

Silent Valley Waste Services
Limited

Silent Valley Landfill

2021 Second Quarter Monitoring
Report

Issue | 29 July 2021

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 115825-00

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1 Introduction

This 2021 Second Quarter Monitoring Report is a consolidated report detailing the findings of this quarter's results from the surface water, groundwater, landfill gas and leachate results for the monitoring undertaken in the period April to June 2021 in accordance with the Silent Valley Environmental Permit (Permit no. MP3835SV [1]) and the Aftercare Phase Environmental and Infrastructure Monitoring Program [5]. The annual report will include a full assessment of the year's results.

The data has been collected as referenced in Schedule 3 of the Consolidated Permit [1]. This report makes reference to the 2019 Annual Monitoring Report [2] and the 2020 Annual Monitoring Report [3].

1.1 Monitoring Regime

The monitoring regime is undertaken in accordance with the Aftercare Phase Environmental and Infrastructure Monitoring Program [5] and in line with the Consolidated Permit [1], which is fully detailed within the 2019 annual report.

2 Discussion of Monitoring Results

2.1 Rainfall

Measured rainfall data is illustrated in **Appendix A, Figures A1 to A3**.

Based on the available data, May recorded the highest monthly rainfall of the quarter (300.2mm) and the highest daily rainfall total (44.5mm on the 8th May). This is the highest monthly rainfall total on record for the month of May. April recorded the lowest monthly rainfall of the quarter (18.9mm), with 14 consecutive days of no rain (14th April – 27th April). This was the lowest recorded rainfall for April since 2015. June recorded a monthly rainfall of 34.1mm, which is over 100mm lower than last year's total.

2.2 Leachate

2.2.1 Leachate Quality Monitoring

Leachate quality monitoring results from within the waste body and from leachate standpipes are presented in **Appendix B, Table B1**.

The majority of the determinands are compliant. However well LC5A is currently damaged.

Well LC2A recorded an elevated Ammoniacal Nitrogen concentration. However, the average ammoniacal nitrogen concentration has declined over the past year and historically has been shown to fluctuate. The concentration recorded for LC2A is slightly higher than the previous quarter.

Wells LC2A and LC4A specifically exceeded the AMC for zinc which has remained elevated since the third quarter of 2020 and shows an increase from last quarter.

Well LC2A exceeded the AMC for Nickel, this shows an increase from last quarter. This is the third quarter in which Nickel has exceeded the AMC and therefore, it is recommended this is investigated further.

In accordance with the Aftercare Phase Environmental and Infrastructure Monitoring Program report [4], the contingency plan is to be implemented after three consecutive exceedances have been recorded.

The installation within LC5A has failed and therefore works are ongoing to replace this well in the near future.

2.2.2 Leachate Level Monitoring

Leachate level monitoring results are presented in **Appendix B, Table B2**.

The monthly average level for all the wells remains below the required 3.0m, as per the Permit [1].

2.3 Surface Water Quality

The surface water quality monitoring results are presented in **Appendix B, Table B3**, and graphically in **Appendix A, Figure A4**.

Commentaries are provided for upstream and downstream monitoring points in the Nant Merddog, including locations SW1 to SW10 located downstream of the landfill, as discussed below.

2.3.1 Upstream Surface Water

Surface water monitoring locations, SWU, SW2A1, SWW4, SWW1 and SWW2 are located downstream of the landfill and monitored on a six-monthly basis in accordance with the Permit requirements. They are monitored this quarter.

SWU

Zinc has exceeded the applied EQS criteria.

SW2AI

SW2AI has not been sampled. However, the EQS was not exceeded when last sampled in October 2020.

SWW4

Zinc has exceeded the applied EQS criteria.

SWW1

No exceedances of the applied EQS criteria. The elevated Zinc recorded in October 2020 has now decreased below the limit of detection.

SWW2

Results show this location to be compliant.

2.3.2 Downstream Surface Water

SWD and SWD1

Results show these locations are both compliant.

SW1 to SW10

Sampling in these locations ceased in May 2020. The surface water results for the monitoring points located downstream of the landfill indicate no significant environmental impact on the Nant Merddog.

2.4 Groundwater

2.4.1 Groundwater Quality Monitoring

Groundwater quality monitoring results are presented in **Appendix A, Figures A5 and A6** and in **Appendix B, Table B4**.

Any non-compliances for both upstream and downstream wells are discussed in the following sections.

2.4.1.1 Upstream Groundwater wells

Well GW3A and GW4

GW3A and GW4 monitor the sandstone strata classified as S3-East, and GW11B had been installed in the sandstone strata classified as S2-West.

In GW3A the mercury concentration continues to remain higher than the trigger level; this has increased slightly from last quarter, although has fluctuated over the past year. Mercury concentrations in GW3A have been continually recorded above the trigger level since April 2018. Based on previous results these are temporary fluctuations associated with the environment outside of the influence of the landfill.

In GW3A the concentration of Zinc has increased from last quarter and is now recorded above the trigger level of 0.05mg/l with a concentration of 0.12mg/l. This is the first Zinc exceedance in GW3A since April 2020.

Manganese has continually been recorded above the assessment level in GW4 with continued fluctuations over the years whilst showing no recognisable trend. Manganese has exceeded the assessment level again this quarter. The elevated concentrations recorded upstream are likely to be from steel works waste deposited to the north of the landfill and old mine workings in the area. Manganese is a typical contaminant of mine drainage, which is considered to be impacting the groundwater in the locale of the landfill.

In GW4 the concentration of Zinc exceeded the control level of 0.02mg/l with a concentration of 0.0430mg/l. This is the first Zinc exceedance in GW4 since Jan 2020.

2.4.1.2 Downstream Groundwater wells

The results from the compliance wells indicate that generally the pumping system at the toe of the landfill is continuing to successfully control the potential egress of leachate from the landfill. No issues associated with pump failure within the cut-off system have been recorded so far during 2020 and 2021.

Well GW10

GW10 has been installed in the sandstone strata classified as S3-East.

GW10 is compliant with the exception of Manganese, which exceeded the assessment level of 1mg/l with a concentration of 1.68mg/l for the first time since October 2020.

Well GW9

GW9 has been installed in the sandstone strata classified as S2-East.

GW9 continues to be non-compliant for ammoniacal nitrogen in relation to the Trigger Level of 1mg/l. The recorded value is higher than last quarter but has been shown to fluctuate.

GW9 exceeds the control level of 0.02mg/l for Zinc with a concentration of 0.033mg/l. This is an increase from the concentration recorded over the past two years, having not previously exceeded the control level in this time.

Well GW12

GW12 has been installed in the sandstone strata classified as S2-West.

GW12 exceeds the control level of 0.1ug/l for Mercury for the first time since July 2020, with a concentration of 0.15ug/l.

The well is non-complaint for Zinc for the first time since April 2020, recording a concentration of 0.17mg/l, which is above the trigger level of 0.05mg/l.

Wells GW6 and GW7

GW6 and GW7 have been installed in the centre of the valley in the sandstone strata classified as S1. GW7 is compliant.

The manganese concentration in GW7 has now been recorded below the assessment level for two quarters. However, the concentration has slightly increased from the first quarter. Generally, manganese has followed a downwards trend over the past year. Manganese levels have historically been known to fluctuate within this well, and it is considered that the concentrations are also impacted by the upstream groundwater.

Monitoring well GW6 is non-complaint for Zinc for the first time in over a year, recording a concentration of 0.0520mg/l, which is marginally above the trigger level of 0.05mg/l.

2.4.2 Groundwater Levels Monitoring

Groundwater levels are monitored on a quarterly basis in the compliance and upstream wells. The monitoring results are illustrated graphically in **Appendix A, Figure A7**. Water levels have remained consistent this quarter with the first quarter of 2021 and majority of 2020.

The 2020 Annual Monitoring Report [3] noted that GW7 had recorded a 5.4m drop in groundwater level during the 2020 fourth quarter. Following a review of the existing data, considering the levels recorded last quarter and this quarter are consistent to other readings in 2020, there is confidence that this result indicates an error in the data.

2.5 Landfill Gas

2.5.1 Landfill Gas Quality Monitoring

The landfill gas monitoring results are presented in **Appendix B, Table B5**.

Methane

Methane concentrations continue to be recorded below the respective Control and Trigger Levels (where available) in all monitoring locations.

Carbon Dioxide

Carbon dioxide concentrations were recorded below the respective Control and Trigger Levels, where available, in the majority of monitoring locations with the exception of GMW6;

- GMW6 (red valve) in June

As stated by Golder Associates [10] single exceedances do not require to be actioned. However, if ongoing exceedances are recorded then the relevant people require to be informed and appropriate measures of identification and solutions identified.

In GMW6, a single exceedance of the trigger level was recorded. A sustained increase is visible from January, and therefore as the trend is slowly increasing it should be reviewed following the receipt of next quarters results.

In GMW14/14A consecutive exceedances were recorded in 2020. Generally, concentrations have been increasing. However, concentrations in GMW14/14A have decreased over the last quarter and no longer exceed the control or trigger levels over the months April, May and June.

GMW12 shows a reduced trend from last quarter, with concentrations no longer exceeding the control level. However, concentrations recorded by the yellow valve do slightly increase from April to June, with the reading in June the same concentration as the control level. It was noted to review this well within last quarters report, however, on the basis of this quarter's results no further action is required. If the trend continues to increase it should be reviewed again following the receipt of next quarters readings.

3 Conclusion

The monitoring data and interpretation produced in this report has not identified any significant issues relating to contaminant levels recorded above the screening criteria within the leachate and groundwater. Where limited minor exceedances have been identified there is no evidence to suggest they are having a discernible impact on the surrounding environment and the landfill continues to comply with the requirements of the permit.

This quarter concentrations of Zinc within the upstream and downstream groundwater wells have increased above the control and trigger levels (except in GW7 and GW10). This should be closely reviewed again following the receipt of next quarter's readings.

Leachate monitoring results indicate that well LC2A exceeded the AMC for Nickel for the third quarter and therefore, it is recommended this is investigated further. A review should be completed on this data set and recommendations set out within a technical note.

Based on the 2020 Annual monitoring report [3], the following is still being investigated further;

- The continually high levels of ammoniacal nitrogen concentration within the leachate samples, and the 2.32m reduction in leachate head monitoring within LC5A. Considering well LC5A has been damaged, the leachate data will be reviewed following the installation of a new well. The continuing high levels of ammoniacal nitrogen recorded in the leachate within LC2A should also be investigated with further potential remedial work during the re-installation of LC5A.
- The ongoing carbon dioxide gas exceedances in GMW14/14A. In the first quarter it was recommended that a technical note be prepared, including a review of the conceptual site model and gas results. Results from this quarter indicate GMW14/14A no longer exceeds both the control or trigger levels, however, the technical note is currently work in progress and will review the latest results as part of the assessment.

References

- [1] Environment Agency, Silent Valley Landfill Site, Pollution Prevention and Control (England and Wales) Regulations 2000, Landfill (England and Wales) Regulations 2002, Permit number MP3835SV, November 2005, Permit amended as of 04/03/16.
- [2] Arup, Silent Valley Landfill, 2019 Annual Monitoring Report, 31st January 2020.
- [3] Arup, Silent Valley Landfill, 2020 Annual Monitoring Report, 30th January 2021.
- [4] Arup, Silent Valley Landfill, Interim GW9 and Nant Merddog W, Issue May 2015.
- [5] Arup, Silent Valley Landfill, Aftercare Phase Environmental and Infrastructure Monitoring Program, Issue June 2013.
- [6] Arup, Silent Valley Landfill, Hydrogeological Risk Assessment, document reference 04/6363, November 2004.
- [7] Arup, Silent Valley Landfill, Investigation into the Western Flank of the Cut-off System. Compliance Well GW9 and GW10, document reference 115825, August 2011.
- [8] Environment Agency, Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water, report reference LFTGN02, June 2014.
- [9] Arup, Silent Valley Landfill, Hydrogeological Risk Assessment (Supplementary Revision May 2009), document reference 09/7543, June 2009.
- [10] Golder Associates, Establishment of Trigger Levels at Silent Valley landfill site, letter report dated 21 December 2006.
- [11] Environment Agency, Guidance on the management of landfill gas, document reference LFTGN03, June 2014.
- [12] The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015.
- [13] Water Framework Directive - United Kingdom Technical Advisory Group (WFD-UKTAG), "Metal Bioavailability Assessment Tool (M-BAT)," 2014.

