

Silent Valley Waste Services
Limited

Silent Valley Landfill

2020 Annual and Fourth Quarter
Monitoring Report

Issue | 29 January 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.

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1 Introduction

This 2020 Annual Monitoring Report presents the surface water, groundwater, landfill gas and leachate results for the monitoring undertaken in the period January to December 2020 in accordance with the Silent Valley Environmental Permit (Permit no. MP3835SV, Ref. [1]) and the Aftercare Phase Environmental and Infrastructure Monitoring Program (Ref. [5]).

This report also includes the Fourth Quarter Monitoring results for the period October to December 2020.

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 Third Quarter 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, December recorded the highest monthly rainfall of the quarter and the highest daily rainfall total. These values are higher than the same time period in previous years. This is the wettest fourth quarter since rainfall measurement began at the site in 2008.

Annual summary

The combined total for the year 2020 is 1716.6mm, which is above the long-term average for the region of 1260mm (Ref [9]) and the highest annual recorded rainfall since 2008.

December recorded the highest month of rainfall during 2020 with a level of 300.4mm recorded, previous data shows December as a relatively drier month. Feb, March, June, August, October and November also recorded rainfall levels over 100mm. Notably Feb, June, August and October were wetter than the previous year and generally wetter than normal. The lowest rainfall was recorded in May with a level of 18.1mm.

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 no samples were retrieved from L1A, LC1A and LC5A. Installation LC5A was damaged during the last quarter and needs to be reinstalled.

Well LC2A has exceeded the Acceptable Maximum Concentration (AMC) for ammoniacal nitrogen and the average AMC for all wells has also declined this quarter. However, the average AMC for ammoniacal nitrogen is generally driven by LC5A which was damaged and therefore no samples were taken. LC2A also exceeded the AMC for Nickel, a concentration which has been fluctuating over and below the AMC concentration over the past year.

Wells LC2A and LC4A also exceeded the AMC for zinc which has now been elevated for the past two quarters. This will be investigated further if the wells exceed the zinc AMC again in the first quarter of 2021.

Annual summary

The average values for the monitored contaminants have been recorded below their respective AMCs throughout 2020 with the exception of ammoniacal nitrogen, chloride, zinc and nickel.

The average concentration of ammoniacal nitrogen has been fluctuating since 2017 and 2018, hitting a high of 854mg/l in April 2017 proceeding to a low of 593.36mg/l in October 2017. The levels have continued to fluctuate throughout 2019 and 2020 with July recording the highest average AMC concentration of 1014mg/l and April recording the lowest average AMC of 655.5mg/l. However, ammoniacal nitrogen levels continue to be recorded below level of detection in the downstream compliance wells. The highest exceeding concentrations were recorded in well LC5A which contributes to the higher average AMC values, until this quarter while it is damaged. Notably, well LC2A has recorded AMC exceedances each quarter this year, albeit at a lower concentration.

In accordance with the Aftercare Phase Environmental and Infrastructure Monitoring Program report (Ref. [4]), the contingency plan is to be implemented after three consecutive exceedances have been recorded. Previously corrective measures were implemented in well LC5A through de-silting and pumping the well, however there is now a requirement for the well to be re-installed as it is damaged.

The continuing high levels of ammoniacal nitrogen recorded in LC2A should also be investigated with potential remedial work during the re-installation of LC5A.

The average concentration of nickel was recorded above the AMC during the second and third quarter only. This was due to LC5A recording a higher than normal level of nickel with the remaining wells remaining fairly consistent.

2.2.2 Leachate Head Monitoring

Leachate head 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 (Ref [1]). Well L1 was recorded as dry this quarter.

Annual Average Leachate Head

The average leachate head per year has decreased again, similar to in 2018, which contradicts the previous increasing trend from 2013, as detailed in Table 2.1 below.

Table 2.1: Annual Average Leachate Head

Year	Maximum Leachate Head	Average Leachate Head	Average Leachate Head <3m
2013	2.45m	1.01m	Yes
2014	3.95m	1.14m	Yes
2015	4.96m	1.81m	Yes
2016	4.83m	2.54m	Yes

Year	Maximum Leachate Head	Average Leachate Head	Average Leachate Head <3m
2017	5.09m	2.70m	Yes
2018	5.36m	2.58m	Yes
2019	5.05m	2.74m	Yes
2020	4.89m	2.47m	Yes

Previously the decreased annual leachate head in 2018 was assumed to be due to an unusually dry year. However, the leachate head has decreased again this year, one of the wettest years on record. Notably, the variation in leachate head is driven by LC5A and leachate levels in the other wells has remained relatively stable throughout the year.

This will be reviewed at the beginning of 2021, when further investigation is planned for LC5A.

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. Results show these locations are all compliant.

Annual summary

Results show all upstream surface water locations have been compliant with the freshwater EQS concentrations during both monitoring round this year.

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 up to the cessation for these monitoring points located downstream of the landfill indicated no environmental impact on the Nant Merddog.

Annual summary

On a review of any results obtained this year, all downstream surface water locations have been compliant with the freshwater EQS concentrations this year.

2.4 Groundwater

2.4.1 Groundwater Quality Monitoring

Groundwater quality monitoring results are presented graphically 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. Mercury concentrations in GW3A have been continually recorded above the trigger level since April 2018, although the trigger level is applied to the downstream groundwater. Based on previous results these are temporary fluctuations associated with the environment outside of the influence of the landfill.

Manganese has continually been recorded above the assessment level in GW4 with continued fluctuations throughout the years showing no recognisable trend. 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.

Annual Summary

As discussed above, concentrations of mercury and manganese have remained elevated this year in GW3 and GW4, respectively. These wells will continue to be monitored in the future.

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 during 2020.

Well GW10

GW10 has been installed in the sandstone strata classified as S3-East. GW10 is compliant except for a manganese exceedance. Manganese hasn't exceeded in this well since January 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. However the concentration of ammoniacal nitrogen only marginally exceeds the trigger level this quarter, similar to the 3rd quarter result, and is lower than last quarter indicating a downward trend.

Well GW12

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

Wells GW6 and GW7

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

The manganese concentration in GW7 has been recorded above the assessment level but a decrease from the last quarter. 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 which have exhibited similar concentrations.

Annual Summary

As discussed above, GW9 and GW7 have ongoing exceedances in ammoniacal nitrogen and manganese, respectively. The other wells are mostly compliant except for a rare exceedance which does not indicate any trends. These wells will continue to be monitored in the future.

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**. The majority of water levels have remained consistent this quarter, except in GW7, where there has been a significant decrease this quarter from 301.3 to 295.9mOD. It is likely this 5.4m drop is due to an error in the data and will be further reviewed next quarter.

Annual summary

Overall, the ground water levels have remained fairly constant over the year. The smallest change was recorded in upstream well GW11B which recorded a 0.08m difference, and the biggest change was recorded in the downstream well GW7 which recorded a 5.4m change. However, it is possible this is an error and will be further reviewed next quarter.

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 GMW2, GMW5, GMW6, GMW12 and GMW14/14A.

Carbon dioxide levels have been recorded above the Control and/or Trigger Levels in the following wells (valves):

Control Level

- GMW2 (red) in October only

Trigger Level

- GMW5 (white) in December only
- GMW6 (red) every month
- GMW12 (yellow) in October only
- GMW14/14A (red) every month
- GMW14/14A (white) in November and December

After an elevation at the start of the quarter, GMW2 concentrations were recorded below the Trigger and Control levels in November and December. Similar to GMW12.

GMW5 only recorded one concentration higher than the Trigger level in December.

GMW6 has recorded elevated concentrations each month this quarter, similar to the third quarter, however concentrations appear to be reducing. This well should be reviewed following receipt of next quarter's readings.

In GMW14/14A consecutive exceedances have been recorded in 2020. The gas concentrations did appear to be reducing but have increased again this quarter. The white valve in GMW14/14A is now also recording concentrations above the Trigger and Control levels.

Annual summary

Throughout 2020 methane levels have remained below the respective Control and Trigger Levels (where available) in all monitoring locations.

In GMW2 the trigger level of 1.5% was exceeded in July and August in the red valve with a recorded level of 1.6%. The last recorded trigger level exceedance was in July 2019 with 1.6%. The control level of 1% in the red valve of GMW2 was also exceeded in September and October 2020 with a maximum level of 1.1% recorded. This is similar to 2019 and 2018 with higher recordings during the summer months.

The control level of 1% in GMW4 red valve was exceeded by a maximum of 1.2% in July and August 2020.

The trigger level of 4.8% in the GMW5 white valve was exceeded in December with a level of 5.2%. The control level was exceeded in January with 4.6%. The white valve exceedances are similar to 2019 and 2018 with exceedances recorded in the latter part of the year before they fall below both the trigger and control levels again.

The red valve trigger level of 4.3% was exceeded in GMW6 in July and is still exceeding to date with a maximum recorded concentration of 5.7%. These exceedances have occurred within similar months during 2018 and 2019, however by the fourth quarter the levels have usually reduced below the trigger and control level.

In GMW12 the control level of 2.4% was exceeded in June and July in the red valve with a recorded level of 2.8%. The trigger level of 2.9% was then exceeded from August to October with a maximum concentration of 3.3%. However, the concentrations in this well have reduced below the control level again.

The yellow valve trigger level for GMW13 was exceeded from December 2019 to February 2020 with a maximum value of 6.8% and the control level was exceeded from February to August with a maximum level of 5.9%. Similar exceedances have been observed in GMW13 in the past. GMW13 is located on the north-western flank of the valley, outside the waste mass. It is considered likely that this well is detecting ground gas concentrations from the local bedrock geology and marsh land in the vicinity of the well.

GMW14A was installed in August 2019, since installation the well has recorded concentrations above the trigger level in the red valve (deep install 26.3m bgl) with a maximum concentration of 4.3% in both February and November 2020. The exceedances are lower in the summer months than the winter months, however this trend is not confirmed since the well has only been installed less than 1.5yrs ago. The white valve (shallow install 5m bgl) has also shown exceedances above the trigger level of 5.4% with concentrations of 5.9% during the winter months. On review of the installation work, repairs occurred in this well at the end of 2019. However, a full year of readings demonstrate the gassing regime of this well is still recording high concentrations.

Elevated levels of carbon dioxide continue to be recorded in GMW1, GMW8, GMW9, GMW17 and GMW18. The carbon dioxide levels in GMW10 have continued to vary throughout the year. However, no control or Trigger Levels have been derived for these monitoring locations as they are not required by the permit [1].

With the changes in concentrations occurring in different valves, the readings for the first quarter of 2020 should be closely monitored to determine if these remain consistent.

As stated by Golder Associates (Ref. [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. Considering the ongoing exceedances in GMW14/14A this well needs to be investigated further. It is recommended that a technical note is prepared which includes a review of the conceptual site model and gas results.

Gas monitoring will continue in accordance with the agreed programme and the relevant Permit conditions.

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.

Following an annual review of the data, it is recommended that the following will be investigated further;

- The continual high levels of ammoniacal nitrogen concentration within the leachate samples and the 2.32m reduction in leachate head monitoring this quarter within LC5A. Considering well LC5A has been damaged during the past quarter, 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.
- Groundwater level monitoring in GW7 as there was a 5.4m drop in level recorded in the fourth quarter, but it is likely due to an error in the data and will be further reviewed next quarter.
- The ongoing carbon dioxide gas exceedances in GMW14/14A. It is recommended that a technical note is prepared which includes a review of the conceptual site model and gas results.

