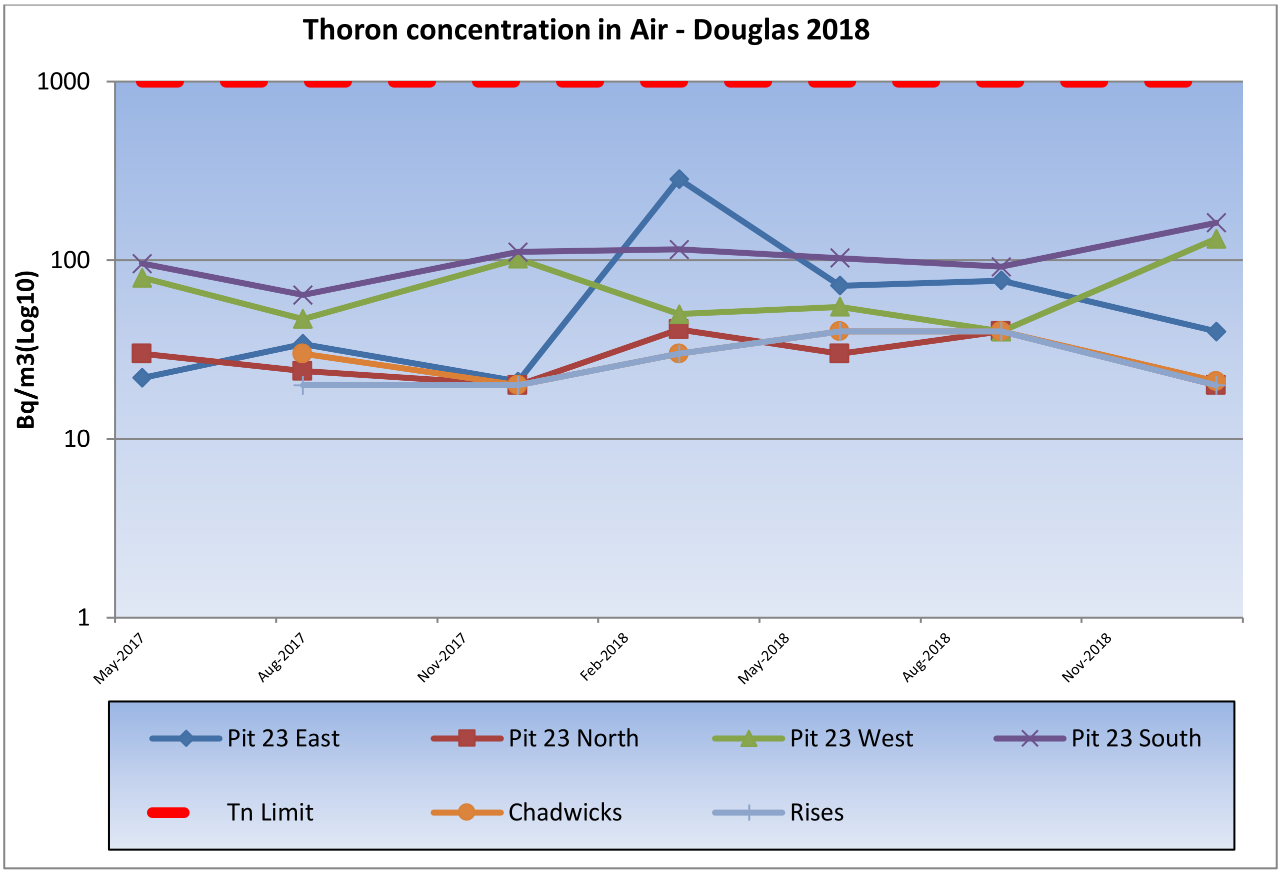


Figure 7: Thoron concentration in air, 2018

4.3.2 Gross alpha concentrations in airborne dust

As noted in Section 4.2, sampling for airborne particulates in PM_{10} dust is conducted using high volume (hi-vol) air samplers located at the Chadwick's, Lyons and Rises residences (see Figure 4).

For the purposes of monitoring gross alpha concentration in air, hi-vol samples are collected for a continuous 96 hour period every quarter, representing a total air sample volume of approximately 6,000 m^3. The filters are weighed to determine the total dust loading in mg/m^3 and are then analysed for gross alpha activity expressed as millibequerels/m^3 (mBq/m^3).

The results for the monitoring period are shown in Table 5 and Figure 8.

Table 5: Gross Alpha Radiation in PM10 dust

Location (Douglas)	Date	Sample No.	Run Time (Hrs)	Air Volume (m^3)	Activity Conc (mBq/m^3)
Chadwick's	08/02/2018	C33	95:46	5756	0.50
Lyons	08/02/2018	C34	89:26	5441	0.39
Rises	08/02/2018	C35	89:26	6635	0.44
Chadwick's	20/06/2018	QB48	95:46	6228	0.15
Lyons	20/06/2018	QB47	95:46	6198	0.19
Rises	20/06/2018	QB46	95:46	5966	0.27
Chadwick's	14/09/2018	GFG45	95:46	6088	0.09
Lyons	14/09/2018	GFG44	95:46	7032	0.06
Rises	14/09/2018	GFG46	95:46	5325	0.05
Chadwick's	23/11/2018	GHI27	95:46	5932	0.08
Rises	23/11/2018	GHI28	95:46	5932	0.05
Lyons	17/12/2018	GHI38	95:45	6818	0.09

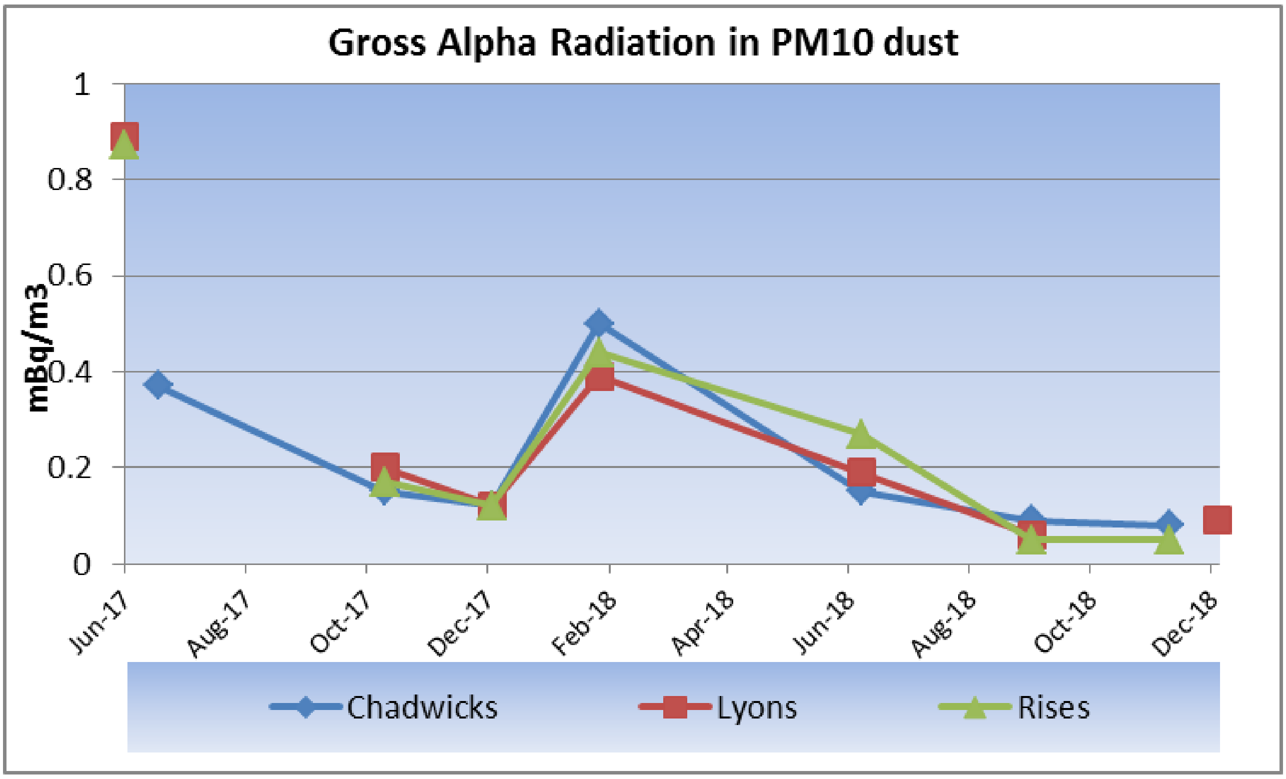


Figure 8: Gross Alpha Radiation in PM10 Dust

4.3.3 Radionuclide concentrations in groundwater

Section 7.6.1 of the EMP prescribes the groundwater monitoring points and biannual frequency of monitoring; Section 7.6.7 of the EMP prescribes the laboratory analysis suite which includes target radionuclides (thorium, uranium, radium-226, radium-228 and uranium-238).

Nine (9) new monitoring bores that were proposed for installation in the current endorsed Pit 23 EMP were installed in 2018. Three bores were installed in May 2018 with the remainder of the well drilling program deferred to October 2018 as a result of poor weather and deteriorating ground conditions.

Radionuclide concentration results obtained in accordance with this schedule are presented in Table 6 and Figure 9 through Figure 15. This data shows that for all target radionuclides the measured concentrations were below relevant limits during the reporting period with nil exceedances of any precautionary or upper trigger level, and were consistent with historical results.

Table 6: Radionuclide concentrations in groundwater, 2018

Groundwater Bore ID	Date	Thorium (mg/L)	Uranium (mg/L)	U238 (Bq/L)	Ra226 (Bq/L)	Ra228 (Bq/L)
	Precautionary trigger	*n/a*	*0.17*	*0.17*	*4.3*	*1.7*
	Upper trigger	*n/a*	*0.2*	*0.2*	*5.0*	*2.0*
Q1 2018						
IWB2	8/01/2018	<0.002	<0.001	<0.025	<0.05	<0.08
IWB6	8/01/2018	<0.002	<0.001	<0.025	<0.05	<0.08
BW5	9/01/2018	<0.002	0.004	<0.025	<0.05	<0.08
BW28A	9/01/2018	<0.002	0.004	0.037	0.16	<0.08
BW53 (“Puls”)	9/01/2018	<0.002	<0.001	<0.025	<0.05	<0.08
BW36	10/01/2018	<0.002	<0.001	<0.025	<0.05	<0.08
WRK300	10/01/2018	<0.002	0.001	<0.025	<0.05	<0.08
WRK301	11/01/2018	<0.028	0.01	0.037	<0.05	<0.08
WRK302	11/01/2018	<0.002	<0.001	<0.025	0.26	1.03
WRK303	11/01/2018	<0.002	<0.001	<0.025	<0.05	<0.08
WRK304	11/01/2018	<0.002	<0.001	<0.025	<0.05	<0.08
Q2 2018 – New bores installed May 2018						
GW01	7/06/2018	<0.002	<0.001	<0.025	<0.05	<0.08
GW07	7/06/2018	<0.002	0.001	<0.025	<0.05	<0.08
GW06	12/06/2018	<0.002	0.003	0.037	0.11	0.14
Q3 2018						
BW5	2/07/2018	<0.002	0.004	<0.025	<0.09	<0.14
BW28A	3/07/2018	<0.002	0.001	0.086	0.17	<0.08
BW53 (“Puls”)	3/07/2018	<0.002	<0.001	<0.025	<0.05	0.11
IWB2	3/07/2018	<0.002	<0.001	<0.025	<0.05	<0.08
IWB6	3/07/2018	<0.002	<0.001	0.037	<0.05	<0.08
WRK301	10/07/2018	<0.002	0.005	0.049	0.14	0.17
WRK302	10/07/2018	<0.002	0.001	0.148	0.19	0.76
WRK303	10/07/2018	<0.002	<0.001	<0.025	<0.06	<0.09
WRK304	10/07/2018	<0.002	<0.001	<0.025	<0.05	<0.08
WRK300	17/07/2018	<0.002	0.001	<0.025	<0.05	<0.08
Q4 2018 – New bores installed October 2018						

Groundwater Bore ID	Date	Thorium (mg/L)	Uranium (mg/L)	U238 (Bq/L)	Ra226 (Bq/L)	Ra228 (Bq/L)
GW02	28/11/2018	<0.002	<0.001	<0.025	0.05	0.11
GW03	28/11/2018	<0.002	0.001	<0.025	0.07	0.16
GW04	28/11/2018	<0.002	<0.001	<0.025	0.05	0.12
GW05	28/11/2018	<0.002	<0.001	<0.025	0.07	0.15
GW08	29/11/2018	<0.002	0.002	<0.025	0.09	0.24
BW45B	29/11/2018	<0.002	<0.001	<0.025	0.22	0.86

NOTE: Where concentrations are reported as below the laboratory limit of reporting / limit of detection (as indicated by "<") the numerical value is treated as a negative concentration to enable graphical representation.

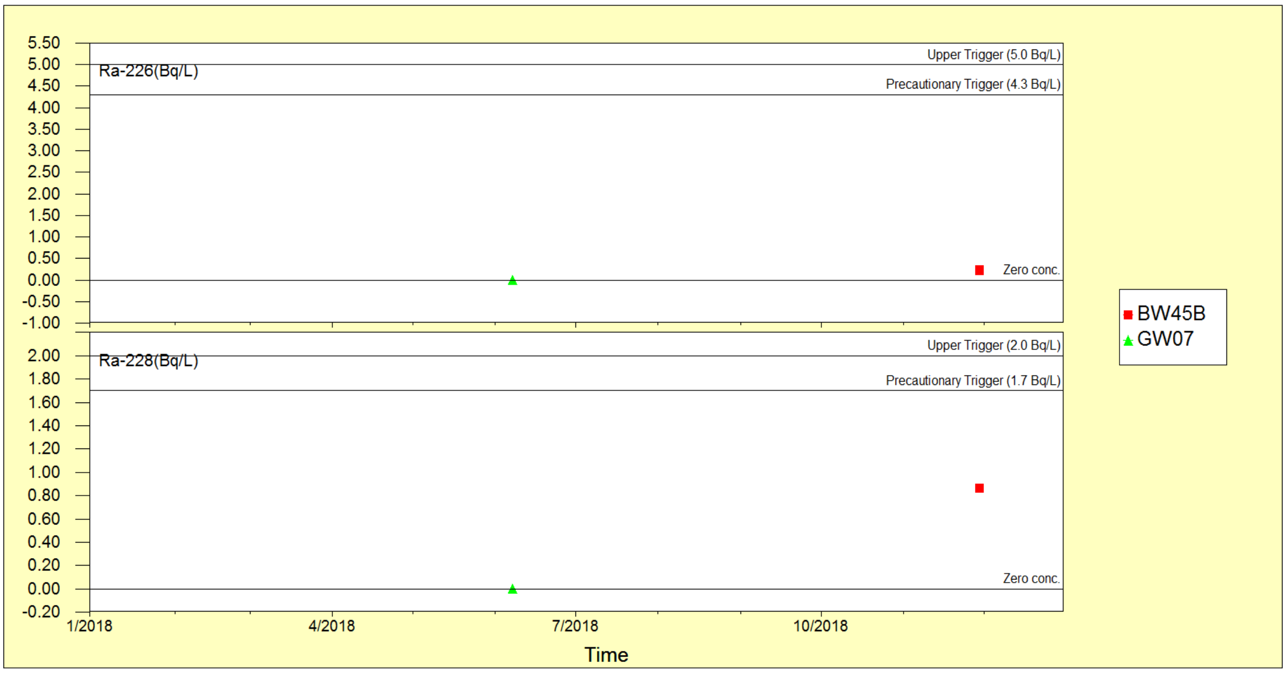


Figure 9: Ra-226 and Ra-228 – cross-gradient monitoring bores (2018 period)

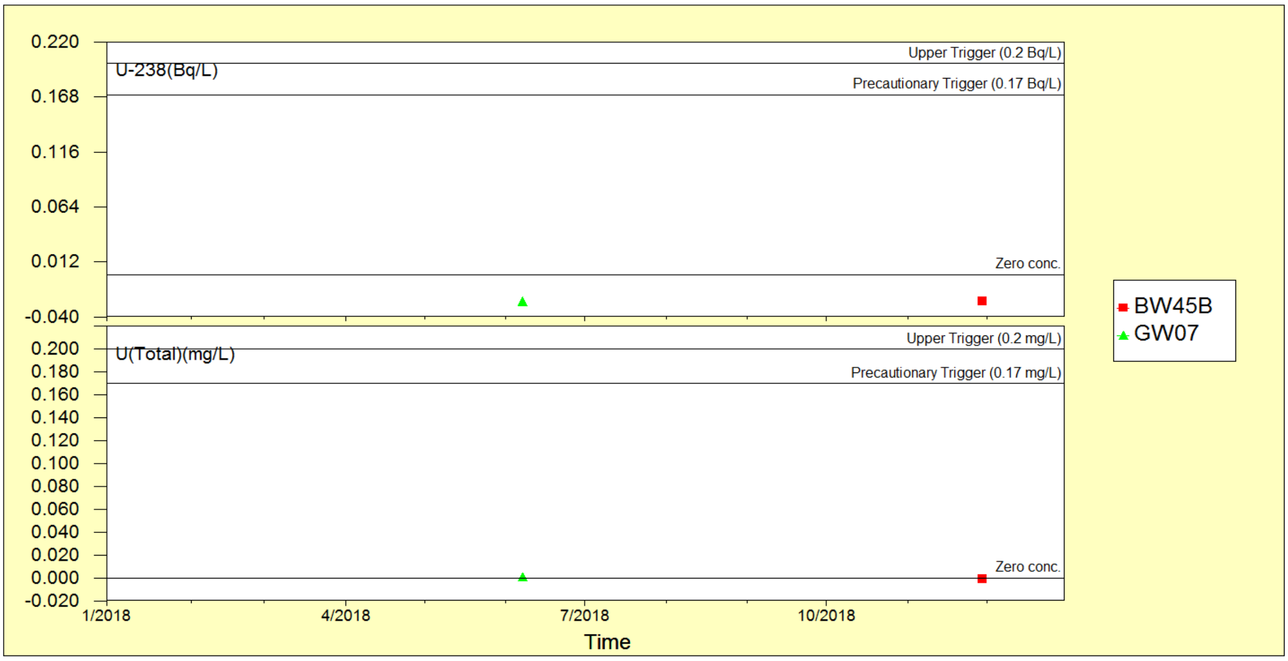


Figure 10: Uranium and U-238 – cross-gradient monitoring bores (2018 period)

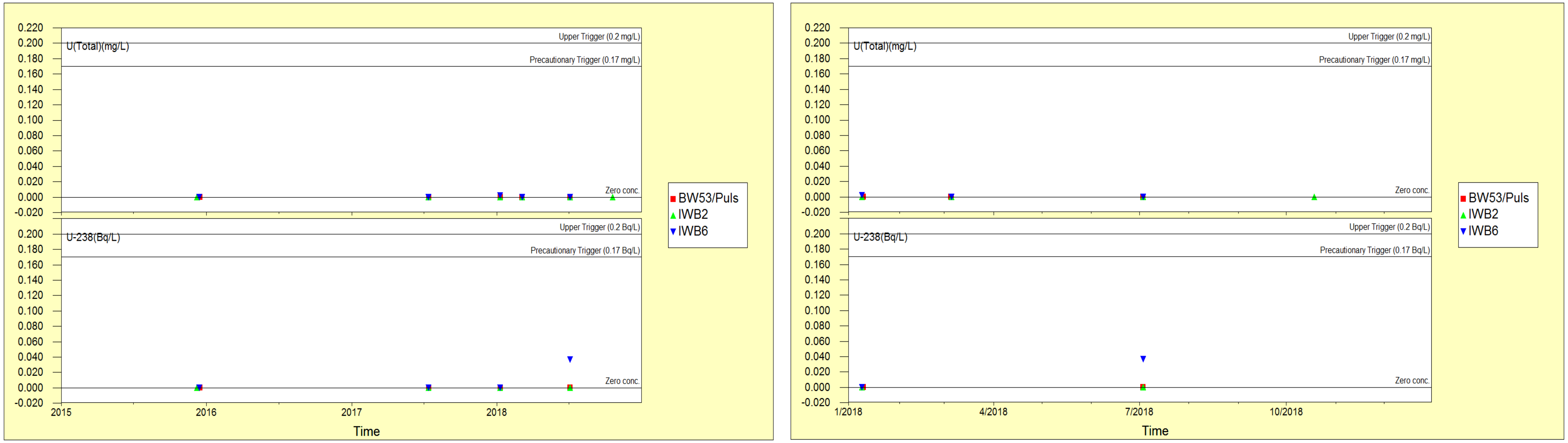


Figure 11: Uranium and U-238 – background monitoring bores

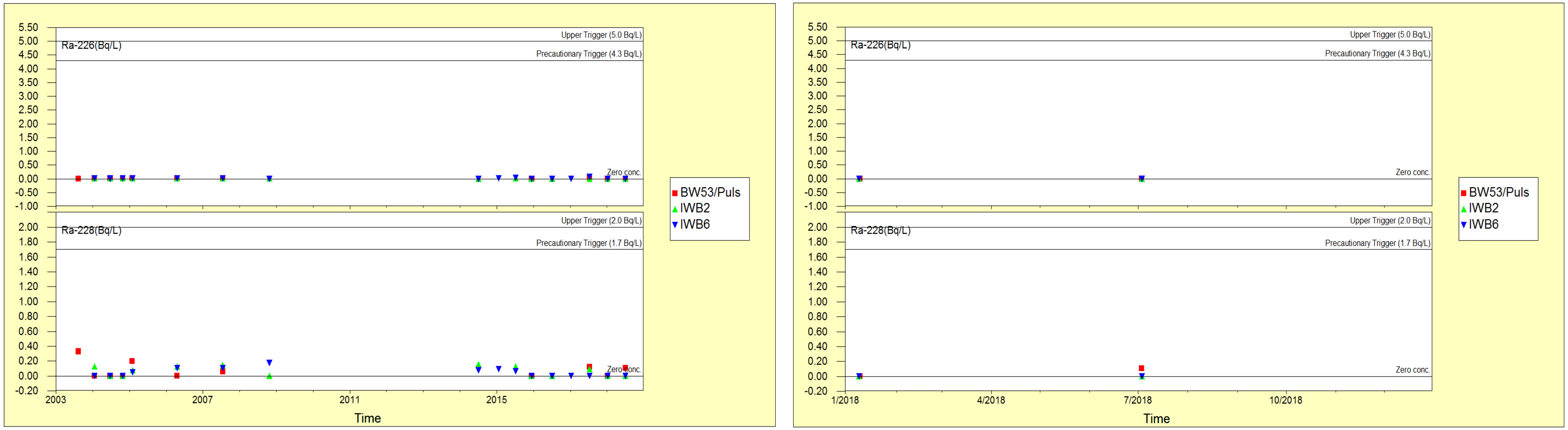
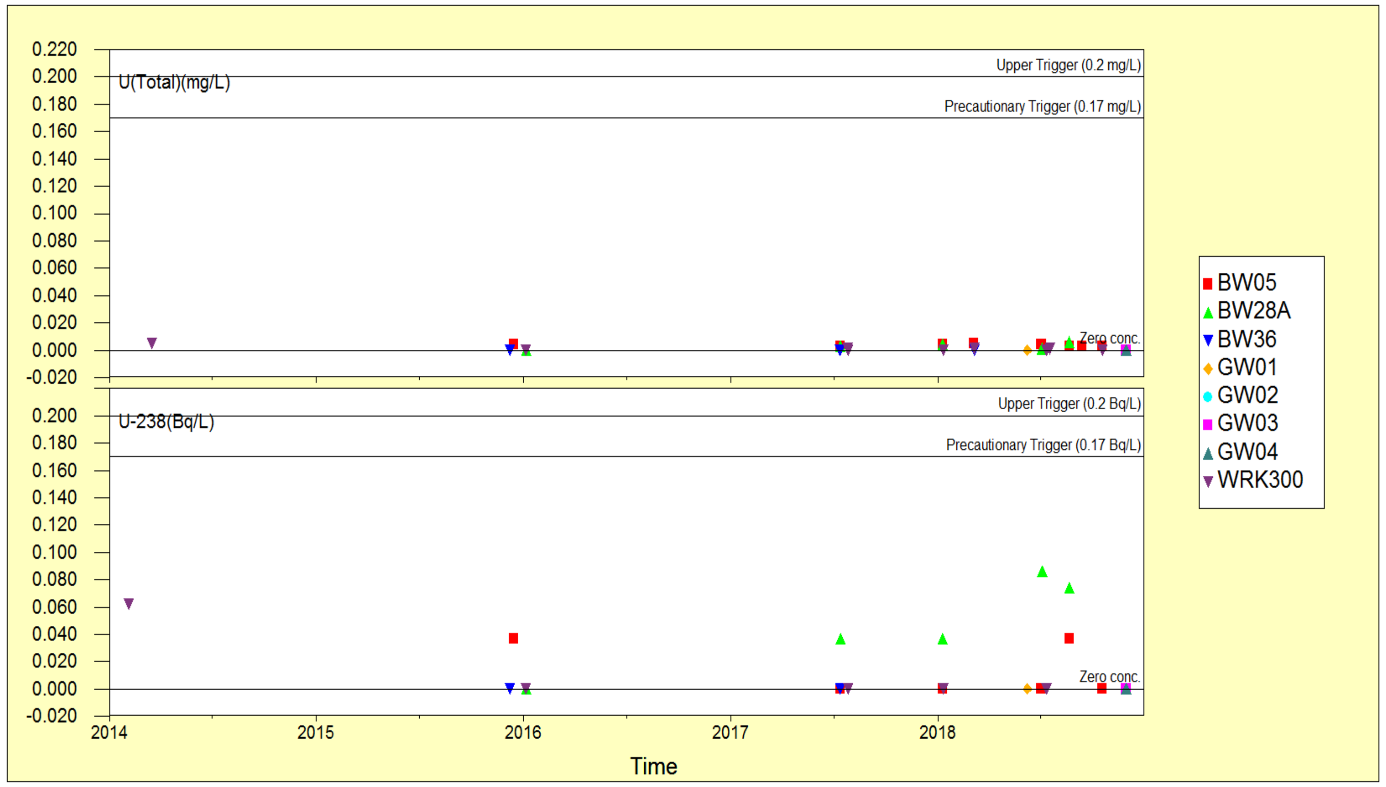


Figure 12: Ra-226 and Ra-228 – background monitoring bores



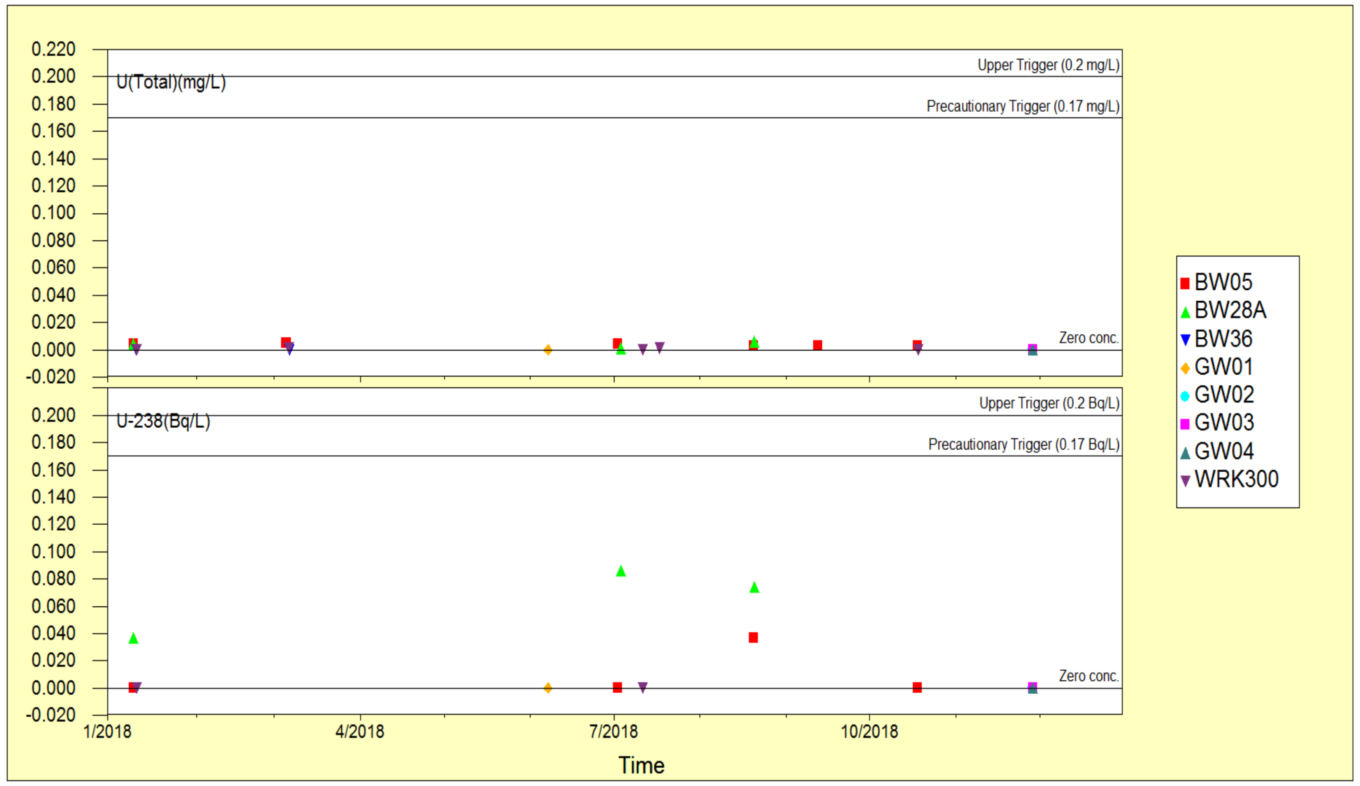
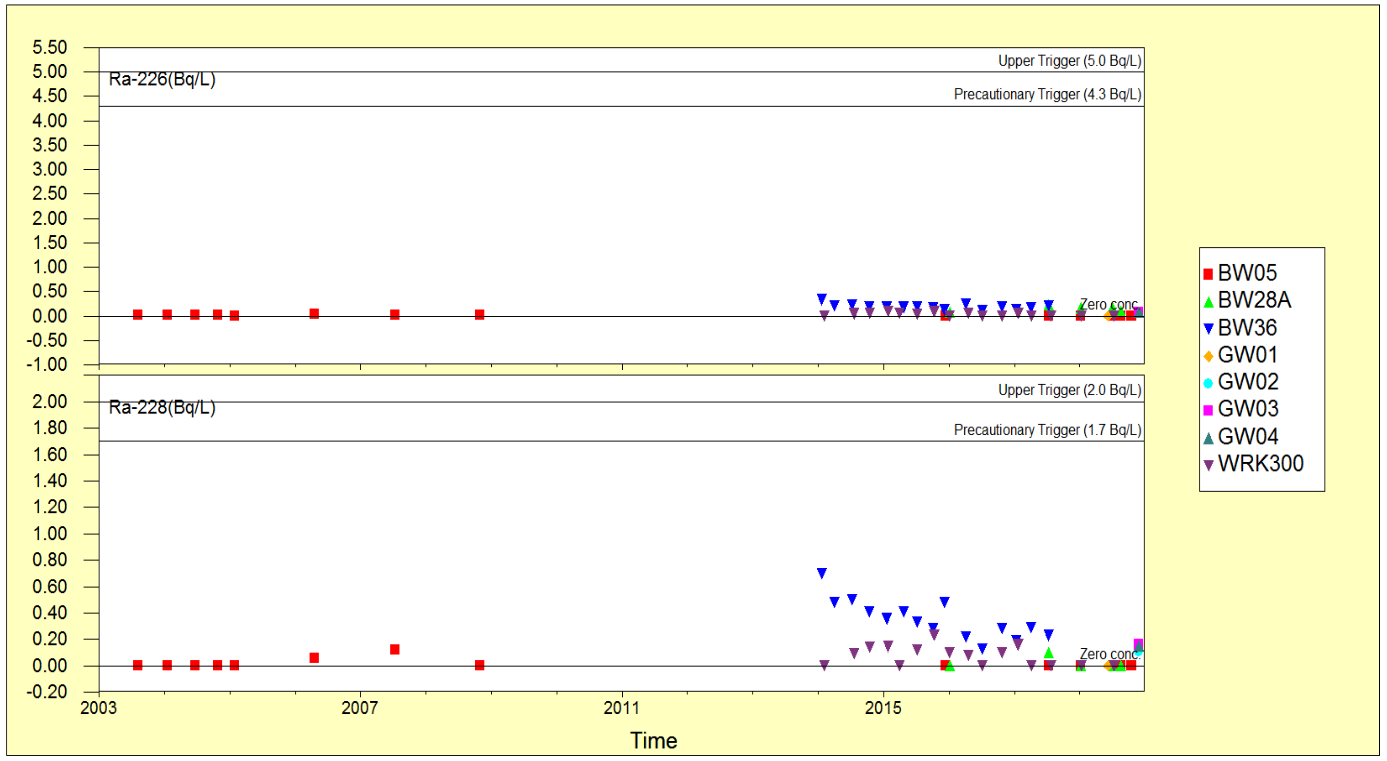


Figure 13: Uranium and U-238 – monitoring bores along predicted flow path



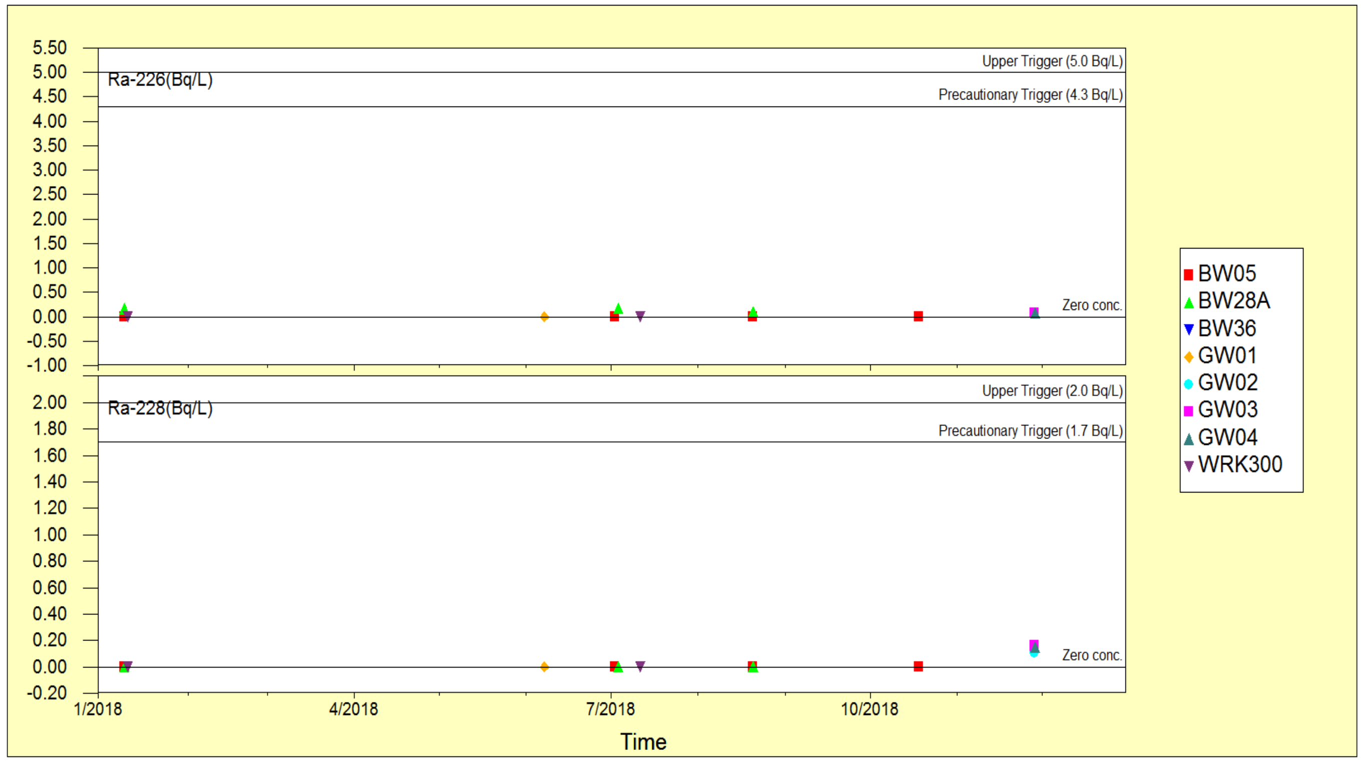
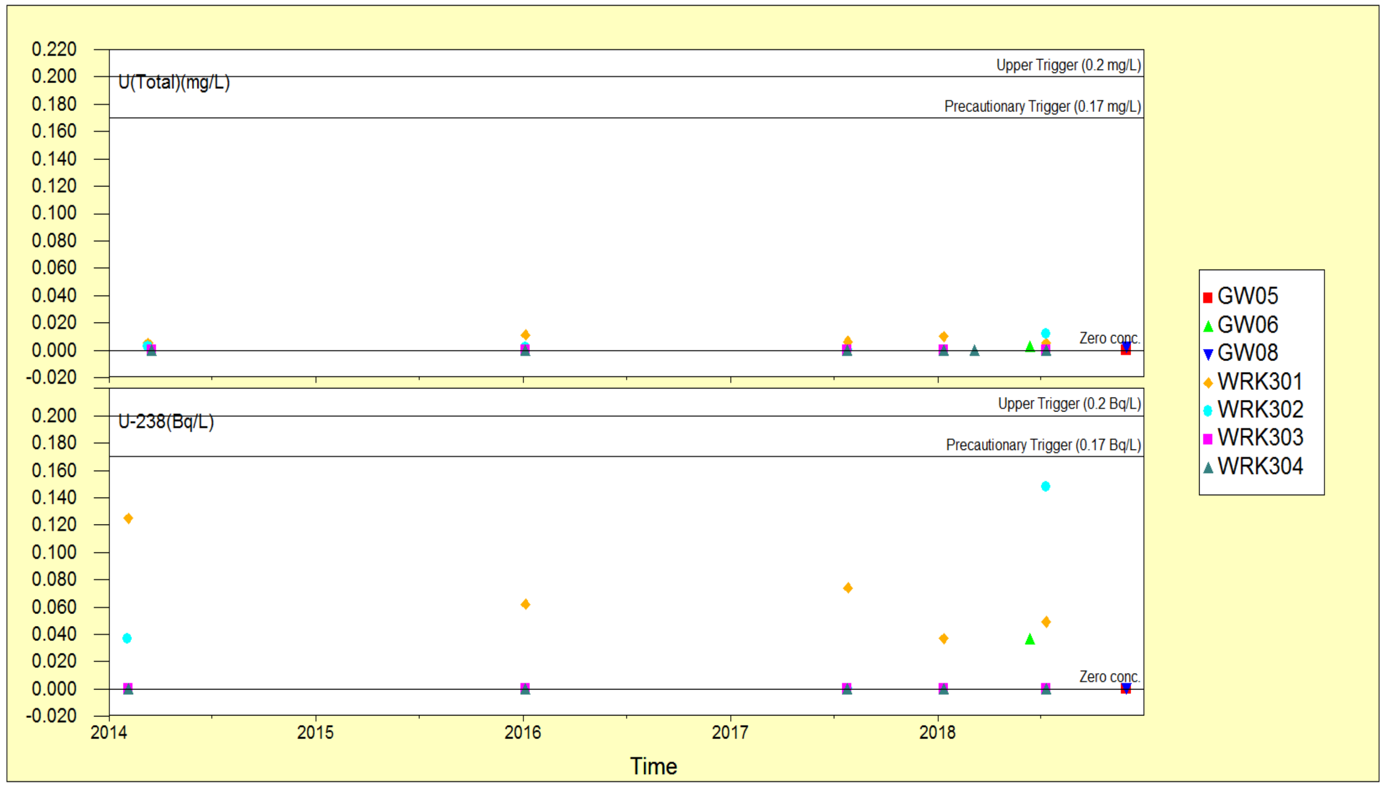


Figure 14: Ra-226 and Ra-228 – monitoring bores along predicted flow path



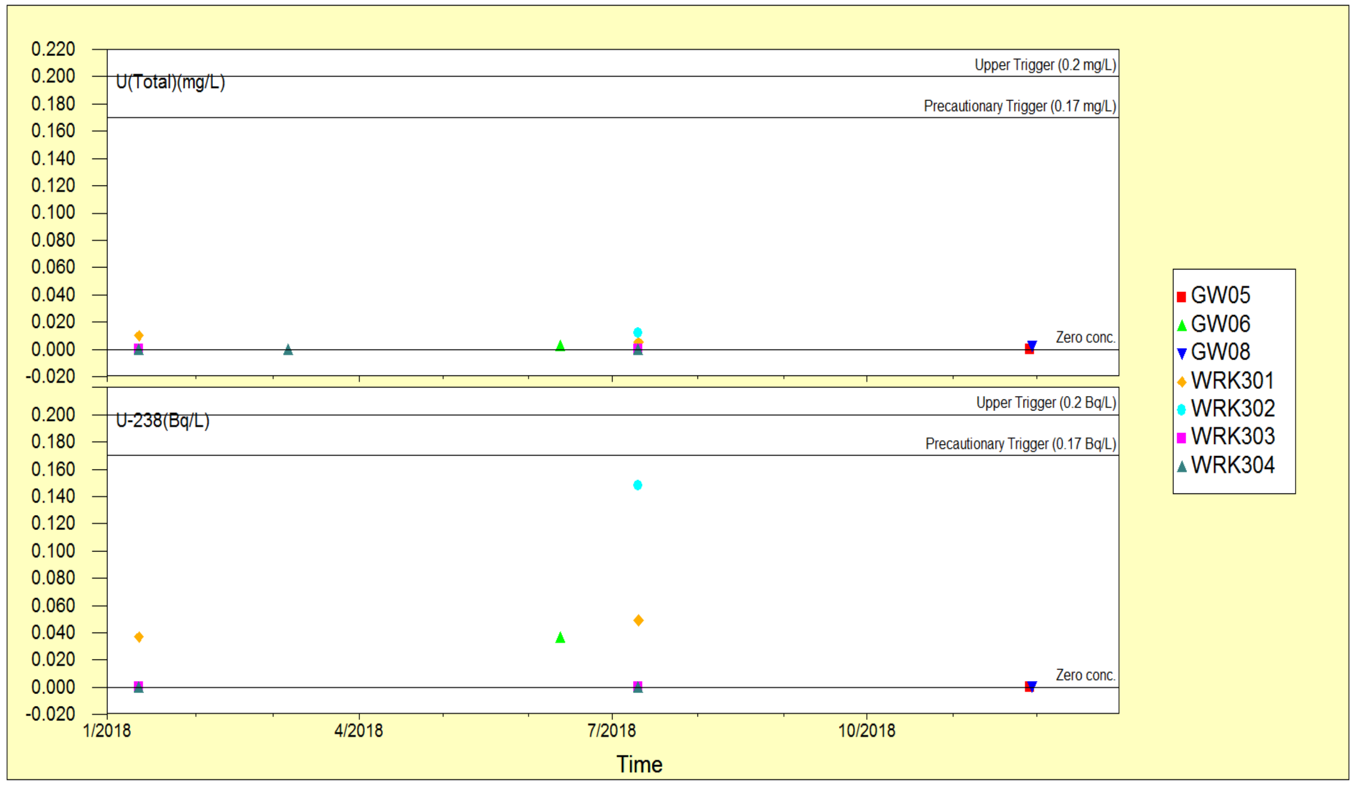
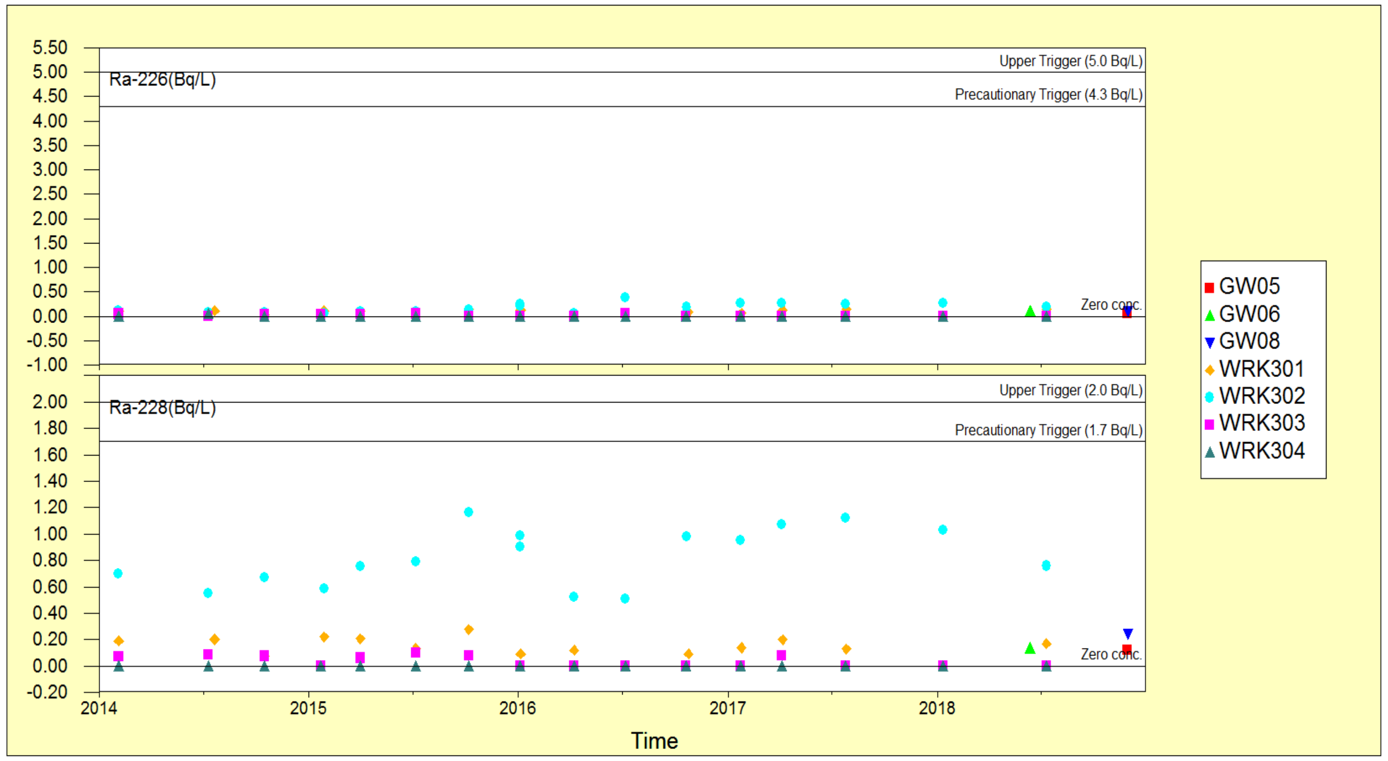


Figure 15: Uranium and U-238 – up-gradient monitoring bores



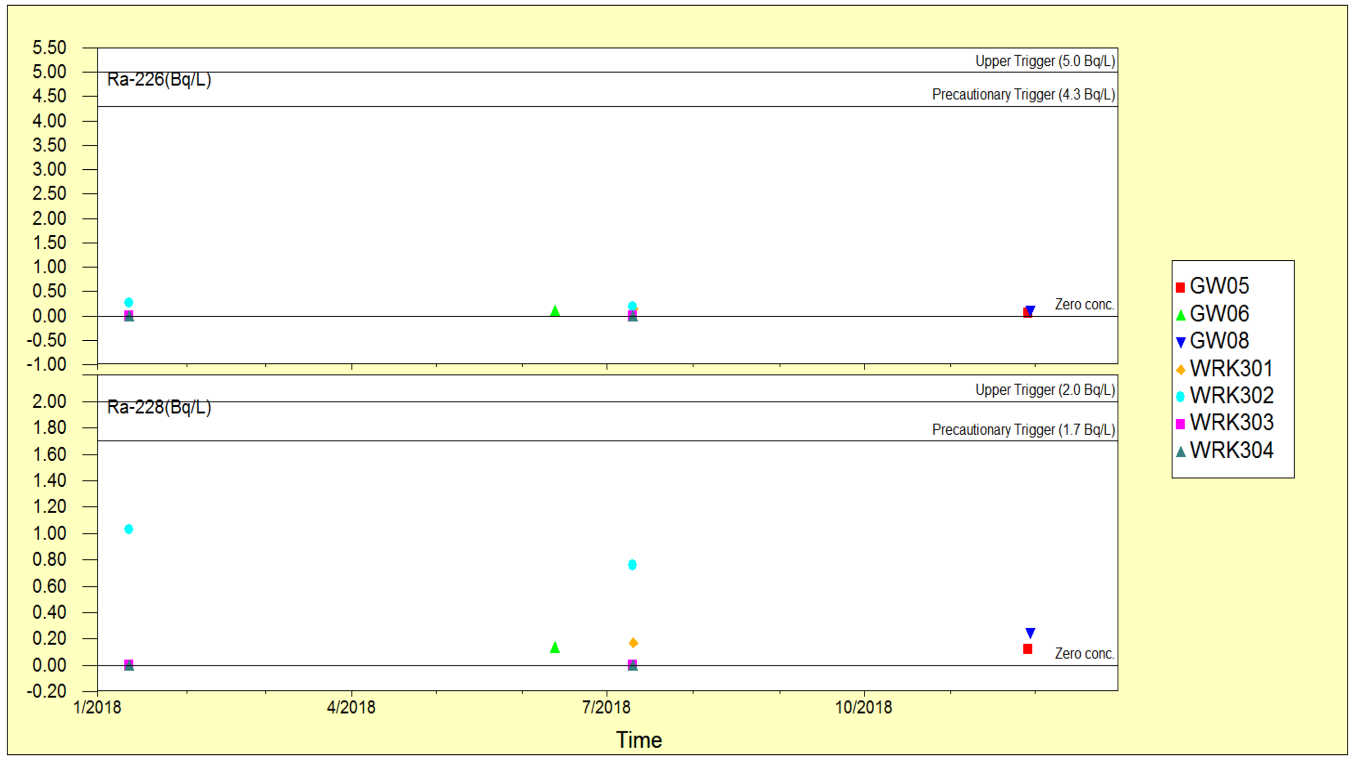


Figure 16: Ra-226 and Ra-228 – up-gradient monitoring bores

4.3.4 Radionuclide concentrations in surface water

Section 7.9.1 of the EMP prescribes the locations for surface water monitoring and the monitoring frequency, as summarised in Table 7. These locations are subject to sampling and laboratory analysis for radionuclides (thorium, uranium, radium-226, radium-228 and uranium-238).

Radionuclide monitoring results for the reporting period are presented in Figure 17 and Figure 18. The corresponding monitoring data for radionuclides in surface water is provided in **Appendix A**. Note that for concentrations reported as below the laboratory limit of reporting / limit of detection (as indicated by "<") the numerical value is treated as a negative concentration to enable graphical representation in order to validate that sampling for that analyte was undertaken.

The monitoring results for radionuclides in surface water obtained during the reporting period confirm nil exceedances of any precautionary or upper trigger level. Further, no off-site discharges from the confines of Pit 23 or immediate area occurred.

Note that long-term data for these surface water points is available and the data presented in Figure 17 and Figure 18 represents all current data for these points.

Table 7: Monitoring program – radionuclide concentrations in surface water

Surface water monitoring locations	Frequency
SW14 – Costello's Creek SW5b – White Lake SW24 – McGlashin's Swamp SW20 – North-west drainage line SW22 – Southern Drainage Line	• Quarterly; or • During or following an off-site discharge event (creek and drainage lines only)

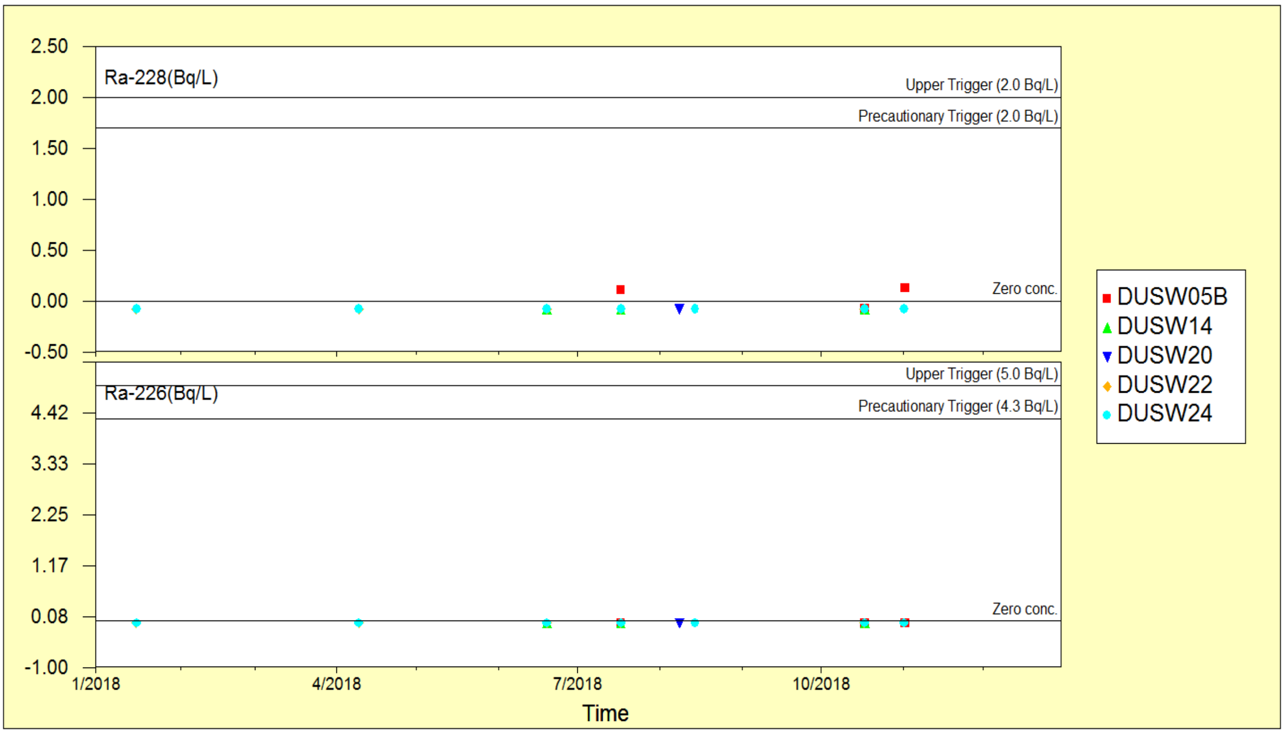


Figure 17: Ra-226 and Ra-228 in surface water

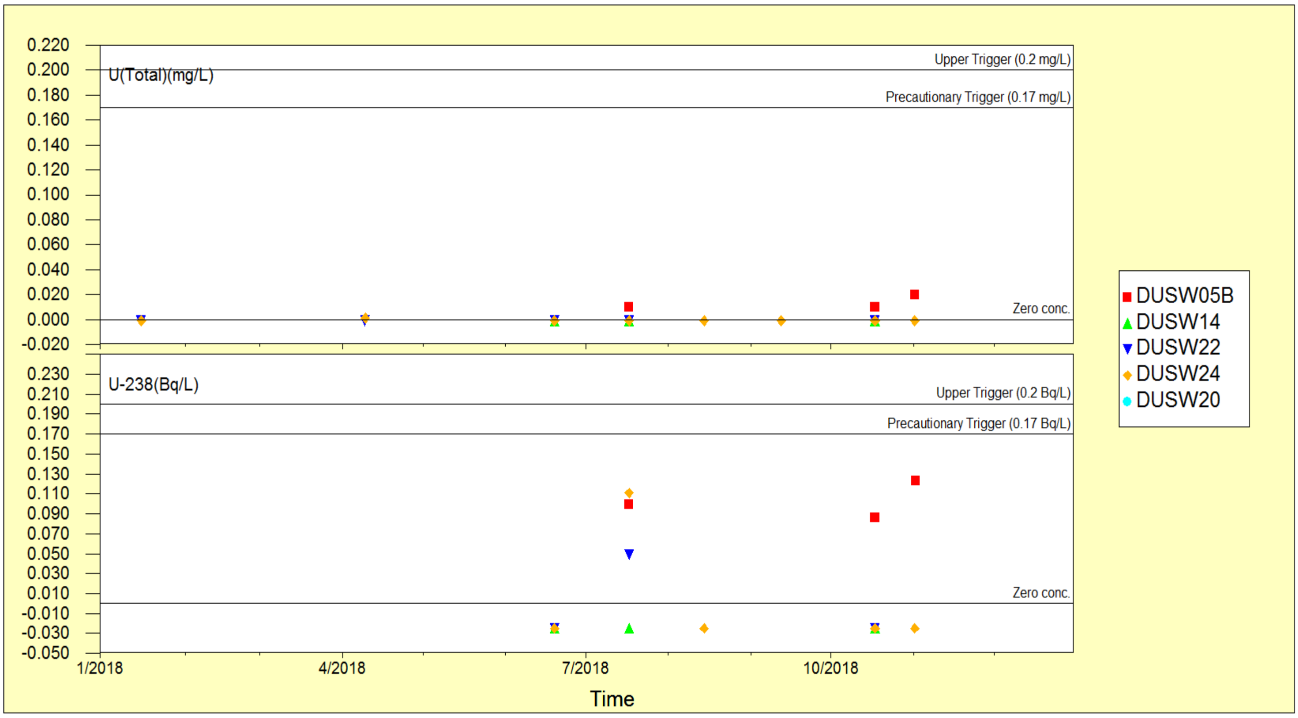


Figure 18: Uranium and U-238 in surface water

4.4 Groundwater levels

4.4.1 Bore network augmentation

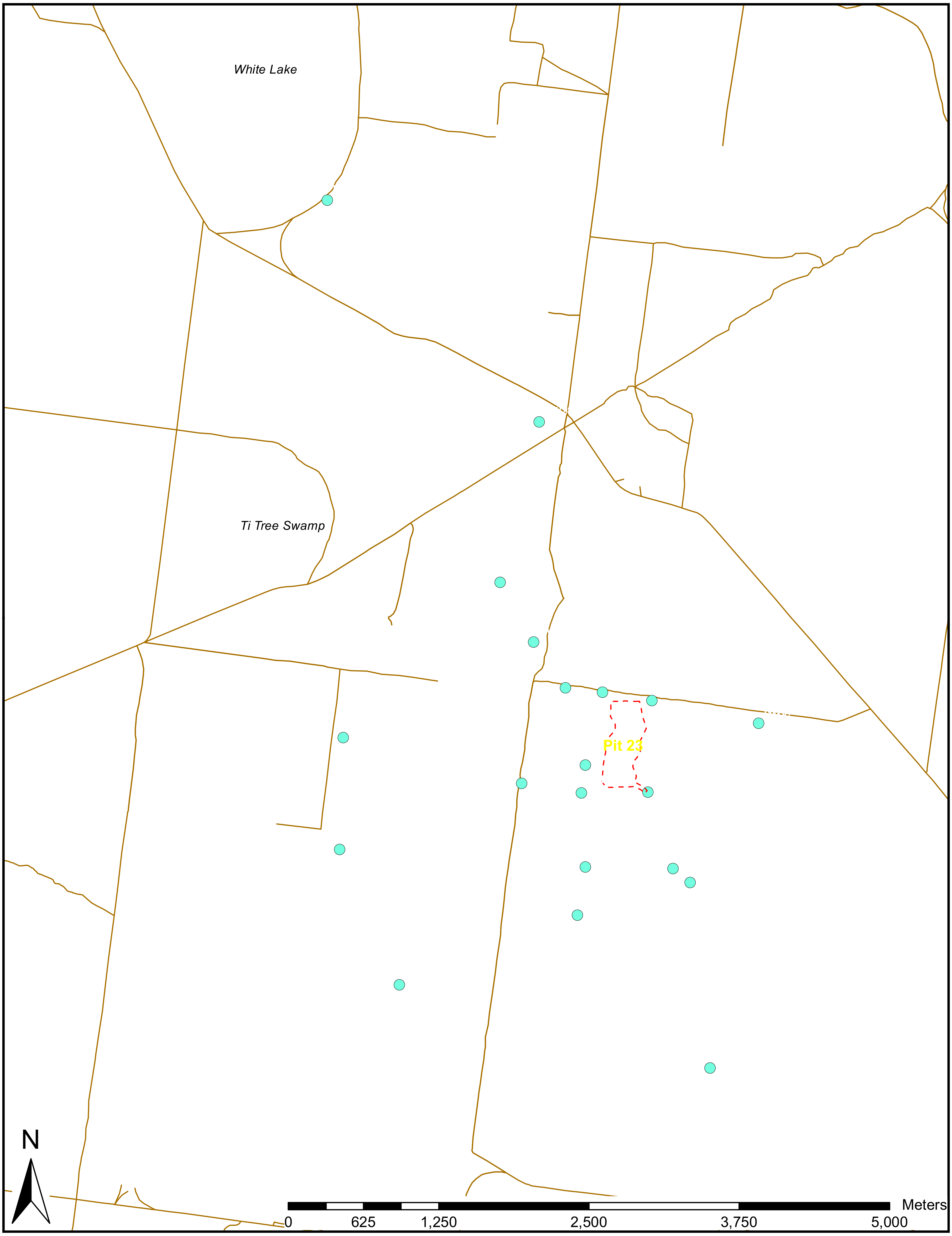
As indicated in the current endorsed Pit 23 EMP (*Table 7 – Pit 23 monitoring bore network*) several new and replacement groundwater bores were scheduled for installation in 2018. All new and replacement bores were installed in May and October 2018, per Table 8 below. A map of the updated Pit 23 groundwater bore network is given in Figure 19.

Consistent with Section 7.6.3 of the EMP all new groundwater bores were authorised through a '*Licence to Construct Works*' (Works Licences WLE071083 and WLE072073) issued by GWM Water. All bores were installed by a licensed driller (Sims Drilling, Victorian Drillers Licence No. 895) under the supervision of consultant hydrogeologists from Jacobs Consulting.

