TWEED SHIRE COUNCIL

Eviron Road Quarry Landfill
Annual Environmental Management Review 2015
Stage 1 (Application No.08_0068)

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1. Introduction

Tweed Shire Council (the Council) sought approval from the then Department of Planning and Infrastructure (the Department) to develop waste infrastructure to meet the Tweed Local Government Area's (LGA) projected medium and long term needs. Council has proposed to establish the Shire's new landfill facilities on existing Council owned land at Eviron Road, Eviron, within the Tweed LGA. Council has developed a concept plan for the proposed infrastructure which includes a landfill within the existing void space created by Quirks Quarry, the development of two further quarries to be used as landfills after exhaustion of the quarry resource, and necessary operational infrastructure such as haul roads, a dedicated acid sulphate soils treatment area, and other service buildings/storage facilities as required.

Department of Planning and Infrastructure provided approval to Council for Stage 1 of the Project in December 2012.

The environmental assessment for this approval was prepared by GHD Pty Ltd (GHD) in accordance with the requirements of Part 3A of the Environmental Planning and Assessment Act 1979 (EP&A Act).

The main objectives of Stage 1 of the Project are to;

- Construct a Haul Road from the Existing Stott's Creek Resource Recovery Centre to a new Landfill at Quirks Quarry
- Construct a new Landfill in the void of the existing Quirks Quarry; and
- Construct a new quarry at West Valley.

As part of the approval, Schedule 6 Condition 6 required an Annual Review be produced detailing the works carried out in the previous twelve months. This Review covers the 2015 calendar year.

Work carried out to date has been minimal due to Council's landfill capacity at the existing Stotts Creek Resource Recovery Centre. Management Plans have been prepared along with some site investigation and monitoring works. However no substantial works have commenced on site.

2. Location

The site for the project is located at Eviron Road, Eviron within the Tweed LGA, approximately 16 km northeast of Murwillumbah. The site, which has an area of 158 hectares, comprises Council-owned land, being Lot 1 of DP 34555, Lot 26 of DP 615931, and Lot 602 DP 1001049 and Council has negotiated part acquisition Lot 1 DP 774820, in order to situate the proposed haul road. This will connect the site to Council's existing Stott's Creek Landfill.

3. Scope

In accordance with Schedule 6 Condition 6, this Review covers:

a) Work carried out on the development to over the previous calendar year (2014), and what work is proposed for 2015.
b) A review of monitoring results and complaints records for the last year
c) Identification of non-compliances
d) Identify trends in monitoring data
e) Identify discrepancies between predicted and actual impacts of the project and analyse causes of significant discrepancies
f) Describe measures that may be implemented to improve the environmental performance of the project.

4. Work to Date

Management Plans

No management plans were submitted for approval over and above those detailed in the previous Annual Report as detailed below.

Environmental Management Strategy

This strategy is a requirement as per Schedule 6, Condition 3 of the approval. It lists all the plans required under the approval, who is responsible for preparation of each plan, who implements the plan, who audits the plan and a suggested timeframe for each. This Strategy was submitted 27 May 2014 and approved by DoPI 4 June 2014.

Heritage Management Plan

This plan is required as per Schedule 4, Condition 28 of the approval. This plan was prepared in consultation with the LALC and included a Heritage Awareness Induction for all those involved. To date any personnel attending the site have been inducted prior to commencement of any activities. This plan was submitted 8 January 2014 and approved by DoPI 4 June 2014.

Biodiversity Offset Plan

This plan is a requirement as per Schedule 4, Condition 29 of the approval. This plan was submitted 18 December 2013 and in DoPI's letter dated 4 June 2014 it stated they would review its adequacy in consultation with relevant agencies and would be in contact shortly regarding their findings. We are unable to locate any further response.

White Lace Flower Translocation Plan

This plan is required as per Schedule 4, Condition 30 of the approval. Work to date has been carried out in accordance with the plan. This plan was submitted 28 August 2013 and approved by DoPI 4 June 2014.

Landscape Management Plan

This plan is a requirement as per Schedule 4, Condition 31 of the approval and was submitted to DoPI 4 April 2014. DoPI advised that further discussions would be required with the OEH. There has been no further correspondence.

General

The following work has been carried out on site in the reporting period:

- Quarrying of the Quirks Quarry has been finalised. The contractor's stockpiles of material are to be removed prior to further work in this area.
- Environmental Baseline Monitoring.
- Environmental Site Inductions have continued for site personnel.

Meteorological Station

As reported previously, there have been some issues with the data from the Meteorological Station. This has been resolved and data from September 2015 to the end of the year is available and a high level summary is provided in Appendix A in accordance with Schedule 3, Condition 9 of the Project Approval.

Haul Road

As previously reported, Council has commenced preconstruction works for the Haul Road.

These works include:

- Continuation of the design and documentation for the proposed new Haul Road
- Design work for the section of road between Ch 800 and 1100 that requires preloading has continued.

No other work has been undertaken during the reporting period.

5. Forward Works Plan 2016

Haul Road Construction

Finalising the design and calling tenders for the construction of the first section of the Haul Road is expected to commence during the 2016 calendar year. The area that requires pre-loading will also be commenced in 2016 with works to be undertaken by Tweed Shire Council.

Environmental

Environmental monitoring and recording will continue in accordance with Environmental Management Plans submitted to date.

Continual reviews of the timelines for activities will be carried out to ensure it aligns with the Environmental Management Strategy.

6. Monitoring Results Review

Monitoring

To date, no substantive construction works has been carried out for the Project other than those activities mentioned above.

Water quality monitoring (groundwater and surface water) is currently being carried out to establish baseline conditions. Appendix B details the monitoring results for the reporting year (GW – Groundwater SW – Surface Water).

At the commencement of substantial construction activities monitoring results will be reviewed to identify data trends against baseline conditions so that any impacts can be identified.

As mentioned above, data from the Meteorological Station has been found to be corrupted. This station records air temperature, wind direction, wind speed, rainfall and relative

humidity. This data will be used to identify any impact weather has on other parameters being monitored for the Project and could assist in reviewing ways to minimise those impacts. A high level summary of weather data has been provided in Appendix A.

Complaints

To date there have been no complaints related to the project.

7. Identification of non-compliance and actions

A summary of non-compliance and actions is provided below.

Condition	Non-Compliance	Discussion and Actions
Schedule 6 Condition 6	Failure to submit annual reviews for reporting periods 2012, 2013 and 2014.	Tweed Shire Council's interpreted the condition as not being until approved activities had commenced. It is acknowledged that this interpretation of the condition was not correct and the first annual review was subsequently submitted for the 2014 reporting period to reflect the concept and design phase of the project.
Schedule 6 Condition 6	Failure to submit 2015 annual review by March 30 2016.	Environmental management system oversight. Review was submitted on 29 April 2016. The existing environmental management system has been reviewed and substantially improved to ensure this non-compliance does not re-occur.
Schedule 6 Condition 10	Independent Environmental Audit	This condition requires that an independent environmental audit is to be undertaken one year after approval and every subsequent three years. At this stage substantial works have not commenced and therefore there is no potential risk to the environment. TSC is currently in consultation with the Industrial Assessment Team to seek an extension to March 2017 which will be approximately 1 year after the commencement of substantial construction works for the Haul Rd.
Schedule 6 Condition 12	Access to information	Environmental management system oversight. Tweed Shire Council has undertaken steps to make available the required information on the public website. This work was completed on the 19 April 2016.

8. Identify trends in monitoring data

As mentioned in Section 6, monitoring data is only baseline at this stage. A discussion of trends to determine potential impacts will be undertaken from the commencement of substantial construction works that are anticipated to occur in the 2016 reporting period.

9. Impact Assessment

Substantial work is ye t to be carried out and thus no discrepancies have been identified against the relevant predications in the Environmental Assessment.

10. Improvement Program

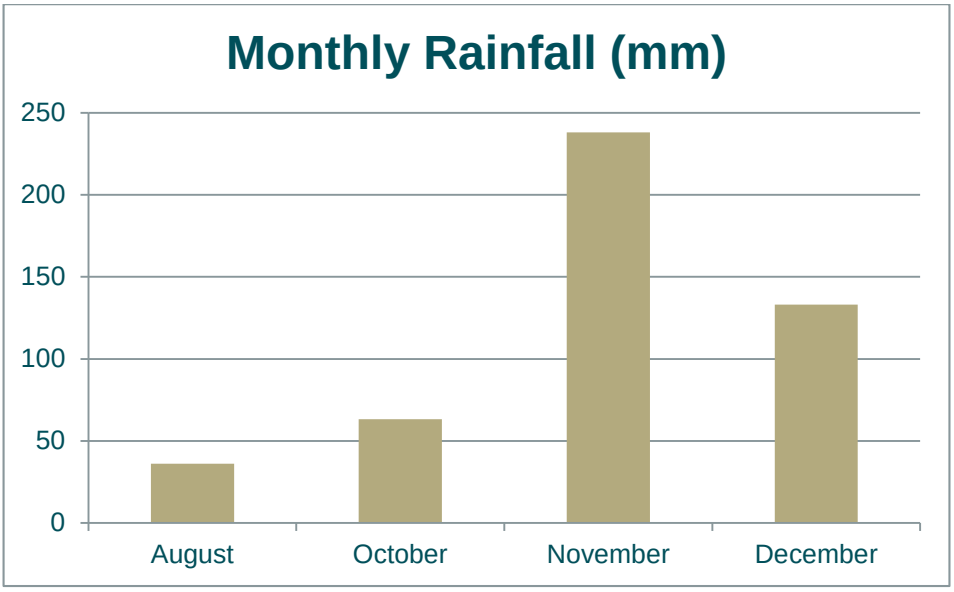
Administrative improvements have been made to the Environmental Management System to minimise the risk of future non-compliance and include the following key elements.

