EPL289 – ANNUAL GROUNDWATER MONITORING REPORT

12th July 2024

Reporting period: 01 July 2023 – 30 June 2024

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EXECUTIVE SUMMARY

Groundwater bores for GEMCO's Waste Management Facility (WMF) were monitored quarterly during FY24 in accordance with the conditions of Environment Protection Licence 289 (EPL289). This monitoring was conducted in line with Appendix 2 – Groundwater Monitoring Programme of EPL289 (the Monitoring Plan). There are 11 groundwater monitoring bores present within or adjacent to the WMF that are installed in both the upper (9 bores) and deeper (2 bores) aquifers. During FY24, all bores were dry during the August and November 2023 monitoring rounds, two bores contained water during the February 2023 monitoring round and nine bores contained water during the May / June 2024 monitoring round.

Laboratory analysis indicated that there were some exceedances from the adopted Australian and New Zealand Guidelines (ANZG) for Fresh and Marine Water Quality (ANZG, 2018) toxicant default guidelines with a 95% level of protection for metals and metalloids. Specifically, all groundwater bores sampled quarterly across FY24, exceeded the trigger value for zinc (0.008 mg/L), and one bore (WT025S) exceeded the trigger value for nickel (0.011 mg/L).

The concentration of *Enterococci* and *Escherichia coli* was elevated at WT015D during the February 2024 monitoring round with results of 6,300 and 540,000 CFU/100 mL respectively. This result was the highest concentrations of bacteria (*Enterococci* and *Escherichia coli*) for all groundwater monitoring bores since these parameters have been monitored from 2013. However, the results for WT015D in the consecutive monitoring round undertaken in June 2024 showed concentrations of *Enterococci* and *Escherichia coli* as less than the Limit of Reporting (LOR). This elevated result in February 2024 is attributed to sample contamination (e.g. by operator or from animal faeces such as frogs) rather than potential seepage from the sewage sludge that is stored at the WFM.

Based on the available data for the FY24 reporting period, there is a general absence of landfill seepage indicators. The lack of water in the shallow aquifer under the WMF for the majority of the reporting period would also suggest the risk of leachate potentially migrating vertically or horizontally through this aquifer system is low.

WASTE

The main waste streams that are disposed of at the WMF are green waste, construction waste and putrescible/household waste. Grease trap waste in small volumes (252 kL in FY24) and sewage sludge (2317 kL in FY24) following any routine maintenance of the Alyangula sewage treatment facility are also disposed of at the facility in line with Table 1 of EPL289. A minor storage area is located within the facility for the temporary storage of batteries (potentially containing acid solutions or solids, and lead or lead compounds) as well as an area for the storage of tyres (see **Figure 1**).

GROUNDWATER MONITORING PROGRAM

GEMCO conducts quarterly groundwater monitoring at 11 bores across eight locations within and adjacent to the WMF as specified in the conditions of EPL289. These bores have been installed in both the upper (9) and deeper (2) aquifers and are monitored for water level and quality to evaluate any potential increasing trends of the various analytes which may indicate generation and mobilisation of landfill leachate into the groundwater. Of note, WT029D and WT029S were installed at the same depth (12.00 metres below ground level (mbgl)). Despite their nomenclatures denoting 'deep' (D) and 'shallow' (S), these bores both target the shallow aquifer.

Monitoring locations

There are 11 groundwater monitoring bores across eight locations within and adjacent to the WMF. The locations of these bores in relation to the waste disposal and storage areas are shown in **Figure 1**.