Table 8: Updated Pit 23 monitoring bore list (as at December 2018)

Well ID	Position	Comment
WRK300	In predicted flow path	
WRK301	Up-gradient of Pit 23	
WRK302	Up-gradient of Pit 23	
WRK303	Up-gradient of Pit 23	
WRK304	Up-gradient of Pit 23	
GW01	In predicted flow path	Installed 23/5/18
GW02	In predicted flow path	Installed 17/10/18
GW03	In predicted flow path	Installed 17/10/18
GW04	In predicted flow path	Installed 18/10/18
GW05	Up-gradient of Pit 23	Installed 17/10/18
GW06	Up-gradient of Pit 23	Installed 23/5/18
GW07	Cross-gradient (East)	Installed 23/5/18 - replaces BW29

Well ID	Position	Comment
GW08	Up-gradient of Pit 23	Installed 18/10/18
BW5	In predicted flow path	
BW28A	In predicted flow path	
BW36	In predicted flow path	
BW45	Cross-gradient (West)	Replaced by BW45B
BW45A	Cross-gradient (West)	Did not intersect aquifer – re-drilled as BW45B
BW45B	Cross-gradient (West)	Installed 18/10/18 – replaces BW45
BW53	Representative of background	
IWB2	Representative of background	
IWB6	Representative of background	



Pit 23
Pit 23 Groundwater Bore Network

Iluka Resources Ltd - Pit 23
Groundwater Bore Network (as at 31/12/18)

ILUKA

L:\Maps\2019\Unregistered\Douglas\Pit 23

DRAWN: N. Travers

DATE: 11-04-2019

FIGURE: 19

4.4.2 Standing water levels

In accordance with Section 7.9.1 of the EMP, groundwater levels are measured on a monthly basis at bores WRK300 – WRK304 inclusive, GW01 to GW08 inclusive, BW36 and BW45B (replaces BW45). All other bores (BW5, BW28A, BW52, IWB2 and IWB6) are measured on a six-monthly basis.

For purposes of reporting these groundwater bores are grouped based on their location relative to the predicted groundwater flow path from Pit 23, being:

- in the flow path;
- up-gradient of the flow path;
- cross-gradient to the flow path (i.e. adjacent to but not influenced by the flow path); and
- nearby bores not on the flow path representative of background conditions.

Groundwater level hydrographs for these bores expressed in groundwater elevation (metres above Australian Height, mAHD) are given in Figure 20, Figure 21, Figure 22 and Table 9 below.

All bores along the predicted flow path (Figure 20) exhibit stable standing water levels in the preceding 24-month period and in comparison to long-term trends; bores up-gradient of Pit 23 exhibit relatively stable water levels with minor fluctuation in levels.

Table 9: Monitoring Bores - Standing water Levels (mAHD)

Well Id	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18
WRK300	174.93	174.92	174.94	174.91	174.96	174.91	174.97	175.02	174.98	174.96	175.01	174.99
WRK301	178.28	178.23	178.27	178.22	178.26	178.21	178.27	178.28	178.29	178.26	178.29	178.27
WRK302	176.19	176.17	176.14	176.17	176.15	176.07	176.07	176.15	176.05	176.1	176.48	176.14
WRK303	179.87	179.89	179.85	179.87	179.9	179.84	179.69	179.8	179.9	179.82	179.75	179.84
WRK304	180.04	180.43	180.36	180.19	180.15	180.42	180.26	180.23	180.34	179.45	180.37	180.42
GW01	installed May 2018					173.35	173.36	173.36	173.35	173.38	173.34	173.39
GW02	installed October 2018									170.88	170.77	170.8
GW03	installed October 2018									162.36	162.33	162.37
GW04	installed October 2018									178.32	178.34	178.33
GW05	installed October 2018									178.96	178.98	179
GW06	installed May 2018					175.91	175.95	176.03	176.00	176.05	176.01	175.99
GW07	installed May 2018					172.38	172.39	#	172.41	172.45	172.41	172.45
GW08	installed October 2018									177.61	177.59	177.64
BW5	147.87	*	147.68	*	*	*	147.8	147.97	147.98	147.93	*	*
BW28A	152.59	*	152.28	*	*	*	152.18	152.83	*	*	*	*
BW36	174.29	174.26	174.28	174.07	174.13	174.05	174.24	174.13	174.18	174.21	174.26	174.19
BW45A	installed May 2018					Dry	Dry	Dry	Dry	Dry	Dry	Dry
BW45B	installed October 2018									177.32	177.23	177.27
BW53	175.47	*	175.9	175.47	*	*	175.66	*	*	*	*	*
IWB2	179.23	*	179.3	179.28	*	*	179.32	*	*	179.35	*	*
IWB6	177.09	*	176.1	176.52	*	*	176.46	*	*	*	*	*

= Unable to access bore due to wet conditions

* = Monitoring required biannually

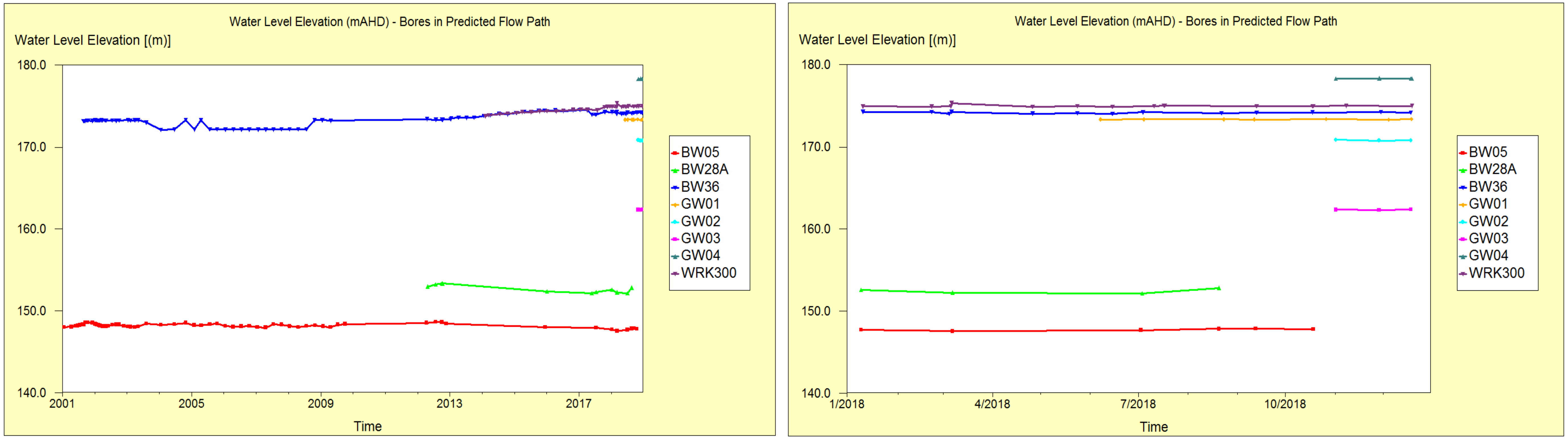


Figure 20: Groundwater elevation (mAHD) – bores in predicted flow path

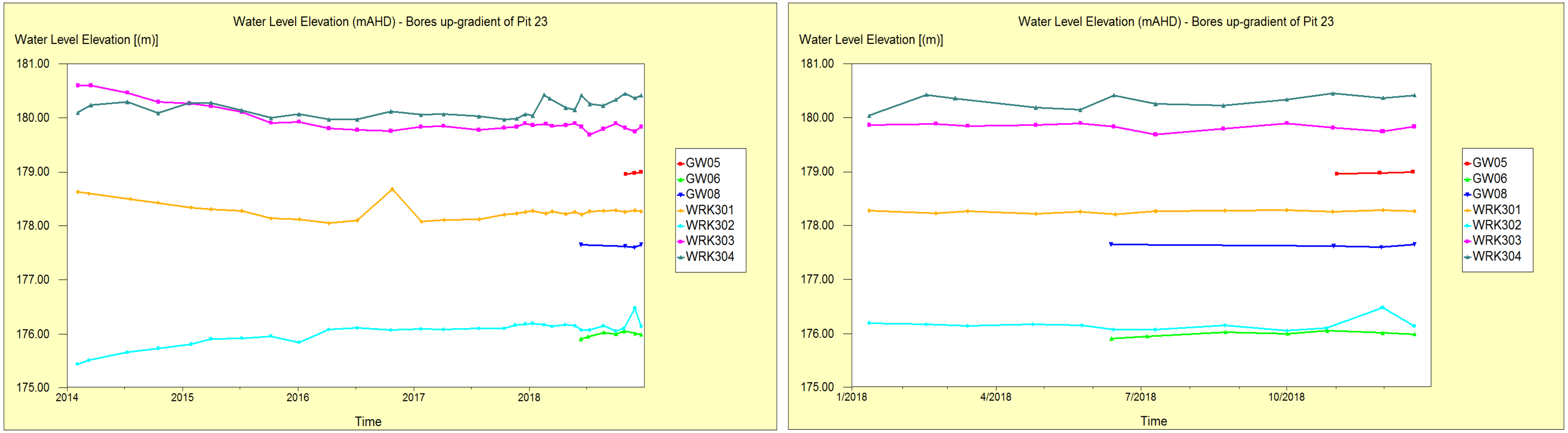
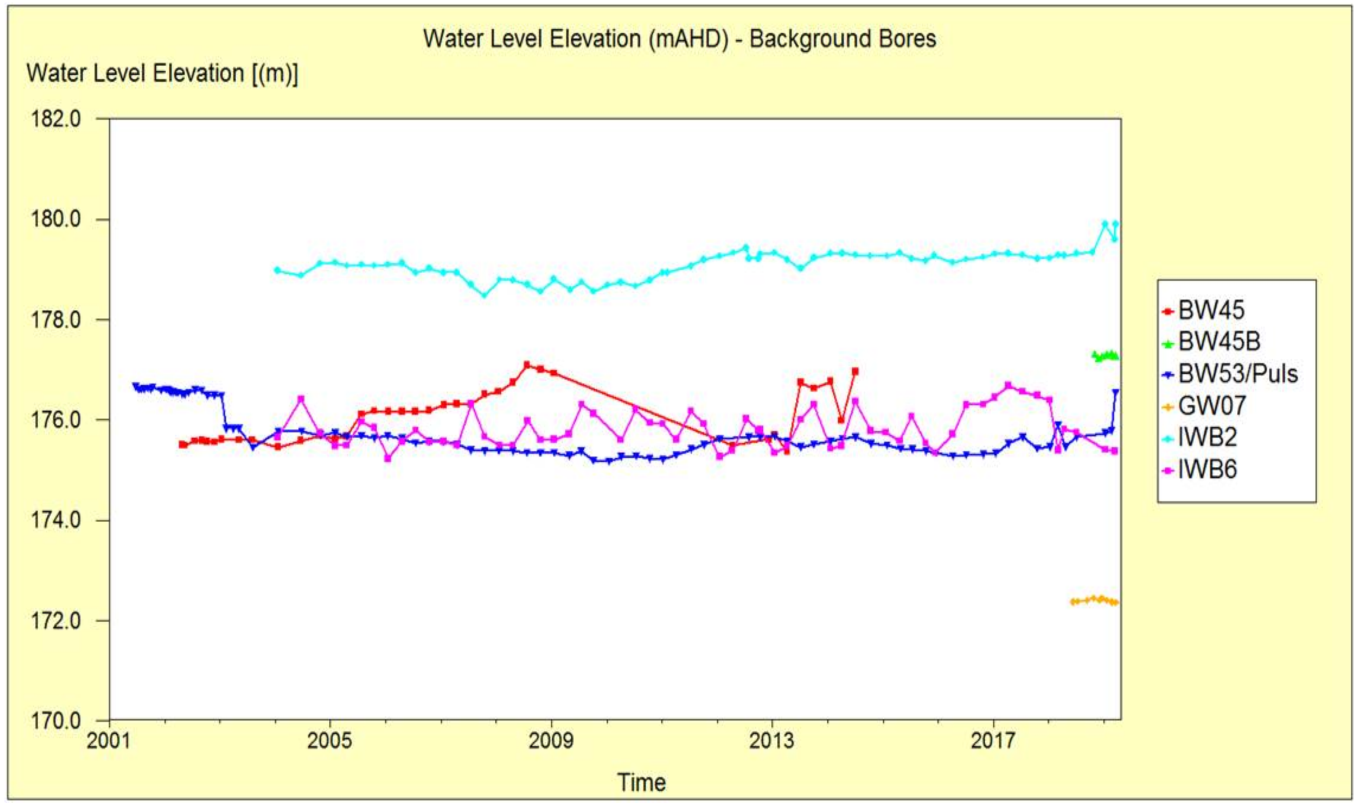


Figure 21: Groundwater elevation (mAHD) – bores up-gradient of Pit 23



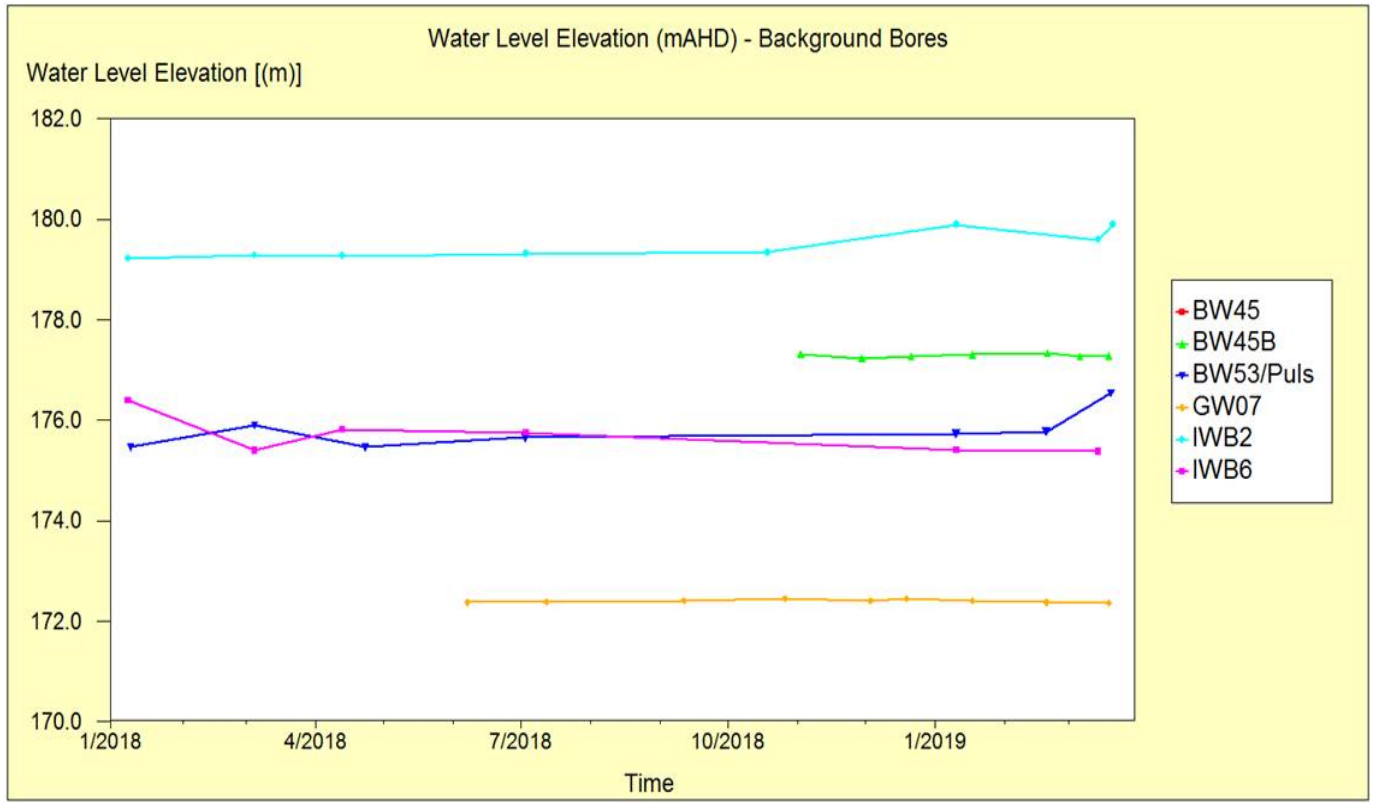


Figure 22: Groundwater elevation (mAHD) – cross-gradient and background bores

4.5 Groundwater quality

In accordance with Section 7.6.7 of the EMP, biannual groundwater samples obtained from the monitoring locations are subjected to in-field and laboratory analysis for a suite of target parameters.

Assessment of potential Pit 23 seepage and expression into groundwater is based on an analysis of chloride/sulphate and sodium/calcium ratios obtained from biannual monitoring, with a reduction in either ratio by more than 10% applied as a potential indicator of Pit 23 seepage and expression in groundwater. Ionic balance ratio results for nominated groundwater monitoring locations during the reporting period are given in Table 10. Results confirm that no consecutive >10% reduction in any ionic balance ratio occurred at any stage in the 2018 reporting period.

Table 10: Groundwater monitoring locations – ionic ratio balance results

Sample Point	Date	Chloride (mg/L)	Sulfate (mg/L)	Chloride/ Sulphate	Reduction in ratio	Confirmed repeated exceedence	Sodium (mg/L)	Calcium (mg/L)	Sodium/ Calcium	Reduction in ratio	Confirmed repeated exceedence
DG_A_LPZ_BW28A	13/07/2017	6300	850	7.41			3300	470	7.021		
DG_A_LPZ_BW28A	9/01/2018	6800	940	7.23	2%		3700	490	7.55	-8%	
DG_A_LPZ_BW28A	3/07/2018	7200	920	7.83	-8%		3500	530	6.60	13%	
DG_A_LPZ_BW28A	20/08/2018	7200	870	8.28	-6%		3600	510	7.06	-7%	No
DG_A_LPZ_BW36	12/07/2017	2200	420	5.24			1300	74	17.57		
DG_A_LPZ_BW36	10/01/2018	2000	360	5.56	-6%		1200	82	14.63	17%	
DG_A_LPZ_BW36	6/03/2018	1900	360	5.28	5%		1100	61	18.03	-23%	No
DG_A_LPZ_BW36	**blocked**										
DG_A_LPZ_BW5	13/07/2017	7000	960	7.29			4200	210	20.00		
DG_A_LPZ_BW5	9/01/2018	7800	870	8.97	-23%		4600	270	17.04	15%	
DG_A_LPZ_BW5	5/03/2018	7500	940	7.98	11%		4600	260	17.69	-4%	No
DG_A_LPZ_BW5	2/07/2018	9100	870	10.46	-31%	No	5000	210	23.81	-35%	
DG_A_LPZ_BW5	20/08/2018	9000	760	11.84	-13%		5200	290	17.93	25%	
DG_A_LPZ_BW5	12/09/2018	9000	960	9.38	21%		5200	270	19.26	-7%	No
DG_A_LPZ_BW5	18/10/2018	8800	800	11.00	-17%	No	4900	260	18.85	2%	
DG_A_LPZ_BW53/PU	13/07/2017	200	130	1.54			180	10	18.00		
DG_A_LPZ_BW53	9/01/2018	360	150	2.40	-56%		240	42	5.71	68%	
DG_A_LPZ_BW53	5/03/2018	500	190	2.63	-10%		350	39	8.97	-57%	No
DG_A_LPZ_BW53	3/07/2018	790	270	2.93	-11%		530	34	15.59	-74%	
DG_A_LPZ_IWB2	12/07/2017	1300	150	8.67			670	10	67.00		
DG_A_LPZ_IWB2	8/01/2018	1200	150	8.00	8%		680	12	56.67	15%	
DG_A_LPZ_IWB2	5/03/2018	1200	140	8.57	-7%		640	11	58.18	-3%	No
DG_A_LPZ_IWB2	3/07/2018	1200	160	7.50	13%		710	11	64.55	-11%	
DG_A_LPZ_IWB2	18/10/2018	1200	160	7.50	0%	No	670	11	60.91	6%	
DG_A_LPZ_IWB6	12/07/2017	360	200	1.80			290	5.8	50.00		
DG_A_LPZ_IWB6	8/01/2018	360	200	1.80	0%		310	7.3	42.47	15%	
DG_A_LPZ_IWB6	5/03/2018	330	190	1.74	4%		300	6.7	44.78	-5%	No
DG_A_LPZ_IWB6	3/07/2018	350	200	1.75	-1%		300	6.7	44.78	0%	
DG_A_LPZ_WRK300	26/07/2017	1800	320	5.63			1000	130	7.69		
DG_A_LPZ_WRK300	10/01/2018	1700	320	5.31	6%		1000	150	6.67	13%	
DG_A_LPZ_WRK300	6/03/2018	1700	330	5.15	3%		920	130	7.08	-6%	No
DG_A_LPZ_WRK300	17/07/2018	1600	290	5.52	-7%		880	140	6.29	11%	
DG_A_LPZ_WRK300	18/10/2018	1700	310	5.48	1%		910	130	7.00	-11%	No
DG_A_LPZ_WRK301	26/07/2017	3100	640	4.84			1600	240	6.67		
DG_A_LPZ_WRK301	11/01/2018	3100	650	4.77	2%		1700	250	6.80	-2%	
DG_A_LPZ_WRK301	10/07/2018	3100	480	6.46	-35%		1700	260	6.54	4%	
DG_A_LPZ_WRK302	25/07/2017	6700	1400	4.79			3300	470	7.02		
DG_A_LPZ_WRK302	11/01/2018	6500	1500	4.33	9%		3500	480	7.29	-4%	
DG_A_LPZ_WRK302	10/07/2018	6500	1300	5.00	-15%		3500	520	6.73	8%	
DG_A_LPZ_WRK303	25/07/2017	2100	570	3.68			1200	93	12.90		
DG_A_LPZ_WRK303	11/01/2018	2100	550	3.82	-4%		1300	97	13.40	-4%	
DG_A_LPZ_WRK303	10/07/2018	2400	570	4.21	-10%		1400	110	12.73	5%	
DG_A_LPZ_WRK304	25/07/2017	2000	500	4.00			1200	81	14.81		
DG_A_LPZ_WRK304	11/01/2018	2200	660	3.33	17%		1500	100	15.00	-1%	
DG_A_LPZ_WRK304	6/03/2018	2100	610	3.44	-3%	No	1300	89	14.61	3%	
DG_A_LPZ_WRK304	10/07/2018	2200	640	3.44	0%		1400	93	15.05	-3%	
DG_A_LPZ_GW1	7/06/2018	930	110	8.45			490	82	5.98		
DG_A_LPZ_GW6	12/06/2018	6600	1500	4.40			3400	660	5.15		
DG_A_LPZ_GW7	7/06/2018	5500	890	6.18			3000	460	6.52		
DG_A_LPZ_GW8	29/11/2018	5300	1100	4.82			2800	390	7.18		
DG_A_LPZ_GW2	28/11/2018	2100	410	5.12			1300	38	34.21		
DG_A_LPZ_GW3	28/11/2018	2900	510	5.69			1800	190	9.47		
DG_A_LPZ_GW4	28/11/2018	2700	690	3.91			1700	120	14.17		
DG_A_LPZ_GW5	28/11/2018	3100	560	5.54			1800	170	10.59		
DG_A_LPZ_BW45B	29/11/2018	4800	840	5.71			2500	290	8.62		

Full groundwater quality monitoring data (laboratory and field data) for the reporting period for all parameters monitored is provided in **Appendix B** and **Appendix C** of this report, respectively.

4.6 Surface water quality

4.6.1 Surface water potentially impacted by runoff from disturbed areas

In accordance with Section 8.7.1 of the EMP, surface water samples must be obtained from nominated surface water monitoring points if a discharge of run-off from the disturbed area of Pit 23 and surrounds occurs.

No discharges occurred during the reporting period and subsequently no follow-up monitoring was required.

4.6.2 Surface water potentially impacted by groundwater

In accordance with Section 8.7.2 of the EMP, quarterly surface water samples obtained from the nominated monitoring points are subjected to laboratory analysis for a suite of target parameters to identify the potential expression of Pit 23 groundwater seepage into surface waters.

Assessment of potential Pit 23 seepage and expression into surface waters is based on an analysis of chloride/sulphate and sodium/calcium ratios obtained from quarterly monitoring, with a consecutive reduction in either ratio by more than 10% applied as potential indicator of Pit 23 seepage and expression at surface.

The analysis of quarterly ionic ratio results for nominated surface water monitoring locations during the reporting period are given in Table 11.

Full surface water quality monitoring data for the reporting period for all parameters monitored (laboratory and field results) is provided in **Appendix D** and Appendix E of this report.

Table 11: Surface water monitoring locations - ionic ratio balance results

Sample Point	Sample Date	Chloride (mg/L)	Sulfate (mg/L)	Chloride/ Sulphate	Reduction in ratio	Confirmed repeated exceedence	Sodium (mg/L)	Calcium (mg/L)	Sodium/Calcium	Reduction in ratio	Confirmed repeated exceedence
DG_A_I_SW_DUSW5B	15/01/2018	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
DG_A_I_SW_DUSW5B	19/06/2018	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
DG_A_I_SW_DUSW5B	17/07/2018	100000	7000	14.29	-69%		59000	1600	36.88	-124%	
DG_A_I_SW_DUSW5B	17/10/2018	120000	9700	12.37	13%		65000	2000	32.50	12%	
DG_A_I_SW_DUSW5B	1/11/2018	170000	9400	18.09	-46%	No	100000	1200	83.33	-156%	No
DG_A_I_SW_DUSW5B	8/01/2019	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
DG_A_I_SW_DUSW14	15/01/2018	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
DG_A_I_SW_DUSW14	19/06/2018	1800	310	5.81	-8%		1100	67	16.42	5%	
DG_A_I_SW_DUSW14	17/07/2018	1800	330	5.45	6%		1200	58	20.69	-26%	
DG_A_I_SW_DUSW14	17/10/2018	1600	280	5.71	-5%		1000	50	20.00	3%	
DG_A_I_SW_DUSW14	8/01/2019	2400	350	6.86	-20%		1400	50	28.00	-40%	
DG_A_I_SW_DUSW20	15/01/2018	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
DG_A_I_SW_DUSW20	19/06/2018	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
DG_A_I_SW_DUSW20	17/07/2018	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
DG_A_I_SW_DUSW20	8/08/2018	1100	200	5.50	25%		660	52	12.69	-43%	
DG_A_I_SW_DUSW20	12/09/2018	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
DG_A_I_SW_DUSW20	17/10/2018	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
DG_A_I_SW_DUSW20	8/01/2019	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
DG_A_I_SW_DUSW22	15/01/2018	470	17	27.65	-193%		240	27	8.89	4%	
DG_A_I_SW_DUSW22	19/06/2018	3600	410	8.78	68%		1800	160	11.25	-27%	
DG_A_I_SW_DUSW22	17/07/2018	3200	330	9.70	-10%	No	1700	140	12.14	-8%	
DG_A_I_SW_DUSW22	17/10/2018	2800	280	10.00	-3%		1400	120	11.67	4%	
DG_A_I_SW_DUSW22	8/01/2019	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
DG_A_I_SW_DUSW24	15/01/2018	970	68	14.26	-24%		690	42	16.43	-215%	
DG_A_I_SW_DUSW24	19/06/2018	2100	57	36.84	-158%		1200	66	18.18	-11%	
DG_A_I_SW_DUSW24	17/07/2018	2100	69	30.43	17%		1300	65	20.00	-10%	
DG_A_I_SW_DUSW24	14/08/2018	1900	72	26.39	13%	Yes	1100	63	17.46	13%	
DG_A_I_SW_DUSW24	12/09/2018	2000	89	22.47	15%	Yes	1300	71	18.31	-5%	No
DG_A_I_SW_DUSW24	17/10/2018	2700	130	20.77	8%	No	1500	92	16.30	11%	
DG_A_I_SW_DUSW24	1/11/2018	3100	130	23.85	-15%		1800	100	18.00	-10%	No
DG_A_I_SW_DUSW24	8/01/2019	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY

Per Table 11, monitoring data for DUSW24 (McGlashin's Swamp) indicated a consecutive reduction in the chloride/sulphate ratio by >10% between the July and September 2018 monitoring results.

Follow up sampling and analysis in August and September, as required under the EMP, showed that the chloride/sulphate ratio at DUSW24 was still greater than the 10% ratio trigger.

Where consecutive results show a 10% reduction in the ionic balance at a nominated monitoring location, and may indicate potential seepage from Pit 23, the EMP requires that:

- *the timing of seepage from Pit 23 reaching the monitoring location will be compared with that predicted by the hydrogeological model and if there is variance of more than 10% the model will be recalibrated and the impact assessment re-examined.*
- *the full suite of analysis will be compared with trigger values, defined as follows:*
    - *Precautionary trigger value, set at 85% of the WoV SEPP objective or 85% of the background value, as defined below, whichever is the greater; and*
    - *Upper trigger value, set at the WoV SEPP objective or the background value, as defined below, whichever is the greater.*
- *If the average of the two results is greater than the precautionary trigger value, the following will occur:*
    - *Investigations to determine the cause of the indicated impact;*
    - *Increasing monitoring frequency in order to assess trends and understand processes occurring;*

   - *Possible analytical and/or numerical modelling to help determine the cause of impact.*

- *If the average of the two results is greater than the upper trigger value and exception report, as described in Section 12 of this document, will be prepared and submitted. The exception report will indicate a plan for remediation/prevention that may include any of all the following:*
   - *Further investigation of the cause, if not adequately understood;*
   - *Detailed impact assessment based on recalibrated models;*
   - *Development and implementation of strategies to prevent future unacceptable results or to mitigate any impacts, potentially including groundwater abstraction immediately adjacent and down-gradient of Pit 23; and*
   - *Reducing or ceasing the disposal of materials to Pit 23 until observations are stabilised and/or at acceptable levels if:*
      - *A change in the sodium/calcium or chloride/sulphate ratios is detected;*
      - *The change is found to due to seepage from Pit 23; and*
      - *The elevated result is assessed to be resulting in an unacceptable impact.*

Consistent with the above process, the following was identified:

- the hydrogeological model developed by CDM Smith (2015) predicted seepage from Pit 23 to reach McGlashin's Swamp (DUSW24) in the year 2160, or at least 143 years later than potentially indicated by the above chloride/sulphate results (less than 2 years).
- with respect to full-suite water quality analysis undertaken for sampling point DUSW24 (see Table 12 to Table 16 and **Appendix D**) the following are noted:
   - sufficient data was available to determine background concentrations for these indicators, which are determined as the 75th percentile value based on the mean and standard deviation of the available data. For DUSW24, these 75th percentile (background) values are higher than the standard SEPP WoV objectives, and therefore apply as the upper trigger (background) values for the following step;
   - comparison of the average of the two samples obtained within the reporting period (17/7/18 & 14/8/18 and 14/8/18 & 12/9/18) against the 85th percentile precautionary trigger levels and 75th percentile upper limit for DUSW24 indicated an exceedance of the precautionary trigger values for pH, Total Nitrogen, Boron, Copper and Electrical Conductivity and an exceedance of the upper limits for pH and Total Nitrogen (14/8/18 and 12/9/18 only). Per the EMP, where this occurs:
      - investigation is required to determine the cause of the indicated impact;
      - the monitoring frequency shall be increased to assess trends and understand the processes occurring; and
      - consideration given to analytical and/or numerical modelling to help determine cause of impact.

These exceedances were reported to HRCC on 1st November 2018 by means of an Exception Report in which Iluka indicated that:

- the seepage impact investigation commissioned by Iluka to assess similar exceedances at McGlashin's Swamp in the 2017 reporting period, and which was underway at the time of the November 2018 Exception Report, would be expanded to consider these 2018 exceedances;
- this investigation was the appropriate mechanism to evaluate the cause of the identified exceedances and that no additional or duplicate investigation was warranted;

- update and re-calibration of the Douglas Mine and Pit 23 groundwater was to be commissioned to validate existing model predictions as to groundwater path and flow rates from Pit 23;
- the frequency of monitoring had been increased to allow improved understanding of observed results and trends; and
- that an embargo was placed on any materials disposal into Pit 23 until such time of the seepage impact investigation completed and exceedance causes understood. This embargo commenced on 12th November 2018.

On 30th November 2018, at the request of HRCC and the Pit 23 Technical Reference Group (TRG), Iluka submitted to HRCC and *2017 Interim Performance Report* inclusive the detailed seepage impact investigation undertaken by EMM Consulting (‘*Pit 23 Groundwater – Assessment of Seepage Indicator Exceedances’*, EMM 2018). As indicated to HRCC this investigation concluded that:

- no evidence existed to suggest groundwater seepage or material transport from Pit 23 via a surface water pathway or groundwater pathway contributed to the exceedances observed at DUSW24;
- contributing factors of natural evapoconcentration and photosynthesis processes were evident, with similar observations noted in analogue monitoring locations in the region;
- the difference between predicted seepage rates and expression at DUSW24, as compared to that potentially indicated in the ionic-balance data, is significant and unlikely based on hydraulic conductivity of the underlying lithology; and
- the findings of prior investigations of groundwater quality risk from Pit 23 by-product disposal (per Jacobs, 2014) and groundwater hydrogeological modelling (CDM Smith 2014, 2015) remained valid.

The investigation also identified that the groundwater trigger levels set within the current endorsed Iluka Pit 23 EMP (Rev 4, July 2017) did not consider natural variation and were overly sensitive to expected fluctuations in water quality.

Based on the above it is Iluka’s position that:

- no seepage from Pit 23 occurred in either the 2017 or 2018 reporting period and that no mitigation measures applied;
- relevant trigger levels would be revised in the next revision of the Pit 23 EMP based on the dataset obtained to-date; and
- the embargo on incoming waste disposal could be lifted, which occurred on 28th February 2019.

The Pit 23 Groundwater Seepage Impact Assessment is provided in **Appendix F**.

As noted above the update of the hydrogeological model was enacted and is in-progress at time of reporting. This work commenced in January 2019 with scheduled completion in Q2 2019.

Table 12: Electrical Conductivity surface water trigger levels – DUSW24 (McGlashin’s Swamp)

DUSW24	EC (mg/L)	75%-ile (b/ground)	Prec Trigger	Upper Trigger	SEPP WoV WQO	Ion. Bal. Rep. Exceedance?	2-sample AVG	Comment
19/01/2017	1500	-	-	-	-	-	-	min 5 results reqd for statistical analysis
26/06/2017	2530	-	-	-	-	-	-	min 5 results reqd for statistical analysis
12/09/2017	2120	-	-	-	-	-	-	min 5 results reqd for statistical analysis
11/10/2017	2290	-	-	-	-	-	-	min 5 results reqd for statistical analysis
15/01/2018	3710	*2530*	**2151**	**2530**	**1500**	-	*3000*	
9/04/2018	8336	*3415*	**2903**	**3415**	**1500**	-	*6023*	
19/06/2018	6900	*5305*	**4509**	**5305**	**1500**	-	*7618*	
17/07/2018	6800	*6825*	**5801**	**6825**	**1500**	-	*6850*	
14/08/2018	6200	*6800*	**5780**	**6800**	**1500**	**Yes (Cl:S04)**	***6500***	CL:S04 ratio triggered, EC above precautionary
12/09/2018	6700	*6775*	**5759**	**6775**	**1500**	**Yes (Cl:S04)**	***6450***	CL:S04 ratio triggered, EC above precautionary
17/10/2018	8700	*6850*	**5823**	**6850**	**1500**	**Yes (Na:Ca)**	***7700***	Na:Ca ratio triggered, EC above upper trigger
1/11/2018	10000	*7259*	**6170**	**7259**	**1500**	-	*9350*	

Table 13: pH surface water trigger levels – DUSW24 (McGlashin's Swamp)

DUSW24	pH units	75%-ile (b/ground)	Prec Trigger	Upper Trigger	SEPP WoV WQO	Ion. Bal. Rep. Exceedance?	2-sample AVG	Comment
19/01/2017	8.57	-	-	-	-	-	-	min 5 results reqd for statistical analysis
26/06/2017	8.91	-	-	-	-	-	-	min 5 results reqd for statistical analysis
12/09/2017	8.61	-	-	-	-	-	-	min 5 results reqd for statistical analysis
11/10/2017	9.61	-	-	-	-	-	-	min 5 results reqd for statistical analysis
15/01/2018	10.4	*9.61*	**8.17**	**9.61**	**8.3**	-	*10.01*	
9/04/2018	8.76	*9.44*	**8.02**	**9.44**	**8.3**	-	*9.58*	
19/06/2018	9.07	*9.34*	**7.94**	**9.34**	**8.3**	-	*8.92*	
17/07/2018	9.4	*9.45*	**8.03**	**9.45**	**8.3**	-	*9.24*	
14/08/2018	9.7	*9.61*	**8.17**	**9.61**	**8.3**	**Yes (Cl:S04)**	***9.55***	CL:S04 ratio triggered, pH above precautionary
12/09/2018	9.7	*9.68*	**8.23**	**9.68**	**8.3**	**Yes (Cl:S04)**	***9.70***	CL:S04 ratio triggered, pH above upper trigger
17/10/2018	9.8	*9.70*	**8.25**	**9.70**	**8.3**	**Yes (Na:Ca)**	***9.75***	Na:Ca ratio triggered, EC above upper trigger
1/11/2018	9.2	*9.70*	**8.25**	**9.70**	**8.3**	-	*9.50*	

Table 14: Total Nitrogen surface water trigger levels – DUSW24 (McGlashin's Swamp)

DUSW24	TN (mg/L)	75%-ile (b/ground)	Prec Trigger	Upper Trigger	SEPP WoV WQO	Ion. Bal. Rep. Exceedance?	2-sample AVG	Comment
19/01/2017	1.2	-	-	-	-	-	-	min 5 results reqd for statistical analysis
26/06/2017	5	-	-	-	-	-	-	min 5 results reqd for statistical analysis
12/09/2017	2.8	-	-	-	-	-	-	min 5 results reqd for statistical analysis
11/10/2017	3	-	-	-	-	-	-	min 5 results reqd for statistical analysis
15/01/2018	4.6	4.60	3.91	4.60	0.9	-	3.80	
9/04/2018	11	4.90	4.17	4.90	0.9	-	7.80	
19/06/2018	6.1	5.55	4.72	5.55	0.9	-	8.55	
17/07/2018	6.1	6.10	5.19	6.10	0.9	-	6.10	
14/08/2018	5.6	6.10	5.19	6.10	0.9	Yes (Cl:S04)	5.85	CL:S04 ratio triggered, TN above precautionary
12/09/2018	7.2	6.10	5.19	6.10	0.9	Yes (Cl:S04)	6.40	CL:S04 ratio triggered, TN above upper trigger
17/10/2018	6.1	6.10	5.19	6.10	0.9	Yes (Na:Ca)	6.65	Na:Ca ratio triggered, TN above upper trigger
1/11/2018	7.3	6.38	5.42	6.38	0.9	-	6.70	

Table 15: Copper surface water trigger levels – DUSW24 (McGlashin's Swamp)

DUSW24	Cu (mg/L)	75%-ile (b/ground)	Prec Trigger	Upper Trigger	SEPP WoV WQO	Ion. Bal. Rep. Exceedance?	2-sample AVG	Comment
19/01/2017	0.001	-	-	-	-	-	-	min 5 results reqd for statistical analysis
26/06/2017	0.001	-	-	-	-	-	-	min 5 results reqd for statistical analysis
12/09/2017	0.002	-	-	-	-	-	-	min 5 results reqd for statistical analysis
11/10/2017	0.001	-	-	-	-	-	-	min 5 results reqd for statistical analysis
15/01/2018	0.003	0.002	0.0017	0.0020	0.0018	-	0.0020	
9/04/2018	0.002	0.002	0.0017	0.0020	0.0018	-	0.0025	
19/06/2018	0.002	0.002	0.0017	0.0020	0.0018	-	0.0020	
17/07/2018	0.001	0.002	0.0017	0.0020	0.0018	-	0.0015	
14/08/2018	0.001	0.002	0.0017	0.0020	0.0018	Yes (Cl:S04)	0.0010	CL:S04 ratio triggered, Cu below precautionary
12/09/2018	0.003	0.002	0.0017	0.0020	0.0018	Yes (Cl:S04)	0.0020	CL:S04 ratio triggered, Cu above precautionary
17/10/2018	0.002	0.002	0.0017	0.0020	0.0018	Yes (Na:Ca)	0.0025	Na:Ca ratio triggered, Cu above upper trigger
1/11/2018	0.001	0.002	0.0017	0.0020	0.0018	-	0.0015	

Table 16: Boron surface water trigger levels – DUSW24 (McGlashin's Swamp)

DUSW24	B (mg/L)	75%-ile (b/ground)	Prec Trigger	Upper Trigger	SEPP WoV WQO	Ion. Bal. Rep. Exceedance?	2-sample AVG	Comment
26/06/2017	1.60	-	-	-	-	-	-	min 5 results reqd for statistical analysis
12/09/2017	1.20	-	-	-	-	-	-	min 5 results reqd for statistical analysis
11/10/2017	1.10	-	-	-	-	-	-	min 5 results reqd for statistical analysis
15/01/2018	1.70	-	-	-	-	-	-	min 5 results reqd for statistical analysis
9/04/2018	2.90	1.700	1.4450	1.7000	0.68	-	2.3000	
17/07/2018	1.90	1.850	1.5725	1.8500	0.68	-	1.9000	
14/08/2018	1.50	1.800	1.5300	1.8000	0.68	Yes (Cl:S04)	1.7000	CL:S04 ratio triggered, B above precautionary
12/09/2018	1.80	1.825	1.5513	1.8250	0.68	Yes (Cl:S04)	1.6500	CL:S04 ratio triggered, B above precautionary
17/10/2018	2.00	1.900	1.6150	1.9000	0.68	Yes (Na:Ca)	1.9000	Na:Ca ratio triggered, B above precautionary
1/11/2018	2.30	1.975	1.6788	1.9750	0.68	-	2.1500	

5 Management Actions

5.1 Monitoring bore audits

In accordance with Section 7.6.2 of the EMP, audits of the monitoring bore network are undertaken on monthly or bi-annually and outcomes reported annually within this EMP and Rehabilitation Performance Report.

Bore integrity (e.g. physical condition, blocked/dry or poor yield) is assessed as part of the groundwater monitoring program. Outcomes of monitoring bore audits performed during the reporting period are summarised in Table 17.

Table 17: Monitoring bore audit results, 2018

Well Id	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18
WRK300	OK	OK	OK	OK	OK	OK	OK	OK	*	OK	*	*
WRK301	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
WRK302	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
WRK303	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
WRK304	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
GW01	installed May 2018					OK	OK	OK	OK	OK	OK	OK
GW02	installed October 2018										OK	OK
GW03	installed October 2018										OK	OK
GW04	installed October 2018										OK	OK
GW05	installed October 2018										OK	OK
GW06	installed May 2018					OK	OK	OK	OK	OK	OK	OK
GW07	installed May 2018					OK	OK	#	OK	OK	OK	OK
GW08	installed October 2018										OK	OK
BW5	*OK*	*	*OK*	*	*	*	*OK*	*OK*	*OK*	*OK*	*	*
BW28A	*OK*	*	*OK*	*	*	*	*OK*	*OK*	*	*	*	*
BW36	OK	OK	Blocked									
BW45A	installed May 2018					Dry	Dry	Dry	Dry	Dry	Dry	Dry
BW45B	installed October 2018										OK	OK
BW53	*OK*	*	*OK*	*OK*	*	*	*OK*	*	*	*	*	*
IWB2	*OK*	*	*OK*	*OK*	*	*	*OK*	*	*	*OK*	*	*
IWB6	*OK*	*	*OK*	*OK*	*	*	*OK*	*	*	*	*	*

* = No sampling occurred therefore no audit completed, #= Unable to access bore due to wet conditions

5.2 Groundwater flow paths from Pit 23

In accordance with Section 7.9.1 of the EMP, groundwater levels measured at bores WRK300 – WRK304 inclusive, GW1 to GW7 inclusive, GW9, BW36 and BW45 are used to construct groundwater contours in the area of Pit 23 and surrounds and infer groundwater flow paths from Pit 23, with these levels and flow paths compared with the groundwater levels and flow paths predicted by the hydrogeological model.

Groundwater level contours are provided in Figure 23 and Figure 24 (EMM 2018; 2019). Figure 23 compares the 2015 modelled contours per CDM Smith (2015), and interpreted groundwater contours as at June 2018 not including level data for new 2018 bores. Figure 24 compares these June 2018 contours to interpreted March 2019 contours, the latter including level data for all new 2018 bores and the re-inclusion of several historical Douglas Mine bores not considered in the 2018 contours. From the latest March 2019 contours it is demonstrated that:

- groundwater contours and flow-paths are consistent with the 2015 modelled contours and prior year contours; and
- groundwater flow from Pit 23 is still to the north and north-west.

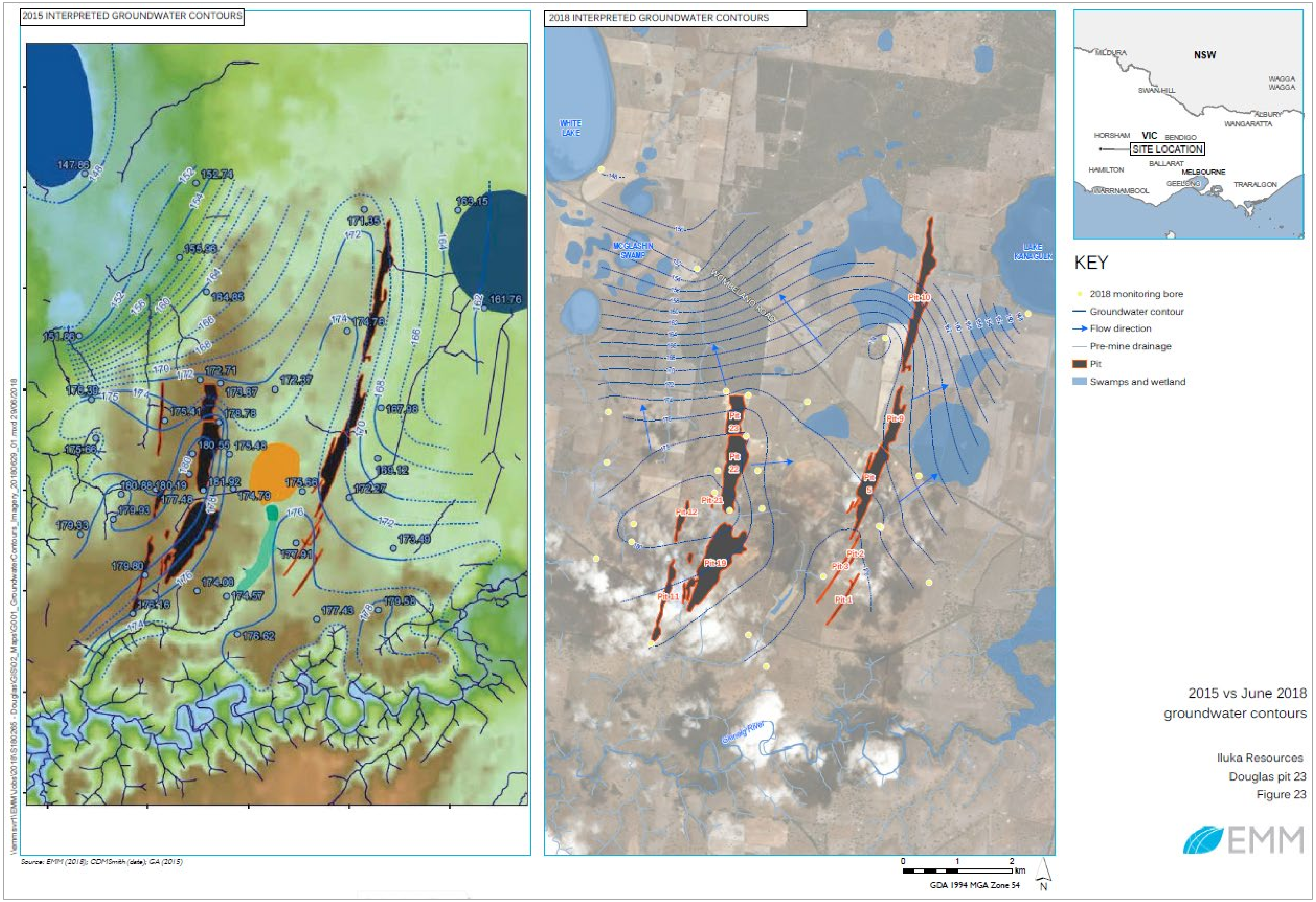


Figure 23: Douglas Groundwater contours and flow paths, 2015 Modelled vs 2018

Figure 24: Douglas Groundwater contours and flow paths, June 2018 vs March 2019

5.3 Groundwater model review and recalibration

Sections 7.10 and 8.7.2 of the endorsed EMP outlines the circumstances that will trigger a review and recalibration of the hydrogeological model.

An update of the Douglas Mine (inclusive Pit 23) hydrogeological model was commissioned in December 2018 in response to the potential groundwater seepage impacts identified during surface water monitoring at McGlashin's Swamp in the 2017 reporting period.

Whilst complimentary seepage impact investigation (EMM, 2018) determined that the observed exceedances were associated with natural phenomena and un-related to Pit 23, the review and update of the groundwater model has progressed in accordance with the Pit 23 EMP and is underway at time of reporting. This modelling is scheduled for completion in Q2 2019.

This modelling will be used to validate existing model predictions on the groundwater flow path and groundwater flow rates from the Pit 23 facility.

5.4 Maximum surface level of disposed materials in Pit 23

In accordance with Section 7.9.1 of the EMP, the maximum elevation of the upper surface of materials disposed of at the end of the reporting period must be reported.

The Pit 23 void consists of an upper and lower disposal area; all loads for 2018 were placed and capped in the lower disposal area with nil use of the upper disposal area. Accordingly, the survey undertaken on the 8th of December 2017 confirming the upper surface of materials deposited in Pit 23 (i.e. the elevation of capped material in the upper disposal area) remains unchanged at 193 mAHD[1].

5.5 Non-compliances

The following administrative non-compliance is declared:

- sampling for Uranium-238 concentrations was missed for surface water monitoring points DUSW22 and DUSW24 in Q1 2018. This missed sampling event was addressed with the Iluka contractor responsible for the monitoring.

5.6 Comments and complaints received

No complaints or comments were received during the reporting period.

5.7 2018 Completed Actions

The following actions were implemented:

- revision and update of the Pit 23 monthly inspection sheet to include commentary in reference to:
    - potential weed infestations (quarterly)
    - confirmation of truck wash operational performance (weekly)
    - feral animal spotlight surveys (biannual); and
    - inspection of the security fence and security camera footage (monthly).

[1] metres Australian Height Datum , mAHD

- increased monitoring frequency at surface water monitoring point DUSW24 (McGlashin's Swamp);
- commenced quarterly surface water quality monitoring at Brooksby's Swamp as recommended by the Pit 23 Groundwater Seepage Impact Assessment (**Appendix D**) as an analogue monitoring point to DUSW24 (McGlashin's Swamp).

5.8 2019 Proposed Actions

The following actions are planned in 2019:

- submission of an update of the hydrogeological model to validate or adjust existing model predictions on Pit 23 seepage.
- submission of the updated Pit 23 Incoming Waste Monitoring Plan (IWMP), Environmental Management Plan (EMP) and Rehabilitation and Vegetation Management Plan (R&VMP) consistent with the default two-year review periods stipulated within these plans. The updated EMP will include outcomes of the updated groundwater modelling; and
- commencement of bi-annual EMP, R&VMP and IWMP performance reporting;

5.9 Other matters

5.9.1 Annual geotechnical audit

In accordance with Section 10.5.2 and 10.5.3 of the EMP, an annual geotechnical inspection of the Pit 23 facility was completed by an independent geotechnical engineer (Sonnekus Associates) on 7th November 2018. No major actions were identified.

5.9.2 Pit 23 Risk Register annual review

Per Section 6 of the EMP, the Pit 23 Risk Analysis and Response Plan (RARP) was developed by AECOM Australia Pty Ltd who recommended that the Pit 23 Risk Register (contained as Appendix A of the RARP) be reviewed annually at the time when EMP and Rehabilitation Performance Reports are developed.

Two reviews of the Pit 23 risk register have been conducted in December 2018 and April 2019, presented in **Appendix G** to this report:

- December 2018 review – population of the risk register within the Iluka Resources Ltd corporate risk register (CGR) database:
  - no changes to risk rankings, trigger levels or management actions/contingency measures identified or proposed;
  - minor note that following the introduction of the new State Environment Protection Policy (SEPP) Waters, which superseded the Groundwaters SEPP, the Victorian groundwater segment classifications have changed with the groundwater segment applicable to Pit 23 / Douglas Mine now being "Segement F".
- April 2019 review – review and update coinciding with the preparation of this 2018 EMP and Performance Report:
  - no changes to risk rankings, trigger levels or management actions/contingency measures identified or proposed;
  - noted that references to the updated SEPP Waters and groundwater segment classifications would be resolved during the bi-annual update of the Pit 23 EMP in H1 2019; and

- noted the update of the Pit 23/Douglas mine groundwater model was in development at time of this reporting and risk register review but no changes to risk rankings, trigger levels or management controls were anticipated.

6 References

EMM (2018) Memorandum to Iluka Resources Ltd – Douglas Pit 23 Compliance Reporting FY17/18: Groundwater contours and flow-paths, 29th June 2018.

EMM (2019) Map - 2018 and 2019 interpreted groundwater contours, Douglas Mine.

EMM (2018) Pit 23 Groundwater – Assessment of Seepage Indicator Exceedances, November 2018 (Report S180265, Rev 2 Final), issued for Iluka Resources Ltd

CDM Smith (2014) Douglas Mine Site Hydrogeological Modelling. Completed on behalf of Iluka Resources, November 2014

CDM Smith (2015) Douglas Mine – Particle Tracking of Seepage Water. Completed on behalf of Iluka Resources, February 2015

7 Appendices

7.1 Appendix A: Monitoring Data (Lab) – Radiation – Surface Water

Sample Point	Date	Thorium (mg/L)	Uranium (mg/L)	U-238 (Bq/L)	Ra-226 (Bq/L)	Ra-228 (Bq/L)
	Precautionary trigger	*n/a*	*0.17*	*0.17*	*4.3*	*1.7*
	Upper trigger	*n/a*	*0.2*	*0.2*	*5*	*2*
Q1 2018						
DUSW05B	15/01/2018	*DRY*	*DRY*	*DRY*	*DRY*	*DRY*
DUSW14	15/01/2018	*DRY*	*DRY*	*DRY*	*DRY*	*DRY*
DUSW20	15/01/2018	*DRY*	*DRY*	*DRY*	*DRY*	*DRY*
DUSW22	15/01/2018	0.002	0.001	DNS	0.05	0.008
DUSW24	15/01/2018	0.002	0.001	DNS	0.05	0.008
Q2 2018						
DUSW05B	19/06/2018	*DRY*	*DRY*	*DRY*	*DRY*	*DRY*
DUSW14	19/06/2018	0.002	0.001	0.025	0.05	0.008
DUSW20	19/06/2018	*DRY*	*DRY*	*DRY*	*DRY*	*DRY*
DUSW22	19/06/2018	0.002	0.001	0.025	0.05	0.008
DUSW24	19/06/2018	0.002	0.001	0.025	0.05	0.008
Q3 2018						
DUSW05B	17/07/2018	0.02	0.01	0.099	0.05	0.11
DUSW14	17/07/2018	0.002	0.001	0.025	0.05	0.08
DUSW20	8/08/2018	0.002	0.001	0.025	0.05	0.08
DUSW22	17/07/2018	0.002	0.001	0.049	0.05	0.08
DUSW24	17/07/2018	0.002	0.001	0.111	0.05	0.08
DUSW24	14/08/2018	0.002	0.001	0.025	0.05	0.08
DUSW24	12/09/2019	0.002	0.001	DNS	DNS	DNS
Q4 2018						
DUSW05B	17/10/2018	0.02	0.01	0.086	0.05	0.08
DUSW05B	1/11/2018	0.02	0.02	0.123	0.05	0.13
DUSW14	17/10/2018	0.002	0.001	0.025	0.05	0.08
DUSW20	17/10/2018	*DRY*	*DRY*	*DRY*	*DRY*	*DRY*
DUSW22	17/10/2018	0.002	0.001	0.025	0.05	0.08
DUSW24	17/10/2018	0.002	0.001	0.025	0.05	0.08
DUSW24	1/11/2018	0.002	0.001	0.025	0.05	0.08

DNS = did not sample

7.2 Appendix B: Monitoring Data (Lab) – Groundwater

Variable	Unit	Sample Point	Date	Result
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_IWB2	8/01/2018	32
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_IWB6	8/01/2018	15
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_BW05	9/01/2018	470
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_BW28A	9/01/2018	410
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	140
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_BW36	10/01/2018	30
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK300	10/01/2018	250
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK303	11/01/2018	31
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK304	11/01/2018	36
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK302	11/01/2018	99
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK301	11/01/2018	360
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_BW05	5/03/2018	470
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	74
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_IWB2	5/03/2018	31
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_IWB6	5/03/2018	16
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK304	6/03/2018	36
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK300	6/03/2018	220
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_BW36	6/03/2018	29
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_GW07	7/06/2018	110
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_GW01	7/06/2018	160
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_GW06	12/06/2018	180
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_BW05	2/07/2018	470
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	88
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_IWB6	3/07/2018	17
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_IWB2	3/07/2018	32
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_BW28A	3/07/2018	410
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK303	10/07/2018	35
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK304	10/07/2018	35
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK302	10/07/2018	110
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK301	10/07/2018	360
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK300	17/07/2018	260
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_BW05	20/08/2018	460
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_BW28A	20/08/2018	410
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_BW05	12/09/2018	460
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_BW05	18/10/2018	460
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK300	18/10/2018	200
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_IWB2	18/10/2018	33
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_GW02	28/11/2018	76
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_GW03	28/11/2018	340
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_GW05	28/11/2018	220
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_GW04	28/11/2018	39
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_BW45B	29/11/2018	24
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_PZ_GW08	29/11/2018	160

Variable	Unit	Sample Point	Date	Result
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_IWB6	8/01/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_BW05	9/01/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_BW36	10/01/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK301	11/01/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_BW05	5/03/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_IWB6	5/03/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_BW36	6/03/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_GW07	7/06/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_GW01	7/06/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_GW06	12/06/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_BW05	2/07/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_BW05	20/08/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_BW28A	20/08/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_BW05	12/09/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_BW05	18/10/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_GW02	28/11/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_GW03	28/11/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_GW05	28/11/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_GW04	28/11/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_BW45B	29/11/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_PZ_GW08	29/11/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_IWB6	8/01/2018	0

Variable	Unit	Sample Point	Date	Result
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_BW05	9/01/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_BW36	10/01/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_WRK301	11/01/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_BW05	5/03/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_IWB6	5/03/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_BW36	6/03/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_GW07	7/06/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_GW01	7/06/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_GW06	12/06/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_BW05	2/07/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_BW05	18/10/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_IWB2	8/01/2018	32
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_IWB6	8/01/2018	15
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_BW05	9/01/2018	470
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_BW28A	9/01/2018	410
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	140
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_BW36	10/01/2018	30
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_WRK300	10/01/2018	250
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_WRK303	11/01/2018	31
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_WRK304	11/01/2018	36
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_WRK302	11/01/2018	99
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_WRK301	11/01/2018	360
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_BW05	5/03/2018	470
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	74

Variable	Unit	Sample Point	Date	Result
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_IWB2	5/03/2018	31
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_IWB6	5/03/2018	16
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_WRK304	6/03/2018	36
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_WRK300	6/03/2018	220
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_BW36	6/03/2018	29
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_GW07	7/06/2018	110
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_GW01	7/06/2018	160
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_GW06	12/06/2018	180
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_BW05	2/07/2018	470
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	88
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_IWB6	3/07/2018	17
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_IWB2	3/07/2018	32
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_BW28A	3/07/2018	410
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_WRK303	10/07/2018	35
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_WRK304	10/07/2018	35
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_WRK302	10/07/2018	110
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_WRK301	10/07/2018	360
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_WRK300	17/07/2018	260
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_BW05	18/10/2018	460
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_WRK300	18/10/2018	200
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_PZ_IWB2	18/10/2018	33
Aluminium (Total)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0.05
Aluminium (Total)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	0.31
Aluminium (Total)	mg/L	DG_A_I_PZ_BW05	9/01/2018	0.31
Aluminium (Total)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0.01
Aluminium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0.65
Aluminium (Total)	mg/L	DG_A_I_PZ_BW36	10/01/2018	0.06
Aluminium (Total)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0.1
Aluminium (Total)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0.31
Aluminium (Total)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0.07
Aluminium (Total)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0.2
Aluminium (Total)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	26
Aluminium (Total)	mg/L	DG_A_I_PZ_BW05	5/03/2018	0.22
Aluminium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	2.3
Aluminium (Total)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0.02
Aluminium (Total)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	0.23
Aluminium (Total)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0.01
Aluminium (Total)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0.01
Aluminium (Total)	mg/L	DG_A_I_PZ_BW36	6/03/2018	0.48
Aluminium (Total)	mg/L	DG_A_I_PZ_GW07	7/06/2018	0.36
Aluminium (Total)	mg/L	DG_A_I_PZ_GW01	7/06/2018	0.08
Aluminium (Total)	mg/L	DG_A_I_PZ_GW06	12/06/2018	0.78
Aluminium (Total)	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.85
Aluminium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	0.65
Aluminium (Total)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0.45

Variable	Unit	Sample Point	Date	Result
Aluminium (Total)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0.15
Aluminium (Total)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0.56
Aluminium (Total)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0.01
Aluminium (Total)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0.01
Aluminium (Total)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0.18
Aluminium (Total)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0.39
Aluminium (Total)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0.14
Aluminium (Total)	mg/L	DG_A_I_PZ_BW05	20/08/2018	0.23
Aluminium (Total)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	0.01
Aluminium (Total)	mg/L	DG_A_I_PZ_BW05	12/09/2018	0.19
Aluminium (Total)	mg/L	DG_A_I_PZ_BW05	18/10/2018	0.06
Aluminium (Total)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0.06
Aluminium (Total)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0.03
Aluminium (Total)	mg/L	DG_A_I_PZ_GW02	28/11/2018	0.11
Aluminium (Total)	mg/L	DG_A_I_PZ_GW03	28/11/2018	0.66
Aluminium (Total)	mg/L	DG_A_I_PZ_GW05	28/11/2018	0.66
Aluminium (Total)	mg/L	DG_A_I_PZ_GW04	28/11/2018	0.02
Aluminium (Total)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	1.6
Aluminium (Total)	mg/L	DG_A_I_PZ_GW08	29/11/2018	0.26
Ammonia Nitrogen	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_PZ_IWB6	8/01/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_PZ_BW05	9/01/2018	0.06
Ammonia Nitrogen	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0.6
Ammonia Nitrogen	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	11
Ammonia Nitrogen	mg/L	DG_A_I_PZ_BW36	10/01/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0.02
Ammonia Nitrogen	mg/L	DG_A_I_PZ_WRK301	11/01/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_PZ_BW05	5/03/2018	0.29
Ammonia Nitrogen	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	5.2
Ammonia Nitrogen	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_PZ_IWB6	5/03/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_PZ_BW36	6/03/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_PZ_GW07	7/06/2018	0.16
Ammonia Nitrogen	mg/L	DG_A_I_PZ_GW01	7/06/2018	0.02
Ammonia Nitrogen	mg/L	DG_A_I_PZ_GW06	12/06/2018	0.02
Ammonia Nitrogen	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.14
Ammonia Nitrogen	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	7.7
Ammonia Nitrogen	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0.22