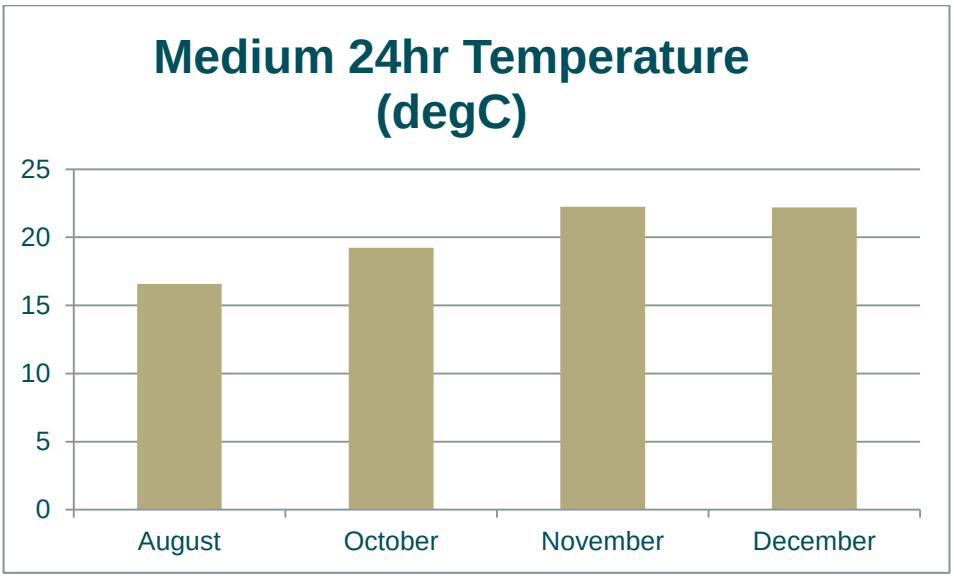
- Compliance/Obligations Register
- Monitoring Results Database
- Compliance Calendar
- Communications Register

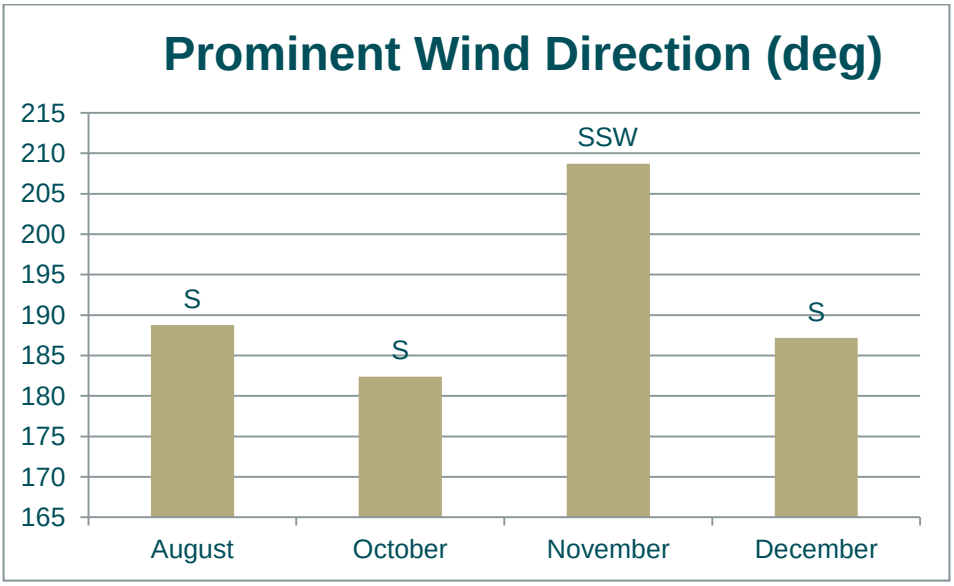
As the project moves from a concept and design phase to construction and operation a detailed analysis of operational data will be undertaken against baseline data for assessment against predictions of the Environmental Assessment.

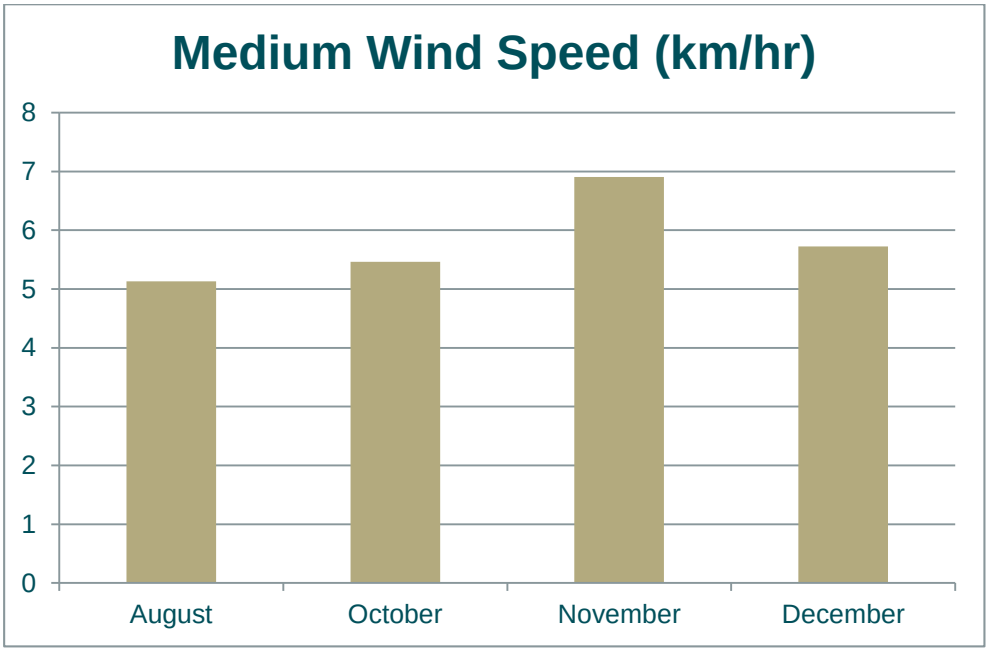
Actions taken to address specific non-compliances have been discussed in Section 7.

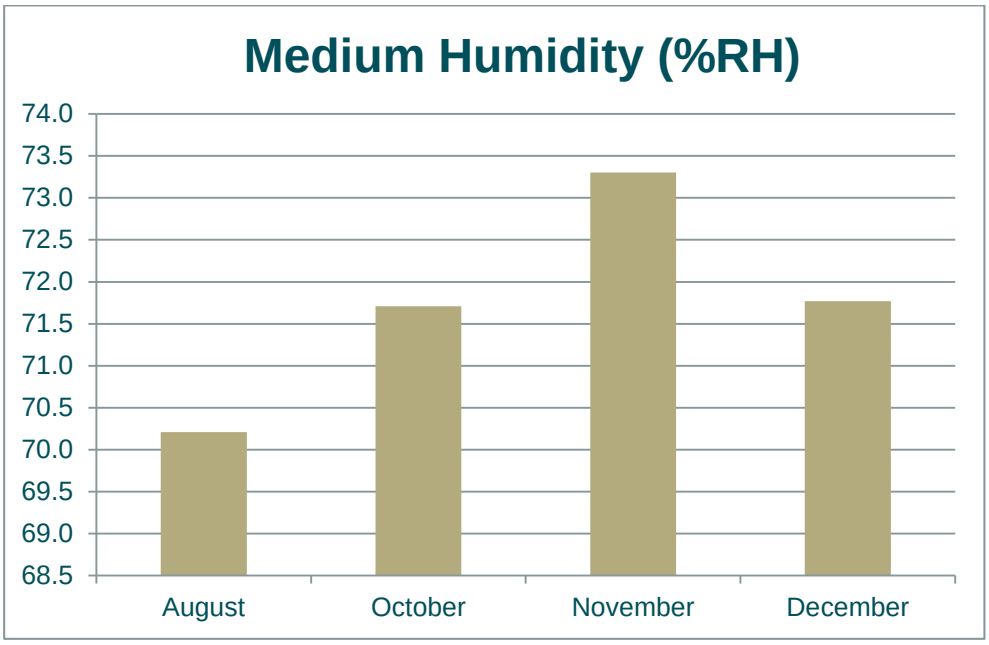
Appendix A – 2015 Meteorological Data








Medium Wind Speed (km/hr)
8
7
6
5
4
3
2
1
0
August
October
November
December


Medium Humidity (%RH)
74.0
73.5
73.0
72.5
72.0
71.5
71.0
70.5
70.0
69.5
69.0
68.5
August
October
November
December

Appendix B – 2015 Monitoring Data

Site		February	May	August	November
GW1	Alkalinity (mg/L as CaCO3)	9	12	13	13
	Ammonia (mg/L)	<0.02	<0.02	<0.02	0.02
	Bicarbonate HCO3 (mg/L)	6	7	13	13
	Biochemical Oxygen Demand (mg/L)	<1.0	2.7	2.1	1.5
	Carbonate (CO3) (mg/L)	NP	NP	NP	NP
	Chloride (mg/L)	28	27	32	40
	Chromium 3 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Chromium 6 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Conductivity (µScm-1)	122	130	149	177
	Disolved Oxygen Membrane (mg/L)	2.6	5.7	2.3	3.2
	Flouride (mg/L)	0.04	0.02	0.02	0.02
	Nitrate (N mg/L)	0.16	0.15	0.02	0.15
	Nitrite (N mg/L)	<0.02	<0.02	<0.02	<0.02
	pH (pH units)	6.4	5.6	5.6	5.4
	Phenol Alkalinity (mg/L as CaCO3)	NP	NP	NP	NP
	Redox Potential (mV)	88	165	116	123
	Sulphate (mg/L)	6.4	4.9	4.5	5
	Temperature (C)	21.4	21.4	18	20.5
	TOC (mg/L)	2.5	1.6	0.8	0.8