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 Second Third Monitoring Report, 30th September 2020.
- [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 (Dec 2013 - Dec 2020)

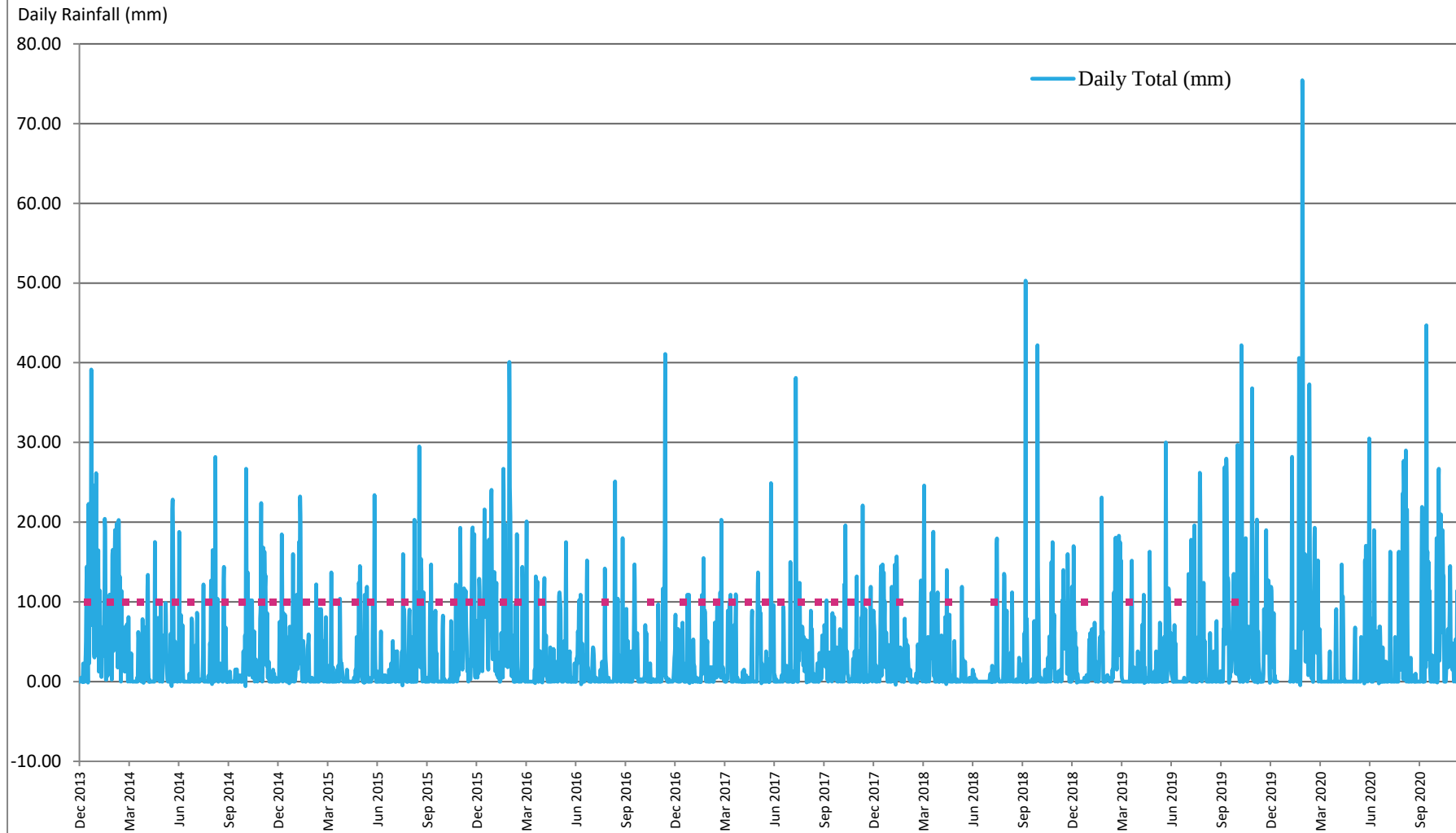


Figure A2
Monthly rainfall totals (Jan 2014 - Dec 2020)

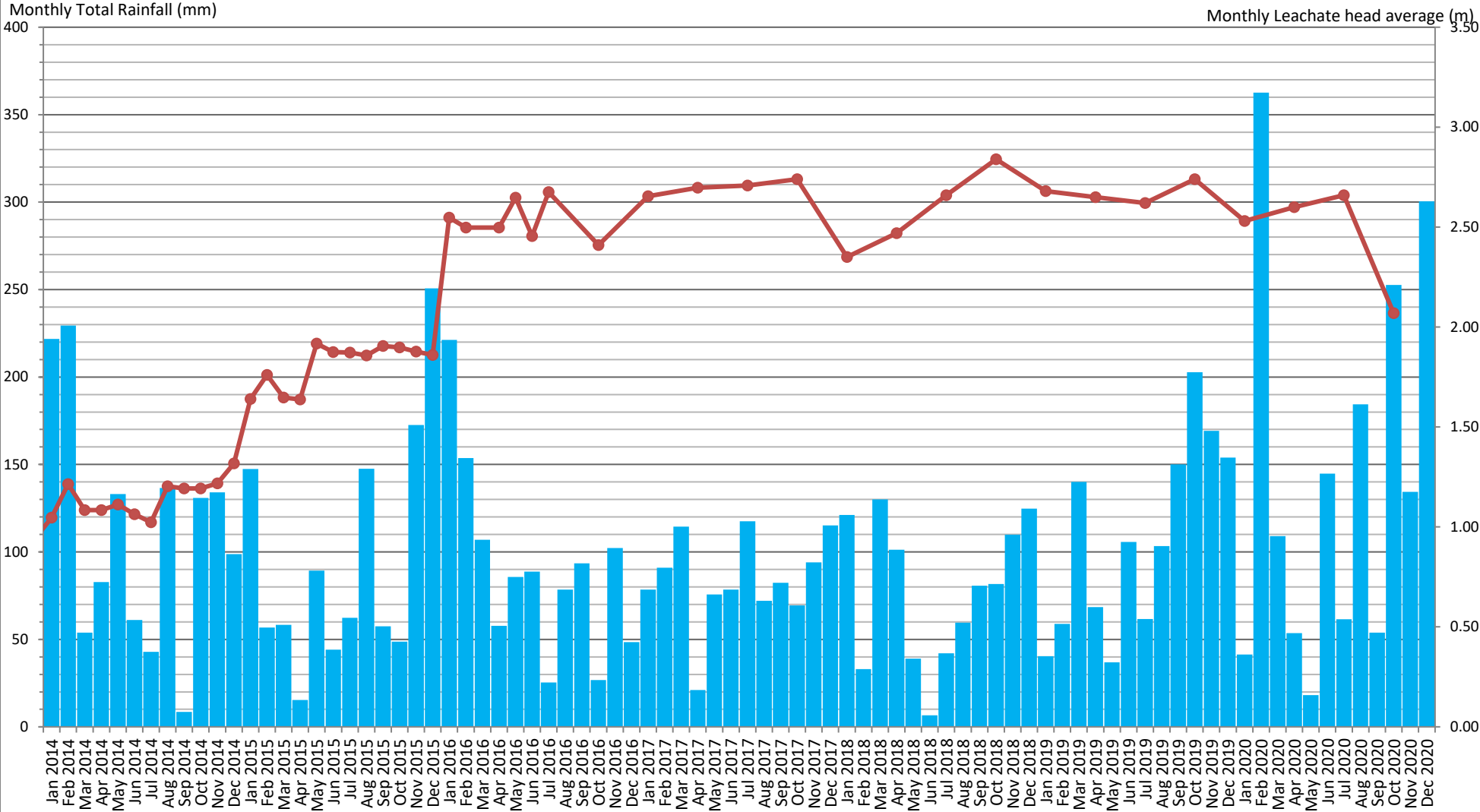


Figure A3
Monthly total rainfall (Jan 2014 - Dec 2020)

Monthly Total Rainfall (mm)

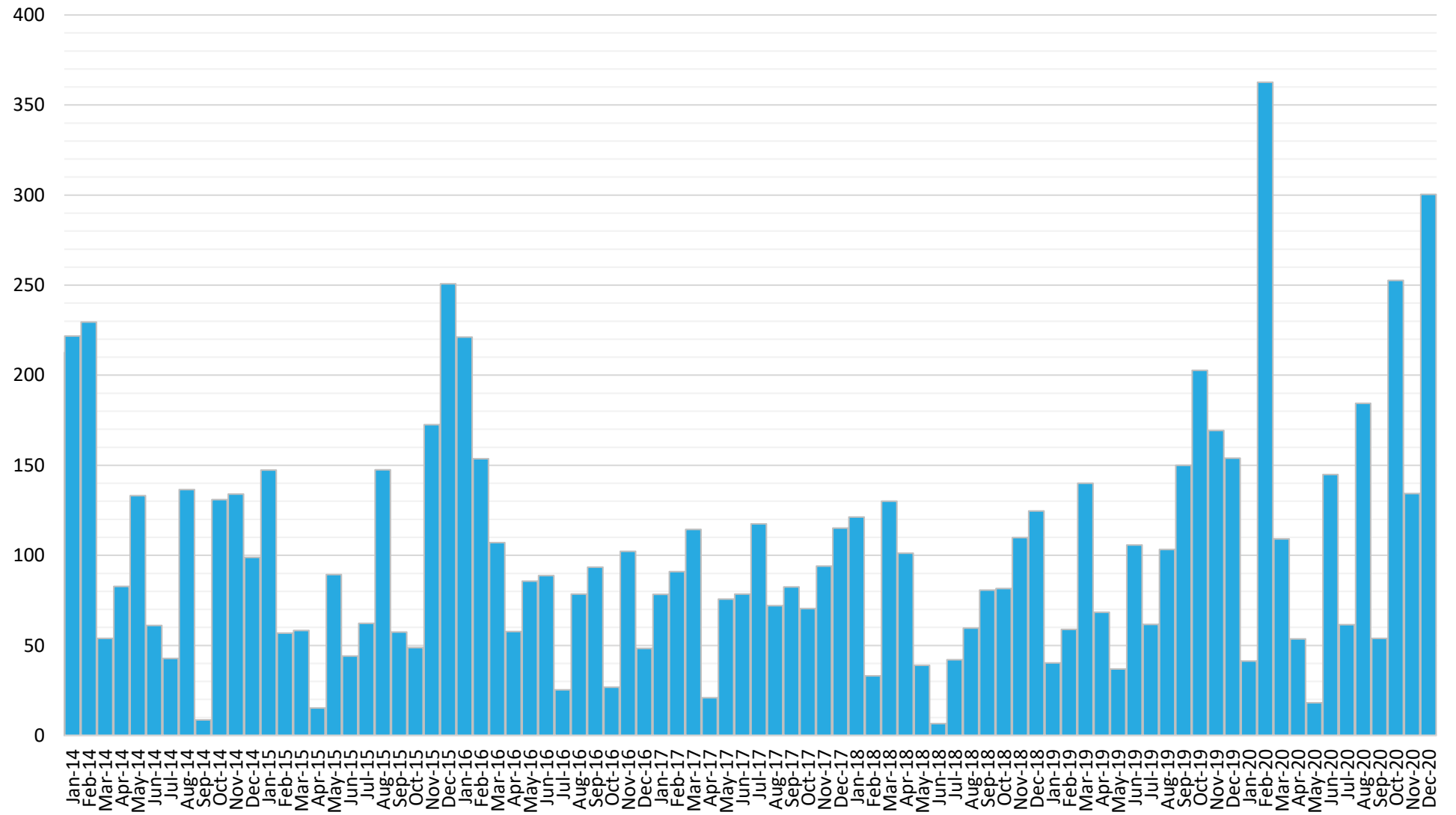


Figure A4
Surface water monitoring graphs

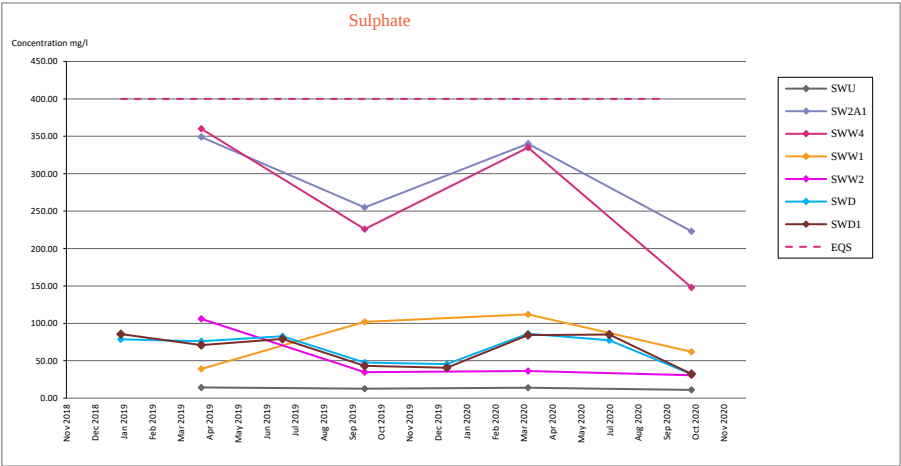
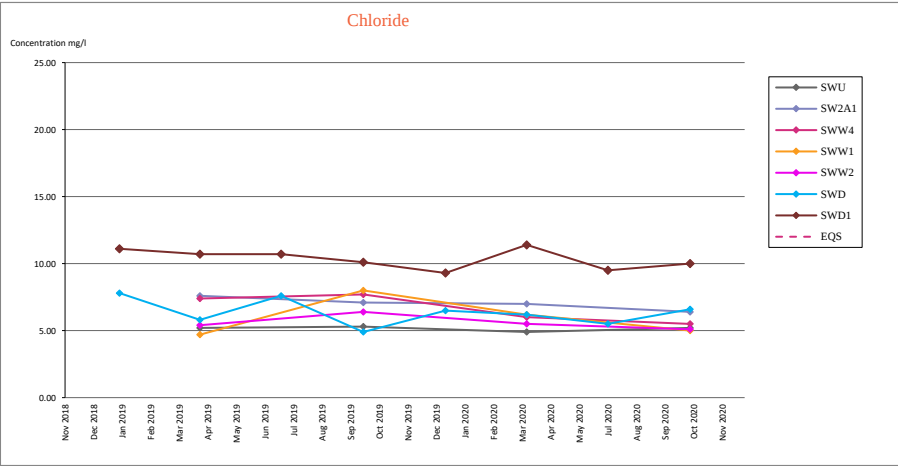
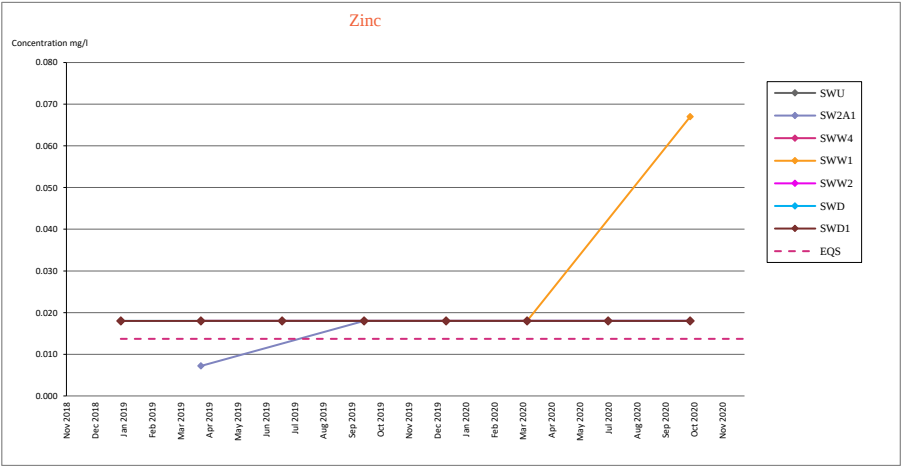
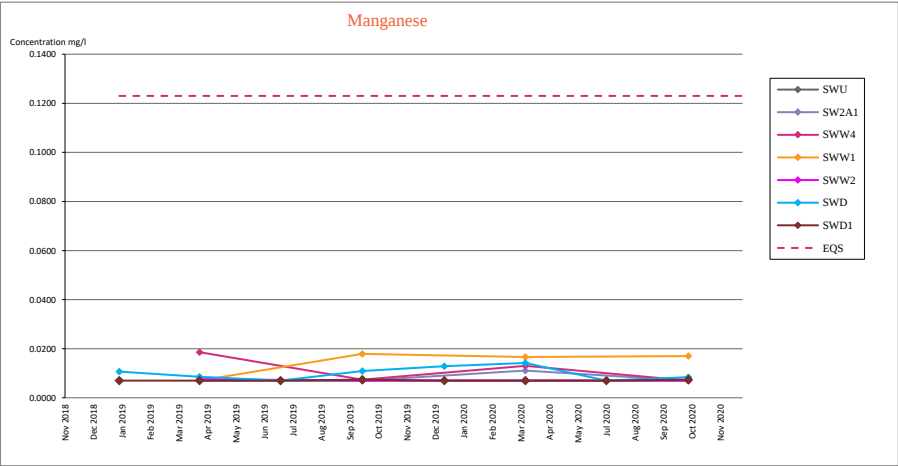