Variable	Unit	Sample Point	Date	Result
Ammonia Nitrogen	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0.03
Ammonia Nitrogen	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_PZ_BW05	20/08/2018	0.02
Ammonia Nitrogen	mg/L	DG_A_I_PZ_BW28A	20/08/2018	0.13
Ammonia Nitrogen	mg/L	DG_A_I_PZ_BW05	12/09/2018	0.09
Ammonia Nitrogen	mg/L	DG_A_I_PZ_BW05	18/10/2018	0.43
Ammonia Nitrogen	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_PZ_GW02	28/11/2018	0.06
Ammonia Nitrogen	mg/L	DG_A_I_PZ_GW03	28/11/2018	0.13
Ammonia Nitrogen	mg/L	DG_A_I_PZ_GW05	28/11/2018	0.15
Ammonia Nitrogen	mg/L	DG_A_I_PZ_GW04	28/11/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_PZ_BW45B	29/11/2018	0.02
Ammonia Nitrogen	mg/L	DG_A_I_PZ_GW08	29/11/2018	0.02
Anions (Total)	meq/L	DG_A_I_PZ_IWB2	8/01/2018	39
Anions (Total)	meq/L	DG_A_I_PZ_IWB6	8/01/2018	15
Anions (Total)	meq/L	DG_A_I_PZ_BW05	9/01/2018	250
Anions (Total)	meq/L	DG_A_I_PZ_BW28A	9/01/2018	220
Anions (Total)	meq/L	DG_A_I_PZ_BW53/Puls	9/01/2018	16
Anions (Total)	meq/L	DG_A_I_PZ_BW36	10/01/2018	66
Anions (Total)	meq/L	DG_A_I_PZ_WRK300	10/01/2018	59
Anions (Total)	meq/L	DG_A_I_PZ_WRK303	11/01/2018	73
Anions (Total)	meq/L	DG_A_I_PZ_WRK304	11/01/2018	76
Anions (Total)	meq/L	DG_A_I_PZ_WRK302	11/01/2018	220
Anions (Total)	meq/L	DG_A_I_PZ_WRK301	11/01/2018	110
Anions (Total)	meq/L	DG_A_I_PZ_BW05	5/03/2018	240
Anions (Total)	meq/L	DG_A_I_PZ_BW53/Puls	5/03/2018	20
Anions (Total)	meq/L	DG_A_I_PZ_IWB2	5/03/2018	38
Anions (Total)	meq/L	DG_A_I_PZ_IWB6	5/03/2018	14
Anions (Total)	meq/L	DG_A_I_PZ_WRK304	6/03/2018	74
Anions (Total)	meq/L	DG_A_I_PZ_WRK300	6/03/2018	59
Anions (Total)	meq/L	DG_A_I_PZ_BW36	6/03/2018	64
Anions (Total)	meq/L	DG_A_I_PZ_GW07	7/06/2018	180
Anions (Total)	meq/L	DG_A_I_PZ_GW01	7/06/2018	32
Anions (Total)	meq/L	DG_A_I_PZ_GW06	12/06/2018	220
Anions (Total)	meq/L	DG_A_I_PZ_BW05	2/07/2018	290
Anions (Total)	meq/L	DG_A_I_PZ_BW53/Puls	3/07/2018	30
Anions (Total)	meq/L	DG_A_I_PZ_IWB6	3/07/2018	15
Anions (Total)	meq/L	DG_A_I_PZ_IWB2	3/07/2018	38
Anions (Total)	meq/L	DG_A_I_PZ_BW28A	3/07/2018	230
Anions (Total)	meq/L	DG_A_I_PZ_WRK303	10/07/2018	80
Anions (Total)	meq/L	DG_A_I_PZ_WRK304	10/07/2018	75

Variable	Unit	Sample Point	Date	Result
Anions (Total)	meq/L	DG_A_I_PZ_WRK302	10/07/2018	210
Anions (Total)	meq/L	DG_A_I_PZ_WRK301	10/07/2018	110
Anions (Total)	meq/L	DG_A_I_PZ_WRK300	17/07/2018	56
Anions (Total)	meq/L	DG_A_I_PZ_BW05	18/10/2018	270
Anions (Total)	meq/L	DG_A_I_PZ_WRK300	18/10/2018	59
Anions (Total)	meq/L	DG_A_I_PZ_IWB2	18/10/2018	38
Anions (Total)	meq/L	DG_A_I_PZ_GW02	28/11/2018	71
Anions (Total)	meq/L	DG_A_I_PZ_GW03	28/11/2018	100
Anions (Total)	meq/L	DG_A_I_PZ_GW05	28/11/2018	100
Anions (Total)	meq/L	DG_A_I_PZ_GW04	28/11/2018	93
Anions (Total)	meq/L	DG_A_I_PZ_BW45B	29/11/2018	150
Anions (Total)	meq/L	DG_A_I_PZ_GW08	29/11/2018	180
Arsenic (Total)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0.002
Arsenic (Total)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	0.018
Arsenic (Total)	mg/L	DG_A_I_PZ_BW05	9/01/2018	0.008
Arsenic (Total)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0.96
Arsenic (Total)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0.043
Arsenic (Total)	mg/L	DG_A_I_PZ_BW36	10/01/2018	0.003
Arsenic (Total)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0.018
Arsenic (Total)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0.003
Arsenic (Total)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0.009
Arsenic (Total)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0.003
Arsenic (Total)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	0.16
Arsenic (Total)	mg/L	DG_A_I_PZ_BW05	5/03/2018	0.009
Arsenic (Total)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	0.037
Arsenic (Total)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0.003
Arsenic (Total)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	0.019
Arsenic (Total)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0.012
Arsenic (Total)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0.002
Arsenic (Total)	mg/L	DG_A_I_PZ_BW36	6/03/2018	0.03
Arsenic (Total)	mg/L	DG_A_I_PZ_GW07	7/06/2018	0.005
Arsenic (Total)	mg/L	DG_A_I_PZ_GW01	7/06/2018	0.001
Arsenic (Total)	mg/L	DG_A_I_PZ_GW06	12/06/2018	0.008
Arsenic (Total)	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.011
Arsenic (Total)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	0.012
Arsenic (Total)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0.007
Arsenic (Total)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0.002
Arsenic (Total)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0.007
Arsenic (Total)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0.004
Arsenic (Total)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0.009
Arsenic (Total)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0.003
Arsenic (Total)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0.011
Arsenic (Total)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0.003
Arsenic (Total)	mg/L	DG_A_I_PZ_BW05	20/08/2018	0.013
Arsenic (Total)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	0.85

Variable	Unit	Sample Point	Date	Result
Arsenic (Total)	mg/L	DG_A_I_PZ_BW05	12/09/2018	0.012
Arsenic (Total)	mg/L	DG_A_I_PZ_BW05	18/10/2018	0.008
Arsenic (Total)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0.003
Arsenic (Total)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0.002
Arsenic (Total)	mg/L	DG_A_I_PZ_GW02	28/11/2018	0.032
Arsenic (Total)	mg/L	DG_A_I_PZ_GW03	28/11/2018	0.069
Arsenic (Total)	mg/L	DG_A_I_PZ_GW05	28/11/2018	0.027
Arsenic (Total)	mg/L	DG_A_I_PZ_GW04	28/11/2018	0.01
Arsenic (Total)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	0.004
Arsenic (Total)	mg/L	DG_A_I_PZ_GW08	29/11/2018	0.013
Barium (Total)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0.003
Barium (Total)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	0.018
Barium (Total)	mg/L	DG_A_I_PZ_BW05	9/01/2018	0.027
Barium (Total)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0.11
Barium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0.021
Barium (Total)	mg/L	DG_A_I_PZ_BW36	10/01/2018	0.025
Barium (Total)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0.026
Barium (Total)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0.034
Barium (Total)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0.023
Barium (Total)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0.021
Barium (Total)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	0.044
Barium (Total)	mg/L	DG_A_I_PZ_BW05	5/03/2018	0.036
Barium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	0.04
Barium (Total)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0.006
Barium (Total)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	0.028
Barium (Total)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0.04
Barium (Total)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0.035
Barium (Total)	mg/L	DG_A_I_PZ_BW36	6/03/2018	0.021
Barium (Total)	mg/L	DG_A_I_PZ_GW07	7/06/2018	0.027
Barium (Total)	mg/L	DG_A_I_PZ_GW01	7/06/2018	0.072
Barium (Total)	mg/L	DG_A_I_PZ_GW06	12/06/2018	0.025
Barium (Total)	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.035
Barium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	0.038
Barium (Total)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0.024
Barium (Total)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0.003
Barium (Total)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0.011
Barium (Total)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0.034
Barium (Total)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0.025
Barium (Total)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0.023
Barium (Total)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0.017
Barium (Total)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0.027
Barium (Total)	mg/L	DG_A_I_PZ_BW05	20/08/2018	0.031
Barium (Total)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	0.093
Barium (Total)	mg/L	DG_A_I_PZ_BW05	12/09/2018	0.038
Barium (Total)	mg/L	DG_A_I_PZ_BW05	18/10/2018	0.029

Variable	Unit	Sample Point	Date	Result
Barium (Total)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0.025
Barium (Total)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0.003
Barium (Total)	mg/L	DG_A_I_PZ_GW02	28/11/2018	0.14
Barium (Total)	mg/L	DG_A_I_PZ_GW03	28/11/2018	0.26
Barium (Total)	mg/L	DG_A_I_PZ_GW05	28/11/2018	0.17
Barium (Total)	mg/L	DG_A_I_PZ_GW04	28/11/2018	0.047
Barium (Total)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	0.096
Barium (Total)	mg/L	DG_A_I_PZ_GW08	29/11/2018	0.16
Boron (Total)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0.06
Boron (Total)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	0.04
Boron (Total)	mg/L	DG_A_I_PZ_BW05	9/01/2018	1.1
Boron (Total)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0.65
Boron (Total)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0.08
Boron (Total)	mg/L	DG_A_I_PZ_BW36	10/01/2018	0.12
Boron (Total)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0.21
Boron (Total)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0.54
Boron (Total)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0.58
Boron (Total)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	1.7
Boron (Total)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	0.56
Boron (Total)	mg/L	DG_A_I_PZ_BW05	5/03/2018	1.8
Boron (Total)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	0.16
Boron (Total)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0.11
Boron (Total)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	0.07
Boron (Total)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0.88
Boron (Total)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0.24
Boron (Total)	mg/L	DG_A_I_PZ_BW36	6/03/2018	0.14
Boron (Total)	mg/L	DG_A_I_PZ_GW07	7/06/2018	1.7
Boron (Total)	mg/L	DG_A_I_PZ_GW01	7/06/2018	0.07
Boron (Total)	mg/L	DG_A_I_PZ_GW06	12/06/2018	1.8
Boron (Total)	mg/L	DG_A_I_PZ_BW05	2/07/2018	1.3
Boron (Total)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	0.2
Boron (Total)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0.06
Boron (Total)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0.07
Boron (Total)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0.87
Boron (Total)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0.46
Boron (Total)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0.53
Boron (Total)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	1.7
Boron (Total)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0.54
Boron (Total)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0.21
Boron (Total)	mg/L	DG_A_I_PZ_BW05	20/08/2018	1.4
Boron (Total)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	0.87
Boron (Total)	mg/L	DG_A_I_PZ_BW05	12/09/2018	1.3
Boron (Total)	mg/L	DG_A_I_PZ_BW05	18/10/2018	1.2
Boron (Total)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0.2
Boron (Total)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0.07

Variable	Unit	Sample Point	Date	Result
Boron (Total)	mg/L	DG_A_I_PZ_GW02	28/11/2018	0.12
Boron (Total)	mg/L	DG_A_I_PZ_GW03	28/11/2018	0.22
Boron (Total)	mg/L	DG_A_I_PZ_GW05	28/11/2018	0.53
Boron (Total)	mg/L	DG_A_I_PZ_GW04	28/11/2018	0.54
Boron (Total)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	0.96
Boron (Total)	mg/L	DG_A_I_PZ_GW08	29/11/2018	1.2
Cadmium (Total)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_BW05	9/01/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_BW36	10/01/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_BW05	5/03/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_BW36	6/03/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_GW07	7/06/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_GW01	7/06/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_GW06	12/06/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_BW05	20/08/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_BW05	12/09/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_BW05	18/10/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_GW02	28/11/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_GW03	28/11/2018	0.0002

Variable	Unit	Sample Point	Date	Result
Cadmium (Total)	mg/L	DG_A_I_PZ_GW05	28/11/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_GW04	28/11/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_PZ_GW08	29/11/2018	0.0002
Calcium (Total)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	12
Calcium (Total)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	7.3
Calcium (Total)	mg/L	DG_A_I_PZ_BW05	9/01/2018	270
Calcium (Total)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	490
Calcium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	42
Calcium (Total)	mg/L	DG_A_I_PZ_BW36	10/01/2018	82
Calcium (Total)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	150
Calcium (Total)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	97
Calcium (Total)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	100
Calcium (Total)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	480
Calcium (Total)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	250
Calcium (Total)	mg/L	DG_A_I_PZ_BW05	5/03/2018	260
Calcium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	39
Calcium (Total)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	11
Calcium (Total)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	6.7
Calcium (Total)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	89
Calcium (Total)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	130
Calcium (Total)	mg/L	DG_A_I_PZ_BW36	6/03/2018	61
Calcium (Total)	mg/L	DG_A_I_PZ_GW07	7/06/2018	460
Calcium (Total)	mg/L	DG_A_I_PZ_GW01	7/06/2018	82
Calcium (Total)	mg/L	DG_A_I_PZ_GW06	12/06/2018	660
Calcium (Total)	mg/L	DG_A_I_PZ_BW05	2/07/2018	210
Calcium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	34
Calcium (Total)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	6.7
Calcium (Total)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	11
Calcium (Total)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	530
Calcium (Total)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	110
Calcium (Total)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	93
Calcium (Total)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	520
Calcium (Total)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	260
Calcium (Total)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	140
Calcium (Total)	mg/L	DG_A_I_PZ_BW05	20/08/2018	290
Calcium (Total)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	510
Calcium (Total)	mg/L	DG_A_I_PZ_BW05	12/09/2018	270
Calcium (Total)	mg/L	DG_A_I_PZ_BW05	18/10/2018	260
Calcium (Total)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	130
Calcium (Total)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	11
Calcium (Total)	mg/L	DG_A_I_PZ_GW02	28/11/2018	38
Calcium (Total)	mg/L	DG_A_I_PZ_GW03	28/11/2018	190
Calcium (Total)	mg/L	DG_A_I_PZ_GW05	28/11/2018	170
Calcium (Total)	mg/L	DG_A_I_PZ_GW04	28/11/2018	120

Variable	Unit	Sample Point	Date	Result
Calcium (Total)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	290
Calcium (Total)	mg/L	DG_A_I_PZ_GW08	29/11/2018	390
Cations (Total)	meq/L	DG_A_I_PZ_IWB2	8/01/2018	38
Cations (Total)	meq/L	DG_A_I_PZ_IWB6	8/01/2018	16
Cations (Total)	meq/L	DG_A_I_PZ_BW05	9/01/2018	260
Cations (Total)	meq/L	DG_A_I_PZ_BW28A	9/01/2018	230
Cations (Total)	meq/L	DG_A_I_PZ_BW53/Puls	9/01/2018	16
Cations (Total)	meq/L	DG_A_I_PZ_BW36	10/01/2018	66
Cations (Total)	meq/L	DG_A_I_PZ_WRK300	10/01/2018	62
Cations (Total)	meq/L	DG_A_I_PZ_WRK303	11/01/2018	72
Cations (Total)	meq/L	DG_A_I_PZ_WRK304	11/01/2018	80
Cations (Total)	meq/L	DG_A_I_PZ_WRK302	11/01/2018	210
Cations (Total)	meq/L	DG_A_I_PZ_WRK301	11/01/2018	110
Cations (Total)	meq/L	DG_A_I_PZ_BW05	5/03/2018	250
Cations (Total)	meq/L	DG_A_I_PZ_BW53/Puls	5/03/2018	21
Cations (Total)	meq/L	DG_A_I_PZ_IWB2	5/03/2018	37
Cations (Total)	meq/L	DG_A_I_PZ_IWB6	5/03/2018	15
Cations (Total)	meq/L	DG_A_I_PZ_WRK304	6/03/2018	69
Cations (Total)	meq/L	DG_A_I_PZ_WRK300	6/03/2018	57
Cations (Total)	meq/L	DG_A_I_PZ_BW36	6/03/2018	60
Cations (Total)	meq/L	DG_A_I_PZ_GW07	7/06/2018	180
Cations (Total)	meq/L	DG_A_I_PZ_GW01	7/06/2018	32
Cations (Total)	meq/L	DG_A_I_PZ_GW06	12/06/2018	230
Cations (Total)	meq/L	DG_A_I_PZ_BW05	2/07/2018	270
Cations (Total)	meq/L	DG_A_I_PZ_BW53/Puls	3/07/2018	31
Cations (Total)	meq/L	DG_A_I_PZ_IWB6	3/07/2018	15
Cations (Total)	meq/L	DG_A_I_PZ_IWB2	3/07/2018	39
Cations (Total)	meq/L	DG_A_I_PZ_BW28A	3/07/2018	230
Cations (Total)	meq/L	DG_A_I_PZ_WRK303	10/07/2018	78
Cations (Total)	meq/L	DG_A_I_PZ_WRK304	10/07/2018	75
Cations (Total)	meq/L	DG_A_I_PZ_WRK302	10/07/2018	220
Cations (Total)	meq/L	DG_A_I_PZ_WRK301	10/07/2018	110
Cations (Total)	meq/L	DG_A_I_PZ_WRK300	17/07/2018	55
Cations (Total)	meq/L	DG_A_I_PZ_BW05	18/10/2018	270
Cations (Total)	meq/L	DG_A_I_PZ_WRK300	18/10/2018	56
Cations (Total)	meq/L	DG_A_I_PZ_IWB2	18/10/2018	38
Cations (Total)	meq/L	DG_A_I_PZ_GW02	28/11/2018	70
Cations (Total)	meq/L	DG_A_I_PZ_GW03	28/11/2018	100
Cations (Total)	meq/L	DG_A_I_PZ_GW05	28/11/2018	100
Cations (Total)	meq/L	DG_A_I_PZ_GW04	28/11/2018	92
Cations (Total)	meq/L	DG_A_I_PZ_BW45B	29/11/2018	150
Cations (Total)	meq/L	DG_A_I_PZ_GW08	29/11/2018	170
Chloride	mg/L	DG_A_I_PZ_IWB2	8/01/2018	1200
Chloride	mg/L	DG_A_I_PZ_IWB6	8/01/2018	360
Chloride	mg/L	DG_A_I_PZ_BW05	9/01/2018	7800

Variable	Unit	Sample Point	Date	Result
Chloride	mg/L	DG_A_I_PZ_BW28A	9/01/2018	6800
Chloride	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	360
Chloride	mg/L	DG_A_I_PZ_BW36	10/01/2018	2000
Chloride	mg/L	DG_A_I_PZ_WRK300	10/01/2018	1700
Chloride	mg/L	DG_A_I_PZ_WRK303	11/01/2018	2100
Chloride	mg/L	DG_A_I_PZ_WRK304	11/01/2018	2200
Chloride	mg/L	DG_A_I_PZ_WRK302	11/01/2018	6500
Chloride	mg/L	DG_A_I_PZ_WRK301	11/01/2018	3100
Chloride	mg/L	DG_A_I_PZ_BW05	5/03/2018	7500
Chloride	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	500
Chloride	mg/L	DG_A_I_PZ_IWB2	5/03/2018	1200
Chloride	mg/L	DG_A_I_PZ_IWB6	5/03/2018	330
Chloride	mg/L	DG_A_I_PZ_WRK304	6/03/2018	2100
Chloride	mg/L	DG_A_I_PZ_WRK300	6/03/2018	1700
Chloride	mg/L	DG_A_I_PZ_BW36	6/03/2018	1900
Chloride	mg/L	DG_A_I_PZ_GW07	7/06/2018	5500
Chloride	mg/L	DG_A_I_PZ_GW01	7/06/2018	930
Chloride	mg/L	DG_A_I_PZ_GW06	12/06/2018	6600
Chloride	mg/L	DG_A_I_PZ_BW05	2/07/2018	9100
Chloride	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	790
Chloride	mg/L	DG_A_I_PZ_IWB6	3/07/2018	350
Chloride	mg/L	DG_A_I_PZ_IWB2	3/07/2018	1200
Chloride	mg/L	DG_A_I_PZ_BW28A	3/07/2018	7200
Chloride	mg/L	DG_A_I_PZ_WRK303	10/07/2018	2400
Chloride	mg/L	DG_A_I_PZ_WRK304	10/07/2018	2200
Chloride	mg/L	DG_A_I_PZ_WRK302	10/07/2018	6500
Chloride	mg/L	DG_A_I_PZ_WRK301	10/07/2018	3100
Chloride	mg/L	DG_A_I_PZ_WRK300	17/07/2018	1600
Chloride	mg/L	DG_A_I_PZ_BW05	20/08/2018	9000
Chloride	mg/L	DG_A_I_PZ_BW28A	20/08/2018	7200
Chloride	mg/L	DG_A_I_PZ_BW05	12/09/2018	9000
Chloride	mg/L	DG_A_I_PZ_BW05	18/10/2018	8800
Chloride	mg/L	DG_A_I_PZ_WRK300	18/10/2018	1700
Chloride	mg/L	DG_A_I_PZ_IWB2	18/10/2018	1200
Chloride	mg/L	DG_A_I_PZ_GW02	28/11/2018	2100
Chloride	mg/L	DG_A_I_PZ_GW03	28/11/2018	2900
Chloride	mg/L	DG_A_I_PZ_GW05	28/11/2018	3100
Chloride	mg/L	DG_A_I_PZ_GW04	28/11/2018	2700
Chloride	mg/L	DG_A_I_PZ_BW45B	29/11/2018	4800
Chloride	mg/L	DG_A_I_PZ_GW08	29/11/2018	5300
Chromium (Total)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0.001
Chromium (Total)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	0.005
Chromium (Total)	mg/L	DG_A_I_PZ_BW05	9/01/2018	0.001
Chromium (Total)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0.001
Chromium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0.002

Variable	Unit	Sample Point	Date	Result
Chromium (Total)	mg/L	DG_A_I_PZ_BW36	10/01/2018	0.004
Chromium (Total)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0.001
Chromium (Total)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0.007
Chromium (Total)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0.03
Chromium (Total)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0.001
Chromium (Total)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	0.099
Chromium (Total)	mg/L	DG_A_I_PZ_BW05	5/03/2018	0.001
Chromium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	0.009
Chromium (Total)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0.001
Chromium (Total)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	0.006
Chromium (Total)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0.052
Chromium (Total)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0.001
Chromium (Total)	mg/L	DG_A_I_PZ_BW36	6/03/2018	0.011
Chromium (Total)	mg/L	DG_A_I_PZ_GW07	7/06/2018	0.01
Chromium (Total)	mg/L	DG_A_I_PZ_GW01	7/06/2018	0.002
Chromium (Total)	mg/L	DG_A_I_PZ_GW06	12/06/2018	0.002
Chromium (Total)	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.001
Chromium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	0.002
Chromium (Total)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0.005
Chromium (Total)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0.001
Chromium (Total)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0.002
Chromium (Total)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0.009
Chromium (Total)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0.033
Chromium (Total)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0.002
Chromium (Total)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0.001
Chromium (Total)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0.001
Chromium (Total)	mg/L	DG_A_I_PZ_BW05	20/08/2018	0.001
Chromium (Total)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	0.001
Chromium (Total)	mg/L	DG_A_I_PZ_BW05	12/09/2018	0.001
Chromium (Total)	mg/L	DG_A_I_PZ_BW05	18/10/2018	0.001
Chromium (Total)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0.001
Chromium (Total)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0.001
Chromium (Total)	mg/L	DG_A_I_PZ_GW02	28/11/2018	0.001
Chromium (Total)	mg/L	DG_A_I_PZ_GW03	28/11/2018	0.006
Chromium (Total)	mg/L	DG_A_I_PZ_GW05	28/11/2018	0.013
Chromium (Total)	mg/L	DG_A_I_PZ_GW04	28/11/2018	0.001
Chromium (Total)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	0.001
Chromium (Total)	mg/L	DG_A_I_PZ_GW08	29/11/2018	0.001
Cobalt (Total)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0.003
Cobalt (Total)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	0.002
Cobalt (Total)	mg/L	DG_A_I_PZ_BW05	9/01/2018	0.001
Cobalt (Total)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0.039
Cobalt (Total)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0.002
Cobalt (Total)	mg/L	DG_A_I_PZ_BW36	10/01/2018	0.005
Cobalt (Total)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0.005

Variable	Unit	Sample Point	Date	Result
Cobalt (Total)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0.001
Cobalt (Total)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0.001
Cobalt (Total)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0.033
Cobalt (Total)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	0.027
Cobalt (Total)	mg/L	DG_A_I_PZ_BW05	5/03/2018	0.001
Cobalt (Total)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	0.003
Cobalt (Total)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0.004
Cobalt (Total)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	0.002
Cobalt (Total)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0.001
Cobalt (Total)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0.001
Cobalt (Total)	mg/L	DG_A_I_PZ_BW36	6/03/2018	0.006
Cobalt (Total)	mg/L	DG_A_I_PZ_GW07	7/06/2018	0.022
Cobalt (Total)	mg/L	DG_A_I_PZ_GW01	7/06/2018	0.005
Cobalt (Total)	mg/L	DG_A_I_PZ_GW06	12/06/2018	0.001
Cobalt (Total)	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.001
Cobalt (Total)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	0.001
Cobalt (Total)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0.002
Cobalt (Total)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0.003
Cobalt (Total)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0.002
Cobalt (Total)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0.001
Cobalt (Total)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0.001
Cobalt (Total)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0.03
Cobalt (Total)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0.004
Cobalt (Total)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0.003
Cobalt (Total)	mg/L	DG_A_I_PZ_BW05	20/08/2018	0.003
Cobalt (Total)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	0.041
Cobalt (Total)	mg/L	DG_A_I_PZ_BW05	12/09/2018	0.001
Cobalt (Total)	mg/L	DG_A_I_PZ_BW05	18/10/2018	0.001
Cobalt (Total)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0.002
Cobalt (Total)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0.003
Cobalt (Total)	mg/L	DG_A_I_PZ_GW02	28/11/2018	0.017
Cobalt (Total)	mg/L	DG_A_I_PZ_GW03	28/11/2018	0.089
Cobalt (Total)	mg/L	DG_A_I_PZ_GW05	28/11/2018	0.047
Cobalt (Total)	mg/L	DG_A_I_PZ_GW04	28/11/2018	0.021
Cobalt (Total)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	0.039
Cobalt (Total)	mg/L	DG_A_I_PZ_GW08	29/11/2018	0.093
Copper (Total)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0.001
Copper (Total)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	0.003
Copper (Total)	mg/L	DG_A_I_PZ_BW05	9/01/2018	0.001
Copper (Total)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0.001
Copper (Total)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0.001
Copper (Total)	mg/L	DG_A_I_PZ_BW36	10/01/2018	0.003
Copper (Total)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0.003
Copper (Total)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0.001
Copper (Total)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0.002

Variable	Unit	Sample Point	Date	Result
Copper (Total)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0.003
Copper (Total)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	0.029
Copper (Total)	mg/L	DG_A_I_PZ_BW05	5/03/2018	0.001
Copper (Total)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	0.002
Copper (Total)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0.001
Copper (Total)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	0.001
Copper (Total)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0.002
Copper (Total)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0.001
Copper (Total)	mg/L	DG_A_I_PZ_BW36	6/03/2018	0.002
Copper (Total)	mg/L	DG_A_I_PZ_GW07	7/06/2018	0.001
Copper (Total)	mg/L	DG_A_I_PZ_GW01	7/06/2018	0.001
Copper (Total)	mg/L	DG_A_I_PZ_GW06	12/06/2018	0.001
Copper (Total)	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.001
Copper (Total)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	0.002
Copper (Total)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0.002
Copper (Total)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0.001
Copper (Total)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0.003
Copper (Total)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0.001
Copper (Total)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0.001
Copper (Total)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0.001
Copper (Total)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0.001
Copper (Total)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0.002
Copper (Total)	mg/L	DG_A_I_PZ_BW05	20/08/2018	0.001
Copper (Total)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	0.001
Copper (Total)	mg/L	DG_A_I_PZ_BW05	12/09/2018	0.002
Copper (Total)	mg/L	DG_A_I_PZ_BW05	18/10/2018	0.001
Copper (Total)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0.002
Copper (Total)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0.001
Copper (Total)	mg/L	DG_A_I_PZ_GW02	28/11/2018	0.001
Copper (Total)	mg/L	DG_A_I_PZ_GW03	28/11/2018	0.019
Copper (Total)	mg/L	DG_A_I_PZ_GW05	28/11/2018	0.012
Copper (Total)	mg/L	DG_A_I_PZ_GW04	28/11/2018	0.001
Copper (Total)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	0.002
Copper (Total)	mg/L	DG_A_I_PZ_GW08	29/11/2018	0.008
Electrical Conductivity	µS/cm	DG_A_I_PZ_IWB2	8/01/2018	4160
Electrical Conductivity	µS/cm	DG_A_I_PZ_IWB6	8/01/2018	1659
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW05	9/01/2018	24600
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW28A	9/01/2018	20600
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW53/Puls	9/01/2018	1754
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW36	10/01/2018	6730
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK300	10/01/2018	6340
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK303	11/01/2018	7270
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK304	11/01/2018	7450
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK302	11/01/2018	19720
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK301	11/01/2018	10240

Variable	Unit	Sample Point	Date	Result
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW05	5/03/2018	26144
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW53/Puls	5/03/2018	2480
Electrical Conductivity	µS/cm	DG_A_I_PZ_IWB2	5/03/2018	4667
Electrical Conductivity	µS/cm	DG_A_I_PZ_IWB6	5/03/2018	1858
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK304	6/03/2018	8264
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK300	6/03/2018	6663
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW36	6/03/2018	7218
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW07	7/06/2018	17000
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW01	7/06/2018	3500
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW06	12/06/2018	20000
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW05	2/07/2018	26000
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW53/Puls	3/07/2018	3200
Electrical Conductivity	µS/cm	DG_A_I_PZ_IWB6	3/07/2018	1700
Electrical Conductivity	µS/cm	DG_A_I_PZ_IWB2	3/07/2018	4300
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW28A	3/07/2018	21000
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK303	10/07/2018	8100
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK304	10/07/2018	7700
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK302	10/07/2018	20000
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK301	10/07/2018	11000
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK300	17/07/2018	5800
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW05	20/08/2018	27000
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW28A	20/08/2018	21000
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW05	12/09/2018	26000
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW05	18/10/2018	25000
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK300	18/10/2018	6100
Electrical Conductivity	µS/cm	DG_A_I_PZ_IWB2	18/10/2018	4300
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW02	28/11/2018	7400
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW03	28/11/2018	10000
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW05	28/11/2018	11000
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW04	28/11/2018	9300
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW45B	29/11/2018	15000
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW08	29/11/2018	17000
Fluoride (Total)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0.18
Fluoride (Total)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	0.1
Fluoride (Total)	mg/L	DG_A_I_PZ_BW05	9/01/2018	0.55
Fluoride (Total)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0.44
Fluoride (Total)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0.29
Fluoride (Total)	mg/L	DG_A_I_PZ_BW36	10/01/2018	0.33
Fluoride (Total)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0.37
Fluoride (Total)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0.26
Fluoride (Total)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0.38
Fluoride (Total)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0.61
Fluoride (Total)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	0.58
Fluoride (Total)	mg/L	DG_A_I_PZ_BW05	5/03/2018	0.55
Fluoride (Total)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	0.21

Variable	Unit	Sample Point	Date	Result
Fluoride (Total)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0.16
Fluoride (Total)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	0.1
Fluoride (Total)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0.41
Fluoride (Total)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0.36
Fluoride (Total)	mg/L	DG_A_I_PZ_BW36	6/03/2018	0.33
Fluoride (Total)	mg/L	DG_A_I_PZ_GW07	7/06/2018	0.31
Fluoride (Total)	mg/L	DG_A_I_PZ_GW01	7/06/2018	0.26
Fluoride (Total)	mg/L	DG_A_I_PZ_GW06	12/06/2018	0.29
Fluoride (Total)	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.55
Fluoride (Total)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	0.19
Fluoride (Total)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0.1
Fluoride (Total)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0.17
Fluoride (Total)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0.48
Fluoride (Total)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0.27
Fluoride (Total)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0.39
Fluoride (Total)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0.61
Fluoride (Total)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0.62
Fluoride (Total)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0.43
Fluoride (Total)	mg/L	DG_A_I_PZ_BW05	20/08/2018	0.56
Fluoride (Total)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	0.51
Fluoride (Total)	mg/L	DG_A_I_PZ_BW05	12/09/2018	0.58
Fluoride (Total)	mg/L	DG_A_I_PZ_BW05	18/10/2018	0.71
Fluoride (Total)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0.43
Fluoride (Total)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0.25
Fluoride (Total)	mg/L	DG_A_I_PZ_GW02	28/11/2018	0.26
Fluoride (Total)	mg/L	DG_A_I_PZ_GW03	28/11/2018	0.57
Fluoride (Total)	mg/L	DG_A_I_PZ_GW05	28/11/2018	0.52
Fluoride (Total)	mg/L	DG_A_I_PZ_GW04	28/11/2018	0.33
Fluoride (Total)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	1
Fluoride (Total)	mg/L	DG_A_I_PZ_GW08	29/11/2018	0.34
Iron (Total)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0.18
Iron (Total)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	2.1
Iron (Total)	mg/L	DG_A_I_PZ_BW05	9/01/2018	0.77
Iron (Total)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	8.1
Iron (Total)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	4.4
Iron (Total)	mg/L	DG_A_I_PZ_BW36	10/01/2018	0.06
Iron (Total)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0.02
Iron (Total)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0.02
Iron (Total)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0.01
Iron (Total)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0.01
Iron (Total)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	56
Iron (Total)	mg/L	DG_A_I_PZ_BW05	5/03/2018	0.67
Iron (Total)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	8.7
Iron (Total)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0.09
Iron (Total)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	1.9

Variable	Unit	Sample Point	Date	Result
Iron (Total)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0.04
Iron (Total)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0.1
Iron (Total)	mg/L	DG_A_I_PZ_BW36	6/03/2018	2.7
Iron (Total)	mg/L	DG_A_I_PZ_GW07	7/06/2018	1.2
Iron (Total)	mg/L	DG_A_I_PZ_GW01	7/06/2018	0.05
Iron (Total)	mg/L	DG_A_I_PZ_GW06	12/06/2018	0.57
Iron (Total)	mg/L	DG_A_I_PZ_BW05	2/07/2018	1.3
Iron (Total)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	1
Iron (Total)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0.52
Iron (Total)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0.09
Iron (Total)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0.67
Iron (Total)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0.02
Iron (Total)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0.01
Iron (Total)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0.03
Iron (Total)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0.11
Iron (Total)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0.26
Iron (Total)	mg/L	DG_A_I_PZ_BW05	20/08/2018	1.5
Iron (Total)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	9.8
Iron (Total)	mg/L	DG_A_I_PZ_BW05	12/09/2018	1.2
Iron (Total)	mg/L	DG_A_I_PZ_BW05	18/10/2018	0.45
Iron (Total)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0.2
Iron (Total)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0.02
Iron (Total)	mg/L	DG_A_I_PZ_GW02	28/11/2018	7.4
Iron (Total)	mg/L	DG_A_I_PZ_GW03	28/11/2018	34
Iron (Total)	mg/L	DG_A_I_PZ_GW05	28/11/2018	11
Iron (Total)	mg/L	DG_A_I_PZ_GW04	28/11/2018	1.6
Iron (Total)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	0.75
Iron (Total)	mg/L	DG_A_I_PZ_GW08	29/11/2018	8.7
Lead (Total)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_BW05	9/01/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_BW36	10/01/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0.004
Lead (Total)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	0.051
Lead (Total)	mg/L	DG_A_I_PZ_BW05	5/03/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	0.002
Lead (Total)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0.001

Variable	Unit	Sample Point	Date	Result
Lead (Total)	mg/L	DG_A_I_PZ_BW36	6/03/2018	0.002
Lead (Total)	mg/L	DG_A_I_PZ_GW07	7/06/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_GW01	7/06/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_GW06	12/06/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0.008
Lead (Total)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_BW05	20/08/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_BW05	12/09/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_BW05	18/10/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_GW02	28/11/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_GW03	28/11/2018	0.003
Lead (Total)	mg/L	DG_A_I_PZ_GW05	28/11/2018	0.002
Lead (Total)	mg/L	DG_A_I_PZ_GW04	28/11/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	0.001
Lead (Total)	mg/L	DG_A_I_PZ_GW08	29/11/2018	0.001
Magnesium (Total)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	98
Magnesium (Total)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	20
Magnesium (Total)	mg/L	DG_A_I_PZ_BW05	9/01/2018	470
Magnesium (Total)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	550
Magnesium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	26
Magnesium (Total)	mg/L	DG_A_I_PZ_BW36	10/01/2018	110
Magnesium (Total)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	130
Magnesium (Total)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	120
Magnesium (Total)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	110
Magnesium (Total)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	430
Magnesium (Total)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	250
Magnesium (Total)	mg/L	DG_A_I_PZ_BW05	5/03/2018	390
Magnesium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	36
Magnesium (Total)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	100
Magnesium (Total)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	20
Magnesium (Total)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	100
Magnesium (Total)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	120
Magnesium (Total)	mg/L	DG_A_I_PZ_BW36	6/03/2018	110
Magnesium (Total)	mg/L	DG_A_I_PZ_GW07	7/06/2018	330

Variable	Unit	Sample Point	Date	Result
Magnesium (Total)	mg/L	DG_A_I_PZ_GW01	7/06/2018	78
Magnesium (Total)	mg/L	DG_A_I_PZ_GW06	12/06/2018	540
Magnesium (Total)	mg/L	DG_A_I_PZ_BW05	2/07/2018	480
Magnesium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	63
Magnesium (Total)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	19
Magnesium (Total)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	96
Magnesium (Total)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	560
Magnesium (Total)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	130
Magnesium (Total)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	100
Magnesium (Total)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	450
Magnesium (Total)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	270
Magnesium (Total)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	120
Magnesium (Total)	mg/L	DG_A_I_PZ_BW05	20/08/2018	540
Magnesium (Total)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	570
Magnesium (Total)	mg/L	DG_A_I_PZ_BW05	12/09/2018	540
Magnesium (Total)	mg/L	DG_A_I_PZ_BW05	18/10/2018	520
Magnesium (Total)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	120
Magnesium (Total)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	94
Magnesium (Total)	mg/L	DG_A_I_PZ_GW02	28/11/2018	150
Magnesium (Total)	mg/L	DG_A_I_PZ_GW03	28/11/2018	210
Magnesium (Total)	mg/L	DG_A_I_PZ_GW05	28/11/2018	190
Magnesium (Total)	mg/L	DG_A_I_PZ_GW04	28/11/2018	150
Magnesium (Total)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	300
Magnesium (Total)	mg/L	DG_A_I_PZ_GW08	29/11/2018	390
Manganese (Total)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0.009
Manganese (Total)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	0.007
Manganese (Total)	mg/L	DG_A_I_PZ_BW05	9/01/2018	0.1
Manganese (Total)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	2.4
Manganese (Total)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0.13
Manganese (Total)	mg/L	DG_A_I_PZ_BW36	10/01/2018	0.003
Manganese (Total)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0.26
Manganese (Total)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0.004
Manganese (Total)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0.003
Manganese (Total)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0.018
Manganese (Total)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	0.94
Manganese (Total)	mg/L	DG_A_I_PZ_BW05	5/03/2018	0.14
Manganese (Total)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	0.14
Manganese (Total)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0.014
Manganese (Total)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	0.008
Manganese (Total)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0.008
Manganese (Total)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0.18
Manganese (Total)	mg/L	DG_A_I_PZ_BW36	6/03/2018	0.006
Manganese (Total)	mg/L	DG_A_I_PZ_GW07	7/06/2018	0.054
Manganese (Total)	mg/L	DG_A_I_PZ_GW01	7/06/2018	0.032
Manganese (Total)	mg/L	DG_A_I_PZ_GW06	12/06/2018	0.038

Variable	Unit	Sample Point	Date	Result
Manganese (Total)	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.2
Manganese (Total)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	0.074
Manganese (Total)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0.008
Manganese (Total)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0.01
Manganese (Total)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0.13
Manganese (Total)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0.012
Manganese (Total)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0.004
Manganese (Total)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0.012
Manganese (Total)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0.4
Manganese (Total)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0.2
Manganese (Total)	mg/L	DG_A_I_PZ_BW05	20/08/2018	0.19
Manganese (Total)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	2.3
Manganese (Total)	mg/L	DG_A_I_PZ_BW05	12/09/2018	0.17
Manganese (Total)	mg/L	DG_A_I_PZ_BW05	18/10/2018	0.14
Manganese (Total)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0.14
Manganese (Total)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0.01
Manganese (Total)	mg/L	DG_A_I_PZ_GW02	28/11/2018	1.2
Manganese (Total)	mg/L	DG_A_I_PZ_GW03	28/11/2018	23
Manganese (Total)	mg/L	DG_A_I_PZ_GW05	28/11/2018	5.7
Manganese (Total)	mg/L	DG_A_I_PZ_GW04	28/11/2018	0.12
Manganese (Total)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	0.11
Manganese (Total)	mg/L	DG_A_I_PZ_GW08	29/11/2018	3.9
Mercury (Total)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_BW05	9/01/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_BW36	10/01/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_BW05	5/03/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_BW36	6/03/2018	0.0002
Mercury (Total)	mg/L	DG_A_I_PZ_GW07	7/06/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_GW01	7/06/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_GW06	12/06/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	0.0001

Variable	Unit	Sample Point	Date	Result
Mercury (Total)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0.0006
Mercury (Total)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_BW05	20/08/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_BW05	12/09/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_BW05	18/10/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_GW02	28/11/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_GW03	28/11/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_GW05	28/11/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_GW04	28/11/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_PZ_GW08	29/11/2018	0.0001
Molybdenum (Total)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_BW05	9/01/2018	0.002
Molybdenum (Total)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0.002
Molybdenum (Total)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_BW36	10/01/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0.002
Molybdenum (Total)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	0.003
Molybdenum (Total)	mg/L	DG_A_I_PZ_BW05	5/03/2018	0.002
Molybdenum (Total)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_BW36	6/03/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_GW07	7/06/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_GW01	7/06/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_GW06	12/06/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.003
Molybdenum (Total)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0.001

Variable	Unit	Sample Point	Date	Result
Molybdenum (Total)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0.006
Molybdenum (Total)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0.004
Molybdenum (Total)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0.002
Molybdenum (Total)	mg/L	DG_A_I_PZ_BW05	20/08/2018	0.002
Molybdenum (Total)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	0.002
Molybdenum (Total)	mg/L	DG_A_I_PZ_BW05	12/09/2018	0.002
Molybdenum (Total)	mg/L	DG_A_I_PZ_BW05	18/10/2018	0.002
Molybdenum (Total)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0.002
Molybdenum (Total)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_GW02	28/11/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_GW03	28/11/2018	0.003
Molybdenum (Total)	mg/L	DG_A_I_PZ_GW05	28/11/2018	0.004
Molybdenum (Total)	mg/L	DG_A_I_PZ_GW04	28/11/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_PZ_GW08	29/11/2018	0.002
Nickel (Total)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0.001
Nickel (Total)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	0.001
Nickel (Total)	mg/L	DG_A_I_PZ_BW05	9/01/2018	0.001
Nickel (Total)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0.01
Nickel (Total)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0.002
Nickel (Total)	mg/L	DG_A_I_PZ_BW36	10/01/2018	0.004
Nickel (Total)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0.006
Nickel (Total)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0.001
Nickel (Total)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0.001
Nickel (Total)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0.017
Nickel (Total)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	0.048
Nickel (Total)	mg/L	DG_A_I_PZ_BW05	5/03/2018	0.001
Nickel (Total)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	0.002
Nickel (Total)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0.004
Nickel (Total)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	0.002
Nickel (Total)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0.003
Nickel (Total)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0.003
Nickel (Total)	mg/L	DG_A_I_PZ_BW36	6/03/2018	0.006
Nickel (Total)	mg/L	DG_A_I_PZ_GW07	7/06/2018	0.019
Nickel (Total)	mg/L	DG_A_I_PZ_GW01	7/06/2018	0.006
Nickel (Total)	mg/L	DG_A_I_PZ_GW06	12/06/2018	0.011
Nickel (Total)	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.001
Nickel (Total)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	0.001
Nickel (Total)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0.002
Nickel (Total)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0.004
Nickel (Total)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0.01
Nickel (Total)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0.005

Variable	Unit	Sample Point	Date	Result
Nickel (Total)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0.001
Nickel (Total)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0.017
Nickel (Total)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0.012
Nickel (Total)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0.007
Nickel (Total)	mg/L	DG_A_I_PZ_BW05	20/08/2018	0.001
Nickel (Total)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	0.014
Nickel (Total)	mg/L	DG_A_I_PZ_BW05	12/09/2018	0.001
Nickel (Total)	mg/L	DG_A_I_PZ_BW05	18/10/2018	0.001
Nickel (Total)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0.007
Nickel (Total)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0.004
Nickel (Total)	mg/L	DG_A_I_PZ_GW02	28/11/2018	0.015
Nickel (Total)	mg/L	DG_A_I_PZ_GW03	28/11/2018	0.025
Nickel (Total)	mg/L	DG_A_I_PZ_GW05	28/11/2018	0.04
Nickel (Total)	mg/L	DG_A_I_PZ_GW04	28/11/2018	0.016
Nickel (Total)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	0.049
Nickel (Total)	mg/L	DG_A_I_PZ_GW08	29/11/2018	0.04
Nitrate Nitrogen	mg/L	DG_A_I_PZ_IWB2	8/01/2018	4.3
Nitrate Nitrogen	mg/L	DG_A_I_PZ_IWB6	8/01/2018	9.4
Nitrate Nitrogen	mg/L	DG_A_I_PZ_BW05	9/01/2018	0.74
Nitrate Nitrogen	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0.27
Nitrate Nitrogen	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0.02
Nitrate Nitrogen	mg/L	DG_A_I_PZ_BW36	10/01/2018	7.8
Nitrate Nitrogen	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0.83
Nitrate Nitrogen	mg/L	DG_A_I_PZ_WRK303	11/01/2018	4.6
Nitrate Nitrogen	mg/L	DG_A_I_PZ_WRK304	11/01/2018	2.4
Nitrate Nitrogen	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0.37
Nitrate Nitrogen	mg/L	DG_A_I_PZ_WRK301	11/01/2018	0.01
Nitrate Nitrogen	mg/L	DG_A_I_PZ_BW05	5/03/2018	0.89
Nitrate Nitrogen	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	1.2
Nitrate Nitrogen	mg/L	DG_A_I_PZ_IWB2	5/03/2018	5.8
Nitrate Nitrogen	mg/L	DG_A_I_PZ_IWB6	5/03/2018	9.8
Nitrate Nitrogen	mg/L	DG_A_I_PZ_WRK304	6/03/2018	2.5
Nitrate Nitrogen	mg/L	DG_A_I_PZ_WRK300	6/03/2018	2
Nitrate Nitrogen	mg/L	DG_A_I_PZ_BW36	6/03/2018	8.4
Nitrate Nitrogen	mg/L	DG_A_I_PZ_GW07	7/06/2018	0.56
Nitrate Nitrogen	mg/L	DG_A_I_PZ_GW01	7/06/2018	8.9
Nitrate Nitrogen	mg/L	DG_A_I_PZ_GW06	12/06/2018	0.12
Nitrate Nitrogen	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.79
Nitrate Nitrogen	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	1
Nitrate Nitrogen	mg/L	DG_A_I_PZ_IWB6	3/07/2018	8.4
Nitrate Nitrogen	mg/L	DG_A_I_PZ_IWB2	3/07/2018	4.1
Nitrate Nitrogen	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0.12
Nitrate Nitrogen	mg/L	DG_A_I_PZ_WRK303	10/07/2018	3.2
Nitrate Nitrogen	mg/L	DG_A_I_PZ_WRK304	10/07/2018	2
Nitrate Nitrogen	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0.35

Variable	Unit	Sample Point	Date	Result
Nitrate Nitrogen	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0.31
Nitrate Nitrogen	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0.99
Nitrate Nitrogen	mg/L	DG_A_I_PZ_BW05	20/08/2018	0.71
Nitrate Nitrogen	mg/L	DG_A_I_PZ_BW28A	20/08/2018	0.08
Nitrate Nitrogen	mg/L	DG_A_I_PZ_BW05	12/09/2018	0.69
Nitrate Nitrogen	mg/L	DG_A_I_PZ_BW05	18/10/2018	0.81
Nitrate Nitrogen	mg/L	DG_A_I_PZ_WRK300	18/10/2018	2
Nitrate Nitrogen	mg/L	DG_A_I_PZ_IWB2	18/10/2018	3.6
Nitrate Nitrogen	mg/L	DG_A_I_PZ_GW02	28/11/2018	4.1
Nitrate Nitrogen	mg/L	DG_A_I_PZ_GW03	28/11/2018	0.036
Nitrate Nitrogen	mg/L	DG_A_I_PZ_GW05	28/11/2018	0.12
Nitrate Nitrogen	mg/L	DG_A_I_PZ_GW04	28/11/2018	2.3
Nitrate Nitrogen	mg/L	DG_A_I_PZ_BW45B	29/11/2018	0.53
Nitrate Nitrogen	mg/L	DG_A_I_PZ_GW08	29/11/2018	0.005
Nitrite Nitrogen	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_IWB6	8/01/2018	0.004
Nitrite Nitrogen	mg/L	DG_A_I_PZ_BW05	9/01/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0.004
Nitrite Nitrogen	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_BW36	10/01/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0.018
Nitrite Nitrogen	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_WRK301	11/01/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_BW05	5/03/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	0.05
Nitrite Nitrogen	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_IWB6	5/03/2018	0.004
Nitrite Nitrogen	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_BW36	6/03/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_GW07	7/06/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_GW01	7/06/2018	0.005
Nitrite Nitrogen	mg/L	DG_A_I_PZ_GW06	12/06/2018	0.003
Nitrite Nitrogen	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	0.13
Nitrite Nitrogen	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0.005
Nitrite Nitrogen	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0.02
Nitrite Nitrogen	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0.001

Variable	Unit	Sample Point	Date	Result
Nitrite Nitrogen	mg/L	DG_A_I_PZ_BW05	20/08/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_BW28A	20/08/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_BW05	12/09/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_BW05	18/10/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0.002
Nitrite Nitrogen	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_GW02	28/11/2018	0.14
Nitrite Nitrogen	mg/L	DG_A_I_PZ_GW03	28/11/2018	0.011
Nitrite Nitrogen	mg/L	DG_A_I_PZ_GW05	28/11/2018	0.001
Nitrite Nitrogen	mg/L	DG_A_I_PZ_GW04	28/11/2018	0.069
Nitrite Nitrogen	mg/L	DG_A_I_PZ_BW45B	29/11/2018	0.003
Nitrite Nitrogen	mg/L	DG_A_I_PZ_GW08	29/11/2018	0.001
pH	pH units	DG_A_I_PZ_IWB2	8/01/2018	5.42
pH	pH units	DG_A_I_PZ_IWB6	8/01/2018	5.37
pH	pH units	DG_A_I_PZ_BW05	9/01/2018	6.99
pH	pH units	DG_A_I_PZ_BW28A	9/01/2018	6.47
pH	pH units	DG_A_I_PZ_BW53/Puls	9/01/2018	6.8
pH	pH units	DG_A_I_PZ_BW36	10/01/2018	5.57
pH	pH units	DG_A_I_PZ_WRK300	10/01/2018	6.54
pH	pH units	DG_A_I_PZ_WRK303	11/01/2018	5.81
pH	pH units	DG_A_I_PZ_WRK304	11/01/2018	6.03
pH	pH units	DG_A_I_PZ_WRK302	11/01/2018	5.96
pH	pH units	DG_A_I_PZ_WRK301	11/01/2018	6.96
pH	pH units	DG_A_I_PZ_BW05	5/03/2018	6.88
pH	pH units	DG_A_I_PZ_BW53/Puls	5/03/2018	6.67
pH	pH units	DG_A_I_PZ_IWB2	5/03/2018	5.39
pH	pH units	DG_A_I_PZ_IWB6	5/03/2018	5.41
pH	pH units	DG_A_I_PZ_WRK304	6/03/2018	6
pH	pH units	DG_A_I_PZ_WRK300	6/03/2018	6.66
pH	pH units	DG_A_I_PZ_BW36	6/03/2018	5.55
pH	pH units	DG_A_I_PZ_GW07	7/06/2018	6.7
pH	pH units	DG_A_I_PZ_GW01	7/06/2018	6.8
pH	pH units	DG_A_I_PZ_GW06	12/06/2018	6.8
pH	pH units	DG_A_I_PZ_BW05	2/07/2018	7.1
pH	pH units	DG_A_I_PZ_BW53/Puls	3/07/2018	6.8
pH	pH units	DG_A_I_PZ_IWB6	3/07/2018	5.6
pH	pH units	DG_A_I_PZ_IWB2	3/07/2018	5.6
pH	pH units	DG_A_I_PZ_BW28A	3/07/2018	6.6
pH	pH units	DG_A_I_PZ_WRK303	10/07/2018	6
pH	pH units	DG_A_I_PZ_WRK304	10/07/2018	6.2
pH	pH units	DG_A_I_PZ_WRK302	10/07/2018	6.2
pH	pH units	DG_A_I_PZ_WRK301	10/07/2018	7.3
pH	pH units	DG_A_I_PZ_WRK300	17/07/2018	7.1
pH	pH units	DG_A_I_PZ_BW05	20/08/2018	7.3
pH	pH units	DG_A_I_PZ_BW28A	20/08/2018	6.6

Variable	Unit	Sample Point	Date	Result
pH	pH units	DG_A_I_PZ_BW05	12/09/2018	7.1
pH	pH units	DG_A_I_PZ_BW05	18/10/2018	7.1
pH	pH units	DG_A_I_PZ_WRK300	18/10/2018	6.8
pH	pH units	DG_A_I_PZ_IWB2	18/10/2018	5.6
pH	pH units	DG_A_I_PZ_GW02	28/11/2018	6
pH	pH units	DG_A_I_PZ_GW03	28/11/2018	6.7
pH	pH units	DG_A_I_PZ_GW05	28/11/2018	6.6
pH	pH units	DG_A_I_PZ_GW04	28/11/2018	5.9
pH	pH units	DG_A_I_PZ_BW45B	29/11/2018	5.5
pH	pH units	DG_A_I_PZ_GW08	29/11/2018	6.7
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0.048
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	0.004
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_BW05	9/01/2018	0.004
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0.042
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0.006
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_BW36	10/01/2018	0.004
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0.004
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0.005
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0.009
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0.004
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	0.004
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_BW05	5/03/2018	0.004
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	0.006
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0.007
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	0.004
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0.44
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0.019
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_BW36	6/03/2018	0.004
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_GW07	7/06/2018	0.004
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_GW01	7/06/2018	0.004
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_GW06	12/06/2018	0.015
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.004
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	0.099
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0.007
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0.01
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0.13
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0.008
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0.012
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0.004
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0.004
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0.004
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_BW05	20/08/2018	0.004
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	0.024
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_BW05	12/09/2018	0.004
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_BW05	18/10/2018	0.004

Variable	Unit	Sample Point	Date	Result
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0.004
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0.008
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_GW02	28/11/2018	0.009
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_GW03	28/11/2018	0.004
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_GW05	28/11/2018	0.004
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_GW04	28/11/2018	0.004
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	0.004
Phosphorus (Ortho)	mg/L	DG_A_I_PZ_GW08	29/11/2018	0.004
Potassium (Total)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	5
Potassium (Total)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	1.7
Potassium (Total)	mg/L	DG_A_I_PZ_BW05	9/01/2018	82
Potassium (Total)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	45
Potassium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	17
Potassium (Total)	mg/L	DG_A_I_PZ_BW36	10/01/2018	21
Potassium (Total)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	14
Potassium (Total)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	11
Potassium (Total)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	17
Potassium (Total)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	26
Potassium (Total)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	25
Potassium (Total)	mg/L	DG_A_I_PZ_BW05	5/03/2018	88
Potassium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	15
Potassium (Total)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	4.7
Potassium (Total)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	1.8
Potassium (Total)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	16
Potassium (Total)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	13
Potassium (Total)	mg/L	DG_A_I_PZ_BW36	6/03/2018	17
Potassium (Total)	mg/L	DG_A_I_PZ_GW07	7/06/2018	17
Potassium (Total)	mg/L	DG_A_I_PZ_GW01	7/06/2018	8.9
Potassium (Total)	mg/L	DG_A_I_PZ_GW06	12/06/2018	21
Potassium (Total)	mg/L	DG_A_I_PZ_BW05	2/07/2018	85
Potassium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	19
Potassium (Total)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	1.6
Potassium (Total)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	4.9
Potassium (Total)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	42
Potassium (Total)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	11
Potassium (Total)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	16
Potassium (Total)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	26
Potassium (Total)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	23
Potassium (Total)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	13
Potassium (Total)	mg/L	DG_A_I_PZ_BW05	20/08/2018	84
Potassium (Total)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	44
Potassium (Total)	mg/L	DG_A_I_PZ_BW05	12/09/2018	84
Potassium (Total)	mg/L	DG_A_I_PZ_BW05	18/10/2018	83
Potassium (Total)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	13
Potassium (Total)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	5

Variable	Unit	Sample Point	Date	Result
Potassium (Total)	mg/L	DG_A_I_PZ_GW02	28/11/2018	24
Potassium (Total)	mg/L	DG_A_I_PZ_GW03	28/11/2018	27
Potassium (Total)	mg/L	DG_A_I_PZ_GW05	28/11/2018	22
Potassium (Total)	mg/L	DG_A_I_PZ_GW04	28/11/2018	15
Potassium (Total)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	19
Potassium (Total)	mg/L	DG_A_I_PZ_GW08	29/11/2018	16
Selenium (Total)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0.001
Selenium (Total)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	0.002
Selenium (Total)	mg/L	DG_A_I_PZ_BW05	9/01/2018	0.008
Selenium (Total)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0.007
Selenium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0.001
Selenium (Total)	mg/L	DG_A_I_PZ_BW36	10/01/2018	0.001
Selenium (Total)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0.001
Selenium (Total)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0.025
Selenium (Total)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0.011
Selenium (Total)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0.015
Selenium (Total)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	0.024
Selenium (Total)	mg/L	DG_A_I_PZ_BW05	5/03/2018	0.014
Selenium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	0.001
Selenium (Total)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0.001
Selenium (Total)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	0.002
Selenium (Total)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0.017
Selenium (Total)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0.002
Selenium (Total)	mg/L	DG_A_I_PZ_BW36	6/03/2018	0.002
Selenium (Total)	mg/L	DG_A_I_PZ_GW07	7/06/2018	0.005
Selenium (Total)	mg/L	DG_A_I_PZ_GW01	7/06/2018	0.002
Selenium (Total)	mg/L	DG_A_I_PZ_GW06	12/06/2018	0.012
Selenium (Total)	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.012
Selenium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	0.001
Selenium (Total)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0.002
Selenium (Total)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0.001
Selenium (Total)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0.017
Selenium (Total)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0.023
Selenium (Total)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0.013
Selenium (Total)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0.015
Selenium (Total)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0.006
Selenium (Total)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0.002
Selenium (Total)	mg/L	DG_A_I_PZ_BW05	20/08/2018	0.01
Selenium (Total)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	0.005
Selenium (Total)	mg/L	DG_A_I_PZ_BW05	12/09/2018	0.01
Selenium (Total)	mg/L	DG_A_I_PZ_BW05	18/10/2018	0.008
Selenium (Total)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0.003
Selenium (Total)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0.001
Selenium (Total)	mg/L	DG_A_I_PZ_GW02	28/11/2018	0.003
Selenium (Total)	mg/L	DG_A_I_PZ_GW03	28/11/2018	0.002

Variable	Unit	Sample Point	Date	Result
Selenium (Total)	mg/L	DG_A_I_PZ_GW05	28/11/2018	0.004
Selenium (Total)	mg/L	DG_A_I_PZ_GW04	28/11/2018	0.029
Selenium (Total)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	0.008
Selenium (Total)	mg/L	DG_A_I_PZ_GW08	29/11/2018	0.008
Silver (Total)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_BW05	9/01/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_BW36	10/01/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_BW05	5/03/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_BW36	6/03/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_GW07	7/06/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_GW01	7/06/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_GW06	12/06/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_BW05	20/08/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_BW05	12/09/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_BW05	18/10/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_GW02	28/11/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_GW03	28/11/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_GW05	28/11/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_GW04	28/11/2018	0.001

Variable	Unit	Sample Point	Date	Result
Silver (Total)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	0.001
Silver (Total)	mg/L	DG_A_I_PZ_GW08	29/11/2018	0.001
Sulfate (Total)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	150
Sulfate (Total)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	200
Sulfate (Total)	mg/L	DG_A_I_PZ_BW05	9/01/2018	870
Sulfate (Total)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	940
Sulfate (Total)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	150
Sulfate (Total)	mg/L	DG_A_I_PZ_BW36	10/01/2018	360
Sulfate (Total)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	320
Sulfate (Total)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	550
Sulfate (Total)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	660
Sulfate (Total)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	1500
Sulfate (Total)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	650
Sulfate (Total)	mg/L	DG_A_I_PZ_BW05	5/03/2018	940
Sulfate (Total)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	190
Sulfate (Total)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	140
Sulfate (Total)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	190
Sulfate (Total)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	610
Sulfate (Total)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	330
Sulfate (Total)	mg/L	DG_A_I_PZ_BW36	6/03/2018	360
Sulfate (Total)	mg/L	DG_A_I_PZ_GW07	7/06/2018	890
Sulfate (Total)	mg/L	DG_A_I_PZ_GW01	7/06/2018	110
Sulfate (Total)	mg/L	DG_A_I_PZ_GW06	12/06/2018	1500
Sulfate (Total)	mg/L	DG_A_I_PZ_BW05	2/07/2018	870
Sulfate (Total)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	270
Sulfate (Total)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	200
Sulfate (Total)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	160
Sulfate (Total)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	920
Sulfate (Total)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	570
Sulfate (Total)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	640
Sulfate (Total)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	1300
Sulfate (Total)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	480
Sulfate (Total)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	290
Sulfate (Total)	mg/L	DG_A_I_PZ_BW05	20/08/2018	760
Sulfate (Total)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	870
Sulfate (Total)	mg/L	DG_A_I_PZ_BW05	12/09/2018	960
Sulfate (Total)	mg/L	DG_A_I_PZ_BW05	18/10/2018	800
Sulfate (Total)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	310
Sulfate (Total)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	160
Sulfate (Total)	mg/L	DG_A_I_PZ_GW02	28/11/2018	410
Sulfate (Total)	mg/L	DG_A_I_PZ_GW03	28/11/2018	510
Sulfate (Total)	mg/L	DG_A_I_PZ_GW05	28/11/2018	560
Sulfate (Total)	mg/L	DG_A_I_PZ_GW04	28/11/2018	690
Sulfate (Total)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	840
Sulfate (Total)	mg/L	DG_A_I_PZ_GW08	29/11/2018	1100