Appendix A

Monitoring Results - Graphs

Figure A1
Daily rainfall totals and sampling events (June 2014 - June 2021)

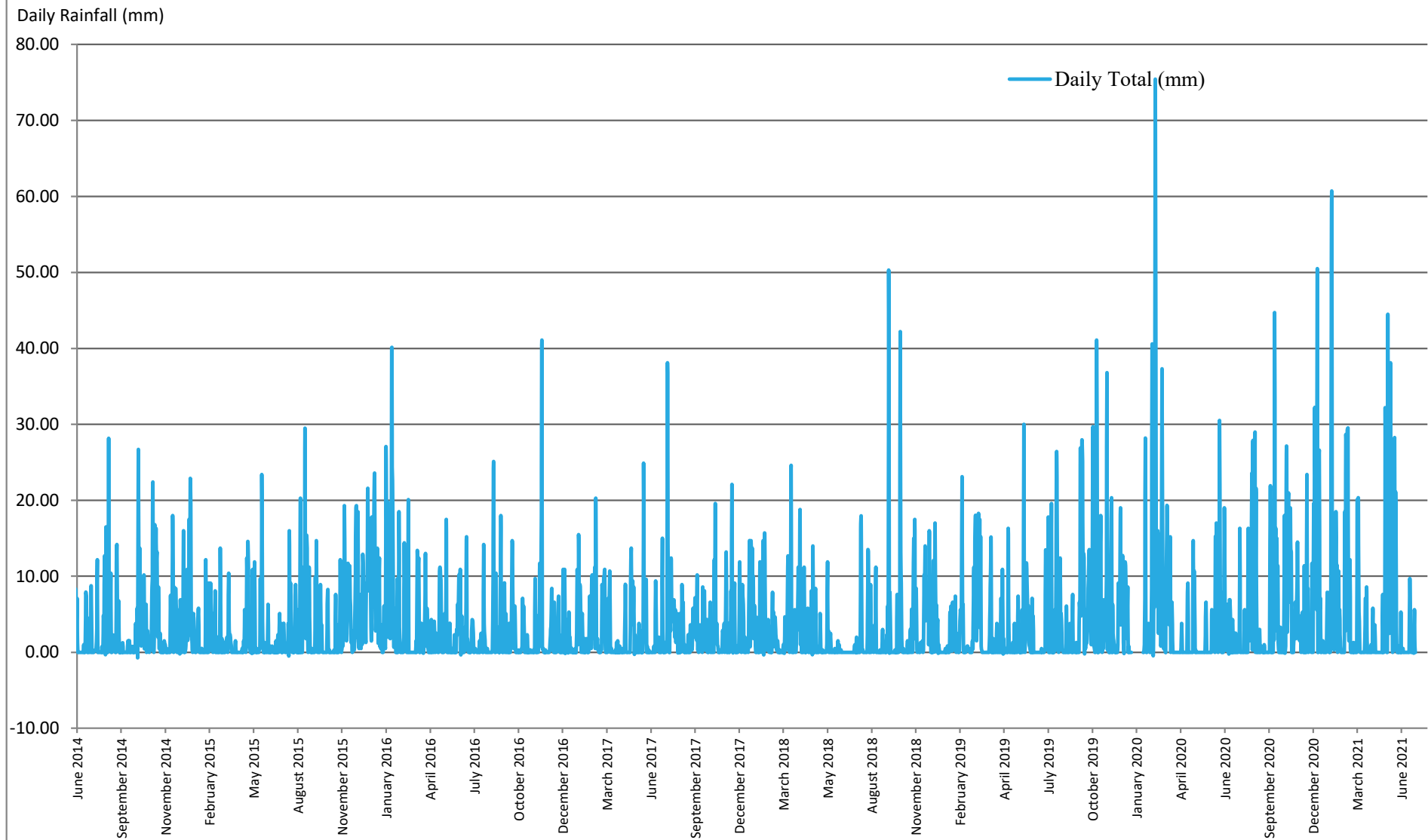


Figure A2
Monthly rainfall totals (July 2014 - June 2021)

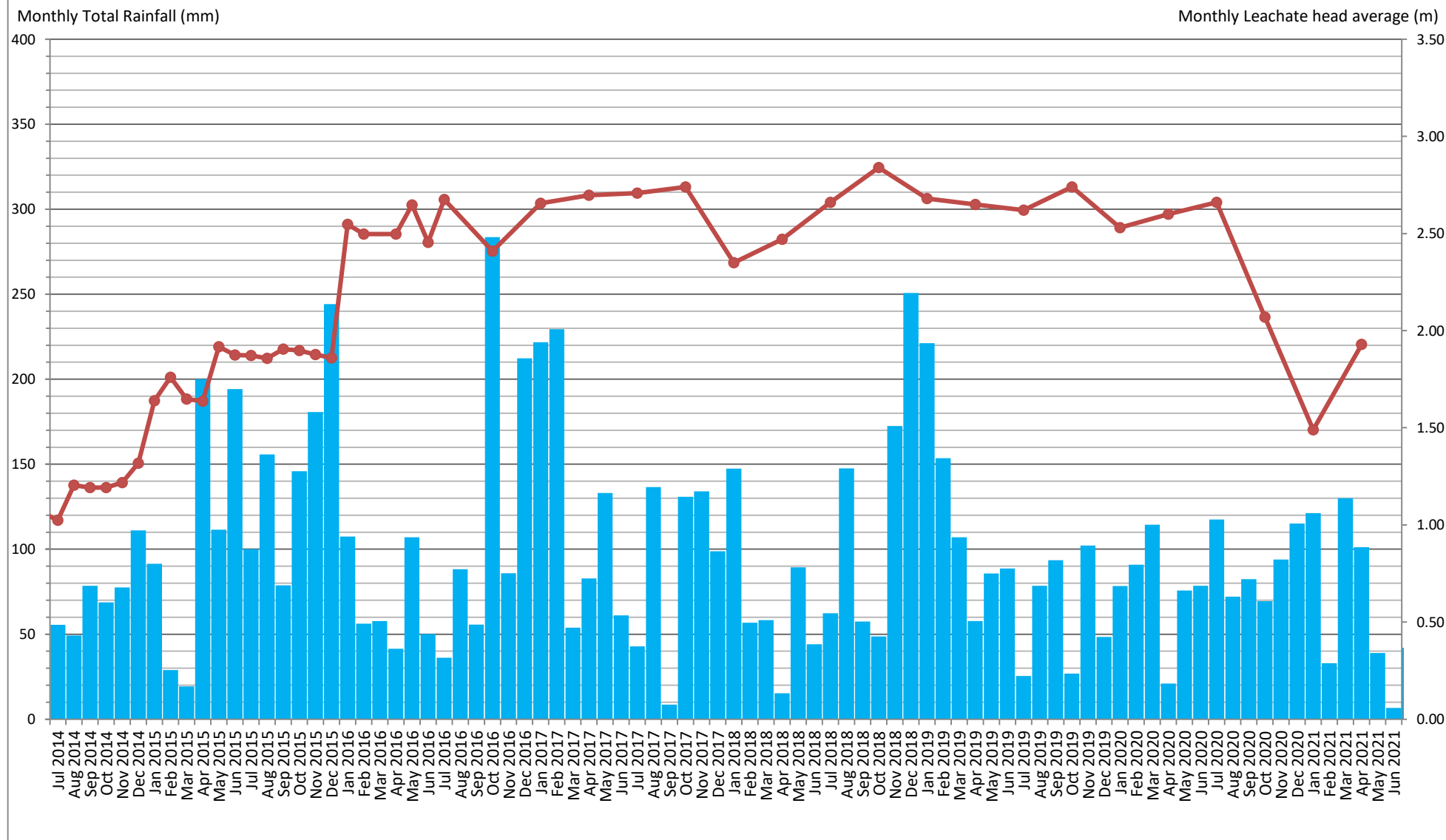


Figure A3
Monthly total rainfall July 2014 - June 2021)

Monthly Total Rainfall (mm)