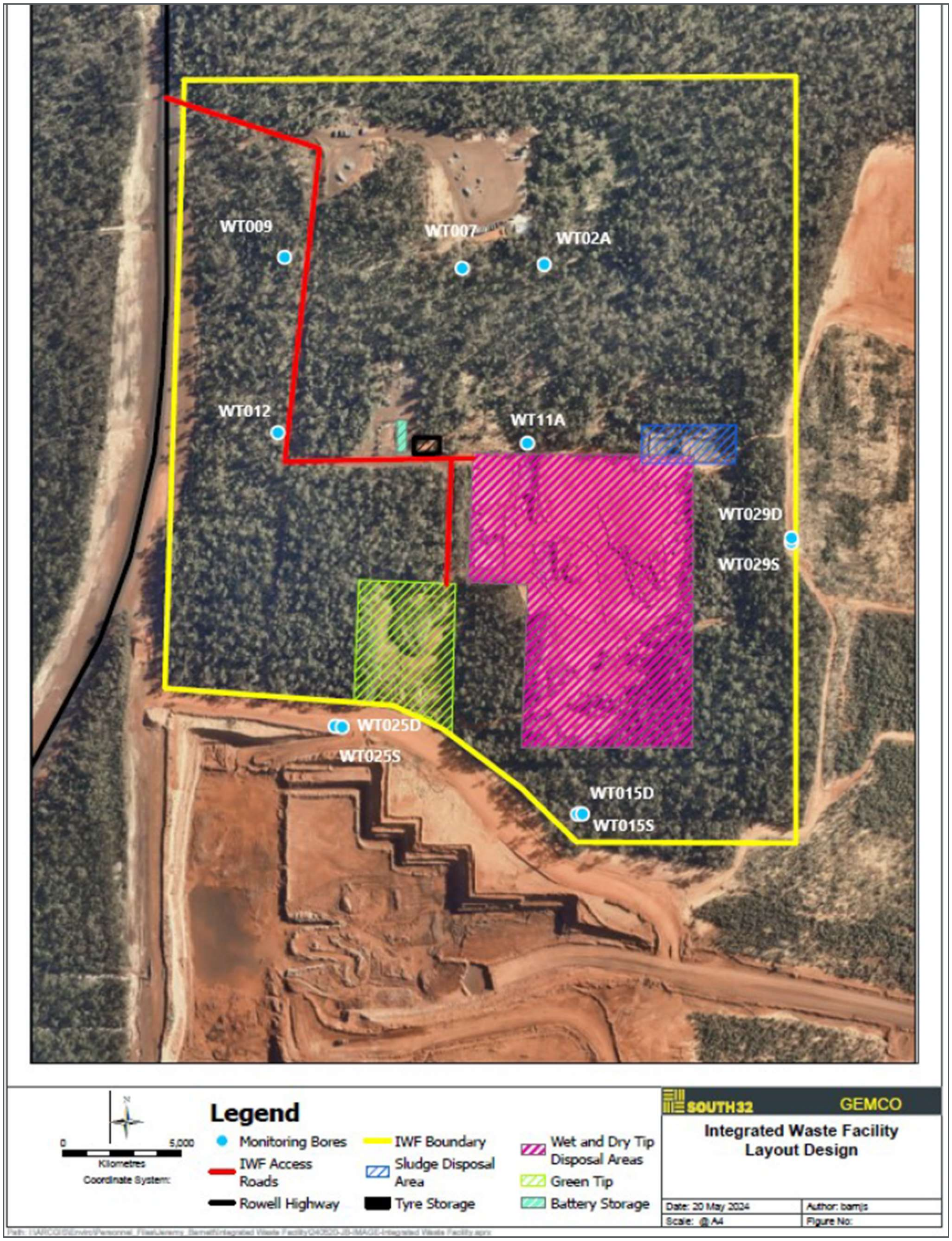

***Figure 1** WMF layout and groundwater monitoring network*

Field Sampling Methodology

Depth to groundwater (metres below top of casing (mbTOC)) was measured for each groundwater monitoring bore prior to sampling by using a manually operated electronic water level dip meter.

Low flow purging of groundwater monitoring bores was carried out by trained Environmental Specialists and Technicians using a Sample Pro® Portable Micropurge Pump with combined QED® MP50 compressor/controller unit. A Win-Situ Troll® 600 multi-parameter water quality meter with flow-through cell was used to determine when stabilisation criteria were met and field readings were recorded using a Microsoft application, EQuIS Collect. Field readings were uploaded from the field directly into GEMCO's Environmental Monitoring Database, EQuIS. After stabilisation criteria were met, groundwater samples were collected and stored in an esky before sending to a NATA (National Association of Testing Authorities) - Accredited Laboratory (ALS Laboratories) for analysis.

Analytical suites

The groundwater monitoring analytical schedule in accordance with EPL289 (Appendix 2: Groundwater Monitoring Programme) is summarised below:

Metals and metalloids (Mn, Zn, Fe, Ni, Pb).

pH.

Dissolved oxygen (DO).

Chloride (Cl^-).

Potassium (K).

Total organic nitrogen (TON).

Total phosphorous (TP).

Total dissolved solids (TDS).

Chemical Oxygen Demand.

Ammonium (NH_4^+).

E. Coli.

Enterococci.

Assessment Criteria

While EPL289 does not detail compliance trigger values for analytes, GEMCO compare metal concentrations to ANZG (2018) toxicant default guidelines for freshwaters with a 95% level of protection where available (**Table 1**). In addition to the analysis of metal concentrations, the analysis and interpretation of data within this report is focussed on nutrient concentrations and bacteria as indicators of potential mobilisation of landfill leachate and/or seepage from the sewage sludge facility.

***Table 1** GEMCO Water quality trigger levels for WMF groundwater*

Analyte	Water Quality Trigger Value (mg/L)(ANZG 2018)
Ni	0.011
Pb	0.0034
Mn	1.9
Zn	0.008
Fe	N/A

N/A – no relevant trigger level applies

RESULTS AND DISCUSSION

Groundwater Levels

Groundwater samples are required to be collected on a quarterly basis, however seasonal and operational influences (i.e., dewatering of adjacent quarries to allow for mining) resulted in many of the bores not containing sufficient water to sample in FY24. All bores (11) were dry during the August and November 2023 monitoring rounds (i.e., during the dry season). Only two bores, WT015D and WT025D, which are installed in the deeper aquifer, had sufficient water for sampling during the February 2024 monitoring round. Nine bores (WT007, WT009, WT012, WT015D, WT015S, WT025D, WT025S, WT029D and WT029S) were sampled during the May / June 2024 monitoring. Of note, four of the bores (WT015D, WT015S, WT029D and WT029S) were sampled outside of the proposed quarterly sampling frequency (i.e., sampled in June rather than May 2024) due to access constraints relating to track deterioration from above-average wet season rainfall.

Groundwater Quality

Metals:

Laboratory analysis indicated that there were some exceedances from the adopted ANZG (2018) toxicant default guidelines (for freshwaters with a 95% level of protection for dissolved metals and metalloids). Dissolved rather than total metal concentrations have been analysed and discussed within this report as this fraction is more relevant to the overarching aim of monitoring biological effects of potential contaminants.

All groundwater bores sampled quarterly across FY24 exceeded the trigger value for zinc (0.008 mg/L). One bore (WT025S) exceeded the trigger value for nickel (0.011 mg/L) during the May 2024 monitoring round. The concentration of dissolved lead and manganese were below their respective trigger values for all groundwater bores that were sampled in the FY24 reporting period (**Table 2**). The concentration of dissolved iron was below the LoR for all bores except for WT007 (May 2024) and WT015S (June 2024), with no trigger value for freshwaters being provided for iron within the ANZG (2018). Overall, it is unlikely that elevated zinc concentrations are indicative of impacts from the WMF, as groundwater sampling across Groote Eylandt consistently shows variable and elevated zinc concentrations (Hansen and Bailey, 2015). This is considered to reflect the enrichment of zinc and other metals (Manganese and Copper)) in the underlying geology of Groote Eylandt. Long-term monitoring of metals in groundwater from bores associated with the WMF does not show any increasing trends in any of the metals analysed as part of this monitoring program (**Figure 2** - **Figure 6**). It should be noted that where metal concentrations were below the LoR, concentrations have been plotted as the LoR for **Figure 2**– **Figure 6**.