Variable	Unit	Sample Point	Date	Result
Thorium (Total)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_BW05	9/01/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_BW36	10/01/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	0.028
Thorium (Total)	mg/L	DG_A_I_PZ_BW05	5/03/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	0.003
Thorium (Total)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_BW36	6/03/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_GW07	7/06/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_GW01	7/06/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_GW06	12/06/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_BW05	20/08/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_BW05	12/09/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_BW05	18/10/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_GW02	28/11/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_GW03	28/11/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_GW05	28/11/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_GW04	28/11/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	0.002
Thorium (Total)	mg/L	DG_A_I_PZ_GW08	29/11/2018	0.002
Total Dissolved Solids	mg/L	DG_A_I_PZ_IWB2	8/01/2018	2400
Total Dissolved Solids	mg/L	DG_A_I_PZ_IWB6	8/01/2018	1100

Variable	Unit	Sample Point	Date	Result
Total Dissolved Solids	mg/L	DG_A_I_PZ_BW05	9/01/2018	16000
Total Dissolved Solids	mg/L	DG_A_I_PZ_BW28A	9/01/2018	14000
Total Dissolved Solids	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	1100
Total Dissolved Solids	mg/L	DG_A_I_PZ_BW36	10/01/2018	4100
Total Dissolved Solids	mg/L	DG_A_I_PZ_WRK300	10/01/2018	3700
Total Dissolved Solids	mg/L	DG_A_I_PZ_WRK303	11/01/2018	4400
Total Dissolved Solids	mg/L	DG_A_I_PZ_WRK304	11/01/2018	4600
Total Dissolved Solids	mg/L	DG_A_I_PZ_WRK302	11/01/2018	14000
Total Dissolved Solids	mg/L	DG_A_I_PZ_WRK301	11/01/2018	6600
Total Dissolved Solids	mg/L	DG_A_I_PZ_BW05	5/03/2018	15000
Total Dissolved Solids	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	1300
Total Dissolved Solids	mg/L	DG_A_I_PZ_IWB2	5/03/2018	2400
Total Dissolved Solids	mg/L	DG_A_I_PZ_IWB6	5/03/2018	980
Total Dissolved Solids	mg/L	DG_A_I_PZ_WRK304	6/03/2018	4200
Total Dissolved Solids	mg/L	DG_A_I_PZ_WRK300	6/03/2018	3500
Total Dissolved Solids	mg/L	DG_A_I_PZ_BW36	6/03/2018	3700
Total Dissolved Solids	mg/L	DG_A_I_PZ_GW07	7/06/2018	11000
Total Dissolved Solids	mg/L	DG_A_I_PZ_GW01	7/06/2018	1900
Total Dissolved Solids	mg/L	DG_A_I_PZ_GW06	12/06/2018	14000
Total Dissolved Solids	mg/L	DG_A_I_PZ_BW05	2/07/2018	17000
Total Dissolved Solids	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	1800
Total Dissolved Solids	mg/L	DG_A_I_PZ_IWB6	3/07/2018	1100
Total Dissolved Solids	mg/L	DG_A_I_PZ_IWB2	3/07/2018	2500
Total Dissolved Solids	mg/L	DG_A_I_PZ_BW28A	3/07/2018	14000
Total Dissolved Solids	mg/L	DG_A_I_PZ_WRK303	10/07/2018	4800
Total Dissolved Solids	mg/L	DG_A_I_PZ_WRK304	10/07/2018	4500
Total Dissolved Solids	mg/L	DG_A_I_PZ_WRK302	10/07/2018	13000
Total Dissolved Solids	mg/L	DG_A_I_PZ_WRK301	10/07/2018	6600
Total Dissolved Solids	mg/L	DG_A_I_PZ_WRK300	17/07/2018	3500
Total Dissolved Solids	mg/L	DG_A_I_PZ_BW05	20/08/2018	17000
Total Dissolved Solids	mg/L	DG_A_I_PZ_BW28A	20/08/2018	14000
Total Dissolved Solids	mg/L	DG_A_I_PZ_BW05	12/09/2018	17000
Total Dissolved Solids	mg/L	DG_A_I_PZ_BW05	18/10/2018	15000
Total Dissolved Solids	mg/L	DG_A_I_PZ_WRK300	18/10/2018	3500
Total Dissolved Solids	mg/L	DG_A_I_PZ_IWB2	18/10/2018	2400
Total Dissolved Solids	mg/L	DG_A_I_PZ_GW02	28/11/2018	4300
Total Dissolved Solids	mg/L	DG_A_I_PZ_GW03	28/11/2018	6700
Total Dissolved Solids	mg/L	DG_A_I_PZ_GW05	28/11/2018	6500
Total Dissolved Solids	mg/L	DG_A_I_PZ_GW04	28/11/2018	5600
Total Dissolved Solids	mg/L	DG_A_I_PZ_BW45B	29/11/2018	9500
Total Dissolved Solids	mg/L	DG_A_I_PZ_GW08	29/11/2018	11000
Uranium (Total)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_BW05	9/01/2018	0.004
Uranium (Total)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0.004

Variable	Unit	Sample Point	Date	Result
Uranium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_BW36	10/01/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	0.01
Uranium (Total)	mg/L	DG_A_I_PZ_BW05	5/03/2018	0.005
Uranium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_BW36	6/03/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_GW07	7/06/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_GW01	7/06/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_GW06	12/06/2018	0.003
Uranium (Total)	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.004
Uranium (Total)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0.005
Uranium (Total)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_BW05	20/08/2018	0.003
Uranium (Total)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	0.005
Uranium (Total)	mg/L	DG_A_I_PZ_BW05	12/09/2018	0.003
Uranium (Total)	mg/L	DG_A_I_PZ_BW05	18/10/2018	0.003
Uranium (Total)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_GW02	28/11/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_GW03	28/11/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_GW05	28/11/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_GW04	28/11/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	0.001
Uranium (Total)	mg/L	DG_A_I_PZ_GW08	29/11/2018	0.002
Zinc (Total)	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0.008
Zinc (Total)	mg/L	DG_A_I_PZ_IWB6	8/01/2018	0.007
Zinc (Total)	mg/L	DG_A_I_PZ_BW05	9/01/2018	0.001
Zinc (Total)	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0.004
Zinc (Total)	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0.006
Zinc (Total)	mg/L	DG_A_I_PZ_BW36	10/01/2018	0.031

Variable	Unit	Sample Point	Date	Result
Zinc (Total)	mg/L	DG_A_I_PZ_WRK300	10/01/2018	0.04
Zinc (Total)	mg/L	DG_A_I_PZ_WRK303	11/01/2018	0.007
Zinc (Total)	mg/L	DG_A_I_PZ_WRK304	11/01/2018	0.021
Zinc (Total)	mg/L	DG_A_I_PZ_WRK302	11/01/2018	0.012
Zinc (Total)	mg/L	DG_A_I_PZ_WRK301	11/01/2018	0.21
Zinc (Total)	mg/L	DG_A_I_PZ_BW05	5/03/2018	0.003
Zinc (Total)	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	0.007
Zinc (Total)	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0.012
Zinc (Total)	mg/L	DG_A_I_PZ_IWB6	5/03/2018	0.006
Zinc (Total)	mg/L	DG_A_I_PZ_WRK304	6/03/2018	0.023
Zinc (Total)	mg/L	DG_A_I_PZ_WRK300	6/03/2018	0.016
Zinc (Total)	mg/L	DG_A_I_PZ_BW36	6/03/2018	0.02
Zinc (Total)	mg/L	DG_A_I_PZ_GW07	7/06/2018	0.016
Zinc (Total)	mg/L	DG_A_I_PZ_GW01	7/06/2018	0.027
Zinc (Total)	mg/L	DG_A_I_PZ_GW06	12/06/2018	0.001
Zinc (Total)	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.002
Zinc (Total)	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	0.017
Zinc (Total)	mg/L	DG_A_I_PZ_IWB6	3/07/2018	0.014
Zinc (Total)	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0.012
Zinc (Total)	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0.028
Zinc (Total)	mg/L	DG_A_I_PZ_WRK303	10/07/2018	0.014
Zinc (Total)	mg/L	DG_A_I_PZ_WRK304	10/07/2018	0.003
Zinc (Total)	mg/L	DG_A_I_PZ_WRK302	10/07/2018	0.01
Zinc (Total)	mg/L	DG_A_I_PZ_WRK301	10/07/2018	0.008
Zinc (Total)	mg/L	DG_A_I_PZ_WRK300	17/07/2018	0.027
Zinc (Total)	mg/L	DG_A_I_PZ_BW05	20/08/2018	0.004
Zinc (Total)	mg/L	DG_A_I_PZ_BW28A	20/08/2018	0.01
Zinc (Total)	mg/L	DG_A_I_PZ_BW05	12/09/2018	0.005
Zinc (Total)	mg/L	DG_A_I_PZ_BW05	18/10/2018	0.002
Zinc (Total)	mg/L	DG_A_I_PZ_WRK300	18/10/2018	0.025
Zinc (Total)	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0.015
Zinc (Total)	mg/L	DG_A_I_PZ_GW02	28/11/2018	0.029
Zinc (Total)	mg/L	DG_A_I_PZ_GW03	28/11/2018	0.069
Zinc (Total)	mg/L	DG_A_I_PZ_GW05	28/11/2018	0.036
Zinc (Total)	mg/L	DG_A_I_PZ_GW04	28/11/2018	0.011
Zinc (Total)	mg/L	DG_A_I_PZ_BW45B	29/11/2018	0.057
Zinc (Total)	mg/L	DG_A_I_PZ_GW08	29/11/2018	0.052

7.3 Appendix C: Monitoring Data (Field) – Groundwater

Variable	Unit	Sample Point	Date	Result
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.1
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW05	20/08/2018	0
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW05	12/09/2018	0.1
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW05	18/10/2018	0.2
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW28A	9/01/2018	0
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW28A	3/07/2018	0
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW28A	20/08/2018	0
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW45B	2/11/2018	3.9
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW45B	29/11/2018	0.1
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW45B	21/12/2018	0.9
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW53/Puls	9/01/2018	0.1
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW53/Puls	5/03/2018	0
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW53/Puls	23/04/2018	1
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW53/Puls	3/07/2018	0.5
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW01	7/06/2018	8.6
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW01	4/07/2018	8.7
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW01	23/08/2018	7.8
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW01	11/09/2018	7.7
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW01	26/10/2018	7.4
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW01	4/12/2018	7
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW01	18/12/2018	7
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW02	1/11/2018	2
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW02	28/11/2018	1
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW02	18/12/2018	2.4
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW02	28/12/2018	1
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW03	1/11/2018	4.2
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW03	28/11/2018	2.6
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW03	18/12/2018	2.6
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW04	1/11/2018	1
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW04	28/11/2018	4.8
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW04	19/12/2018	2.4
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW05	1/11/2018	2.9
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW05	28/11/2018	0.3
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW05	19/12/2018	1.3
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW06	12/06/2018	8.2
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW06	5/07/2018	9.2
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW06	23/08/2018	9
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW06	1/10/2018	8
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW06	26/10/2018	8.7
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW06	30/11/2018	8.2
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW06	20/12/2018	7
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW07	7/06/2018	8

Variable	Unit	Sample Point	Date	Result
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.1
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW07	12/07/2018	8.3
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW07	11/09/2018	8.3
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW07	26/10/2018	8.1
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW07	3/12/2018	8.5
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW07	19/12/2018	8.3
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW08	30/10/2018	2
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW08	29/11/2018	8
Dissolved Oxygen	%	DG_A_I_PZ_GW08	29/11/2018	92
Dissolved Oxygen	mg/L	DG_A_I_PZ_GW08	20/12/2018	1.8
Dissolved Oxygen	mg/L	DG_A_I_PZ_IWB2	8/01/2018	0.3
Dissolved Oxygen	mg/L	DG_A_I_PZ_IWB2	5/03/2018	0.3
Dissolved Oxygen	mg/L	DG_A_I_PZ_IWB2	13/04/2018	0.3
Dissolved Oxygen	mg/L	DG_A_I_PZ_IWB2	3/07/2018	0.2
Dissolved Oxygen	mg/L	DG_A_I_PZ_IWB2	18/10/2018	0.2
Dissolved Oxygen	mg/L	DG_A_I_PZ_IWB6	5/03/2018	1
Dissolved Oxygen	mg/L	DG_A_I_PZ_IWB6	13/04/2018	2.3
Dissolved Oxygen	mg/L	DG_A_I_PZ_IWB6	3/07/2018	1.5
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK300	10/01/2018	4
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK300	22/02/2018	1
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK300	6/03/2018	1.1
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK300	26/04/2018	4.3
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK300	24/05/2018	1.8
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK300	15/06/2018	1.7
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK300	11/07/2018	2.5
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK300	17/07/2018	3.2
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK300	18/10/2018	1.5
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK301	11/01/2018	1.6
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK301	22/02/2018	1.3
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK301	14/03/2018	2.7
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK301	26/04/2018	1.4
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK301	24/05/2018	1.6
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK301	15/06/2018	6
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK301	10/07/2018	4.7
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK301	23/08/2018	3.3
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK301	1/10/2018	1.7
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK301	30/10/2018	1.8
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK301	30/11/2018	1.9
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK301	20/12/2018	1
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK302	11/01/2018	5
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK302	16/02/2018	4.4
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK302	14/03/2018	4.9
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK302	24/04/2018	4.4
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK302	25/05/2018	4.3

Variable	Unit	Sample Point	Date	Result
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.1
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK302	14/06/2018	4.4
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK302	10/07/2018	4.9
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK302	23/08/2018	4.9
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK302	1/10/2018	4.7
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK302	26/10/2018	4.6
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK302	30/11/2018	4.9
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK302	20/12/2018	4.9
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK303	11/01/2018	9.9
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK303	22/02/2018	9.2
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK303	14/03/2018	9.5
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK303	26/04/2018	9.1
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK303	24/05/2018	9.2
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK303	14/06/2018	8.8
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK303	10/07/2018	7.8
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK303	22/08/2018	10.2
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK303	1/10/2018	10
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK303	30/10/2018	10.2
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK303	30/11/2018	10
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK303	20/12/2018	10
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK304	11/01/2018	10
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK304	16/02/2018	8.6
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK304	6/03/2018	10.4
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK304	26/04/2018	10
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK304	24/05/2018	10
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK304	14/06/2018	9.8
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK304	10/07/2018	11.2
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK304	22/08/2018	11.6
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK304	1/10/2018	11.5
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK304	30/10/2018	11.4
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK304	30/11/2018	11.5
Dissolved Oxygen	mg/L	DG_A_I_PZ_WRK304	20/12/2018	11.4
Dissolved Oxygen Field	%	DG_A_I_PZ_BW05	2/07/2018	1
Dissolved Oxygen Field	%	DG_A_I_PZ_BW05	20/08/2018	0
Dissolved Oxygen Field	%	DG_A_I_PZ_BW05	12/09/2018	1
Dissolved Oxygen Field	%	DG_A_I_PZ_BW05	18/10/2018	4
Dissolved Oxygen Field	%	DG_A_I_PZ_BW28A	9/01/2018	0
Dissolved Oxygen Field	%	DG_A_I_PZ_BW28A	3/07/2018	0
Dissolved Oxygen Field	%	DG_A_I_PZ_BW28A	20/08/2018	0
Dissolved Oxygen Field	%	DG_A_I_PZ_BW45B	2/11/2018	45
Dissolved Oxygen Field	%	DG_A_I_PZ_BW45B	29/11/2018	0.7
Dissolved Oxygen Field	%	DG_A_I_PZ_BW45B	21/12/2018	17
Dissolved Oxygen Field	%	DG_A_I_PZ_BW53/Puls	9/01/2018	8
Dissolved Oxygen Field	%	DG_A_I_PZ_BW53/Puls	5/03/2018	0

Variable	Unit	Sample Point	Date	Result
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.1
Dissolved Oxygen Field	%	DG_A_I_PZ_BW53/Puls	23/04/2018	10
Dissolved Oxygen Field	%	DG_A_I_PZ_BW53/Puls	3/07/2018	4
Dissolved Oxygen Field	%	DG_A_I_PZ_GW01	7/06/2018	108
Dissolved Oxygen Field	%	DG_A_I_PZ_GW01	4/07/2018	99
Dissolved Oxygen Field	%	DG_A_I_PZ_GW01	23/08/2018	89
Dissolved Oxygen Field	%	DG_A_I_PZ_GW01	11/09/2018	88
Dissolved Oxygen Field	%	DG_A_I_PZ_GW01	26/10/2018	84
Dissolved Oxygen Field	%	DG_A_I_PZ_GW01	4/12/2018	80
Dissolved Oxygen Field	%	DG_A_I_PZ_GW01	18/12/2018	83
Dissolved Oxygen Field	%	DG_A_I_PZ_GW02	1/11/2018	10
Dissolved Oxygen Field	%	DG_A_I_PZ_GW02	28/11/2018	5
Dissolved Oxygen Field	%	DG_A_I_PZ_GW02	18/12/2018	53
Dissolved Oxygen Field	%	DG_A_I_PZ_GW03	1/11/2018	65
Dissolved Oxygen Field	%	DG_A_I_PZ_GW03	28/11/2018	30
Dissolved Oxygen Field	%	DG_A_I_PZ_GW03	18/12/2018	30
Dissolved Oxygen Field	%	DG_A_I_PZ_GW04	1/11/2018	15
Dissolved Oxygen Field	%	DG_A_I_PZ_GW04	28/11/2018	60
Dissolved Oxygen Field	%	DG_A_I_PZ_GW04	19/12/2018	37
Dissolved Oxygen Field	%	DG_A_I_PZ_GW05	1/11/2018	32
Dissolved Oxygen Field	%	DG_A_I_PZ_GW05	28/11/2018	8
Dissolved Oxygen Field	%	DG_A_I_PZ_GW05	19/12/2018	10
Dissolved Oxygen Field	%	DG_A_I_PZ_GW06	12/06/2018	91
Dissolved Oxygen Field	%	DG_A_I_PZ_GW06	5/07/2018	106
Dissolved Oxygen Field	%	DG_A_I_PZ_GW06	23/08/2018	105
Dissolved Oxygen Field	%	DG_A_I_PZ_GW06	1/10/2018	93
Dissolved Oxygen Field	%	DG_A_I_PZ_GW06	26/10/2018	103
Dissolved Oxygen Field	%	DG_A_I_PZ_GW06	30/11/2018	84
Dissolved Oxygen Field	%	DG_A_I_PZ_GW06	20/12/2018	100
Dissolved Oxygen Field	%	DG_A_I_PZ_GW07	7/06/2018	96
Dissolved Oxygen Field	%	DG_A_I_PZ_GW07	12/07/2018	99
Dissolved Oxygen Field	%	DG_A_I_PZ_GW07	11/09/2018	102
Dissolved Oxygen Field	%	DG_A_I_PZ_GW07	26/10/2018	97
Dissolved Oxygen Field	%	DG_A_I_PZ_GW07	3/12/2018	102
Dissolved Oxygen Field	%	DG_A_I_PZ_GW07	19/12/2018	104
Dissolved Oxygen Field	%	DG_A_I_PZ_GW08	30/10/2018	28
Dissolved Oxygen Field	%	DG_A_I_PZ_GW08	29/11/2018	92
Dissolved Oxygen Field	%	DG_A_I_PZ_GW08	20/12/2018	26
Dissolved Oxygen Field	%	DG_A_I_PZ_IWB2	8/01/2018	4
Dissolved Oxygen Field	%	DG_A_I_PZ_IWB2	5/03/2018	4
Dissolved Oxygen Field	%	DG_A_I_PZ_IWB2	13/04/2018	5
Dissolved Oxygen Field	%	DG_A_I_PZ_IWB2	3/07/2018	4
Dissolved Oxygen Field	%	DG_A_I_PZ_IWB2	18/10/2018	4
Dissolved Oxygen Field	%	DG_A_I_PZ_IWB6	5/03/2018	13

Variable	Unit	Sample Point	Date	Result
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.1
Dissolved Oxygen Field	%	DG_A_I_PZ_IWB6	13/04/2018	21
Dissolved Oxygen Field	%	DG_A_I_PZ_IWB6	3/07/2018	20
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK300	10/01/2018	53
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK300	22/02/2018	18
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK300	6/03/2018	19
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK300	26/04/2018	51
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK300	24/05/2018	21
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK300	15/06/2018	19
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK300	11/07/2018	28
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK300	17/07/2018	32
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK300	18/10/2018	10
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK301	11/01/2018	38
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK301	22/02/2018	13
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK301	14/03/2018	28
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK301	26/04/2018	16
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK301	24/05/2018	14
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK301	15/06/2018	69
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK301	10/07/2018	47
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK301	23/08/2018	39
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK301	1/10/2018	36
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK301	30/10/2018	44
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK301	30/11/2018	37
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK301	20/12/2018	34
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK302	11/01/2018	53
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK302	16/02/2018	50
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK302	14/03/2018	52
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK302	24/04/2018	51
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK302	25/05/2018	55
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK302	14/06/2018	51
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK302	10/07/2018	57
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK302	23/08/2018	56
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK302	1/10/2018	63
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK302	26/10/2018	55
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK302	30/11/2018	60
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK302	20/12/2018	58
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK303	11/01/2018	108
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK303	22/02/2018	106
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK303	14/03/2018	107
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK303	26/04/2018	100
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK303	24/05/2018	96
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK303	14/06/2018	99
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK303	10/07/2018	81
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK303	22/08/2018	112

Variable	Unit	Sample Point	Date	Result
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.1
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK303	1/10/2018	115
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK303	30/10/2018	117
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK303	30/11/2018	104
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK303	20/12/2018	110
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK304	11/01/2018	119
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK304	16/02/2018	95
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK304	6/03/2018	115
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK304	26/04/2018	112
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK304	24/05/2018	112
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK304	14/06/2018	102
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK304	10/07/2018	120
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK304	22/08/2018	129
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK304	1/10/2018	125
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK304	30/10/2018	125
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK304	30/11/2018	127
Dissolved Oxygen Field	%	DG_A_I_PZ_WRK304	20/12/2018	128
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW05	9/01/2018	24000
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW05	5/03/2018	23000
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW05	2/07/2018	26000
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW05	20/08/2018	27000
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW05	12/09/2018	26000
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW05	18/10/2018	25000
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW28A	9/01/2018	21000
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW28A	3/07/2018	21000
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW28A	20/08/2018	21000
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW36	10/01/2018	7100
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW36	22/02/2018	6665
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW36	6/03/2018	6600
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW45B	2/11/2018	14870
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW45B	29/11/2018	15000
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW45B	21/12/2018	16256
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW53/Puls	9/01/2018	1800
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW53/Puls	5/03/2018	2200
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW53/Puls	23/04/2018	2774
Electrical Conductivity	µS/cm	DG_A_I_PZ_BW53/Puls	3/07/2018	3200
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW01	7/06/2018	3500
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW01	4/07/2018	10957
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW01	23/08/2018	11359
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW01	11/09/2018	11225
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW01	26/10/2018	11352
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW01	4/12/2018	11138
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW01	18/12/2018	11079
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW02	1/11/2018	6923

Variable	Unit	Sample Point	Date	Result
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.1
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW02	28/11/2018	7400
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW02	18/12/2018	7079
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW03	1/11/2018	10280
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW03	28/11/2018	10000
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW03	18/12/2018	11433
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW04	1/11/2018	9613
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW04	28/11/2018	9300
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW04	19/12/2018	9695
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW05	1/11/2018	11046
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW05	28/11/2018	11000
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW05	19/12/2018	11252
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW06	12/06/2018	20000
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW06	5/07/2018	21507
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW06	23/08/2018	21936
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW06	1/10/2018	21500
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW06	26/10/2018	21634
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW06	30/11/2018	21433
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW06	20/12/2018	21337
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW07	7/06/2018	17000
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW07	12/07/2018	18409
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW07	11/09/2018	18637
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW07	26/10/2018	18673
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW07	3/12/2018	18362
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW07	19/12/2018	18527
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW08	30/10/2018	14038
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW08	29/11/2018	17000
Electrical Conductivity	µS/cm	DG_A_I_PZ_GW08	20/12/2018	20688
Electrical Conductivity	µS/cm	DG_A_I_PZ_IWB2	8/01/2018	4300
Electrical Conductivity	µS/cm	DG_A_I_PZ_IWB2	5/03/2018	4200
Electrical Conductivity	µS/cm	DG_A_I_PZ_IWB2	13/04/2018	4598
Electrical Conductivity	µS/cm	DG_A_I_PZ_IWB2	3/07/2018	4300
Electrical Conductivity	µS/cm	DG_A_I_PZ_IWB6	8/01/2018	1700
Electrical Conductivity	µS/cm	DG_A_I_PZ_IWB6	5/03/2018	1700
Electrical Conductivity	µS/cm	DG_A_I_PZ_IWB6	13/04/2018	1842
Electrical Conductivity	µS/cm	DG_A_I_PZ_IWB6	3/07/2018	1700
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK300	10/01/2018	6400
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK300	22/02/2018	6113
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK300	6/03/2018	6100
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK300	26/04/2018	6307
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK300	24/05/2018	5890
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK300	15/06/2018	5839
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK300	17/07/2018	5800
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK300	18/10/2018	6487

Variable	Unit	Sample Point	Date	Result
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.1
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK301	11/01/2018	11000
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK301	22/02/2018	10752
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK301	14/03/2018	10690
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK301	26/04/2018	11688
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK301	24/05/2018	10240
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK301	15/06/2018	10746
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK301	10/07/2018	11000
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK301	23/08/2018	11411
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK301	1/10/2018	12046
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK301	30/10/2018	11521
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK301	30/11/2018	11275
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK301	20/12/2018	12178
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK302	11/01/2018	20000
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK302	16/02/2018	20028
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK302	14/03/2018	19260
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK302	24/04/2018	22058
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK302	25/05/2018	19550
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK302	14/06/2018	20344
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK302	10/07/2018	20000
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK302	23/08/2018	21572
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK302	1/10/2018	21025
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK302	26/10/2018	21426
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK302	30/11/2018	20916
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK302	20/12/2018	20996
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK303	11/01/2018	7600
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK303	22/02/2018	7573
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK303	14/03/2018	7214
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK303	26/04/2018	8675
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK303	24/05/2018	7380
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK303	14/06/2018	8107
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK303	10/07/2018	8100
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK303	22/08/2018	8736
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK303	1/10/2018	8975
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK303	30/10/2018	9034
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK303	30/11/2018	8824
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK303	20/12/2018	8972
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK304	11/01/2018	7800
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK304	16/02/2018	7488
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK304	6/03/2018	7500
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK304	26/04/2018	8153
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK304	24/05/2018	7320
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK304	14/06/2018	7736
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK304	10/07/2018	7700

Variable	Unit	Sample Point	Date	Result
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.1
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK304	22/08/2018	8095
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK304	1/10/2018	8104
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK304	30/10/2018	8168
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK304	30/11/2018	8170
Electrical Conductivity	µS/cm	DG_A_I_PZ_WRK304	20/12/2018	8144
pH	pH units	DG_A_I_PZ_BW05	9/01/2018	6.99
pH	pH units	DG_A_I_PZ_BW05	5/03/2018	6.88
pH	pH units	DG_A_I_PZ_BW05	2/07/2018	6.95
pH	pH units	DG_A_I_PZ_BW05	20/08/2018	6.84
pH	pH units	DG_A_I_PZ_BW05	12/09/2018	6.86
pH	pH units	DG_A_I_PZ_BW05	18/10/2018	6.91
pH	pH units	DG_A_I_PZ_BW28A	9/01/2018	6.47
pH	pH units	DG_A_I_PZ_BW28A	3/07/2018	6.46
pH	pH units	DG_A_I_PZ_BW28A	20/08/2018	6.39
pH	pH units	DG_A_I_PZ_BW36	10/01/2018	5.57
pH	pH units	DG_A_I_PZ_BW36	22/02/2018	5.57
pH	pH units	DG_A_I_PZ_BW36	6/03/2018	5.55
pH	pH units	DG_A_I_PZ_BW45B	2/11/2018	4.95
pH	pH units	DG_A_I_PZ_BW45B	29/11/2018	5.5
pH	pH units	DG_A_I_PZ_BW53/Puls	9/01/2018	6.8
pH	pH units	DG_A_I_PZ_BW53/Puls	5/03/2018	6.67
pH	pH units	DG_A_I_PZ_BW53/Puls	23/04/2018	6.44
pH	pH units	DG_A_I_PZ_BW53/Puls	3/07/2018	6.85
pH	pH units	DG_A_I_PZ_GW01	7/06/2018	6.67
pH	pH units	DG_A_I_PZ_GW01	4/07/2018	5.88
pH	pH units	DG_A_I_PZ_GW01	23/08/2018	5.29
pH	pH units	DG_A_I_PZ_GW01	11/09/2018	5.14
pH	pH units	DG_A_I_PZ_GW01	26/10/2018	5.04
pH	pH units	DG_A_I_PZ_GW01	4/12/2018	5.11
pH	pH units	DG_A_I_PZ_GW01	18/12/2018	5.01
pH	pH units	DG_A_I_PZ_GW02	1/11/2018	6.12
pH	pH units	DG_A_I_PZ_GW02	28/11/2018	6
pH	pH units	DG_A_I_PZ_GW02	18/12/2018	5.97
pH	pH units	DG_A_I_PZ_GW03	1/11/2018	6.36
pH	pH units	DG_A_I_PZ_GW03	28/11/2018	6.67
pH	pH units	DG_A_I_PZ_GW03	18/12/2018	6.5
pH	pH units	DG_A_I_PZ_GW04	1/11/2018	5.74
pH	pH units	DG_A_I_PZ_GW04	28/11/2018	5.82
pH	pH units	DG_A_I_PZ_GW04	19/12/2018	5.89
pH	pH units	DG_A_I_PZ_GW05	1/11/2018	6.37
pH	pH units	DG_A_I_PZ_GW05	28/11/2018	6.55
pH	pH units	DG_A_I_PZ_GW05	19/12/2018	6.65
pH	pH units	DG_A_I_PZ_GW06	12/06/2018	6.59

Variable	Unit	Sample Point	Date	Result
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.1
pH	pH units	DG_A_I_PZ_GW06	5/07/2018	6.57
pH	pH units	DG_A_I_PZ_GW06	23/08/2018	6.39
pH	pH units	DG_A_I_PZ_GW06	1/10/2018	6.38
pH	pH units	DG_A_I_PZ_GW06	26/10/2018	6.32
pH	pH units	DG_A_I_PZ_GW06	30/11/2018	6.4
pH	pH units	DG_A_I_PZ_GW06	20/12/2018	6.38
pH	pH units	DG_A_I_PZ_GW07	7/06/2018	6.5
pH	pH units	DG_A_I_PZ_GW07	12/07/2018	6.5
pH	pH units	DG_A_I_PZ_GW07	11/09/2018	6.54
pH	pH units	DG_A_I_PZ_GW07	26/10/2018	6.44
pH	pH units	DG_A_I_PZ_GW07	3/12/2018	6.6
pH	pH units	DG_A_I_PZ_GW07	19/12/2018	6.2
pH	pH units	DG_A_I_PZ_GW08	30/10/2018	6.19
pH	pH units	DG_A_I_PZ_GW08	29/11/2018	6.55
pH	pH units	DG_A_I_PZ_GW08	20/12/2018	6.35
pH	pH units	DG_A_I_PZ_IWB2	8/01/2018	5.42
pH	pH units	DG_A_I_PZ_IWB2	5/03/2018	5.39
pH	pH units	DG_A_I_PZ_IWB2	13/04/2018	5.44
pH	pH units	DG_A_I_PZ_IWB2	3/07/2018	5.45
pH	pH units	DG_A_I_PZ_IWB2	18/10/2018	5.42
pH	pH units	DG_A_I_PZ_IWB6	8/01/2018	5.37
pH	pH units	DG_A_I_PZ_IWB6	5/03/2018	5.41
pH	pH units	DG_A_I_PZ_IWB6	13/04/2018	5.46
pH	pH units	DG_A_I_PZ_IWB6	3/07/2018	5.44
pH	pH units	DG_A_I_PZ_WRK300	10/01/2018	6.54
pH	pH units	DG_A_I_PZ_WRK300	22/02/2018	6.65
pH	pH units	DG_A_I_PZ_WRK300	6/03/2018	6.66
pH	pH units	DG_A_I_PZ_WRK300	26/04/2018	6.34
pH	pH units	DG_A_I_PZ_WRK300	24/05/2018	6.82
pH	pH units	DG_A_I_PZ_WRK300	15/06/2018	6.52
pH	pH units	DG_A_I_PZ_WRK300	11/07/2018	6.57
pH	pH units	DG_A_I_PZ_WRK300	17/07/2018	6.7
pH	pH units	DG_A_I_PZ_WRK300	18/10/2018	6.57
pH	pH units	DG_A_I_PZ_WRK301	11/01/2018	6.96
pH	pH units	DG_A_I_PZ_WRK301	22/02/2018	6.9
pH	pH units	DG_A_I_PZ_WRK301	14/03/2018	6.93
pH	pH units	DG_A_I_PZ_WRK301	26/04/2018	6.93
pH	pH units	DG_A_I_PZ_WRK301	24/05/2018	7.01
pH	pH units	DG_A_I_PZ_WRK301	15/06/2018	7
pH	pH units	DG_A_I_PZ_WRK301	10/07/2018	7.1
pH	pH units	DG_A_I_PZ_WRK301	23/08/2018	6.97
pH	pH units	DG_A_I_PZ_WRK301	1/10/2018	6.97
pH	pH units	DG_A_I_PZ_WRK301	30/10/2018	6.95

Variable	Unit	Sample Point	Date	Result
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.1
pH	pH units	DG_A_I_PZ_WRK301	30/11/2018	7.01
pH	pH units	DG_A_I_PZ_WRK301	20/12/2018	6.89
pH	pH units	DG_A_I_PZ_WRK302	11/01/2018	5.96
pH	pH units	DG_A_I_PZ_WRK302	16/02/2018	5.85
pH	pH units	DG_A_I_PZ_WRK302	14/03/2018	5.98
pH	pH units	DG_A_I_PZ_WRK302	24/04/2018	5.91
pH	pH units	DG_A_I_PZ_WRK302	25/05/2018	5.95
pH	pH units	DG_A_I_PZ_WRK302	14/06/2018	5.91
pH	pH units	DG_A_I_PZ_WRK302	10/07/2018	6.06
pH	pH units	DG_A_I_PZ_WRK302	23/08/2018	5.89
pH	pH units	DG_A_I_PZ_WRK302	1/10/2018	5.95
pH	pH units	DG_A_I_PZ_WRK302	26/10/2018	5.82
pH	pH units	DG_A_I_PZ_WRK302	30/11/2018	6.02
pH	pH units	DG_A_I_PZ_WRK302	20/12/2018	5.96
pH	pH units	DG_A_I_PZ_WRK303	11/01/2018	5.81
pH	pH units	DG_A_I_PZ_WRK303	22/02/2018	5.83
pH	pH units	DG_A_I_PZ_WRK303	14/03/2018	5.8
pH	pH units	DG_A_I_PZ_WRK303	26/04/2018	5.85
pH	pH units	DG_A_I_PZ_WRK303	24/05/2018	5.84
pH	pH units	DG_A_I_PZ_WRK303	14/06/2018	5.81
pH	pH units	DG_A_I_PZ_WRK303	10/07/2018	5.92
pH	pH units	DG_A_I_PZ_WRK303	22/08/2018	5.78
pH	pH units	DG_A_I_PZ_WRK303	1/10/2018	5.83
pH	pH units	DG_A_I_PZ_WRK303	30/10/2018	5.78
pH	pH units	DG_A_I_PZ_WRK303	30/11/2018	5.95
pH	pH units	DG_A_I_PZ_WRK303	20/12/2018	5.86
pH	pH units	DG_A_I_PZ_WRK304	11/01/2018	6.03
pH	pH units	DG_A_I_PZ_WRK304	16/02/2018	6.05
pH	pH units	DG_A_I_PZ_WRK304	6/03/2018	6
pH	pH units	DG_A_I_PZ_WRK304	26/04/2018	6.05
pH	pH units	DG_A_I_PZ_WRK304	24/05/2018	6.07
pH	pH units	DG_A_I_PZ_WRK304	14/06/2018	6.04
pH	pH units	DG_A_I_PZ_WRK304	10/07/2018	6.1
pH	pH units	DG_A_I_PZ_WRK304	22/08/2018	5.99
pH	pH units	DG_A_I_PZ_WRK304	1/10/2018	6.02
pH	pH units	DG_A_I_PZ_WRK304	30/10/2018	6
pH	pH units	DG_A_I_PZ_WRK304	30/11/2018	6.15
pH	pH units	DG_A_I_PZ_WRK304	20/12/2018	6.08
Redox Potential (Eh)	mV	DG_A_I_PZ_BW05	2/07/2018	-21
Redox Potential (Eh)	mV	DG_A_I_PZ_BW05	20/08/2018	-22
Redox Potential (Eh)	mV	DG_A_I_PZ_BW05	12/09/2018	-12
Redox Potential (Eh)	mV	DG_A_I_PZ_BW05	18/10/2018	-29
Redox Potential (Eh)	mV	DG_A_I_PZ_BW28A	9/01/2018	-27

Variable	Unit	Sample Point	Date	Result
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.1
Redox Potential (Eh)	mV	DG_A_I_PZ_BW28A	3/07/2018	-58
Redox Potential (Eh)	mV	DG_A_I_PZ_BW28A	20/08/2018	-43
Redox Potential (Eh)	mV	DG_A_I_PZ_BW45B	2/11/2018	145
Redox Potential (Eh)	mV	DG_A_I_PZ_BW45B	29/11/2018	140
Redox Potential (Eh)	mV	DG_A_I_PZ_BW45B	21/12/2018	172
Redox Potential (Eh)	mV	DG_A_I_PZ_BW53/Puls	5/03/2018	-146
Redox Potential (Eh)	mV	DG_A_I_PZ_BW53/Puls	23/04/2018	-60
Redox Potential (Eh)	mV	DG_A_I_PZ_BW53/Puls	3/07/2018	-130
Redox Potential (Eh)	mV	DG_A_I_PZ_GW01	7/06/2018	110
Redox Potential (Eh)	mV	DG_A_I_PZ_GW01	4/07/2018	141
Redox Potential (Eh)	mV	DG_A_I_PZ_GW01	23/08/2018	161
Redox Potential (Eh)	mV	DG_A_I_PZ_GW01	11/09/2018	162
Redox Potential (Eh)	mV	DG_A_I_PZ_GW01	26/10/2018	156
Redox Potential (Eh)	mV	DG_A_I_PZ_GW01	4/12/2018	159
Redox Potential (Eh)	mV	DG_A_I_PZ_GW01	18/12/2018	177
Redox Potential (Eh)	mV	DG_A_I_PZ_GW02	1/11/2018	2
Redox Potential (Eh)	mV	DG_A_I_PZ_GW02	28/11/2018	25
Redox Potential (Eh)	mV	DG_A_I_PZ_GW02	18/12/2018	79
Redox Potential (Eh)	mV	DG_A_I_PZ_GW03	1/11/2018	46
Redox Potential (Eh)	mV	DG_A_I_PZ_GW03	28/11/2018	-76
Redox Potential (Eh)	mV	DG_A_I_PZ_GW03	18/12/2018	-86
Redox Potential (Eh)	mV	DG_A_I_PZ_GW04	1/11/2018	105
Redox Potential (Eh)	mV	DG_A_I_PZ_GW04	28/11/2018	109
Redox Potential (Eh)	mV	DG_A_I_PZ_GW04	19/12/2018	100
Redox Potential (Eh)	mV	DG_A_I_PZ_GW05	1/11/2018	69
Redox Potential (Eh)	mV	DG_A_I_PZ_GW05	28/11/2018	-60
Redox Potential (Eh)	mV	DG_A_I_PZ_GW05	19/12/2018	-74
Redox Potential (Eh)	mV	DG_A_I_PZ_GW06	12/06/2018	95
Redox Potential (Eh)	mV	DG_A_I_PZ_GW06	5/07/2018	97
Redox Potential (Eh)	mV	DG_A_I_PZ_GW06	23/08/2018	101
Redox Potential (Eh)	mV	DG_A_I_PZ_GW06	1/10/2018	135
Redox Potential (Eh)	mV	DG_A_I_PZ_GW06	26/10/2018	82
Redox Potential (Eh)	mV	DG_A_I_PZ_GW06	30/11/2018	105
Redox Potential (Eh)	mV	DG_A_I_PZ_GW06	20/12/2018	96
Redox Potential (Eh)	mV	DG_A_I_PZ_GW07	7/06/2018	97
Redox Potential (Eh)	mV	DG_A_I_PZ_GW07	12/07/2018	106
Redox Potential (Eh)	mV	DG_A_I_PZ_GW07	11/09/2018	105
Redox Potential (Eh)	mV	DG_A_I_PZ_GW07	26/10/2018	85
Redox Potential (Eh)	mV	DG_A_I_PZ_GW07	3/12/2018	82
Redox Potential (Eh)	mV	DG_A_I_PZ_GW07	19/12/2018	96
Redox Potential (Eh)	mV	DG_A_I_PZ_GW08	30/10/2018	87
Redox Potential (Eh)	mV	DG_A_I_PZ_GW08	29/11/2018	-14
Redox Potential (Eh)	mV	DG_A_I_PZ_GW08	20/12/2018	15

Variable	Unit	Sample Point	Date	Result
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.1
Redox Potential (Eh)	mV	DG_A_I_PZ_IWB2	8/01/2018	297
Redox Potential (Eh)	mV	DG_A_I_PZ_IWB2	5/03/2018	61
Redox Potential (Eh)	mV	DG_A_I_PZ_IWB2	13/04/2018	202
Redox Potential (Eh)	mV	DG_A_I_PZ_IWB2	3/07/2018	158
Redox Potential (Eh)	mV	DG_A_I_PZ_IWB2	18/10/2018	171
Redox Potential (Eh)	mV	DG_A_I_PZ_IWB6	5/03/2018	82
Redox Potential (Eh)	mV	DG_A_I_PZ_IWB6	13/04/2018	175
Redox Potential (Eh)	mV	DG_A_I_PZ_IWB6	3/07/2018	130
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK300	10/01/2018	190
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK300	22/02/2018	57
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK300	6/03/2018	59
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK300	26/04/2018	76
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK300	24/05/2018	297
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK300	15/06/2018	73
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK300	11/07/2018	119
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK300	17/07/2018	87
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK300	18/10/2018	83
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK301	11/01/2018	278
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK301	22/02/2018	48
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK301	14/03/2018	235
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK301	26/04/2018	47
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK301	24/05/2018	293
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK301	15/06/2018	76
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK301	10/07/2018	51
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK301	23/08/2018	56
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK301	1/10/2018	98
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK301	30/10/2018	44
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK301	30/11/2018	52
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK301	20/12/2018	25
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK302	11/01/2018	339
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK302	16/02/2018	94
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK302	14/03/2018	226
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK302	24/04/2018	99
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK302	25/05/2018	345
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK302	14/06/2018	122
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK302	10/07/2018	123
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK302	23/08/2018	129
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK302	1/10/2018	128
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK302	26/10/2018	108
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK302	30/11/2018	129
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK302	20/12/2018	103
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK303	11/01/2018	306
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK303	22/02/2018	105

Variable	Unit	Sample Point	Date	Result
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.1
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK303	14/03/2018	123
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK303	26/04/2018	103
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK303	24/05/2018	389
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK303	14/06/2018	120
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK303	10/07/2018	134
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK303	22/08/2018	132
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK303	1/10/2018	137
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK303	30/10/2018	106
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK303	30/11/2018	128
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK303	20/12/2018	110
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK304	11/01/2018	301
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK304	16/02/2018	81
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK304	6/03/2018	94
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK304	26/04/2018	90
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK304	24/05/2018	390
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK304	14/06/2018	107
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK304	10/07/2018	114
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK304	22/08/2018	117
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK304	1/10/2018	118
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK304	30/10/2018	95
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK304	30/11/2018	114
Redox Potential (Eh)	mV	DG_A_I_PZ_WRK304	20/12/2018	99
Temperature	°C	DG_A_I_PZ_BW05	2/07/2018	17.1
Temperature	°C	DG_A_I_PZ_BW05	20/08/2018	17.1
Temperature	°C	DG_A_I_PZ_BW05	12/09/2018	16.9
Temperature	°C	DG_A_I_PZ_BW05	18/10/2018	16.9
Temperature	°C	DG_A_I_PZ_BW28A	9/01/2018	19.2
Temperature	°C	DG_A_I_PZ_BW28A	3/07/2018	17
Temperature	°C	DG_A_I_PZ_BW28A	20/08/2018	18
Temperature	°C	DG_A_I_PZ_BW45B	2/11/2018	21.4
Temperature	°C	DG_A_I_PZ_BW45B	29/11/2018	19.8
Temperature	°C	DG_A_I_PZ_BW45B	21/12/2018	19
Temperature	°C	DG_A_I_PZ_BW53/Puls	9/01/2018	18.1
Temperature	°C	DG_A_I_PZ_BW53/Puls	5/03/2018	17.1
Temperature	°C	DG_A_I_PZ_BW53/Puls	23/04/2018	19.4
Temperature	°C	DG_A_I_PZ_BW53/Puls	3/07/2018	15
Temperature	°C	DG_A_I_PZ_GW01	7/06/2018	20
Temperature	°C	DG_A_I_PZ_GW01	4/07/2018	19
Temperature	°C	DG_A_I_PZ_GW01	23/08/2018	18
Temperature	°C	DG_A_I_PZ_GW01	11/09/2018	18.6
Temperature	°C	DG_A_I_PZ_GW01	26/10/2018	18.4
Temperature	°C	DG_A_I_PZ_GW01	4/12/2018	18.4
Temperature	°C	DG_A_I_PZ_GW01	18/12/2018	18.8

Variable	Unit	Sample Point	Date	Result
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.1
Temperature	°C	DG_A_I_PZ_GW02	1/11/2018	23
Temperature	°C	DG_A_I_PZ_GW02	28/11/2018	21
Temperature	°C	DG_A_I_PZ_GW02	18/12/2018	21
Temperature	°C	DG_A_I_PZ_GW03	1/11/2018	22.5
Temperature	°C	DG_A_I_PZ_GW03	28/11/2018	23
Temperature	°C	DG_A_I_PZ_GW03	18/12/2018	23
Temperature	°C	DG_A_I_PZ_GW04	1/11/2018	21.5
Temperature	°C	DG_A_I_PZ_GW04	28/11/2018	19.3
Temperature	°C	DG_A_I_PZ_GW04	19/12/2018	20
Temperature	°C	DG_A_I_PZ_GW05	1/11/2018	25.5
Temperature	°C	DG_A_I_PZ_GW05	28/11/2018	25
Temperature	°C	DG_A_I_PZ_GW05	19/12/2018	22
Temperature	°C	DG_A_I_PZ_GW06	12/06/2018	17.2
Temperature	°C	DG_A_I_PZ_GW06	5/07/2018	17.3
Temperature	°C	DG_A_I_PZ_GW06	23/08/2018	17.7
Temperature	°C	DG_A_I_PZ_GW06	1/10/2018	20.9
Temperature	°C	DG_A_I_PZ_GW06	26/10/2018	19.3
Temperature	°C	DG_A_I_PZ_GW06	30/11/2018	20.2
Temperature	°C	DG_A_I_PZ_GW06	20/12/2018	19.6
Temperature	°C	DG_A_I_PZ_GW07	7/06/2018	18
Temperature	°C	DG_A_I_PZ_GW07	12/07/2018	18.2
Temperature	°C	DG_A_I_PZ_GW07	11/09/2018	20.6
Temperature	°C	DG_A_I_PZ_GW07	26/10/2018	20
Temperature	°C	DG_A_I_PZ_GW07	3/12/2018	19.5
Temperature	°C	DG_A_I_PZ_GW07	19/12/2018	20
Temperature	°C	DG_A_I_PZ_GW08	30/10/2018	25
Temperature	°C	DG_A_I_PZ_GW08	29/11/2018	24
Temperature	°C	DG_A_I_PZ_GW08	20/12/2018	20
Temperature	°C	DG_A_I_PZ_IWB2	8/01/2018	18
Temperature	°C	DG_A_I_PZ_IWB2	5/03/2018	18
Temperature	°C	DG_A_I_PZ_IWB2	13/04/2018	17.7
Temperature	°C	DG_A_I_PZ_IWB2	3/07/2018	17.5
Temperature	°C	DG_A_I_PZ_IWB2	18/10/2018	17.7
Temperature	°C	DG_A_I_PZ_IWB6	5/03/2018	18.1
Temperature	°C	DG_A_I_PZ_IWB6	13/04/2018	18.6
Temperature	°C	DG_A_I_PZ_IWB6	3/07/2018	17.2
Temperature	°C	DG_A_I_PZ_WRK300	10/01/2018	23
Temperature	°C	DG_A_I_PZ_WRK300	22/02/2018	21.6
Temperature	°C	DG_A_I_PZ_WRK300	6/03/2018	19.7
Temperature	°C	DG_A_I_PZ_WRK300	26/04/2018	17.7
Temperature	°C	DG_A_I_PZ_WRK300	24/05/2018	15.5
Temperature	°C	DG_A_I_PZ_WRK300	15/06/2018	17
Temperature	°C	DG_A_I_PZ_WRK300	11/07/2018	17

Variable	Unit	Sample Point	Date	Result
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.1
Temperature	°C	DG_A_I_PZ_WRK300	17/07/2018	18
Temperature	°C	DG_A_I_PZ_WRK300	18/10/2018	18.5
Temperature	°C	DG_A_I_PZ_WRK301	11/01/2018	26.6
Temperature	°C	DG_A_I_PZ_WRK301	22/02/2018	20.8
Temperature	°C	DG_A_I_PZ_WRK301	14/03/2018	22.4
Temperature	°C	DG_A_I_PZ_WRK301	26/04/2018	18.6
Temperature	°C	DG_A_I_PZ_WRK301	24/05/2018	16.3
Temperature	°C	DG_A_I_PZ_WRK301	15/06/2018	15.9
Temperature	°C	DG_A_I_PZ_WRK301	10/07/2018	19
Temperature	°C	DG_A_I_PZ_WRK301	23/08/2018	17.1
Temperature	°C	DG_A_I_PZ_WRK301	1/10/2018	22.4
Temperature	°C	DG_A_I_PZ_WRK301	30/10/2018	23.2
Temperature	°C	DG_A_I_PZ_WRK301	30/11/2018	21
Temperature	°C	DG_A_I_PZ_WRK301	20/12/2018	22
Temperature	°C	DG_A_I_PZ_WRK302	11/01/2018	17.9
Temperature	°C	DG_A_I_PZ_WRK302	16/02/2018	17.4
Temperature	°C	DG_A_I_PZ_WRK302	14/03/2018	17.7
Temperature	°C	DG_A_I_PZ_WRK302	24/04/2018	17.5
Temperature	°C	DG_A_I_PZ_WRK302	25/05/2018	17.2
Temperature	°C	DG_A_I_PZ_WRK302	14/06/2018	17.2
Temperature	°C	DG_A_I_PZ_WRK302	10/07/2018	17.8
Temperature	°C	DG_A_I_PZ_WRK302	23/08/2018	17.1
Temperature	°C	DG_A_I_PZ_WRK302	1/10/2018	18.3
Temperature	°C	DG_A_I_PZ_WRK302	26/10/2018	17.5
Temperature	°C	DG_A_I_PZ_WRK302	30/11/2018	18.3
Temperature	°C	DG_A_I_PZ_WRK302	20/12/2018	18.1
Temperature	°C	DG_A_I_PZ_WRK303	11/01/2018	18.5
Temperature	°C	DG_A_I_PZ_WRK303	22/02/2018	20.2
Temperature	°C	DG_A_I_PZ_WRK303	14/03/2018	20.5
Temperature	°C	DG_A_I_PZ_WRK303	26/04/2018	17
Temperature	°C	DG_A_I_PZ_WRK303	24/05/2018	16.8
Temperature	°C	DG_A_I_PZ_WRK303	14/06/2018	18.2
Temperature	°C	DG_A_I_PZ_WRK303	10/07/2018	18.3
Temperature	°C	DG_A_I_PZ_WRK303	22/08/2018	18.2
Temperature	°C	DG_A_I_PZ_WRK303	1/10/2018	18.7
Temperature	°C	DG_A_I_PZ_WRK303	30/10/2018	18.9
Temperature	°C	DG_A_I_PZ_WRK303	30/11/2018	18.6
Temperature	°C	DG_A_I_PZ_WRK303	20/12/2018	18.8
Temperature	°C	DG_A_I_PZ_WRK304	11/01/2018	18.5
Temperature	°C	DG_A_I_PZ_WRK304	16/02/2018	17.7
Temperature	°C	DG_A_I_PZ_WRK304	6/03/2018	18
Temperature	°C	DG_A_I_PZ_WRK304	26/04/2018	18.2
Temperature	°C	DG_A_I_PZ_WRK304	24/05/2018	16

Variable	Unit	Sample Point	Date	Result
Dissolved Oxygen	mg/L	DG_A_I_PZ_BW05	2/07/2018	0.1
Temperature	°C	DG_A_I_PZ_WRK304	14/06/2018	18
Temperature	°C	DG_A_I_PZ_WRK304	10/07/2018	17.7
Temperature	°C	DG_A_I_PZ_WRK304	22/08/2018	18.1
Temperature	°C	DG_A_I_PZ_WRK304	1/10/2018	18.4
Temperature	°C	DG_A_I_PZ_WRK304	30/10/2018	18.5
Temperature	°C	DG_A_I_PZ_WRK304	30/11/2018	18.3
Temperature	°C	DG_A_I_PZ_WRK304	20/12/2018	18.4

7.4 Appendix D: Monitoring Data (Lab) – Surface water

Variable	Unit	Sample Point ID	Date	Result
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW22	19/06/2018	97
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW14	19/06/2018	170
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW24	19/06/2018	240
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW22	17/07/2018	100
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW14	17/07/2018	180
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	93
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW24	17/07/2018	150
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW20	8/08/2018	65
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW24	14/08/2018	84
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW24	12/09/2018	120
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW22	17/10/2018	140
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW14	17/10/2018	240
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	100
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW24	17/10/2018	99
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	200
Alkalinity (Bicarbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW24	1/11/2018	180
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW22	19/06/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW14	19/06/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW24	19/06/2018	28
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW14	17/07/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	76
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW24	17/07/2018	100
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW20	8/08/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW24	14/08/2018	130
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW24	12/09/2018	83
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW14	17/10/2018	0
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	30
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW24	17/10/2018	120
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	42
Alkalinity (Carbonate) as CaCO3	mg/L	DG_A_I_SW_DUSW24	1/11/2018	59
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_SW_DUSW22	19/06/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_SW_DUSW14	19/06/2018	0
Alkalinity (Hydroxide) as CaCO3	mg/L	DG_A_I_SW_DUSW24	19/06/2018	0
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_SW_DUSW22	15/01/2018	58
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_SW_DUSW24	15/01/2018	290
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_SW_DUSW22	9/04/2018	36
Alkalinity (Total) as CaCO3	mg/L	DG_A_I_SW_DUSW24	9/04/2018	390
Aluminium (Total)	mg/L	DG_A_I_SW_DUSW22	15/01/2018	0.04
Aluminium (Total)	mg/L	DG_A_I_SW_DUSW24	15/01/2018	0.04
Aluminium (Total)	mg/L	DG_A_I_SW_DUSW22	9/04/2018	0.04
Aluminium (Total)	mg/L	DG_A_I_SW_DUSW24	9/04/2018	0.09

Variable	Unit	Sample Point ID	Date	Result
Aluminium (Total)	mg/L	DG_A_I_SW_DUSW22	19/06/2018	0.02
Aluminium (Total)	mg/L	DG_A_I_SW_DUSW14	19/06/2018	0.2
Aluminium (Total)	mg/L	DG_A_I_SW_DUSW24	19/06/2018	0.17
Aluminium (Total)	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0.06
Aluminium (Total)	mg/L	DG_A_I_SW_DUSW14	17/07/2018	0.43
Aluminium (Total)	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	0.6
Aluminium (Total)	mg/L	DG_A_I_SW_DUSW24	17/07/2018	0.12
Aluminium (Total)	mg/L	DG_A_I_SW_DUSW20	8/08/2018	5.6
Aluminium (Total)	mg/L	DG_A_I_SW_DUSW24	14/08/2018	0.12
Aluminium (Total)	mg/L	DG_A_I_SW_DUSW24	12/09/2018	0.13
Aluminium (Total)	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0.07
Aluminium (Total)	mg/L	DG_A_I_SW_DUSW14	17/10/2018	0.34
Aluminium (Total)	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	4
Aluminium (Total)	mg/L	DG_A_I_SW_DUSW24	17/10/2018	0.29
Aluminium (Total)	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	0.1
Aluminium (Total)	mg/L	DG_A_I_SW_DUSW24	1/11/2018	0.27
Ammonia Nitrogen	mg/L	DG_A_I_SW_DUSW22	15/01/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_SW_DUSW24	15/01/2018	0.14
Ammonia Nitrogen	mg/L	DG_A_I_SW_DUSW22	9/04/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_SW_DUSW24	9/04/2018	0.04
Ammonia Nitrogen	mg/L	DG_A_I_SW_DUSW22	19/06/2018	0.06
Ammonia Nitrogen	mg/L	DG_A_I_SW_DUSW14	19/06/2018	0.11
Ammonia Nitrogen	mg/L	DG_A_I_SW_DUSW24	19/06/2018	0.13
Ammonia Nitrogen	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0.02
Ammonia Nitrogen	mg/L	DG_A_I_SW_DUSW14	17/07/2018	0.1
Ammonia Nitrogen	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	0.34
Ammonia Nitrogen	mg/L	DG_A_I_SW_DUSW24	17/07/2018	0.04
Ammonia Nitrogen	mg/L	DG_A_I_SW_DUSW20	8/08/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_SW_DUSW24	14/08/2018	0.01
Ammonia Nitrogen	mg/L	DG_A_I_SW_DUSW24	12/09/2018	0.02
Ammonia Nitrogen	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0.03
Ammonia Nitrogen	mg/L	DG_A_I_SW_DUSW14	17/10/2018	0.02
Ammonia Nitrogen	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	0.1
Ammonia Nitrogen	mg/L	DG_A_I_SW_DUSW24	17/10/2018	0.37
Ammonia Nitrogen	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	0.43
Ammonia Nitrogen	mg/L	DG_A_I_SW_DUSW24	1/11/2018	0.84
Arsenic (Total)	mg/L	DG_A_I_SW_DUSW22	15/01/2018	0.001
Arsenic (Total)	mg/L	DG_A_I_SW_DUSW24	15/01/2018	0.007
Arsenic (Total)	mg/L	DG_A_I_SW_DUSW22	9/04/2018	0.001
Arsenic (Total)	mg/L	DG_A_I_SW_DUSW24	9/04/2018	0.019
Arsenic (Total)	mg/L	DG_A_I_SW_DUSW22	19/06/2018	0.001
Arsenic (Total)	mg/L	DG_A_I_SW_DUSW14	19/06/2018	0.001
Arsenic (Total)	mg/L	DG_A_I_SW_DUSW24	19/06/2018	0.013
Arsenic (Total)	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0.001
Arsenic (Total)	mg/L	DG_A_I_SW_DUSW14	17/07/2018	0.001

Variable	Unit	Sample Point ID	Date	Result
Arsenic (Total)	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	0.03
Arsenic (Total)	mg/L	DG_A_I_SW_DUSW24	17/07/2018	0.014
Arsenic (Total)	mg/L	DG_A_I_SW_DUSW20	8/08/2018	0.003
Arsenic (Total)	mg/L	DG_A_I_SW_DUSW24	14/08/2018	0.011
Arsenic (Total)	mg/L	DG_A_I_SW_DUSW24	12/09/2018	0.013
Arsenic (Total)	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0.001
Arsenic (Total)	mg/L	DG_A_I_SW_DUSW14	17/10/2018	0.002
Arsenic (Total)	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	0.02
Arsenic (Total)	mg/L	DG_A_I_SW_DUSW24	17/10/2018	0.012
Arsenic (Total)	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	0.07
Arsenic (Total)	mg/L	DG_A_I_SW_DUSW24	1/11/2018	0.012
Barium (Total)	mg/L	DG_A_I_SW_DUSW22	15/01/2018	0.037
Barium (Total)	mg/L	DG_A_I_SW_DUSW24	15/01/2018	0.043
Barium (Total)	mg/L	DG_A_I_SW_DUSW22	9/04/2018	0.025
Barium (Total)	mg/L	DG_A_I_SW_DUSW24	9/04/2018	0.047
Barium (Total)	mg/L	DG_A_I_SW_DUSW22	19/06/2018	0.083
Barium (Total)	mg/L	DG_A_I_SW_DUSW14	19/06/2018	0.066
Barium (Total)	mg/L	DG_A_I_SW_DUSW24	19/06/2018	0.033
Barium (Total)	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0.078
Barium (Total)	mg/L	DG_A_I_SW_DUSW14	17/07/2018	0.068
Barium (Total)	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	0.13
Barium (Total)	mg/L	DG_A_I_SW_DUSW24	17/07/2018	0.06
Barium (Total)	mg/L	DG_A_I_SW_DUSW20	8/08/2018	0.047
Barium (Total)	mg/L	DG_A_I_SW_DUSW24	14/08/2018	0.072
Barium (Total)	mg/L	DG_A_I_SW_DUSW24	12/09/2018	0.092
Barium (Total)	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0.1
Barium (Total)	mg/L	DG_A_I_SW_DUSW14	17/10/2018	0.071
Barium (Total)	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	0.15
Barium (Total)	mg/L	DG_A_I_SW_DUSW24	17/10/2018	0.14
Barium (Total)	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	0.21
Barium (Total)	mg/L	DG_A_I_SW_DUSW24	1/11/2018	0.17
Boron (Total)	mg/L	DG_A_I_SW_DUSW22	15/01/2018	0.04
Boron (Total)	mg/L	DG_A_I_SW_DUSW24	15/01/2018	1.7
Boron (Total)	mg/L	DG_A_I_SW_DUSW22	9/04/2018	0.04
Boron (Total)	mg/L	DG_A_I_SW_DUSW24	9/04/2018	2.9
Boron (Total)	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0.16
Boron (Total)	mg/L	DG_A_I_SW_DUSW14	17/07/2018	0.27
Boron (Total)	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	4.1
Boron (Total)	mg/L	DG_A_I_SW_DUSW24	17/07/2018	1.9
Boron (Total)	mg/L	DG_A_I_SW_DUSW20	8/08/2018	0.27
Boron (Total)	mg/L	DG_A_I_SW_DUSW24	14/08/2018	1.5
Boron (Total)	mg/L	DG_A_I_SW_DUSW24	12/09/2018	1.8
Boron (Total)	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0.17
Boron (Total)	mg/L	DG_A_I_SW_DUSW14	17/10/2018	0.29
Boron (Total)	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	4.5