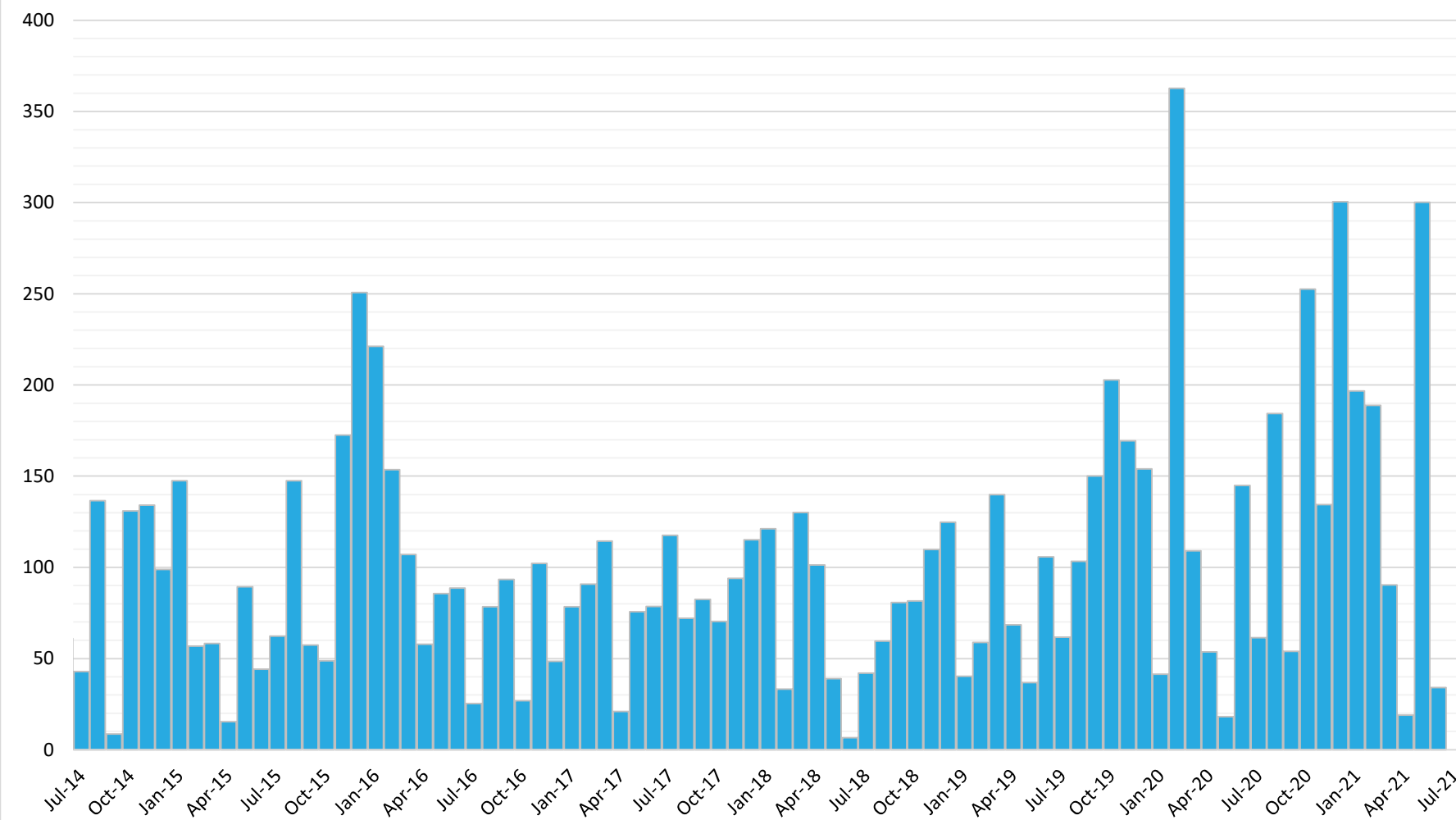


Figure A4
Surface water monitoring graphs

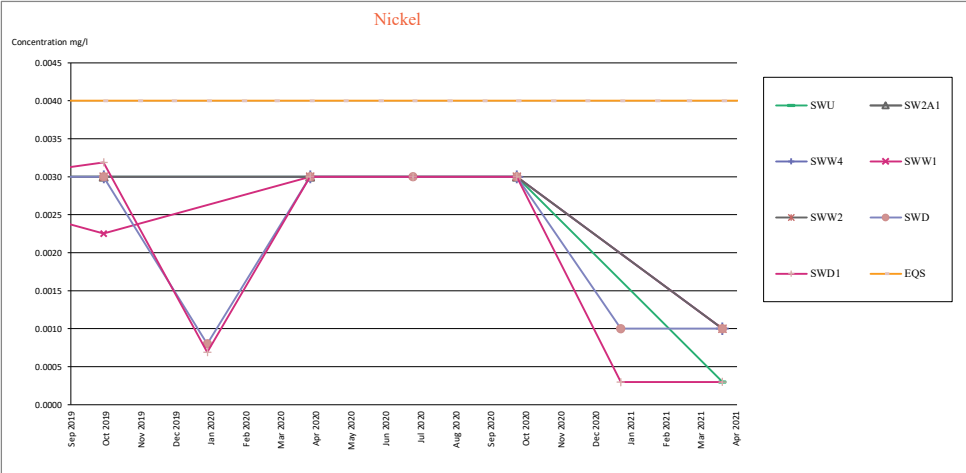
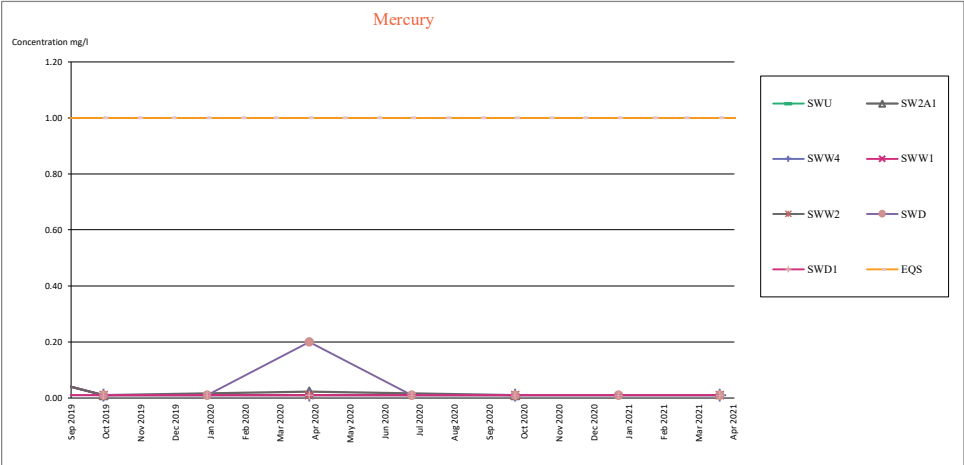
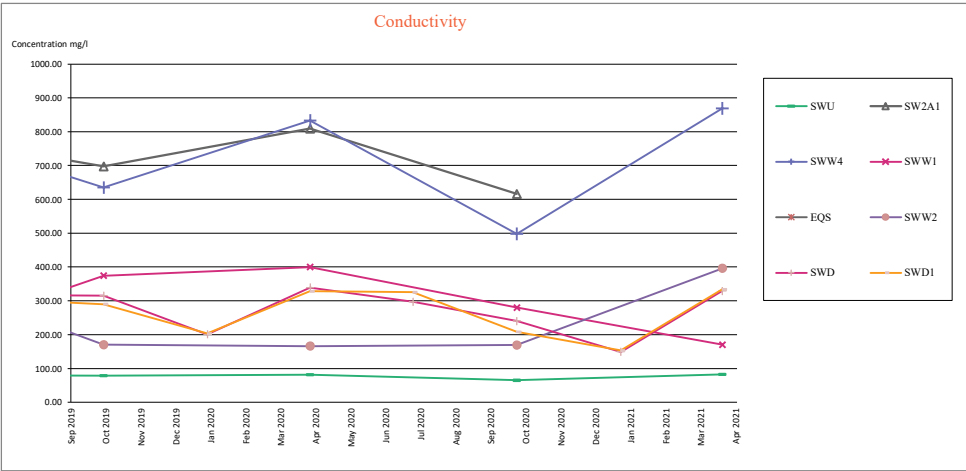
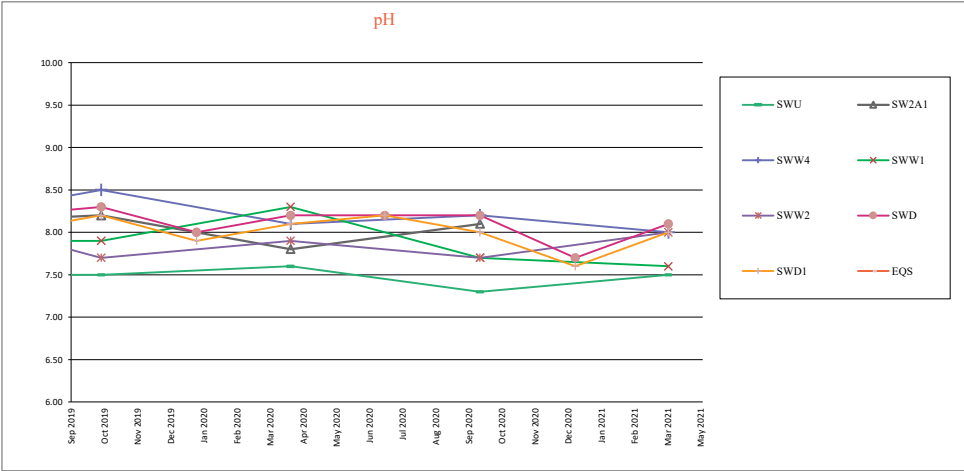
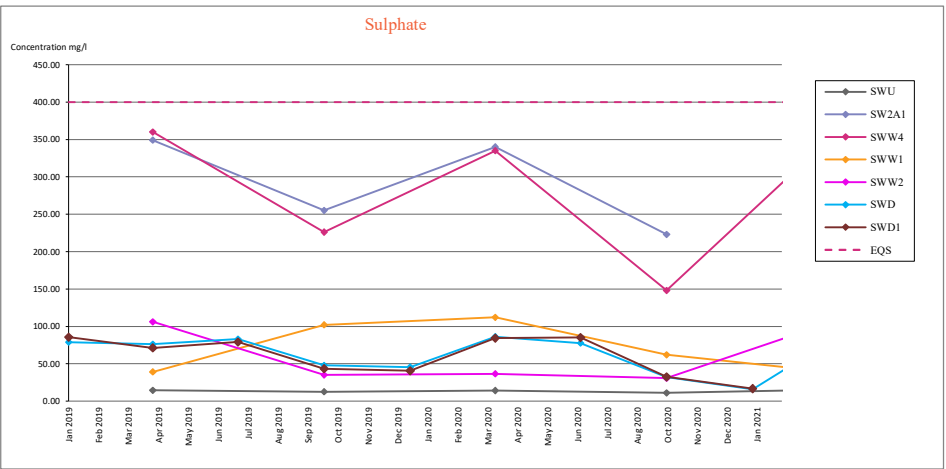
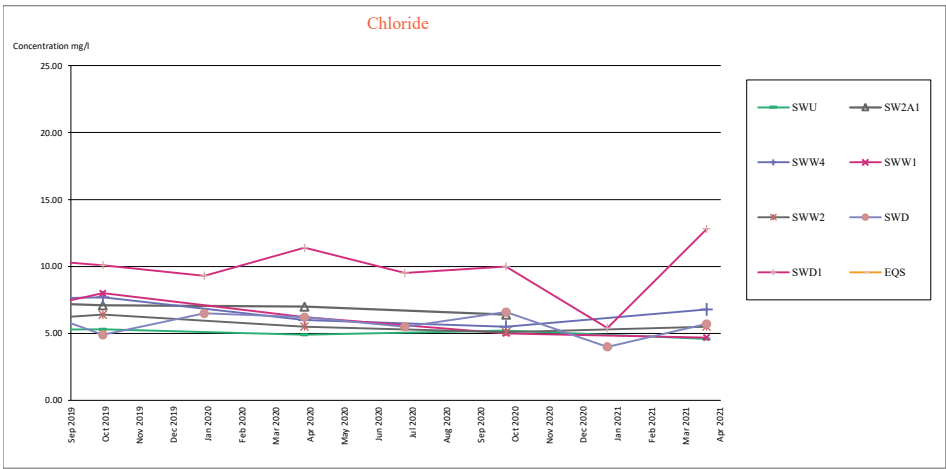
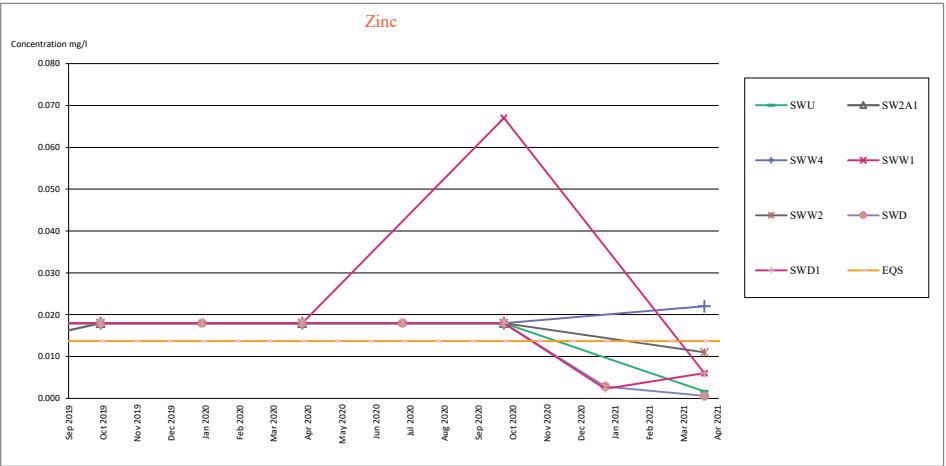
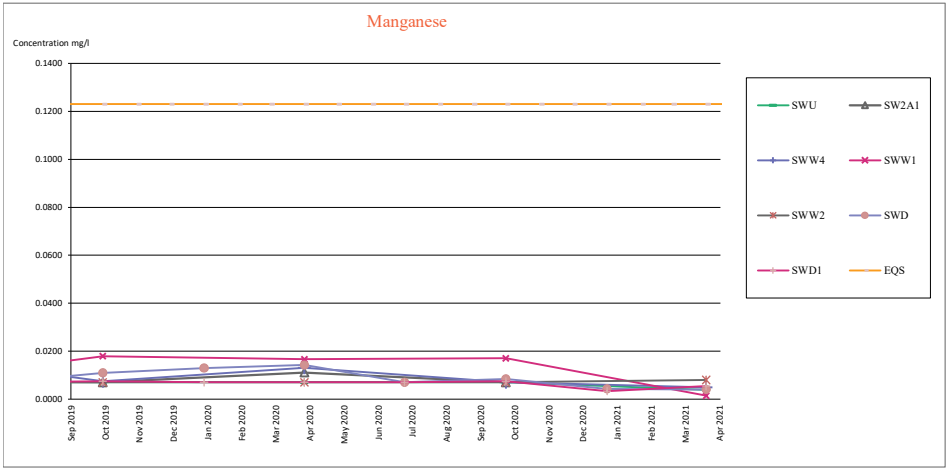
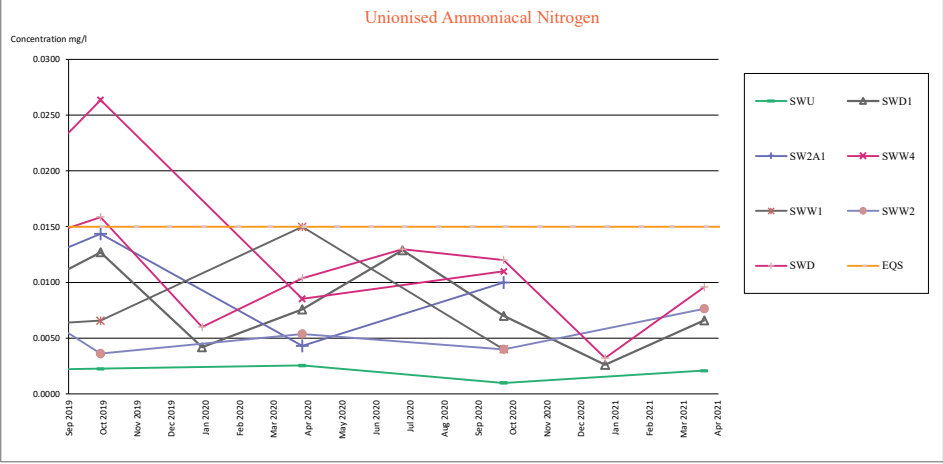
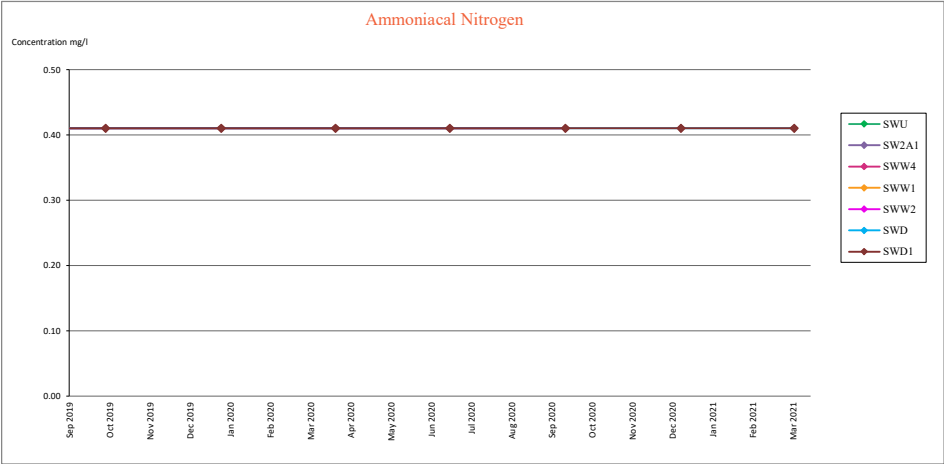