Nutrients:

Nutrient levels for all 11 groundwater monitoring bores were either below the LoR or reported at low concentrations during the FY24 reporting period (**Table 2**), in line with historical data (**Table 3**). The nutrient concentrations for groundwater at the WMF are like concentrations displayed more broadly across GEMCO's leases and are likely to reflect levels that naturally occur in the local aquifer(s) (Coffey, 2011).

Bacteria:

The concentration of *Enterococci* and *Escherichia coli* was elevated at WT015D during the February 2024 monitoring round with results of 6,300 and 540,000 CFU/100 mL respectively. This result was the highest concentration of bacteria (*Enterococci* or *Escherichia coli*) recorded for any groundwater monitoring bore since monitoring for these parameters commenced in 2013. The results for WT015D in the subsequent monitoring round undertaken in June 2024 showed concentrations of *Enterococci* and *Escherichia coli* less than the LoR (i.e., not detected). The elevated results in February 2024 are attributed to sample contamination (e.g. by operator or from animal faeces such as frogs - which were observed associated with this bore) rather than seepage of sewage sludge that is disposed of at the WFM.

There are several other factors that suggest this elevated concentration is unlikely to be attributable to the sewage sludge, including the relatively small amount of sewage sludge (2317 kL) disposed at this facility over FY24. Additionally, WT015D is orientated to the south of the sewage sludge disposal area at the WFM (see **Figure 1**) which does not lie within the direct groundwater flow path (south-west / west) under the facility. Furthermore, in combination to the location of the groundwater monitoring bore, the measured water level of WT015D on 14 February 2024 (i.e., when it was sampled) was deep (16.21 mbTOC) which further reduces the likelihood that sewage sludge migrated down the water column and then horizontally to contaminate groundwater in this bore.

In addition, *Escherichia coli* was detected at WT029S and WT025S with concentrations of 10 CFU/100 mL and 1 CFU/100 mL. These results were equal to the corresponding LoR for the respective analysis for May 2024 (WT025S) and June 2024 (WT029S) and were also attributed to sample contamination from the same factors as WT015D. Furthermore, during February 2024, WT025D had a low concentration of *Enterococci* (1 CFU/100 mL) which may have been due to contamination from the sampling of WT015D which displayed an elevated concentration or by other means of sample contamination such as from the operator or from animal faeces (e.g. from frogs).

Discussion

The management practices at GEMCO's WMF include regular capping of waste cells. This assists in ensuring only minimal volumes of leachate are produced and that there is a minimal driving gradient of groundwater to mobilise leachate into the aquifer system(s). Based on the available data, there is a general absence of landfill seepage indicators. Historically, groundwater data was limited to the upper aquifer. In below-average rainfall years, the water table does not intersect the screened intervals of the bores, resulting in a lack of groundwater data for extended periods. Despite above average rainfall for this FY24 reporting period, there was a general absence of water within the upper aquifer until the end of the wet season (i.e., only during the May / June 2024 monitoring round). This was likely due to mine dewatering activities that occur adjacent to the WMF which result in the temporary lowering of the aquifer. The lack of water in this shallow aquifer under the WMF suggests that the risk of leachate potentially migrating through the aquifer systems is low. GEMCO will continue to sample the two deeper bores (WT015D and WT025D) to provide groundwater quality data from the deep aquifer and monitor potential impacts from the WMF.

Quarterly groundwater monitoring will continue in FY25 to determine any trends in water quality parameters that may be the result of landfill leachate. This will be reported to the NT Environmental

Protection Authority (EPA) in line with the reporting requirements of GEMCO's renewed licence EPL289-01 effective 1 July 2024.

***Table 2** FY24 Groundwater analytical results*

			General Chemistry								Inorganics	Dissolved Metals and Metalloids					Bacteriological	
Sample Location	**Sample Date**	**Depth to water (mbTOC)**	**pH**	**Dissolved Oxygen (%)**	**Chloride (mg/L)**	**Potassium (mg/L)**	**Organic Nitrogen as N (mg/L)**	**Total Phosphorus as P (mg/L)**	**Total Dissolved Solids (mg/L)**	**Chemical Oxygen Demand (mg/L)**	**Ammonium as N (mg/L)**	**Iron (mg/L)**	**Lead (mg/L)**	**Manganese (mg/L)**	**Nickel (mg/L)**	**Zinc (mg/L)**	**Enterococci (CFU/100mL)**	**Escherichia coli (CFU/100mL)**
ANZG (2018) DGV												**N/A**	**0.0034**	**1.9**	**0.011**	**0.008**		
WT007	27/05/2024	2.80	6.46	17.92	17	2	1	0.06	339	31	0.05	0.16	< 0.001	0.058	0.01	0.033	< 1	< 100
WT009	27/05/2024	4.48	5.33	83.88	11	1	< 0.1	< 0.01	282	< 10	< 0.01	< 0.05	0.002	0.015	0.006	0.043	< 1	< 1
WT012	27/05/2024	5.61	4.31	73.55	4	< 1	0.1	< 0.01	55	< 10	< 0.01	< 0.05	< 0.001	0.068	0.002	0.014	< 1	< 1
WT015D	14/02/2024	16.21	4.94	50.72	20	< 1	0.2	0.12	56	< 10	0.12	< 0.05	< 0.001	0.941	0.009	0.072	6300	540000
WT015D	18/06/2024	8.42	4.76	77.37	18	< 1	0.2	0.06	49	< 10	0.18	< 0.05	< 0.001	0.594	0.002	0.015	< 10	< 10
WT015S	18/06/2024	8.53	5.53	15.86	20	< 1	0.3	0.04	97	< 10	0.01	0.06	< 0.001	0.441	0.003	0.013	< 10	< 10
WT025D	14/02/2024	14.98	4.73	72.75	29	< 1	0.4	< 0.01	86	< 10	< 0.01	< 0.05	< 0.001	0.108	0.011	0.049	1	< 1
WT025D	27/05/2024	6.15	4.37	100.77	27	< 1	0.2	< 0.01	86	< 10	0.13	< 0.05	< 0.001	0.075	0.006	0.018	< 1	< 1
WT025S	27/05/2024	6.16	4.85	73.73	41	< 1	0.6	0.02	134	< 10	0.02	< 0.05	< 0.001	0.081	0.013	0.093	< 1	1
WT029D	18/06/2024	11.35	5.14	42.77	3	< 1	0.3	0.04	443	< 10	0.22	< 0.05	< 0.001	0.052	0.005	0.012	< 10	< 10
WT029S	18/06/2024	11.40	5.36	37.68	6	< 1	0.3	< 0.02	56	< 10	0.18	< 0.05	< 0.001	0.053	0.004	0.026	< 10	10

Note: Concentrations above adopted ANZG (2018) trigger values are indicated by red text and shading.