Variable	Unit	Sample Point ID	Date	Result
Boron (Total)	mg/L	DG_A_I_SW_DUSW24	17/10/2018	2
Boron (Total)	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	7.2
Boron (Total)	mg/L	DG_A_I_SW_DUSW24	1/11/2018	2.3
Cadmium (Total)	mg/L	DG_A_I_SW_DUSW22	15/01/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_SW_DUSW24	15/01/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_SW_DUSW22	9/04/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_SW_DUSW24	9/04/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_SW_DUSW22	19/06/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_SW_DUSW14	19/06/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_SW_DUSW24	19/06/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_SW_DUSW14	17/07/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	0.002
Cadmium (Total)	mg/L	DG_A_I_SW_DUSW24	17/07/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_SW_DUSW20	8/08/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_SW_DUSW24	14/08/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_SW_DUSW24	12/09/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_SW_DUSW14	17/10/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	0.002
Cadmium (Total)	mg/L	DG_A_I_SW_DUSW24	17/10/2018	0.0002
Cadmium (Total)	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	0.002
Cadmium (Total)	mg/L	DG_A_I_SW_DUSW24	1/11/2018	0.0002
Calcium	mg/L	DG_A_I_SW_DUSW22	15/01/2018	27
Calcium	mg/L	DG_A_I_SW_DUSW24	15/01/2018	42
Calcium	mg/L	DG_A_I_SW_DUSW22	9/04/2018	15
Calcium	mg/L	DG_A_I_SW_DUSW24	9/04/2018	62
Calcium	mg/L	DG_A_I_SW_DUSW22	19/06/2018	160
Calcium	mg/L	DG_A_I_SW_DUSW14	19/06/2018	67
Calcium	mg/L	DG_A_I_SW_DUSW24	19/06/2018	66
Calcium	mg/L	DG_A_I_SW_DUSW22	17/07/2018	140
Calcium	mg/L	DG_A_I_SW_DUSW14	17/07/2018	58
Calcium	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	1600
Calcium	mg/L	DG_A_I_SW_DUSW24	17/07/2018	65
Calcium	mg/L	DG_A_I_SW_DUSW20	8/08/2018	52
Calcium	mg/L	DG_A_I_SW_DUSW24	14/08/2018	63
Calcium	mg/L	DG_A_I_SW_DUSW24	12/09/2018	71
Calcium	mg/L	DG_A_I_SW_DUSW22	17/10/2018	120
Calcium	mg/L	DG_A_I_SW_DUSW14	17/10/2018	50
Calcium	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	2000
Calcium	mg/L	DG_A_I_SW_DUSW24	17/10/2018	92
Calcium	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	1200
Calcium	mg/L	DG_A_I_SW_DUSW24	1/11/2018	100
Chloride	mg/L	DG_A_I_SW_DUSW22	15/01/2018	470
Chloride	mg/L	DG_A_I_SW_DUSW24	15/01/2018	970

Variable	Unit	Sample Point ID	Date	Result
Chloride	mg/L	DG_A_I_SW_DUSW22	9/04/2018	290
Chloride	mg/L	DG_A_I_SW_DUSW24	9/04/2018	2200
Chloride	mg/L	DG_A_I_SW_DUSW22	19/06/2018	3600
Chloride	mg/L	DG_A_I_SW_DUSW14	19/06/2018	1800
Chloride	mg/L	DG_A_I_SW_DUSW24	19/06/2018	2100
Chloride	mg/L	DG_A_I_SW_DUSW22	17/07/2018	3200
Chloride	mg/L	DG_A_I_SW_DUSW14	17/07/2018	1800
Chloride	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	100000
Chloride	mg/L	DG_A_I_SW_DUSW24	17/07/2018	2100
Chloride	mg/L	DG_A_I_SW_DUSW20	8/08/2018	1100
Chloride	mg/L	DG_A_I_SW_DUSW24	14/08/2018	1900
Chloride	mg/L	DG_A_I_SW_DUSW24	12/09/2018	2000
Chloride	mg/L	DG_A_I_SW_DUSW22	17/10/2018	2800
Chloride	mg/L	DG_A_I_SW_DUSW14	17/10/2018	1600
Chloride	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	120000
Chloride	mg/L	DG_A_I_SW_DUSW24	17/10/2018	2700
Chloride	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	170000
Chloride	mg/L	DG_A_I_SW_DUSW24	1/11/2018	3100
Chromium (Total)	mg/L	DG_A_I_SW_DUSW22	15/01/2018	0.001
Chromium (Total)	mg/L	DG_A_I_SW_DUSW24	15/01/2018	0.001
Chromium (Total)	mg/L	DG_A_I_SW_DUSW22	9/04/2018	0.001
Chromium (Total)	mg/L	DG_A_I_SW_DUSW24	9/04/2018	0.001
Chromium (Total)	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0.001
Chromium (Total)	mg/L	DG_A_I_SW_DUSW14	17/07/2018	0.001
Chromium (Total)	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	0.01
Chromium (Total)	mg/L	DG_A_I_SW_DUSW24	17/07/2018	0.001
Chromium (Total)	mg/L	DG_A_I_SW_DUSW20	8/08/2018	0.005
Chromium (Total)	mg/L	DG_A_I_SW_DUSW24	14/08/2018	0.001
Chromium (Total)	mg/L	DG_A_I_SW_DUSW24	12/09/2018	0.001
Chromium (Total)	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0.001
Chromium (Total)	mg/L	DG_A_I_SW_DUSW14	17/10/2018	0.002
Chromium (Total)	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	0.01
Chromium (Total)	mg/L	DG_A_I_SW_DUSW24	17/10/2018	0.002
Chromium (Total)	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	0.01
Chromium (Total)	mg/L	DG_A_I_SW_DUSW24	1/11/2018	0.002
Copper (Total)	mg/L	DG_A_I_SW_DUSW22	15/01/2018	0.001
Copper (Total)	mg/L	DG_A_I_SW_DUSW24	15/01/2018	0.003
Copper (Total)	mg/L	DG_A_I_SW_DUSW22	9/04/2018	0.001
Copper (Total)	mg/L	DG_A_I_SW_DUSW24	9/04/2018	0.002
Copper (Total)	mg/L	DG_A_I_SW_DUSW22	19/06/2018	0.001
Copper (Total)	mg/L	DG_A_I_SW_DUSW14	19/06/2018	0.001
Copper (Total)	mg/L	DG_A_I_SW_DUSW24	19/06/2018	0.002
Copper (Total)	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0.001
Copper (Total)	mg/L	DG_A_I_SW_DUSW14	17/07/2018	0.001
Copper (Total)	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	0.01

Variable	Unit	Sample Point ID	Date	Result
Copper (Total)	mg/L	DG_A_I_SW_DUSW24	17/07/2018	0.001
Copper (Total)	mg/L	DG_A_I_SW_DUSW20	8/08/2018	0.003
Copper (Total)	mg/L	DG_A_I_SW_DUSW24	14/08/2018	0.001
Copper (Total)	mg/L	DG_A_I_SW_DUSW24	12/09/2018	0.003
Copper (Total)	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0.001
Copper (Total)	mg/L	DG_A_I_SW_DUSW14	17/10/2018	0.001
Copper (Total)	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	0.01
Copper (Total)	mg/L	DG_A_I_SW_DUSW24	17/10/2018	0.002
Copper (Total)	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	0.01
Copper (Total)	mg/L	DG_A_I_SW_DUSW24	1/11/2018	0.001
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW22	15/01/2018	1664
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW24	15/01/2018	3710
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW22	9/04/2018	1210
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW24	9/04/2018	8336
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW22	19/06/2018	11000
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW22	19/06/2018	12265
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW14	19/06/2018	6400
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW14	19/06/2018	6818
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW24	19/06/2018	6900
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW24	19/06/2018	7436
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW22	17/07/2018	10897
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW22	17/07/2018	10000
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW22	17/07/2018	10894
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW05B	17/07/2018	19834
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW14	17/07/2018	6784
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW14	17/07/2018	6300
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW14	17/07/2018	6784
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW05B	17/07/2018	190000
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW05B	17/07/2018	198324
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW24	17/07/2018	7466
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW24	17/07/2018	6800
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW24	17/07/2018	7466
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW20	8/08/2018	4000
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW20	8/08/2018	3820
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW24	14/08/2018	6200
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW24	14/08/2018	6042
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW24	12/09/2018	6700
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW24	12/09/2018	7163
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW22	17/10/2018	8700
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW22	17/10/2018	9196
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW14	17/10/2018	6000
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW14	17/10/2018	6360
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW05B	17/10/2018	200000
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW05B	17/10/2018	203926
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW24	17/10/2018	8700

Variable	Unit	Sample Point ID	Date	Result
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW24	17/10/2018	9283
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW05B	1/11/2018	230000
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW05B	1/11/2018	233504
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW24	1/11/2018	10000
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW24	1/11/2018	10273
Fluoride	mg/L	DG_A_I_SW_DUSW22	15/01/2018	0.17
Fluoride	mg/L	DG_A_I_SW_DUSW24	15/01/2018	0.35
Fluoride	mg/L	DG_A_I_SW_DUSW22	9/04/2018	0.11
Fluoride	mg/L	DG_A_I_SW_DUSW24	9/04/2018	0.61
Fluoride	mg/L	DG_A_I_SW_DUSW22	19/06/2018	0.33
Fluoride	mg/L	DG_A_I_SW_DUSW14	19/06/2018	0.25
Fluoride	mg/L	DG_A_I_SW_DUSW24	19/06/2018	0.38
Fluoride	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0.34
Fluoride	mg/L	DG_A_I_SW_DUSW14	17/07/2018	0.25
Fluoride	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	1
Fluoride	mg/L	DG_A_I_SW_DUSW24	17/07/2018	0.35
Fluoride	mg/L	DG_A_I_SW_DUSW20	8/08/2018	0.15
Fluoride	mg/L	DG_A_I_SW_DUSW24	14/08/2018	0.32
Fluoride	mg/L	DG_A_I_SW_DUSW24	12/09/2018	0.35
Fluoride	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0.45
Fluoride	mg/L	DG_A_I_SW_DUSW14	17/10/2018	0.29
Fluoride	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	1
Fluoride	mg/L	DG_A_I_SW_DUSW24	17/10/2018	0.32
Fluoride	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	1
Fluoride	mg/L	DG_A_I_SW_DUSW24	1/11/2018	0.38
Iron (Total)	mg/L	DG_A_I_SW_DUSW22	15/01/2018	0.33
Iron (Total)	mg/L	DG_A_I_SW_DUSW24	15/01/2018	0.07
Iron (Total)	mg/L	DG_A_I_SW_DUSW22	9/04/2018	0.27
Iron (Total)	mg/L	DG_A_I_SW_DUSW24	9/04/2018	0.13
Iron (Total)	mg/L	DG_A_I_SW_DUSW22	19/06/2018	0.31
Iron (Total)	mg/L	DG_A_I_SW_DUSW14	19/06/2018	0.62
Iron (Total)	mg/L	DG_A_I_SW_DUSW24	19/06/2018	0.11
Iron (Total)	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0.4
Iron (Total)	mg/L	DG_A_I_SW_DUSW14	17/07/2018	1.2
Iron (Total)	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	0.3
Iron (Total)	mg/L	DG_A_I_SW_DUSW24	17/07/2018	0.1
Iron (Total)	mg/L	DG_A_I_SW_DUSW20	8/08/2018	4.2
Iron (Total)	mg/L	DG_A_I_SW_DUSW24	14/08/2018	0.1
Iron (Total)	mg/L	DG_A_I_SW_DUSW24	12/09/2018	0.11
Iron (Total)	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0.91
Iron (Total)	mg/L	DG_A_I_SW_DUSW14	17/10/2018	2.1
Iron (Total)	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	2.7
Iron (Total)	mg/L	DG_A_I_SW_DUSW24	17/10/2018	0.31
Iron (Total)	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	0.1
Iron (Total)	mg/L	DG_A_I_SW_DUSW24	1/11/2018	0.35

Variable	Unit	Sample Point ID	Date	Result
Lead (Total)	mg/L	DG_A_I_SW_DUSW22	15/01/2018	0.001
Lead (Total)	mg/L	DG_A_I_SW_DUSW24	15/01/2018	0.001
Lead (Total)	mg/L	DG_A_I_SW_DUSW22	9/04/2018	0.001
Lead (Total)	mg/L	DG_A_I_SW_DUSW24	9/04/2018	0.001
Lead (Total)	mg/L	DG_A_I_SW_DUSW22	19/06/2018	0.001
Lead (Total)	mg/L	DG_A_I_SW_DUSW14	19/06/2018	0.001
Lead (Total)	mg/L	DG_A_I_SW_DUSW24	19/06/2018	0.001
Lead (Total)	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0.001
Lead (Total)	mg/L	DG_A_I_SW_DUSW14	17/07/2018	0.001
Lead (Total)	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	0.01
Lead (Total)	mg/L	DG_A_I_SW_DUSW24	17/07/2018	0.001
Lead (Total)	mg/L	DG_A_I_SW_DUSW20	8/08/2018	0.002
Lead (Total)	mg/L	DG_A_I_SW_DUSW24	14/08/2018	0.001
Lead (Total)	mg/L	DG_A_I_SW_DUSW24	12/09/2018	0.001
Lead (Total)	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0.001
Lead (Total)	mg/L	DG_A_I_SW_DUSW14	17/10/2018	0.001
Lead (Total)	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	0.01
Lead (Total)	mg/L	DG_A_I_SW_DUSW24	17/10/2018	0.001
Lead (Total)	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	0.01
Lead (Total)	mg/L	DG_A_I_SW_DUSW24	1/11/2018	0.001
Magnesium	mg/L	DG_A_I_SW_DUSW22	15/01/2018	41
Magnesium	mg/L	DG_A_I_SW_DUSW24	15/01/2018	44
Magnesium	mg/L	DG_A_I_SW_DUSW22	9/04/2018	24
Magnesium	mg/L	DG_A_I_SW_DUSW24	9/04/2018	89
Magnesium	mg/L	DG_A_I_SW_DUSW22	19/06/2018	270
Magnesium	mg/L	DG_A_I_SW_DUSW14	19/06/2018	100
Magnesium	mg/L	DG_A_I_SW_DUSW24	19/06/2018	73
Magnesium	mg/L	DG_A_I_SW_DUSW22	17/07/2018	260
Magnesium	mg/L	DG_A_I_SW_DUSW14	17/07/2018	100
Magnesium	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	4200
Magnesium	mg/L	DG_A_I_SW_DUSW24	17/07/2018	74
Magnesium	mg/L	DG_A_I_SW_DUSW20	8/08/2018	63
Magnesium	mg/L	DG_A_I_SW_DUSW24	14/08/2018	66
Magnesium	mg/L	DG_A_I_SW_DUSW24	12/09/2018	69
Magnesium	mg/L	DG_A_I_SW_DUSW22	17/10/2018	210
Magnesium	mg/L	DG_A_I_SW_DUSW14	17/10/2018	100
Magnesium	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	5400
Magnesium	mg/L	DG_A_I_SW_DUSW24	17/10/2018	87
Magnesium	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	8600
Magnesium	mg/L	DG_A_I_SW_DUSW24	1/11/2018	86
Manganese (Total)	mg/L	DG_A_I_SW_DUSW22	15/01/2018	0.08
Manganese (Total)	mg/L	DG_A_I_SW_DUSW24	15/01/2018	0.019
Manganese (Total)	mg/L	DG_A_I_SW_DUSW22	9/04/2018	0.055
Manganese (Total)	mg/L	DG_A_I_SW_DUSW24	9/04/2018	0.094
Manganese (Total)	mg/L	DG_A_I_SW_DUSW22	19/06/2018	0.023

Variable	Unit	Sample Point ID	Date	Result
Manganese (Total)	mg/L	DG_A_I_SW_DUSW14	19/06/2018	0.034
Manganese (Total)	mg/L	DG_A_I_SW_DUSW24	19/06/2018	0.03
Manganese (Total)	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0.061
Manganese (Total)	mg/L	DG_A_I_SW_DUSW14	17/07/2018	0.21
Manganese (Total)	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	0.01
Manganese (Total)	mg/L	DG_A_I_SW_DUSW24	17/07/2018	0.05
Manganese (Total)	mg/L	DG_A_I_SW_DUSW20	8/08/2018	0.096
Manganese (Total)	mg/L	DG_A_I_SW_DUSW24	14/08/2018	0.04
Manganese (Total)	mg/L	DG_A_I_SW_DUSW24	12/09/2018	0.033
Manganese (Total)	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0.17
Manganese (Total)	mg/L	DG_A_I_SW_DUSW14	17/10/2018	0.2
Manganese (Total)	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	0.16
Manganese (Total)	mg/L	DG_A_I_SW_DUSW24	17/10/2018	0.048
Manganese (Total)	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	0.74
Manganese (Total)	mg/L	DG_A_I_SW_DUSW24	1/11/2018	0.053
Mercury (Total)	mg/L	DG_A_I_SW_DUSW22	15/01/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_SW_DUSW24	15/01/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_SW_DUSW22	9/04/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_SW_DUSW24	9/04/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_SW_DUSW22	19/06/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_SW_DUSW14	19/06/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_SW_DUSW24	19/06/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_SW_DUSW14	17/07/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	0.001
Mercury (Total)	mg/L	DG_A_I_SW_DUSW24	17/07/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_SW_DUSW20	8/08/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_SW_DUSW24	14/08/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_SW_DUSW24	12/09/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_SW_DUSW14	17/10/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_SW_DUSW24	17/10/2018	0.0001
Mercury (Total)	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	0.001
Mercury (Total)	mg/L	DG_A_I_SW_DUSW24	1/11/2018	0.0001
Molybdenum (Total)	mg/L	DG_A_I_SW_DUSW22	15/01/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_SW_DUSW24	15/01/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_SW_DUSW22	9/04/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_SW_DUSW24	9/04/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_SW_DUSW14	17/07/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	0.01
Molybdenum (Total)	mg/L	DG_A_I_SW_DUSW24	17/07/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_SW_DUSW20	8/08/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_SW_DUSW24	14/08/2018	0.001

Variable	Unit	Sample Point ID	Date	Result
Molybdenum (Total)	mg/L	DG_A_I_SW_DUSW24	12/09/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_SW_DUSW14	17/10/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	0.01
Molybdenum (Total)	mg/L	DG_A_I_SW_DUSW24	17/10/2018	0.001
Molybdenum (Total)	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	0.01
Molybdenum (Total)	mg/L	DG_A_I_SW_DUSW24	1/11/2018	0.001
Nickel (Total)	mg/L	DG_A_I_SW_DUSW22	15/01/2018	0.001
Nickel (Total)	mg/L	DG_A_I_SW_DUSW24	15/01/2018	0.003
Nickel (Total)	mg/L	DG_A_I_SW_DUSW22	9/04/2018	0.001
Nickel (Total)	mg/L	DG_A_I_SW_DUSW24	9/04/2018	0.004
Nickel (Total)	mg/L	DG_A_I_SW_DUSW22	19/06/2018	0.002
Nickel (Total)	mg/L	DG_A_I_SW_DUSW14	19/06/2018	0.001
Nickel (Total)	mg/L	DG_A_I_SW_DUSW24	19/06/2018	0.002
Nickel (Total)	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0.001
Nickel (Total)	mg/L	DG_A_I_SW_DUSW14	17/07/2018	0.001
Nickel (Total)	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	0.01
Nickel (Total)	mg/L	DG_A_I_SW_DUSW24	17/07/2018	0.003
Nickel (Total)	mg/L	DG_A_I_SW_DUSW20	8/08/2018	0.004
Nickel (Total)	mg/L	DG_A_I_SW_DUSW24	14/08/2018	0.002
Nickel (Total)	mg/L	DG_A_I_SW_DUSW24	12/09/2018	0.001
Nickel (Total)	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0.002
Nickel (Total)	mg/L	DG_A_I_SW_DUSW14	17/10/2018	0.001
Nickel (Total)	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	0.01
Nickel (Total)	mg/L	DG_A_I_SW_DUSW24	17/10/2018	0.003
Nickel (Total)	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	0.01
Nickel (Total)	mg/L	DG_A_I_SW_DUSW24	1/11/2018	0.004
Nitrate Nitrogen	mg/L	DG_A_I_SW_DUSW22	15/01/2018	0.01
Nitrate Nitrogen	mg/L	DG_A_I_SW_DUSW24	15/01/2018	0.01
Nitrate Nitrogen	mg/L	DG_A_I_SW_DUSW22	9/04/2018	0.01
Nitrate Nitrogen	mg/L	DG_A_I_SW_DUSW24	9/04/2018	0.01
Nitrate Nitrogen	mg/L	DG_A_I_SW_DUSW22	19/06/2018	0.01
Nitrate Nitrogen	mg/L	DG_A_I_SW_DUSW14	19/06/2018	0.47
Nitrate Nitrogen	mg/L	DG_A_I_SW_DUSW24	19/06/2018	0.01
Nitrate Nitrogen	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0.01
Nitrate Nitrogen	mg/L	DG_A_I_SW_DUSW14	17/07/2018	0.31
Nitrate Nitrogen	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	0.01
Nitrate Nitrogen	mg/L	DG_A_I_SW_DUSW24	17/07/2018	0.01
Nitrate Nitrogen	mg/L	DG_A_I_SW_DUSW20	8/08/2018	0.43
Nitrate Nitrogen	mg/L	DG_A_I_SW_DUSW24	14/08/2018	0.01
Nitrate Nitrogen	mg/L	DG_A_I_SW_DUSW24	12/09/2018	0.01
Nitrate Nitrogen	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0.01
Nitrate Nitrogen	mg/L	DG_A_I_SW_DUSW14	17/10/2018	0.01
Nitrate Nitrogen	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	0.01
Nitrate Nitrogen	mg/L	DG_A_I_SW_DUSW24	17/10/2018	0.01

Variable	Unit	Sample Point ID	Date	Result
Nitrate Nitrogen	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	0.01
Nitrate Nitrogen	mg/L	DG_A_I_SW_DUSW24	1/11/2018	0.01
Nitrogen (Total)	mg/L	DG_A_I_SW_DUSW22	15/01/2018	0.76
Nitrogen (Total)	mg/L	DG_A_I_SW_DUSW24	15/01/2018	4.6
Nitrogen (Total)	mg/L	DG_A_I_SW_DUSW22	9/04/2018	0.79
Nitrogen (Total)	mg/L	DG_A_I_SW_DUSW24	9/04/2018	11
Nitrogen (Total)	mg/L	DG_A_I_SW_DUSW22	19/06/2018	0.47
Nitrogen (Total)	mg/L	DG_A_I_SW_DUSW14	19/06/2018	1.2
Nitrogen (Total)	mg/L	DG_A_I_SW_DUSW24	19/06/2018	6.1
Nitrogen (Total)	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0.48
Nitrogen (Total)	mg/L	DG_A_I_SW_DUSW14	17/07/2018	1.1
Nitrogen (Total)	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	0.8
Nitrogen (Total)	mg/L	DG_A_I_SW_DUSW24	17/07/2018	6.1
Nitrogen (Total)	mg/L	DG_A_I_SW_DUSW20	8/08/2018	1.7
Nitrogen (Total)	mg/L	DG_A_I_SW_DUSW24	14/08/2018	5.6
Nitrogen (Total)	mg/L	DG_A_I_SW_DUSW24	12/09/2018	7.2
Nitrogen (Total)	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0.74
Nitrogen (Total)	mg/L	DG_A_I_SW_DUSW14	17/10/2018	0.82
Nitrogen (Total)	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	6.6
Nitrogen (Total)	mg/L	DG_A_I_SW_DUSW24	17/10/2018	6.1
Nitrogen (Total)	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	10
Nitrogen (Total)	mg/L	DG_A_I_SW_DUSW24	1/11/2018	7.3
pH	pH units	DG_A_I_SW_DUSW22	15/01/2018	7.51
pH	pH units	DG_A_I_SW_DUSW24	15/01/2018	10.4
pH	pH units	DG_A_I_SW_DUSW22	9/04/2018	5.6
pH	pH units	DG_A_I_SW_DUSW24	9/04/2018	8.76
pH	pH units	DG_A_I_SW_DUSW22	19/06/2018	6.97
pH	pH units	DG_A_I_SW_DUSW14	19/06/2018	7.33
pH	pH units	DG_A_I_SW_DUSW24	19/06/2018	9.07
pH	pH units	DG_A_I_SW_DUSW22	17/07/2018	6.87
pH	pH units	DG_A_I_SW_DUSW22	17/07/2018	7.5
pH	pH units	DG_A_I_SW_DUSW22	17/07/2018	6.87
pH	pH units	DG_A_I_SW_DUSW05B	17/07/2018	7.13
pH	pH units	DG_A_I_SW_DUSW14	17/07/2018	7.32
pH	pH units	DG_A_I_SW_DUSW14	17/07/2018	7.5
pH	pH units	DG_A_I_SW_DUSW14	17/07/2018	7.32
pH	pH units	DG_A_I_SW_DUSW05B	17/07/2018	8.3
pH	pH units	DG_A_I_SW_DUSW05B	17/07/2018	7.13
pH	pH units	DG_A_I_SW_DUSW24	17/07/2018	9.48
pH	pH units	DG_A_I_SW_DUSW24	17/07/2018	9.4
pH	pH units	DG_A_I_SW_DUSW24	17/07/2018	9.48
pH	pH units	DG_A_I_SW_DUSW20	8/08/2018	7.4
pH	pH units	DG_A_I_SW_DUSW20	8/08/2018	8.1
pH	pH units	DG_A_I_SW_DUSW24	14/08/2018	9.7
pH	pH units	DG_A_I_SW_DUSW24	14/08/2018	8.9

Variable	Unit	Sample Point ID	Date	Result
pH	pH units	DG_A_I_SW_DUSW24	12/09/2018	9.7
pH	pH units	DG_A_I_SW_DUSW24	12/09/2018	9.33
pH	pH units	DG_A_I_SW_DUSW22	17/10/2018	6.43
pH	pH units	DG_A_I_SW_DUSW22	17/10/2018	7.6
pH	pH units	DG_A_I_SW_DUSW22	17/10/2018	6.43
pH	pH units	DG_A_I_SW_DUSW14	17/10/2018	7.35
pH	pH units	DG_A_I_SW_DUSW14	17/10/2018	7.7
pH	pH units	DG_A_I_SW_DUSW14	17/10/2018	7.35
pH	pH units	DG_A_I_SW_DUSW05B	17/10/2018	7.23
pH	pH units	DG_A_I_SW_DUSW05B	17/10/2018	7.8
pH	pH units	DG_A_I_SW_DUSW05B	17/10/2018	7.23
pH	pH units	DG_A_I_SW_DUSW24	17/10/2018	9.63
pH	pH units	DG_A_I_SW_DUSW24	17/10/2018	9.8
pH	pH units	DG_A_I_SW_DUSW24	17/10/2018	9.63
pH	pH units	DG_A_I_SW_DUSW05B	1/11/2018	7.3
pH	pH units	DG_A_I_SW_DUSW05B	1/11/2018	6.89
pH	pH units	DG_A_I_SW_DUSW24	1/11/2018	9.32
pH	pH units	DG_A_I_SW_DUSW24	1/11/2018	9.2
pH	pH units	DG_A_I_SW_DUSW24	1/11/2018	9.32
pH	pH units	DG_A_I_SW_DUSW05B	1/11/2018	6.89
Phosphorus (Total)	mg/L	DG_A_I_SW_DUSW22	15/01/2018	0.009
Phosphorus (Total)	mg/L	DG_A_I_SW_DUSW24	15/01/2018	0.35
Phosphorus (Total)	mg/L	DG_A_I_SW_DUSW22	9/04/2018	0.019
Phosphorus (Total)	mg/L	DG_A_I_SW_DUSW24	9/04/2018	1.9
Phosphorus (Total)	mg/L	DG_A_I_SW_DUSW22	19/06/2018	0.02
Phosphorus (Total)	mg/L	DG_A_I_SW_DUSW14	19/06/2018	0.025
Phosphorus (Total)	mg/L	DG_A_I_SW_DUSW24	19/06/2018	0.76
Phosphorus (Total)	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0.014
Phosphorus (Total)	mg/L	DG_A_I_SW_DUSW14	17/07/2018	0.021
Phosphorus (Total)	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	0.45
Phosphorus (Total)	mg/L	DG_A_I_SW_DUSW24	17/07/2018	0.73
Phosphorus (Total)	mg/L	DG_A_I_SW_DUSW20	8/08/2018	0.1
Phosphorus (Total)	mg/L	DG_A_I_SW_DUSW24	14/08/2018	0.6
Phosphorus (Total)	mg/L	DG_A_I_SW_DUSW24	12/09/2018	0.66
Phosphorus (Total)	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0.013
Phosphorus (Total)	mg/L	DG_A_I_SW_DUSW14	17/10/2018	0.032
Phosphorus (Total)	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	0.25
Phosphorus (Total)	mg/L	DG_A_I_SW_DUSW24	17/10/2018	0.47
Phosphorus (Total)	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	0.28
Phosphorus (Total)	mg/L	DG_A_I_SW_DUSW24	1/11/2018	0.66
Potassium	mg/L	DG_A_I_SW_DUSW22	15/01/2018	4
Potassium	mg/L	DG_A_I_SW_DUSW24	15/01/2018	32
Potassium	mg/L	DG_A_I_SW_DUSW22	9/04/2018	3.9
Potassium	mg/L	DG_A_I_SW_DUSW24	9/04/2018	54
Potassium	mg/L	DG_A_I_SW_DUSW22	19/06/2018	17

Variable	Unit	Sample Point ID	Date	Result
Potassium	mg/L	DG_A_I_SW_DUSW14	19/06/2018	7.1
Potassium	mg/L	DG_A_I_SW_DUSW24	19/06/2018	39
Potassium	mg/L	DG_A_I_SW_DUSW22	17/07/2018	14
Potassium	mg/L	DG_A_I_SW_DUSW14	17/07/2018	6.4
Potassium	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	510
Potassium	mg/L	DG_A_I_SW_DUSW24	17/07/2018	37
Potassium	mg/L	DG_A_I_SW_DUSW20	8/08/2018	6.9
Potassium	mg/L	DG_A_I_SW_DUSW24	14/08/2018	32
Potassium	mg/L	DG_A_I_SW_DUSW24	12/09/2018	34
Potassium	mg/L	DG_A_I_SW_DUSW22	17/10/2018	13
Potassium	mg/L	DG_A_I_SW_DUSW14	17/10/2018	8.8
Potassium	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	680
Potassium	mg/L	DG_A_I_SW_DUSW24	17/10/2018	41
Potassium	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	970
Potassium	mg/L	DG_A_I_SW_DUSW24	1/11/2018	49
Radium 226	Bq/L	DG_A_I_SW_DUSW22	15/01/2018	0.05
Radium 226	Bq/L	DG_A_I_SW_DUSW24	15/01/2018	0.05
Radium 226	Bq/L	DG_A_I_SW_DUSW22	9/04/2018	0.05
Radium 226	Bq/L	DG_A_I_SW_DUSW24	9/04/2018	0.05
Radium 226	Bq/L	DG_A_I_SW_DUSW22	19/06/2018	0.05
Radium 226	Bq/L	DG_A_I_SW_DUSW14	19/06/2018	0.05
Radium 226	Bq/L	DG_A_I_SW_DUSW24	19/06/2018	0.05
Radium 226	Bq/L	DG_A_I_SW_DUSW22	17/07/2018	0.05
Radium 226	Bq/L	DG_A_I_SW_DUSW05B	17/07/2018	0.05
Radium 226	Bq/L	DG_A_I_SW_DUSW14	17/07/2018	0.05
Radium 226	Bq/L	DG_A_I_SW_DUSW24	17/07/2018	0.05
Radium 226	Bq/L	DG_A_I_SW_DUSW20	8/08/2018	0.05
Radium 226	Bq/L	DG_A_I_SW_DUSW24	14/08/2018	0.05
Radium 226	Bq/L	DG_A_I_SW_DUSW22	17/10/2018	0.05
Radium 226	Bq/L	DG_A_I_SW_DUSW14	17/10/2018	0.05
Radium 226	Bq/L	DG_A_I_SW_DUSW05B	17/10/2018	0.05
Radium 226	Bq/L	DG_A_I_SW_DUSW24	17/10/2018	0.05
Radium 226	Bq/L	DG_A_I_SW_DUSW24	1/11/2018	0.05
Radium 226	Bq/L	DG_A_I_SW_DUSW05B	1/11/2018	0.05
Radium 228	Bq/L	DG_A_I_SW_DUSW22	15/01/2018	0.08
Radium 228	Bq/L	DG_A_I_SW_DUSW24	15/01/2018	0.08
Radium 228	Bq/L	DG_A_I_SW_DUSW22	9/04/2018	0.08
Radium 228	Bq/L	DG_A_I_SW_DUSW24	9/04/2018	0.08
Radium 228	Bq/L	DG_A_I_SW_DUSW22	19/06/2018	0.08
Radium 228	Bq/L	DG_A_I_SW_DUSW14	19/06/2018	0.08
Radium 228	Bq/L	DG_A_I_SW_DUSW24	19/06/2018	0.08
Radium 228	Bq/L	DG_A_I_SW_DUSW22	17/07/2018	0.08
Radium 228	Bq/L	DG_A_I_SW_DUSW05B	17/07/2018	0.11
Radium 228	Bq/L	DG_A_I_SW_DUSW14	17/07/2018	0.08
Radium 228	Bq/L	DG_A_I_SW_DUSW24	17/07/2018	0.08

Variable	Unit	Sample Point ID	Date	Result
Radium 228	Bq/L	DG_A_I_SW_DUSW20	8/08/2018	0.08
Radium 228	Bq/L	DG_A_I_SW_DUSW24	14/08/2018	0.08
Radium 228	Bq/L	DG_A_I_SW_DUSW22	17/10/2018	0.08
Radium 228	Bq/L	DG_A_I_SW_DUSW14	17/10/2018	0.08
Radium 228	Bq/L	DG_A_I_SW_DUSW05B	17/10/2018	0.08
Radium 228	Bq/L	DG_A_I_SW_DUSW24	17/10/2018	0.08
Radium 228	Bq/L	DG_A_I_SW_DUSW24	1/11/2018	0.08
Radium 228	Bq/L	DG_A_I_SW_DUSW05B	1/11/2018	0.13
Selenium (Total)	mg/L	DG_A_I_SW_DUSW22	15/01/2018	0.001
Selenium (Total)	mg/L	DG_A_I_SW_DUSW24	15/01/2018	0.001
Selenium (Total)	mg/L	DG_A_I_SW_DUSW22	9/04/2018	0.001
Selenium (Total)	mg/L	DG_A_I_SW_DUSW24	9/04/2018	0.004
Selenium (Total)	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0.002
Selenium (Total)	mg/L	DG_A_I_SW_DUSW14	17/07/2018	0.002
Selenium (Total)	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	0.01
Selenium (Total)	mg/L	DG_A_I_SW_DUSW24	17/07/2018	0.002
Selenium (Total)	mg/L	DG_A_I_SW_DUSW20	8/08/2018	0.001
Selenium (Total)	mg/L	DG_A_I_SW_DUSW24	14/08/2018	0.001
Selenium (Total)	mg/L	DG_A_I_SW_DUSW24	12/09/2018	0.001
Selenium (Total)	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0.001
Selenium (Total)	mg/L	DG_A_I_SW_DUSW14	17/10/2018	0.001
Selenium (Total)	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	0.03
Selenium (Total)	mg/L	DG_A_I_SW_DUSW24	17/10/2018	0.001
Selenium (Total)	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	0.01
Selenium (Total)	mg/L	DG_A_I_SW_DUSW24	1/11/2018	0.001
Silver (Total)	mg/L	DG_A_I_SW_DUSW22	15/01/2018	0.001
Silver (Total)	mg/L	DG_A_I_SW_DUSW24	15/01/2018	0.001
Silver (Total)	mg/L	DG_A_I_SW_DUSW22	9/04/2018	0.001
Silver (Total)	mg/L	DG_A_I_SW_DUSW24	9/04/2018	0.001
Silver (Total)	mg/L	DG_A_I_SW_DUSW22	19/06/2018	0.001
Silver (Total)	mg/L	DG_A_I_SW_DUSW14	19/06/2018	0.001
Silver (Total)	mg/L	DG_A_I_SW_DUSW24	19/06/2018	0.001
Silver (Total)	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0.001
Silver (Total)	mg/L	DG_A_I_SW_DUSW14	17/07/2018	0.001
Silver (Total)	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	0.01
Silver (Total)	mg/L	DG_A_I_SW_DUSW24	17/07/2018	0.001
Silver (Total)	mg/L	DG_A_I_SW_DUSW20	8/08/2018	0.001
Silver (Total)	mg/L	DG_A_I_SW_DUSW24	14/08/2018	0.001
Silver (Total)	mg/L	DG_A_I_SW_DUSW24	12/09/2018	0.001
Silver (Total)	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0.001
Silver (Total)	mg/L	DG_A_I_SW_DUSW14	17/10/2018	0.001
Silver (Total)	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	0.01
Silver (Total)	mg/L	DG_A_I_SW_DUSW24	17/10/2018	0.001
Silver (Total)	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	0.01
Silver (Total)	mg/L	DG_A_I_SW_DUSW24	1/11/2018	0.001

Variable	Unit	Sample Point ID	Date	Result
Sodium	mg/L	DG_A_I_SW_DUSW22	15/01/2018	240
Sodium	mg/L	DG_A_I_SW_DUSW24	15/01/2018	690
Sodium	mg/L	DG_A_I_SW_DUSW22	9/04/2018	140
Sodium	mg/L	DG_A_I_SW_DUSW24	9/04/2018	1300
Sodium	mg/L	DG_A_I_SW_DUSW22	19/06/2018	1800
Sodium	mg/L	DG_A_I_SW_DUSW14	19/06/2018	1100
Sodium	mg/L	DG_A_I_SW_DUSW24	19/06/2018	1200
Sodium	mg/L	DG_A_I_SW_DUSW22	17/07/2018	1700
Sodium	mg/L	DG_A_I_SW_DUSW14	17/07/2018	1200
Sodium	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	59000
Sodium	mg/L	DG_A_I_SW_DUSW24	17/07/2018	1300
Sodium	mg/L	DG_A_I_SW_DUSW20	8/08/2018	660
Sodium	mg/L	DG_A_I_SW_DUSW24	14/08/2018	1100
Sodium	mg/L	DG_A_I_SW_DUSW24	12/09/2018	1300
Sodium	mg/L	DG_A_I_SW_DUSW22	17/10/2018	1400
Sodium	mg/L	DG_A_I_SW_DUSW14	17/10/2018	1000
Sodium	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	65000
Sodium	mg/L	DG_A_I_SW_DUSW24	17/10/2018	1500
Sodium	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	100000
Sodium	mg/L	DG_A_I_SW_DUSW24	1/11/2018	1800
Sulfate	mg/L	DG_A_I_SW_DUSW22	15/01/2018	17
Sulfate	mg/L	DG_A_I_SW_DUSW24	15/01/2018	68
Sulfate	mg/L	DG_A_I_SW_DUSW22	9/04/2018	22
Sulfate	mg/L	DG_A_I_SW_DUSW24	9/04/2018	52
Sulfate	mg/L	DG_A_I_SW_DUSW22	19/06/2018	410
Sulfate	mg/L	DG_A_I_SW_DUSW14	19/06/2018	310
Sulfate	mg/L	DG_A_I_SW_DUSW24	19/06/2018	57
Sulfate	mg/L	DG_A_I_SW_DUSW22	17/07/2018	330
Sulfate	mg/L	DG_A_I_SW_DUSW14	17/07/2018	330
Sulfate	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	7000
Sulfate	mg/L	DG_A_I_SW_DUSW24	17/07/2018	69
Sulfate	mg/L	DG_A_I_SW_DUSW20	8/08/2018	200
Sulfate	mg/L	DG_A_I_SW_DUSW24	14/08/2018	72
Sulfate	mg/L	DG_A_I_SW_DUSW24	12/09/2018	89
Sulfate	mg/L	DG_A_I_SW_DUSW22	17/10/2018	280
Sulfate	mg/L	DG_A_I_SW_DUSW14	17/10/2018	280
Sulfate	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	9700
Sulfate	mg/L	DG_A_I_SW_DUSW24	17/10/2018	130
Sulfate	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	9400
Sulfate	mg/L	DG_A_I_SW_DUSW24	1/11/2018	130
Thorium (Total)	mg/L	DG_A_I_SW_DUSW22	15/01/2018	0.002
Thorium (Total)	mg/L	DG_A_I_SW_DUSW24	15/01/2018	0.002
Thorium (Total)	mg/L	DG_A_I_SW_DUSW22	9/04/2018	0.002
Thorium (Total)	mg/L	DG_A_I_SW_DUSW24	9/04/2018	0.002
Thorium (Total)	mg/L	DG_A_I_SW_DUSW22	19/06/2018	0.002

Variable	Unit	Sample Point ID	Date	Result
Thorium (Total)	mg/L	DG_A_I_SW_DUSW14	19/06/2018	0.002
Thorium (Total)	mg/L	DG_A_I_SW_DUSW24	19/06/2018	0.002
Thorium (Total)	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0.002
Thorium (Total)	mg/L	DG_A_I_SW_DUSW14	17/07/2018	0.002
Thorium (Total)	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	0.02
Thorium (Total)	mg/L	DG_A_I_SW_DUSW24	17/07/2018	0.002
Thorium (Total)	mg/L	DG_A_I_SW_DUSW20	8/08/2018	0.002
Thorium (Total)	mg/L	DG_A_I_SW_DUSW24	14/08/2018	0.002
Thorium (Total)	mg/L	DG_A_I_SW_DUSW24	12/09/2018	0.002
Thorium (Total)	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0.002
Thorium (Total)	mg/L	DG_A_I_SW_DUSW14	17/10/2018	0.002
Thorium (Total)	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	0.02
Thorium (Total)	mg/L	DG_A_I_SW_DUSW24	17/10/2018	0.002
Thorium (Total)	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	0.02
Thorium (Total)	mg/L	DG_A_I_SW_DUSW24	1/11/2018	0.002
Total Dissolved Solids	mg/L	DG_A_I_SW_DUSW22	15/01/2018	1000
Total Dissolved Solids	mg/L	DG_A_I_SW_DUSW24	15/01/2018	2200
Total Dissolved Solids	mg/L	DG_A_I_SW_DUSW22	9/04/2018	670
Total Dissolved Solids	mg/L	DG_A_I_SW_DUSW24	9/04/2018	4100
Total Dissolved Solids	mg/L	DG_A_I_SW_DUSW22	17/07/2018	6400
Total Dissolved Solids	mg/L	DG_A_I_SW_DUSW14	17/07/2018	3600
Total Dissolved Solids	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	170000
Total Dissolved Solids	mg/L	DG_A_I_SW_DUSW24	17/07/2018	3900
Total Dissolved Solids	mg/L	DG_A_I_SW_DUSW20	8/08/2018	2100
Total Dissolved Solids	mg/L	DG_A_I_SW_DUSW24	14/08/2018	3500
Total Dissolved Solids	mg/L	DG_A_I_SW_DUSW24	12/09/2018	4000
Total Dissolved Solids	mg/L	DG_A_I_SW_DUSW22	17/10/2018	5600
Total Dissolved Solids	mg/L	DG_A_I_SW_DUSW14	17/10/2018	3500
Total Dissolved Solids	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	210000
Total Dissolved Solids	mg/L	DG_A_I_SW_DUSW24	17/10/2018	5200
Total Dissolved Solids	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	320000
Total Dissolved Solids	mg/L	DG_A_I_SW_DUSW24	1/11/2018	5800
Total Suspended Solids	mg/L	DG_A_I_SW_DUSW22	15/01/2018	1
Total Suspended Solids	mg/L	DG_A_I_SW_DUSW24	15/01/2018	40
Total Suspended Solids	mg/L	DG_A_I_SW_DUSW22	9/04/2018	4
Total Suspended Solids	mg/L	DG_A_I_SW_DUSW24	9/04/2018	160
Total Suspended Solids	mg/L	DG_A_I_SW_DUSW22	19/06/2018	2
Total Suspended Solids	mg/L	DG_A_I_SW_DUSW14	19/06/2018	8
Total Suspended Solids	mg/L	DG_A_I_SW_DUSW24	19/06/2018	46
Total Suspended Solids	mg/L	DG_A_I_SW_DUSW22	17/07/2018	1
Total Suspended Solids	mg/L	DG_A_I_SW_DUSW14	17/07/2018	10
Total Suspended Solids	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	470
Total Suspended Solids	mg/L	DG_A_I_SW_DUSW24	17/07/2018	75
Total Suspended Solids	mg/L	DG_A_I_SW_DUSW20	8/08/2018	31
Total Suspended Solids	mg/L	DG_A_I_SW_DUSW24	14/08/2018	41

Variable	Unit	Sample Point ID	Date	Result
Total Suspended Solids	mg/L	DG_A_I_SW_DUSW24	12/09/2018	49
Total Suspended Solids	mg/L	DG_A_I_SW_DUSW22	17/10/2018	2
Total Suspended Solids	mg/L	DG_A_I_SW_DUSW14	17/10/2018	22
Total Suspended Solids	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	190
Total Suspended Solids	mg/L	DG_A_I_SW_DUSW24	17/10/2018	30
Total Suspended Solids	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	170
Total Suspended Solids	mg/L	DG_A_I_SW_DUSW24	1/11/2018	24
Uranium	mg/L	DG_A_I_SW_DUSW22	19/06/2018	0.002
Uranium	mg/L	DG_A_I_SW_DUSW14	19/06/2018	0.002
Uranium	mg/L	DG_A_I_SW_DUSW24	19/06/2018	0.002
Uranium	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0.004
Uranium	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	0.008
Uranium	mg/L	DG_A_I_SW_DUSW14	17/07/2018	0.002
Uranium	mg/L	DG_A_I_SW_DUSW24	17/07/2018	0.009
Uranium	mg/L	DG_A_I_SW_DUSW20	8/08/2018	0.002
Uranium	mg/L	DG_A_I_SW_DUSW24	14/08/2018	0.002
Uranium	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0.002
Uranium	mg/L	DG_A_I_SW_DUSW14	17/10/2018	0.002
Uranium	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	0.007
Uranium	mg/L	DG_A_I_SW_DUSW24	17/10/2018	0.002
Uranium	mg/L	DG_A_I_SW_DUSW24	1/11/2018	0.002
Uranium	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	0.01
Uranium (Total)	mg/L	DG_A_I_SW_DUSW22	15/01/2018	0.001
Uranium (Total)	mg/L	DG_A_I_SW_DUSW24	15/01/2018	0.001
Uranium (Total)	mg/L	DG_A_I_SW_DUSW22	9/04/2018	0.001
Uranium (Total)	mg/L	DG_A_I_SW_DUSW24	9/04/2018	0.001
Uranium (Total)	mg/L	DG_A_I_SW_DUSW22	19/06/2018	0.001
Uranium (Total)	mg/L	DG_A_I_SW_DUSW14	19/06/2018	0.001
Uranium (Total)	mg/L	DG_A_I_SW_DUSW24	19/06/2018	0.001
Uranium (Total)	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0.001
Uranium (Total)	mg/L	DG_A_I_SW_DUSW14	17/07/2018	0.001
Uranium (Total)	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	0.01
Uranium (Total)	mg/L	DG_A_I_SW_DUSW24	17/07/2018	0.001
Uranium (Total)	mg/L	DG_A_I_SW_DUSW20	8/08/2018	0.001
Uranium (Total)	mg/L	DG_A_I_SW_DUSW24	14/08/2018	0.001
Uranium (Total)	mg/L	DG_A_I_SW_DUSW24	12/09/2018	0.001
Uranium (Total)	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0.001
Uranium (Total)	mg/L	DG_A_I_SW_DUSW14	17/10/2018	0.001
Uranium (Total)	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	0.01
Uranium (Total)	mg/L	DG_A_I_SW_DUSW24	17/10/2018	0.001
Uranium (Total)	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	0.02
Uranium (Total)	mg/L	DG_A_I_SW_DUSW24	1/11/2018	0.001
Uranium 238	Bq/L	DG_A_I_SW_DUSW22	19/06/2018	0.025
Uranium 238	Bq/L	DG_A_I_SW_DUSW14	19/06/2018	0.025
Uranium 238	Bq/L	DG_A_I_SW_DUSW24	19/06/2018	0.025

Variable	Unit	Sample Point ID	Date	Result
Uranium 238	Bq/L	DG_A_I_SW_DUSW22	17/07/2018	0.049
Uranium 238	Bq/L	DG_A_I_SW_DUSW05B	17/07/2018	0.099
Uranium 238	Bq/L	DG_A_I_SW_DUSW14	17/07/2018	0.025
Uranium 238	Bq/L	DG_A_I_SW_DUSW24	17/07/2018	0.111
Uranium 238	Bq/L	DG_A_I_SW_DUSW20	8/08/2018	0.025
Uranium 238	Bq/L	DG_A_I_SW_DUSW24	14/08/2018	0.025
Uranium 238	Bq/L	DG_A_I_SW_DUSW22	17/10/2018	0.025
Uranium 238	Bq/L	DG_A_I_SW_DUSW14	17/10/2018	0.025
Uranium 238	Bq/L	DG_A_I_SW_DUSW05B	17/10/2018	0.086
Uranium 238	Bq/L	DG_A_I_SW_DUSW24	17/10/2018	0.025
Uranium 238	Bq/L	DG_A_I_SW_DUSW24	1/11/2018	0.025
Uranium 238	Bq/L	DG_A_I_SW_DUSW05B	1/11/2018	0.123
Zinc (Total)	mg/L	DG_A_I_SW_DUSW22	15/01/2018	0.005
Zinc (Total)	mg/L	DG_A_I_SW_DUSW24	15/01/2018	0.004
Zinc (Total)	mg/L	DG_A_I_SW_DUSW22	9/04/2018	0.006
Zinc (Total)	mg/L	DG_A_I_SW_DUSW24	9/04/2018	0.008
Zinc (Total)	mg/L	DG_A_I_SW_DUSW22	19/06/2018	0.004
Zinc (Total)	mg/L	DG_A_I_SW_DUSW14	19/06/2018	0.001
Zinc (Total)	mg/L	DG_A_I_SW_DUSW24	19/06/2018	0.001
Zinc (Total)	mg/L	DG_A_I_SW_DUSW22	17/07/2018	0.008
Zinc (Total)	mg/L	DG_A_I_SW_DUSW14	17/07/2018	0.003
Zinc (Total)	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	0.01
Zinc (Total)	mg/L	DG_A_I_SW_DUSW24	17/07/2018	0.003
Zinc (Total)	mg/L	DG_A_I_SW_DUSW20	8/08/2018	0.023
Zinc (Total)	mg/L	DG_A_I_SW_DUSW24	14/08/2018	0.003
Zinc (Total)	mg/L	DG_A_I_SW_DUSW24	12/09/2018	0.007
Zinc (Total)	mg/L	DG_A_I_SW_DUSW22	17/10/2018	0.007
Zinc (Total)	mg/L	DG_A_I_SW_DUSW14	17/10/2018	0.007
Zinc (Total)	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	0.01
Zinc (Total)	mg/L	DG_A_I_SW_DUSW24	17/10/2018	0.007
Zinc (Total)	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	0.02
Zinc (Total)	mg/L	DG_A_I_SW_DUSW24	1/11/2018	0.034

7.5 Appendix E: Monitoring Data (Field) – Surface water

Variable	Unit	Sample Point	Date	Result
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW05B	17/07/2018	4.5
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW05B	17/10/2018	4.5
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW05B	1/11/2018	0.8
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW11	21/08/2018	8.4
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW11	10/09/2018	6.2
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW14	19/06/2018	9.4
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW14	17/07/2018	10.7
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW14	17/10/2018	11.7
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW17	15/01/2018	7.3
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW17	15/02/2018	7.1
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW17	13/03/2018	7.9
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW17	9/04/2018	9.4
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW17	21/05/2018	8.3
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW17	19/06/2018	11.9
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW17	16/07/2018	11.2
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW17	21/08/2018	11.3
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW17	10/09/2018	11
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW17	17/10/2018	10
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW17	26/11/2018	10.2
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW17	18/12/2018	9.2
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW19	15/01/2018	5.9
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW19	15/02/2018	5.7
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW19	13/03/2018	6.9
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW19	15/04/2018	9.2
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW19	21/05/2018	8
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW19	19/06/2018	12.2
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW19	16/07/2018	12.1
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW19	21/08/2018	11.2
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW19	10/09/2018	12.6
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW19	17/10/2018	10.7
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW19	26/11/2018	10.2
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW19	18/12/2018	9.4
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW20	8/08/2018	8
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW22	15/01/2018	5.5
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW22	9/04/2018	8.1
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW22	19/06/2018	11.1
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW22	17/07/2018	10.9
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW22	17/10/2018	9.2
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW23	15/01/2018	6.5
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW23	17/10/2018	11.2
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW24	15/01/2018	8
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW24	9/04/2018	16.8

Variable	Unit	Sample Point	Date	Result
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW24	19/06/2018	7.6
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW24	17/07/2018	11.8
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW24	14/08/2018	
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW24	12/09/2018	11.6
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW24	17/10/2018	17.6
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW24	1/11/2018	9.3
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW26	15/01/2018	6.1
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW26	16/07/2018	11.4
Dissolved Oxygen	mg/L	DG_A_I_SW_DUSW26	17/10/2018	9.9
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW05B	17/07/2018	198324
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW05B	17/10/2018	203926
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW05B	1/11/2018	233504
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW11	21/08/2018	252
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW11	10/09/2018	307
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW14	19/06/2018	6818
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW14	17/07/2018	6784
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW14	17/10/2018	6360
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW17	15/01/2018	760
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW17	15/02/2018	900
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW17	13/03/2018	871
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW17	9/04/2018	820
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW17	21/05/2018	610
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW17	19/06/2018	596
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW17	16/07/2018	502
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW17	21/08/2018	359
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW17	10/09/2018	337
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW17	17/10/2018	427
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW17	26/11/2018	532
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW17	18/12/2018	565
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW19	15/01/2018	580
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW19	15/02/2018	610
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW19	13/03/2018	627
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW19	15/04/2018	660
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW19	21/05/2018	649
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW19	19/06/2018	719
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW19	16/07/2018	688
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW19	21/08/2018	621
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW19	10/09/2018	616

Variable	Unit	Sample Point	Date	Result
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW19	17/10/2018	657
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW19	26/11/2018	656
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW19	18/12/2018	660
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW20	8/08/2018	3820
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW22	15/01/2018	1700
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW22	9/04/2018	1100
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW22	19/06/2018	12265
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW22	17/07/2018	10894
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW22	17/10/2018	9196
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW23	15/01/2018	1900
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW23	17/10/2018	1611
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW24	15/01/2018	2200
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW24	9/04/2018	7400
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW24	19/06/2018	7436
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW24	17/07/2018	7466
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW24	14/08/2018	6042
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW24	12/09/2018	7163
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW24	17/10/2018	9283
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW24	1/11/2018	10273
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW26	15/01/2018	621
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW26	16/07/2018	257
Electrical Conductivity	µS/cm	DG_A_I_SW_DUSW26	17/10/2018	319
pH	pH units	DG_A_I_SW_DUSW05B	17/07/2018	7.13
pH	pH units	DG_A_I_SW_DUSW05B	17/10/2018	7.23
pH	pH units	DG_A_I_SW_DUSW05B	1/11/2018	6.89
pH	pH units	DG_A_I_SW_DUSW11	21/08/2018	7.95
pH	pH units	DG_A_I_SW_DUSW11	10/09/2018	7.16
pH	pH units	DG_A_I_SW_DUSW14	19/06/2018	7.33
pH	pH units	DG_A_I_SW_DUSW14	17/07/2018	7.32
pH	pH units	DG_A_I_SW_DUSW14	17/10/2018	7.35
pH	pH units	DG_A_I_SW_DUSW17	15/01/2018	8.41
pH	pH units	DG_A_I_SW_DUSW17	15/02/2018	8.94
pH	pH units	DG_A_I_SW_DUSW17	13/03/2018	8.83
pH	pH units	DG_A_I_SW_DUSW17	9/04/2018	8.27
pH	pH units	DG_A_I_SW_DUSW17	21/05/2018	8.49
pH	pH units	DG_A_I_SW_DUSW17	19/06/2018	7.56

Variable	Unit	Sample Point	Date	Result
pH	pH units	DG_A_I_SW_DUSW17	16/07/2018	7.52
pH	pH units	DG_A_I_SW_DUSW17	21/08/2018	7.92
pH	pH units	DG_A_I_SW_DUSW17	10/09/2018	7.5
pH	pH units	DG_A_I_SW_DUSW17	17/10/2018	7.6
pH	pH units	DG_A_I_SW_DUSW17	26/11/2018	8.12
pH	pH units	DG_A_I_SW_DUSW17	18/12/2018	7.75
pH	pH units	DG_A_I_SW_DUSW19	15/01/2018	7.83
pH	pH units	DG_A_I_SW_DUSW19	15/02/2018	7.68
pH	pH units	DG_A_I_SW_DUSW19	13/03/2018	7.92
pH	pH units	DG_A_I_SW_DUSW19	15/04/2018	6.82
pH	pH units	DG_A_I_SW_DUSW19	21/05/2018	8.21
pH	pH units	DG_A_I_SW_DUSW19	19/06/2018	9.14
pH	pH units	DG_A_I_SW_DUSW19	16/07/2018	7.4
pH	pH units	DG_A_I_SW_DUSW19	21/08/2018	7.74
pH	pH units	DG_A_I_SW_DUSW19	10/09/2018	7.3
pH	pH units	DG_A_I_SW_DUSW19	17/10/2018	7.6
pH	pH units	DG_A_I_SW_DUSW19	26/11/2018	8.25
pH	pH units	DG_A_I_SW_DUSW19	18/12/2018	7.65
pH	pH units	DG_A_I_SW_DUSW20	8/08/2018	7.4
pH	pH units	DG_A_I_SW_DUSW22	15/01/2018	7.5
pH	pH units	DG_A_I_SW_DUSW22	9/04/2018	5.6
pH	pH units	DG_A_I_SW_DUSW22	19/06/2018	6.97
pH	pH units	DG_A_I_SW_DUSW22	17/07/2018	6.87
pH	pH units	DG_A_I_SW_DUSW22	17/10/2018	6.43
pH	pH units	DG_A_I_SW_DUSW23	15/01/2018	7.9
pH	pH units	DG_A_I_SW_DUSW23	17/10/2018	7.34
pH	pH units	DG_A_I_SW_DUSW24	15/01/2018	10.4
pH	pH units	DG_A_I_SW_DUSW24	9/04/2018	8.8
pH	pH units	DG_A_I_SW_DUSW24	19/06/2018	9.07
pH	pH units	DG_A_I_SW_DUSW24	17/07/2018	9.48
pH	pH units	DG_A_I_SW_DUSW24	14/08/2018	8.9
pH	pH units	DG_A_I_SW_DUSW24	12/09/2018	9.33
pH	pH units	DG_A_I_SW_DUSW24	17/10/2018	9.63
pH	pH units	DG_A_I_SW_DUSW24	1/11/2018	9.32
pH	pH units	DG_A_I_SW_DUSW26	15/01/2018	8.2
pH	pH units	DG_A_I_SW_DUSW26	16/07/2018	7.83

Variable	Unit	Sample Point	Date	Result
pH	pH units	DG_A_I_SW_DUSW26	17/10/2018	7.9
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW05B	17/07/2018	44
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW05B	17/10/2018	64
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW05B	1/11/2018	-79
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW11	21/08/2018	49
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW11	10/09/2018	52
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW14	19/06/2018	48
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW14	17/07/2018	41
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW14	17/10/2018	75
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW17	15/01/2018	285
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW17	15/02/2018	253
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW17	13/03/2018	247
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW17	9/04/2018	44
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW17	21/05/2018	329
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW17	19/06/2018	49
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW17	16/07/2018	67
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW17	21/08/2018	76
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW17	10/09/2018	66
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW17	17/10/2018	58
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW17	26/11/2018	79
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW17	18/12/2018	64
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW19	15/01/2018	266
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW19	15/02/2018	251
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW19	13/03/2018	231
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW19	15/04/2018	47
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW19	21/05/2018	329
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW19	19/06/2018	77
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW19	16/07/2018	63
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW19	21/08/2018	49
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW19	10/09/2018	67
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW19	17/10/2018	59
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW19	26/11/2018	73
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW19	18/12/2018	106
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW20	8/08/2018	166
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW22	15/01/2018	275
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW22	9/04/2018	106
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW22	19/06/2018	87
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW22	17/07/2018	87
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW22	17/10/2018	72
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW23	15/01/2018	263
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW23	17/10/2018	79
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW24	15/01/2018	206
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW24	9/04/2018	211
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW24	19/06/2018	30

Variable	Unit	Sample Point	Date	Result
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW24	17/07/2018	34
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW24	14/08/2018	253
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW24	12/09/2018	32
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW24	17/10/2018	39
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW24	1/11/2018	15
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW26	15/01/2018	275
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW26	16/07/2018	61
Redox Potential (Eh)	mV	DG_A_I_SW_DUSW26	17/10/2018	63
Temperature	°C	DG_A_I_SW_DUSW05B	17/07/2018	10.2
Temperature	°C	DG_A_I_SW_DUSW05B	17/10/2018	21.7
Temperature	°C	DG_A_I_SW_DUSW05B	1/11/2018	20.6
Temperature	°C	DG_A_I_SW_DUSW11	21/08/2018	9.9
Temperature	°C	DG_A_I_SW_DUSW11	10/09/2018	16.5
Temperature	°C	DG_A_I_SW_DUSW14	19/06/2018	5.9
Temperature	°C	DG_A_I_SW_DUSW14	17/07/2018	8.4
Temperature	°C	DG_A_I_SW_DUSW14	17/10/2018	17.9
Temperature	°C	DG_A_I_SW_DUSW17	15/01/2018	22.1
Temperature	°C	DG_A_I_SW_DUSW17	15/02/2018	19.3
Temperature	°C	DG_A_I_SW_DUSW17	13/03/2018	19.4
Temperature	°C	DG_A_I_SW_DUSW17	9/04/2018	22.2
Temperature	°C	DG_A_I_SW_DUSW17	21/05/2018	13.6
Temperature	°C	DG_A_I_SW_DUSW17	19/06/2018	8
Temperature	°C	DG_A_I_SW_DUSW17	16/07/2018	9.5
Temperature	°C	DG_A_I_SW_DUSW17	21/08/2018	11.3
Temperature	°C	DG_A_I_SW_DUSW17	10/09/2018	17.4
Temperature	°C	DG_A_I_SW_DUSW17	17/10/2018	16.9
Temperature	°C	DG_A_I_SW_DUSW17	26/11/2018	18.4
Temperature	°C	DG_A_I_SW_DUSW17	18/12/2018	18.9
Temperature	°C	DG_A_I_SW_DUSW19	15/01/2018	24.1
Temperature	°C	DG_A_I_SW_DUSW19	15/02/2018	20.4
Temperature	°C	DG_A_I_SW_DUSW19	13/03/2018	20.6
Temperature	°C	DG_A_I_SW_DUSW19	15/04/2018	24.1
Temperature	°C	DG_A_I_SW_DUSW19	21/05/2018	12.6
Temperature	°C	DG_A_I_SW_DUSW19	19/06/2018	8.9
Temperature	°C	DG_A_I_SW_DUSW19	16/07/2018	9
Temperature	°C	DG_A_I_SW_DUSW19	21/08/2018	10.1
Temperature	°C	DG_A_I_SW_DUSW19	10/09/2018	13.6
Temperature	°C	DG_A_I_SW_DUSW19	17/10/2018	15.9
Temperature	°C	DG_A_I_SW_DUSW19	26/11/2018	19.2
Temperature	°C	DG_A_I_SW_DUSW19	18/12/2018	20
Temperature	°C	DG_A_I_SW_DUSW20	8/08/2018	12.1
Temperature	°C	DG_A_I_SW_DUSW22	15/01/2018	21.7
Temperature	°C	DG_A_I_SW_DUSW22	9/04/2018	17.8
Temperature	°C	DG_A_I_SW_DUSW22	19/06/2018	4.7

Variable	Unit	Sample Point	Date	Result
Temperature	°C	DG_A_I_SW_DUSW22	17/07/2018	8.4
Temperature	°C	DG_A_I_SW_DUSW22	17/10/2018	15.5
Temperature	°C	DG_A_I_SW_DUSW23	15/01/2018	24.5
Temperature	°C	DG_A_I_SW_DUSW23	17/10/2018	17.7
Temperature	°C	DG_A_I_SW_DUSW24	15/01/2018	28.5
Temperature	°C	DG_A_I_SW_DUSW24	9/04/2018	26.6
Temperature	°C	DG_A_I_SW_DUSW24	19/06/2018	7
Temperature	°C	DG_A_I_SW_DUSW24	17/07/2018	10.4
Temperature	°C	DG_A_I_SW_DUSW24	14/08/2018	14.2
Temperature	°C	DG_A_I_SW_DUSW24	12/09/2018	14.2
Temperature	°C	DG_A_I_SW_DUSW24	17/10/2018	20.2
Temperature	°C	DG_A_I_SW_DUSW24	1/11/2018	20.1
Temperature	°C	DG_A_I_SW_DUSW26	15/01/2018	21.7
Temperature	°C	DG_A_I_SW_DUSW26	16/07/2018	8.9
Temperature	°C	DG_A_I_SW_DUSW26	17/10/2018	17
Turbidity	NTU	DG_A_I_SW_DUSW05B	17/07/2018	209
Turbidity	NTU	DG_A_I_SW_DUSW05B	17/10/2018	146
Turbidity	NTU	DG_A_I_SW_DUSW05B	1/11/2018	137
Turbidity	NTU	DG_A_I_SW_DUSW11	21/08/2018	129
Turbidity	NTU	DG_A_I_SW_DUSW11	10/09/2018	893
Turbidity	NTU	DG_A_I_SW_DUSW14	19/06/2018	17.5
Turbidity	NTU	DG_A_I_SW_DUSW14	17/07/2018	25.5
Turbidity	NTU	DG_A_I_SW_DUSW14	17/10/2018	27.9
Turbidity	NTU	DG_A_I_SW_DUSW17	15/01/2018	278
Turbidity	NTU	DG_A_I_SW_DUSW17	15/02/2018	83.4
Turbidity	NTU	DG_A_I_SW_DUSW17	13/03/2018	63.7
Turbidity	NTU	DG_A_I_SW_DUSW17	9/04/2018	93.2
Turbidity	NTU	DG_A_I_SW_DUSW17	21/05/2018	65.2
Turbidity	NTU	DG_A_I_SW_DUSW17	19/06/2018	278
Turbidity	NTU	DG_A_I_SW_DUSW17	16/07/2018	593
Turbidity	NTU	DG_A_I_SW_DUSW17	21/08/2018	1600
Turbidity	NTU	DG_A_I_SW_DUSW17	10/09/2018	900
Turbidity	NTU	DG_A_I_SW_DUSW17	26/11/2018	626
Turbidity	NTU	DG_A_I_SW_DUSW17	18/12/2018	386
Turbidity	NTU	DG_A_I_SW_DUSW19	15/01/2018	188
Turbidity	NTU	DG_A_I_SW_DUSW19	15/02/2018	161
Turbidity	NTU	DG_A_I_SW_DUSW19	13/03/2018	136
Turbidity	NTU	DG_A_I_SW_DUSW19	15/04/2018	116
Turbidity	NTU	DG_A_I_SW_DUSW19	21/05/2018	113
Turbidity	NTU	DG_A_I_SW_DUSW19	19/06/2018	77
Turbidity	NTU	DG_A_I_SW_DUSW19	16/07/2018	95.4
Turbidity	NTU	DG_A_I_SW_DUSW19	21/08/2018	137
Turbidity	NTU	DG_A_I_SW_DUSW19	10/09/2018	122
Turbidity	NTU	DG_A_I_SW_DUSW19	17/10/2018	135

Variable	Unit	Sample Point	Date	Result
Turbidity	NTU	DG_A_I_SW_DUSW19	26/11/2018	131
Turbidity	NTU	DG_A_I_SW_DUSW19	18/12/2018	132
Turbidity	NTU	DG_A_I_SW_DUSW20	8/08/2018	68
Turbidity	NTU	DG_A_I_SW_DUSW22	15/01/2018	6.8
Turbidity	NTU	DG_A_I_SW_DUSW22	9/04/2018	4.3
Turbidity	NTU	DG_A_I_SW_DUSW22	19/06/2018	10.7
Turbidity	NTU	DG_A_I_SW_DUSW22	17/07/2018	99.2
Turbidity	NTU	DG_A_I_SW_DUSW22	17/10/2018	16.1
Turbidity	NTU	DG_A_I_SW_DUSW23	15/01/2018	25
Turbidity	NTU	DG_A_I_SW_DUSW23	17/10/2018	31.6
Turbidity	NTU	DG_A_I_SW_DUSW24	15/01/2018	11
Turbidity	NTU	DG_A_I_SW_DUSW24	9/04/2018	70.4
Turbidity	NTU	DG_A_I_SW_DUSW24	19/06/2018	42.9
Turbidity	NTU	DG_A_I_SW_DUSW24	17/07/2018	159
Turbidity	NTU	DG_A_I_SW_DUSW24	14/08/2018	31
Turbidity	NTU	DG_A_I_SW_DUSW24	12/09/2018	42.4
Turbidity	NTU	DG_A_I_SW_DUSW24	17/10/2018	41.1
Turbidity	NTU	DG_A_I_SW_DUSW24	1/11/2018	37.9
Turbidity	NTU	DG_A_I_SW_DUSW26	15/01/2018	2500
Turbidity	NTU	DG_A_I_SW_DUSW26	16/07/2018	1600
Turbidity	NTU	DG_A_I_SW_DUSW26	17/10/2018	894

7.6 Appendix F: Pit 23 Groundwater Seepage Impact Assessment (EMM, 2018)

Pit 23 Groundwater

Assessment of Seepage Indicator Exceedances

Prepared for Iluka Resources Limited
November 2018

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Pit 23 Groundwater

Assessment of Seepage Indicator Exceedances

Prepared for Iluka Resources Limited
November 2018

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Pit 23 Groundwater

Assessment of Seepage Indicator Exceedances

Report Number

S180265 RP2

Client

Iluka Resources Limited

Date

29 November 2018

Version

v2 Final

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Executive Summary

A review of the groundwater and surface water environments surrounding Iluka's Pit 23 mineral sands by-product disposal facility (Pit 23) at the Douglas mine, has been undertaken to determine if recent water quality trigger level exceedances at McGlashin Swamp were caused by Pit 23 operations.