Figure A4
Surface water monitoring graphs

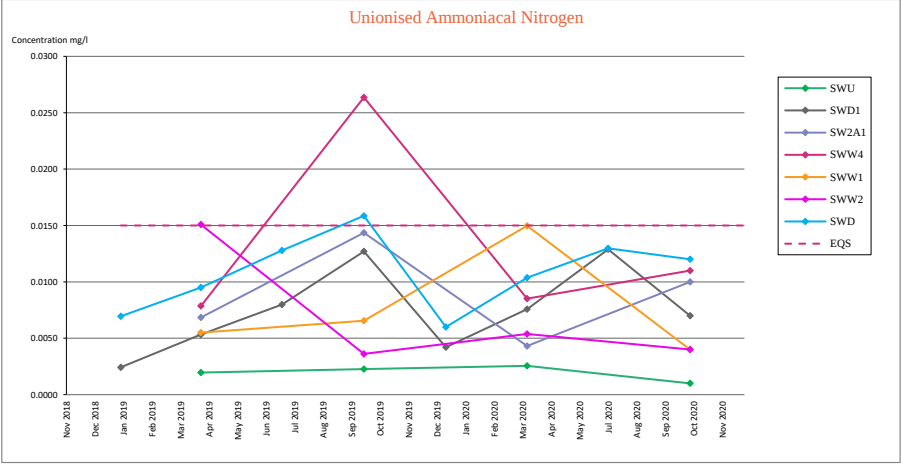
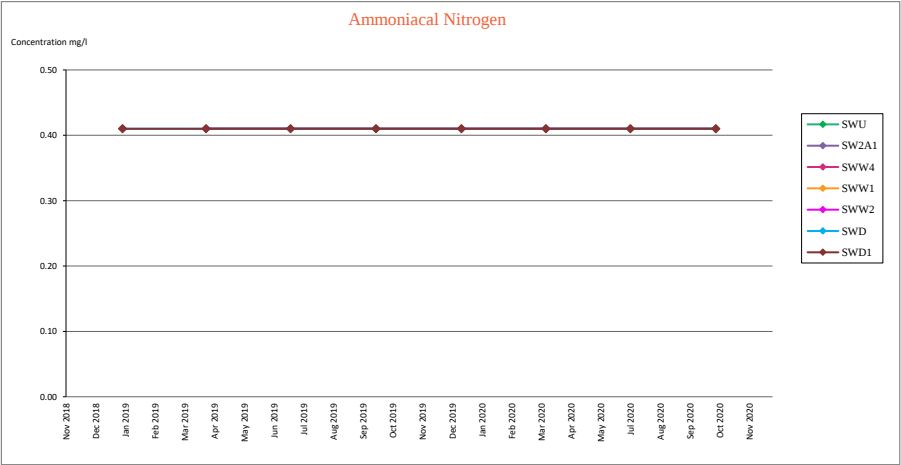


Figure A5
Groundwater quality monitoring results - Compliance wells graphs

Compliance wells graphs

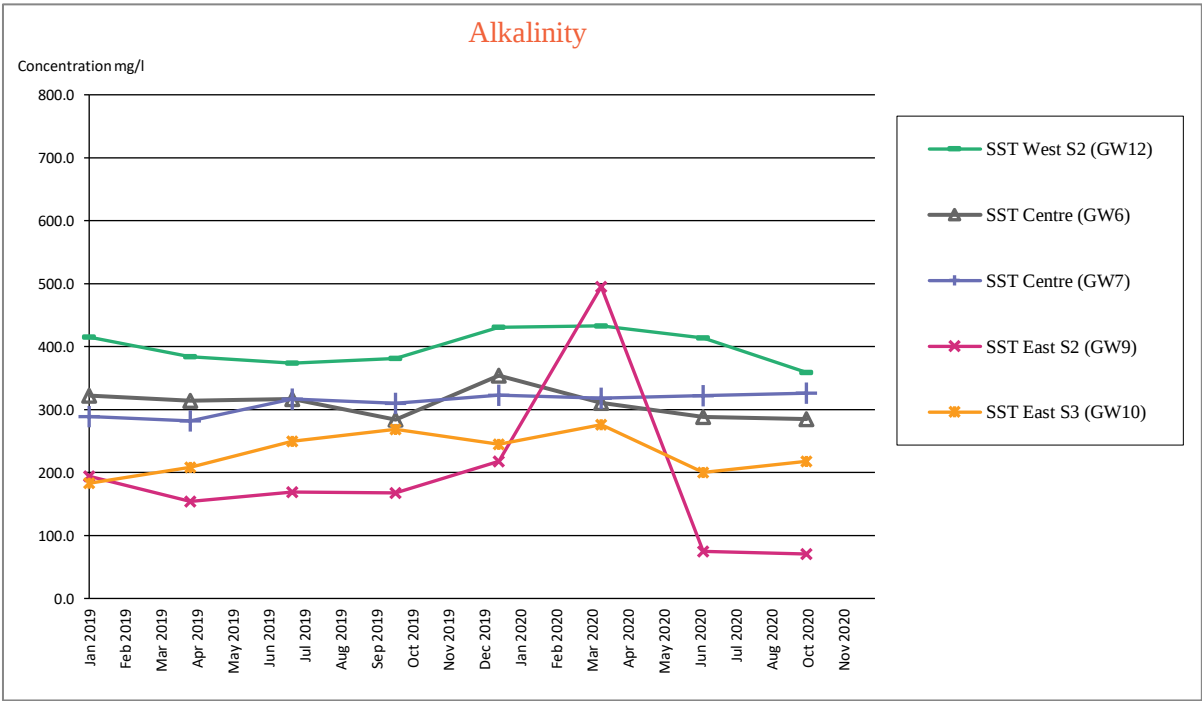
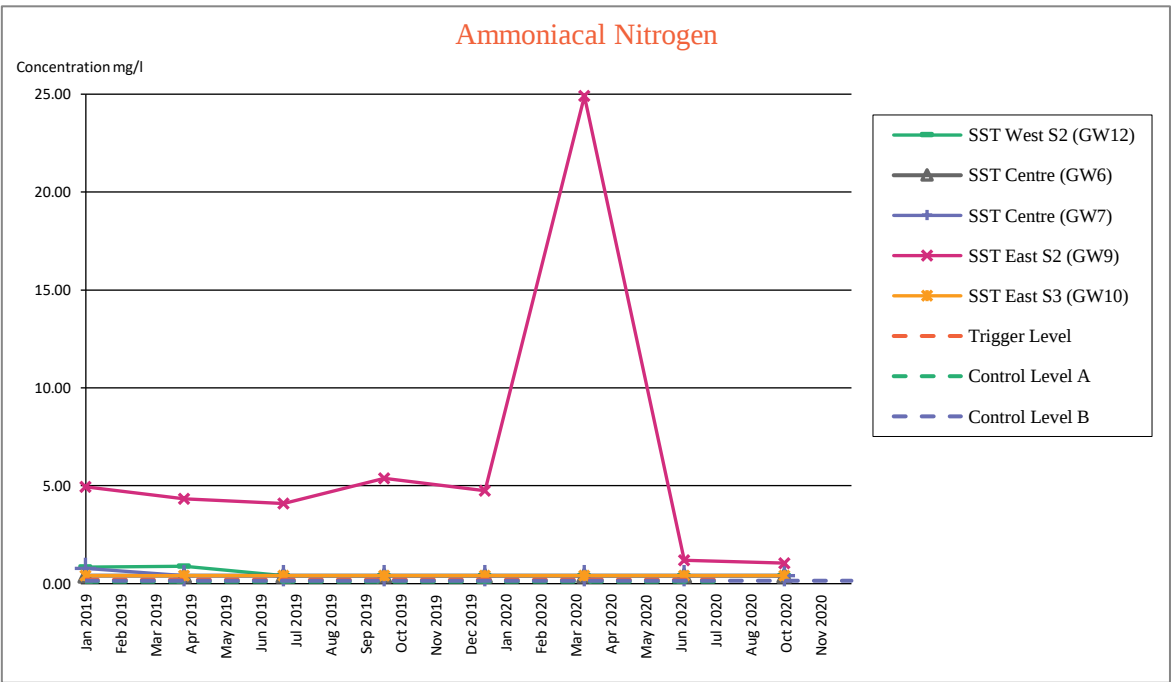
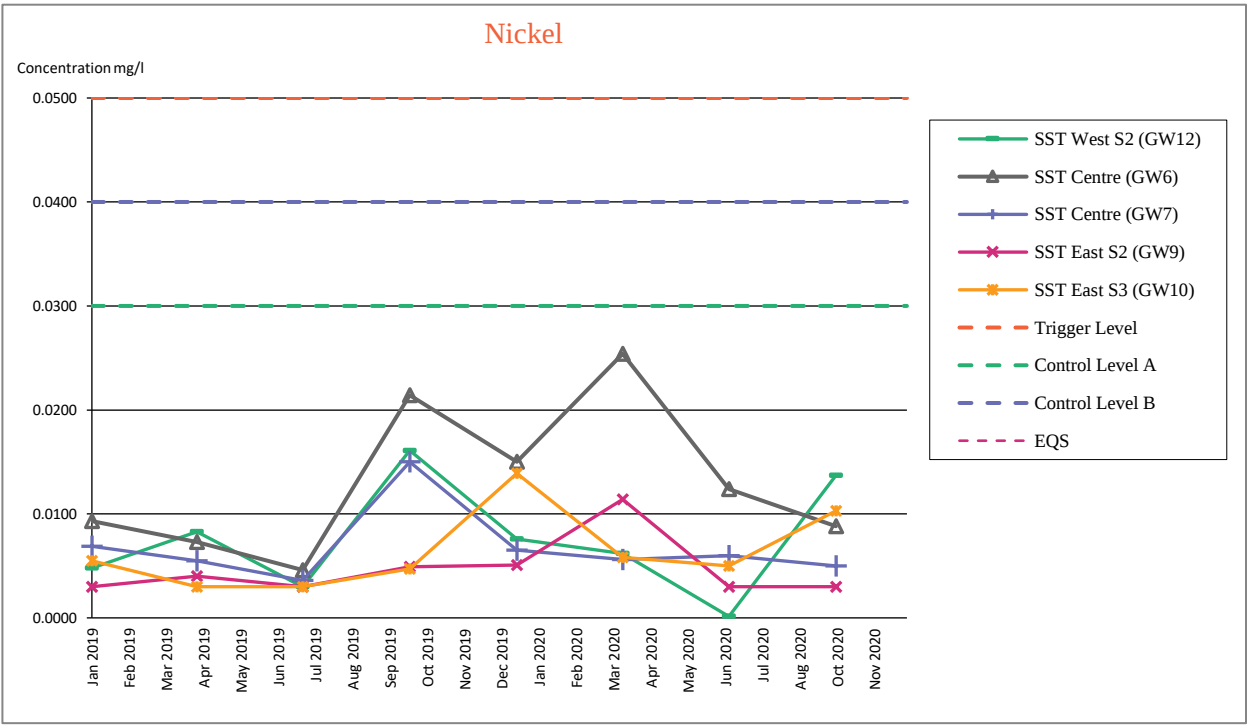
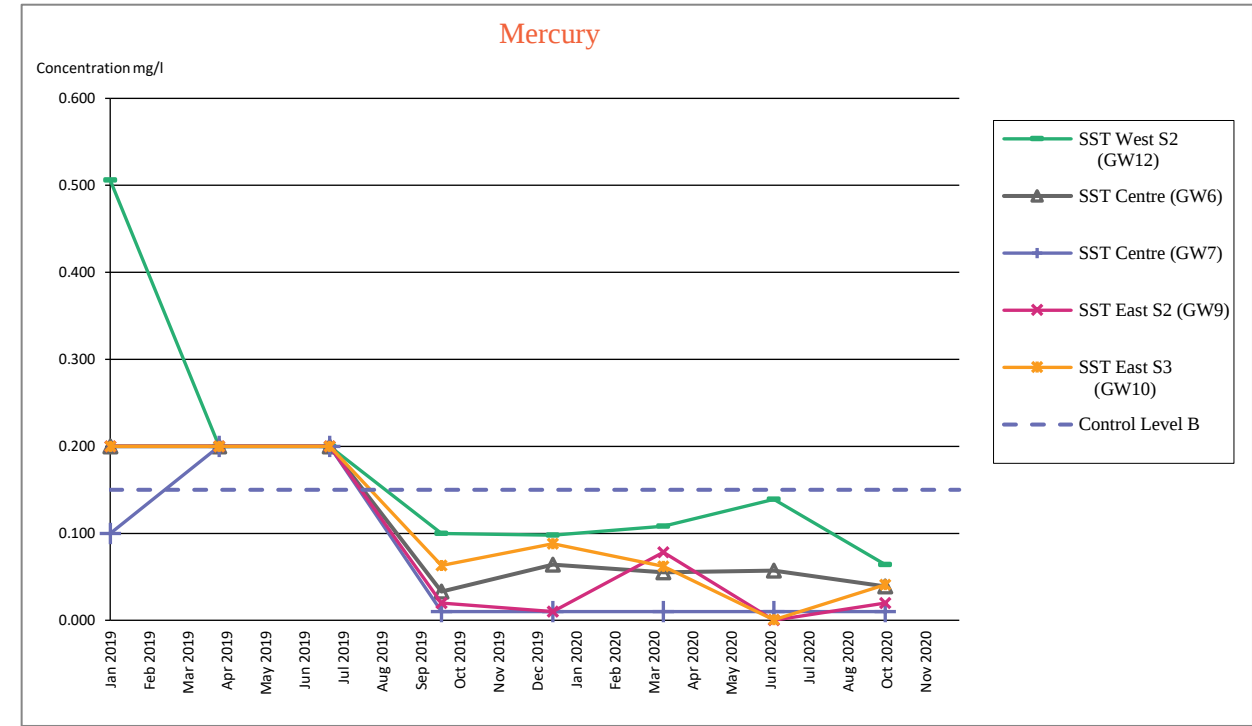