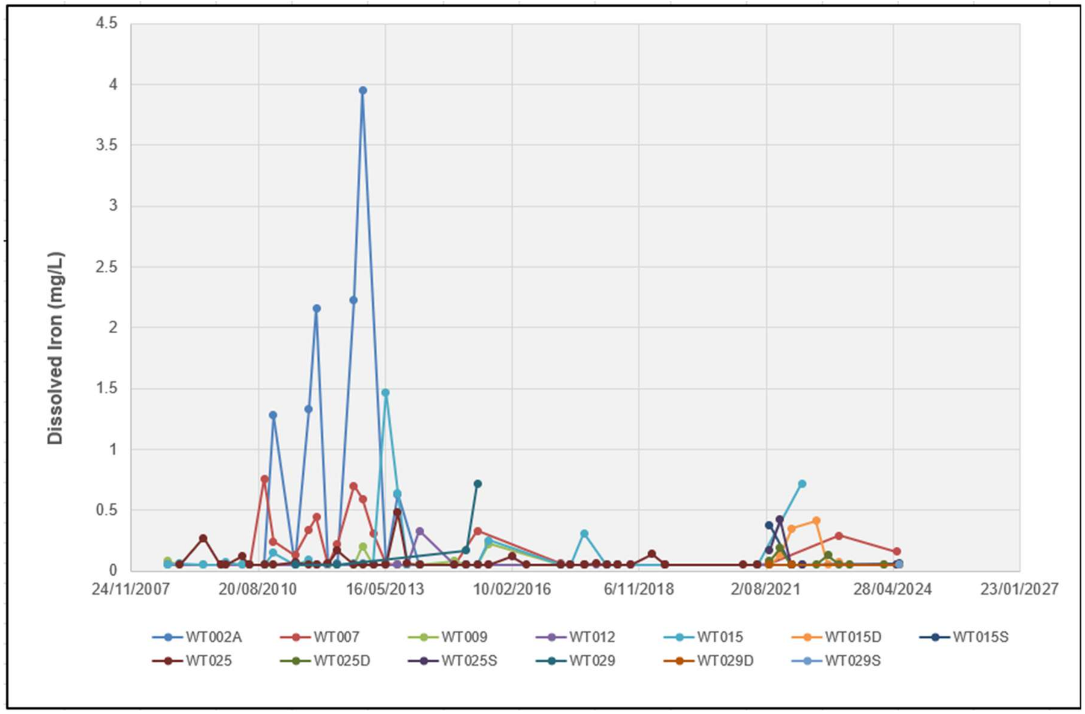

Figure 2 *Dissolved iron concentrations of groundwater monitoring bores at the WFM.*

Note*: Bores WT015, WT025, WT029 are no longer active (i.e., were destroyed and replaced)*

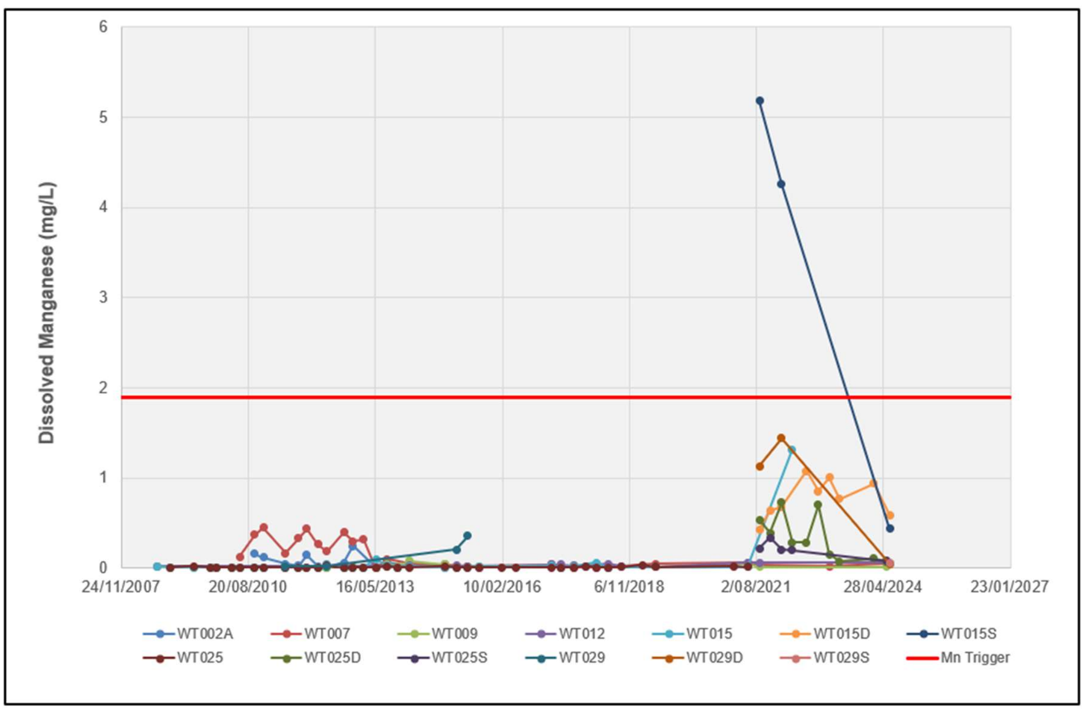

Figure 3 *Dissolved manganese concentrations of groundwater monitoring bores at the WFM.*