Figure A4
Surface water monitoring graphs





Compliance wells graphs

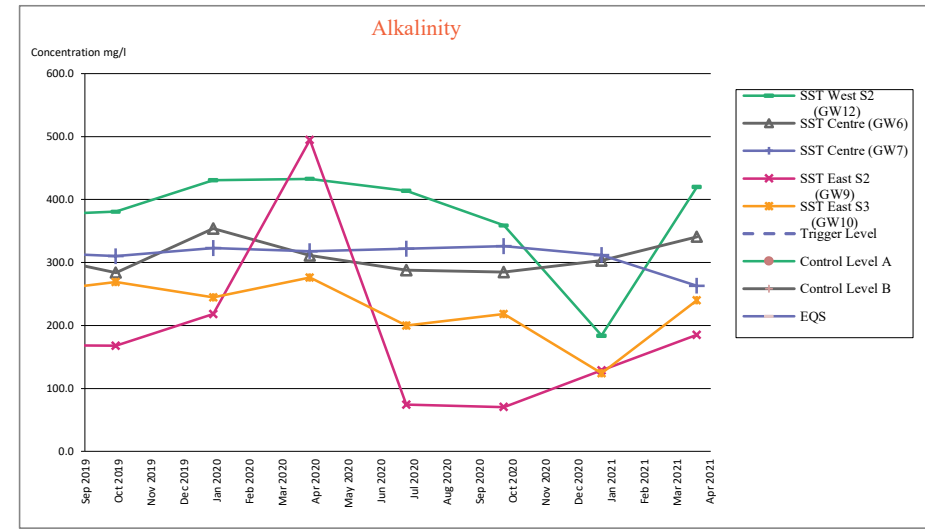
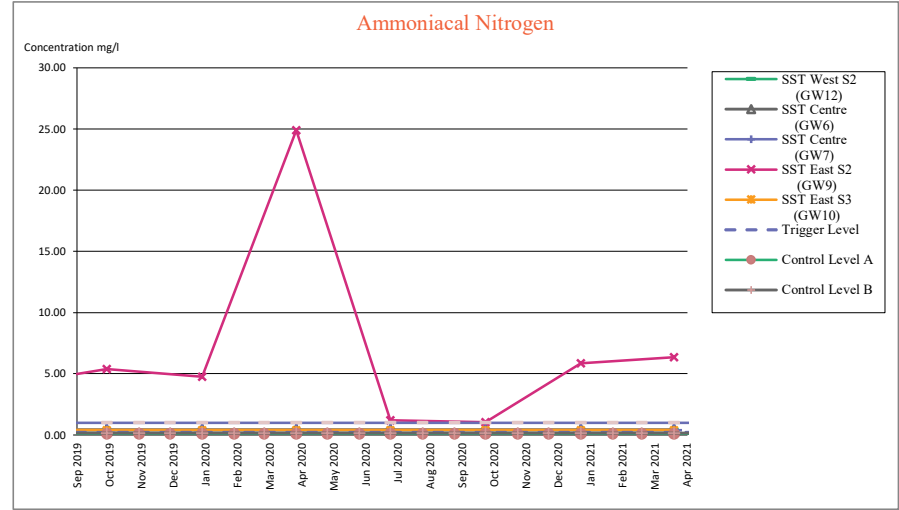
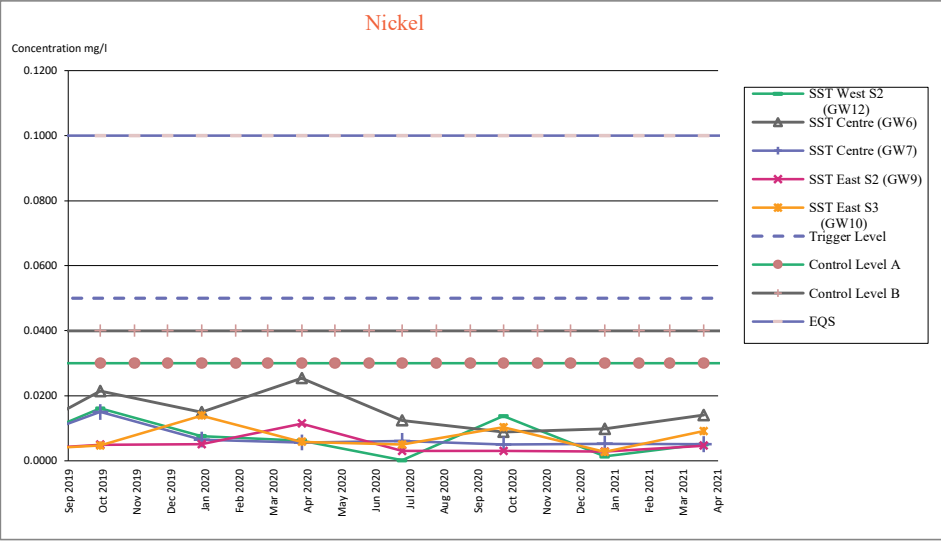
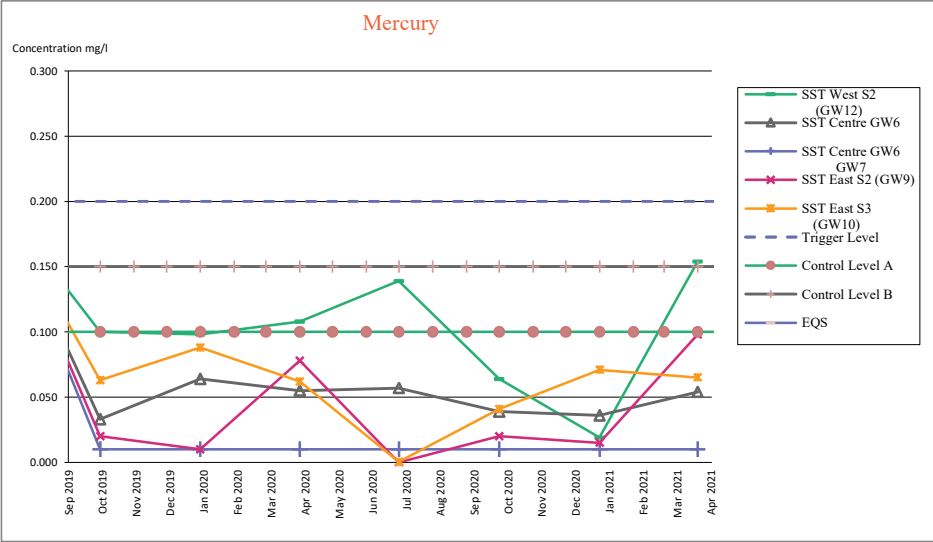
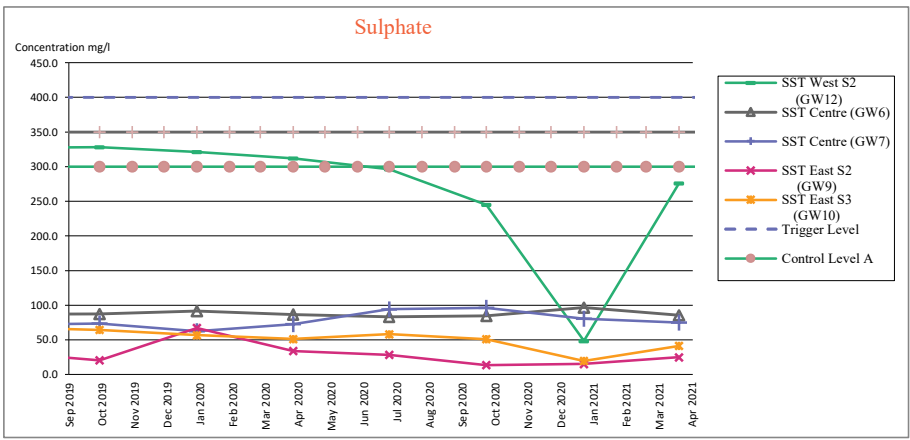
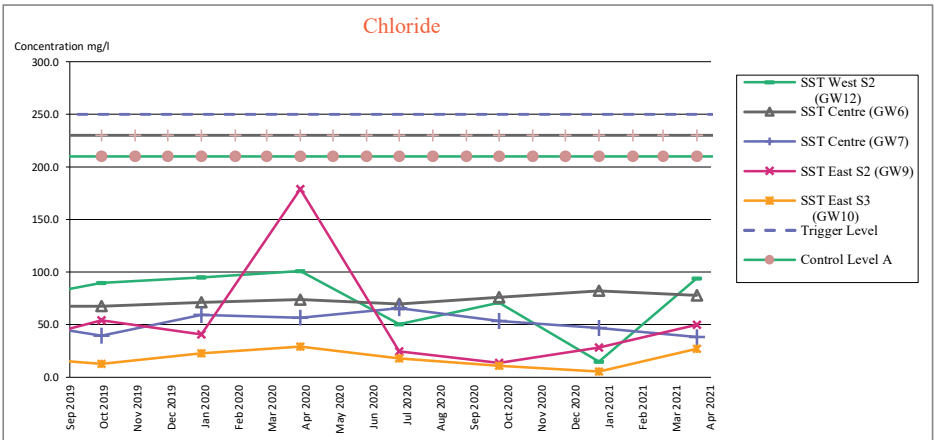
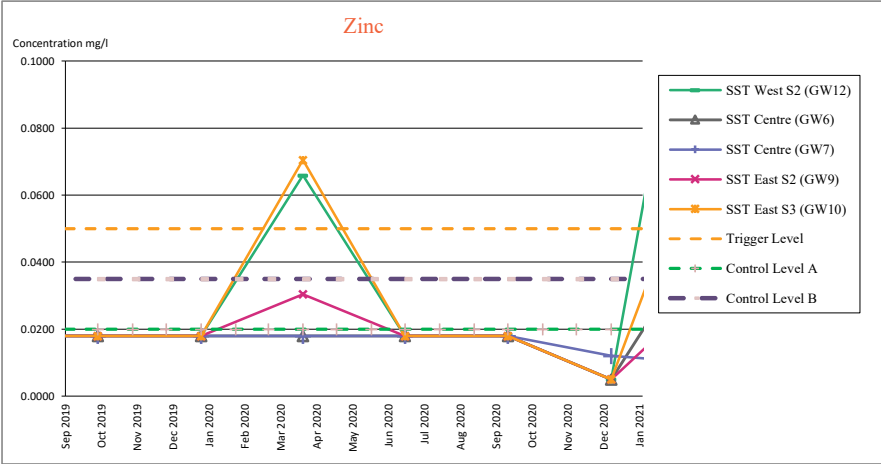
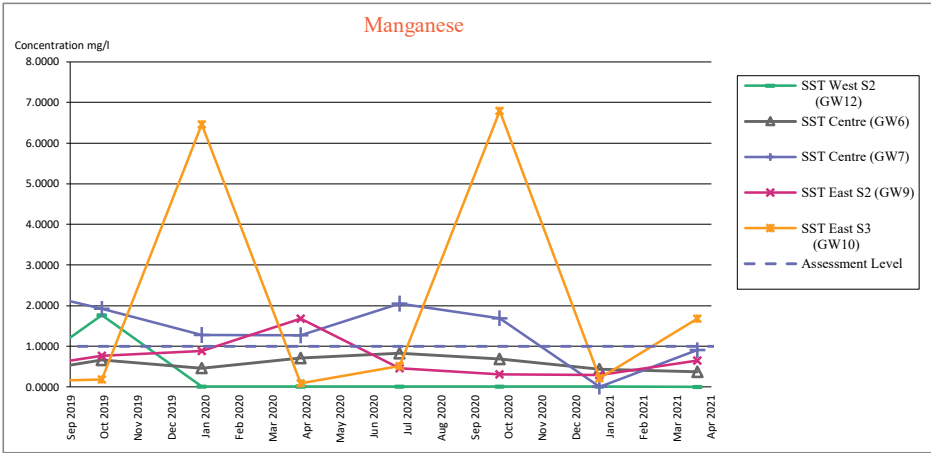