Figure A5
Groundwater quality monitoring results - Compliance wells graphs

Compliance wells graphs

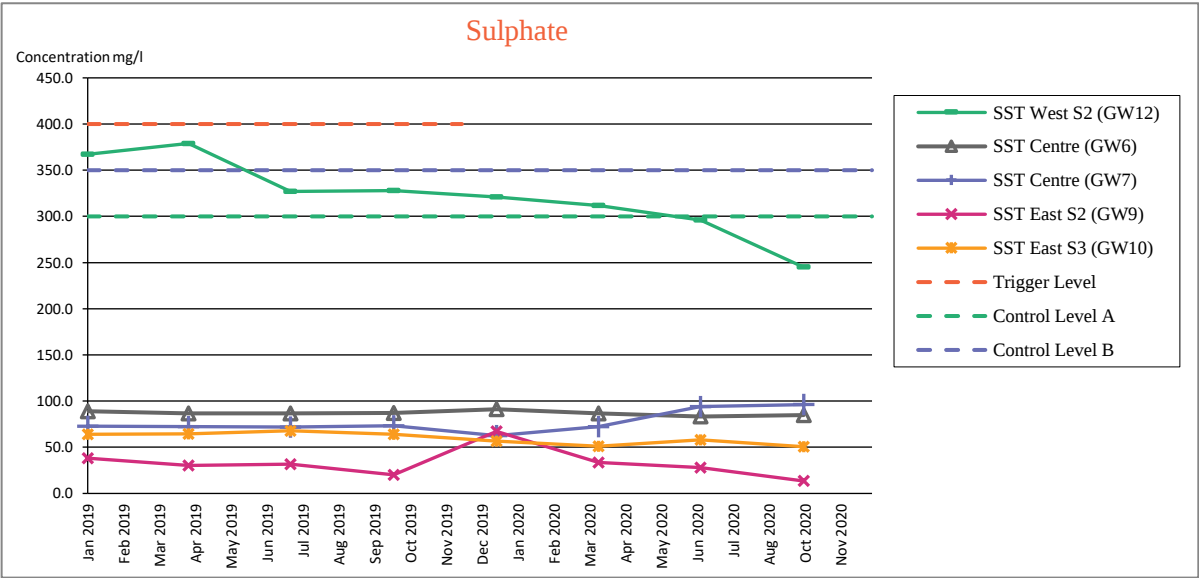
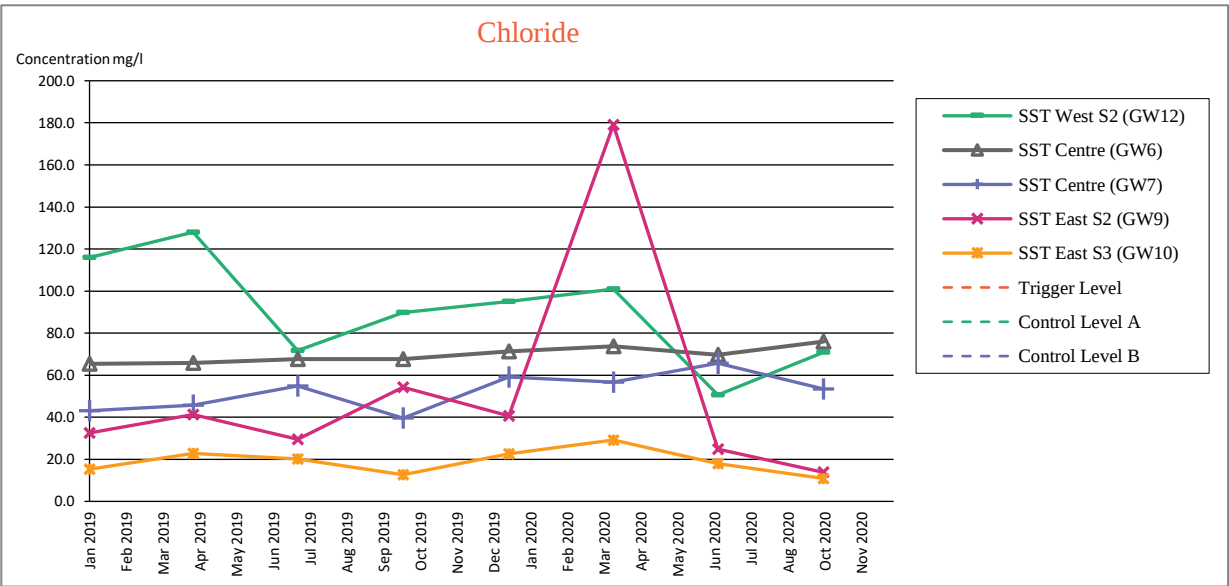
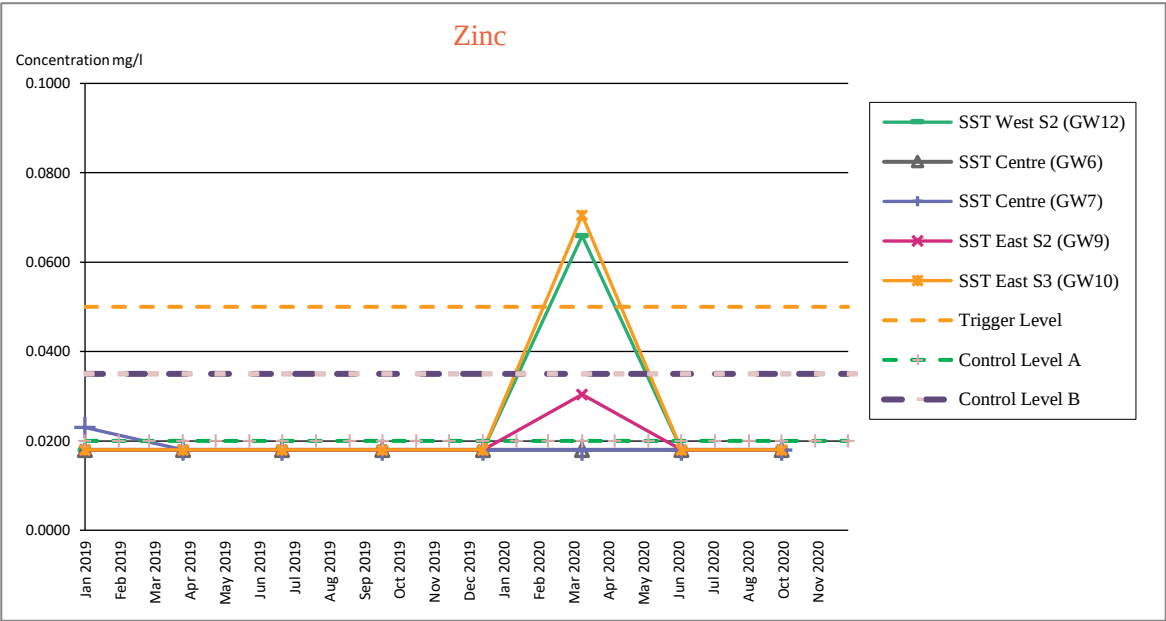
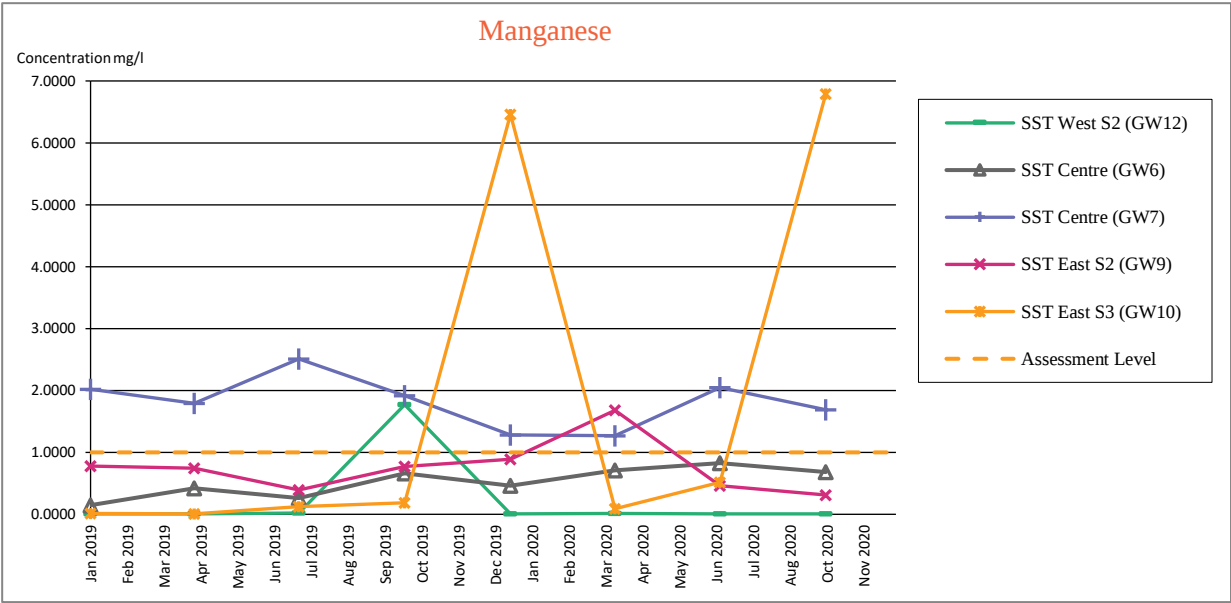
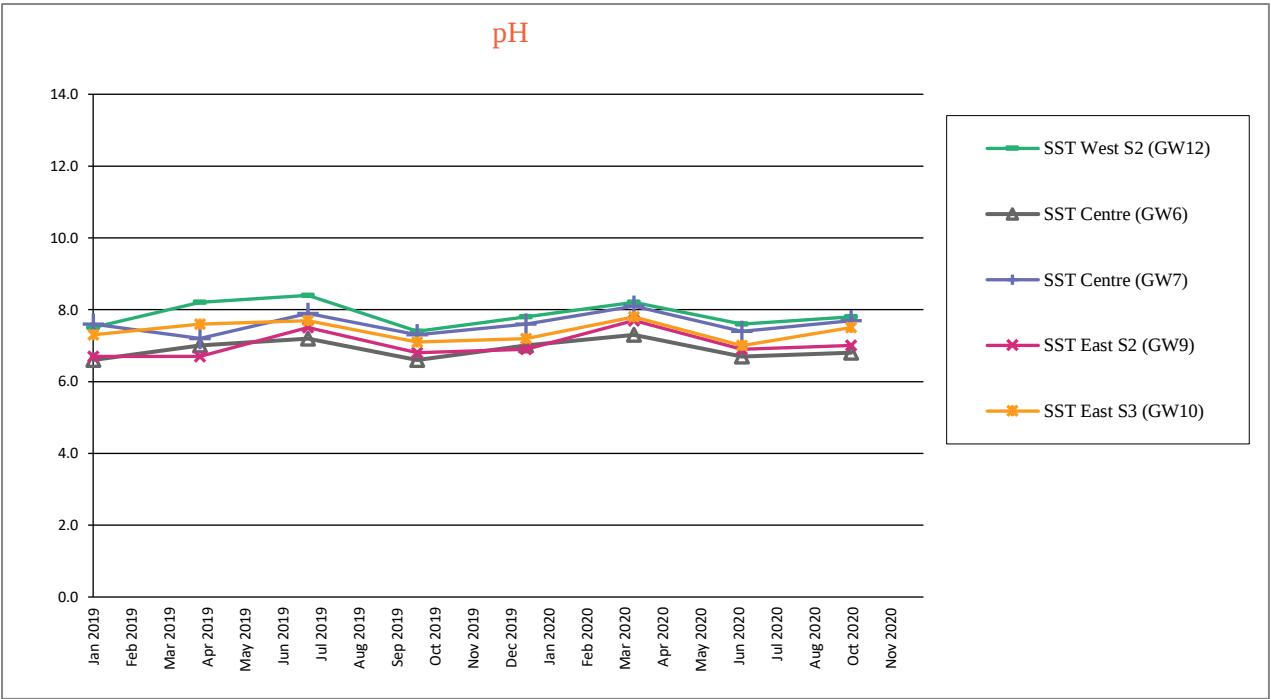