Note*: Bores WT015, WT025, WT029 are no longer active (i.e., were destroyed and replaced)*

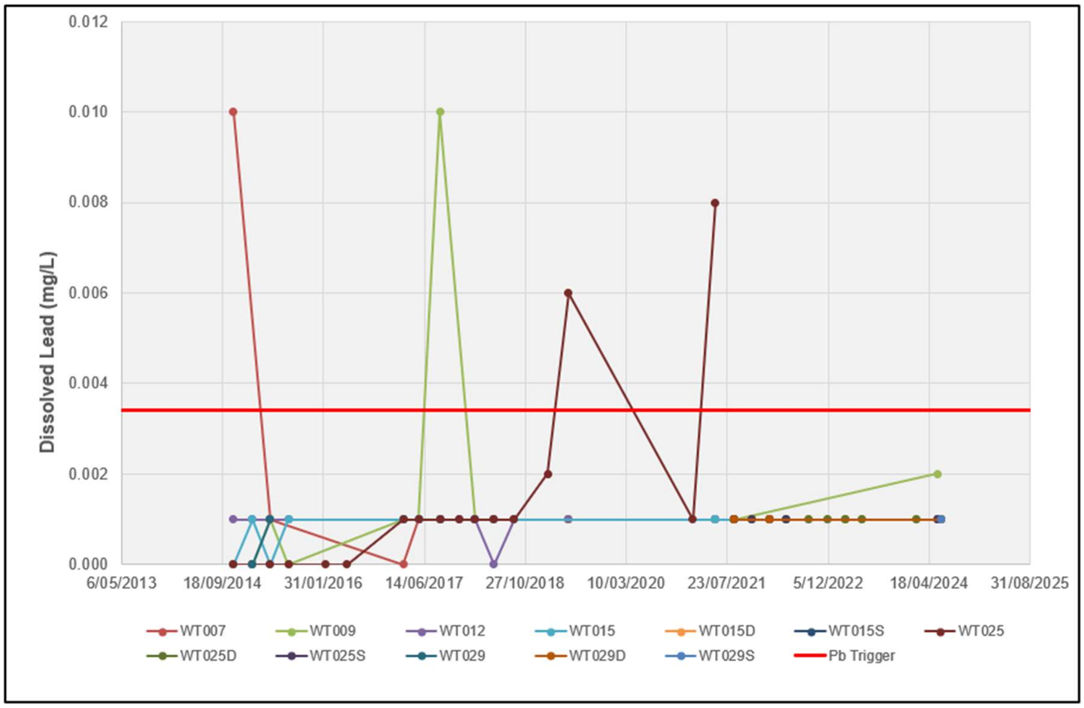

Figure 4 *Dissolved lead concentrations of groundwater monitoring bores at the WFM.*

Note*: Bores WT015, WT025, WT029 are no longer active (i.e., were destroyed and replaced.)*

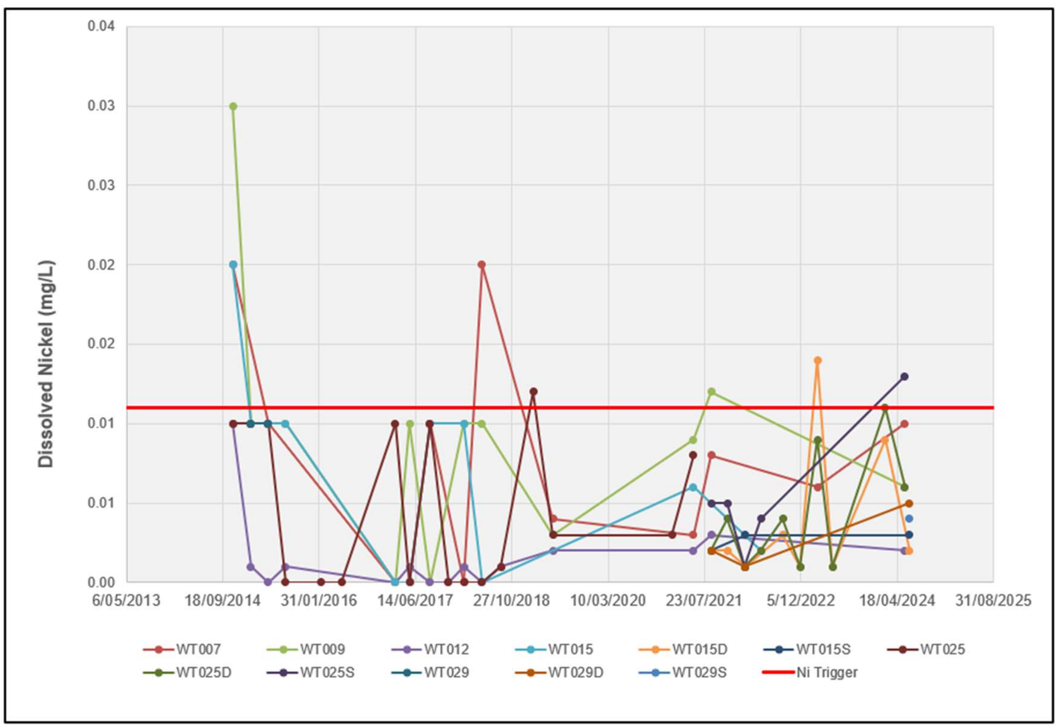

Figure 5 *Dissolved nickel concentrations of groundwater monitoring bores at the WFM.*

Note*: Bores WT015, WT025, WT029 are no longer active (i.e., were destroyed and replaced)*