	Total Acidity (mg/L CaCO3)	36	30	67	74
	Total Aluminium (mg/L)	2.16	2.37	0.53	14.3
	Total Arsenic(mg/L)	<0.005	0.001	<0.001	0.005
	Total Cadmium (mg/L)	<0.001	<0.001	<0.001	<0.001
	Total Calcium (mg/L)	2.1	2.4	3.6	4.2
	Total Chromium (mg/L)	<0.01	0.001	<0.001	0.005
	Total Copper (mg/L)	<0.01	<0.001	0.001	0.015
	Total Iron (mg/L)	0.82	1.22	0.32	10.6
	Total Kjeldahl Nitrogen (mg/L)	0.31	0.21	0.13	0.63
	Total Lead (mg/L)	<0.01	0.002	0.001	0.01
	Total Magnesium (mg/L)	1.8	2.4	3.1	4
	Total Manganese (mg/L)	0.03	0.073	0.114	0.189
	Total Nickel (mg/L)	<0.01	0.001	<0.001	0.004
	Total Nitrogen (mg/L)	0.47	0.36	0.15	0.78
	Total Phosphorus (mg/L)	0.07	0.09	0.03	0.15
	Total Potassium (mg/L)	<5	<5	<5	<5
	Total Sodium (mg/L)	16	18	19	23
	Total Zinc (mg/L)	0.02	0.045	0.012	0.069
GW2	Alkalinity (mg/L as CaCO3)	500	440	480	490
	Ammonia (mg/L)	3.17	0.16	0.2	0.37
	Bicarbonate HCO3 (mg/L)	307	270	480	490

	Biochemical Oxygen Demand (mg/L)	21	4.2	10	5.7
	Carbonate (CO3) (mg/L)	NP	NP	NP	NP
	Chloride (mg/L)	820	610	780	770
	Chromium 3 (mg/L)	0.03	0.03	0.03	0.02
	Chromium 6 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Conductivity (µScm-1)	4360	3590	4140	4020
	Disolved Oxygen Membrane (mg/L)	1.6	4	3.6	1.5
	Flouride (mg/L)	0.48	0.54	0.45	0.47
	Nitrate (N mg/L)	0.09	0.22	0.07	<0.02
	Nitrite (N mg/L)	<0.02	<0.02	<0.02	<0.02
	pH (pH units)	7	7.1	7.1	7
	Phenol Alkalinity (mg/L as CaCO3)	NP	NP	NP	NP
	Redox Potential (mV)	-100	-62	-37	-73
	Sulphate (mg/L)	704	645	617	628
	Temperature (C)	21.6	21.1	20.2	20.2
	TOC (mg/L)	8.1	5.1	3.7	4.4
	Total Acidity (mg/L CaCO3)	94	58	73	71
	Total Aluminium (mg/L)	35.1	28.8	31.4	19.1
	Total Arsenic (mg/L)	<0.005	0.012	0.019	0.012
	Total Cadmium (mg/L)	<0.001	<0.001	<0.001	<0.001
	Total Calcium (mg/L)	159	156	178	173

	Total Chromium (mg/L)	0.03	0.026	0.031	0.018
	Total Copper (mg/L)	0.01	0.015	0.023	0.01
	Total Iron (mg/L)	48.1	45.6	45.3	37
	Total Kjeldahl Nitrogen (mg/L)	5.68	1.08	1	1.24
	Total Lead(mg/L)	<0.01	0.018	0.016	0.008
	Total Magnesium (mg/L)	155	148	164	161
	Total Manganese (mg/L)	3.49	4.13	3.19	3.8
	Total Nickel (mg/L)	<0.01	0.019	0.02	0.013
	Total Nitrogen (mg/L)	5.77	1.3	1.07	1.24
	Total Phosphorus (mg/L)	0.67	0.58	0.71	0.71
	Total Potassium (mg/L)	16	16	16	16
	Total Sodium (mg/L)	504	431	520	481
	Total Zinc (mg/L)	0.22	0.309	0.264	0.015
GW4	Alkalinity (mg/L as CaCO3)	1320	1240	1200	1170
	Ammonia (mg/L)	28.2	3.76	2.41	0.99
	Bicarbonate HCO3 (mg/L)	806	757	1200	1170
	Biochemical Oxygen Demand (mg/L)	190	36	14	4.5
	Carbonate (CO3) (mg/L)	NP	NP	NP	NP
	Chloride (mg/L)	1600	1700	1620	1400
	Chromium 3 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Chromium 6 (mg/L)	<0.01	<0.01	<0.01	<0.01

	Conductivity (µScm-1)	7050	7100	6940	6020
	Disolved Oxygen Membrane (mg/L)	<1.0	1.3	2.2	1.3
	Flouride (mg/L)	0.8	0.79	0.82	0.76
	Nitrate (N mg/L)	0.02	0.11	0.11	0.03
	Nitrite (N mg/L)	0.03	0.02	<0.02	<0.02
	pH (pH units)	7.2	7.3	7.4	7.3
	Phenol Alkalinity (mg/L as CaCO3)	NP	NP	NP	NP
	Redox Potential (mV)	-216	-81	-78	-62
	Sulphate (mg/L)	788	183	237	307
	Temperature (C)	22.9	22.4	20.4	20.5
	TOC (mg/L)	144	207	188	193
	Total Acidity (mg/L CaCO3)	180	100	92	76
	Total Aluminium (mg/L)	4.35	6.69	5.39	0.998
	Total Arsenic (mg/L)	<0.005	0.004	0.004	0.001
	Total Cadmium (mg/L)	<0.001	<0.001	<0.001	<0.001
	Total Calcium (mg/L)	46	52	58	53
	Total Chromium (mg/L)	<0.01	0.007	0.007	0.003
	Total Copper (mg/L)	0.02	0.006	0.007	0.003
	Total Iron (mg/L)	13.4	11.6	11.1	4.27
	Total Kjeldahl Nitrogen (mg/L)	46.6	9.19	6.5	2.77
	Total Lead (mg/L)	0.01	0.013	0.009	0.002

	Total Magnesium (mg/L)	211	206	224	194
	Total Manganese (mg/L)	2.92	2.96	2.64	2.96
	Total Nickel (mg/L)	<0.01	0.007	0.005	0.001
	Total Nitrogen (mg/L)	46.6	9.32	6.61	2.8
	Total Phosphorus (mg/L)	15	8.96	5.75	7.03
	Total Potassium (mg/L)	52	43	46	38
	Total Sodium(mg/L)	1220	1230	1270	990
	Total Zinc (mg/L)	1.63	1.3	1.07	0.176
GW5	Alkalinity (mg/L as CaCO3)	1	2	2	1
	Ammonia (mg/L)	<0.02	<0.02	<0.02	<0.02
	Bicarbonate HCO3 (mg/L)	<1	1	2	1
	Biochemical Oxygen Demand (mg/L)	1.8	3	1.8	<1.0
	Carbonate (CO3) (mg/L)	NP	NP	NP	NP
	Chloride (mg/L)	18	16	16	13
	Chromium 3 (mg/L)	0.02	<0.01	0.03	<0.01
	Chromium 6 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Conductivity (µScm-1)	86	85	89	85
	Disolved Oxygen Membrane (mg/L)	6.2	6.3	6.3	6
	Flouride (mg/L)	0.02	0.03	0.02	0.02
	Nitrate (N mg/L)	0.67	0.92	0.63	1.49

	Nitrite (N mg/L)	<0.02	<0.02	<0.02	<0.02
	pH (pH units)	4.8	4.9	4.7	4.6
	Phenol Alkalinity (mg/L as CaCO3)	NP	NP	NP	NP
	Redox Potential (mV)	191	219	235	227
	Sulphate (mg/L)	6.6	5.5	5.3	4.7
	Temperature (C)	21.6	21.5	21	21.4
	TOC (mg/L)	0.5	2.4	0.9	1
	Total Acidity (mg/L CaCO3)	65	50	65	63
	Total Aluminium(mg/L)	25.3	6.64	15.2	9.46
	Total Arsenic (mg/L)	<0.005	0.004	0.015	0.01
	Total Cadmium (mg/L)	<0.001	<0.001	<0.001	<0.001
	Total Calcium (mg/L)	0.8	0.9	0.9	1.3
	Total Chromium (mg/L)	0.02	0.006	0.034	0.007
	Total Copper (mg/L)	<0.01	0.014	0.042	0.023
	Total Iron (mg/L)	10.5	6.3	20.9	12.1
	Total Kjeldahl Nitrogen (mg/L)	0.39	0.35	0.58	0.26
	Total Lead (mg/L)	<0.01	0.008	0.014	0.008
	Total Magnesium (mg/L)	1.1	1.4	1.6	1.6
	Total Manganese (mg/L)	1.75	1.25	4.06	2.73
	Total Nickel (mg/L)	<0.01	0.007	0.018	0.012
	Total Nitrogen (mg/L)	1.06	1.27	1.21	1.75