Figure A5
Groundwater quality monitoring results - Compliance wells graphs

Compliance wells graphs



Compliance wells graphs

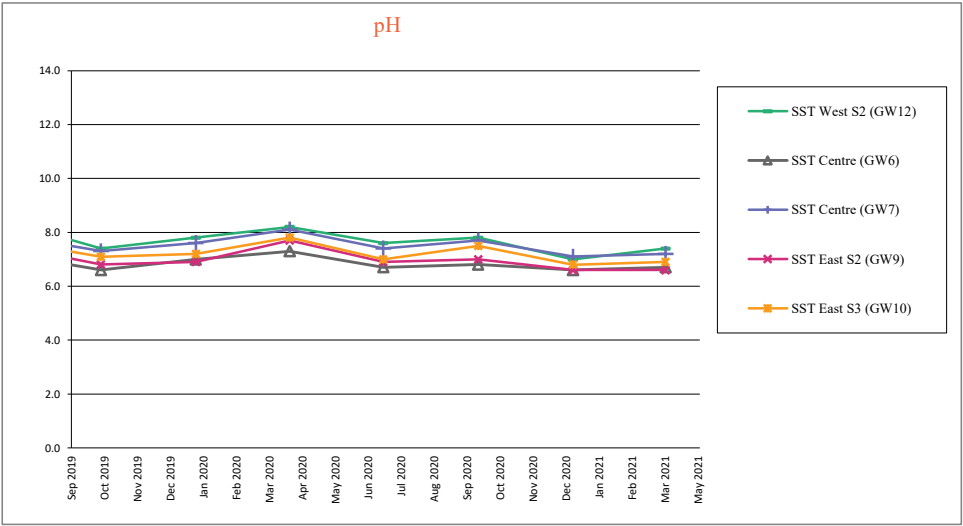


Figure A6
Groundwater quality monitoring results - Upstream wells graphs

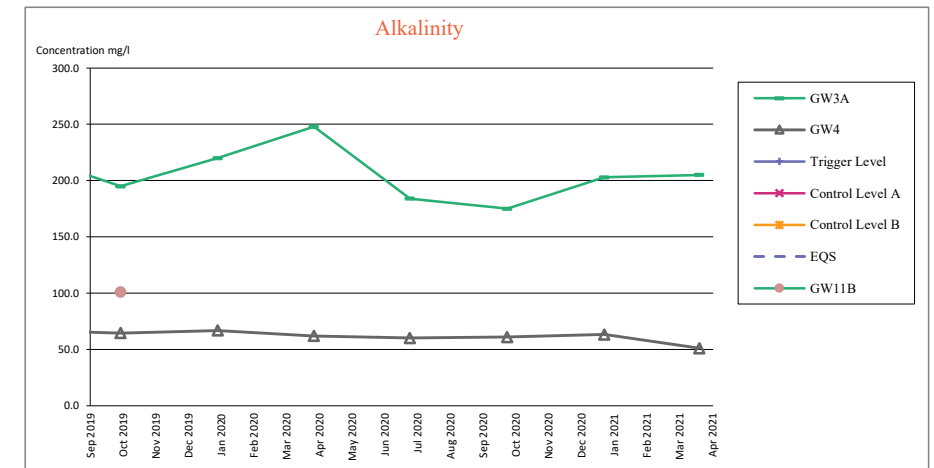
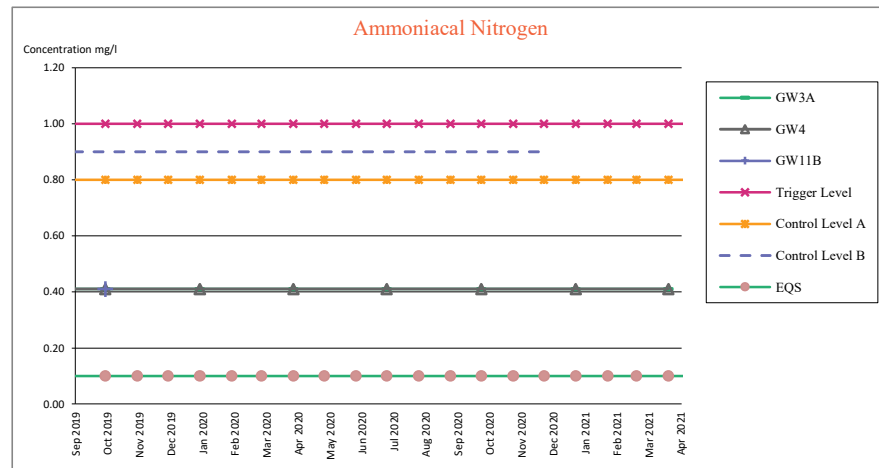
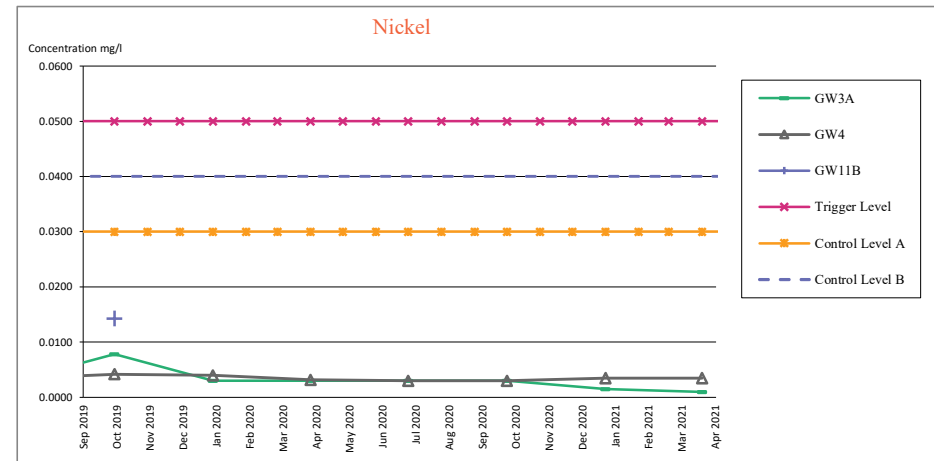
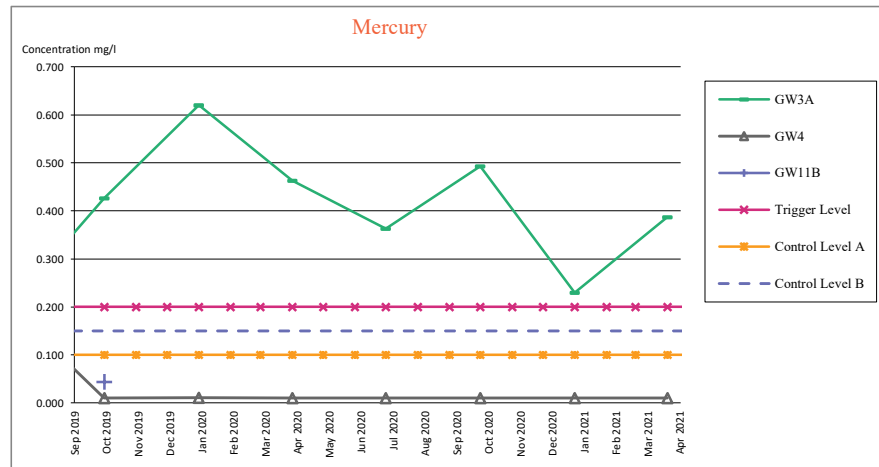
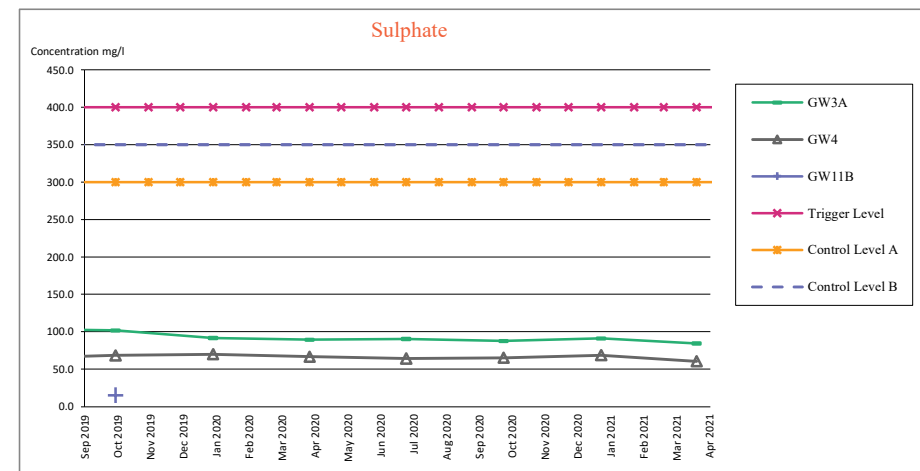
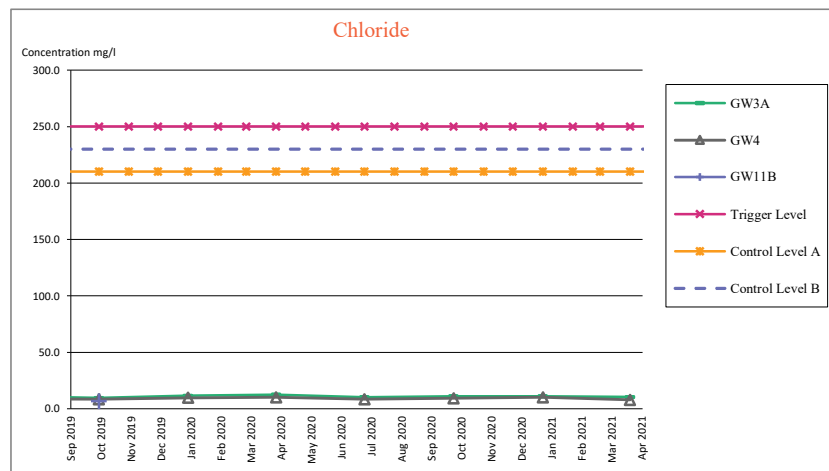
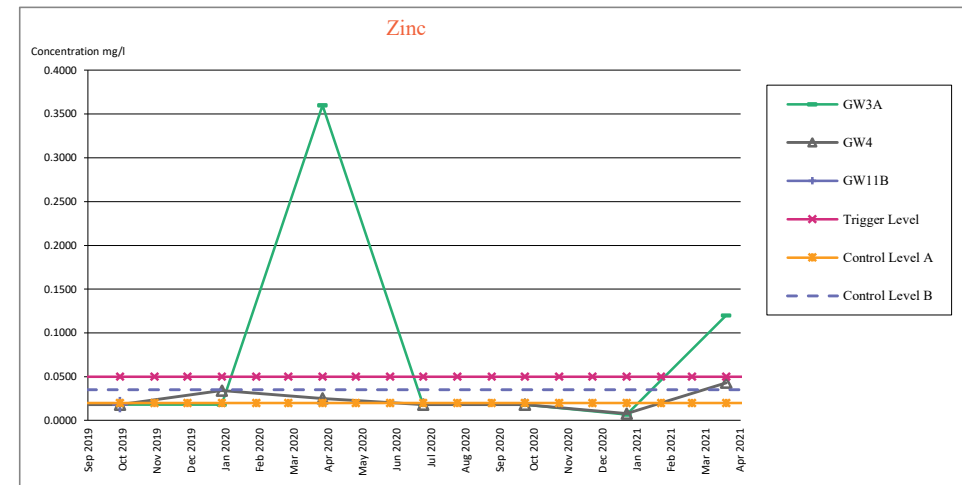
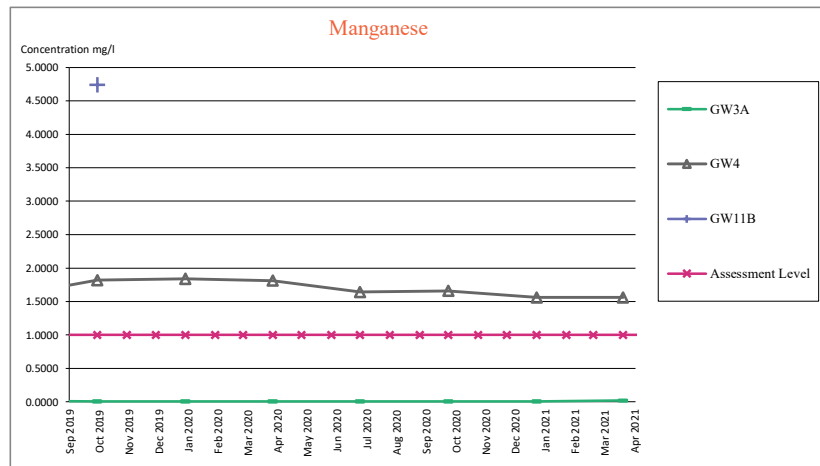