Figure A5
Groundwater quality monitoring results - Compliance wells graphs

Compliance wells graphs



Groundwater quality monitoring results - Upstream wells graphs

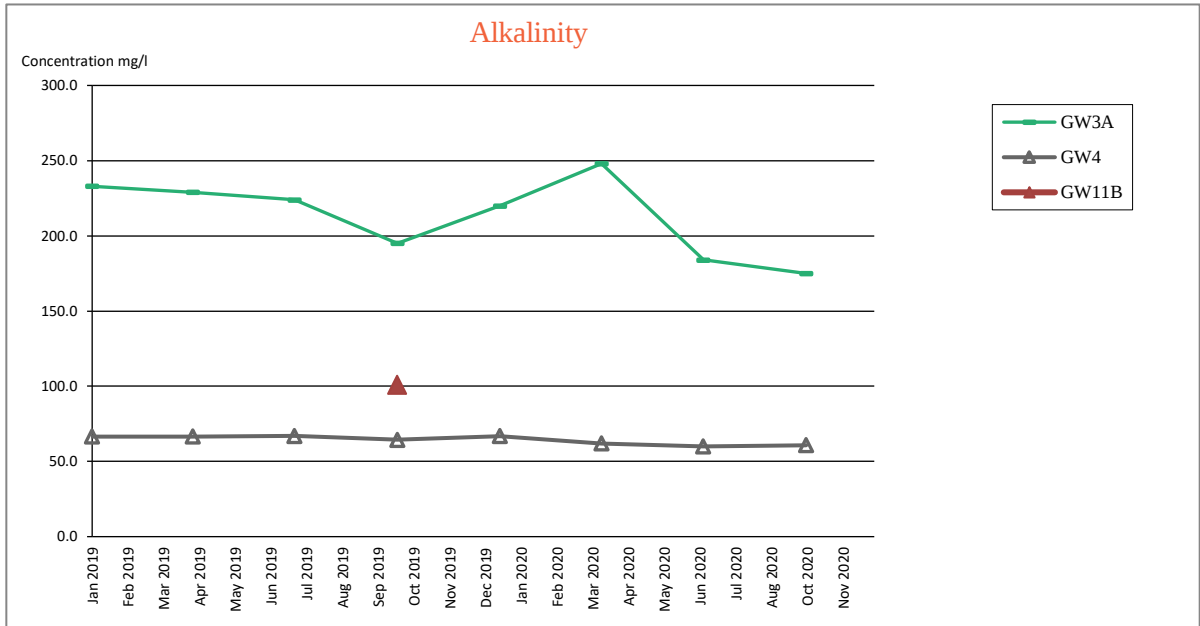
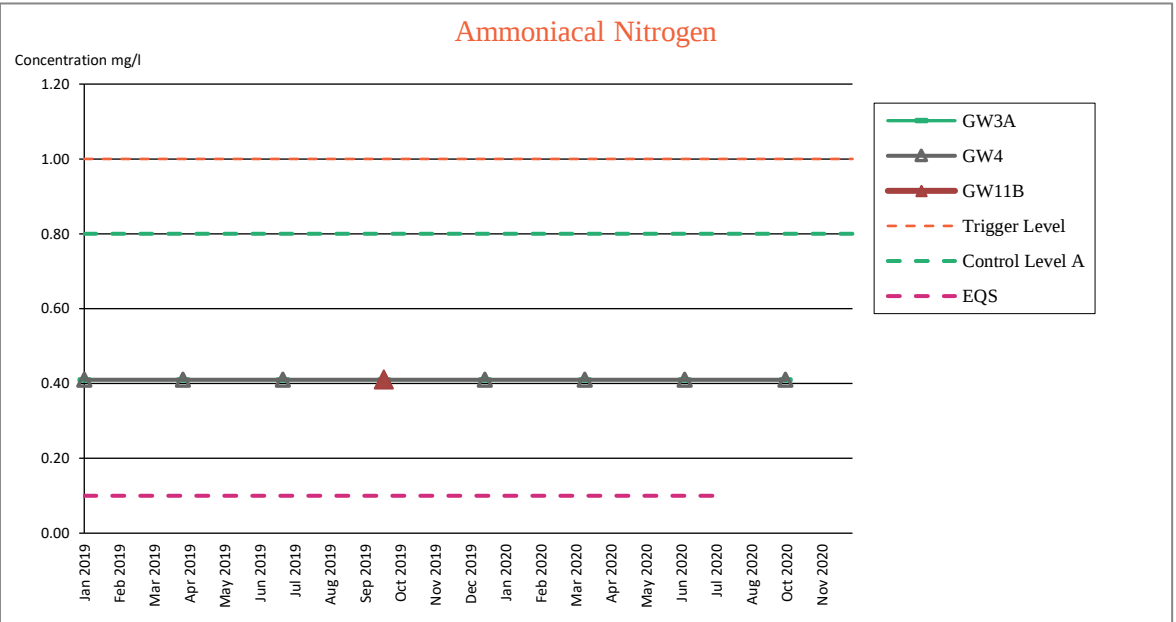
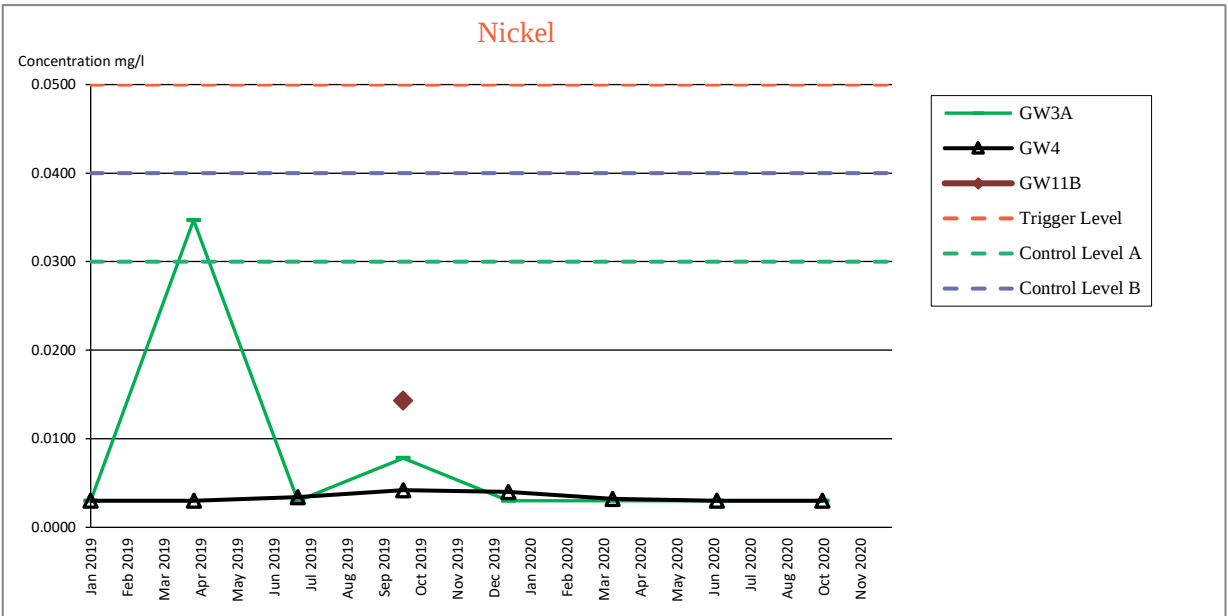
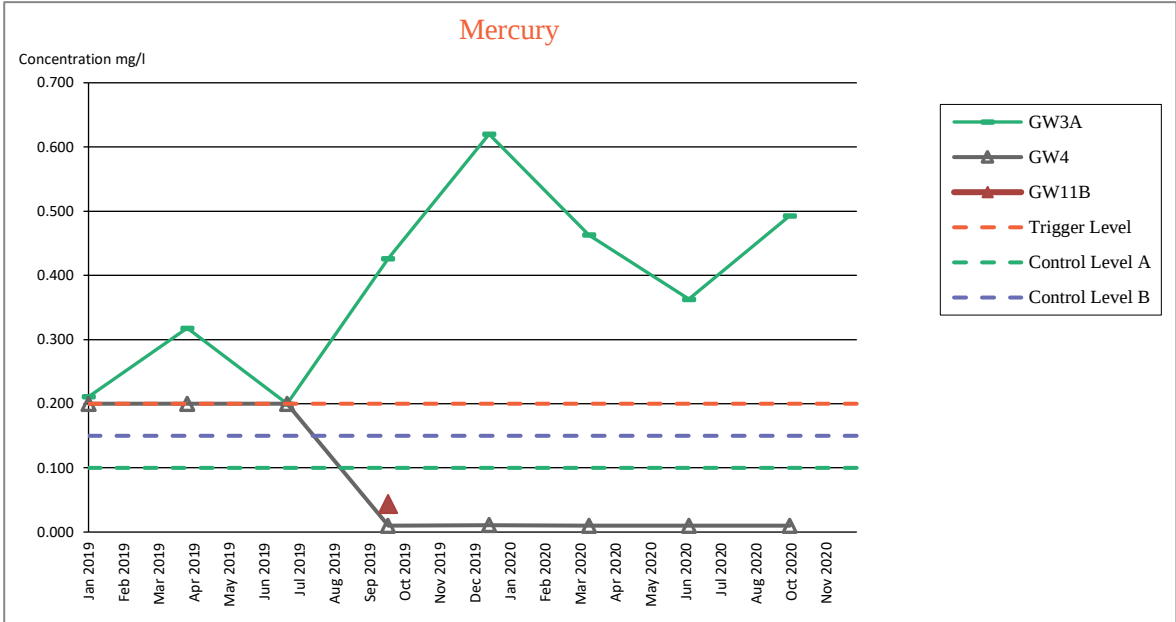