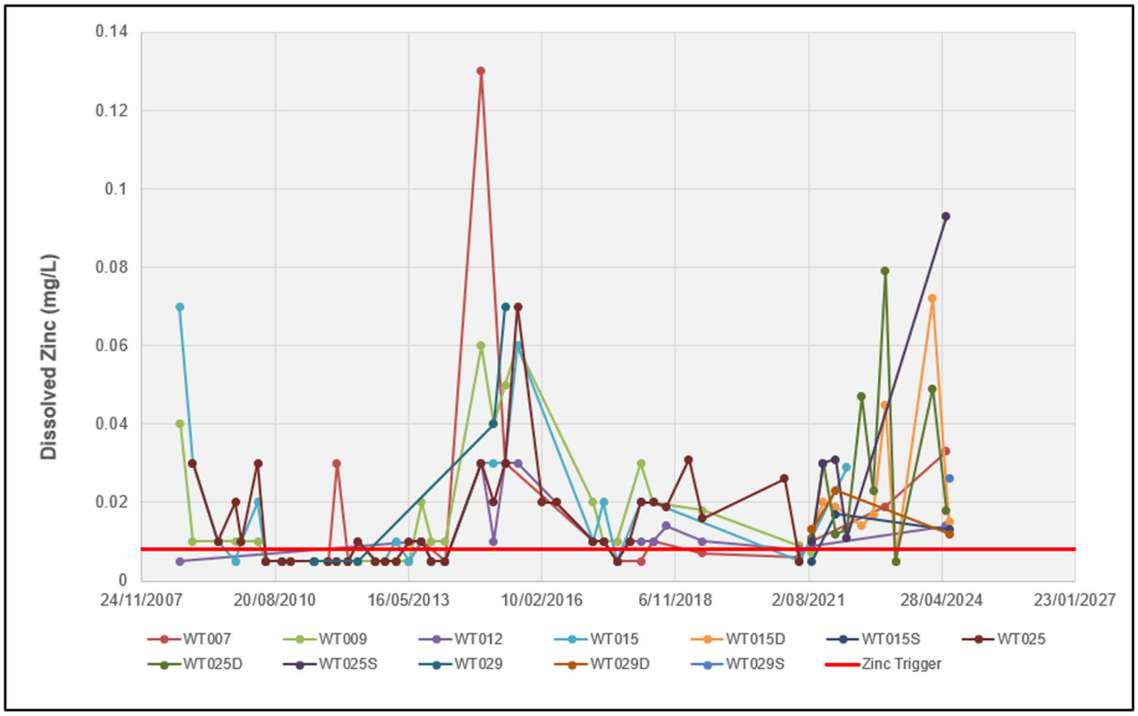

Figure 6 *Dissolved zinc concentrations of groundwater monitoring bores at the WFM.*

Note*: Bores WT015, WT025, WT029 are no longer active (i.e., were destroyed and replaced).*

Table 3 *Long term nutrient concentrations of groundwater monitoring bores at the WMF*

Sample Point	Sample Date	Ammonium as N (mg/L)	Organic Nitrogen as N (mg/L)	Potassium (mg/L)	Total Phosphorus as P (mg/L)
WT002A	5/10/2010	0.03		< 1	0.56
WT002A	15/12/2010	0.05		1	
WT002A	7/06/2011	0.04		< 1	
WT002A	19/09/2011	0.03		< 1	
WT002A	23/11/2011	0.05		< 1	
WT002A	16/02/2012	0.01		< 1	
WT002A	30/04/2012	0.03		< 1	
WT002A	10/09/2012	0.06		< 1	
WT002A	18/11/2012	0.09		1	
WT002A	20/05/2013	0.19		< 1	
WT002A	19/08/2013	0.18		1	
WT002A	12/02/2014	0.03		< 1	
WT007	13/06/2010	0.05		4	
WT007	5/10/2010	0.09		4	0.21
WT007	15/12/2010	0.22		4	
WT007	7/06/2011	0.06		3	
WT007	19/09/2011	0.11		3	
WT007	23/11/2011	0.2		3	
WT007	16/02/2012	0.06		4	
WT007	30/04/2012	0.08		3	
WT007	10/09/2012	0.2		2	
WT007	18/11/2012	0.2		2	

Sample Point	Sample Date	Ammonium as N (mg/L)	Organic Nitrogen as N (mg/L)	Potassium (mg/L)	Total Phosphorus as P (mg/L)
WT007	11/02/2013	0.21		3	
WT007	20/05/2013	0.1		3	
WT007	19/08/2013	0.08		2	
WT007	12/02/2014	0.01		2	
WT007	10/11/2014	< 0.01		2	0.01
WT007	12/05/2015	< 0.01		2	< 0.01
WT007	28/02/2017	< 0.01		3	0.05
WT007	15/05/2017	0.05		3	< 0.01
WT007	28/08/2017	0.04		3	0.15
WT007	19/02/2018	0.07		2	0.03
WT007	22/05/2018	0.04		3	0.04
WT007	28/05/2019	< 0.01	0.4	2	0.02
WT007	24/05/2021	< 0.01	0.5	3	< 0.05
WT007	25/08/2021		0.5	2	0.10
WT007	28/02/2023		0.1	2	0.01
WT007	27/05/2024	0.05	1	2	0.06
WT009	4/09/2008	0.02		3	
WT009	9/12/2008	< 0.01		3	
WT009	10/03/2009	< 0.01		2	
WT009	10/03/2009	< 0.01		2	
WT009	16/06/2009	0.07		2	
WT009	26/10/2009	< 0.01		2	
WT009	8/12/2009	0.01		2	
WT009	8/12/2009	0.01		2	
WT009	12/04/2010	< 0.01		1	
WT009	12/06/2010	< 0.01		2	
WT009	5/10/2010	0.06		2	0.05
WT009	14/12/2010	0.02		1	
WT009	7/06/2011	0.02		1	
WT009	19/09/2011	0.02		2	
WT009	22/11/2011	0.02		1	
WT009	16/02/2012	0.02		1	
WT009	30/04/2012	0.03		1	
WT009	10/09/2012	0.03		1	
WT009	18/11/2012	0.09		2	
WT009	11/02/2013	0.04		2	
WT009	20/05/2013	0.06		1	
WT009	19/08/2013	0.04		2	
WT009	4/11/2013	0.11		2	
WT009	12/02/2014	0.02		1	
WT009	10/11/2014	0.05		1	0.02
WT009	11/02/2015	0.04		1	0.04
WT009	12/05/2015	< 0.01		1	< 0.01
WT009	10/08/2015	< 0.01		1	< 0.01
WT009	28/02/2017	0.03		1	< 0.01
WT009	15/05/2017	0.06		1	0.02
WT009	28/08/2017	0.01		1	0.03
WT009	19/02/2018	0.16		1	0.01