Figure A6
Groundwater quality monitoring results - Upstream wells graphs



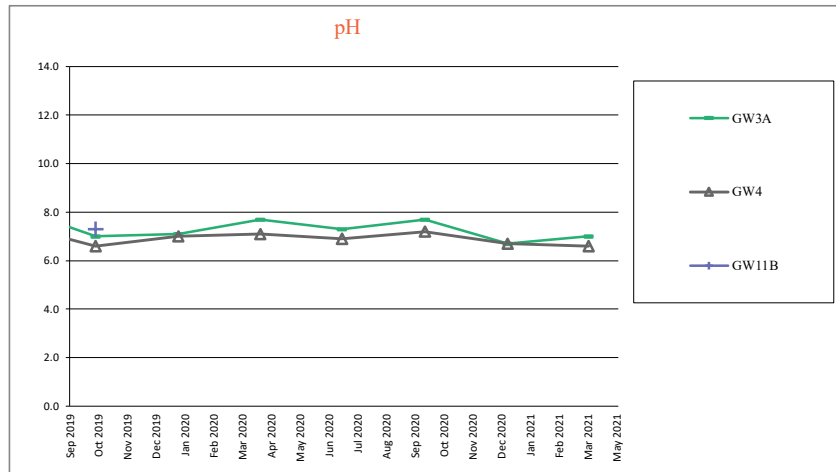
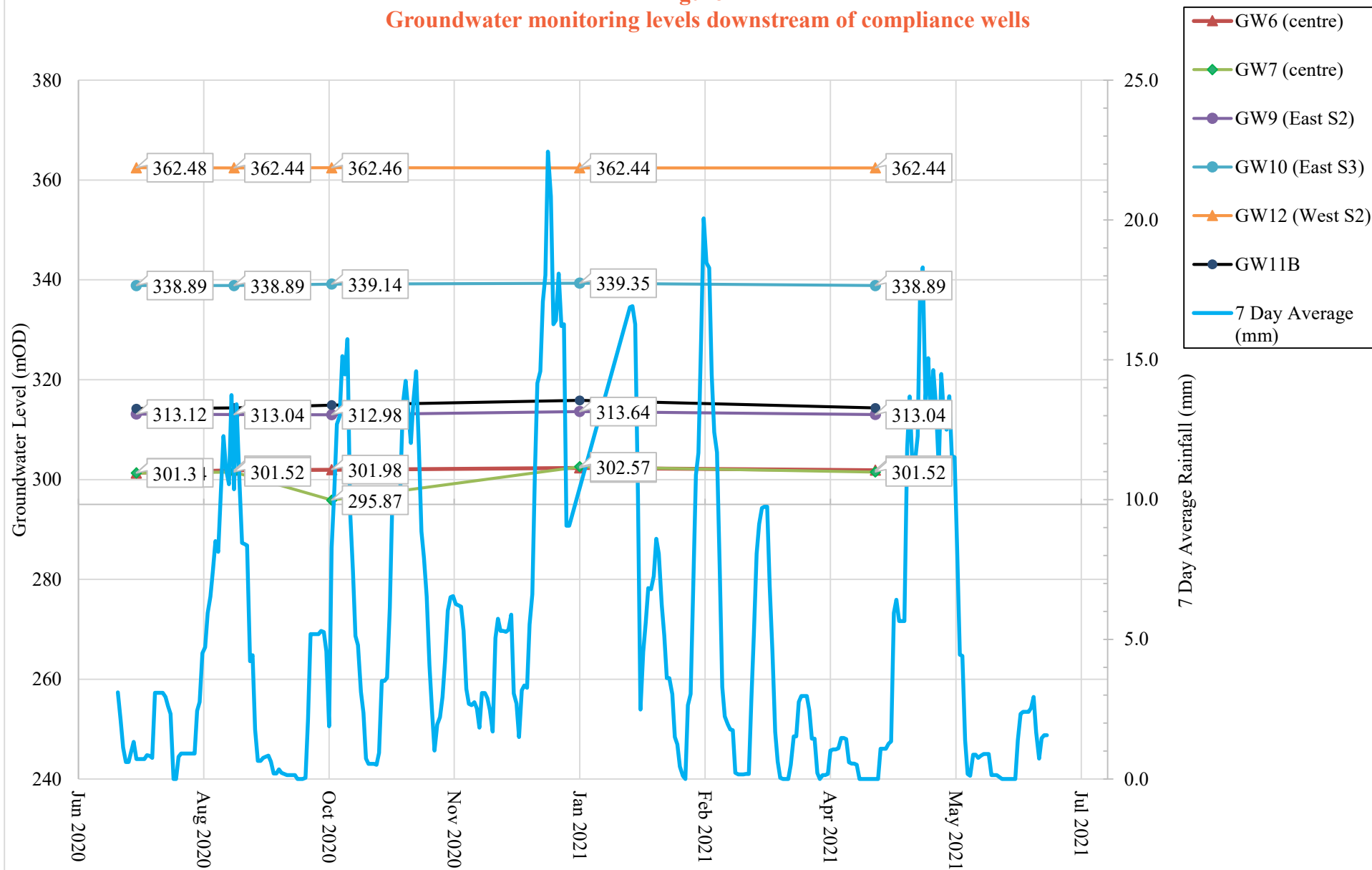


Figure A7
Groundwater monitoring levels downstream of compliance wells



Appendix B

Monitoring Results - Tables

Appendix B
Table B1
Leachate Monitoring Results

115825

January 2021												
LOCATION	Units	L1A	L1B	LC1A	LC2A	LC4A	LC5A	Maximum concentration (mg/l)	Monthly Average (mg/l)	Acceptable Maximum Concentration (AMC) (mg/l)	LP3A	LP4
Date Sampled	-							-	-	-		
Manganese in filtrate as Mn	mg/l	N/S	0.5	N/S	0.158	0.566	N/S	0.566	0.4080	--	N/S	0.182
Mercury, filt trace as Hg	mg/l	N/S	< 0.00001	N/S	< 0.00001	< 0.00001	N/S	0.00001	0.0000	0.00056	< 0.00001	< 0.00001
Nickel in filtrate as Ni	mg/l	N/S	< 0.0077	N/S	0.168	0.018	N/S	0.168	0.0646	0.0681	N/S	0.0061
Zinc, ultra-low filtered as Zn	mg/l	N/S	0.02	N/S	5.52	6.42	N/S	6.42	3.9867	1.38	N/S	0.016
pH	pH Units	N/S	8.1	N/S	8.2	7.5	N/S	8.2	7.9333	--	8.6	8.4
Conductivity- Electrical 20C	uS/cm	N/S	1770	N/S	11500	4170	N/S	11500	5813.3333	--	1600	1840
Alkalinity as CaCO3	mg/l	N/S	409	N/S	4560	2720	N/S	4560	2563.0000	--	379	710
Ammoniacal Nitrogen as N	mg/l	N/S	N/S	N/S	789	257	N/S	789	523.0000	526	< N/S	N/S
Chloride as Cl	mg/l	N/S	127	N/S	896	201	N/S	896	408.0000	1408	128	126
Sulphate as SO4	mg/l	N/S	319	N/S	708	18.7	N/S	708	348.5667	999	240	156
Redox Potential ^(see note 4)	mV	N/S	-199	N/S	-323	-314	N/S	0	-278.6667	--	-163	-206
Total Suspended Solids	mg/l	N/S	14.2	N/S	8540	3460	N/S	8540	4004.7333	--	48	8
Solids, Total Dissolved 180 deg C	mg/l	N/S	1330	N/S	5490	1850	N/S	5490	2890.0000	--	1230	1220
Dissolved Oxygen, Fixed	mg/l	N/S	2.7	N/S	< 0.5	< 0.5	N/S	2.7	1.2333	--	6.4	3.8
TOC (filtered)	mg/l	N/S	14.1	N/S	277	59.1	N/S	277	116.7333	--	12.8	17.3

Notes

- < denotes 'less than'.
- L1A,L1B, LC1A, LC2A,LC4A, LC5A: Wells in Waste.
- denotes 'no acceptable maximum concentration available'.
- The redox potential was not measured on site and there is a possibility that it has changed between sampling and analysis
- LC5A is a replacement for LC5 well.
- N/S denotes 'not sampled'.

Exceedance of AMC (per well)



Exceedance of AMC (monthly average)

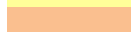


Table B2
Leachate Head Levels

		Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21
LC1A	Elevation of base of landfill mAOD	357.62			357.62								
	Elevation at top of casing mAOD	398.85			398.85								
	Depth to leachate from top of casing (m)	40.39			40.39								
	Leachate elevation (mAOD)	358.46			358.46								
	Calculated leachate head (m)	0.84			0.84								
LC2A	Elevation of base of landfill mAOD	362.49			362.49								
	Elevation at top of casing mAOD	401.12			401.12								
	Depth to leachate from top of casing (m)	35.54			35.73								
	Leachate elevation (mAOD)	365.58			365.39								
	Calculated leachate head (m)	3.09			2.90								
LC4A	Elevation of base of landfill mAOD	372.27			372.27								
	Elevation at top of casing mAOD	401.14			401.14								
	Depth to leachate from top of casing (m)	26.84			26.82								
	Leachate elevation (mAOD)	374.30			374.32								
	Calculated leachate head (m)	2.03			2.05								
LC5A	Elevation of base of landfill mAOD	350.14			350.14								
	Elevation at top of casing mAOD	380.75			380.75								
	Depth to leachate from top of casing (m)	DAMAGED			DAMAGED								
	Leachate elevation (mAOD)												
	Calculated leachate head (m)												
L1	Casing height (mAOD)	357.00			357.00								
	Leachate (mbgl)				21.06								
	Leachate (m AOD)	-			335.94								
	Base of landfill (m AOD)	336.80			336.80								
	Depth of well from top of casing (m)	21.03			21.06								
	Base of well (m AOD)	335.97			335.94								
	Calculated leachate head (m)				-0.86								
L1A*	Casing height (mAOD)	355.79			355.79								
	Leachate (mbgl)				20.90								
	Leachate (m AOD)	-			334.89								
	Base of landfill (m AOD)	316.64			316.64								
	Depth of well from top of casing (m)				20.91								
	Base of well (m AOD)	355.79			334.88								
	Calculated leachate head (m)				18.25								
L1B*	Casing height (mAOD)	354.80			354.80								
	Leachate (mbgl)	26.75			25.28								
	Leachate (m AOD)	328.05			329.52								
	Base of landfill (m AOD)	319.60			319.60								
	Depth of well from top of casing (m)	34.86			34.86								
	Base of well (m AOD)	319.94			319.94								
	Calculated leachate head (m)	8.45			9.92								

2021	Quarterly Leachate Head Averages (m)
January	1.99
February	1.93
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

Minimum monthly leachate head average
Maximum monthly leachate head average

Notes:**Top of casings were re-surveyed in August 2019**

1. LC1A top of casing is 1710mm above ground level.

2. LC2A top of casing is 820mm above GL.

3. LC4A top of casing is 1040mm above GL.

4. LC5A top of casing is 1050mm above GL.

* Well not included in monthly average.

Note: L1 is generally dry or with very little water in it.

Table B3
Surface Water Monitoring Results

Month	Location	Date	Mercury, ultra-low total as Hg	Manganese in filtrate as Mn	Nickel in filtrate as Ni	Bioavailable Ni	Zinc, ultra-low total as Zn	Bioavailable Zn	pH	Conductivity-Electrical 20C	Ammoniacal Nitrogen as N	* Unionised Ammoniacal Nitrogen based on measured Temperature	Measured surface water temperature	Chloride as Cl	Sulphate as SO4	Total Suspended Solids	Dissolved Oxygen, fixed	TOC, filtered	Redox Potential	Alkalinity as CaCO3	Calcium
			ug/l	mg/l	mg/l	mg/l	mg/l	mg/l		uS/cm	mg/l	mg/l	°C	mg/l	mg/l	mg/l	mg/l	mg/l	mV	mg/l	mg/l
A p r i l	Freshwater EQS**		1	0.123	0.004	0.004	0.0137	0.0137				0.015**		250	400						
	Upstream of Landfill	SWU1 27/04/2021	< 0.0100	0.0039	0.0012	0.0003	0.018	0.0003	7.5000	82.6000	< 0.4100	0.0021	8.2000	4.6000	15.5000	37.0000	9.9000	<0.7	-145.0000	16.0000	7.4000
		SW2A1 27/04/2021	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
		SWW4 27/04/2021	< 0.0100	0.0049	< 0.0010	< 0.0010	0.0220	0.0005	8.0000	869.0000	< 0.4100	0.0073	9.6000	6.8000	360.0000	8.0000	9.6000	9.2000	137.0000	93.8000	134.0000
	NW Ditch System	SWW1 27/04/2021	< 0.0100	0.0014	< 0.0010	< 0.0010	< 0.0060	< 0.0060	7.6000	170.0000	< 0.4100	0.0027	8.7000	4.7000	38.2000	1.0000	8.9000	<0.7	-133.0000	37.8000	19.0000
		SWW2 27/04/2021	< 0.0100	0.0080	< 0.0010	< 0.0010	0.0110	0.0007	8.0000	396.0000	< 0.4100	0.0076	10.3000	5.5000	108.0000	4.0000	8.0000	1.5000	-135.0000	89.4000	40.0000
M a y	Downstream of Landfill	SWD1 27/04/2021	< 0.0100	0.0040	< 0.0010	< 0.0010	0.0091	< 0.0060	8.1000	329.0000	< 0.4100	0.0096	10.3000	5.7000	85.5000	5.0000	8.8000	1.2000	-132.0000	81.4000	44.0000
		SWD1 27/04/2021	< 0.0100	0.0054	0.0026	0.0003	< 0.0060	< 0.0060	8.0000	334.0000	< 0.4100	0.0066	8.3000	12.8000	89.0000	3.0000	9.6000	1.3000	-130.0000	67.6000	59.0000
	Upstream of Landfill	SWU1 Six-monthly	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
		SW2A1 Six-monthly	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
		SWW4 Six-monthly	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
	NW Ditch System	SWW1 Six-monthly	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
J u n e		SWW2 Six-monthly	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
	Downstream of Landfill	SWD1 Quarterly	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
	Upstream of Landfill	SWU1 Six-monthly	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
		SW2A1 Six-monthly	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
		SWW4 Six-monthly	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
	NW Ditch System	SWW1 Six-monthly	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Minimum			< 0.0100	< 0.0014	< 0.0010	< 0.0003	< 0.0060	< 0.0003	7.5000	82.6000	< <	0.0021	8.2000	4.6000	15.5000	1.0000	8.0000	1.2000	-145.0000	16.0000	7.4000
	Maximum		< 0.0100	< 0.0080	< 0.0026	< 0.0010	< 0.0220	< 0.0060	8.1000	869.0000	< <	0.0096	10.3000	12.8000	360.0000	37.0000	9.9000	9.2000	137.0000	93.8000	134.0000