Figure A6
Groundwater quality monitoring results - Upstream wells graphs

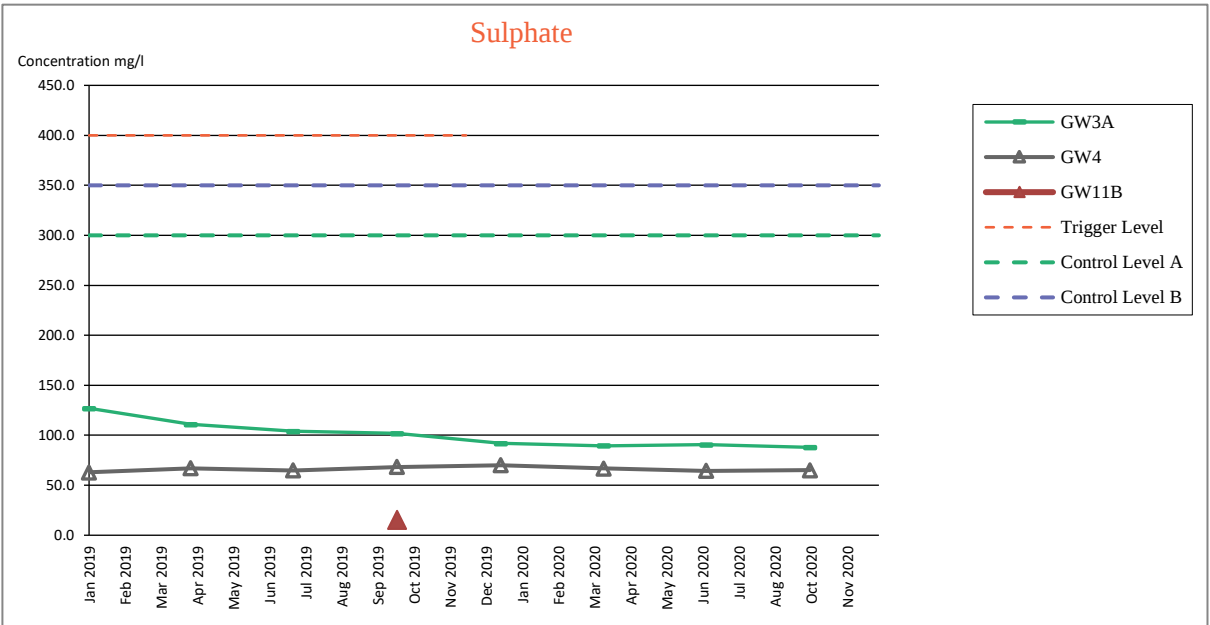
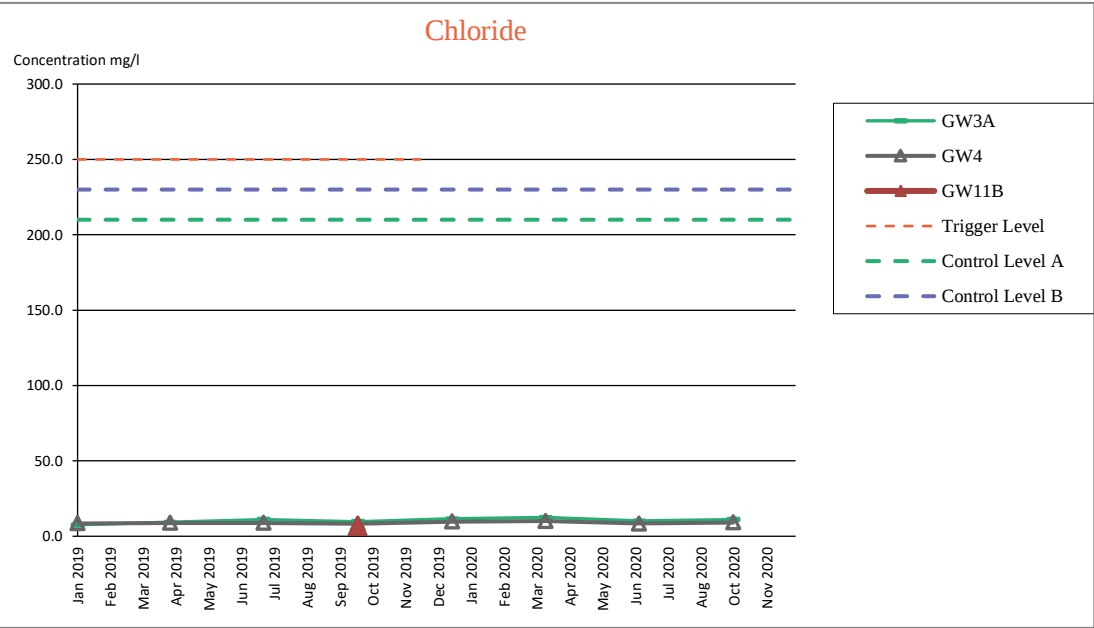
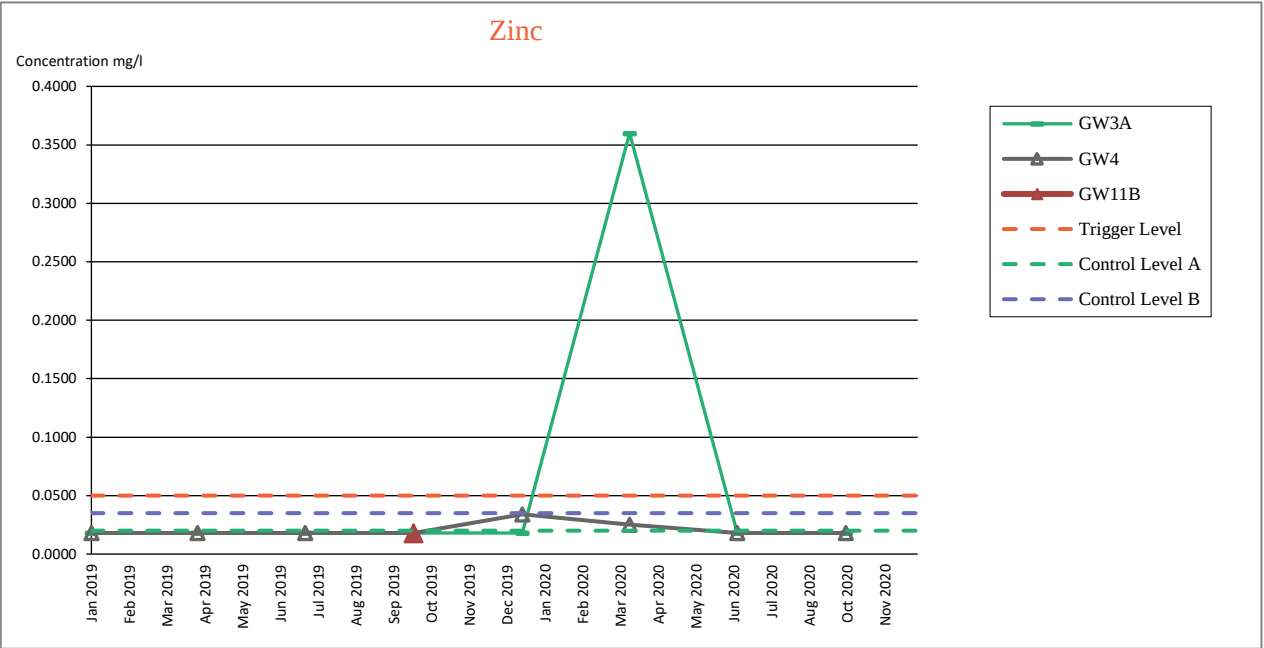
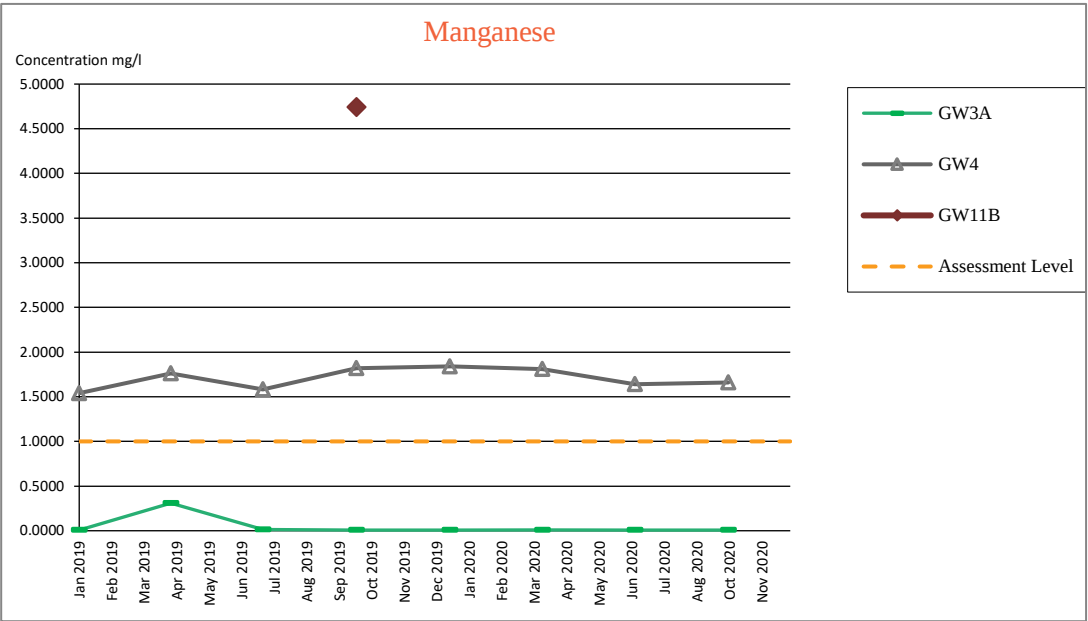


Figure A6
Groundwater quality monitoring results - Upstream wells graphs

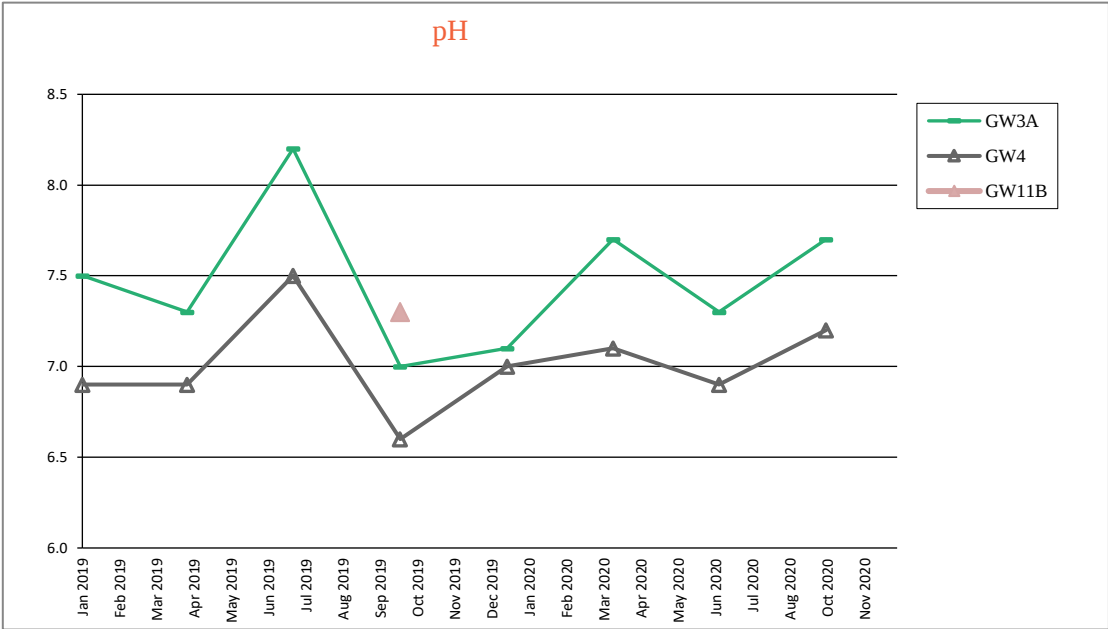
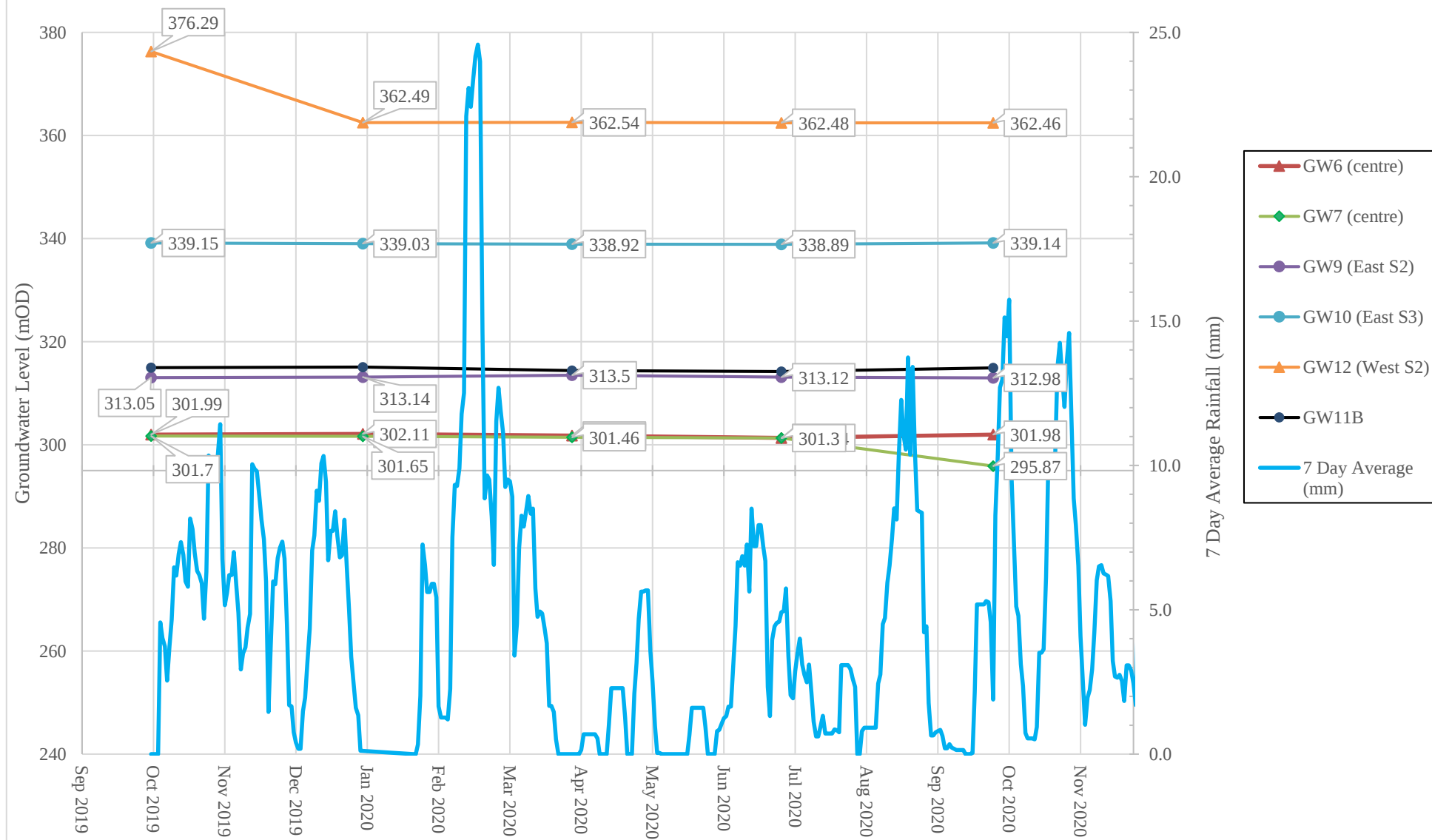