	Total Phosphorus (mg/L)	0.09	0.09	0.2	0.11
	Total Potassium (mg/L)	<5	<5	<5	<5
	Total Sodium (mg/L)	9.9	11	12	9.7
	Total Zinc (mg/L)	0.03	0.113	0.098	0.119
GW6	Alkalinity (mg/L as CaCO3)	89	62	34	30
	Ammonia (mg/L)	3.05	0.54	0.34	0.21
	Bicarbonate HCO3 (mg/L)	54	38	34	30
	Biochemical Oxygen Demand (mg/L)	15	17	5.4	6
	Carbonate (CO3) (mg/L)	NP	NP	NP	NP
	Chloride (mg/L)	120	100	100	34
	Chromium 3 (mg/L)	0.03	0.04	0.03	0.03
	Chromium 6 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Conductivity (µScm-1)	643	532	533	753
	Disolved Oxygen Membrane (mg/L)	2	2.3	2.7	1.9
	Flouride (mg/L)	0.21	0.17	0.14	0.18
	Nitrate (N mg/L)	0.04	<0.02	0.02	0.03
	Nitrite (N mg/L)	0.02	0.03	0.02	<0.02
	pH (pH units)	6.3	6.2	6	5.7
	Phenol Alkalinity (mg/L as CaCO3)	NP	NP	NP	NP
	Redox Potential (mV)	-25	11	87	2
	Sulphate (mg/L)	38	35	46	93

	Temperature (C)	24.3	21.1	18.6	20.5
	TOC (mg/L)	6.8	1.9	1.5	2.2
	Total Acidity (mg/L CaCO3)	130	97	110	110
	Total Aluminium (mg/L)	39.7	47	26.9	33.2
	Total Arsenic (mg/L)	<0.005	0.017	0.01	0.013
	Total Cadmium (mg/L)	<0.001	<0.001	<0.001	<0.001
	Total Calcium (mg/L)	19	18	17	31
	Total Chromium (mg/L)	0.03	0.043	0.026	0.03
	Total Copper (mg/L)	0.02	0.038	0.019	0.02
	Total Iron (mg/L)	63.5	58.8	68	93.8
	Total KjeldahlNitrogen (mg/L)	6.51	1.9	1.38	1.22
	Total Lead (mg/L)	<0.01	0.031	0.014	0.015
	Total Magnesium (mg/L)	22	20	20	24
	Total Manganese (mg/L)	1.18	1.09	1.04	1.37
	Total Nickel (mg/L)	0.02	0.042	0.027	0.042
	Total Nitrogen (mg/L)	6.57	1.93	1.42	1.25
	Total Phosphorus (mg/L)	0.72	0.65	0.67	0.56
	Total Potassium (mg/L)	7	6	6	<5
	Total Sodium (mg/L)	55	53	48	61
	Total Zinc (mg/L)	1.31	2.94	0.975	0.95
GW7	Alkalinity (mg/L as CaCO3)	2	1	1	1

	Ammonia (mg/L)	<0.02	<0.02	<0.02	<0.02
	Bicarbonate HCO3 (mg/L)	1	<1	1	1
	Biochemical Oxygen Demand (mg/L)	1.2	1.5	<1.0	<1.0
	Carbonate (CO3) (mg/L)	NP	NP	NP	NP
	Chloride (mg/L)	110	120	110	100
	Chromium 3 (mg/L)	0.02	0.02	0.02	0.02
	Chromium 6 (mg/L)	<0.01	0.01	<0.01	<0.01
	Conductivity (µScm-1)	395	423	389	301
	Disolved Oxygen Membrane (mg/L)	2.2	2.9	2.9	2.8
	Flouride (mg/L)	0.03	0.05	0.02	0.05
	Nitrate (N mg/L)	3.51	0.08	0.07	0.65
	Nitrite (N mg/L)	<0.02	<0.02	<0.02	<0.02
	pH (pH units)	5	4.7	4.7	4.6
	Phenol Alkalinity (mg/L as CaCO3)	NP	NP	NP	NP
	Redox Potential (mV)	135	146	185	101
	Sulphate (mg/L)	4.6	3.3	6.2	6.2
	Temperature (C)	23.1	21.1	18.3	19.7
	TOC (mg/L)	1.4	0.3	0.4	0.6
	Total Acidity (mg/L CaCO3)	100	86	120	79
	Total Aluminium (mg/L)	27.4	37.4	21.9	20.1
	Total Arsenic (mg/L)	<0.005	0.01	0.01	0.008

	Total Cadmium (mg/L)	<0.001	<0.001	<0.001	<0.001
	Total Calcium (mg/L)	2.3	2.6	2.9	2.3
	Total Chromium (mg/L)	0.02	0.033	0.029	0.018
	Total Copper (mg/L)	0.02	0.012	0.022	0.013
	Total Iron (mg/L)	50	60.4	47.9	57.9
	Total Kjeldahl Nitrogen (mg/L)	1.07	1.15	1	0.52
	Total Lead (mg/L)	<0.01	0.023	0.016	0.012
	Total Magnesium (mg/L)	5.3	6.2	5.9	4.9
	Total Manganese (mg/L)	0.13	0.144	0.13	0.128
	Total Nickel (mg/L)	<0.01	0.012	0.012	0.009
	Total Nitrogen (mg/L)	1.58	1.23	1.07	1.17
	Total Phosphorus (mg/L)	0.14	0.23	0.18	0.12
	Total Potassium(mg/L)	<5	<5	<5	<5
	Total Sodium (mg/L)	58	68	62	50
	Total Zinc (mg/L)	0.06	0.099	0.128	80
GW8	Alkalinity (mg/L as CaCO3)	71	53	43	37
	Ammonia (mg/L)	0.04	0.04	0.02	<0.02
	Bicarbonate HCO3 (mg/L)	43	32	43	37
	Biochemical Oxygen Demand (mg/L)	2.1	1.5	<1.0	<1.0
	Carbonate (CO3) (mg/L)	NP	NP	NP	NP
	Chloride (mg/L)	110	100	110	79

	Chromium 3 (mg/L)	0.02	0.05	0.04	0.01
	Chromium 6 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Conductivity (µScm-1)	533	522	476	303
	Disolved Oxygen Membrane (mg/L)	1.9	3.2	4.7	2.4
	Flouride (mg/L)	0.21	0.17	0.17	0.04
	Nitrate (N mg/L)	<0.02	<0.02	0.02	0.41
	Nitrite (N mg/L)	0.02	0.02	<0.02	<0.02
	pH (pH units)	6.6	6.5	6.2	6
	Phenol Alkalinity (mg/L as CaCO3)	NP	NP	NP	NP
	Redox Potential (mV)	-31	19	48	-10
	Sulphate (mg/L)	10	12	15	17
	Temperature (C)	22.4	21.4	18.8	20.2
	TOC (mg/L)	0.6	0.7	0.7	1.4
	Total Acidity(mg/L CaCO3)	64	73	72	71
	Total Aluminium (mg/L)	36.1	55	31.3	26.2
	Total Arsenic (mg/L)	0.036	0.049	0.125	0.044
	Total Cadmium (mg/L)	<0.001	<0.001	<0.001	<0.001
	Total Calcium (mg/L)	7.9	7.8	6.7	4.8
	Total Chromium (mg/L)	0.02	0.05	0.036	0.023
	Total Copper (mg/L)	0.01	0.021	0.028	0.013
	Total Iron (mg/L)	54.6	66.2	97.6	46.7

	Total Kjeldahl Nitrogen (mg/L)	0.92	0.77	0.83	0.77
	Total Lead (mg/L)	<0.01	0.03	0.019	0.01
	Total Magnesium (mg/L)	7.4	7.6	6.6	4.7
	Total Manganese (mg/L)	0.51	0.623	0.694	0.361
	Total Nickel (mg/L)	<0.01	0.025	0.018	0.011
	Total Nitrogen (mg/L)	0.92	0.79	0.85	1.18
	Total Phosphorus (mg/L)	0.15	0.16	0.12	0.13
	Total Potassium (mg/L)	<5	<5	<5	<5
	Total Sodium (mg/L)	84	88	78	52
	Total Zinc (mg/L)	0.08	0.169	0.132	0.08
GW9	Alkalinity (mg/L as CaCO3)	12	13	9	4
	Ammonia (mg/L)	0.03	<0.02	<0.02	<0.02
	Bicarbonate HCO3 (mg/L)	7	8	9	4
	Biochemical Oxygen Demand (mg/L)	3.3	4.5	3	<1.0
	Carbonate(CO3) (mg/L)	NP	NP	NP	NP
	Chloride (mg/L)	520	380	610	820
	Chromium 3 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Chromium 6 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Conductivity (µScm-1)	1754	1363	2090	2620
	Disolved Oxygen Membrane (mg/L)	1.7	3.5	3.7	4.1

	Flouride (mg/L)	0.04	0.05	0.03	0.05
	Nitrate (N mg/L)	<0.02	0.02	0.06	0.02
	Nitrite (N mg/L)	<0.02	<0.02	<0.02	<0.02
	pH (pH units)	5.4	5.3	5.2	4.8
	Phenol Alkalinity (mg/L as CaCO3)	NP	NP	NP	NP
	Redox Potential (mV)	46	66	124	132
	Sulphate (mg/L)	64	62	94	83
	Temperature (C)	23.3	21.7	18.8	19.9
	TOC (mg/L)	5.3	5.5	7	9.4
	Total Acidity (mg/L CaCO3)	94	91	130	72
	Total Aluminium (mg/L)	5.58	6.56	9.24	6.33
	Total Arsenic (mg/L)	<0.005	0.005	0.007	0.003
	Total Cadmium (mg/L)	<0.001	<0.001	<0.001	0.001
	Total Calcium (mg/L)	30	28	23	57
	Total Chromium (mg/L)	<0.01	0.005	0.007	0.004
	Total Copper (mg/L)	<0.01	0.008	0.015	0.012
	Total Iron(mg/L)	6.65	6.22	11.7	4.24
	Total Kjeldahl Nitrogen (mg/L)	1	0.72	1.03	0.58
	Total Lead (mg/L)	0.01	0.016	0.024	0.012
	Total Magnesium (mg/L)	30	27	29	58
	Total Manganese (mg/L)	1.3	1.08	1.66	0.91