Exceedances of the precautionary trigger levels set for electrical conductivity and pH were confirmed at McGlashin Swamp based on data collected in 2017. Measurements from McGlashin Swamp are considered non-erroneous as most manually calculated ion balance errors were less than 3%.

Groundwater quality trends assessed for electrical conductivity, pH and chloride to sulphate ratio ($Cl:SO_4$) were analysed in the area surrounding Pit 23 and along the groundwater flow path between Pit 23 and McGlashin Swamp. No evidence of groundwater seepage and subsequent plume migration was evident. Similarly, no water quality exceedances were seen in surface water sites DUSW20 and DUSW25 located upstream of McGlashin Swamp. In addition, exceedances measured at McGlashin Swamp do not correlate with the modelled catchment runoff events. In summary, no evidence has been found to suggest the exceedances measured at McGlashin Swamp were caused by groundwater seepage or material transport via a surface water pathway from Pit 23.

The groundwater risk assessment of continued by-product disposal into Pit 23 undertaken by Jacobs (2014) stated that there was a low risk of impact to groundwater accessibility, groundwater quality and groundwater dependent ecosystems. This original assessment is deemed still valid.

The water quality exceedances measured at McGlashin Swamp were likely caused by natural phenomena including evapoconcentration and photosynthesis, which have also been noted to some degree in the nearby Jallumba Marsh and Redgum Swamp. These two wetlands should be added to the Douglas surface water monitoring program, as well as Brooksby's Swamp, an analogous surface water site for McGlashin Swamp, located outside the groundwater catchment zone of Pit 23 operations.

It is recommended that background concentrations of water quality parameters are recalculated once enough data has been collected at the new surface water monitoring locations, nominally after two years, allowing enough climatic variability in the system and ensuring statistical validity in the dataset. Precautionary and minimum trigger levels should also be implemented for ionic ratios to replace the current trigger system which uses a reduction percentage approach, making these parameters less sensitive to natural phenomena and variability.

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1 Introduction

1.1 Background

Iluka disposes of heavy mineral processing by-products generated by its Hamilton mineral separation plant to the Pit 23 Mineral Sands By-Products Disposal Facility (herein referred to as Pit 23); a mining void located at its Douglas mine.

In preparation of Iluka's Annual Environmental and Rehabilitation Performance Report for the 2017 calendar year, Iluka identified a potential indication of seepage from Pit 23. The following seepage indicators, as defined in the current endorsed Iluka Pit Mineral By-Products Disposal Environmental Management Plan (EMP; Rev 4, 6th July 2017), were noted in a down-gradient surface water monitoring point located at McGlashin Swamp:

- an observed reduction (>10%) of $Cl:SO_4$ during both routine and follow-up monitoring; and
- a simultaneous exceedance of the precautionary trigger values for pH and electric conductivity.

Where precautionary trigger levels are exceeded for ionic-balance and other parameters simultaneously, a requirement of the Pit 23 EMP is that Iluka initiates an investigation to determine the cause of the indicated (potential) impact.

1.2 Objectives of This Report

This report will focus on determining the cause of the water quality exceedances observed at McGlashin Swamp. This will be achieved by reviewing both the quality and pathways of groundwater and surface water in the surrounding area. The overall objectives of the review are to:

1. Evaluate the relevant Iluka-supplied monitoring data and validate that ionic balance ratios and precautionary trigger levels, as defined in the Pit 23 EMP, were exceeded in the 2017 reporting period.
2. Determine the likely cause of the identified exceedances with consideration of:
   a) Seepage/groundwater flow rates in the Douglas Mine/Pit 23 groundwater model; and
   b) Potential natural processes influencing the observed exceedances.
3. If the assessment determines that observed exceedances may be seepage driven, assess the likely level of impact to the receiving environment and any beneficial uses.
4. If the assessment determines that observed exceedances are not, or are unlikely to be, seepage driven:
   a) validate the risk assessment findings of prior studies into Pit 23 seepage and risk/impact studies to downstream receptors, including McGlashin Swamp; and
   b) assess the appropriateness of the current ionic balance ratios with consideration of observed fluctuations and provide recommendations on their revision, if relevant.

5. Evaluate the possibility of a surface water pathway for the observed water quality changes through a desktop review of:

    a) the McGlashin Swamp surface water catchment's proximity to mine activity; and

    b) rainfall data for the period preceding the observed changes in water quality parameters.

1.3 Previous Work

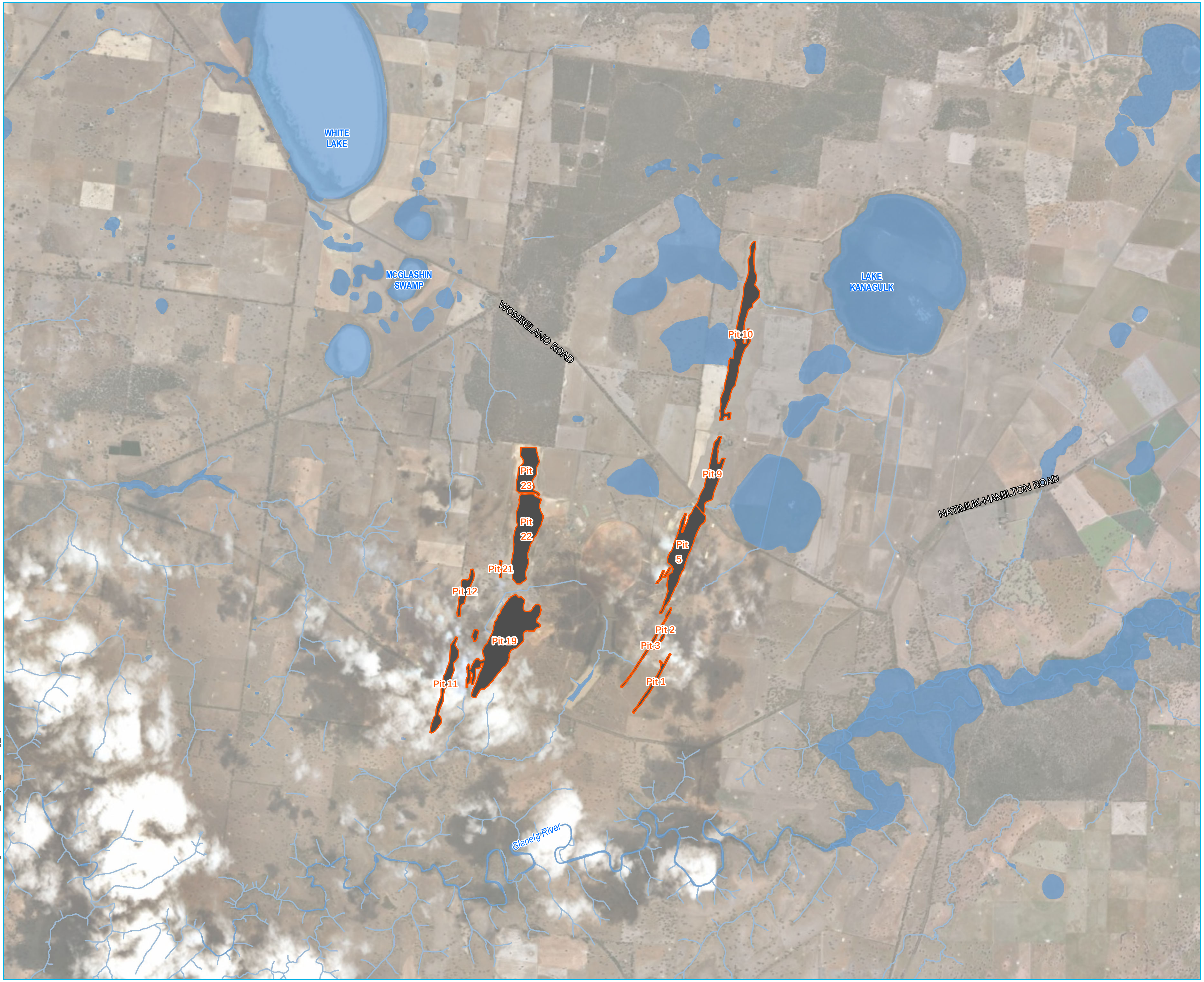
Reports by CDM Smith (2014, 2015) and Jacobs (2014) have investigated the hydrogeological risk associated with heavy mineral concentrate (HMC) by-product disposal into Pit 23 at the Douglas Mine. The aim of these reports were to support the environmental approvals process associated with long term disposal of by-products into Pit 23 by predicting the impacts on local groundwater resources and sensitive receptors.

Hydrogeological modelling was undertaken by CDM Smith (2014) to assess potential impacts on groundwater levels and to determine the behaviour of water particles originating from Pit 23. Modelling considered the scenarios where by-product disposal did and did not continue. In both cases, it was determined that particles from Pit 23 would discharge to the surface through either evapotranspiration, the North-West Drainage Line or McGlashin Swamp. Groundwater from Pit 23 is predicted to take 285 years to reach McGlashin Swamp in either case, and it is not predicted to reach any stock or domestic bores.

Particle tracking simulations of seepage water from the mined pits and the TSF at the Douglas Mine were completed by CDM Smith (2015). These simulations confirmed the Pit 23 groundwater path previously found by CDM Smith (2014) and estimated that particles would first start arriving at McGlashin Swamp between the years 2140 and 2160, depending on model assumptions.

An assessment of the risks posed by continued by-product disposal was undertaken by Jacobs (2014). As part of this assessment, leachability tests were performed on the by-products. These tests found that while contaminants such as radium-226, radium-228, chromium and arsenic are present in the by-products, they are not readily soluble and so have a low risk of entering the groundwater system. In addition to this, the majority of any contaminant dilution will occur within 500 m of Pit 23, meaning that negligible concentrations will be observed in the North-West Drainage Line or McGlashin Swamp which are 2000–3000 m away respectively.

Overall, Jacobs (2014) assessed the consequences as 'low', as the environmental impacts are predicted to be within natural variability and inter-connected systems are unlikely to be affected. The likelihood of impact was rated as 'unlikely' as the contaminant by-products were found to be not readily soluble and will dilute before reaching sensitive receptors. The overall hydrogeological risk of continued by-product disposal was therefore given an overall rating of 'low'.



Source: EMM (2018); CDMSmith (2015); GA (2015)

KEY

- Pre-mine drainage
- Pit
- Swamps and wetland

Figure 1.1
Douglas mine site and surrounding environment

Iluka Resources
Douglas pit 23

0 0.75 1.5 3 Kilometers

GDA 1994 MGA Zone 54

N

2 Validation of Observed Exceedances

2.1 Management Criteria

The water quality guidelines applicable to Pit 23 and the Douglas Mine site are detailed in the SEPP Guidelines (Waters; EPA Victoria 2018). The SEPP guidelines list beneficial uses that surface water bodies should meet the quality standards for; these uses are shown in Table 2.1, noting that only the water body types relevant to this investigation are shown. The “Lakes and Swamps” category includes wetlands like McGlashin Swamp, while “Murray & Western Plains Rivers and Streams” covers all other flowing bodies in the area. Table 2.1 shows that the streams and rivers surrounding Pit 23 should be suitable for all beneficial uses except navigation and shipping. McGlashin Swamp and other wetlands must be suitable for all purposes except for industrial and commercial use, and for navigation and shipping.

The SEPP guidelines state that these beneficial uses are protected, except in circumstances where the background levels of water quality indicators exceed the relevant quality guidelines. In these cases, the background levels become the environmental quality objective.

A summary of the water quality objectives specified in the SEPP guidelines are shown in Table 2.2. These are derived from the Australia and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG 2018) using a protection level of 95% where applicable, as required by the SEPP guidelines for slight to moderately modified systems. Note that the quality objectives for pH, oxygen, turbidity, conductivity, total phosphorus and total nitrogen have only been listed in the SEPP in relation to rivers and streams, not wetlands and lakes. Water quality objectives that are compared to the 25th or 75th percentiles must be calculated from a minimum of 11 data points collected from monthly monitoring over one year.

In the case of McGlashin Swamp, baseline levels of some of the monitored parameters exceed the values shown in Table 2.2 and therefore the target values for these analytes are based on background measurements. In their Mineral Sands By-Product Disposal EMP (Rev 4, 6th July 2017), Iluka defines the background levels for naturally exceeding analytes as the 75th percentile value of past monitoring results, based on the mean, standard deviation and the assumption of a normal distribution of results. Table 2.3 summarises the revised quality objectives for monitored parameters at McGlashin Swamp where the background levels are naturally higher than those in Table 2.2.

Table 2.1 Surface water beneficial uses (EPA Victoria 2018)

Beneficial Uses	Lakes and Swamps	Murray & Western Plains Rivers and Streams
Aquatic ecosystem is considered:		
largely unmodified		
slight to moderately modified	✔	✔
highly modified		
Water suitable for:		
primary contact recreation	✔	✔
secondary contact recreation	✔	✔
aesthetic enjoyment	✔	✔
traditional owner cultural values	✔	✔
cultural and spiritual values	✔	✔
agriculture and irrigation	✔	✔
human consumption of aquatic foods	✔	✔
aquaculture	where the environmental quality is suitable, and an aquaculture licence has been approved in accordance with the *Fisheries Act 1995.*	
human consumption after appropriate treatment	where water is sourced for supply in accordance with the special water supply catchment areas set out in Schedule 5 of the *Catchment and Land Protection Act 1994* or the *Safe Water Drinking Act 2003.*	
industrial and commercial use		✔
navigation and shipping		

Table 2.2 SEPP (Waters; EPA Victoria 2018) surface water quality indicators and objectives

Analyte	Value	Units	Condition
pH	≥7.0	pH units	25th percentile
	≤8.0	pH units	75th percentile
Oxygen	≥65	% Saturation	25th percentile
	≤130	% Saturation	maximum
Turbidity	≤20	NTU	75th percentile
Conductivity	≤2,500	µS/cm at 25°C	75th percentile
Total phosphorus	≤55	µg/L	75th percentile
Total nitrogen	≤1,000	µg/L	75th percentile

Table 2.2 SEPP (Waters; EPA Victoria 2018) surface water quality indicators and objectives

Analyte	Value	Units	Condition
Metals and Metalloids			
Aluminium	55	µg/L	maximum
Arsenic (III)	24	µg/L	maximum
Arsenic (V)	13	µg/L	maximum
Boron	370	µg/L	maximum
Cadmium	0.2	µg/L	maximum
Chromium (VI)	0.4	µg/L	maximum
Copper	1.4	µg/L	maximum
Lead	3.4	µg/L	maximum
Manganese	1,900	µg/L	maximum
Mercury (inorganic)	0.6	µg/L	maximum
Nickel	11	µg/L	maximum
Selenium (total)	11	µg/L	maximum
Silver	0.05	µg/L	maximum
Zinc	8	µg/L	maximum
Non-metallic Inorganics			
Ammonia	900	µg/L	maximum
Chlorine	3	µg/L	maximum
Cyanide	7	µg/L	maximum
Nitrate	700	µg/L	maximum
Hydrogen sulphide	1.0	µg/L	maximum
Radionuclides			
Radium-226	5	Bq/L	maximum
Radium-228	2	Bq/L	maximum
Uranium-238	0.2	Bq/L	maximum

Table 2.3 Revised quality targets for McGlashin Swamp (2017 monitoring data)

	pH	Aluminium (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)
Count	4	4	4	4
SEPP guideline	7.0–8.0	0.055	1	0.055
Background value (75th percentile)	9.09	0.46	3.5	1.70

2.2 McGlashin Swamp Exceedances

Due to naturally high background levels of some analytes outlined in the SEPP (Waters; EPA Victoria 2018), the Pit 23 surface water management plan (Iluka 2017) compares water quality measurements from McGlashin Swamp to trigger levels derived from background data. Assuming sufficient data is available, the upper trigger levels are taken to be the background levels (Table 2.3), while the precautionary trigger levels are set at 85% of the upper trigger levels or at the SEPP objectives, whichever is higher. Where sufficient data has not been collected, the precautionary and upper trigger levels are set as 1.25 and 1.5 times the background value, respectively.

An investigation into the water quality is required when repeated exceedances are observed in $Cl:SO_4$ or sodium:calcium ratios (>10% reduction). To confirm an exceedance, the sampling and analysis process is repeated. As part of this investigation, monitored water quality parameters are compared to the trigger levels to determine if any exceedances are present. If the average of the two results (the initial measurement and the repeat) is greater than the precautionary trigger value, then the cause of the exceedance must be investigated.

Water quality data including $Cl:SO_4$, electrical conductivity and pH levels measured at McGlashin Swamp from 2017 is shown in Table 2.4. Table 2.5 shows the precautionary and upper trigger values calculated for these analytes based on the 2017 data as well as all the data, assuming the data collected is sufficient for these calculations. Values in Table 2.4 have been highlighted where they exceed the relevant trigger levels. Where measurements have been repeated to confirm an exceedance, the two-sample averages have been calculated and are shown in Table 2.6. From Table 2.4 through to Table 2.6, the following can be observed:

- pH values exceed the precautionary trigger levels in every measurement and exceed the upper trigger level in 4 out of the 10 measurements;
- electrical conductivity exceeds the precautionary trigger level for 8 out of 10 measurements. All conductivity measurements taken in 2018 have exceeded at least the precautionary trigger level;
- 7 out of 9 $Cl:SO_4$ reduction calculations have found reductions greater than 10% of the previous value;
- repeated $Cl:SO_4$ exceedances are seen between 26/06/2017 and 11/10/2017, as well as between 19/06/2018 and 12/09/2018. The fact that these exceedances have occurred over the same period in 2017 and 2018 could imply that they are due to natural variations;
- in each case where repeated $Cl:SO_4$ exceedances are seen, the two-sample averages of both pH and electrical conductivity are above the precautionary trigger levels; and
- the two-sample average of total nitrogen also exceeds precautionary trigger levels over Jun–Jul and Jul–Aug 2018.

Based on this assessment, and per the current endorsed Pit 23 EMP, the conditions that necessitate an investigation into the water quality at McGlashin Swamp have been met in 2017. $Cl:SO_4$, pH and electrical conductivity all exceed the trigger values derived when assuming enough data has been collected to represent background levels. This is likely not an accurate assumption however, as only four data points were collected over the span of 10 months. Table 2.7 summarises the trigger levels calculated for each analyte when assuming insufficient data has been collected. In this case, exceedances are still highlighted based on the two-sample averages, as indicated by the bold values for pH, electrical conductivity and total nitrogen (Table 2.6).

Table 2.4 McGlashin Swamp water quality measurements 2017–2018

Measurement Date	$Cl:SO_4$	Reduction in Ratio	Electrical Conductivity (µS/cm)	pH	Aluminium (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Dissolved Oxygen (% saturation)
19/01/2017	312		1,500	8.57	0.3	1.2	1.66	-
26/06/2017	66.25	79%	2,530	8.91	0.47	5	1.8	110
12/09/2017	13.16	80%	2,120	8.61	0.45	2.8	0.92	82
11/10/2017	11.52	12%	2,290	9.61	0.09	3	0.69	85
15/01/2018	14.26	-24%	3,710	10.4	0.04	4.6	0.35	236
9/04/2018	42.31	-197%	8,336	8.76	0.09	11	1.9	64
19/06/2018	36.84	13%	6,900	9.07	0.17	6.1	0.76	218
17/07/2018	30.43	17%	6,800	9.4	0.12	6.1	0.73	-
14/08/2018	26.39	13%	6,200	9.7	0.12	5.6	0.60	-
12/09/2018	22.47	15%	6,700	9.7	-	-	-	-

Notes: Highlighted values exceed precautionary triggers from Table 2.5, or are $Cl:SO_4$ reductions greater than 10%.

Table 2.5 Trigger levels calculated for water quality parameters at McGlashin Swamp

Trigger Type	pH (upper)	Electrical Conductivity (µS/cm)	Aluminium (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Dissolved Oxygen (upper) (% saturation)
Precautionary Trigger (2017 data)	8.0	2,125	0.39	3.0	1.44	110
Upper Trigger (2017 data)	9.09	2,500	0.46	3.5	1.70	130
Precautionary Trigger (all data)	8.0	5,759	0.26	5.2	1.41	162
Upper Trigger (all data)	9.68	6,775	0.30	6.1	1.66	191

Table 2.6 McGlashin Swamp water quality parameter two-sample averages

Date Range	pH (upper)	Electrical Conductivity (µS/cm)	Aluminium (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Dissolved Oxygen (upper) (% saturation)
Sep–Oct 2017	8.76	2,205	0.27	2.9	0.81	84
Jun–Jul 2018	**9.24**	**6,850**	0.15	**6.1**	0.75	-
Jul–Aug 2018	**9.55**	**6,500**	0.12	**5.9**	0.67	-
Aug–Sep 2018	**9.7**	**6,450**	-	-	-	-

Notes: Highlighted values exceed the relevant precautionary trigger values from Table 2.5. Bolded values exceed trigger levels from Table 2.7

Table 2.7 McGlashin Swamp water quality trigger levels (assuming insufficient measurements (2017))

	pH (upper)	Electrical Conductivity (µS/cm)	Aluminium (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Dissolved Oxygen (upper) (% saturation)
Precautionary trigger (1.25x background level)	9.19	2,940	0.57	4.4	2.12	122
Upper trigger (1.5x background level)	9.27	3,530	0.68	5.3	2.54	146

2.3 Ion Balance Error

To check the validity of the laboratory supplied water quality results used to assess exceedances at the Douglas site, the ion balance errors were manually calculated from the reported major ion concentrations and compared to laboratory supplied values. It is noted however that samples taken from McGlashin Swamp (DUSW24) have not had laboratory supplied values for total anion and cation concentrations provided since January 2017, preventing comparison with manually calculated values for subsequent measurements. Various surface water and groundwater samples collected across the site during the period where the most recent exceedances were observed (July–September 2018) have also been analysed for ion balance errors to determine whether errors are observed across different sites.

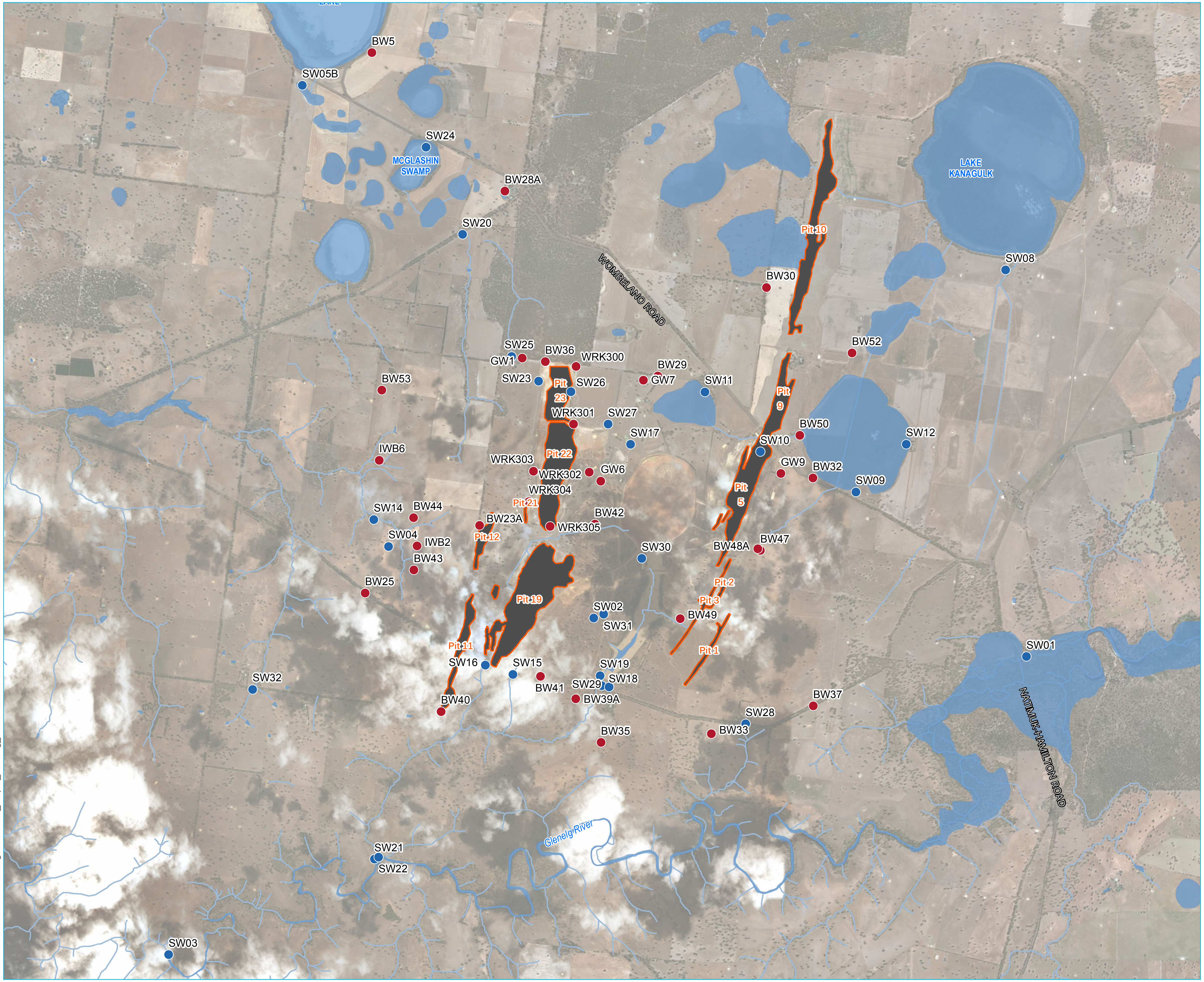
Bartram & Ballance (1996) state that the calculated ion balance error for groundwaters should be less than 5%, and less than 10% for surface waters. Exceeding these values suggests that errors are present, although it is possible for outliers to naturally occur. Errors that can lead to large ion balance errors include analytical error, not measuring a significant ion and analysing unfiltered samples.

Table 2.8 shows the ion balance errors manually calculated for each sample taken at McGlashin Swamp, while Table 2.9 compares manually calculated ion balance errors from other surface water and groundwater monitoring locations at Douglas to laboratory supplied values. Locations of all monitoring points sampled during the 2017 calendar year are also shown in Figure 2.1.

From Table 2.8 and Table 2.9, the following is seen:

- manually calculated ion balance errors for McGlashin Swamp samples are all very low (<5%), except for the sample taken on 26 June 2017, which has an error of 21%. This large error is likely due to an error in measuring alkalinity; the total alkalinity measured for this sample was 130 mg/L, compared to an average of 300 mg/L for other measurements;
- the manually calculated and laboratory supplied ion balance errors for the 19 January 2017 McGlashin Swamp sample are very similar, suggesting the results are valid;
- DUSW11, DUSW17 and DUSW26 all have high manual and laboratory derived ionic balance values. This may be a result of how fresh these water sources are. They are the freshest waters listed, and so a difference of 1–2 meq of ions leads to a large relative error;
- the manually calculated ion balance values are approximately the same as those reported by the laboratory for most of the other Douglas sites analysed. The largest difference between the calculated and reported value occurs in BW5, with a difference of 5.1%; and
- apart from the previously mentioned sites, all of the sample points show both manually calculated and laboratory reported ionic balance values that are lower than the 5 or 10 % guidelines as discussed.

Laboratory reported data from this period should therefore be considered valid, as only the freshest water systems showed evidence of error. McGlashin Swamp in particular, despite being a surface water body, showed very low ion balance errors of less than 3% in most cases.



KEY

- Groundwater monitoring site
- Surface water monitoring site
- Pre-mine drainage
- Pit
- Swamps and wetland

Source: EMM (2018); CDMSmith (2015); GA (2015)

0 0.75 1.5 3 Kilometers

GDA 1994 MGA Zone 54

N

Figure 2.1
Monitoring locations sampled during 2017

Iluka Resources
Douglas pit 23

Table 2.8 Manual ionic balance calculations McGlashin Swamp samples

Sample Point	Date	Ionic Balance[2] Manual Calculation (% error)	Ionic Balance Laboratory Value (% error)	Total Ions (Manual calculation) (meq/L)
DUSW24[1]	19/01/2017	-4.8	-4.7	31
DUSW24	26/06/2017	21.0	-	45
DUSW24	12/09/2017	-1.1	-	52
DUSW24	11/10/2017	0.5	-	45
DUSW24	15/01/2018	2.8	-	71
DUSW24	9/04/2018	-1.9	-	139
DUSW24	19/06/2018	-2.6	-	128
DUSW24	17/07/2018	0.9	-	133
DUSW24	14/08/2018	-1.8	-	117

Notes: 1. DUSW24 refers to the McGlashin Swamp sampling point;
2. negative values for % error indicate more anions in the solution, while positive values indicate more cations; and
3. dashes (-) are used where laboratory values were not supplied.

Table 2.9 Manual ionic balance calculations for recent measurements compared to laboratory supplied values

Sample Point[1]	Date	Ionic Balance[2] Manual Calculation (% error)	Ionic Balance Laboratory Value (% error)	Total Ions (Laboratory) (meq/L)
DUSW11	10/09/2018	18.8	19.3	5.7
DUSW17	10/09/2018	24.3	23.7	7.6
DUSW18	10/09/2018	4.6	3.5	8.7
DUSW19	10/09/2018	-0.1	0.0	10
DUSW03	10/09/2018	-2.1	-2.7	37
DUSW01	10/09/2018	0.4	0.0	40
BW28A	20/08/2018	0.1	0.0	460
BW5	20/08/2018	1.5	-3.6	560
WRK300	17/07/2018	-0.8	-0.9	111
DUSW26	16/07/2018	26.4	26.3	5.7
WRK301	10/07/2018	2.4	0.0	220
WRK302	10/07/2018	0.8	2.3	430
WRK304	10/07/2018	-1.3	0.0	150
WRK303	10/07/2018	-1.8	-1.3	158
BW40	5/07/2018	-1.5	-1.7	120
BW42	5/07/2018	-0.2	0.0	380

Table 2.9 Manual ionic balance calculations for recent measurements compared to laboratory supplied values

Sample Point[1]	Date	Ionic Balance[2] Manual Calculation (% error)	Ionic Balance Laboratory Value (% error)	Total Ions (Laboratory) (meq/L)
BW49	5/07/2018	-0.8	0.8	131
BW48A	5/07/2018	-1.4	0.0	240
BW47	4/07/2018	0.0	0.0	420
BW50	4/07/2018	-1.7	-0.5	191
BW52	4/07/2018	0.3	-1.8	165
BW43	3/07/2018	2.3	0.0	10.6
IWB2	3/07/2018	2.1	1.3	77
IWB6	3/07/2018	2.1	0.0	30

Notes: 1. sample points beginning with 'DUSW' refer to surface water samples; and
2. negative values for % error indicate more anions in the solution, while positive values indicate more cations.

3 Groundwater Seepage Assessment

Due to the repeated decreases of more than 10% seen in $Cl:SO_4$ in 2017, the possibility of groundwater seepage from Pit 23 to McGlashin Swamp must be assessed per Section 8.7 of the Pit 23 EMP.

A decrease in $Cl:SO_4$ can indicate groundwater seepage due to the different ionic ratios seen in surface water mixing with the potential leachate. These ratios are shown in Table 3.1 and are based on laboratory tests and in-pit dissolution modelling completed by Iluka (2016). The leachate is dominated by the $Ca\text{-}SO_4$ ion pair and has very low $Cl:SO_4$; therefore, it is expected that groundwater seepage from Pit 23 would cause a noticeable decrease $Cl:SO_4$ of groundwater-connected surface waters.

Table 3.1 Ionic ratios in surface waters and Pit 23 leachate (Iluka 2017)

	Surface Waters (all sites)			Pit 23 Leachate	
	Average	**Maximum**	**Minimum**	**Laboratory**	**Model**
Chloride/sulphate	7.32	8.76	5.62	0.008	0.015
Sodium/calcium	23.95	38.67	11.45	0.017	0.050

3.1 Groundwater Model Review

CDM Smith (2014, 2015) has produced two reports which model the groundwater system across the Douglas mine site, with attention given to groundwater seepage from Pit 23. These studies found that groundwater seepage from Pit 23 would flow to the north-west, eventually discharging to the surface at McGlashin Swamp, the North-West Drainage Line, or through evapotranspiration. The modelled groundwater seepage flow paths are shown in Figure 3.1.

In addition to determining the flow path of Pit 23 groundwater seepage, the travel time of water particles was also modelled. These predictions considered two different scenarios:

1. the base case, which assumes that no further disposal of by-products to Pit 23 continues after the processing of heavy mineral concentrate (HMC) produced at the Woornack, Rownack and Pirro (WRP) mine is completed at the Iluka Hamilton Mineral Separation Plant (MSP); and

2. the future disposal case, which assumes that by-product disposal to Pit 23 will continue for an additional 20 years after the HMC from WRP has been processed.

Figure 3.2 shows the modelled particle tracks and travel times, where the purple and blue lines represent the base and future disposal cases respectively. This figure shows that groundwater particles are expected to take at least 240 years to reach McGlashin Swamp, which corresponds to the year 2251 as by-product disposal into Pit 23 began in 2011. CDM Smith (2015) modelled uncertainty cases beyond what is shown in Figure 3.2 and found particle arrival years to McGlashin Swamp from Pit 22/Pit 23 ranging from 2140 to 2160. In any case, these modelled scenarios suggest it is very unlikely that by-product seepage from Pit 23 has reached McGlashin Swamp.

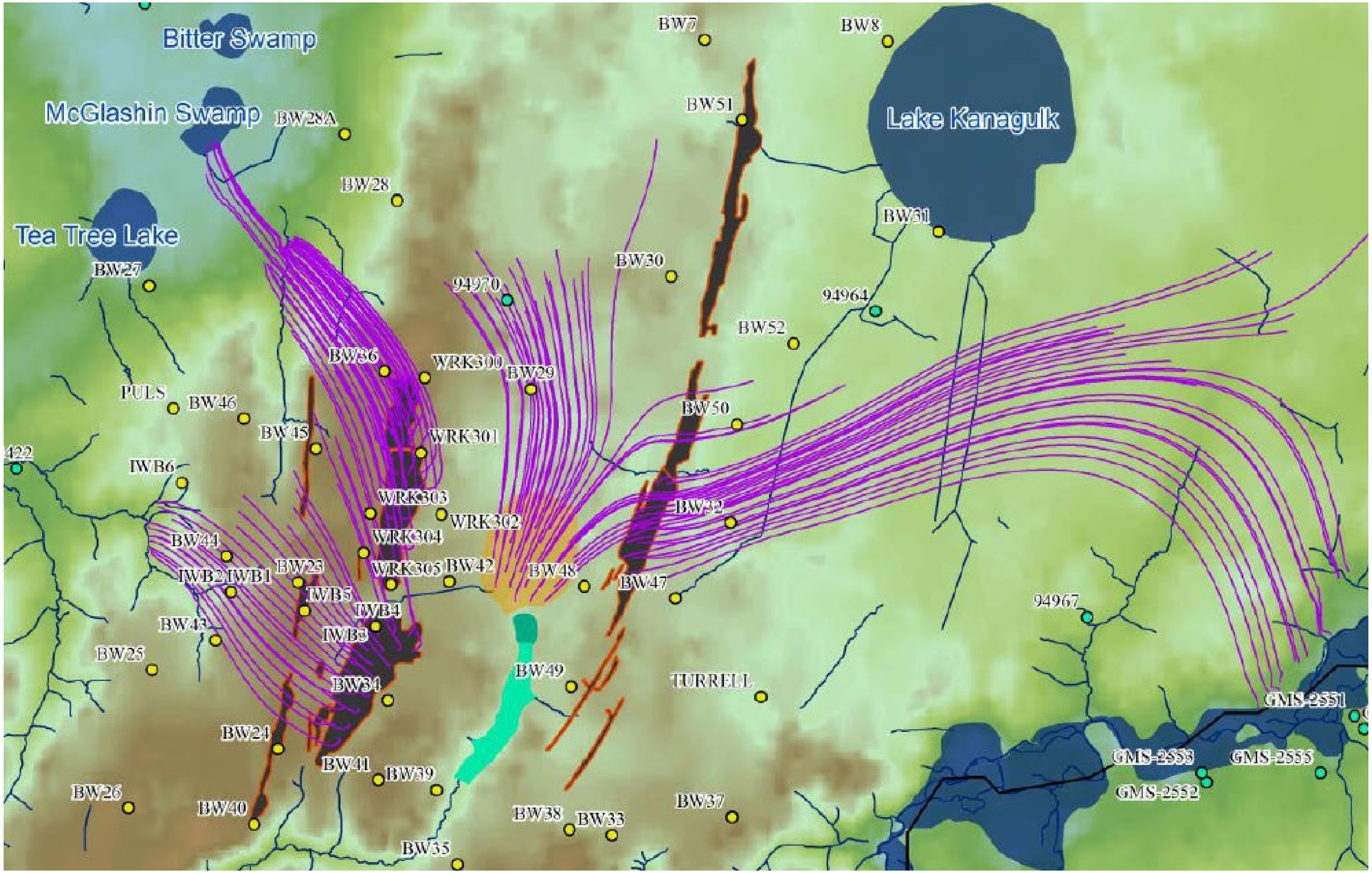


Figure 3.1 Particles originating from Pit 5, Pit 19, Pit 22, Pit 23 and the TSF tracked across the Douglas mine site (CDM Smith 2015)

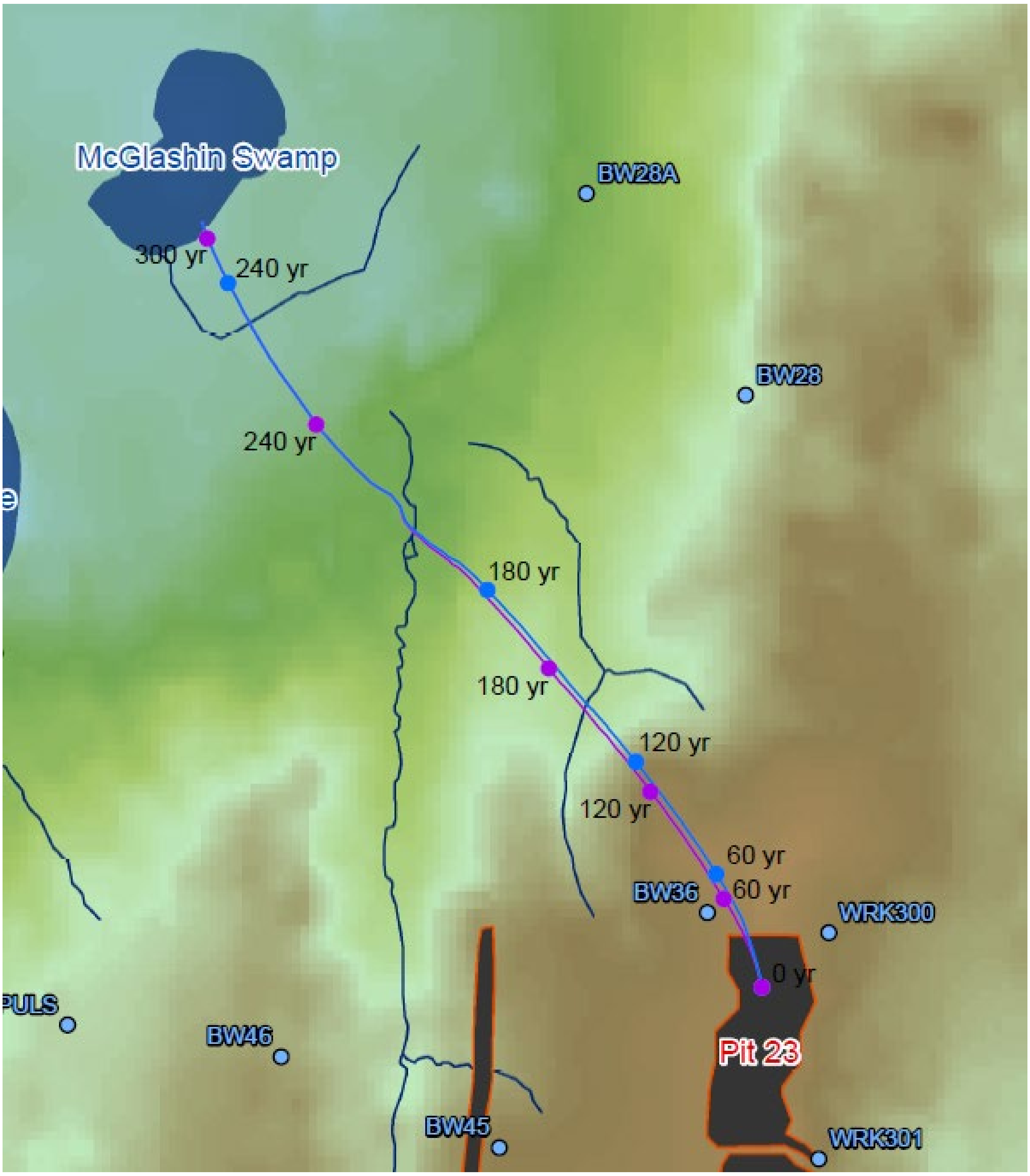


Figure 3.2 **Pit 23 seepage particle tracking. Purple and blue represent the base and future disposal cases respectively (CDM Smith 2014)**

3.2 Trend Analysis

For the exceedances at McGlashin Swamp to be caused by groundwater seepage from Pit 23, then the contaminated groundwater plume showing high pH and electrical conductivity levels, as well as low $Cl:SO_4$, would need to be visible at bores along the flow path between Pit 23 and McGlashin Swamp.

Figure 3.1 shows that particles that reach McGlashin Swamp from Pit 23 first pass through monitoring bores WRK301 and BW36. Therefore, by comparing the water quality data of these bores to historical data and to surrounding bores, it can be determined if they have experienced any negative trends associated with groundwater seepage as detailed below.

3.2.1 Electrical conductivity

To determine if the elevated electrical conductivity measurements observed at McGlashin Swamp could have been caused by groundwater seepage from Pit 23, measurements from nearby bores and other groundwater-influenced surface water locations were also assessed.

Figure 3.3 and Figure 3.4 show the locations and historical electrical conductivity measurements of the bores immediately surrounding Pit 23, while Figure 3.5 and Figure 3.6 show the same information for bores that are on or near the flow path of groundwater originating from Pit 23. Figure 3.7 is a time-series plot which compares the electrical conductivity measurements observed at McGlashin Swamp to other groundwater-influenced surface water bodies across the Douglas mine. From these figures the following is observed:

- apart from WRK305 exhibiting a downward trend, the bores surrounding Pit 23 show no clear electrical conductivity trends and have remained relatively stable since 2016, suggesting that they have not been influenced by high-salinity groundwater seepage;
- bores that are in the groundwater flow path (BW36 and WRK300) have electrical conductivity measurements ranging from 6,200–7,200 µS/cm in August 2018. These levels are not elevated over the other bores adjacent to Pit 23;
- the highest electrical conductivity observed in the bores surrounding Pit 23 is seen in WRK302, which had a reading of 21,000 µS/cm in August 2018;
- BW28A is located outside of the Pit 23 groundwater flow path but has consistently exhibited electrical conductivity levels of more than 15,000 µS/cm from 2016 onward. Similarly, WRK301 is upstream of the flow path and has shown consistently elevated levels of more than 8,500 µS/cm. The electrical conductivity levels seen in these bores are higher than those in the flow path; and
- electrical conductivity measurements at McGlashin Swamp follow similar trends to other groundwater-influenced surface water locations. Each of the locations show a decrease in conductivity toward the end of 2017, before increasing in 2018, suggesting that this trend could be due to environmental factors and/or other related geochemical phenomena (see Section 4.2).

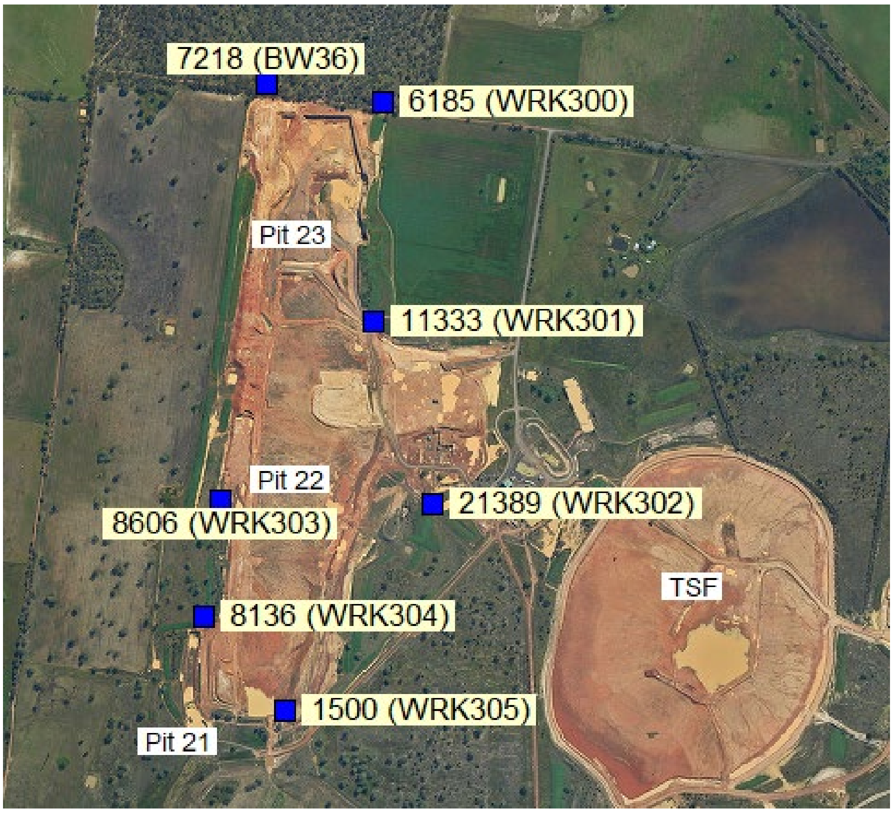


Figure 3.3 **Locations and latest (2018) electrical conductivity measurements (µS/cm) of bores surrounding Pit 23**

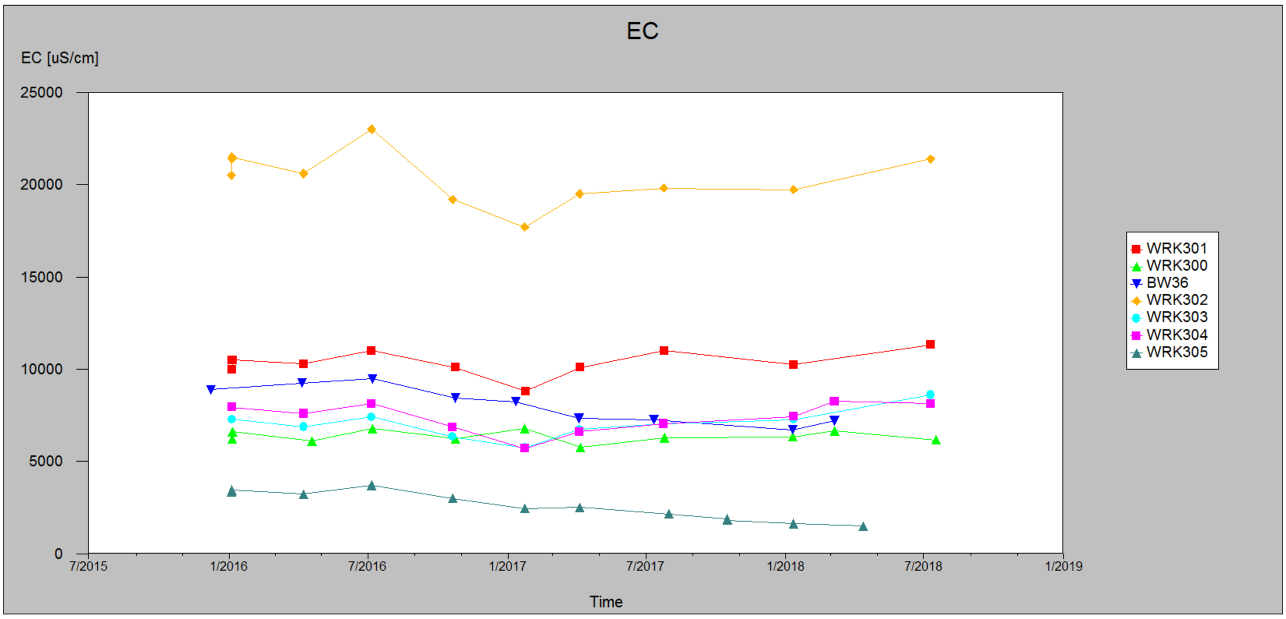


Figure 3.4 **Time-series plot of electrical conductivity (µS/cm) measured in bores surrounding Pit 23**

Figure 3.5 Locations and latest (2018) electrical conductivity measurements (µS/cm) of bores in or near the groundwater flow path from Pit 23 and at McGlashin Swamp (DUSW24)

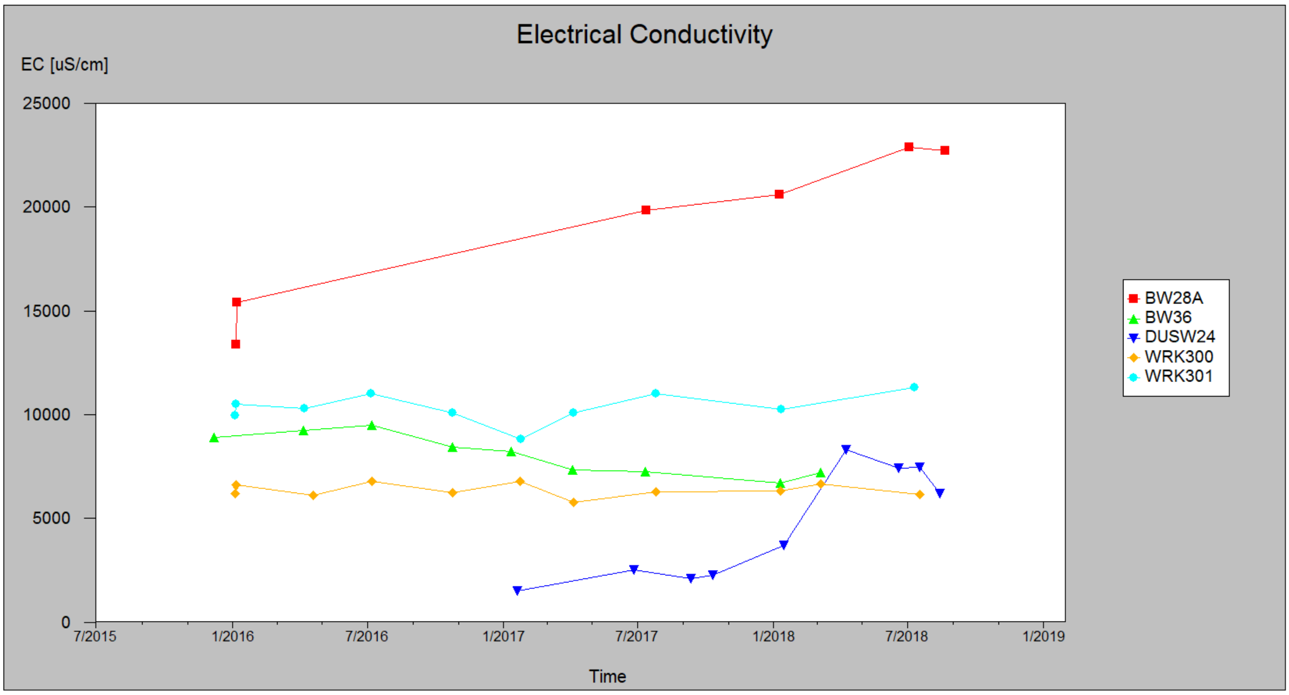


Figure 3.6 Electrical conductivity (µS/cm) measured at McGlashin Swamp (DUSW24) and bores located within the groundwater flow path from Pit 23

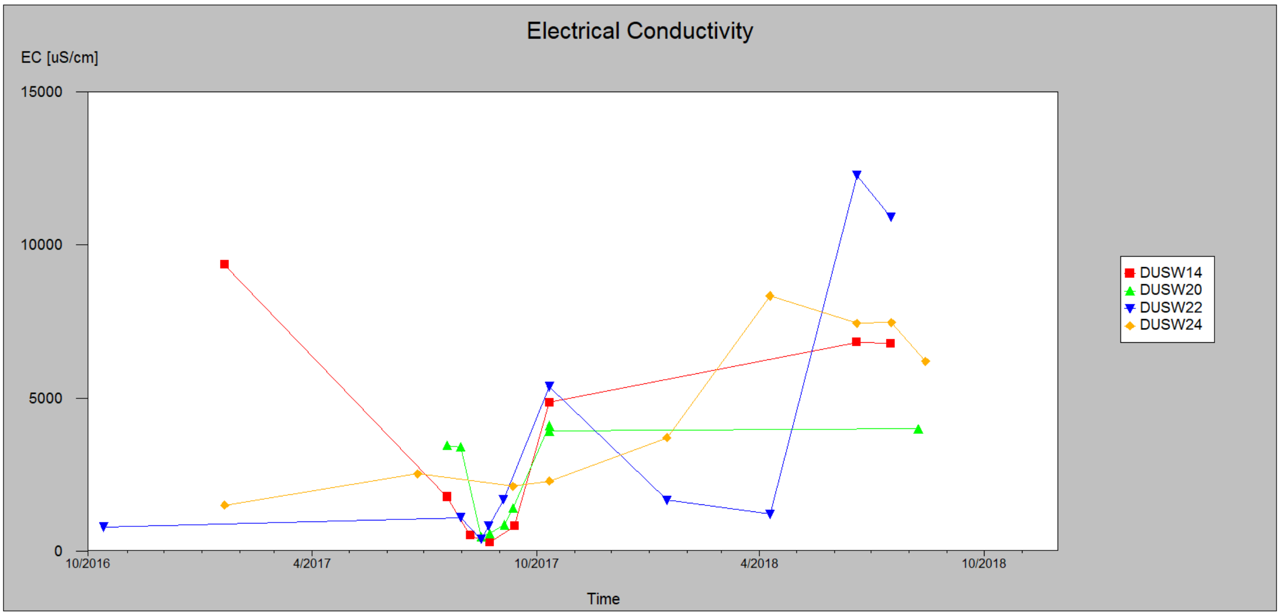


Figure 3.7 Comparison of electrical conductivity measurements (µS/cm) from groundwater-influenced surface water sites. DUSW14, DUSW20, DUSW22 and DUSW24 correspond to Costello's Creek, Northern Drainage Line, Shaw's Gully Creek and McGlashin Swamp respectively.