Sample Point	Sample Date	Ammonium as N (mg/L)	Organic Nitrogen as N (mg/L)	Potassium (mg/L)	Total Phosphorus as P (mg/L)
WT009	22/05/2018	0.04		1	0.02
WT009	28/05/2019	0.04	< 0.1	1	0.02
WT009	24/05/2021	< 0.01	< 0.1	2	< 0.01
WT009	25/08/2021		< 0.1	1	< 0.01
WT009	27/05/2024	< 0.01	< 0.1	1	< 0.01
WT011A	5/10/2010	0.03		< 1	
WT011A	15/12/2010				
WT011A	16/12/2010	0.22		< 1	
WT011A	21/03/2011				
WT011A	31/03/2011				
WT011A	31/03/2011				
WT011A	31/03/2011				
WT011A	31/03/2011				
WT011A	7/06/2011				
WT011A	7/06/2011	0.01		< 1	
WT011A	19/09/2011				
WT011A	19/09/2011	0.02		< 1	
WT011A	22/11/2011				
WT011A	23/11/2011	0.06		< 1	
WT011A	16/02/2012				
WT011A	16/02/2012	0.02		< 1	
WT011A	30/04/2012				
WT011A	30/04/2012	0.04		< 1	
WT011A	10/09/2012				
WT011A	10/09/2012	0.03		< 1	
WT011A	10/09/2012				
WT011A	18/11/2012	0.09		< 1	
WT011A	18/11/2012				
WT011A	11/02/2013	0.07		< 1	
WT011A	11/02/2013				
WT011A	20/05/2013	0.08		< 1	
WT011A	20/05/2013				
WT011A	20/05/2013				
WT011A	20/05/2013				
WT011A	20/05/2013				
WT011A	20/05/2013				
WT011A	20/05/2013				
WT011A	19/08/2013	0.12		< 1	
WT011A	19/08/2013				
WT011A	4/11/2013				
WT011A	4/11/2013	0.07		< 1	
WT011A	12/02/2014	0.12		< 1	
WT011A	12/02/2014				
WT011A	12/02/2014				
WT011A	12/02/2014				
WT011A	12/02/2014				
WT011A	12/02/2014				
WT011A	12/02/2014				

Sample Point	Sample Date	Ammonium as N (mg/L)	Organic Nitrogen as N (mg/L)	Potassium (mg/L)	Total Phosphorus as P (mg/L)
WT011A	10/11/2014				
WT011A	10/11/2014			< 1	
WT011A	28/02/2017				
WT011A	28/02/2017	0.09		< 1	< 0.01
WT011A	15/05/2017	0.06		< 1	
WT011A	28/08/2017	0.04		< 1	
WT011A	28/08/2017				
WT011A	19/02/2018				
WT011A	19/02/2018	0.14		< 1	
WT011A	22/05/2018	0.02		< 1	< 0.01
WT012	4/09/2008	0.04		< 1	
WT012	19/08/2013	0.1		< 1	
WT012	4/11/2013	0.06		< 1	
WT012	12/02/2014	0.05		< 1	
WT012	10/11/2014	< 0.01		< 1	0.01
WT012	11/02/2015	0.01		< 1	0.06
WT012	12/05/2015	< 0.01		< 1	0.01
WT012	10/08/2015	< 0.01		< 1	< 0.01
WT012	28/02/2017	0.03		< 1	< 0.01
WT012	15/05/2017	0.1		< 1	0.01
WT012	28/08/2017	0.06		< 1	0.14
WT012	30/11/2017	0.27		< 1	0.02
WT012	19/02/2018	0.36		< 1	< 0.01
WT012	22/05/2018	0.07		< 1	< 0.01
WT012	30/08/2018		< 0.1	< 1	< 0.01
WT012	28/05/2019	< 0.01	< 0.1	< 1	< 0.01
WT012	24/05/2021	0.02	< 0.1	< 1	< 0.01
WT012	25/08/2021		0.3	< 1	< 0.01
WT012	27/05/2024	< 0.01	0.1	< 1	< 0.01
WT015	3/09/2008	0.04		< 1	
WT015	9/12/2008	< 0.01		< 1	
WT015	9/03/2009	< 0.01		< 1	
WT015	9/03/2009	< 0.01		< 1	
WT015	16/06/2009	0.08		< 1	
WT015	25/10/2009	0.03		< 1	
WT015	8/12/2009	0.03		< 1	
WT015	12/04/2010	< 0.01		< 1	
WT015	13/06/2010	0.05		< 1	
WT015	6/10/2010	0.08		< 1	0.01
WT015	16/12/2010	0.1		< 1	
WT015	7/06/2011	0.02		< 1	
WT015	19/09/2011	< 0.01		< 1	
WT015	22/11/2011	0.05		< 1	
WT015	16/02/2012	0.02		< 1	
WT015	30/04/2012	0.03		< 1	
WT015	10/09/2012	0.02		< 1	
WT015	18/11/2012	0.07		< 1	
WT015	11/02/2013	0.05		< 1	