	Total Nickel (mg/L)	<0.01	0.004	0.006	0.0089
	Total Nitrogen (mg/L)	1	0.74	1.09	0.6
	Total Phosphorus (mg/L)	0.1	0.07	0.08	0.05
	Total Potassium (mg/L)	<5	<5	<5	<5
	Total Sodium (mg/L)	216	203	192	346
	Total Zinc (mg/L)	0.05	0.069	0.066	0.062
GW10	Alkalinity (mg/L as CaCO3)	22	12	<1	8
	Ammonia (mg/L)	0.19	0.65	0.19	0.12
	Bicarbonate HCO3 (mg/L)	13	7	<1	8
	Biochemical Oxygen Demand (mg/L)	3.9	8.1	5.1	3
	Carbonate (CO3) (mg/L)	NP	NP	NP	NP
	Chloride (mg/L)	60	150	410	51
	Chromium 3 (mg/L)	<0.01	<0.01	<0.01	0.01
	Chromium 6 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Conductivity (µScm-1)	275	551	1438	164
	Disolved Oxygen Membrane (mg/L)	1.7	1.9	2.2	3.4
	Flouride (mg/L)	0.03	0.02	0.03	0.03
	Nitrate (Nmg/L)	0.03	<0.02	0.06	0.12
	Nitrite (N mg/L)	0.03	<0.02	<0.02	0.02
	pH (pH units)	6.2	5.5	4.8	5.6
	Phenol Alkalinity (mg/L as CaCO3)	NP	NP	NP	NP

	Redox Potential (mV)	2	62	147	10
	Sulphate (mg/L)	7.2	12	24	5.9
	Temperature (C)	22	21.3	19	19.3
	TOC (mg/L)	16	6.3	4.8	5.9
	Total Acidity (mg/L CaCO3)	60	100	150	57
	Total Aluminium (mg/L)	8.34	6.78	1.64	14.3
	Total Arsenic (mg/L)	<0.005	0.008	0.01	0.016
	Total Cadmium (mg/L)	<0.001	<0.001	<0.001	<0.001
	Total Calcium (mg/L)	7	10	23	3.6
	Total Chromium (mg/L)	<0.01	0.006	0.002	0.011
	Total Copper (mg/L)	0.02	0.017	0.017	0.032
	Total Iron (mg/L)	13.8	13.3	20.6	48.5
	Total Kjeldahl Nitrogen (mg/L)	2.37	1.71	1.58	1.86
	Total Lead (mg/L)	<0.01	0.006	0.003	0.011
	Total Magnesium (mg/L)	4.9	10	29	3.5
	Total Manganese (mg/L)	0.56	0.957	2.49	0.346
	Total Nickel (mg/L)	<0.01	0.006	0.053	0.006
	Total Nitrogen (mg/L)	2.43	1.71	1.64	2
	TotalPhosphorus(mg/L)	0.34	0.21	0.24	0.37
	Total Potassium (mg/L)	<5	<5	<5	<5
	Total Sodium (mg/L)	28	66	192	26

	Total Zinc (mg/L)	0.01	0.039	0.08	0.051
GW11	Alkalinity (mg/L as CaCO3)	8	12	13	6
	Ammonia (mg/L)	0.04	0.02	<0.02	<0.02
	Bicarbonate HCO3 (mg/L)	5	7	13	6
	Biochemical Oxygen Demand (mg/L)	3.9	3.6	3.3	<1.0
	Carbonate (CO3) (mg/L)	NP	NP	NP	NP
	Chloride (mg/L)	18	14	15	14
	Chromium 3 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Chromium 6 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Conductivity (µScm-1)	94	93	101	82
	Disolved Oxygen Membrane (mg/L)	2	3.1	2.6	3.8
	Flouride (mg/L)	0.02	0.02	0.02	0.02
	Nitrate (N mg/L)	0.12	<0.02	<0.02	0.03
	Nitrite (N mg/L)	<0.02	<0.02	<0.02	<0.02
	pH (pH units)	5.3	5.4	5.7	5.1
	Phenol Alkalinity (mg/L as CaCO3)	NP	NP	NP	NP
	Redox Potential (mV)	119	104	141	201
	Sulphate (mg/L)	7.3	5.8	5.3	6.1
	Temperature (C)	24.2	23.4	21	21.6
	TOC (mg/L)	1.5	1.1	0.9	1.6
	Total Acidity (mg/L CaCO3)	84	66	69	65

	Total Aluminium (mg/L)	19.8	20.7	13.1	13.9
	Total Arsenic (mg/L)	<0.005	0.006	0.007	0.006
	Total Cadmium (mg/L)	<0.001	<0.001	<0.001	<0.001
	Total Calcium (mg/L)	0.7	0.8	0.3	1.1
	Total Chromium (mg/L)	<0.01	0.007	0.005	0.005
	Total Copper (mg/L)	0.02	0.025	0.02	0.02
	Total Iron (mg/L)	9.37	16.1	21	16.8
	Total Kjeldahl Nitrogen (mg/L)	0.89	0.96	1.28	0.84
	Total Lead (mg/L)	<0.01	0.017	0.011	0.013
	Total Magnesium (mg/L)	1.5	1.8	2	1.8
	Total Manganese (mg/L)	0.95	1.82	1.84	0.685
	Total Nickel (mg/L)	<0.01	0.006	0.004	0.005
	Total Nitrogen (mg/L)	1.01	0.96	1.28	0.87
	Total Phosphorus (mg/L)	0.12	0.29	0.14	0.11
	Total Potassium (mg/L)	<5	<5	<5	<5
	Total Sodium (mg/L)	12	13	15	11
	Total Zinc (mg/L)	0.04	0.086	0.052	0.074
GW13	Alkalinity (mg/L as CaCO3)	<1	<1	Dry	1
	Ammonia (mg/L)	0.06	<0.02	Dry	<0.02
	Bicarbonate HCO3 (mg/L)	<1	<1	Dry	1
	BiochemicalOxygen Demand(mg/L)	1.8	2.4	Dry	<1.0

	Carbonate (CO3) (mg/L)	NP	NP	Dry	NP
	Chloride (mg/L)	17	12	Dry	10
	Chromium 3 (mg/L)	<0.01	<0.01	Dry	<0.01
	Chromium 6 (mg/L)	<0.01	<0.01	Dry	<0.01
	Conductivity (µScm-1)	89	85	Dry	77
	Disolved Oxygen Membrane (mg/L)	6.6	6.7	Dry	8.1
	Flouride (mg/L)	0.02	0.02	Dry	0.01
	Nitrate (N mg/L)	2.48	2.19	Dry	2.52
	Nitrite (N mg/L)	<0.02	<0.02	Dry	<0.02
	pH (pH units)	4.7	4.4	Dry	4.6
	Phenol Alkalinity (mg/L as CaCO3)	NP	NP	NP	NP
	Redox Potential (mV)	198	209	Dry	226
	Sulphate (mg/L)	4.5	3.6	Dry	3.5
	Temperature (C)	22.6	22.6	Dry	20.2
	TOC (mg/L)	0.4	0.3	Dry	0.4
	Total Acidity (mg/L CaCO3)	47	47	Dry	34
	Total Aluminium (mg/L)	15.4	15.8	Dry	3
	Total Arsenic (mg/L)	<0.005	0.004	Dry	0.002
	Total Cadmium (mg/L)	<0.001	<0.001	Dry	<0.001
	Total Calcium (mg/L)	0.3	0.3	Dry	0.4
	Total Chromium (mg/L)	<0.01	0.007	Dry	0.001

	Total Copper(mg/L)	0.01	0.016	Dry	0.004
	Total Iron (mg/L)	12.9	11.3	Dry	2.58
	Total Kjeldahl Nitrogen (mg/L)	0.52	0.34	Dry	0.07
	Total Lead (mg/L)	<0.01	0.01	Dry	0.002
	Total Magnesium (mg/L)	2.1	2.5	Dry	2.2
	Total Manganese (mg/L)	0.15	0.142	Dry	0.062
	Total Nickel (mg/L)	<0.01	0.003	Dry	0.001
	Total Nitrogen (mg/L)	3	2.53	Dry	2.59
	Total Phosphorus (mg/L)	0.1	0.07	Dry	0.07
	Total Potassium (mg/L)	<5	<5	Dry	<5
	Total Sodium (mg/L)	8.9	10	Dry	7.8
	Total Zinc (mg/L)	0.04	0.056	Dry	0.039
GW14	Alkalinity (mg/L as CaCO3)	1	1	1	1
	Ammonia (mg/L)	<0.02	<0.02	<0.02	<0.02
	Bicarbonate HCO3 (mg/L)	<1	<1	1	1
	Biochemical Oxygen Demand (mg/L)	1.2	2.1	<1.0	<1.0
	Carbonate (CO3) (mg/L)	NP	NP	NP	NP
	Chloride (mg/L)	31	29	30	23
	Chromium 3 (mg/L)	<0.01	0.01	<0.01	<0.01
	Chromium 6 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Conductivity (µScm-1)	130	129	129	121