Figure A7
Groundwater monitoring levels downstream of compliance wells



Appendix B

Monitoring Results - Tables

Appendix B
Table B1
Leachate Monitoring Results

October 2020													
LOCATION	Units	L1A	L1B	LC1A	LC2A	LC4A	LC5A	Maximum concentration (mg/l)	Average concentration (mg/l)	Acceptable Maximum Concentration (AMC) (mg/l)	LP3A	LP4	
Date Sampled	-												
Manganese in filtrate as Mn	mg/l	N/S	0.347	N/S	0.124	0.775	N/S	0.775	0.4153	--	0.0158	0.0458	
Mercury, filt trace as Hg	mg/l	N/S	< 0.0002	N/S	< 0.0002	< 0.0002	N/S	0.000	0.0002	0.00056	< 0.0002	< 0.0002	
Nickel in filtrate as Ni	mg/l	N/S	0.0133	N/S	0.115	0.0077	N/S	0.115	0.0453	0.0681	0.0039	0.0037	
Zinc, ultra-low filtered as Zn	mg/l	N/S	< 0.018	N/S	1.67	1.67	N/S	1.670	1.1193	1.38	< 0.018	< 0.018	
pH	pH Units	N/S	8.1	N/S	8.3	7.5	N/S	8.300	7.97	--	8.4	8.2	
Conductivity- Electrical 20C	uS/cm	N/S	2290	N/S	11000	3980	N/S	11000	5756.666667	--	1220	1190	
Alkalinity as CaCO3	mg/l	N/S	519	N/S	5600	2390	N/S	5600	2836.3	--	362	437	
Ammoniacal Nitrogen as N	mg/l	N/S	2.71	N/S	781	272	N/S	781	351.903	526	< 0.41	1.97	
Chloride as Cl	mg/l	N/S	244	N/S	907	204	N/S	907	451.7	1408	96.4	64.4	
Sulphate as SO4	mg/l	N/S	496	N/S	443	15	N/S	496	318.000	999	191	168	
Redox Potential ¹ (see note 4)	mV	N/S	40	N/S	24	-18	N/S	40	15.3	--	-42	-55	
Total Suspended Solids	mg/l	N/S	16	N/S	1990	1990	N/S	1990	1332.0		3	2	
Solids, Total Dissolved 180 deg C	mg/l	N/S	1750	N/S	5160	1750	N/S	5160	2886.666667		885	857	
Dissolved Oxygen, Fixed	mg/l	N/S	< 0.5	N/S	< 0.5	< 0.5	N/S	0.5	0.50		< 0.5	< 0.5	
TOC (filtered)	mg/l	N/S	23.3	N/S	285	54.9	N/S	285	121.1		11.9	9	

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.
 - NS denotes 'not sampled'.
- No monthly average leachate levels above Maximum Acceptable Concentration (MAC)

Exceedance of AMC for well concentration
Exceedance of AMC for Average Concentration

Table B2
Leachate Head Levels

		Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20
LC1A	Elevation of base of landfill mAOD	357.62			357.62			357.62			357.62		
	Elevation at top of casing mAOD	398.85			398.85			398.85			398.85		
	Depth to leachate from top of casing (m)	40.34			40.30			40.35			40.37		
	Leachate elevation (mAOD)	358.51			358.55			358.50			358.48		
	Calculated leachate head (m)	0.89			0.93			0.88			0.86		
LC2A	Elevation of base of landfill mAOD	362.49			362.49			362.49			362.49		
	Elevation at top of casing mAOD	401.12			401.12			401.12			401.12		
	Depth to leachate from top of casing (m)	35.75			35.63			35.73			35.80		
	Leachate elevation (mAOD)	365.37			365.49			365.39			365.32		
	Calculated leachate head (m)	2.88			3.00			2.90			2.83		
LC4A	Elevation of base of landfill mAOD	372.27			372.27			372.27			372.27		
	Elevation at top of casing mAOD	401.14			401.14			401.14			401.14		
	Depth to leachate from top of casing (m)	26.86			26.87			26.90			26.86		
	Leachate elevation (mAOD)	374.28			374.27			374.24			374.28		
	Calculated leachate head (m)	2.01			2.00			1.97			2.01		
LC5A	Elevation of base of landfill mAOD	350.14			350.14			350.14			350.14		
	Elevation at top of casing mAOD	380.75			380.75			380.75			380.75		
	Depth to leachate from top of casing (m)	26.26			26.13			25.72			28.04		
	Leachate elevation (mAOD)	354.49			354.62			355.03			352.71		
	Calculated leachate head (m)	4.35			4.48			4.89			2.57		
L1	Casing height (mAOD)	357.00			357.00			357.00			357.00		
	Leachate (mbgl)	21.01			21.01			21.01					
	Leachate (m AOD)	335.99			335.99			335.99			-		
	Base of landfill (m AOD)	336.80			336.80			336.80			336.80		
	Depth of well from top of casing (m)	21.03			21.03			21.04					
	Base of well (m AOD)	335.97			335.97			335.96			357.00		
L1A*	Calculated leachate head (m)	-0.81			-0.81			-0.81					
	Casing height (mAOD)	355.79			355.79			355.79			355.79		
	Leachate (mbgl)	20.84			19.90			20.68			20.88		
	Leachate (m AOD)	334.95			335.89			335.11			334.91		
	Base of landfill (m AOD)	316.64			316.64			316.64			316.64		
	Depth of well from top of casing (m)	20.91			20.93			20.93			20.88		
L1B*	Base of well (m AOD)	334.88			334.84			334.88			334.84		
	Calculated leachate head (m)	18.31			19.25			18.47			18.27		
	Casing height (mAOD)	354.80			354.80			354.80			354.80		
	Leachate (mbgl)	24.32			25.05			25.45			24.73		
	Leachate (m AOD)	330.48			329.75			329.35			330.07		
	Base of landfill (m AOD)	319.60			319.60			319.60			319.60		
L1B*	Depth of well from top of casing (m)	34.86			34.86			34.88			34.86		
	Base of well (m AOD)	319.94			319.34			319.94			319.34		
	Calculated leachate head (m)	10.88			10.15			9.75			10.47		
	Casing height (mAOD)												
	Leachate (mbgl)												
	Leachate (m AOD)												

2019	Quarterly Leachate Head Averages (m)
January	2.53
February	N/S
March	N/S
April	2.60
May	N/S
June	N/S
July	2.66
August	N/S
September	N/S
October	2.07
November	N/S
December	N/S

Minimum monthly leachate head average
Maximum monthly leachate head average

- Notes:
Top of casings were re-surveyed in August 2019
- LC1A top of casing is 1710mm above ground level.
 - LC2A top of casing is 820mm above GL.
 - LC4A top of casing is 1040mm above GL.
 - 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 µg/l	Redox Potential mV	Manganese in filtrate as Mn mg/l	Nickel in filtrate as Ni mg/l	Bioavailable Ni mg/l	Zinc, ultra- low total as Zn mg/l	Bioavailable Zn mg/l	pH	Conductivity- Electrical 20°C µS/cm	Alkalinity as CaCO ₃ mg/l	Ammoniacal Nitrogen as N mg/l	Unionised Ammoniacal Nitrogen ** mg/l	Measured surface water °C	Chloride as Cl mg/l	Sulphate as SO ₄ mg/l	Solids, Suspended mg/l	Dissolved oxygen mg/l	TOC (Filtered) mg/l	Calcium mg/l
Freshwater EQS**			1	-	0.123	0.004	0.004	0.0137	0.0137	-	-	-	-	0.015**	-	250	400	-	-	-	-
J a n u a r y	Upstream of Landfill	SWU SW2A1 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	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	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 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	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	SWD SWD1	20/01/2020 20/01/2020	< 0.01 < 0.01	-15.00 < -10.00	0.0129 < 0.0070	0.0031 0.0030	< 0.0180 < 0.018		8.00 7.90	201.00 203.00	53.20 53.40	< 0.41 < 0.41	0.0060 0.0042	6.9 5.3	6.50 9.30	45.40 40.50	2.00 4.00	11.50 11.70	1.30 1.30	25.5 22
F e b r u a r y	Upstream of Landfill	SWU SW2A1 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	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	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 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	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	SWD 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
M a r c h	Upstream of Landfill	SWU SW2A1 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	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	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 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	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	SWD 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
A p r i l	Upstream of Landfill	SWU SW2A1 SWW4	20/04/2020 20/04/2020 20/04/2020	< 0.01 0.023 < 0.01	153 180 158	< 0.0070 0.0113 0.013	< 0.0030 < 0.0030 < 0.0030	< 0.018 0.044 < 0.018		7.6 7.8 8.1	81.6 809 833	16.8 91.2 102	< 0.41 < 0.41 < 0.41	0.0026 0.0043 0.0085	7.80 8.70 8.70	4.9 7 6	14 340 335	2 250 5	9.1 11 8.9	<0.7 8.1 8.3	6.15 116 113
	NW Ditch System	SWW1 SWW2	20/04/2020 20/04/2020	< 0.01 < 0.01	150 139	0.0166 < 0.0070	< 0.0030 < 0.0030	< 0.018 < 0.018		8.3 7.9	400 166	95 37.2	< 0.41 < 0.41	0.0150 0.0054	10.30 8.60	6.2 5.5	112 36.3	5 2	11.2 10.2	1.4 <0.7	38.7 15.1
				< 0.01 < 0.01	157 160	0.0142 < 0.0070	< 0.0030 < 0.0030	< 0.018 < 0.018		8.2 8.1	339 328	94.8 76.4	< 0.41 < 0.41	0.0104 0.0076	8.30 7.10	6.2 11.4	86.1 84.3	10 2	12.7 11.4	1.3 1.7	42.7 36.6
	Downstream of Landfill	SWD SWD1	20/04/2020 20/04/2020	< 0.01 < 0.01	157 160	0.0142 < 0.0070	< 0.0030 < 0.0030	< 0.018 < 0.018		8.2 8.1	339 328	94.8 76.4	< 0.41 < 0.41	0.0104 0.0076	8.30 7.10	6.2 11.4	86.1 84.3	10 2	12.7 11.4	1.3 1.7	42.7 36.6
				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	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
M a y	Upstream of Landfill	SWU SW2A1 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	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	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 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	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	SWD 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
J u n e	Upstream of Landfill	SWU SW2A1 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	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	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 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	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	SWD 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
J u l y	Upstream of Landfill	SWU SW2A1 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	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	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 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	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	SWD SWD1	21/07/2020 21/07/2020	< 0.01 < 0.01	87 95	< 0.0070 < 0.0070	< 0.0030 < 0.0030	< 0.018 < 0.018		8.20 8.20	297.00 325.00	84.80 88.0000	< 0.41 < 0.41	0.0130 0.0129	11.40 11.30	5.50 9.50	77.40 85.00	10.00 8	10.50 10.1	1.30 1.9	36.10 38.5

Table B3
Surface Water Monitoring Results

Month	Location	Date	Mercury, ultra-low total as Hg	Redox Potential	Manganese in filtrate as Mn	Nickel in filtrate as Ni	Bioavailable Ni	Zinc, ultra- low total as Zn	Bioavailable Zn	pH	Conductivity- Electrical 20°C	Alkalinity as CaCO ₃	Ammoniacal Nitrogen as N	Unionised Ammoniacal Nitrogen **	Measured surface water	Chloride as Cl	Sulphate as SO ₄	Solids, Suspended	Dissolved oxygen	TOC (Filtered)	Calcium
			ug/l	mV	mg/l	mg/l	mg/l	mg/l	mg/l		uS/cm	mg/l	mg/l	mg/l	°C	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
A u g u s t	Upstream of Landfill	SWU	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
		SW2AI	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	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	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
		SWW2	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	SWD	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
		SWD1	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
S e p t e m b e r	Upstream of Landfill	SWU	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
		SW2AI	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	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	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
		SWW2	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	SWD	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
		SWD1	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
O c t o b e r	Upstream of Landfill	SWU	<	0.01	80.00	<	0.007	<	0.018	7.30	65.40	13.40	<	0.41	0.001	5.20	11.00	1.00	9.70	<0.7	4.52
		SW2AI	<	0.01	64.00	<	0.007	<	0.018	8.10	616.00	94.40	<	0.41	0.010	6.40	223.00	8.00	7.70	4.40	90.60
		SWW4	<	0.01	44.00	<	0.007	<	0.018	8.20	498.00	110.00	<	0.41	0.011	5.50	148.00	1.00	7.70	5.60	72.30
	NW Ditch System	SWW1	<	0.01	57.00	<	0.017	<	0.067	7.70	280.00	85.60	<	0.41	0.004	5.00	61.80	25.00	7.70	2.80	35.70
		SWW2	<	0.01	69.00	<	0.007	<	0.018	7.70	169.00	44.40	<	0.41	0.004	5.10	30.60	2.00	6.90	<0.7	19.10
	Downstream of Landfill	SWD	<	0.01	140.00	<	0.0084	<	0.018	8.20	240.00	94.00	<	0.41	0.012	6.60	32.10	2.00	9.10	2.20	36.80
		SWD1	<	0.01	85.00	<	0.0074	<	0.018	8.00	208.00	65.20	<	0.41	0.007	10.00	32.30	4.00	8.70	2.40	26.40
N o v e m b e r	Upstream of Landfill	SWU	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
		SW2AI	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	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	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
		SWW2	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	SWD	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
		SWD1	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
D e c e m b e r	Upstream of Landfill	SWU	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
		SW2AI	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	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	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
		SWW2	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	SWD	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
		SWD1	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	-15.0	<	0.007	<	0.0180	7.3	65.4	13.40	<	0.41	0.0026	5.30	4.90	1.00	6.90	1.30	4.52
Maximum			<	0.0230	180.0	<	0.017	<	0.0673	8.3	833.0	110.00	<	0.41	0.01	11.40	11.40	340.00	250.00	12.70	116.00

