EPL289 – ANNUAL MONITORING REPORT

13 July 2021

Reporting period: 01 July 2020 – 30 June 2021

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CONTENTS

EXECUTIVE SUMMARY

Bores within GEMCO's Waste Management Facility were monitored quarterly during FY21 in accordance with the conditions of Environment Protection Licence 289 (EPL289). Bores were mostly dry throughout FY21; except for February and May quarters. Historically, few groundwater quality analyses have been available as the bores have been regularly dry.

Based on the available data, there is a general absence of landfill seepage indicators, however since the existing monitoring network is screened in the upper aquifer, it is unknown whether these data are reflecting the quality of seasonal recharge or potential seepage-affected water.

The lack of water in the shallow aquifer under this facility for the reporting period would also suggest the risk of leachate potentially migrating through the aquifer system is low.

MONITORING PROGRAM

GEMCO conducts quarterly groundwater monitoring at locations in and around the Waste Management Facility as specified in the conditions of EPL289 (Figure 1). Eight groundwater bores are located at the active landfill. In accordance with EPL289, the bores are monitored quarterly for groundwater level and quality to detect contaminated leachates from the site.

The main waste streams that are disposed of at the facility are green waste, construction waste and putrescible/household waste. A minor disposal area is located within the facility for the disposal of sewage sludge following any routine maintenance of the Alyangula sewage treatment facility. Under the conditions of EPL289 tyres and batteries are also stored (not disposed) at the waste management facility.

Figure 1: Groundwater monitoring locations, FY21

Low flow purging of groundwater monitoring bores is carried out 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 is used to determine when stabilisation criteria have been met and field readings are recorded using a Microsoft application, EQuIS Collect. Field readings are uploaded from the field directly into GEMCO's Environmental Monitoring Database, EQuIS. After stabilisation criteria have been met, samples are collected and stored in an Esky before sending to a NATA Accredited Laboratory (i.e. ALS Laboratories) for analysis.

The required monitoring parameters include total and dissolved metalloids (Mn, Zn, Fe, Ni, Pb), major anions (Cl, SO4) and major cations (Ca, Mg, Na, K), alkalinity, total dissolved solids (TDS), Chemical Oxygen Demand, ammonium, total phosphorous, total organic nitrogen (TON), *E Coli*, and *Enterococci*. The 2021 MMP specifies that the water quality data should be compared against the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG 2018) toxicant default guidelines with a 95% level of protection where available.

The groundwater flow direction in the waste facility is to the southwest towards the coast during both wet and dry seasons. Nutrient and bacteria concentrations are analysed for any increasing trends in concentrations/counts which might indicate an increase in the mobilisation of leachate.

SAMPLING EVENTS

During the 2020 – 2021 reporting period, groundwater bores were checked quarterly however groundwater samples were limited to the months of February (one of six bores sampled) and May 2021 (five of six bores sampled) due to the bores being dry in the preceding quarters.

RESULTS AND DISCUSSION

DATA ANALYSIS

Few groundwater analyses are available as the bores have been regularly dry.

Metals

The trigger value for lead was exceeded on one occasion at WT025 during May 2021 (Table 1). There have been very few exceedances of lead throughout the life of the monitoring program (Four, across three sites), and the exact cause of this spike is unknown and will continue to be monitored into FY22.

Zinc exceeded the ANZG (2018) default guideline at WT009 and WT025 (Table 1). Dissolved zinc levels have consistently exceeded the ANZG (2018) and are likely a natural feature of the regional aquifer.

Nutrients and Bacteria

Nutrient levels were low during the reporting period (Table 1) and *Escherichia coli* and *Enterococci* bacteria were under the Limit of Reporting (LOR) for all samples during the reporting period (Table 1).

DISCUSSION

The management practices at GEMCO's Waste Management Facility involve regular capping of waste cells. This assists in ensuring only minimal volumes of leachate are produced and that there is a minimal driving gradient to mobilise leachate into the aquifer system. Based on the available data, there is a general absence of landfill seepage indicators. The reach of the available monitoring bore network is limited to the upper aquifer. In below-average rainfall years, the water table may not reach the screened intervals meaning they are not providing groundwater data for extended periods of time. To more effectively monitor the tip, deeper bores are planned to be installed in FY22 at three sites. Bores WT029, WT015 and WT025 (which are due to be consumed by the mining footprint) will be repositioned closer to the tip and include a deep and shallow bore installed at each location (Figure 2).

The lack of water in the shallow aquifer under this facility for the reporting period would also suggest the risk of leachate potentially migrating through the aquifer system is low.

Monitoring will continue in FY22 to determine any increasing trends in water quality parameters that might be the result of landfill leachate. This will be reported to the N.T. EPA in line with the reporting requirements of EPL289.

Table 1: FY21 water quality results.