	Disolved Oxygen Membrane (mg/L)	4.3	5.3	4.9	4.8
	Flouride (mg/L)	0.02	0.02	0.02	0.01
	Nitrate (N mg/L)	0.55	0.47	0.44	1.38
	Nitrite (N mg/L)	<0.02	<0.02	<0.02	<0.02
	pH (pH units)	4.6	4.5	4.6	4.5
	Phenol Alkalinity (mg/L as CaCO3)	NP	NP	NP	NP
	Redox Potential (mV)	213	226	232	222
	Sulphate (mg/L)	8.1	6	5.8	6.2
	Temperature (C)	23.3	22.1	19.8	20.8
	TOC (mg/L)	0.7	0.3	0.4	0.6
	Total Acidity (mg/L CaCO3)	66	68	74	64
	Total Aluminium (mg/L)	18.9	33.3	18.3	14.1
	Total Arsenic (mg/L)	0.005	0.01	0.006	0.003
	Total Cadmium (mg/L)	<0.001	<0.001	<0.001	<0.001
	Total Calcium (mg/L)	0.6	0.6	0.6	0.8
	Total Chromium (mg/L)	<0.01	0.014	0.008	0.006
	Total Copper (mg/L)	0.01	0.026	0.015	0.008
	Total Iron (mg/L)	17.3	25.4	15.1	10.1
	Total Kjeldahl Nitrogen (mg/L)	0.8	0.73	0.35	0.25
	Total Lead (mg/L)	<0.01	0.025	0.011	0.007
	Total Magnesium (mg/L)	1.3	1.5	1.5	1.4

	Total Manganese (mg/L)	0.08	0.11	0.078	0.071
	Total Nickel (mg/L)	<0.01	0.005	0.005	0.002
	Total Nitrogen(mg/L)	1.35	1.2	0.79	1.63
	Total Phosphorus (mg/L)	0.1	0.12	0.06	0.05
	Total Potassium (mg/L)	<5	<5	<5	<5
	Total Sodium (mg/L)	17	21	20	16
	Total Zinc (mg/L)	0.06	0.068	0.033	0.028
GW15	Alkalinity (mg/L as CaCO3)	69	84	91	110
	Ammonia (mg/L)	0.03	<0.02	<0.02	2.64
	Bicarbonate HCO3 (mg/L)	42	51	91	110
	Biochemical Oxygen Demand (mg/L)	1.5	<1.0	<1.0	18
	Carbonate (CO3) (mg/L)	NP	NP	NP	NP
	Chloride (mg/L)	120	160	180	140
	Chromium 3 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Chromium 6 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Conductivity (µScm-1)	651	762	829	754
	Disolved Oxygen Membrane (mg/L)	4	4.7	5	1.8
	Flouride (mg/L)	0.18	0.24	0.23	0.23
	Nitrate (N mg/L)	0.63	0.06	0.05	<0.02
	Nitrite (N mg/L)	<0.02	<0.02	<0.02	0.02
	pH (pH units)	6.2	6	6.1	6.1

	Phenol Alkalinity (mg/L as CaCO3)	NP	NP	NP	NP
	Redox Potential (mV)	48	155	203	29
	Sulphate (mg/L)	58	44	36	39
	Temperature (C)	23.5	19.8	16.9	20.8
	TOC (mg/L)	9.2	4	3.6	31
	Total Acidity (mg/L CaCO3)	87	120	120	150
	Total Aluminium (mg/L)	2.55	6.85	3.92	1.1
	Total Arsenic (mg/L)	<0.005	0.007	0.008	0.01
	Total Cadmium (mg/L)	<0.001	<0.001	<0.001	<0.001
	Total Calcium (mg/L)	17	21	25	19
	Total Chromium (mg/L)	<0.01	0.004	0.003	0.001
	Total Copper (mg/L)	<0.01	0.004	0.004	0.005
	Total Iron (mg/L)	7.02	9.32	11.1	11.3
	Total Kjeldahl Nitrogen (mg/L)	0.89	0.42	0.32	6.41
	Total Lead (mg/L)	<0.01	0.006	0.005	0.002
	Total Magnesium (mg/L)	11	16	18	14
	Total Manganese (mg/L)	0.22	0.219	0.51	1.19
	Total Nickel (mg/L)	<0.01	0.009	0.011	0.015
	Total Nitrogen (mg/L)	1.52	0.48	0.37	6.43
	Total Phosphorus (mg/L)	0.09	0.08	0.03	0.43
	Total Potassium (mg/L)	<5	<5	<5	<5

	Total Sodium (mg/L)	81	110	124	96
	Total Zinc (mg/L)	0.04	0.047	0.034	0.049
GW16	Alkalinity (mg/L as CaCO3)	9	7	7	7
	Ammonia (mg/L)	0.16	<0.02	<0.02	<0.02
	BicarbonateHCO3 (mg/L)	5	4	7	7
	Biochemical Oxygen Demand (mg/L)	3.6	3.9	3	2.4
	Carbonate (CO3) (mg/L)	NP	NP	NP	NP
	Chloride (mg/L)	28	34	34	20
	Chromium 3 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Chromium 6 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Conductivity (µScm-1)	168	179	189	156
	Disolved Oxygen Membrane (mg/L)	2.8	4.5	4.7	5.4
	Flouride (mg/L)	0.2	0.01	0.01	0.03
	Nitrate (N mg/L)	4.21	1.26	0.51	5.11
	Nitrite (N mg/L)	0.02	<0.05	<0.02	<0.02
	pH (pH units)	5.9	5.2	5.4	5.2
	Phenol Alkalinity (mg/L as CaCO3)	NP	NP	NP	NP
	Redox Potential (mV)	107	159	210	147
	Sulphate (mg/L)	14	16	18	12
	Temperature (C)	23.7	21.8	18.5	20.7
	TOC (mg/L)	1.3	0.9	1.1	0.9

	Total Acidity (mg/L CaCO3)	44	47	47	37
	Total Aluminium (mg/L)	8.94	21.8	16.2	5.76
	Total Arsenic (mg/L)	<0.005	0.003	0.003	0.002
	Total Cadmium (mg/L)	<0.001	<0.001	<0.001	<0.001
	Total Calcium (mg/L)	0.9	0.7	0.3	0.7
	Total Chromium(mg/L)	<0.01	0.007	0.007	0.002
	Total Copper (mg/L)	<0.01	0.014	0.009	0.003
	Total Iron (mg/L)	3.3	10.2	9.48	2.52
	Total Kjeldahl Nitrogen (mg/L)	0.75	1.05	0.84	0.06
	Total Lead (mg/L)	<0.01	0.013	0.011	0.003
	Total Magnesium (mg/L)	1.8	1.6	1.5	2.1
	Total Manganese (mg/L)	0.08	0.139	0.131	0.066
	Total Nickel (mg/L)	<0.01	0.004	0.003	0.002
	Total Nitrogen (mg/L)	4.98	2.31	1.35	5.17
	Total Phosphorus (mg/L)	0.15	0.18	0.14	0.05
	Total Potassium (mg/L)	<5	<5	<5	<5
	Total Sodium (mg/L)	25	32	34	24
	Total Zinc (mg/L)	0.02	0.048	0.04	0.036
GW17	Alkalinity (mg/L as CaCO3)	130	53	Dry	87
	Ammonia (mg/L)	0.59	0.45	Dry	0.33
	Bicarbonate HCO3 (mg/L)	77	32	Dry	87

	Biochemical Oxygen Demand (mg/L)	4.8	6.6	Dry	3.3
	Carbonate (CO3) (mg/L)	NP	NP	Dry	NP
	Chloride (mg/L)	40	30	Dry	33
	Chromium 3 (mg/L)	0.01	0.02	Dry	0.02
	Chromium 6 (mg/L)	<0.01	<0.01	Dry	<0.01
	Conductivity (µScm-1)	510	320	Dry	334
	Disolved OxygenMembrane(mg/L)	3.6	3.9	Dry	2.8
	Flouride (mg/L)	0.29	0.12	Dry	0.17
	Nitrate (N mg/L)	0.05	<0.02	Dry	<0.02
	Nitrite (N mg/L)	<0.02	0.02	Dry	0.03
	pH (pH units)	6.2	5.8	Dry	5.9
	Phenol Alkalinity (mg/L as CaCO3)	NP	NP	NP	NP
	Redox Potential (mV)	-22	37	Dry	-15
	Sulphate (mg/L)	64	39	Dry	48
	Temperature (C)	24.7	21.9	Dry	22
	TOC (mg/L)	12	15	Dry	10
	Total Acidity (mg/L CaCO3)	150	210	Dry	190
	Total Aluminium (mg/L)	8.52	8.86	Dry	10.9
	Total Arsenic (mg/L)	0.022	0.025	Dry	0.052
	Total Cadmium (mg/L)	<0.001	<0.001	Dry	<0.001
	Total Calcium (mg/L)	39	20	Dry	24

	Total Chromium (mg/L)	0.01	0.015	Dry	0.019
	Total Copper (mg/L)	0.02	0.017	Dry	0.024
	Total Iron (mg/L)	23.2	24.2	Dry	35.9
	Total Kjeldahl Nitrogen (mg/L)	2.21	1.7	Dry	1.66
	Total Lead (mg/L)	<0.01	0.007	Dry	0.011
	Total Magnesium (mg/L)	9.4	4.8	Dry	7.4
	Total Manganese (mg/L)	0.28	0.217	Dry	0.27
	Total Nickel(mg/L)	<0.01	0.007	Dry	0.007
	Total Nitrogen (mg/L)	2.26	1.72	Dry	1.7
	Total Phosphorus (mg/L)	0.78	0.39	Dry	0.42
	Total Potassium (mg/L)	<5	<5	Dry	<5
	Total Sodium (mg/L)	32	25	Dry	28
	Total Zinc (mg/L)	0.08	0.082	Dry	0.057
GW19	Alkalinity (mg/L as CaCO3)	46	43	44	44
	Ammonia (mg/L)	<0.02	<0.02	<0.02	<0.02
	Bicarbonate HCO3 (mg/L)	28	26	44	44
	Biochemical Oxygen Demand (mg/L)	<1.0	<1.0	<1.0	<1.0
	Carbonate (CO3) (mg/L)	NP	NP	NP	NP
	Chloride (mg/L)	44	41	40	44
	Chromium 3 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Chromium 6 (mg/L)	<0.01	<0.01	<0.01	<0.01