Sample Point	Sample Date	Ammonium as N (mg/L)	Organic Nitrogen as N (mg/L)	Potassium (mg/L)	Total Phosphorus as P (mg/L)
WT015	20/05/2013	0.15		< 1	
WT015	19/08/2013	1.22		< 1	
WT015	4/11/2013	0.07		< 1	
WT015	12/02/2014	0.06		< 1	
WT015	10/11/2014	< 0.01		< 1	0.11
WT015	11/02/2015	0.01		< 1	0.04
WT015	12/05/2015	< 0.01		< 1	< 0.01
WT015	10/08/2015	0.04		< 1	< 0.01
WT015	28/02/2017	0.21		< 1	0.12
WT015	15/05/2017	0.05		< 1	< 0.01
WT015	28/08/2017	0.04		< 1	0.02
WT015	19/02/2018	0.04		< 1	< 0.01
WT015	22/05/2018	0.04		< 1	< 0.01
WT015	24/05/2021	< 0.01	< 0.1	< 1	< 0.01
WT015	12/05/2022	0.06	0.1	< 1	0.03
WT015D	25/08/2021		< 0.5	< 1	0.26
WT015D	18/11/2021		< 0.1	< 1	0.02
WT015D	17/02/2022	0.05	0.8	< 1	0.02
WT015D	31/08/2022	< 0.01	< 0.5	< 1	0.06
WT015D	1/12/2022	< 0.01	< 1	< 1	0.15
WT015D	28/02/2023		0.2	< 1	0.04
WT015D	18/05/2023	0.15	0.2	< 1	0.06
WT015D	14/02/2024	0.12	0.2	< 1	0.12
WT015D	18/06/2024	0.18	0.2	< 1	0.06
WT015S	25/08/2021		< 2	2	0.45
WT015S	17/02/2022	0.13	< 1	2	0.16
WT015S	18/06/2024	0.01	0.3	< 1	0.04
WT025	9/12/2008	< 0.01		< 1	
WT025	9/03/2009	< 0.01		< 1	
WT025	9/03/2009	< 0.01		< 1	
WT025	16/06/2009	0.08		< 1	
WT025	25/10/2009	< 0.01		< 1	
WT025	8/12/2009	0.01		< 1	
WT025	12/04/2010	< 0.01		< 1	
WT025	13/06/2010	0.02		< 1	
WT025	6/10/2010	0.05		< 1	0.04
WT025	16/12/2010	0.06		< 1	
WT025	7/06/2011	0.03		< 1	
WT025	19/09/2011	< 0.01		< 1	
WT025	22/11/2011	0.02		< 1	
WT025	16/02/2012	0.03		< 1	
WT025	30/04/2012	0.05		< 1	
WT025	10/09/2012	0.03		< 1	
WT025	18/11/2012	0.06		< 1	
WT025	11/02/2013	0.06		< 1	
WT025	20/05/2013	0.05		< 1	
WT025	19/08/2013	0.05		< 1	
WT025	4/11/2013	0.06		< 1	

Sample Point	Sample Date	Ammonium as N (mg/L)	Organic Nitrogen as N (mg/L)	Potassium (mg/L)	Total Phosphorus as P (mg/L)
WT025	12/02/2014	0.04		< 1	
WT025	10/11/2014	0.04		< 1	< 0.01
WT025	11/02/2015	0.02		< 1	0.04
WT025	12/05/2015	< 0.01		< 1	< 0.01
WT025	10/08/2015	< 0.01		< 1	< 0.01
WT025	8/02/2016	0.03		< 1	< 0.01
WT025	27/05/2016	0.02		< 1	< 0.01
WT025	28/02/2017	0.14		< 1	0.05
WT025	15/05/2017	0.05		< 1	< 0.01
WT025	28/08/2017	0.08		< 1	< 0.01
WT025	30/11/2017	0.12		< 1	0.03
WT025	19/02/2018	0.16		< 1	< 0.01
WT025	22/05/2018	0.01		< 1	< 0.01
WT025	30/08/2018		< 0.1	< 1	< 0.01
WT025	14/02/2019		< 1	< 1	< 0.01
WT025	28/05/2019	0.06	< 0.1	< 1	< 0.01
WT025	2/02/2021	< 0.01	< 0.1	< 1	< 0.01
WT025	24/05/2021	< 0.01	0.1	< 1	< 0.01
WT025D	25/08/2021		0.1	< 1	0.01
WT025D	18/11/2021		0.4	< 1	0.04
WT025D	17/02/2022	0.05	2.0	< 1	0.22
WT025D	12/05/2022	0.06	0.5	< 1	0.10
WT025D	31/08/2022	< 0.01	< 0.5	< 1	< 0.05
WT025D	1/12/2022	< 0.01	< 1	< 1	0.26
WT025D	28/02/2023		0.2	< 1	0.04
WT025D	18/05/2023	0.04	0.5	< 1	0.04
WT025D	14/02/2024	< 0.01	0.4	< 1	< 0.01
WT025D	27/05/2024	0.13	0.2	< 1	< 0.01
WT025S	25/08/2021		0.1	< 1	< 0.01
WT025S	18/11/2021		0.9	< 1	0.07
WT025S	17/02/2022	0.02	< 0.5	< 1	< 0.05
WT025S	12/05/2022	< 0.01	0.6	< 1	0.02
WT025S	27/05/2024	0.02	0.6	< 1	0.02
WT029	7/06/2011	0.02		< 1	
WT029	30/04/2012	0.04		< 1	
WT029	11/02/2015	0.03		< 1	0.04
WT029	12/05/2015	< 0.01		< 1	0.08
WT029D	25/08/2021		< 2	< 1	< 0.20
WT029D	17/02/2022	< 0.01	< 1	< 1	0.16
WT029D	18/06/2024	0.22	0.3	< 1	0.04
WT029S	18/06/2024	0.18	0.3	< 1	< 0.02

Notes:

- *Bores WT015, WT025, WT029 are no longer active as they were replaced with additional bores WT015D, WT015S, WT025S, WT025D, WT029D and WT029S*
- Omission of concentrations for the parameters in the historical dataset for nutrients is largely due to the parameter not being required to be recorded at the time of monitoring.

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