Location	Sample Date	Cl^- (mg/L)	K - Dissolved (mg/L)	Organic Nitrogen as N (mg/L)	Total P (mg/L)	COD (mg/L)	Ammonium as N (mg/L)	Fe (µg/L)	Pb (µg/L)	Mn (µg/L)	Ni (µg/L)	Zn (µg/L)	Enterococci (CFU/100mL)	Escherichia coli (CFU/100mL)
WT007	24/05/2021	7	3	0.5	< 0.05	13	< 0.01	< 50	1	62	3	6	< 1	< 1
WT009	24/05/2021	12	2	< 0.1	< 0.01	< 10	< 0.01	< 50	< 1	49	9	9	< 1	< 1
WT012	24/05/2021	4	< 1	< 0.1	< 0.01	< 10	0.02	< 50	< 1	63	2	8	< 1	< 1
WT015	24/05/2021	20	< 1	< 0.1	< 0.01	< 10	< 0.01	< 50	< 1	14	6	5	< 1	< 1
WT025	2/02/2021	22	< 1	< 0.1	< 0.01	< 10	< 0.01	< 50	< 1	20	3	26	< 1	< 1
WT025	24/05/2021	21	< 1	0.1	< 0.01	< 10	< 0.01	< 50	8	15	8	< 5	< 1	< 1

*Metals are reported as dissolved fractions.

Table 2: Long term tip monitoring data (dissolved metals). Highlighted cells represent values that exceed the ANZG (2018) default guideline for that metal.

CHEMICAL_NAME		Iron	Lead	Manganese	Nickel	Zinc
REPORT_RESULT_UNIT		µg/L	µg/L	µg/L	µg/L	µg/L
SYS_LOC_CODE	SAMPLE_DATE	REPORT_RESULT_TEXT	REPORT_RESULT_TEXT	REPORT_RESULT_TEXT	REPORT_RESULT_TEXT	REPORT_RESULT_TEXT
WT002A	5/10/2010	< 50	---	160	---	< 5
WT002A	15/12/2010	1280	---	120	---	< 5
WT002A	7/06/2011	< 50	---	50	---	< 5
WT002A	19/09/2011	1330	---	30	---	< 5
WT002A	23/11/2011	2160	---	150	---	20
WT002A	16/02/2012	< 50	---	20	---	< 5
WT002A	30/04/2012	60	---	10	---	< 5
WT002A	10/09/2012	2230	---	60	---	10
WT002A	18/11/2012	3950	---	250	---	< 5
WT002A	20/05/2013	< 50	---	10	---	10
WT002A	19/08/2013	630	---	70	---	10
WT002A	12/02/2014	< 50	---	20	---	10
WT007	13/06/2010	< 50	---	130	---	< 5
WT007	5/10/2010	760	---	370	---	< 5
WT007	15/12/2010	240	---	450	---	< 5
WT007	7/06/2011	130	---	170	---	< 5
WT007	19/09/2011	340	---	330	---	< 5
WT007	23/11/2011	440	---	440	---	30
WT007	16/02/2012	< 50	---	270	---	< 5
WT007	30/04/2012	220	---	190	---	< 5
WT007	10/09/2012	700	---	400	---	< 5
WT007	18/11/2012	590	---	300	---	< 5
WT007	11/02/2013	310	---	320	---	< 5
WT007	20/05/2013	60	---	0	---	< 5
WT007	19/08/2013	< 50	---	100	---	10
WT007	12/02/2014	50	---	50	---	< 5
WT007	10/11/2014	< 50	10	40	20	130
WT007	12/05/2015	330	< 1	20	10	30
WT007	28/02/2017	60	0	40	0	10
WT007	15/05/2017	< 50	< 1	10	0	10
WT007	28/08/2017	< 50	< 1	10	10	< 5
WT007	19/02/2018	< 50	< 1	10	0	< 5
WT007	22/05/2018	< 50	< 1	10	20	10
WT007	28/05/2019	< 50	< 1	48	4	7