Notes

- 1.The redox potential was not measured on site and there is a possibility that it has changed between sampling and analysis
- 2 N/S - Not analysed
- 3 Unionised ammoniacal nitrogen based on measured
- 4 Environmental Quality Standard EQS 1 for freshwater is derived to protect the most sensitive aquatic life.
- 5.NW Ditch - North Western (ditch system)

	Exceedance of EQS
	Upstream of Nant Merddog
	Downstream of Nant Merddog

Table B4
Groundwater monitoring results

Location	Month	Date	Test reference number	Redox Potential	Mercury, filtrate as Hg	Manganese in filtrate as Mn	Nickel in filtrate as Ni	Zinc, ultra-low filtered as Zn	pH	Electrical Conductivity 20C	Alkalinity as CaCO3	Ammoniacal Nitrogen as N	Unionised Ammoniacal Nitrogen ***	Measure water temperature	Chloride as Cl	Sulphate as SO4	Calcium	D.O. concentration	TOC (Filtered)
				mV	ug/l	mg/l	mg/l	mg/l	pH units	uS/cm	mg/l	mg/l	mg/l	°C	mg/l	mg/l	mg/l	mg/l	mg/l
	Trigger Level				(0.2 ^m)		0.05	(0.05 ^m)	--	--	--	1	--	--	250	400	--	--	--
	Control Level A				(0.1 ^m)	--	0.03	(0.02 ^m)	--	--	--	0.8	--	--	210	300	--	--	--
	Control Level B				(0.15 ^m)	--	0.04	(0.035 ^m)	--	--	--	0.9	--	--	230	350	--	--	--
	Assessment Level				--	(1.0 ^m)	--	--	--	--	--	--	--	--	--	--	--	--	--

UPSTREAM WELLS

SST East S3																									
GW3A	Jan-19	08/01/19	17839308	92		0.211	<	0.0070	<	0.0030	<	0.0180	7.5	585.0	233.0	<	0.41		7.6	127.0	90.8	11.9	2.1		
	Feb-19	Quarterly																							
	Mar-19																								
	Apr-19	01/04/19	18095225	-		0.318		0.3090		0.0347	<	0.0180	7.3	601.0	229.0	<	0.41		9.3	111.0	416.0	7.2	2.4		
	May-19	Quarterly																							
	Jun-19																								
	Jul-19	01/07/19	18369026	-44	<	0.20		0.0141	<	0.0030	<	0.0180	8.2	558.0	224.0	<	0.41		11.2	104.0	85.9	9.1	4.5		
	Aug-19	Quarterly																							
	Sep-19																								
	Oct-19	14/10/19	18694531	164		0.426	<	0.0070		0.0078	<	0.0180	7.0	516.0	195	<	0.41		9.7	102.0	69.0	5.9	1.7		
	Nov-19	Quarterly																							
	Dec-19																								
	Jan-20	21/01/20	18977407	15		0.620	<	0.0070	<	0.0030	<	0.0180	7.1	496.0	220.0	<	0.41		11.6	92.0	72.5	9.1	1.4		
	Feb-20	Quarterly																							
	Mar-20																								
	Apr-20	21/04/20	1860909	157		0.463		0.0089	<	0.0030	<	0.3600	7.7	560.0	248.0	<	0.41	0.0048	13.2	12.5	89.6	8.0	1.6		
	May-20	Quarterly																							
	Jun-20																								
	Jul-20	21/07/20	19513248	119		0.36	<	0.0070	<	0.0030	<	0.0180	7.3	473.0	184.0	<	0.41	0.0020	13.5	10.2	90.6	68.6	11.2	1.8	
	Aug-20	Quarterly																							
	Sep-20																								
	Oct-20	29/10/20	19827617	-39		0.493	<	0.0070	<	0.003	<	0.0180	7.7	467.0	175	<	0.41	0.0050	13.2	11.2	87.9	62.0	10.2	0.9	
	Nov-20	Quarterly																							
	Dec-20																								
GW3A	Jan-21	21/01/21	20069616	108		0.230		0.0089		0.0015		0.0067	6.7	519.0	203.0	<	0.41	0.0005	13.1	11.1	91.2	79.0	8.7	2.1	
	Feb-21	Quarterly																							
	Mar-21																								
	Apr-21	27/04/21	20384851	-26		0.387		0.019	<	0.0010		0.1200	7.0	514.0	205.0	<	0.41	0.0010	13.4	10.4	84.6	N/S	7.1	1.5	
	May-21	Quarterly																							
	Jun-21																								
	Jul-21																								
	Aug-21																								
	Sep-21																								
	Oct-21																								
	Nov-21																								
	Dec-21																								
GW4	Jan-19	08/01/19	17839309	92	<	0.20		1.5400	<	0.0030	<	0.0180	6.9	241.0	66.6	<	0.41		8.6	63.0	15.1	2.7	<	0.7	
	Feb-19	Quarterly																							
	Mar-19																								
	Apr-19	01/04/19	18095226	146	<	0.20		1.7600	<	0.0030	<	0.0180	6.9	274.0	66.6	<	0.41		8.9	67.1	15.7	2.3		1.1	
	May-19	Quarterly																							
	Jun-19																								
	Jul-19	01/07/19	18369027	-80	<	0.20		1.5800		0.0034	<	0.0180	7.5	256.0	67.0	<	0.41		8.9	64.9	16.3	2.4		2.6	
	Aug-19	Quarterly																							
	Sep-19																								
	Oct-19	14/10/19	18694532	170	<	0.01		1.8200		0.0042	<	0.0180	6.6	266.0	64.4	<	0.41		8.3	68.4	16.1	7.1	<	0.7	
	Nov-19	Quarterly																							
	Dec-19																								
	GW4	Jan-20	21/01/20	18977408	9		0.011		1.8400		0.0040		0.0340	7.0	258.0	66.8	<	0.41		9.7	70.0	16.6	2.3		0.7
		Feb-20	Quarterly																						
		Mar-20																							
		Apr-20	21/04/20	1860909	152	<	0.01		1.8100		0.0032		0.0251	7.1	261.0	62.0	<	0.41	0.0010	10.0	10.1	66.8	2.0		0.8
		May-20	Quarterly																						
		Jun-20																							
	Jul-20	21/07/20	19513249	102	<	0.01		1.6400	<	0.0030	<	0.0180	6.9	255.0	60.0	<	0.41	0.0006	9.8	8.4	64.4	68.6	1.9		15.5
Aug-20	Quarterly																								
Sep-20																									
Oct-20	29/10/20	19827618	-36	<	0.01		1.6600	<	0.0030	<	0.0180	7.2	254.0	60.8	<	0.41	0.0010	9.5	9.2	65.2	16.3	2.0	<	0.7	
Nov-20	Quarterly																								
Dec-20																									
GW4	Jan-21	20/01/21	20069616	103	<	0.01		1.5600		0.0035		0.0076	6.7	268.0	63.2	<	0.41	0.0004	9.1	10.0	68.7	19.0	10.2		8.7
	Feb-21	Quarterly																							
	Mar-21																								
	Apr-21	27/04/21	20384852	-92	<	0.01		1.5600		0.0035		0.0430	6.6	243.0	51.0	<	0.41	0.0003	10.0	7.8	60.7	N/S	1.7	<	0.7
	May-21	Quarterly																							
	Jun-21																								
	Jul-21																								
	Aug-21																								
	Sep-21																								
	Oct-21																								
	Nov-21																								
	Dec-21																								
	Jan-19	Not sampled																							
	Feb-19	Quarterly																							
	Mar-19																								
	Apr-19	Not sampled																							
	May-19	Quarterly																							
	Jun-19																								
	Jul-19	Not sampled																							
Aug-19	Quarterly																								
Sep-19																									
Oct-19	16/10/19	18702426	151		0.044		4.7400		0.0143	<	0.0180	7.3	222.0	101.0	<	0.41		6.7	15.5	24.6	3.5		4.3		
Nov-19	Quarterly																								

Table B4
Groundwater monitoring results

Location	Month	Date	Test reference number	Redox Potential	Mercury, filtrate as Hg	Manganese in filtrate as Mn	Nickel in filtrate as Ni	Zinc, ultra-low filtered as Zn	pH	Electrical Conductivity 20C	Alkalinity as CaCO3	Ammoniacal Nitrogen as N	Unionised Ammoniacal Nitrogen ***	Measure water temperature	Chloride as Cl	Sulphate as SO4	Calcium	D.O. concentration	TOC (Filtered)
				mV	ug/l	mg/l	mg/l	mg/l	pH units	uS/cm	mg/l	mg/l	mg/l	°C	mg/l	mg/l	mg/l	mg/l	mg/l
Trigger Level					(0.2*)		0.05	(0.05*)	--	--	--	1	--	--	250	400	--	--	--
Control Level A					(0.1**)	--	0.03	(0.02**)	--	--	--	0.8	--	--	210	300	--	--	--
Control Level B					(0.15**)	--	0.04	(0.035**)	--	--	--	0.9	--	--	230	350	--	--	--
Assessment Level					--	(1.0*)	--	--	--	--	--	--	--	--	--	--	--	--	--
GW11B	Dec-19																		
	Jan-20	Not sampled																	
	Feb-20	Quarterly																	
	Mar-20																		
	Apr-20	Not sampled																	
	May-20	Quarterly																	
	Jun-20																		
	Jul-20	Not sampled																	
	Aug-20	Quarterly																	
	Sep-20																		
	Oct-20	Not sampled																	
	Nov-20	Quarterly																	
	Dec-20																		
	Jan-21	Not sampled																	
	Feb-21	Quarterly																	
	Mar-21																		
	Apr-21	Not sampled																	
	May-21	Quarterly																	
	Jun-21																		
DOWNSTREAM WELLS / COMPLIANCE WELLS																			
SST West S2																			
GW12	Jan-19	08/01/19	17839315	75	0.506	0.0092	0.0048	< 0.0180	7.5	1770.0	415.0	0.84			116.0	367.0	131.0	5.0	12.7
	Feb-19	Quarterly																	
	Mar-19																		
	Apr-19	01/04/19	18095232	113	< 0.200	< 0.0070	0.0083	< 0.0180	8.2	1970.0	384.0	0.89			128.0	379.0	151.0	3.7	13.9
	May-19	Quarterly																	
	Jun-19																		
	Jul-19	01/07/19	18369033	-89	< 0.20	0.0208	< 0.0030	< 0.0180	8.4	1470.0	374.0	< 0.41			71.7	327.0	124.0	6.4	8.4
	Aug-19	Quarterly																	
	Sep-19																		
	Oct-19	14/10/19	18694538	89	< 0.100	1.7700	0.0161	< 0.0180	7.4	1610	381	< 0.41			89.8	328	135	3.4	10.3
	Nov-19	Quarterly																	
	Dec-19																		
	Jan-20	21/01/20	18977414	40	0.098	0.0102	0.0076	< 0.0180	7.8	1660.0	431.0	< 0.41			95.0	321.0	151.0	4.0	11.8
	Feb-20	Quarterly																	
	Mar-20																		
	Apr-20	21/04/20	1860909	183	0.11	0.0130	0.0062	0.0659	8.2	1660.0	433.0	< 0.41	0.0254	20.8	101.0	312.0		4.8	9.3
	May-20	Quarterly																	
	Jun-20																		
	Jul-20	21/07/20		133	0.14	< 0.0070	0.0001	< 0.0180	7.6	1360.0	414.0	< 0.41	0.0059	19.1	50.6	296.0	129.0	6.2	6.0
	Aug-20	Quarterly																	
	Sep-20																		
	Oct-20	29/10/20	19827623	-20	0.06	< 0.0070	0.0137	< 0.0180	7.8	1340.0	359.0	< 0.41	0.0100	19.8	70.9	245	122	6.6	7.7
	Nov-20	Quarterly																	
	Dec-20																		
SST Centre	Jan-21	20/01/21	20069623	137	0.019	0.0081	0.0013	< 0.0050	7.0	454.0	184.0	< 0.41	0.0016	20.1	15.0	48.3	55.0	8.8	2.4
	Feb-21	Quarterly																	
	Mar-21																		
	Apr-21	27/04/21	20384858	-173	0.15	0.0015	0.0051	0.1700	7.4	1530.0	420.0	< 0.41	0.0038	19.3	93.8	276.0	N/S	6.0	10.9
	May-21	Quarterly																	
	Jun-21																		
	Jul-21																		
	Aug-21																		
	Sep-21																		
	Oct-21																		
	Nov-21																		
	Dec-21																		
	Jan-19	08/01/19	17839310	47	< 0.20	0.1480	0.0093	< 0.0180	6.6	764.0	322.0	< 0.41			65.4	89.1	50.6	4.5	3.6
	Feb-19	Quarterly																	
	Mar-19																		
	Apr-19	01/04/19	18095227	95	< 0.20	0.4210	0.0073	< 0.0180	7.0	832.0	314.0	< 0.41			65.9	86.7	56.2	2.6	5.0
	May-19	Quarterly																	
	Jun-19																		
	Jul-19	01/07/19	18369028	-63	< 0.20	0.2610	0.0046	< 0.0180	7.2	821.0	317.0	< 0.41			67.7	86.9	58.1	2.7	5.9
	Aug-19	Quarterly																	
	Sep-19																		
	Oct-19	14/10/19	18694533	176	0.033	0.6620	0.0214	< 0.0180	6.6	788	284	< 0.41			67.7	87.2	44.5	7.3	4.1
	Nov-19	Quarterly																	
	Dec-19																		
GW6	Jan-20	21/01/20	18977409	30	0.064	0.4630	0.0150	< 0.0180	7.0	854.0	354.0	< 0.41			71.3	91.2	61.0	3.5	7.1
	Feb-20	Quarterly																	
	Mar-20																		
	Apr-20	21/04/20	1860909	170	0.06	0.7120	0.0254	< 0.0180	7.3	869.0	311.0	< 0.41	0.0018	12.0	73.7	86.6		3.5	4.2
	May-20	Quarterly																	
	Jun-20																		
	Jul-20	21/07/20	19513250	116	0.06	0.8270	0.0124	< 0.0180	6.7	786.0	288.0	< 0.41	0.0005	12.4	69.7	83.3	54.9	3.1	3.9
	Aug-20	Quarterly																	
	Sep-20																		