3.2.2 pH

To determine if the elevated pH measurements observed at McGlashin Swamp could have been caused by groundwater seepage from Pit 23, they were compared to measurements from nearby bores and other groundwater-influenced surface water locations.

Figure 3.8 and Figure 3.9 show the locations and historical pH measurements of the bores immediately surrounding Pit 23, while Figure 3.10 and Figure 3.11 show the same information for bores that are in or near the flow path of groundwater from Pit 23. Figure 3.12 is a time-series plot which compares the pH measurements observed at McGlashin Swamp to other groundwater-influenced surface water bodies across the Douglas mine. From these figures the following is observed:

- bores surrounding Pit 23 all show increasing pH levels up to the start of 2017. pH levels in each then decrease over 2017 and start to recover in 2018. As all bores are showing the same trend, even if they are not in the groundwater flow path, this suggests that natural factors are causing the change rather than groundwater seepage;

- WRK300, which is in the groundwater flow path, shows pH measurements that are higher than other bores surrounding Pit 23 (7.1 in August 2018), but BW36, which is also in the flow path, has one of the lowest pH levels (5.6 in March 2018). This suggests that if high pH groundwater was seeping from Pit 23, it has only reached WRK300 and not BW36. This is unlikely though, as these bores have had consistently high/low pH levels in relation to the other bores since 2014;

- the highest pH reading observed in the bores surrounding Pit 23 between 2014 and 2018 was 7.7 in WRK301. This reading is lower than all of the readings taken at McGlashin Swamp, which range from 8.6 to 10.4;

- BW28A is located outside of the Pit 23 groundwater flow path towards McGlashin Swamp, but has consistently exhibited pH levels similar to those in the flow path from 2016 onward, suggesting that these bores have not been affected by seepage and instead reflect natural processes;

- the pH levels of the groundwater-connected surface water systems all decrease at the end of 2017 before recovering in 2018. All of these water bodies exhibit similar trends, suggesting that they are influenced by environmental factors;

- pH measurements at McGlashin Swamp have been consistently higher than other groundwater-influenced surface water bodies since monitoring began in 2017, and unlike the other bodies, the pH is trending upward. This suggests that a process is occurring exclusively in McGlashin Swamp (and possibly at other swamps located outside of the study area) which is leading to alkalinisation of the system; and

- other groundwater-influenced surface water bodies including Costello's Creek, the Northern Drainage Line and Shaw's Gully, exhibit pH levels averaging around 7.5, which matches the groundwater pH levels observed in BW28A and the bores surrounding Pit 23.

Figure 3.8 Locations and latest (2018) pH measurements of bores surrounding Pit 23

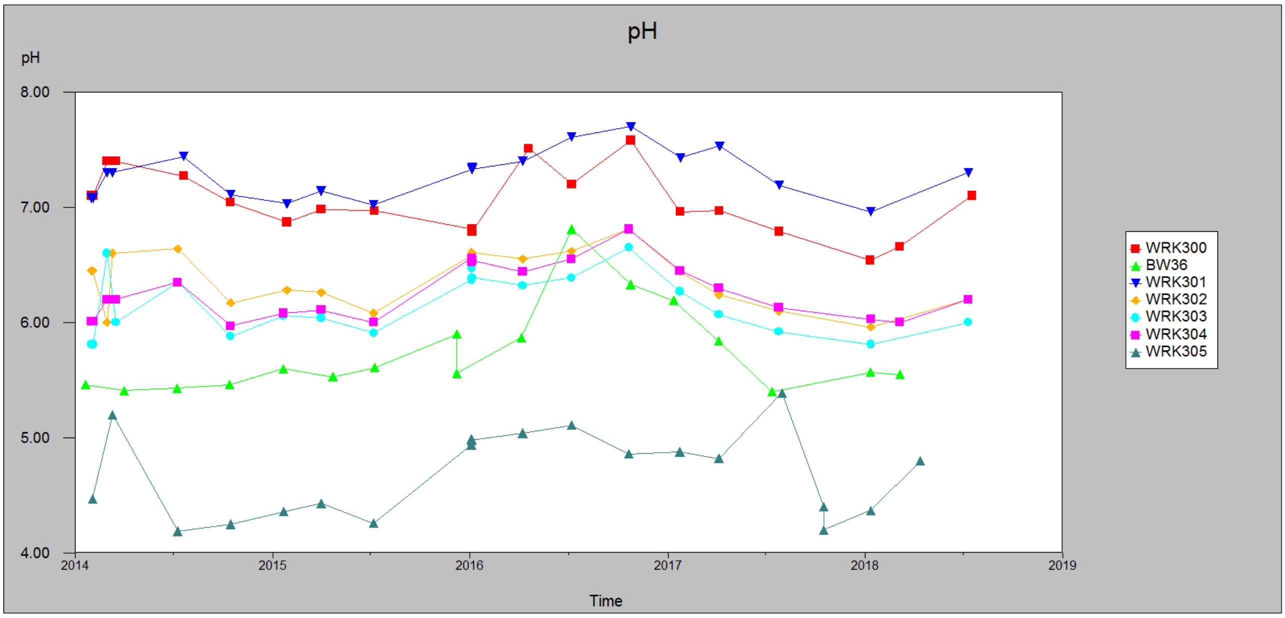


Figure 3.9 Time-series plot of pH measured in bores surrounding Pit 23

Figure 3.10 Locations and latest (2018) pH measurements of bores in or near the groundwater flow path from Pit 23 and at McGlashin Swamp (DUSW24)

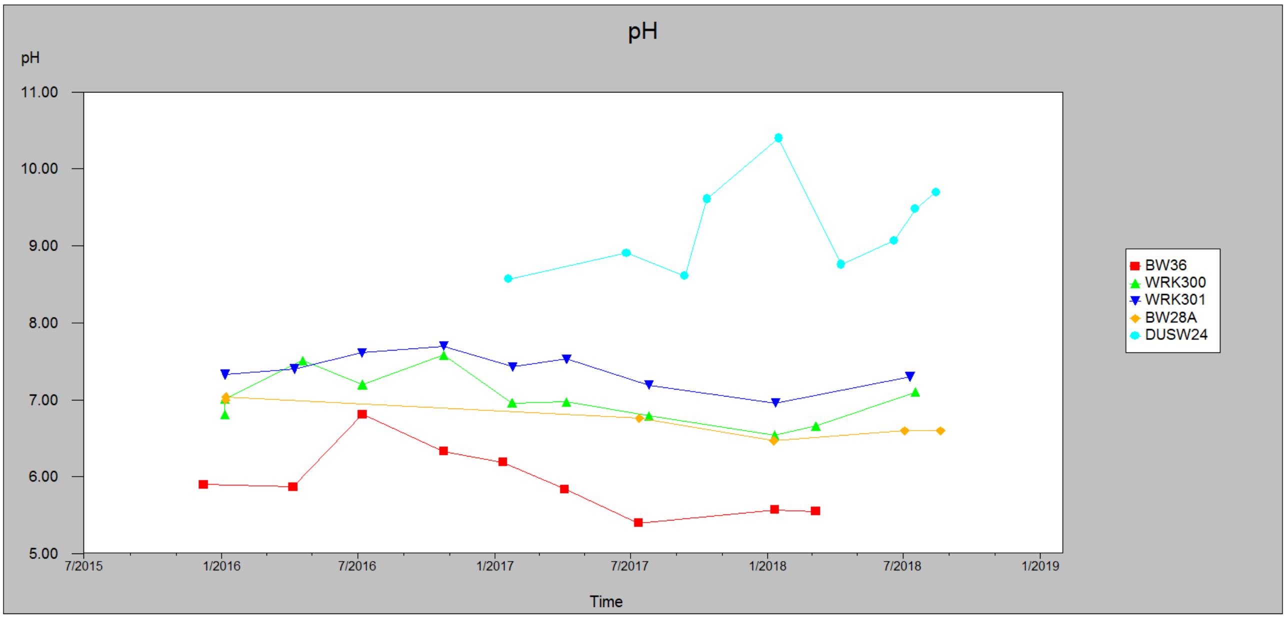


Figure 3.11 pH measured at McGlashin Swamp (DUSW24) and bores located within the groundwater flow path from Pit 23

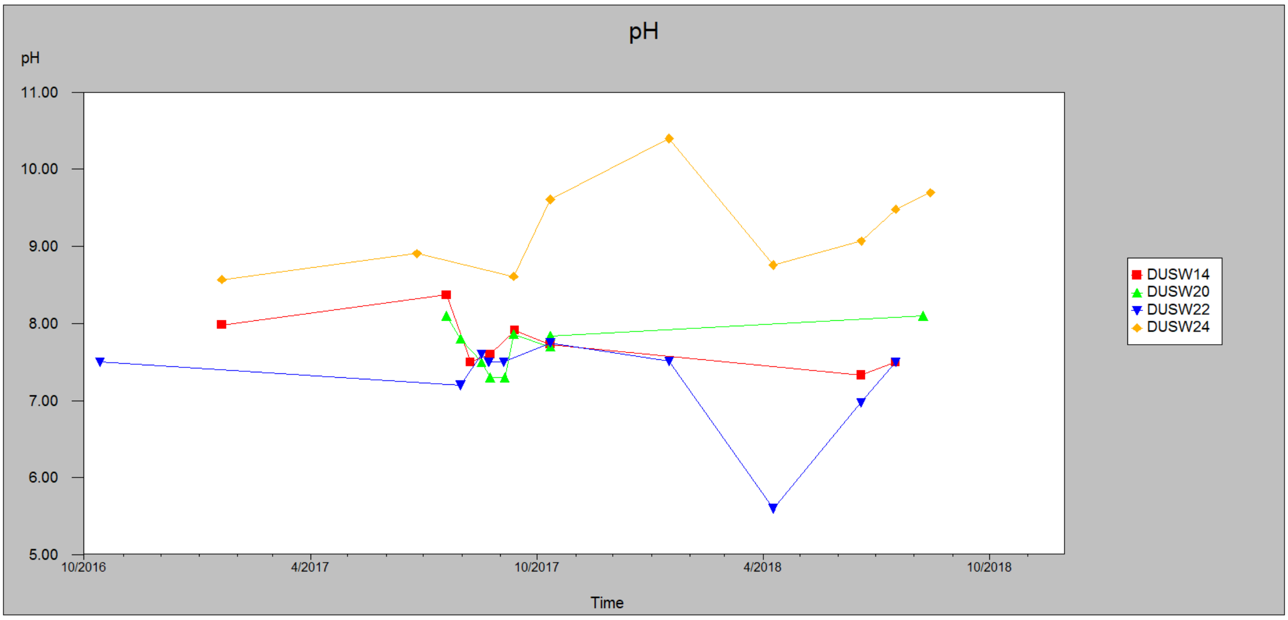


Figure 3.12 Comparison of pH measurements from groundwater-influenced surface water sites. DUSW14, DUSW20, DUSW22 and DUSW24 correspond to Costello's Creek, Northern Drainage Line, Shaw's Gully Creek and McGlashin Swamp respectively.

3.2.3 Chloride to sulphate ratio

To determine if the decreasing $Cl:SO_4$ observed at McGlashin Swamp could have been caused by groundwater seepage from Pit 23, measurements from bores in the vicinity of Pit 23, bores located along the Pit 23 groundwater flow path and other groundwater-influenced surface water locations were assessed.

Figure 3.13 and Figure 3.14 show the locations and historical $Cl:SO_4$ values of the bores immediately surrounding Pit 23, while Figure 3.15 and Figure 3.16 show the same information for bores that are in or near the flow path of groundwater from Pit 23. Figure 3.18 is a time-series plot which compares the $Cl:SO_4$ values observed at McGlashin Swamp to other groundwater-influenced surface water bodies across the Douglas mine. Figure 3.17 and Figure 3.19 compare the sulphate levels at McGlashin Swamp to nearby bores and surface water sites. From these figures the following is observed:

- bores surrounding Pit 23 all show relatively stable $Cl:SO_4$ from the start of 2016, except for WRK301 and WRK305;

- WRK301 shows a sudden $Cl:SO_4$ increase in August 2018 from 6.4 to 8.7, while WRK305 has shown a steady decrease since 2016.

- leachate from Pit 23 was determined to have a $Cl:SO_4$ of approximately 0.008 (Iluka 2017), and therefore any bores affected by groundwater seepage would be expected to show declining $Cl:SO_4$ levels. WRK305 is the only bore where $Cl:SO_4$ is decreasing, but it is outside of the groundwater flow path from Pit 23 and hence this change must be due to other factors. As $Cl:SO_4$ levels have remained steady in other bores, this suggests that no groundwater seepage from Pit 23 has occurred;

- WRK300 and BW36, which are in the Pit 23 groundwater flow path, both show higher $Cl:SO_4$ values than the other bores. This suggests that they have not been affected by low $Cl:SO_4$ seepage from Pit 23;

- $Cl:SO_4$ measurements at McGlashin Swamp are much higher than those seen in the Pit 23 groundwater flow path or in BW28A, which is outside of the flow path. The high $Cl:SO_4$ values observed suggest that McGlashin Swamp has not been strongly affected by groundwater as this would lead to much lower $Cl:SO_4$ levels, as seen in the other groundwater-influenced surface water bodies;

- BW28A is located outside of the Pit 23 groundwater flow path, but has consistently exhibited $Cl:SO_4$ levels similar to those in the flow path from 2016 onward, suggesting that these bores are showing natural levels and have not been affected by seepage;

- the $Cl:SO_4$ levels of the groundwater-connected surface water systems do not show any common trends and appear to vary independently, contrary to other water quality analytes;

- $Cl:SO_4$ measurements at McGlashin Swamp have been consistently higher than other groundwater-influenced surface water bodies since monitoring began in 2017. The high $Cl:SO_4$ is due to lower sulphate concentrations at McGlashin Swamp (1–72 mg/L) than other locations, suggesting that the water signature is not strongly affected by groundwater mixing which shows sulphate concentrations of 290–940 mg/L in the Pit 23 groundwater flow path; and

- Costello's Creek and the Northern Drainage Line exhibit much lower $Cl:SO_4$ levels around 10, which is similar to what is observed in groundwater.

Figure 3.13 Locations and latest (2018) Cl:SO_4 measurements of bores surrounding Pit 23

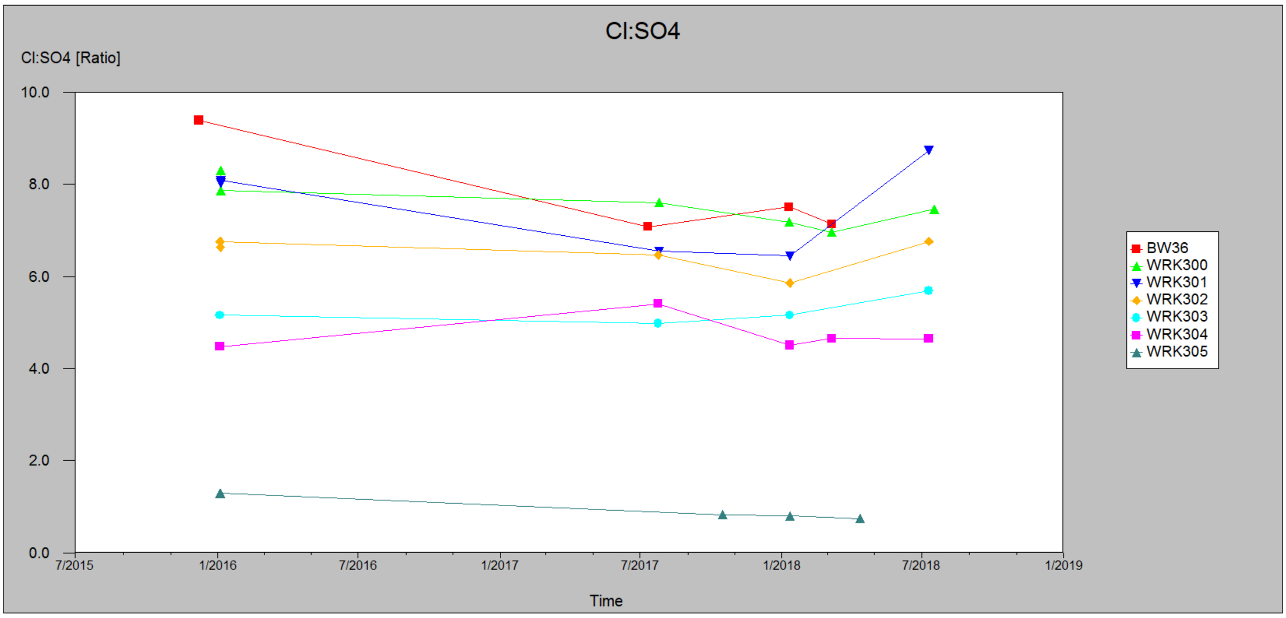


Figure 3.14 Time-series plot of Cl:SO_4 values measured in bores surrounding Pit 23

Figure 3.15 **Locations and latest (2018) Cl:SO_4 measurements of bores in or near the groundwater flow path from Pit 23 and at McGlashin Swamp (DUSW24)**

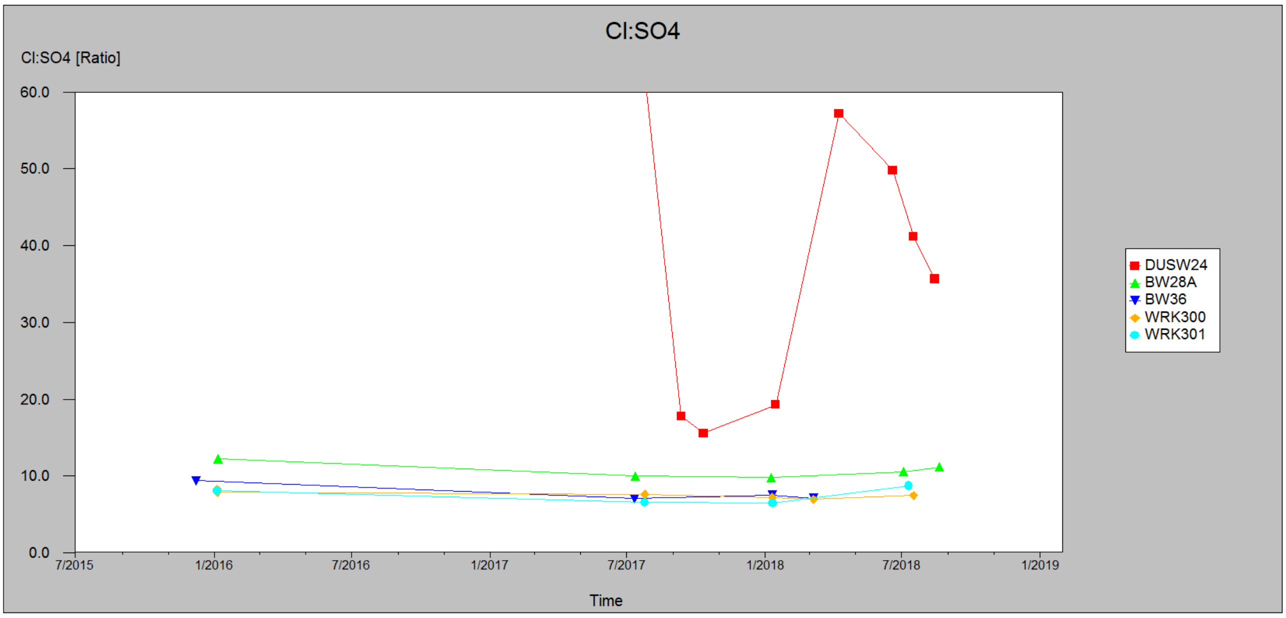


Figure 3.16 Cl:SO_4 levels measured at McGlashin Swamp (DUSW24) and bores located within the groundwater flow path from Pit 23

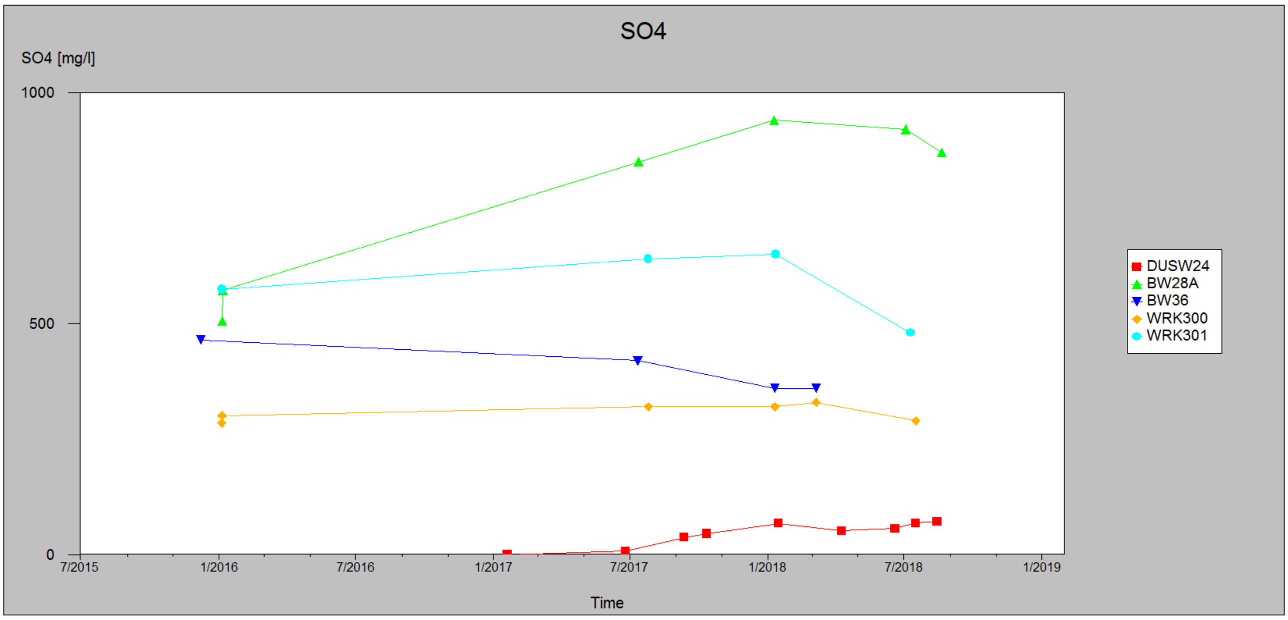


Figure 3.17 Sulphate levels (mg/L) measured at McGlashin Swamp (DUSW24) and bores located within the groundwater flow path from Pit 23

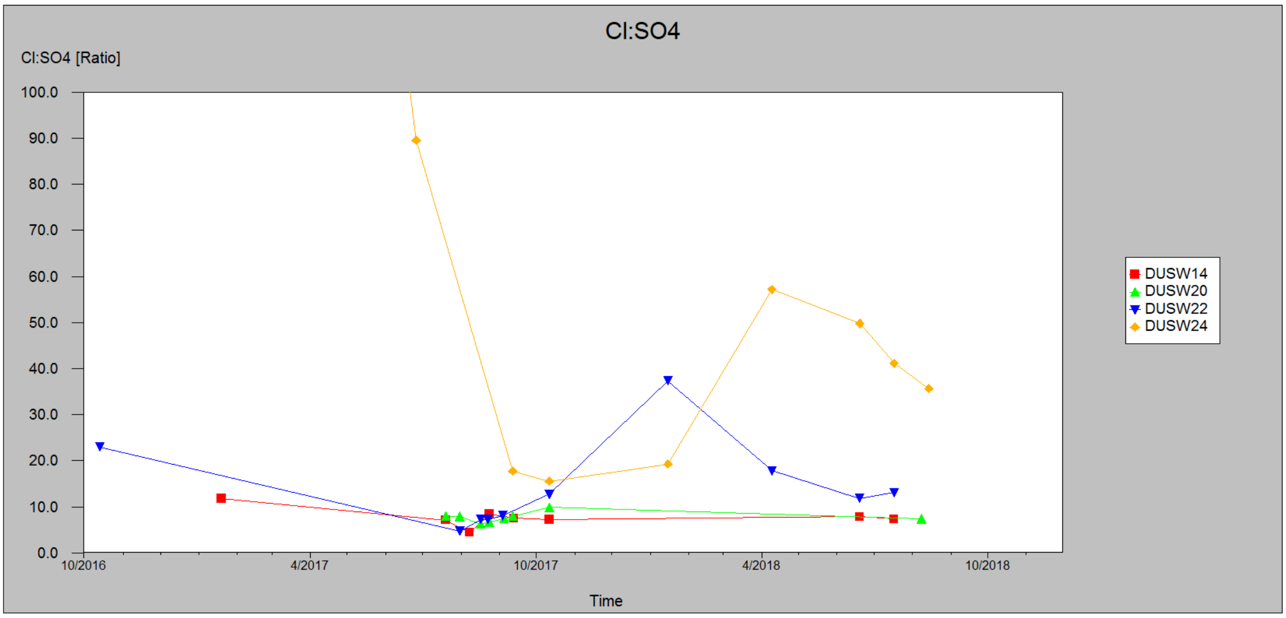


Figure 3.18 Comparison of Cl:SO_4 measurements from groundwater-influenced surface water sites. DUSW14, DUSW20, DUSW22 and DUSW24 correspond to Costello's Creek, Northern Drainage Line, Shaw's Gully Creek and McGlashin Swamp respectively.

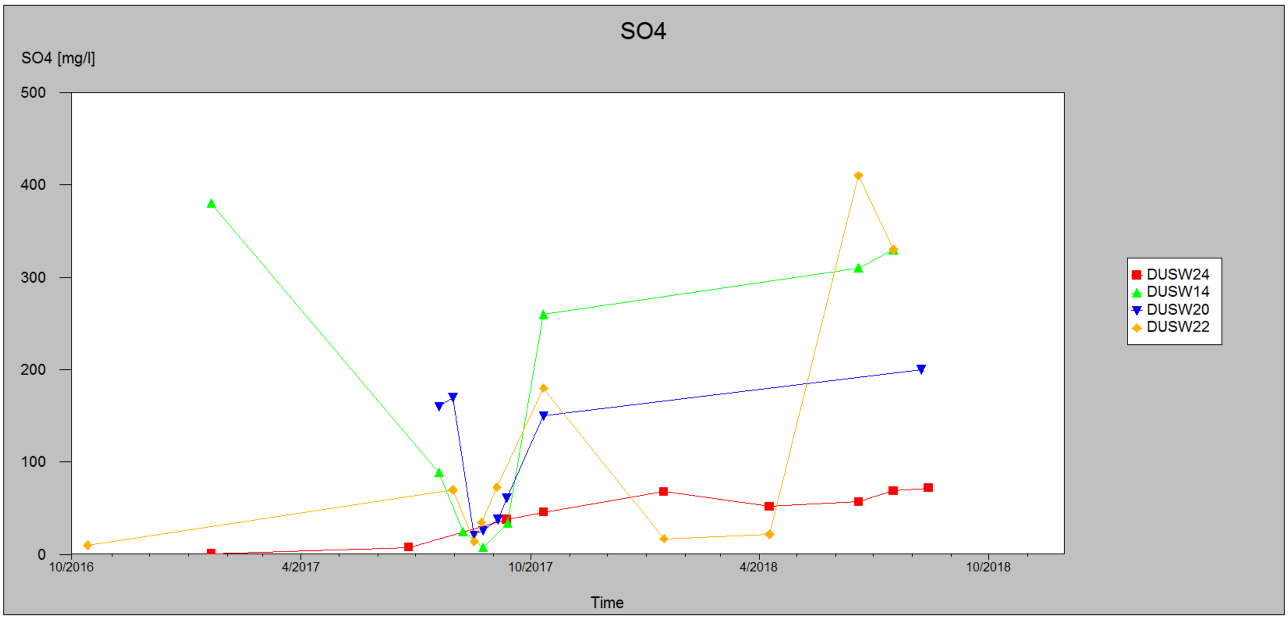


Figure 3.19 Comparison of sulphate measurements (mg/L) from groundwater-influenced surface water sites. DUSW14, DUSW20, DUSW22 and DUSW24 correspond to Costello's Creek, Northern Drainage Line, Shaw's Gully Creek and McGlashin Swamp respectively.

3.3 Groundwater Seepage Summary

Modelling by CDM Smith (2014, 2015) found that groundwater seepage from Pit 23 would flow to the north-west and eventually discharge to the surface at McGlashin Swamp, the North-West Drainage Line or through evapotranspiration. Modelled particles from Pit 22/23 were predicted to arrive at McGlashin Swamp between the years of 2140 and 2160, after passing through monitoring bores WRK300 and BW36. To determine if groundwater seepage was responsible for the exceedances seen in McGlashin Swamp, electrical conductivity, pH and $Cl:SO_4$ trends in upstream bores were assessed.

Electrical conductivity levels measured in bores located within the groundwater flow path showed stable trends and water quality values similar to or better than the bores surrounding Pit 23 and near the flow path. pH trends of bores within the flow path matched those seen in surrounding bores, suggesting that pH levels had not been affected by seepage. $Cl:SO_4$ values were found to be similar for bores in and near the groundwater flow path, indicating that they had not been affected by seepage, which would cause a drop in $Cl:SO_4$.

For each bore analysed within the groundwater flow path, as well as in the surrounding area, the increasing electrical conductivity, increasing pH, or decreasing $Cl:SO_4$ seen at McGlashin Swamp was not replicated. This indicates that groundwater seepage is not the cause for the exceedances at McGlashin Swamp, as the negative water quality trends would also have been observed in bores along the flow path emanating from Pit 23.

4 Surface Water Assessment

4.1 Surface Water Pathway Assessment

The water quality parameter exceedances described in this report were observed at the background water quality monitoring point DUSW24 at McGlashin Swamp.

McGlashin Swamp is one of a number of swamps located in the White Lake depression with its water quality parameters currently monitored by Iluka at monitoring point DUSW24 (Figure 2.1). North of McGlashin Swamp lie White Lake and Bitter Swamp with Ti Tree Swamp located to the south west. Over a dozen smaller unnamed swamps/depressions which may temporarily hold water are located in the vicinity, within 1 km of McGlashin Swamp.

McGlashin Swamp has a 900-ha surface water catchment (Figure 4.1). Approximately 300 ha of this catchment is forested, while the remainder (600 ha) is cropped. The North West drainage line and Red Hill drainage line south of Harrow-Kanagulk Rd receive surface water runoff from the catchment and convey it north towards the swamp. Prior to entering McGlashin Swamp, runoff from these creeks is captured by an unnamed depression (area approximately 7 ha) to the south east of McGlashin Swamp, which discharges water to McGlashin Swamp when filled. The volume required to fill the unnamed depression to the south east of McGlashin Swamp has not been assessed.

Pit 23 is located on a ridge at the eastern extent of the McGlashin Swamp surface water catchment. For material to be transported from Pit 23 to McGlashin Swamp via a surface water pathway, each of the following would need to occur:

1. Material would need to be released from Pit 23 into the upper reaches of the McGlashin Swamp catchment;

2. Rainfall with sufficient intensity to cause runoff and material transport would need to occur. This would involve completely filling Pit 23 and causing it to overflow; by-products disposed in Pit 23 are located approximately 15 m below the natural ground level; and

3. Runoff volume during and prior the transport event would need to be of sufficient volume to fill the unnamed depression to the south east of McGlashin swamp, such that it overflowed to McGlashin Swamp.

In addition, it is likely transport of material from Pit 23 to McGlashin Swamp via a surface water pathway would have water quality impacts at monitoring points upstream of McGlashin Swamp, i.e. DUSW25 on the Red Hill drainage line and DUSW20 on the North West drainage line.

There are currently no records that suggest that material has been released from Pit 23 into the McGlashin Swamp catchment.

The likelihood that rainfall sufficient to fill the depression south east of McGlashin Swamp and cause transport of material occurred prior to / in conjunction with the occurrence of water quality parameter exceedances discussed in this report was assessed using the Bureau of Meteorology's Australian Landscape Water Balance Model (the AWRA-L model). The AWRA-L model is a daily 0.05° grid-based, distributed water balance model. It simulates the flow of water through the landscape from the rainfall entering the grid cell, through vegetation and soil moisture stores, and then out of the grid cell through evapotranspiration, runoff or deep drainage to the groundwater. Daily and monthly runoff estimates from the catchment were obtained from the AWRA-L model. Peak daily runoff rates during 2017 were predicted to be 0.14 mm/day (16/9/17), and 0.05 mm/day during 2018 (12/5/18). Monthly runoff rates are plotted in Figure 4.2 together with 90th, 70th and 30th percentile monthly runoff rates, and indicators of dates that water quality parameter exceedances were measured in McGlashin Swamp.

From Figure 4.2, it can be seen that there may have been a large runoff event during September 2016, however runoff rates were lower than 2 mm/month during the period of water quality monitoring. There does not appear to be a correlation between rainfall runoff events and the occurrence of water quality parameter exceedances in McGlashin Swamp.

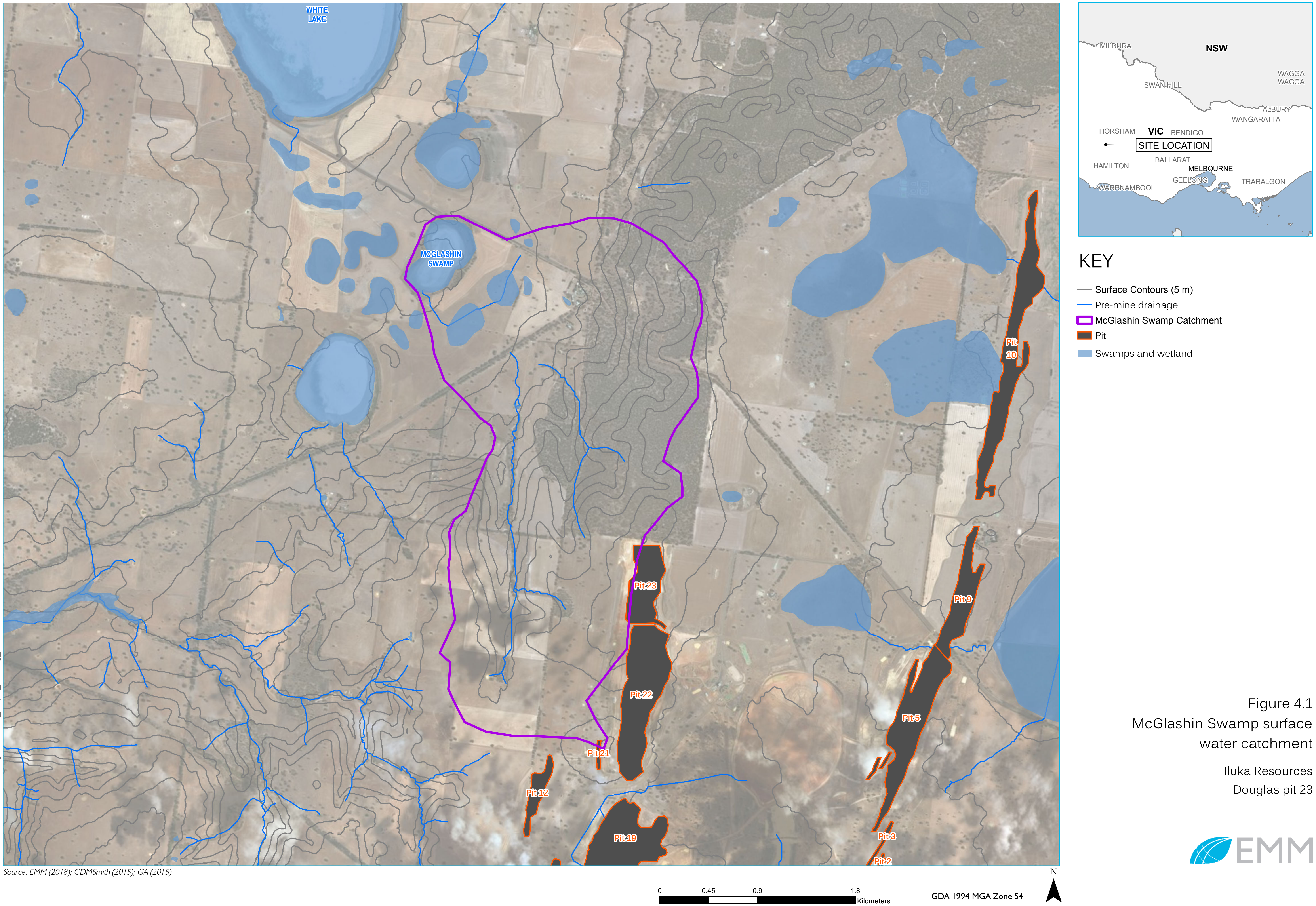
Figure 4.3 illustrates monthly potential evaporation, and the results of a simple water balance on the 7-ha depression upstream of McGlashin Swamp. This plot shows that the September 2016 rainfall runoff event would likely have been sufficient to fill the unnamed depression such that it discharged to McGlashin Swamp, but that following this event any captured runoff would have evaporated from the depression and not made it to McGlashin Swamp.

Background water quality sampling has been undertaken upstream of McGlashin Swamp at DUSW20 and DUSW25 during 2017-2018. During each sampling round, DUSW25 was found to be dry and no samples have been taken from that site. DUSW20 was found to be dry on 5 out of 8 sampling rounds. Samples were taken from DUSW20 on 20 July 2017, 12 Sept 2017 and 11 Oct 2017, with water quality parameters reported in Table 4.1 with the following observed:

- pH, total nitrogen and total phosphorus levels in each of the DUSW20 samples (Table 4.1) were lower than levels recorded in McGlashin Swamp DUSW24 (Table 2.6), and were below trigger levels; and
- Salinity (EC) was variable at DUSW20, and of a similar magnitude to McGlashin Swamp (DUSW24). This result is not an indication of transport of material from Pit 23 as the landscape naturally receives discharge of saline groundwater.

Table 4.1 DUSW20 observed water quality parameters

Date	EC	pH	DO	ORP	TO2N	Total P	TSS	Turbidity
	µs/cm@25C	@25C	mg/L	mV	mg/L	mg/L	mg/L	NTU
20-Jul-17	3600	8.1	8.9	302	1.8	0.073	6	72
12-Sep-17	1500	7.9	9.2	331	2.4	0.08	9	61
11-Oct-17	4100	7.8	6.5	-	2	0.04	8	22.1



T:\Jobs\2018\S180265 - Douglas\GIS\02_Maps_working_SW catchment.mxd 20/11/2018

Source: EMM (2018); CDMSmith (2015); GA (2015)

Figure 4.1
McGlashin Swamp surface water catchment

Iluka Resources
Douglas pit 23

EMM

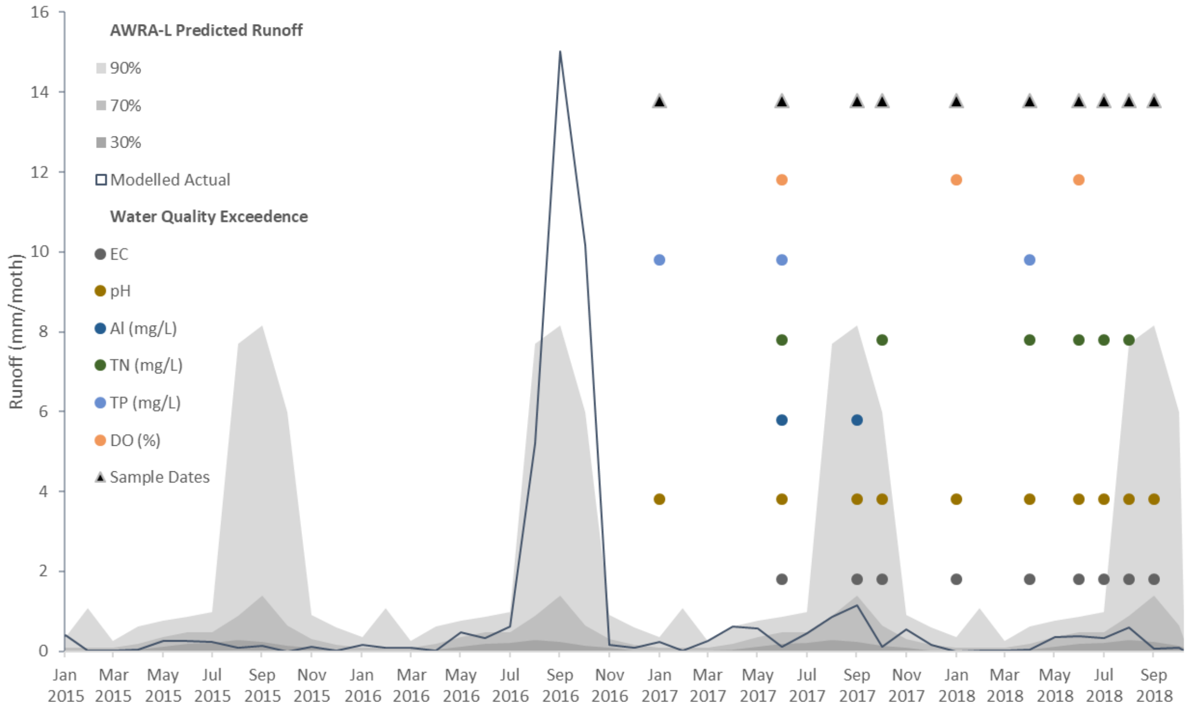


Figure 4.2 AWRA-L modelled monthly runoff in McGlashin Swamp catchment, and sample dates

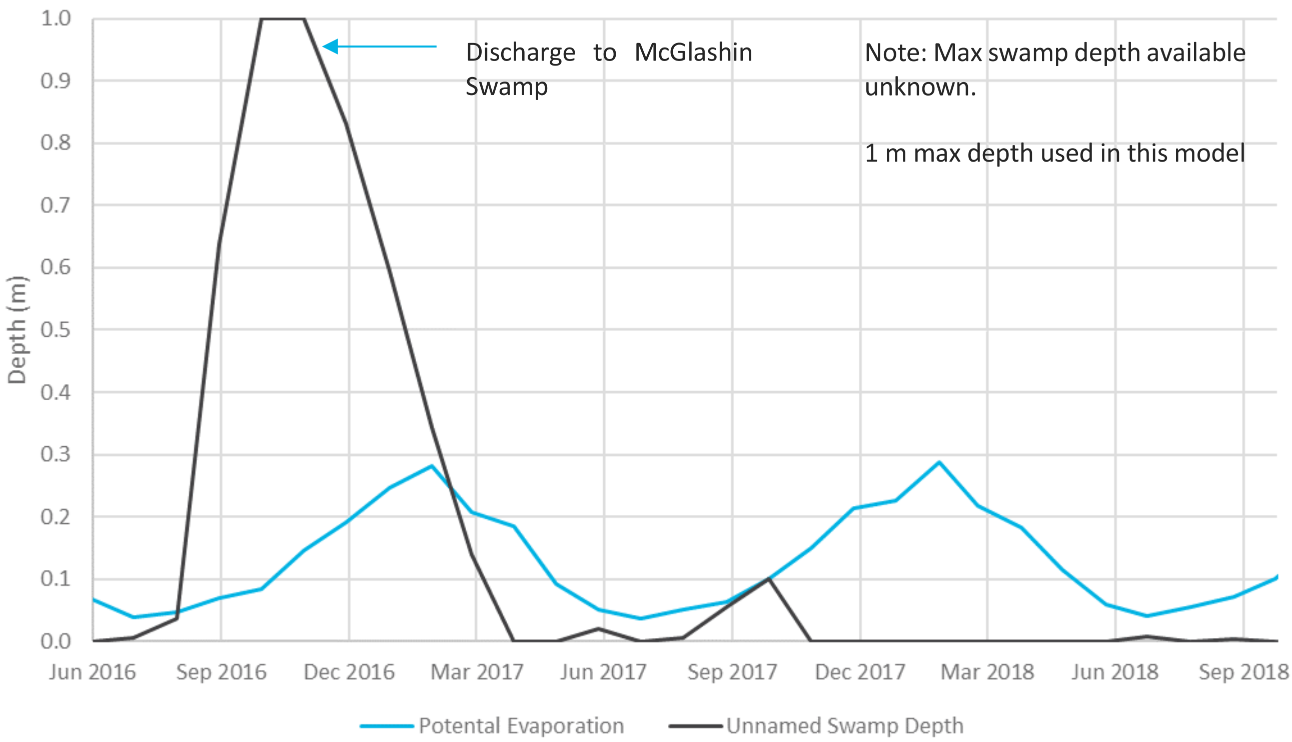


Figure 4.3 AWRA-L modelled monthly potential evaporation in McGlashin Swamp catchment, and simple water balance on unnamed 7 ha swamp upstream of McGlashin Swamp

This high-level assessment of a surface water pathway between Pit 23 and McGlashin Swamp has concluded that:

1. There are no recorded releases of material from Pit 23 into the McGlashin Swamp surface water catchment;
2. Water quality parameter exceedances do not appear to be associated with catchment runoff events;
3. Catchment runoff during the period of recorded water quality parameter exceedances would likely have been captured by an unnamed swamp upstream of McGlashin Swamp, and not arrived at McGlashin Swamp; and
4. Water quality parameter exceedances were not observed in DUSW20 and DUSW25 upstream of McGlashin Swamp.

Given the above, it appears unlikely that the water quality parameter exceedances recorded at McGlashin Swamp were caused by transport of material from Pit 23 via a surface water pathway.

4.2 Evapoconcentration and eutrophication at McGlashin Swamp

Reid & Mosley (2015) from the Goyder Institute, recently investigated different causes of increasing pH and salinity levels in lakes and wetlands. It was found that evapoconcentration and plant growth could cause the pH of these water bodies to increase, with pH levels of 9 to 10.5 being commonly seen.

McGlashin Swamp has been steadily drying out in recent times consistent with emerging drought conditions. When water is removed via evaporation, the concentrations of dissolved ions such as calcium (Ca^{2+}), magnesium (Mg^{2+}), and carbonate (CO_3^{2-}) increase, explaining the increase in electrical conductivity observed over time at McGlashin Swamp. If the concentrations of these ions increase enough, the water will become saturated with them (contain the maximum possible dissolved concentration) and they will begin to precipitate as various compounds. Depending on the concentrations and ratios of each ion, different species will precipitate. Therefore, the precipitating compounds, and hence a change in water quality, can be predicted by knowing the ratios of different ions.

Reid & Mosley (2015) found that the ratio between (Ca^{2+} + Mg^{2+}) and (HCO_3^{-}+CO_3^{2-}) concentrations was the best indicator for high pH conditions forming during evapoconcentration. Lower calcium and magnesium levels relative to carbonate and bicarbonate (lower ratios) was associated with higher pH levels. Figure 4.4 shows the correlation between this ratio and pH for wetland water samples within the study.

Figure 4.4 shows that ratios lower than approximately 10 will result in pH levels ranging roughly between 7.5 and 11.0, with most being in the 8.0 to 9.0 range. Table 4.2 shows the ratios calculated when considering McGlashin Swamp data collected in 2017 with ratios range from 0.64 to 2.97. This is considered very low, indicating that McGlashin Swamp would be expected to increase in pH caused by evapoconcentration.

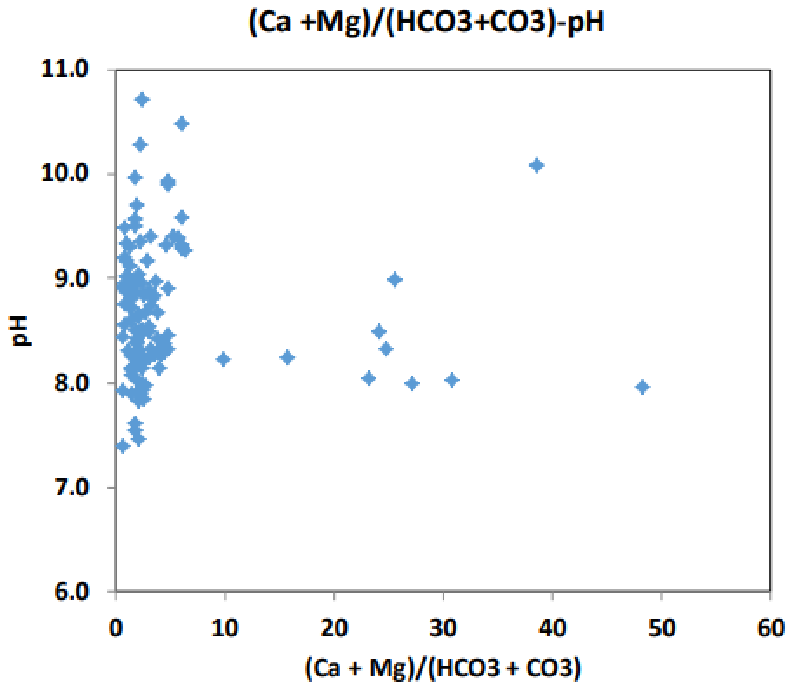


Figure 4.4 Sum of calcium and magnesium divided by the sum of carbonate and bicarbonate concentrations (meq/L) versus pH in wetlands (Reid & Mosley 2015)

Table 4.2 Ionic ratios calculated for 2017 McGlashin Swamp surface water samples

Sample Date	Total alkalinity (meq/L)	Ca^{2+} + Mg^{2+} (meq/L)	(Ca^{2+}+Mg^{2+})/Alkalinity
19/01/2017	7.39	4.70	0.64
26/06/2017	2.60	7.72	2.97
12/09/2017	6.19	5.73	0.92
11/10/2017	6.39	6.41	1.00

Besides evapoconcentration, the other explanation for increasing pH levels given by Reid & Mosley (2015) is photosynthesis and plant growth. Eutrophication (excessive growth of plants and algae in the water body due to high levels of nutrients) could explain the increasing pH and dissolved oxygen measurements seen at McGlashin Swamp. Yang et al. (2008) suggest that total phosphorus levels of more than 0.1 mg/L and total nitrogen levels of more than 2 mg/L indicate a hyper-eutrophic water body. The 2017–2018 background levels of total nitrogen and phosphorus found at McGlashin Swamp are 6.1 and 1.66 mg/L respectively, putting it far above the levels necessary for eutrophication to occur. This theory is supported by recent observations of algae at McGlashin Swamp during water quality sampling rounds.

Large amounts of algae growing due to high nutrient levels would lead to increased rates of photosynthesis in McGlashin Swamp. Part of this process involves inorganic carbon being removed from the water; carbon dioxide is the preferred source, but aquatic plants are also able to use bicarbonate. When plants utilise bicarbonate, hydroxyl ions are produced which lead to increased pH levels – this reaction is shown in Equation 1. Oxygen is produced as a result of photosynthesis, which can lead to high levels of dissolved oxygen in the water, such as the measurements of over 200% saturation measured in January and June 2018 at McGlashin Swamp.

$$HCO_3^- \rightarrow \; CO_2 + OH^-$$

$$\text{bicarbonate ion} \rightarrow \text{carbon dioxide} + \text{hydroxl ion}$$

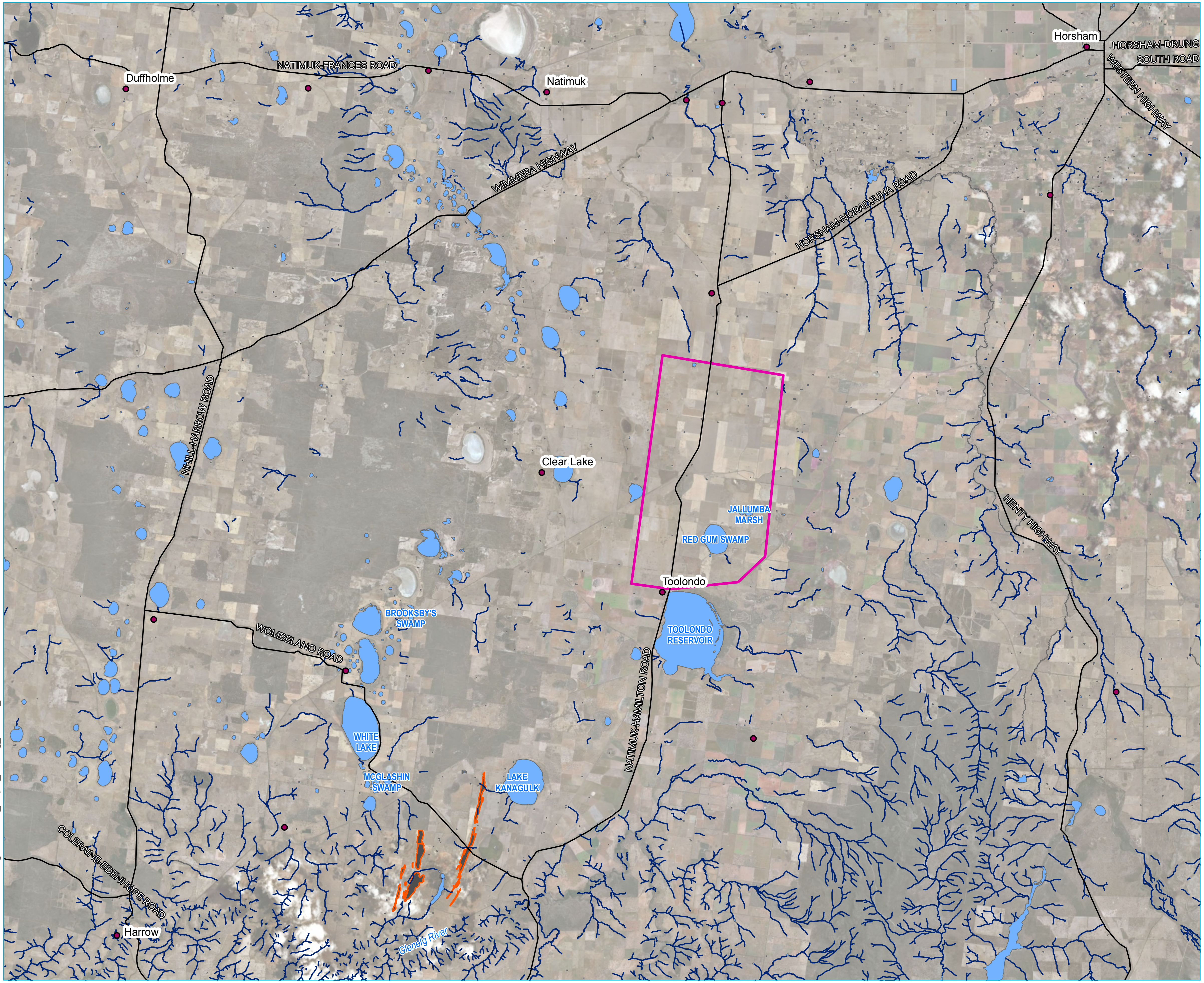
Equation 1 Bicarbonate utilisation for photosynthesis

In addition to the effects from photosynthesis, plant growth itself can also cause alkalising effects. Calcium and magnesium ions are sequestered during plant growth, which reduces the concentrations of these ions available in the water. As discussed previously in regard to evapoconcentration, reducing the concentrations of these ions prevents the precipitation of species like calcium and magnesium carbonates which would cause the pH of the water to decrease. Evidence for this is observed at McGlashin Swamp as calcium and magnesium levels have remained relatively constant from January 2017 to August 2018, while other ions have increased dramatically. Sodium, for example, has increased approximately 300 % from 330 to 1100 mg/L over the same period.

4.2.1 Jallumba Marsh and Redgum Swamp

To determine whether high pH levels are being recorded at other similar wetland/swamp environments in the region, Iluka supplied EMM with the baseline surface water monitoring data currently being collected to support Iluka's WIM100 Fine Minerals Project. Currently, two wetlands are being sampled as part of this project including Redgum Swamp and Jallumba Marsh. The location of these two wetlands in relation to McGlashin Swamp and the Douglas Mine is shown in Figure 4.5. The recorded pH values over the last three recordings for McGlashin Swamp, Redgum Swamp and Jallumba Marsh is shown in Figure 4.6. The following is observed:

- minimum pH recorded over the period was 8.6 across all sites;
- all surface water is alkaline;
- over the last two monitoring events, the Jallumba Marsh pH has increased dramatically (from September to October), similar to the increase seen at McGlashin between June and September; and
- it appears similar geochemical processes are occurring across numerous wetland/swamp environments in the region, although some variability is expected due to local geomorphic, hydrogeological and soil chemical variability.



KEY

- Towns
- Roads
- Watercourses
- Waterbodies
- WIM100 site location
- Douglas mine

Source: EMM (2018); CDMSmith (2015); GA (2015)

0 3 6 12 Kilometers

GDA 1994 MGA Zone 54

N

Figure 4.5
WIM100 site location and surface water monitoring

Iluka Resources
Fines mineral project

EMM

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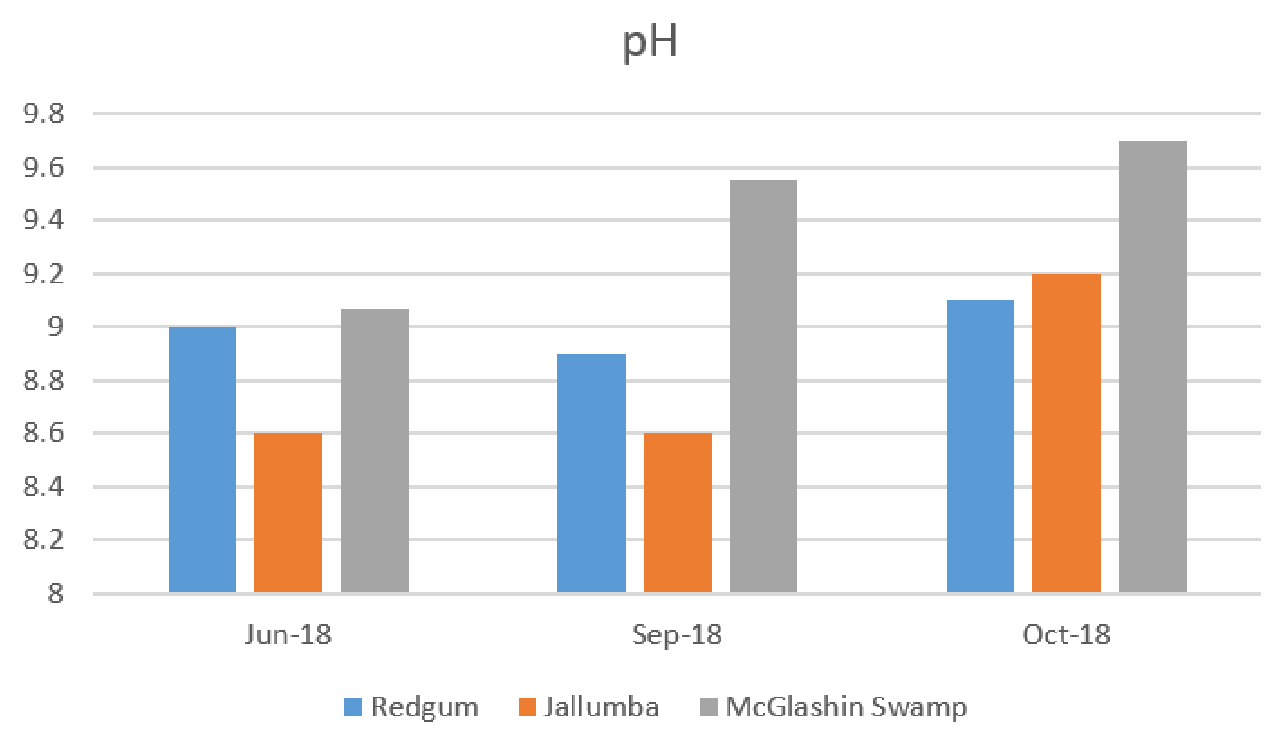


Figure 4.6 Recent pH recordings at McGlashin Swamp, Redgum Swamp and Jallumba Marsh.