	Conductivity (µScm-1)	321	315	304	252
	Disolved Oxygen Membrane (mg/L)	2.1	3.1	7.5	4.8
	Flouride (mg/L)	0.18	0.17	0.17	0.17
	Nitrate (N mg/L)	0.35	0.4	0.45	0.46
	Nitrite (N mg/L)	<0.02	<0.02	<0.02	<0.02
	pH (pH units)	6.6	6.4	6.7	6.5
	Phenol Alkalinity (mg/L as CaCO3)	NP	NP	NP	NP
	Redox Potential (mV)	31	47	64	-11
	Sulphate (mg/L)	34	30	29	31
	Temperature (C)	23.6	22.3	21.1	21.4
	TOC (mg/L)	<0.2	0.9	0.6	<0.2
	Total Acidity (mg/L CaCO3)	39	42	21	31
	Total Aluminium (mg/L)	0.14	0.08	0.04	0.06
	Total Arsenic (mg/L)	<0.005	0.001	0.001	<0.001
	Total Cadmium (mg/L)	<0.001	<0.001	<0.001	<0.001
	Total Calcium (mg/L)	1	1.1	1.1	1
	Total Chromium (mg/L)	<0.01	<0.001	<0.001	<0.001
	Total Copper (mg/L)	<0.01	<0.001	0.001	0.001
	Total Iron (mg/L)	0.19	0.15	0.1	0.11
	Total Kjeldahl Nitrogen (mg/L)	<0.05	<0.05	<0.05	<0.05
	Total Lead (mg/L)	<0.01	<0.001	<0.001	<0.001

	Total Magnesium (mg/L)	0.8	0.9	0.8	0.8
	Total Manganese (mg/L)	<0.01	0.007	0.008	0.013
	Total Nickel (mg/L)	<0.01	<0.001	<0.001	<0.001
	Total Nitrogen (mg/L)	0.37	0.4	0.45	0.44
	Total Phosphorus (mg/L)	0.09	0.08	0.07	0.08
	Total Potassium (mg/L)	<5	<5	<5	<5
	Total Sodium (mg/L)	59	61	61	58
	Total Zinc (mg/L)	<0.01	0.006	<0.005	0.005
GW20	Alkalinity (mg/L as CaCO3)	330	420	350	310
	Ammonia(mg/L)	0.08	0.04	0.03	0.06
	Bicarbonate HCO3 (mg/L)	201	257	350	320
	Biochemical Oxygen Demand (mg/L)	<1.0	<1.0	<1.0	<1.0
	Carbonate (CO3) (mg/L)	NP	NP	NP	NP
	Chloride (mg/L)	72	77	74	73
	Chromium 3 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Chromium 6 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Conductivity (µScm-1)	886	869	875	838
	Disolved Oxygen Membrane (mg/L)	1.3	1.2	1.9	1.8
	Flouride (mg/L)	0.4	0.42	0.47	0.48
	Nitrate (N mg/L)	0.05	<0.02	<0.02	<0.02

	Nitrite (N mg/L)	<0.02	<0.02	<0.02	<0.02
	pH (pH units)	7.1	6.8	7.1	7.1
	Phenol Alkalinity (mg/L as CaCO3)	NP	NP	NP	NP
	Redox Potential (mV)	-38	-20	-28	4
	Sulphate (mg/L)	10	11	10	10
	Temperature (C)	21.7	20.6	20.5	21.4
	TOC (mg/L)	1.9	1.7	1.4	1.5
	Total Acidity (mg/L CaCO3)	46	50	41	42
	Total Aluminium (mg/L)	0.19	0.15	0.35	0.13
	Total Arsenic (mg/L)	<0.005	0.006	0.008	0.004
	Total Cadmium (mg/L)	<0.001	<0.001	<0.001	<0.001
	Total Calcium(mg/L)	74	92	93	82
	Total Chromium (mg/L)	<0.01	<0.001	0.002	0.001
	Total Copper (mg/L)	<0.01	<0.001	0.003	0.002
	Total Iron (mg/L)	1.42	1.3	1.61	0.94
	Total Kjeldahl Nitrogen (mg/L)	0.21	0.07	14	0.15
	Total Lead (mg/L)	<0.01	<0.001	0.001	0.001
	Total Magnesium (mg/L)	11	13	13	12
	Total Manganese (mg/L)	0.98	0.936	0.857	0.694
	Total Nickel (mg/L)	<0.01	0.001	0.002	0.001
	Total Nitrogen (mg/L)	0.26	0.07	0.14	0.15

	Total Phosphorus (mg/L)	0.03	0.03	0.05	0.04
	Total Potassium (mg/L)	<5	<5	<5	<5
	Total Sodium (mg/L)	78	85	82	75
	Total Zinc (mg/L)	0.03	0.011	0.053	0.03
GW21	Alkalinity (mg/L as CaCO3)	38	40	39	56
	Ammonia (mg/L)	<0.02	<0.02	<0.02	<0.02
	Bicarbonate HCO3 (mg/L)	23	24	39	56
	Biochemical Oxygen Demand (mg/L)	<1.0	<1.0	<1.0	<1.0
	Carbonate (CO3) (mg/L)	NP	NP	NP	NP
	Chloride (mg/L)	130	130	38	130
	Chromium 3 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Chromium 6 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Conductivity(µScm-1)	526	568	528	470
	Disolved Oxygen Membrane (mg/L)	1.8	2.4	8.2	1.6
	Flouride (mg/L)	0.12	0.12	0.12	0.17
	Nitrate (N mg/L)	<0.02	<0.02	0.05	<0.02
	Nitrite (N mg/L)	<0.02	<0.02	<0.02	<0.02
	pH (pH units)	6	6	6.6	6.1
	Phenol Alkalinity (mg/L as CaCO3)	NP	NP	NP	NP
	Redox Potential (mV)	56	61	83	-41
	Sulphate (mg/L)	7.9	8	7.7	6.7

	Temperature (C)	21.4	20.5	19.8	20.4
	TOC (mg/L)	<0.2	<0.2	<0.2	<0.2
	Total Acidity (mg/L CaCO3)	75	79	22	72
	Total Aluminium (mg/L)	0.17	0.26	0.05	0.08
	Total Arsenic (mg/L)	<0.005	0.003	0.001	0.001
	Total Cadmium (mg/L)	<0.001	<0.001	<0.001	<0.001
	Total Calcium (mg/L)	13	15	15	16
	Total Chromium (mg/L)	<0.01	<0.001	<0.001	<0.001
	Total Copper (mg/L)	<0.01	0.002	0.001	0.001
	Total Iron (mg/L)	2.22	6.64	1.73	4.07
	Total Kjeldahl Nitrogen (mg/L)	0.23	0.08	<0.05	<0.05
	Total Lead (mg/L)	<0.01	0.001	<0.001	<0.001
	Total Magnesium (mg/L)	12	14	14	14
	TotalManganese(mg/L)	0.03	0.036	0.03	0.078
	Total Nickel (mg/L)	<0.01	0.002	0.001	0.003
	Total Nitrogen (mg/L)	0.23	0.08	0.07	<0.05
	Total Phosphorus (mg/L)	0.09	0.19	0.07	0.03
	Total Potassium (mg/L)	<5	<5	<5	<5
	Total Sodium (mg/L)	56	62	60	59
	Total Zinc (mg/L)	0.01	0.011	0.006	0.009
GW22	Alkalinity (mg/L as CaCO3)	540	600	570	570

	Ammonia (mg/L)	0.38	0.34	0.54	0.53
	Bicarbonate HCO3 (mg/L)	329	368	570	570
	Biochemical Oxygen Demand (mg/L)	<1.0	1.5	1.8	<1.0
	Carbonate (CO3) (mg/L)	NP	NP	NP	NP
	Chloride (mg/L)	130	120	130	140
	Chromium 3 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Chromium 6 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Conductivity (µScm-1)	1606	1588	1643	1653
	Disolved Oxygen Membrane (mg/L)	2.9	2.8	3	2.1
	Flouride (mg/L)	0.16	0.17	0.17	0.2
	Nitrate (N mg/L)	0.08	<0.02	0.04	0.04
	Nitrite (N mg/L)	0.02	0.05	0.03	0.03
	pH (pH units)	6.9	6.8	7	6.9
	Phenol Alkalinity (mg/L as CaCO3)	NP	NP	NP	NP
	Redox Potential(mV)	-48	-63	-63	-45
	Sulphate (mg/L)	115	127	115	120
	Temperature (C)	20.7	20.4	20.4	20.7
	TOC (mg/L)	2.8	2.8	2.5	3
	Total Acidity (mg/L CaCO3)	120	130	100	100
	Total Aluminium (mg/L)	0.24	0.38	0.43	0.09
	Total Arsenic (mg/L)	<0.005	0.005	0.004	0.001