Table B4
Groundwater monitoring results

[illegible]

Table B4
Groundwater monitoring results

Location	Month	Date	Test reference number	Redox Potential	Mercury, filtrate as Hg	Manganese in filtrate as Mn	Nickel in filtrate as Ni	Zinc, ultra-low filtered as Zn	pH	Electrical Conductivity 20C	Alkalinity as CaCO3	Ammoniacal Nitrogen as N	Unionised Ammoniacal Nitrogen ***	Measure water temperature	Chloride as Cl	Sulphate as SO4	Calcium	D.O. concentration	TOC (Filtered)
Trigger Level				mV	ug/l	mg/l	mg/l	mg/l	pH units	uS/cm	mg/l	mg/l	mg/l	°C	mg/l	mg/l	mg/l	mg/l	mg/l
Control Level A					(0.2 ^m)		0.05	(0.05 ^m)	--	--	--	1	--	--	250	400	--	--	--
Control Level B					(0.1 ^m)	--	0.03	(0.02 ^m)	--	--	--	0.8	--	--	210	300	--	--	--
Assessment Level					(0.15 ^m)	--	0.04	(0.035 ^m)	--	--	--	0.9	--	--	230	350	--	--	--
	Nov-21																		
	Dec-21																		
SST East S3																			
GW10	Jan-19	08/01/19	17839313	60	< 0.20	0.0125	0.00550	< 0.0180	7.3	471.0	183.0	< 0.41			15.4	64.2	63.2	8.1	4.8
	Feb-19	Quarterly																	
	Mar-19																		
	Apr-19	01/04/19	18095230	88	< 0.200	0.0075	< 0.0030	< 0.0180	7.6	563.0	208.0	< 0.41			22.8	64.5	89.1	6.5	6.8
	May-19	Quarterly																	
	Jun-19																		
	Jul-19	01/07/19	18369031	-29	< 0.200	0.1220	< 0.0030	< 0.0180	7.7	615.0	250.0	< 0.41			20.1	67.9	74.8	8.5	7.9
	Aug-19	Quarterly																	
	Sep-19																		
	Oct-19	14/10/19	18694536	184	0.063	0.1880	0.0047	< 0.0180	7.1	612.0	269.0	< 0.41			12.6	64.3	85.8	8.1	5.3
	Nov-19	Quarterly																	
	Dec-19																		
	Jan-20	21/01/20	18977412	30	0.09	6.4600	0.0139	< 0.0180	7.2	584.0	245.0	< 0.41			22.6	56.5	66.1	< 0.5	10.4
	Feb-20	Quarterly																	
	Mar-20																		
	Apr-20	21/04/20	1860909	164	0.06	0.0900	0.0058	0.0705	7.8	688.0	276.0	< 0.41	0.0047	9.9	29.2	51.1		6.7	6.9
	May-20	Quarterly																	
	Jun-20																		
	Jul-20	21/07/20	19513253	114	0.00	0.5150	0.0050	< 0.0180	7.0	520.0	200.0	< 0.41	0.0008	10.0	17.9	57.9	63.5	5.1	4.7
	Aug-20	Quarterly																	
	Sep-20																		
	Oct-20	29/10/20	19827622	-27	0.04	6.7900	0.0103	< 0.0180	7.5	500.0	218.0	< 0.41	0.0030	11.4	10.9	50.6	68.1	1.6	5.7
	Nov-20	Quarterly																	
	Dec-20																		
	Jan-21	20/01/21	20069621	104	0.07	0.2140	0.0027	< 0.0050	6.8	254.0	124.0	< 0.41	0.0006	13.1	5.5	19.5	45.0	9.2	2.3
	Feb-21																		
	Mar-21																		
	Apr-21	27/04/21	20384856	-251	0.07	1.6800	0.0091	0.085	6.9	639.0	240.0	< 0.41	0.0006	10.1	27.1	41.1	N/S	2.9	7.0
	May-21	Quarterly																	
	Jun-21																		
	Jul-21																		
	Aug-21																		
	Sep-21																		
	Oct-21																		
	Nov-21																		
	Dec-21																		

Exceedance of Control Level

Exceedance of Trigger Level

Exceedance of Assessment Level

Notes

* The redox potential was not measured on site and there is a possibility that it has changed between sampling and analysis {#/}

** Unionised ammoniacal nitrogen based on measured Temperature and pH; unionised ammoniacal nitrogen = total ammonia/(1+10^{(10.055-(0.0324*TC)-pH)}), where TC is measured water temperature.

^ Ammonia result confirmed on duplicate analysis.

CARBON DIOXIDE (% by Volume)

[illegible]

Table B5
Landfill Gas Monitoring Results

METHANE (% by Volume)														CARBON DIOXIDE (% by Volume)													
Location	Valve	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Comments	
GMW7	Yellow Valve	0	0	0	0	0	0							0.2	0.2	0.6	0.8	0.6	0.6								Yellow Valve,12 depth
	White Valve	0	0	0	0	0	0							0.2	0.2	0.6	0.8	0.6	0.6								White Valve, 5m depth
	Trigger Levels	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Control Levels	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Trigger Level Yellow	-	-	-	-	-	-	-	-	-	-	-	-	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
	Trigger Level White	-	-	-	-	-	-	-	-	-	-	-	-	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	
	Control Level Yellow	-	-	-	-	-	-	-	-	-	-	-	-	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3		
	Control Level White	-	-	-	-	-	-	-	-	-	-	-	-	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32		
GMW12	Red Valve	0	0	0	0	0	0							0.4	0.4	2.3	0.7	0.9	0								Red Valve, 26.3m depth
	Yellow Valve	0	0	0	0	0	0							2.8	2.7	2.8	1.2	2.1	2.4								Yellow Valve,15m depth
	White Valve	0	0	0	0	0	0							0.4	0.9	1	0.8	1.1	0.8								White Valve, 5m depth
	Trigger Level Red	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
	Trigger Level Yellow	1	1	1	1	1	1	1	1	1	1	1	1	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	
	Trigger Level White	1	1	1	1	1	1	1	1	1	1	1	1	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	
	Control Level Red	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39	4	4	4	4	4	4	4	4	4	4	4	4	4	
	Control Level Yellow	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	
Control Level White	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	5	5	5	5	5	5	5	5	5	5	5	5	5		
GMW13	Red Valve	0	0	0	0	0	0.1							1.4	1.5	1.1	1.3	0.9	5.6								Red Valve, 26.3m depth
	Yellow Valve	0.1	0.1	0.1	0	0.1	0							4.2	4.9	4.8	5.1	5	2.5								Yellow Valve,15m depth
	White Valve	0	0	0	0	0	0							2.1	2.4	0	2.4	2.5	1.4								White Valve, 5m depth
	Trigger Level Red	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	
	Trigger Level Yellow	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	6	6	6	6	6	6	6	6	6	6	6	6	6	
	Trigger Level White	1	1	1	1	1	1	1	1	1	1	1	1	5.82	5.82	5.82	5.82	5.82	5.82	5.82	5.82	5.82	5.82	5.82	5.82	5.82	
	Control Level Red	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	
	Control Level Yellow	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	
Control Level White	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	5.32	5.32	5.32	5.32	5.32	5.32	5.32	5.32	5.32	5.32	5.32	5.32	5.32		
GMW14/14A	Red Valve	0	0	0	0	0	0							1.7	3.4	3.7	0.6	0.3	0.5								Red Valve, 26.3m depth
	Yellow Valve	0	0	0	0	0	0.1							6	6.5	6.3	4.5	3.7	3.6								Yellow Valve,15m depth
	White Valve	0	0	0	0	0	0							5.1	5.5	5.3	1.9	3.9	2.2								White Valve, 5m depth
	Trigger Level Red	1	1	1	1	1	1	1	1	1	1	1	1	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
	Trigger Level Yellow	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	
	Trigger Level White	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	
	Control Level Red	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	1	1	1	1	1	1	1	1	1	1	1	1	
	Control Level Yellow	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	
Control Level White	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9		
GMW1**	Red Valve	0	0.3	0.4	0.7	0	3							2.1	6	2.8	1.8	0	4.1								Red Valve, 23.5m depth
	Yellow Valve	2.6	0	0	23.3	6.8	16.1							1.2	0.1	0	1.6	7.3	8.8								Yellow Valve,14.7m depth
	White Valve	0	1.2	0.8	0	0	0.1							0	0.9	0.6	0	0	0								White Valve, 6.5m depth
GMW8*	Yellow Valve	8.6	9.4	8.9	7.3	4.1	4.7							8.3	7.6	7.7	7.8	4.7	5.1								Yellow Valve,17.5m depth
	White Valve	0	0	0	0	0	0.1							4	3.7	3.9	3.8	3.8	3.4								White Valve, 5.7m depth
GMW9*	Red Valve	0	0	0	0	0	0.1							1.9	1.8	1.9	1.9	1.6	1.7								Red Valve, 27m depth
	Yellow Valve	25.3	27.7	27.6	23.7	22.7	20.4							8.6	8.7	9.1	9.3	8.3	9.7								Yellow Valve,15m depth
	White Valve	0.1	0.1	0	0	0	0.1							0.1	0.1	0.1	0.2	0.2	0.1								White Valve, 8.5m depth
GMW10*	Red Valve	14.8	15	0.1	25.3	18.6	19.2							4.3	3.7	7.8	6.9	6.7	8.1								Red Valve, 19.5m depth
	Yellow Valve	15.6	18	0	41.4	19.7	13.2							2.6	2.3	0.1	6.7	3.2	2.7								Yellow Valve,15m depth
	White Valve	16.5	14.5	12.1	5.5	3.2	3							6.5	7.2	8.3	8.4	8.3	8.4								White Valve, 8m depth
GMW17**	Red Valve	0	0	0	0	0	0							1.4	1.5	1.3	1.3	1.1	1.2								Red Valve, 26.3m depth
	Yellow Valve	0	0	0	0	0	0							5.1	5.1	4.8	4.9	4.3	4.1								Yellow Valve,15m depth
	White Valve	0	0	0	0	0	0							2.5	4	3.1	5.1	4.5	4.1								White Valve, 5m depth
GMW18**	Yellow Valve	0	0	0.9	0	0	0							0	1.5	1.4	0	0.1	1.6								Yellow Valve,12 depth
	White Valve	0	0	0	0	0	0							5.1	4.9	5.4	5.2	4.8	4.9								White Valve, 5m depth

Notes:
1. Water denotes 'water in well - reading abandoned'.
2. NT denotes 'reading not taken'.
3. NT in GMW14 is due to cattle quarantine paddock around well location.
4. Where the asterisc (*) is present, no trigger levels have been set, as high levels of methane and carbon dioxide gas are recorded. This is likely to be associated with the presence of bog/marshland.
5. Where two asterisks (**) are present, no trigger levels have been set, as not require by the Permit (Reference [2]).

Exceedance of Trigger

Exceedance of Control