4.2.2 Analogous surface water monitoring recommendation

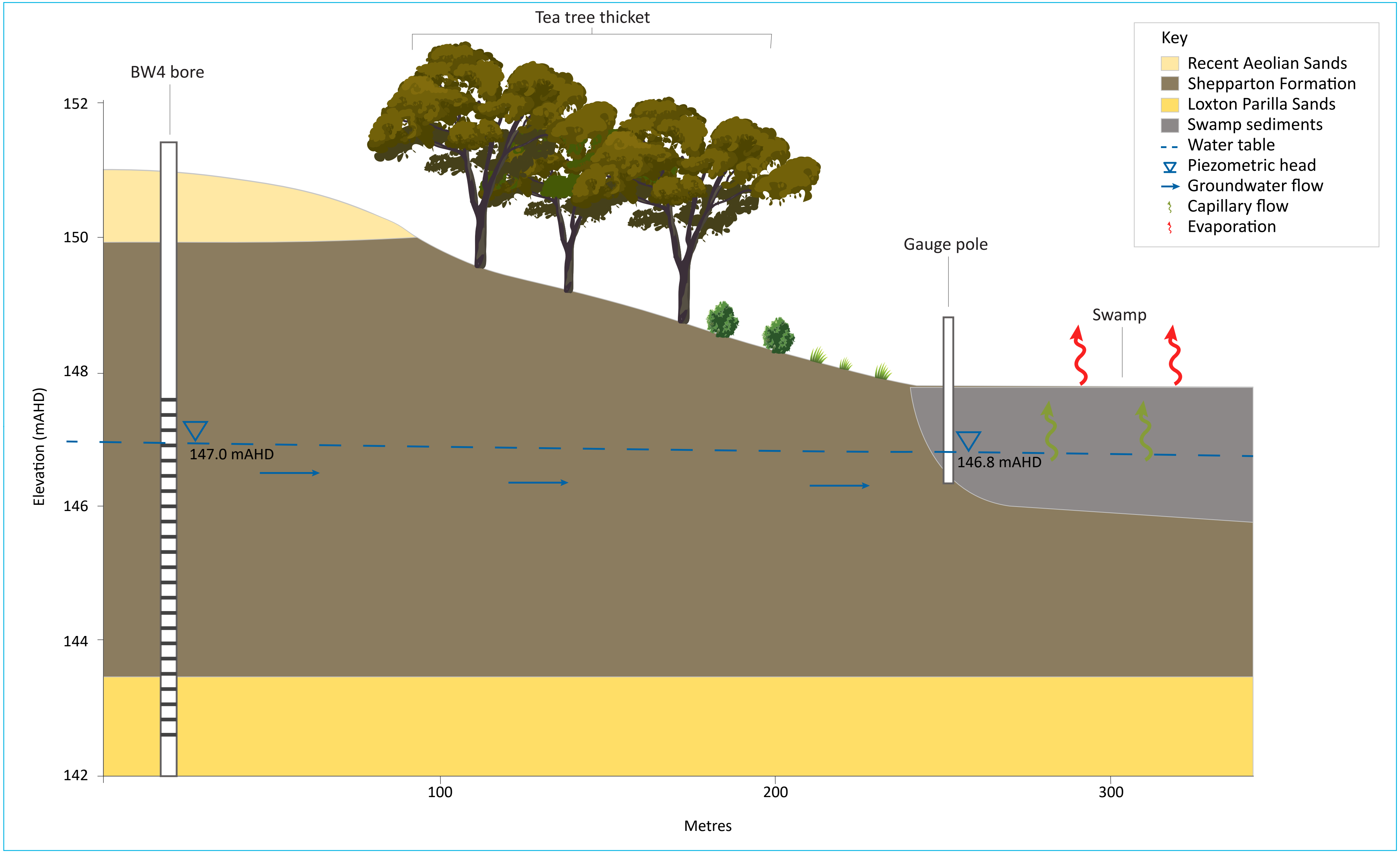
To assist Iluka with their regulatory obligation going forward and to minimise future exceedance triggers that may occur due to natural phenomena rather than disposal activities at Pit 23, analogous surface water monitoring locations are recommended in addition to the existing monitoring points DUSW24 (McGlashin Swamp) and DUSW5B (White Lake). These additional locations will need to meet the following criteria:

- be outside of any influence from groundwater flows from Pit 23;
- be classified as a saline lake or swamp, which receives groundwater discharge;
- have similar hydrogeological profiles and soil types; and
- support similar ecological vegetation communities (for assessing similarities in environmental attributes).

A brief review of the lakes and swamps in the Douglas region undertaken by Goldfields Revegetation (Smart 2001) as part of the Murray Bain Stage 1 Environmental Effects Statement (EES), identified Brooksby's Swamp to have similar characteristics to White Lake and Tea Tree Lakes, while being outside of any groundwater influence from Pit 23. White Lake and Tea Tree Lakes are located closer to the Douglas mine and are potential receptors to Pit 23 discharge. Brooksby's Swamp is located about 4 km northwest of Douglas and is typical of the saline swamps found within the Douglas Depression. Figure 4.7 shows a basic hydrogeological conceptual model of Brooksby's Swamp based on the Smart 2001 study, and Figure 4.8 shows the location of Brooksby's Swamp in relation to Pit 23. From Figure 4.7 and Figure 4.8, the following is noted:

- Brooksby's Swamp is located outside of any discharge zone associated with Pit 23;
- hydrogeological sequence is typical of the area and includes surficial aeolian sands, underlain by the sandy-clays of the Shepparton Formation, which is then underlain by the Loxton Parilla Sands. Typical clayey sediment dominates the top couple of meters within the swamp extent. This lithological structure is consistent with that found across the Douglas Mine/Pit 23 area;
- during the dry period of 2001, groundwater levels measured at the BW4 monitoring bore were 147 mAHD, with groundwater levels measured beneath the swamp at 146.8 mAHD;
- conceptually, groundwater flows towards the swamp during the dry period, and discharges to the surface through capillary action, making Brooksby's Swamp a groundwater discharge zone, at least during parts of the year during low rainfall; and
- the biodiversity mapping tool of Victoria (http://maps.biodiversity.vic.gov.au) highlights the Ecological Vegetation Community (EVC) to be 'Plains Woodlands or Forests' type for both McGlashin Swamp and Brooksby's Swamp. Smart (2001) noted that a stand of Yellow Gums (*E.leucoxylon*) existed on the sandy lunette section of the swamp and is recognised to be part of the 'Plains Woodlands or Forests' community. However, paperbark thicket was also mapped surrounding the swamp, which is a common specie found within the 'Swamp Scrub' EVC. In summary, the saline lakes and swamps within the Douglas depression region support similar ecological communities and thus similar soil, climatic and geomorphologic conditions are assumed to prevail in the absence of a detailed site survey.

It is recommended that Iluka include Brooksby's Swamp as part of their ongoing surface water monitoring plan. However, it was noted that the swamp was dry during the millennium drought (groundwater levels were approximately 1 m below swamp surface) and thus other sites may also need to be included to ensure a surface water sample is obtainable. In addition, Redgum Swamp and Jallumba Marsh are currently being monitoring as part of Iluka's WIM100 Fine Minerals Project. Given the monitoring results already show similar high pH values to McGlashin Swamp, Iluka may consider including these sites as part of the Douglas Environmental Management Plan (EMP). It is envisioned that monitoring these analogous swamps in parallel with the current surface water monitoring points will show the water quality variability is a natural phenomenon rather than a result of groundwater seepage and subsequent transport emanating from Pit 23.



Brooksby's Swamp hydrogeological conceptual model (after Smart 2001)

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Source: EMM (2018); CDMSmith (2015); GA (2015)

KEY

Pre-mine drainage

Pit

Swamps and wetland

Figure 4.8

Douglas mine site and surrounding environment

Iluka Resources

Douglas pit 23

GDA 1994 MGA Zone 54

5 Risk Assessment Validation

Jacobs (2014) investigated the risk that continued by-product disposal to Pit 23 posed to groundwater accessibility, groundwater quality and groundwater dependent ecosystems in the surrounding environment. In each case, the risk was found to be low. To validate these findings, the conclusions made by Jacobs will be reassessed in this section to determine if they are still applicable.

5.1 Groundwater Accessibility

The overall risk to groundwater accessibility caused by continued by-product disposal to Pit 23 was rated as Low. Table 5.1 adapted from the Jacobs 2014 report explains that the reason for this conclusion is that the groundwater levels around Pit 23 are predicted to undergo only minor changes. To verify this claim, the standing water level (mBGL) of bores surrounding Pit 23, as well as bores in the flow path between Pit 23 and McGlashin Swamp are shown in Figure 5.1 and Figure 5.2 respectively. The change in water level between January 2014 and the last measurement in August 2018 for each bore is shown in Table 5.2. From these results, the following is observed:

- the water level in each bore has steadily changed over time. Three of the analysed bores showed a decrease in water level, while the other five showed a slight increase;
- the bores immediately surrounding Pit 23 showed no definite trends, with three bores showing increasing water levels and two showing decreasing water levels; and
- two of the bores located within the Pit 23 groundwater flow path (WRK300 and BW36) showed water level increases of 1.22 and 0.30 m respectively. Ordinarily, this could be perceived to be mound migration due to groundwater seepage, however a 0.44 m increase in water level was also observed in BW28A, which is nearby but not located within the flow path. Also, groundwater levels at Pit 23 have not risen enough over the reporting period to create a large enough groundwater gradient to induce such flow. This would therefore suggest that the increased water levels are due to natural processes.

This assessment suggests that while groundwater levels have slightly changed across the site between 2014 and 2018, the changes are small, appear random and cannot be linked to the disposal activities undertaken at Pit 23. Therefore, the overall risk to groundwater accessibility remains as Low.

Table 5.1 Risk to groundwater accessibility for current and future groundwater users (after Jacobs 2014)

Risk component	Ranking	Reason	Overall risk rating
Likelihood	Unlikely	• predicted changes to groundwater levels are minor and result in very minor changes to travel times between the source and receptor	Low
Consequence	Low	• negligible to minor short-term stress on groundwater environment with rapid recovery • no change in aquifer yield • impacts within the range of natural variability • inter-connected systems, including adjacent and overlying aquifers, hydraulically connected surface water systems and groundwater dependent ecosystems are unaffected • groundwater environment is resilient to impacts and only simple, low cost rehabilitation works are required, if any	

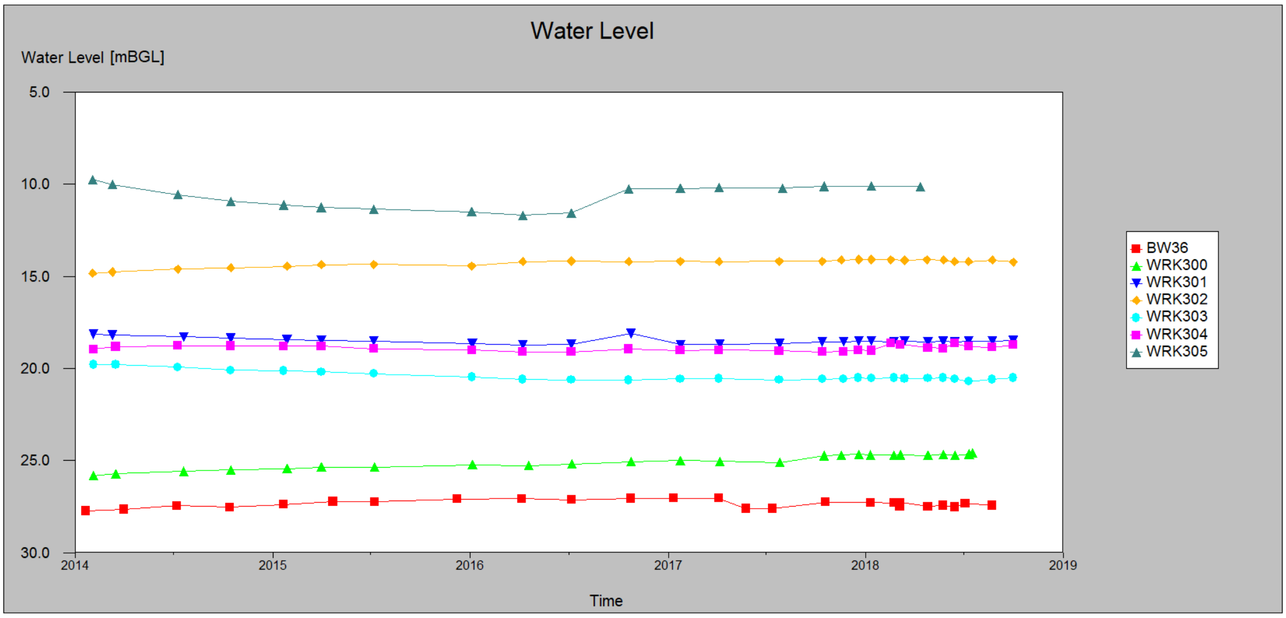

Figure 5.1 Standing water level (mBGL) of the bores surrounding Pit 23

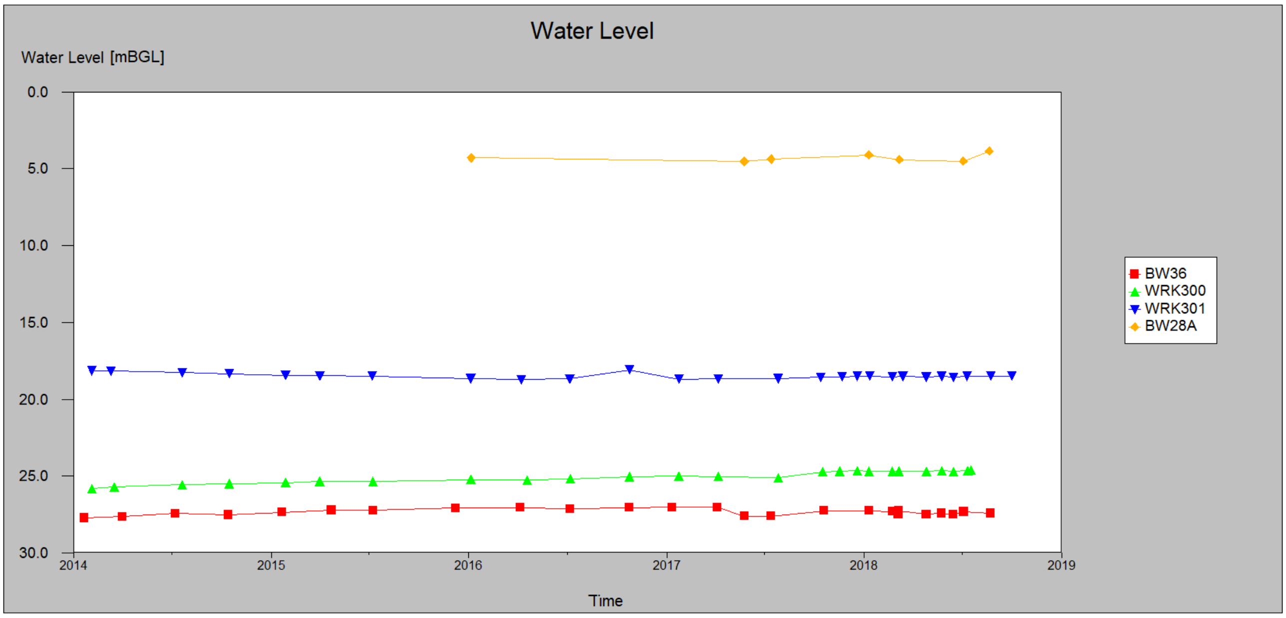

Figure 5.2 Standing water level (mBGL) of the bores in the groundwater flow path between Pit 23 and McGlashin Swamp

Table 5.2 Change in water level across the Douglas groundwater monitoring network (positive values indicate an increase in water level)

Bore	Change in water level (m)
WRK300	1.22
WRK301	-0.34
WRK302	0.61
WRK303	-0.70
WRK304	0.24
WRK305	-0.38
BW36	0.30
BW28A	0.44

5.2 Groundwater Quality

The overall risk to groundwater quality impacts caused by continued by-product disposal to Pit 23 was originally rated as Low by Jacobs (2014). Table 5.3 adapted from Jacobs 2014 report shows that the reasons for this rating are that the identified contaminants are not readily soluble or leachable, and that no impacts have been observed from historical disposal activities.

To verify Jacobs rationale and overall risk rating, reference will be made to Section 3 where some aspects of the groundwater quality surrounding Pit 23 were investigated. In addition, Figure 5.3 through to Figure 5.6 show time-series plots of various contaminants identified in the disposed by-products (radium-226, radium-228, chromium and arsenic) to determine if the concentrations of these analytes are increasing over recent time. With reference to these figures, along with those shown in Section 3, the following is noted:

- radium-226 concentrations have a large variance, but there are no clear increasing trends in any of the bores around Pit 23, or within the flow path between Pit 23 and McGlashin Swamp;
- radium-228 concentrations also show some variance between measurements, but again no clear increasing trends are observed;
- chromium concentrations in these bores are relatively stable, except in WRK301 which shows large fluctuations in measured values;
- arsenic concentrations are similarly stable except for WRK301. The spikes in chromium and arsenic concentrations in WRK301 occurred during the same monitoring rounds, suggesting that they may be due to sampling errors, or natural quality fluctuations;
- BW28A (not shown) showed very high arsenic levels ranging 0.5–1.1 mg/L between 2016 and 2018, suggesting that there is a source for this contaminant in the local environment. However, this bore is not located within the Pit 23 groundwater flow, thus these levels are unlikely to be caused by Pit 23 disposal activities; and
- investigations into the quality of the groundwater surrounding Pit 23 undertaken in Section 3 found that bores located within the flow path between Pit 23 and McGlashin Swamp showed similar or better quality than other bores in the vicinity of Pit 23.

From this analysis, contaminant concentrations are not increasing in the area surrounding Pit 23, or within the groundwater flow path from Pit 23, suggesting that these contaminants are not readily soluble in groundwater nor being transported via the aquifer. Additionally, from consideration of other water quality parameters in Section 3 (electrical conductivity, pH and $Cl:SO_4$), it is also noted that there has been no measurable impact of any disposal activities during recent time on the quality of the receiving groundwater environment.

Table 5.3 Risk to groundwater quality (after Jacobs 2014)

Risk component	Ranking	Reason	Overall risk rating
Likelihood	Unlikely	• contaminants within by-products shown to be not readily soluble in groundwater • no impact of current disposal activities measurable in existing groundwater • effects of dilution in regional groundwater system would reduce potential source concentrations to negligible	
Consequence	Low	• no change in aquifer quality • impacts within the range of natural variability • inter-connected systems, including adjacent and overlying aquifers, hydraulically connected surface water systems and groundwater dependent ecosystems are unaffected • groundwater environment is resilient to impacts and only simple, low cost rehabilitation works are required, if any	Low

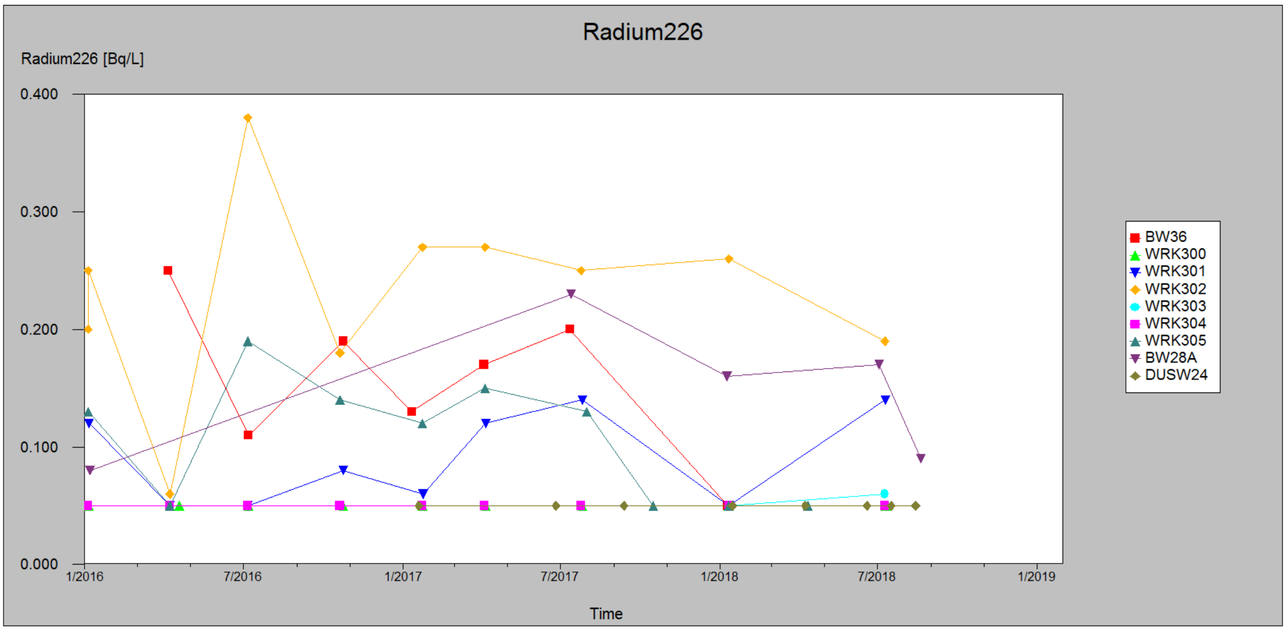

Figure 5.3 Radium-226 concentration (Bq/L) in bores surrounding Pit 23 and within/near the groundwater flow path between Pit 23 and McGlashin Swamp

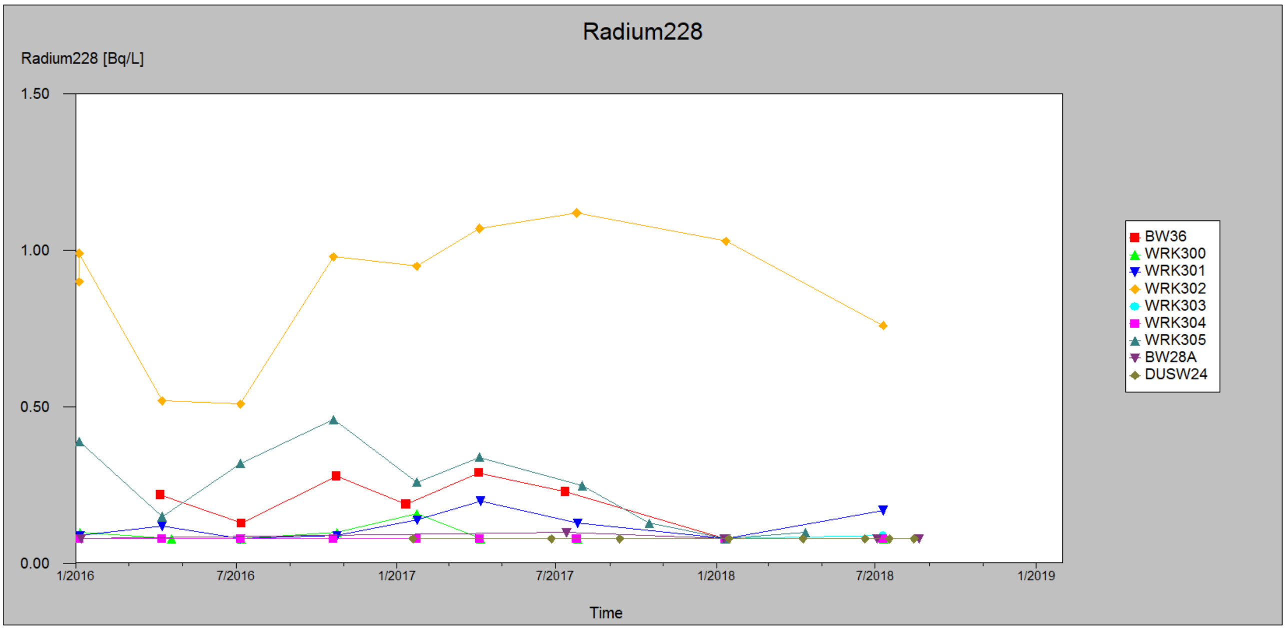

Figure 5.4 **Radium-228 concentration (Bq/L) in bores surrounding Pit 23 and within/near the groundwater flow path between Pit 23 and McGlashin Swamp**

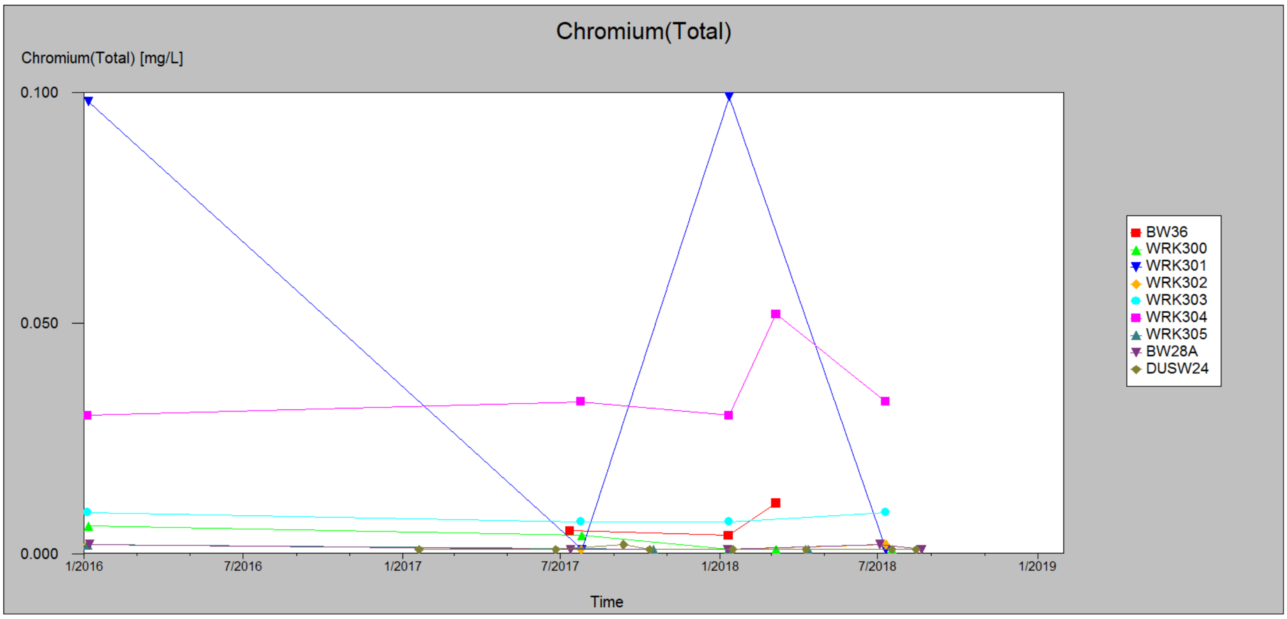

Figure 5.5 **Chromium concentration (mg/L) in bores surrounding Pit 23 and within/near the groundwater flow path between Pit 23 and McGlashin Swamp**

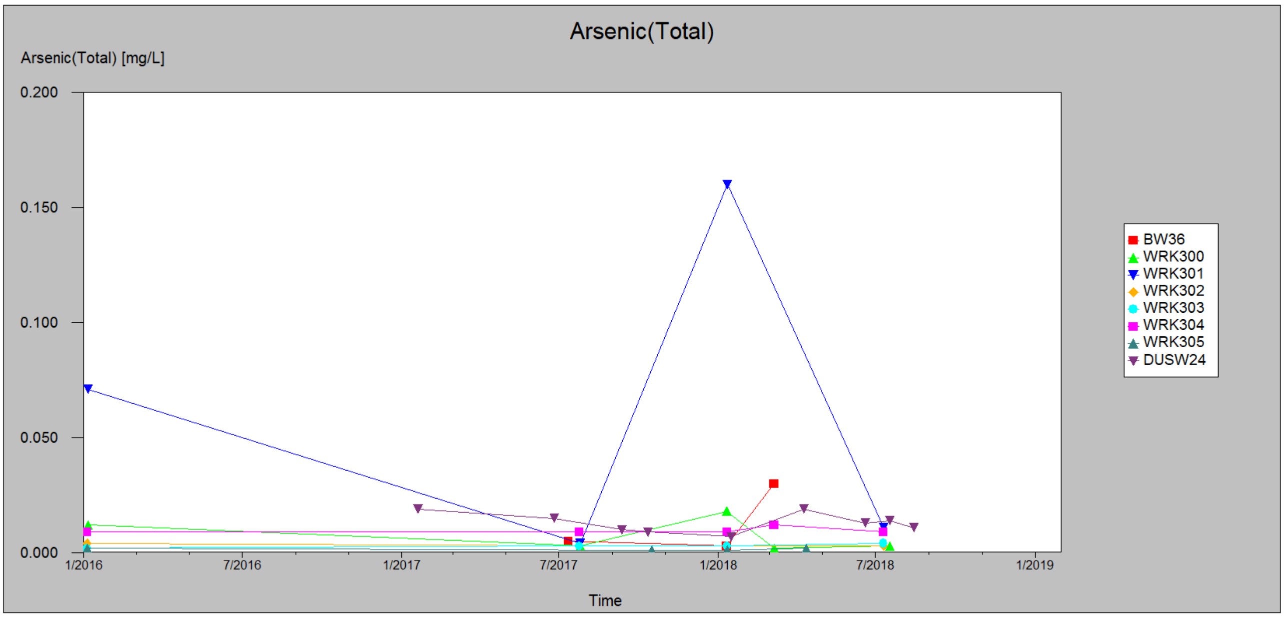

Figure 5.6 Arsenic concentration (mg/L) in bores surrounding Pit 23 and within/near the groundwater flow path between Pit 23 and McGlashin Swamp

5.3 Groundwater Dependent Ecosystems

The overall risk to Groundwater Dependent Ecosystems (GDEs), which are mainly concerned with the groundwater fed wetlands and swamps in the region, caused by continued by-product disposal to Pit 23 was rated as Low. Table 5.4 adapted from Jacobs (2014) shows that the reason for this rating is that groundwater quality and accessibility is unlikely to be affected by continual Pit 23 disposal. In addition, historical data collected up until 2014 were deemed to fall within natural variability.

The risks to groundwater accessibility and groundwater quality were reassessed in Section 5.1 and Section 5.2 respectively. By comparing these previous risk assessments by Jacobs (2014) to current site-based data evaluated in Section 3 along with the assessment of receiving bodies in Section 4, it is concluded that the original Low risk ratings are still valid and thus impacts to any GDEs remains Low, including McGlashin Swamp.

Table 5.4 Risk to groundwater dependent ecosystems (after Jacobs 2014)

Risk component	Ranking	Reason	Overall risk rating
Likelihood	Unlikely	• given impacts to groundwater accessibility and quality immediately beneath Pit 23 is considered to be unlikely, the likelihood of impacting McGlashin Swamp and White Lake is considered unlikely	Low
Consequence	Low	• impacts are within the range of natural variability • inter-connected systems, including adjacent and overlying aquifers, hydraulically connected surface water systems and groundwater dependent ecosystems are unaffected	

6 Trigger Level Review

The trigger levels used to determine exceedances at McGlashin Swamp, and the process for deriving them, have been discussed in detail in Sections 2.1 and 2.2. Table 6.1 summarises the current water quality trigger levels again for completeness and the historical water quality measurements collected at McGlashin Swamp are shown in Table 6.2 with exceeding values highlighted.

As the groundwater seepage and surface water assessments undertaken in Section 3 and Section 4 respectively determined that seepage did not cause these exceedances at McGlashin Swamp, but rather they were caused by natural processes, these triggers should be reviewed so that they are less sensitive to natural variation. This can be achieved through a number of ways including amending how the background concentrations of the water quality analytes are determined, by assessing how the ionic ratios are treated and considering other similar wetland environments within the overall assessment.

Table 6.1 Current water quality trigger values for McGlashin Swamp

Trigger Type	pH (upper)	Electrical Conductivity (µS/cm)	Aluminium (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Dissolved Oxygen (upper) (% saturation)
Precautionary Trigger (2017 data)	8.0	2,125	0.39	3.0	1.44	110
Upper Trigger (2017 data)	9.09	2,500	0.46	3.5	1.70	130
Precautionary Trigger (all data)	8.0	5,759	0.26	5.2	1.41	162
Upper Trigger (all data)	9.68	6,775	0.30	6.1	1.66	191

Table 6.2 Water quality exceedances measured at McGlashin Swamp (based on triggers using all data)

Measurement Date	$Cl:SO_4$	Reduction in Ratio	Electrical Conductivity (µS/cm)	pH	Aluminium (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Dissolved Oxygen (% saturation)
19/01/2017	312		1,500	8.57	0.3	1.2	1.66	-
26/06/2017	66.25	79%	2,530	8.91	0.47	5	1.8	110
12/09/2017	13.16	80%	2,120	8.61	0.45	2.8	0.92	82
11/10/2017	11.52	12%	2,290	9.61	0.09	3	0.69	85
15/01/2018	14.26	-24%	3,710	10.4	0.04	4.6	0.35	236
9/04/2018	42.31	-197%	8,336	8.76	0.09	11	1.9	64
19/06/2018	36.84	13%	6,900	9.07	0.17	6.1	0.76	218
17/07/2018	30.43	17%	6,800	9.4	0.12	6.1	0.73	-
14/08/2018	26.39	13%	6,200	9.7	0.12	5.6	0.60	-
12/09/2018	22.47	15%	6,700	9.7	-	-	-	-

Notes: Highlighted values exceeded precautionary (yellow) and Upper (red) triggers, and/or $Cl:SO_4$ reductions greater than 10%

6.1 Determination of Background Concentrations

Background concentrations of water quality parameters that naturally exceed the guidelines set in SEPP (Waters; EPA Victoria 2018) are currently set as the 75th percentile of the background data collected. The precautionary and upper triggers are then calculated to be 85% and 100% respectively of the background concentrations. Currently, this system struggles at identifying exceedances in cases where the concentrations of analytes have a large variance (e.g. due to seasonal variations), or when considering logarithmic values like pH. The reason for this is likely due to attempting to classify a system with insufficient background data that has not been collected across sufficient climatic variability (such as periods of severe drought).

The effects of variance can be seen in all the water quality parameters in Table 6.2, but it is most apparent when looking at the electrical conductivity measurements. In 2017, these measurements were relatively low at less than 3,000 µS/cm, but in 2018 they rose to an average greater than 6,000 µS/cm, presumably due to the emerging drought conditions. Due to the large difference in measurements in both years, nearly every sample was classified as an exceedance. Jacobs (2014) found that the electrical conductivity at McGlashin Swamp in December 2013 was approximately 18,000 µS/cm, showing that a large variability exists in the system and these swamp/wetland environments are highly sensitive to the prevailing climate at the time.

6.1.1 Trigger levels based on insufficient background data

The Pit 23 EMP defines the interim precautionary and upper trigger levels, to be used when insufficient background data is available, as 1.25 and 1.5 times the calculated background concentrations.

Calculating the trigger levels for pH follow the same process as set out for other water quality analytes, but with special consideration given to the logarithmic nature of this parameter. Instead of multiplying the pH by 1.25 or 1.5, the following equations are used, where *pH* indicates the background pH concentration:

$$\text{Precautionary Trigger} = LOG_{10}(10^{pH} \times 1.25)$$

$$\text{Upper Trigger} = LOG_{10}(10^{pH} \times 1.5)$$

Equation 2 Trigger level calculations for pH

Trigger levels based on the 2017 dataset calculated using this method are shown in Table 6.3, and Table 6.4 shows the exceedances for the last two years when this method is applied. As observed in Table 6.4 and discussed previously in Section 2, this method still highlights exceedances.

Table 6.3 Proposed McGlashin Swamp water quality trigger levels calculated from 2017 data

	pH (upper)	Electrical Conductivity (µS/cm)	Aluminium (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Dissolved Oxygen (upper) (% saturation)
Precautionary trigger (1.25x background level)	9.19	2,940	0.57	4.4	2.12	122
Upper trigger (1.5x background level)	9.27	3,530	0.68	5.3	2.54	146

Table 6.4 Water quality exceedances measured at McGlashin Swamp (based on 'insufficient data triggers levels')

Measurement Date	$Cl:SO_4$	Reduction in Ratio	Electrical Conductivity (µS/cm)	pH	Aluminium (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Dissolved Oxygen (% saturation)
19/01/2017	312		1,500	8.57	0.3	1.2	1.66	-
26/06/2017	66.25	79%	2,530	8.91	0.47	5	1.8	110
12/09/2017	13.16	80%	2,120	8.61	0.45	2.8	0.92	82
11/10/2017	11.52	12%	2,290	9.61	0.09	3	0.69	85
15/01/2018	14.26	-24%	3,710	10.4	0.04	4.6	0.35	236
9/04/2018	42.31	-197%	8,336	8.76	0.09	11	1.9	64
19/06/2018	36.84	13%	6,900	9.07	0.17	6.1	0.76	218
17/07/2018	30.43	17%	6,800	9.4	0.12	6.1	0.73	-
14/08/2018	26.39	13%	6,200	9.7	0.12	5.6	0.60	-
12/09/2018	22.47	15%	6,700	9.7	-	-	-	-

Notes: Highlighted values exceeded precautionary (yellow) and Upper (red) triggers, and/or $Cl:SO_4$ reductions greater than 10%

6.2 Ionic Ratios

Currently, $Cl:SO_4$ and sodium calcium ionic ratios are monitored; an exceedance is said to have occurred when repeated measurements show that one of these ratios has decreased by more than 10%. This system of determining exceedances faces problems in locations that show seasonal changes, especially for surface water locations that are highly sensitive to the prevailing climate, such as McGlashin Swamp.

All of the groundwater-connected surface water bodies showed similar trends of increasing and decreasing $Cl:SO_4$ values around the same time of the year. Therefore, this makes it very likely that this trigger value will be regularly breached just through natural variation. This effect can be seen in Table 6.2, where $Cl:SO_4$ was found to decrease by more than 10% in most measurements. In reality, the $Cl:SO_4$ at McGlashin Swamp was always higher than other surface water bodies and not indicative of groundwater seepage, more so a result of ongoing drought conditions and ongoing evapoconcentration.

To make this parameter less sensitive to natural variation, it is proposed that the trigger level be changed to the actual ratio value, rather than the reduction in ratio percentage, with the latter still assessed as perhaps a leading indicator. As lower $Cl:SO_4$ values can indicate seepage from Pit 23, the trigger level set will be a minimum; values that are lower than the trigger level are considered to be exceeding.

The precautionary and minimum $Cl:SO_4$ trigger values can be derived from background data, as is done with the other analytes. The 25th percentile is used to calculate the background concentration instead of the 75th percentile, as a lower $Cl:SO_4$ value suggests seepage. Additionally, instead of multiplying by 1.25 and 1.5 to find the precautionary and upper triggers, the background level is divided by these values. Based on the 2017 dataset, the precautionary and minimum trigger values for $Cl:SO_4$ would be 10.2 and 8.5 respectively. Note, that it is common that $Cl:SO_4$ values of less than 4 are generally considered acid producing environments thus the suggested updates to the $Cl:SO_4$ triggers are still considered conservative from this perspective.

6.3 Suggested updates to trigger level values

At this point in time, there does not appear to be enough data available to properly characterise the background chemistry and thus set valid trigger levels for McGlashin Swamp. It is recommended that Iluka include Brooksby's Swamp as part of their ongoing surface water monitoring plan, and perhaps also include Redgum Swamp and Jallumba Marsh to allow a more statistically valid approach for calculating trigger levels. As discussed earlier, the recent millennium drought may be causing exacerbation of some of these leading indicators through natural processes including evapoconcentration, eutrophication and photosynthesis. It is envisioned that monitoring these analogous swamps in parallel with the current surface water monitoring points will show the water quality variability is a natural phenomenon rather than a result of groundwater seepage and subsequent transport emanating from Pit 23. Ongoing monitoring for up to two years should be considered, allowing for enough climatic variability to exist in the system and the corresponding monitoring dataset.

As discussed in Section 6.2, Iluka may also want to consider using the actual $Cl:SO_4$ values as the trigger levels, rather the reduction in ratio percentage, with the latter still assessed as perhaps a leading indicator. Until more data is collected at the wetland/swamp sites, interim triggers for $Cl:SO_4$ could be set at be 10.2 and 8.5 for the precautionary and minimum trigger values respectively. Note that $Cl:SO_4$ trigger levels are lower boundaries; $Cl:SO_4$ measurements below these triggers are considered to be breaching.

7 Conclusions

Based on the findings of this report, the following conclusions and recommendations are made:

- manually calculated ion balance errors closely matched values provided by the laboratory, suggesting that the water quality results provided are valid;
- exceedances of the precautionary trigger values for electrical conductivity and pH are observed in the 2017 reporting period only if the four samples taken that year are considered to be representative of all background data. Measurements taken before and after 2017 suggest that these samples are not representative;
- no evidence was found that suggests groundwater seepage or material transport from Pit 23 via a surface water pathway contributed to the exceedances observed at McGlashin Swamp, or that groundwater seepage into the environment surrounding Pit 23 has occurred;
- the exceedances were likely caused by a combination of natural evapoconcentration and photosynthesis processes;
- the groundwater risk assessment of continued by-product disposal into Pit 23 produced by Jacobs (2014) which stated that there was a low risk of impact to groundwater accessibility, groundwater quality and groundwater dependent ecosystems was found to still be valid. Only small changes were observed to groundwater levels and no evidence of contaminants leaching into the groundwater was found;
- Sites analogous to McGlashin Swamp, but outside of any influence from Pit 23 groundwater, including: Brooksby's Swamp, Redgum Swamp and Jallumba Marsh, should be included in the surface water monitoring program from this point on to demonstrate water quality variations due to natural phenomena;
- Once enough data across varying climatic seasons is collected, surface water quality triggers can be recalculated for groundwater fed wetlands and swamp environments such as McGlashin Swamp; and
- to make the ionic ratio triggers less sensitive to natural variation, it is recommended that precautionary and minimum trigger levels are implemented and applied to the ratio value, rather than the current system which uses the percentage decrease between samples as the trigger.

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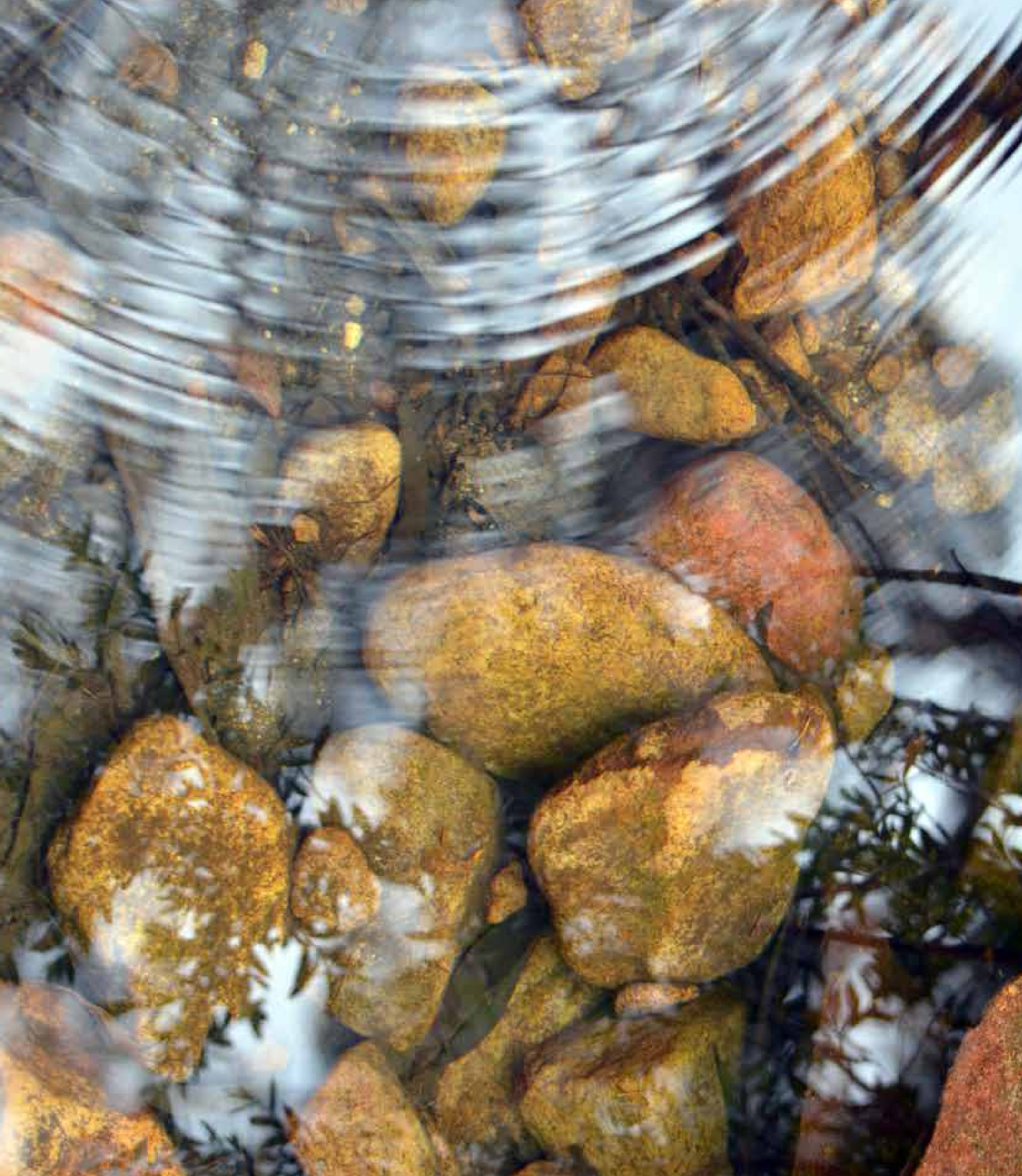

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7.7 Appendix G: Pit 23 Risk Register Review

ILUKA MSD RISK REGISTER									2018 Risk Register Review (December 2018) - Comments	2019 Risk Register Review (April 2018) - Comments
Risk Number	**Iluka CGR Risk #**	**EMP/R&VMP ASPECT**	**Risk Event Name**	**Description of event/impact**	**Timing/Phase**	**Core environmental management measures (mitigation measures) Environmental Management Plan (EMP) & Rehabilitation and Vegetation Management Plan (R&VMP)**	**Trigger Levels**	**Management Action (Response)/Contingency Measures**		
1	5776	Rehabilitation	Drought	Lack of recharge causes revegetation failure. Drought mainly an issue in the first 5 years after planting.	**Rehabilitation**	**R&VMP Section 7.4.2.1** Watering using water from Freshwater Dam or off-site if the soil moisture is considered too low to support plant survival. **R&VMP Section 11.2.1** Monitoring of native vegetation in each of the first 3 years, 5 years and 10 years after planting including assessment of seedling survival and density counts and replacement planting, if required to achieve completion criteria.	Below average rainfall resulting in revegetation failure.	Increase frequency of inspection to quarterly, implement additional watering and replanting. Additional mitigation measure resulting from the risk workshop - ensure a sufficient seed supply for plant replacement.	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5776. No changes required to: * risk ranking * trigger levels * management action/contingency measures	No changes required to: * risk ranking * trigger levels * management action/contingency measures
2	5777	Rehabilitation	Bushfire	Bushfire removes revegetation cover. Bushfire mainly an issue in the first 5 years of planting.	**Rehabilitation**	**R&VMP Section 9.4.11** Prior to establishment of native vegetation across the Pit 23 footprint and buffer area, a Bushfire Risk Assessment of the proposed. revegetation area will be conducted in collaboration with representatives of the RA, the CFA and DELWP. **R&VMP Section 11.2.1** Monitoring of native vegetation in each of the first 3 years, 5 years and 10 years after planting including assessment of seedling survival and density counts and replacement planting, if required to achieve completion criteria.	Bushfire impacts vegetation at Pit 23.	Implement a replanting program to re-establish the proposed revegetation in accordance with the R&VMP. Additional mitigation measure resulting from the risk workshop - ensure a sufficient seed supply for plant replacement.	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5777. No changes required to: * risk ranking * trigger levels * management action/contingency measures	No changes required to: * risk ranking * trigger levels * management action/contingency measures
3	5778	Surface Water	Stormwater containment failure	Northwest Dam (SW23) overflow occurs due to pump failure resulting in uncontrolled sediment-laden surface water flow across paddock to Red Hill Drainage Line	**Operation/ Rehabilitation**	**Refer to EMP Appendix B (Part B)**	**Refer to EMP Appendix B (Part B)**	**Refer to EMP Appendix B (Part B)**	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5778. No changes required to: * risk ranking * trigger levels * management action/contingency measures	No changes required to: * risk ranking * trigger levels * management action/contingency measures
4	5781	Radiation	Radiation	Radiation doses above prescribed OHS limits (public exposure) resulting in public concern.	**Operation/ Rehabilitation**	**EMP Section 10.7** Radiation Management Licence/Plan/Waste Management Plan. **R&VMP Section 7.5** Radiation Management Licence/Radiation Management Plan/Radioactive Waste Management Plan.	As per Radiation Management Plan and Radioactive Waste Management Plan.	As per Radiation Management Plan and Radioactive Waste Management Plan.	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5781. No changes required to: * risk ranking * trigger levels * management action/contingency measures	No changes required to: * risk ranking * trigger levels * management action/contingency measures
5	5782	Compliance	Non compliance with EMP	Monitoring for air/noise/groundwater/surface water not conducted in accordance with EMP and/or results not reported to Regulatory Authority.	**Operation/ Rehabilitation**	**EMP Section 12** Exception and routine reporting in place. **EMP Section 13** External Auditing in place. Implementation of recommendations from external audit.	Trigger levels for air/noise/groundwater/surface water. Identification of deficiencies through the annual review.	Modify management and mitigation procedures relating to the triggering event.	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5782. No changes required to: * risk ranking * trigger levels * management action/contingency measures	No changes required to: * risk ranking * trigger levels * management action/contingency measures
6	5784	Air Quality	Dust (PM10)	Concentration of PM10 dust at sensitive receptors exceeds guidelines resulting in health impacts.	**Operation/ Rehabilitation**	**Refer to EMP Appendix B (Part C)**	**Refer to EMP Appendix B (Part C)**	**Refer to EMP Appendix B (Part C)**	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5784. No changes required to: * risk ranking * trigger levels * management action/contingency measures	No changes required to: * risk ranking * trigger levels * management action/contingency measures
7	5785	Vehicle Hygiene	Transfer of site materials (public roads)	Transfer of mud, soil, debris and NORM onto public roads.	**Operation/ Rehabilitation**	**EMP Section 10.3** Truck wash or workshop wash-down bay. Any debris, mud, clay or other material deposited on any public road surface within 200 m of the intersection of the mine access road with Elliotts Road will be recovered and disposed of on-site. **R&VMP Section 9.4.7** Vehicle hygiene requirements as per EMP.	Visible mud, soil, debris on mine access road or Elliotts Road. Mechanical failure of wheel wash.	Use alternative means of washing vehicles such as truck wash, brushing in Pit, hose down in Workshop wash-down bay, hose down in Pit using potable tank/pump facility. Implement procedural control to prevent vehicles exiting site until they have been cleaned.	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5785. No changes required to: * risk ranking * trigger levels * management action/contingency measures	No changes required to: * risk ranking * trigger levels * management action/contingency measures
8	5786	Noise	Noise	Noise at sensitive receptors above NIRV guidelines resulting in loss of amenity.	**Operation/ Rehabilitation**	**Refer to EMP Appendix B (Part D)**	**Refer to EMP Appendix B (Part D)**	**Refer to EMP Appendix B (Part D)**	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5786. No changes required to: * risk ranking * trigger levels * management action/contingency measures	No changes required to: * risk ranking * trigger levels * management action/contingency measures

ILUKA MSD RISK REGISTER										
Risk Number	**Iluka CGR Risk #**	**EMP/R&VMP ASPECT**	**Risk Event Name**	**Description of event/impact**	**Timing/Phase**	**Core environmental management measures (mitigation measures) Environmental Management Plan (EMP) & Rehabilitation and Vegetation Management Plan (R&VMP)**	**Trigger Levels**	**Management Action (Response)/Contingency Measures**	**2018 Risk Register Review (December 2018) - Comments**	**2019 Risk Register Review (April 2018) - Comments**
9	5787	Groundwater	Groundwater quality (salinity/other)	Change to groundwater quality impacting beneficial users (Segment C-stock mostly).	**Operation/ Rehabilitation**	**Refer to EMP Appendix B (Part A)**	**Refer to EMP Appendix B (Part A)**	**Refer to EMP Appendix B (Part A)**	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5787. No changes required to: * risk ranking * trigger levels * management action/contingency measures **Noted that under the new SEPP (Waters) that groundwater segment classifications have changed - the groundwater segment applicable to Pit 23 / Douglas Mine is now "Segement F".**	No changes required to: * risk ranking * trigger levels * management action/contingency measures **References to updated SEPP (Waters) policy to be resolved in bi-annual revision of Pit 23 EMP in H1 2019.**
10	5788	Site Safety&Security	Unauthorised access-public	Unauthorised access results in an injury to the public.	**Operation/ Rehabilitation**	**EMP Section 10.6** Warning signs, security fencing, swipe card access, security camera. **R&VMP Section 11.1 (Table 7)** As per EMP Section 9.6.	Unauthorised public access.	Identify means of entry and install further prevention measures.	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5788. No changes required to: * risk ranking * trigger levels * management action/contingency measures	No changes required to: * risk ranking * trigger levels * management action/contingency measures
11	5789	Rehabilitation	Browsing animals	Browsing animals remove revegetation.	**Rehabilitation**	**R&VMP Section 9.4.9** Installation of 100 mm galvanised steel pipe strainer posts with steel pipe stays, steel picket posts, four plain wires and rabbit netting. **R&VMP Section 11.2.2** Maintenance of fencing to control livestock and feral animals.	Browsing animals identified.	Identify means of entry and install prevention measures if practicable. Institute a control program that may including baiting. Other methods are available and may be used.	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5789. No changes required to: * risk ranking * trigger levels * management action/contingency measures	No changes required to: * risk ranking * trigger levels * management action/contingency measures
12	5790	Groundwater	Groundwater monitoring	Frequency of monitoring or well network not sufficient/not accessible.	**Operation/ Rehabilitation**	**EMP Section 7** Implementation of groundwater monitoring and management plan (GWMMP) until completion criteria reached. **EMP Section 13** External Auditing in place. Implementation of recommendations from external audit. Routine bore inspections monthly or six-monthly. New bores to be installed as needs. Decommission in accordance with guidelines. **R&VMP Section 11.1 (Table 7)** As per EMP Section 7.	Annual external review identifies deficiencies.	Modify management and mitigation procedures relating to the triggering event.	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5790. No changes required to: * risk ranking * trigger levels * management action/contingency measures	No changes required to: * risk ranking * trigger levels * management action/contingency measures
13	5792	Groundwater	Modelling assumptions inaccurate	Modelling assumptions inaccurate leading to lack of groundwater flow/direction understanding.	**Operation/ Rehabilitation**	**Refer to EMP Appendix B (Part A)**	**Refer to EMP Appendix B (Part A)**	**Refer to EMP Appendix B (Part A)**	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5792. No changes required to: * risk ranking * trigger levels * management action/contingency measures	**Groundwater model update commissioned December 2018, in-progress at time of 2018 EMP Report preparation.** **No change to current risk ranking or management actions/contingencies expected as an outcome of updated modelling.** **Changes to trigger levels may apply but remain unchanged in the interim.**
14	5793	Air Quality	Dust (Arsenic, RCS, NORM)	Dust containing heavy metals resulting in health impacts.	**Operation**	**Refer to EMP Appendix B (Part C)**	**Refer to EMP Appendix B (Part C)**	**Refer to EMP Appendix B (Part C)**	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5793. No changes required to: * risk ranking * trigger levels * management action/contingency measures	No changes required to: * risk ranking * trigger levels * management action/contingency measures

ILUKA MSD RISK REGISTER									2018 Risk Register Review (December 2018) - Comments	2019 Risk Register Review (April 2018) - Comments
Risk Number	**Iluka CGR Risk #**	**EMP/R&VMP ASPECT**	**Risk Event Name**	**Description of event/impact**	**Timing/Phase**	**Core environmental management measures (mitigation measures) Environmental Management Plan (EMP) & Rehabilitation and Vegetation Management Plan (R&VMP)**	**Trigger Levels**	**Management Action (Response)/Contingency Measures**		
15	5794	Rehabilitation	Revegetation establishment	Inability of native vegetation to become established due to poor species choice, low soil moisture, weed infestation or lack of protective fencing resulting in slope erosion and dust generation.	**Rehabilitation**	**R&VMP Section 9.4 (Species choice)** Preparation of plan by ecological consulting organisation. Selection of species from appropriate EVCs. Use of seed from neighbouring forest areas. **R&VMP Section 9.4.5 (Low soil moisture)** Watering in the first summer after planting, if required. **R&VMP Section 9.4.7 (Weed Control)** Herbicide spraying 3 months prior to planting. Cleaning of vehicles. Spraying and scalping of weeds from topsoil stockpiles. **R&VMP Section 9.4.9 (Fencing)** Installation of 100 mm galvanised steel pipe strainer posts with steel pipe stays, steel picket posts, four plain wires and rabbit netting.	Vegetation establishment not in accordance with the requirements in the approved plan.	Review R&VMP and develop alternate revegetation program, increase inspection frequency.	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5794. No changes required to: * risk ranking * trigger levels * management action/contingency measures	No changes required to: * risk ranking * trigger levels * management action/contingency measures
16	5795	Rehabilitation	Revegetation survival	Inability of native vegetation to remain established resulting in slope erosion and dust generation.	**Rehabilitation**	**R&VMP Section 9.4 (Species choice)** Preparation of plan by ecological consulting organisation. Selection of species from appropriate EVCs. Use of seed from neighbouring forest areas. **R&VMP Section 11.2 (Monitoring and maintenance)** Annual monitoring for the first 3 years, then at 5 and 10 years. Re-seeding, re-topsoiling of in-fill planting, if required.	Vegetation survival not to in accordance with the requirements in the approved plan.	Review R&VMP and develop alternate revegetation program, increase inspection frequency.	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5795. No changes required to: * risk ranking * trigger levels * management action/contingency measures	No changes required to: * risk ranking * trigger levels * management action/contingency measures
17	5796	Weeds	Weeds	Weed infestation infecting topsoil during operations and inhibiting revegetation.	**Operation/ Rehabilitation**	**Refer to EMP Appendix B (Part E).** **R&VMP Section 9.4.7** Vehicle hygiene as per EMP. Site inspections to monitor for weed infestations. Herbicide spraying 3 months prior to planting.	**Refer to EMP Appendix B (Part E).**	**Refer to EMP Appendix B (Part E).**	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5796. No changes required to: * risk ranking * trigger levels * management action/contingency measures	No changes required to: * risk ranking * trigger levels * management action/contingency measures
18	5798	Geotech Stability	Surface erosion post closure	Erosion of the final landform shape (or near final) once it is at design level and before topsoiling and a vegetation cover is established. Open surface of erodible soils resulting in increased turbidity to surface waters.	**Rehabilitation**	**R&VMP Section 7** Have conducted landform evolution modelling for up to 500 years post closure. **R&VMP Section 9.2** Earthmoving to be scheduled for moist periods to reduce wind erosion. Landform evolution modelling will be conducted on final surveyed contours with slope adjustment to be carried out if required. **R&VMP Section 10.2**	Erosion identified through inspections.	Investigate frequency of flood event which caused erosion and if required, increase frequency of inspection. Repair to produce an erosion resistant landform.	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5798. No changes required to: * risk ranking * trigger levels * management action/contingency measures	No changes required to: * risk ranking * trigger levels * management action/contingency measures
19	5800	Site Safety&Security	Spills from vehicles	Vehicle accident on-site, leads to hydrocarbon spill and environmental impact to soil, groundwater or surface water.	**Operation/ Rehabilitation**	**EMP Section 9.3** Speed limits on vehicles (for management of dust/noise emissions). **Iluka Standard Practices** Development and implementation of a traffic management plan. Appropriate road design. Effective road maintenance. Inspection and maintenance of on-site vehicles.	Spill occurs leading to impact.	Current contingency measures (clean-up of spills and placement of impacted soil in pit or disposal elsewhere, in accordance with EPA guidelines) considered adequate.	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5800. No changes required to: * risk ranking * trigger levels * management action/contingency measures	No changes required to: * risk ranking * trigger levels * management action/contingency measures
20	5801	Geotech Stability	Loss of shape of final landform	Differential settlement of the final landform such that the completion criteria of return of surface water flows to pre-mining catchments is not met.	**Rehabilitation**	**EMP Section 2.2.3** Acceptance only of sand and clay of spadable consistency. **EMP Section 10.5.2 and 10.5.3** Geotechnical expert advice on backfill placement to avoid differential settlement. **EMP Section 10.5.3 and R&VMP Section 7.1.3** Monitoring to detect settlement. **R&VMP Section 11.1.2** Earthworks to repair erosion.	Poor backfill methods resulting in variable and large post closure settlement.	Obtain expert geotechnical advice and implement recommendations.	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5801. No changes required to: * risk ranking * trigger levels * management action/contingency measures	No changes required to: * risk ranking * trigger levels * management action/contingency measures
21	5804	Rehabilitation	Early closure of Hamilton Plant	MSP closes prior to scheduled closure and insufficient overburden available to fill pit to required final landform height.	**Rehabilitation**	Not considered in the R&VMP.	Residual pit void at the end of disposal.	A reduced amount of by-product is not contemplated in the PP application or EMP. Iluka to complete a detailed study in the short-term to identify the source of additional fill material depending on the short-fall. Possible sources of material include the overburden and material from the tailings storage facility (TSF).	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5804. No changes required to: * risk ranking * trigger levels * management action/contingency measures	No changes required to: * risk ranking * trigger levels * management action/contingency measures
22	5802	Feral Animals	Feral animals	Rabbit, cat and fox populations increase.	**Rehabilitation**	**R&VMP Section 11.2.2** Maintenance of fencing to control livestock and feral animals.	Failing revegetation activities due to seedling destruction. Increase in feral animal abundance.	Re-evaluate control program and assess efficacy of additional fencing.	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5802. No changes required to: * risk ranking * trigger levels * management action/contingency measures	No changes required to: * risk ranking * trigger levels * management action/contingency measures

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23	5805	Geotech Stability	Collapse of the existing pit wall	Environmental impact is loss of valuable subsoil stockpiles falling into pit and potential loss of bund walls. Disruption of surface water drainage systems	**Operation**	**EMP Section 10.5.2** Regular inspections of pit walls and tip heads by site personnel. Annual inspections by geotech engineer. Bunds along the Pit 23 crest to divert surface water runoff from adjacent stockpiles away from pit crest. Bunding of exclusion zones (OHS risk). Further geotechnical studies to be conducted.	Pit wall failure.	Modify management and mitigation procedures relating to the triggering event.	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5805. No changes required to: * risk ranking * trigger levels * management action/contingency measures	No changes required to: * risk ranking * trigger levels * management action/contingency measures
24	5787	Groundwater	Groundwater quality (radionuclides)	Change to groundwater quality impacting beneficial users (Segment C-stock mostly).	**Operation/ Rehabilitation**	**Refer to EMP Appendix B (Part A)**	**Refer to EMP Appendix B (Part A)**	**Refer to EMP Appendix B (Part A)**	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5787. No changes required to: * risk ranking * trigger levels * management action/contingency measures **Noted that under the new SEPP (Waters) that groundwater segment classifications have changed - the groundwater segment applicable to Pit 23 / Douglas Mine is now "Segement F".**	No changes required to: * risk ranking * trigger levels * management action/contingency measures **References to updated SEPP (Waters) policy to be resolved in bi-annual revision of Pit 23 EMP in H1 2019.**
25	5807	Acceptance for disposal	Improper waste acceptance	Improper (non-concrete/steel, non spadable, non NORM contaminated) waste acceptance and tracking resulting in non-compliance with permit conditions.	**Operation**	**EMP Section 2.2.3** IWMP followed. RWMP and RMP monitoring and mitigation measures.	Non compliances identified through the Incoming Waste Monitoring Plan (IWMP).	Modify management and mitigation procedures relating to the triggering event.	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5807. No changes required to: * risk ranking * trigger levels * management action/contingency measures	No changes required to: * risk ranking * trigger levels * management action/contingency measures
26	5808	Surface Water	Surface water to groundwater	Impacted surface water runoff to FWD ultimately impacts groundwater and GDEs.	**Operation**	**Refer to EMP Appendix B (Part B)**	**Refer to EMP Appendix B (Part B)**	**Refer to EMP Appendix B (Part B)**	Risk added to Iluka Corporate Risk Register System (CGR). Assigned as Iluka Risk #5808. No changes required to: * risk ranking * trigger levels * management action/contingency measures	No changes required to: * risk ranking * trigger levels * management action/contingency measures