	Total Cadmium (mg/L)	<0.001	<0.001	<0.001	<0.001
	Total Calcium (mg/L)	115	144	139	133
	Total Chromium (mg/L)	<0.01	0.002	0.003	0.001
	Total Copper (mg/L)	<0.01	0.001	0.004	0.002
	Total Iron (mg/L)	7.11	9.96	8.25	4.51
	Total Kjeldahl Nitrogen (mg/L)	0.65	0.69	0.98	0.78
	Total Lead (mg/L)	<0.01	0.002	0.002	<0.001
	Total Magnesium (mg/L)	14	16	16	17
	Total Manganese (mg/L)	2.14	2.56	2.26	2.14
	Total Nickel (mg/L)	<0.01	0.003	0.003	0.002
	Total Nitrogen (mg/L)	0.75	0.74	1.05	0.85
	Total Phosphorus (mg/L)	0.03	0.08	0.05	0.04
	Total Potassium (mg/L)	6	6	6	6
	Total Sodium (mg/L)	183	210	207	201
	Total Zinc (mg/L)	0.06	0.063	0.11	0.032
GW23	Alkalinity (mg/Las CaCO3)	120	140	100	120
	Ammonia (mg/L)	<0.02	0.02	<0.02	<0.02
	Bicarbonate HCO3 (mg/L)	74	83	100	120
	Biochemical Oxygen Demand (mg/L)	2.1	1.5	17	3.3
	Carbonate (CO3) (mg/L)	NP	NP	NP	NP
	Chloride (mg/L)	130	120	98	110

	Chromium 3 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Chromium 6 (mg/L)	<0.01	<0.01	<0.01	<0.01
	Conductivity (µScm-1)	753	681	569	542
	Disolved Oxygen Membrane (mg/L)	1.4	2.2	5.6	1.3
	Flouride (mg/L)	0.14	0.15	0.13	0.16
	Nitrate (N mg/L)	<0.02	<0.02	0.02	<0.02
	Nitrite (N mg/L)	<0.02	<0.02	<0.02	<0.02
	pH (pH units)	6.6	6.7	6.8	6.6
	Phenol Alkalinity (mg/L as CaCO3)				
	Redox Potential (mV)	-27	-30	25	-12
	Sulphate (mg/L)	28	22	18	21
	Temperature (C)	21.6	21.1	19.9	20.1
	TOC (mg/L)	1.2	1.3	2.9	2.6
	Total Acidity (mg/L CaCO3)	80	57	37	49
	Total Aluminium (mg/L)	0.24	0.08	0.06	0.07
	Total Arsenic (mg/L)	<0.005	<0.001	0.001	0.001
	Total Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001
	Total Calcium (mg/L)	23	26	24	24
	Total Chromium (mg/L)	<0.01	<0.001	<0.001	0.001
	Total Copper (mg/L)	<0.01	<0.001	0.001	0.003
	Total Iron (mg/L)	4.75	3.24	1.83	2.5

	Total Kjeldahl Nitrogen (mg/L)	0.25	0.08	0.18	0.09
	Total Lead (mg/L)	<0.01	<0.001	<0.001	<0.001
	Total Magnesium (mg/L)	13	14	12	13
	Total Manganese (mg/L)	1.97	1.59	0.156	0.932
	Total Nickel (mg/L)	<0.01	0.001	<0.001	0.002
	Total Nitrogen (mg/L)	0.25	0.08	0.2	0.09
	Total Phosphorus (mg/L)	0.07	0.07	0.08	0.08
	Total Potassium (mg/L)	<5	<5	<5	<5
	Total Sodium (mg/L)	89	90	76	78
	Total Zinc (mg/L)	0.02	0.012	0.014	0.011
SW1	Alkalinity (mg/L as CaCO3)	59	12	17	TBA
	Ammonia (mg/L)	0.04	<0.02	<0.02	TBA
	Biochemical Oxygen Demand (mg/L)	6.6	3.6	2.7	TBA
	Chloride (mg/L)	24	20	24	TBA
	Conductivity (µScm-1)	230	103	125	TBA
	Disolved Oxygen Membrane (mg/L)	<0.1	3.9	3.4	TBA
	Nitrate (N mg/L)	0.03	<0.02	<0.02	TBA
	Nitrite (N mg/L)	0.02	<0.02	<0.02	TBA
	Orthophosphate (mg/L)	<0.02	<0.02	<0.02	TBA
	pH (pH units)	6.6	5.6	6.6	TBA

	Redox Potential (mV)	-63	105	97	TBA
	Sulphate (mg/L)	2.7	2.6	2.8	TBA
	Suspended Solids (mg/L)	12	13	165	TBA
	TOC (mg/L)	22	3	4.2	TBA
	Total Arsenic (mg/L)	<0.005	0.001	0.009	TBA
	Total Cadmium (mg/L)	<0.001	<0.001	<0.001	TBA
	Total Calcium (mg/L)	11	3.1	3.9	TBA
	Total Chromium (mg/L)	<0.01	<0.001	0.001	TBA
	Total Copper (mg/L)	<0.01	<0.001	0.002	TBA
	Total Kjeldahl Nitrogen (mg/L)	1.28	0.23	1.35	TBA
	Total Lead (mg/L)	<0.001	<0.001	0.001	TBA
	Total Magnesium (mg/L)	4.4	1.4	1.8	TBA
	Total Manganese (mg/L)	1.71	0.184	0.604	TBA
	Total Nickel (mg/L)	<0.01	0.001	0.001	TBA
	Total Nitrogen (mg/L)	1.33	0.23	1.35	TBA
	Total Phosphorus (mg/L)	0.06	0.04	0.34	TBA
	Total Potassium (mg/L)	<5	<5	<5	TBA
	Total Sodium (mg/L)	14	14	16	TBA
	Total Zinc (mg/L)	0.05	0.03	0.008	TBA
SW2	Alkalinity (mg/Las CaCO3)	40	9	12	TBA
	Ammonia (mg/L)	0.03	<0.02	<0.02	TBA

	Biochemical Oxygen Demand (mg/L)	<0.005	0.002	0.001	TBA
	Chloride (mg/L)	5.7	4.8	1.2	TBA
	Conductivity (µScm-1)	<0.001	<0.001	<0.001	TBA
	Disolved Oxygen Membrane (mg/L)	8.3	2.3	3.1	TBA
	Nitrate (N mg/L)	29	24	31	TBA
	Nitrite (N mg/L)	<0.01	<0.001	<0.001	TBA
	Orthophosphate (mg/L)	196	111	140	TBA
	pH (pH units)	<0.01	<0.001	0.001	TBA
	Redox Potential (mV)	<0.1	1.5	4.8	TBA
	Sulphate (mg/L)	<0.01	<0.001	<0.001	TBA
	Suspended Solids (mg/L)	4.8	1.5	2.1	TBA
	TOC (mg/L)	2.02	0.184	0.109	TBA
	Total Arsenic (mg/L)	<0.01	0.001	0.001	TBA
	Total Cadmium (mg/L)	0.02	<0.02	<0.02	TBA
	Total Calcium (mg/L)	0.02	<0.02	<0.02	TBA
	Total Chromium (mg/L)	<0.02	<0.02	<0.02	TBA
	Total Copper (mg/L)	6.5	5.4	6.3	TBA
	Total Kjeldahl Nitrogen (mg/L)	<5	<5	<5	TBA
	Total Lead (mg/L)	-1	124	139	TBA
	Total Magnesium (mg/L)	16	16	20	TBA
	TotalManganese(mg/L)	2.6	2.7	3.1	TBA

	Total Nickel (mg/L)	22	21	3	TBA
	Total Nitrogen (mg/L)	1.41	0.44	0.28	TBA
	Total Phosphorus (mg/L)	20	3.8	4.2	TBA
	Total Potassium (mg/L)	1.45	0.44	0.28	TBA
	Total Sodium (mg/L)	0.05	0.06	0.03	TBA
	Total Zinc (mg/L)	0.01	0.039	0.01	TBA
SW4	Alkalinity (mg/L as CaCO3)	39	38	53	TBA
	Ammonia (mg/L)	0.03	<0.02	<0.02	TBA
	Biochemical Oxygen Demand (mg/L)	<0.005	0.003	0.002	TBA
	Chloride (mg/L)	3	3	14	TBA
	Conductivity (µScm-1)	<0.001	<0.001	<0.001	TBA
	Disolved Oxygen Membrane (mg/L)	10	11	18	TBA
	Nitrate (N mg/L)	12	9	12	TBA
	Nitrite (N mg/L)	<0.01	<0.001	<0.001	TBA
	Orthophosphate (mg/L)	118	116	152	TBA
	pH (pH units)	<0.01	0.001	0.002	TBA
	Redox Potential (mV)	2.7	3.4	5.3	TBA
	Sulphate (mg/L)	<0.01	<0.001	0.001	TBA
	Suspended Solids (mg/L)	2.2	2.4	3.3	TBA
	TOC (mg/L)	0.34	0.497	0.522	TBA
	Total Arsenic (mg/L)	<0.01	0.001	0.001	TBA

	Total Cadmium(mg/L)	0.02	<0.02	<0.02	TBA
	Total Calcium (mg/L)	0.02	0.02	<0.02	TBA
	Total Chromium (mg/L)	<0.02	<0.02	<0.02	TBA
	Total Copper (mg/L)	7	6	7	TBA
	Total Kjeldahl Nitrogen (mg/L)	<5	<5	<5	TBA
	Total Lead (mg/L)	153	186	132	TBA
	Total Magnesium (mg/L)	7.1	7.8	9.5	TBA
	Total Manganese (mg/L)	2.7	2	3.1	TBA
	Total Nickel (mg/L)	13	23	40	TBA
	Total Nitrogen (mg/L)	0.91	0.83	1.39	TBA
	Total Phosphorus (mg/L)	7.4	5.2	4.9	TBA
	Total Potassium (mg/L)	0.95	0.83	1.39	TBA
	Total Sodium (mg/L)	0.1	0.11	0.16	TBA
	Total Zinc (mg/L)	<0.01	0.059	0.034	TBA

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