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 ^a)		0.05	(0.05 ^a)	--	--	--	1	--	--	250	400	--	--	--
	Control Level A				(0.1 ^{aa})	--	0.03	(0.02 ^{aa})	--	--	--	0.8	--	--	210	300	--	--	--
	Control Level B				(0.15 ^{aa})	--	0.04	(0.035 ^{aa})	--	--	--	0.9	--	--	230	350	--	--	--
	Assessment Level				--	(1.0 ^a)	--	--	--	--	--	--	--	--	--	--	--	--	--

SPSTREAM 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																							
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																						
	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																							
GW11B	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	0.0007	6.7	15.5	24.6	3.5	4.3	
	Nov-19		Quarterly																				
	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																							

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*)	--	--	--	--	--	--	--	--	--	--	--	--	--
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																		
GW6	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																		
	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
GW7	Jan-19	08/01/19	17839311	90	0.10	2.0200	0.0069	0.0230	7.6	766.0	289.0	0.78			43.1	72.7	71.0	4.9	5.6
	Feb-19		Quarterly																
	Mar-19																		
	Apr-19	01/04/19	18095228	104	0.20	1.7900	0.0055	< 0.0180	7.2	794.0	282.0	< 0.41			45.8	72.3	70.4	3.5	5.7
	May-19		Quarterly																
	Jun-19																		
	Jul-19	01/07/19	18369029	-33	0.20	2.5100	0.0036	< 0.0180	7.9	875.0	317.0	< 0.41			54.9	71.7	80.4	3.0	5.8
	Aug-19		Quarterly																
	Sep-19																		
	Oct-19	14/10/19	18694534	195	0.01	1.9200	0.0150	< 0.0180	7.3	815.0	310	< 0.41			39.6	73.5	72.5	8.3	5.2
	Nov-19		Quarterly																
	Dec-19																		
	Jan-20	21/01/20	18977410	44	0.01	1.2800	0.0065	< 0.0180	7.6	900.0	323.0	< 0.41			59.2	62.6	84.7	4.3	6.4
	Feb-20		Quarterly																
	Mar-20																		
	Apr-20	21/04/20	1860909	175	0.01	1.2700	0.0056	< 0.0180	8.1	888.0	318.0	< 0.41	0.0104	11.4	56.7	72.6		4.9	6.2
	May-20		Quarterly																
	Jun-20																		
	Jul-20	21/07/20	19513251	124	0.01	2.0500	0.0060	< 0.0180	7.4	968.0	322.0	< 0.41	0.0021	11.6	65.7	94.2	88.3	3.7	6.5
	Aug-20		Quarterly																
	Sep-20																		
	Oct-20	29/10/20	19827620	-26	0.01	1.6900	0.0050	< 0.0180	7.7	927.0	326.0	< 0.41	0.0040	12.0	53.4	96.2	83.8	3.5	5.0
	Nov-20		Quarterly																
	Dec-20																		

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*)	--	--	--	--	--	--	--	--	--	--	--	--	--			
SST East S2																						
GW9	Jan-19	08/01/19	17839312	58	<	0.20	0.7810	<	0.0030	<	0.0180	6.7	520.0	194.0	4.94	32.6	38.1	34.1	2.6	2.9		
	Feb-19		Quarterly																			
	Mar-19																					
	Apr-19		01/04/19	18095229	92	<	0.20	0.7470	0.0040	<	0.0180	6.7	557.0	154.0	4.33	41.2	30.4	35.8	2.3	4.7		
	May-19			Quarterly																		
	Jun-19																					
	Jul-19	01/07/19	18369030	-71	<	0.200	0.3940	<	0.0030	<	0.0180	7.5	467.0	169.0	4.09	29.5	31.9	30.1	3.6	3.0		
	Aug-19		Quarterly																			
	Sep-19																					
	Oct-19	14/10/19	18694535	179		0.020	0.7710	0.0049	<	0.0180	6.8	613.0	168.0	5.39	54.3	20.1	32.7	8.4	7.4			
	Nov-19		Quarterly																			
	Dec-19																					
Jan-20	21/01/20	18977411	33		0.01	0.8880	0.0051	<	0.0180	6.9	555.0	218.0	4.75	40.7	67.2	35.5	1.8	4.9				
Feb-20		Quarterly																				
Mar-20																						
Apr-20		21/04/20	1860909	186		0.08	1.6800	0.0114		0.0304	7.7	1570.0	495.0	24.90	0.2604	11.7	179.0	33.7	4.4	14.0		
May-20			Quarterly																			
Jun-20																						
Jul-20	21/07/20	19513252	115		0.00	0.4630	<	0.0030	<	0.0180	6.9	368.0	74.6	1.20	0.0021	12.3	24.8	28.2	21.3	2.3		
Aug-20		Quarterly																				
Sep-20																						
Oct-20	29/10/20	19827621	-29		0.02	0.3120	<	0.0030	<	0.0180	7.0	249.0	70.6	1.05	0.0020	12.0	13.8	13.5	15.3	2.0	2.4	
Nov-20		Quarterly																				
Dec-20																						
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																						

	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 T°C is measured water temperature.
^ Ammonia result confirmed on duplicate analysis.

Table B5
Landfill Gas Monitoring Results

[illegible]

Table B5
Landfill Gas Monitoring Results

METHANE (% by Volume)														CARBON DIOXIDE (% by Volume)												
Location	Valve	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Comments
GMW7	Yellow Valve	0.1	0	0	0	0	0	0	0.1	0	0	0	0	0.5	0.3	0.4	0.6	0.3	0.8	1	0.6	0.6	0.6	0.5	0.4	Yellow Valve,12 depth
	White Valve	0.1	0	0	0	0	0	0	0.1	0	0	0	0	0.5	0.3	0.4	0.6	0.3	0.7	1	0.6	0.5	0.5	0.5	0.3	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	
	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	
	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		
	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		
GMW12	Red Valve	0.1	0	0	0	0	0	0.1	0.1	0	0	0	0	0.6	0.6	0.9	0.7	1.1	0.7	1.3	1.2	0.6	0.6	0.7	2.4	Red Valve, 26.3m depth
	Yellow Valve	0.1	0	0	0	0	0	0.1	0	0	0	0	0	0.4	0.5	1.8	0	2.2	2.5	2.8	3.1	3.3	3.3	2.2	1.4	Yellow Valve,15m depth
	White Valve	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0	1.2	0.5	0.8	0.6	0.7	0.7	1.3	1.7	1.5	1.5	0.4	1.1	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	
	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	
	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	
	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	
	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	
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		
GMW13	Red Valve	0.1	0	0	0	0	0	0.1	0.1	0	0	0	0	1.6	1	0.9	1.3	1.1	1.2	1.2	1.3	1.2	1.2	1.3	1.2	Red Valve, 26.3m depth
	Yellow Valve	0.1	0	0	0	0	0	0.1	0.1	0	0	0.1	0.1	6.8	6.8	5.9	5.7	5.9	5.6	5.4	5.7	5.4	5.4	5.2	4.8	Yellow Valve,15m depth
	White Valve	0.1	0	0	0	0	0	0.1	0.1	0	0	0	0	2.9	0	2.2	2.5	2.5	2.8	3.2	0.5	2	2	1.5	1	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	
	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	
	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	
	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	
	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	
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		
GMW14/14A	Red Valve	0.2	0	0	0	0	0	0.1	0.1	0		0	0	3.3	4.3	3.8	2.3	1.6	1.6	1.2	1.7	2	2	4.3	3.4	Red Valve, 26.3m depth
	Yellow Valve	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0		0	0	5.3	4.7	3.6	3.3	3.3	3	3.1	3.3	2.5	2.5	4.2	3.3	Yellow Valve,15m depth
	White Valve	0.4	0	0	0	0	0.1	0.1	0.1	0		0	0	5.5	5.4	4.5	2.3	3.1	3.2	3.2	3.9	4.4	4.4	5.6	5.9	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	
	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	
	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	
	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	
	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	
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		
GMW1**	Red Valve	0.7	0.1	0.5	0	0.1	0	4.4	3.6	2.4	2.4	2.7	0	4.1	2.2	4.3	0	0.4	0	7.9	7.9	3.5	3.5	5.3	2	Red Valve, 23.5m depth
	Yellow Valve	1	0.7	12.2	23.6	25.7	19.9	11	6.7	29.2	29.2	25.8	0	2.7	0.7	5.1	4.8	9.5	10.9	11.5	11.2	8.7	8.7	2.2	0	Yellow Valve,14.7m depth
	White Valve	0.1	1.4	1	water	0.1	0.1	0.1	0	0.2	0.2	0.7	0	0	1.1	0.9	water	0.1	1.2	0.1	0.3	1.4	1.4	1.2	0	White Valve, 6.5m depth
GMW8*	Yellow Valve	11.4	11.4	3.8	3.3	1.1	2.6	2	0.9	5.1	5.1	4.3	5.3	9.7	8.7	3.3	3.5	1.7	3.7	4.5	1.6	9.2	9.2	7.5	7.5	Yellow Valve,17.5m depth
	White Valve	0.1	0	0	0	0	0	0	0.1	0	0	0	0	4.7	3.9	3.9	4.2	2.2	3.9	4.4	3.9	5	5	4.9	5.1	White Valve, 5.7m depth
GMW9*	Red Valve	0.1	0	0	0	0	0	0.1	0.1	0	0	0	0	2.1	1.8	1.7	1.8	1.7	1.7	1.9	2	2	2	2	1	Red Valve, 27m depth
	Yellow Valve	32.4	34.5	30.9	25.9	21.8	20.9	20.9	20.7	24.1	24.1	25.5	26.6	10.3	9.5	10	11.9	12.3	12.9	13.5	14.1	13.1	13.1	10.9	9.7	Yellow Valve,15m depth
	White Valve	0.2	0.1	0.1	0	0	0.1	0.1	0.1	0	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0	0.2	White Valve, 8.5m depth
GMW10*	Red Valve	0.1	0	0	0	15.8	30.2	34.8	34.1	36.9	36.9	34.6	0	5.2	1.1	6.7	5.6	9.6	11.1	10.5	10.7	8.6	8.6	6.4	8.5	Red Valve, 19.5m depth
	Yellow Valve	34.4	46.5	0	0	10	25.6	39.6	35.1	39.8	39.8	37	18.9	5.9	5.7	6.7	4.5	8.4	10.7	10.4	8.7	8.4	8.4	6.8	8	Yellow Valve,15m depth
	White Valve	0.1	1.2	1.3	0	0.1	0.3	0.5	0.7	1	1	0.2	0.2	7.9	8.8	8.8	9	8.8	8.5	8.5	8.2	8.7	8.7	8	8.9	White Valve, 8m depth
GMW17**	Red Valve	0.1	0	0	0	0	0	nt	0	0	0	0	0	1.5	1.4	1.1	1.2	1.3	1.2	nt	1.4	1.4	1.4	1.4	1.5	Red Valve, 26.3m depth
	Yellow Valve	nt	0	0	0	0	0	nt	0	0	0	0	0	nt	5.2	4.5	4.1	4.1	3.7	nt	4	6.3	6.3	6.2	6.3	Yellow Valve,15m depth
	White Valve	0.2	0	0	0	0	0	nt	0	0	0	0	0	3.6	3.3	2.9	3.9	4	4.5	nt	4	3.9	3.9	3.4	3.1	White Valve, 5m depth
GMW18**	Yellow Valve	0.2	0	0	0	0	0	0.1	0	0	0	0	0	0.3	0.1	0.6	1.6	0.5	0	0.1	0.1	1.5	1.5	0	0.1	Yellow Valve,12 depth
	White Valve	0.1	0	0	0	0	0																			

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 asteriscs (**) are present, no trigger levels have been set, as not require by the Permit (Reference [2]).

	Exceedance of Trigger
	Exceedance of Control