	CHEMICAL_NAME REPORT_RESULT_UNIT	Iron µg/L	Lead µg/L	Manganese µg/L	Nickel µg/L	Zinc µg/L
WT007	24/05/2021	< 50	1	62	3	6
WT009	12/04/2010	< 50	---	10	---	10
WT009	12/06/2010	< 50	---	10	---	< 5
WT009	5/10/2010	< 50	---	10	---	< 5
WT009	14/12/2010	50	---	10	---	< 5
WT009	7/06/2011	< 50	---	10	---	< 5
WT009	19/09/2011	60	---	10	---	< 5
WT009	22/11/2011	< 50	---	10	---	< 5
WT009	16/02/2012	50	---	10	---	< 5
WT009	30/04/2012	< 50	---	10	---	< 5
WT009	10/09/2012	< 50	---	10	---	< 5
WT009	18/11/2012	200	---	20	---	< 5
WT009	11/02/2013	< 50	---	10	---	< 5
WT009	20/05/2013	< 50	---	10	---	< 5
WT009	19/08/2013	< 50	---	40	---	20
WT009	4/11/2013	< 50	---	20	---	10
WT009	12/02/2014	< 50	---	80	---	10
WT009	10/11/2014	80	0	40	30	60
WT009	11/02/2015	< 50	0	10	10	40
WT009	12/05/2015	< 50	< 1	20	10	50
WT009	10/08/2015	220	0	20	10	60
WT009	28/02/2017	< 50	< 1	30	0	20
WT009	15/05/2017	< 50	< 1	10	10	10
WT009	28/08/2017	< 50	10	30	0	10
WT009	19/02/2018	< 50	< 1	20	10	30
WT009	22/05/2018	< 50	< 1	20	10	20
WT009	28/05/2019	< 50	< 1	14	3	18
WT009	24/05/2021	< 50	< 1	49	9	9
WT011A	5/10/2010	< 50	---	30	---	10
WT011A	16/12/2010	< 50	---	50	---	< 5
WT011A	7/06/2011	< 50	---	10	---	< 5
WT011A	19/09/2011	< 50	---	10	---	< 5
WT011A	23/11/2011	< 50	---	60	---	< 5
WT011A	16/02/2012	< 50	---	10	---	< 5
WT011A	30/04/2012	< 50	---	10	---	< 5
WT011A	10/09/2012	< 50	---	60	---	10

	CHEMICAL_NAME REPORT_RESULT_UNIT	Iron µg/L	Lead µg/L	Manganese µg/L	Nickel µg/L	Zinc µg/L
WT011A	18/11/2012	< 50	---	60	---	< 5
WT011A	11/02/2013	< 50	---	70	---	10
WT011A	20/05/2013	< 50	---	30	---	40
WT011A	19/08/2013	580	---	110	---	10
WT011A	4/11/2013	< 50	---	60	---	< 5
WT011A	12/02/2014	< 50	---	20	---	< 5
WT011A	10/11/2014	880	< 1	530	20	20
WT011A	28/02/2017	< 50	< 1	20	0	10
WT011A	15/05/2017	< 50	< 1	20	0	10
WT011A	28/08/2017	< 50	< 1	20	10	10
WT011A	19/02/2018	2650	< 1	150	10	30
WT011A	22/05/2018	< 50	0	30	10	20
WT012	19/08/2013	< 50	---	20	---	10
WT012	4/11/2013	< 50	---	10	---	< 5
WT012	12/02/2014	330	---	30	---	< 5
WT012	10/11/2014	< 50	< 1	10	10	30
WT012	11/02/2015	< 50	< 1	30	< 1	10
WT012	12/05/2015	< 50	< 1	20	0	30
WT012	10/08/2015	< 50	< 1	10	< 1	30
WT012	28/02/2017	< 50	< 1	40	0	10
WT012	15/05/2017	< 50	< 1	40	< 1	10
WT012	28/08/2017	< 50	< 1	30	0	< 5
WT012	30/11/2017	< 50	< 1	20	0	10
WT012	19/02/2018	< 50	< 1	40	< 1	10
WT012	22/05/2018	< 50	0	50	0	10
WT012	30/08/2018	< 50	< 1	21	1	14
WT012	28/05/2019	< 50	< 1	19	2	10
WT012	24/05/2021	< 50	< 1	63	2	8
WT015	12/04/2010	< 50	---	10	---	20
WT015	13/06/2010	< 50	---	0	---	< 5
WT015	6/10/2010	< 50	---	0	---	< 5
WT015	16/12/2010	150	---	10	---	< 5
WT015	7/06/2011	< 50	---	10	---	< 5
WT015	19/09/2011	90	---	10	---	< 5
WT015	22/11/2011	< 50	---	0	---	< 5
WT015	16/02/2012	< 50	---	0	---	< 5

	CHEMICAL_NAME REPORT_RESULT_UNIT	Iron µg/L	Lead µg/L	Manganese µg/L	Nickel µg/L	Zinc µg/L
WT015	30/04/2012	< 50	---	40	---	10
WT015	10/09/2012	60	---	0	---	< 5
WT015	18/11/2012	60	---	10	---	< 5
WT015	11/02/2013	< 50	---	10	---	10
WT015	20/05/2013	1470	---	100	---	< 5
WT015	19/08/2013	640	---	30	---	10
WT015	4/11/2013	< 50	---	10	---	< 5
WT015	12/02/2014	< 50	---	20	---	< 5
WT015	10/11/2014	< 50	0	10	20	30
WT015	11/02/2015	< 50	< 1	10	10	30
WT015	12/05/2015	< 50	0	10	10	30
WT015	10/08/2015	250	< 1	20	10	60
WT015	28/02/2017	< 50	< 1	30	0	10
WT015	15/05/2017	< 50	< 1	10	0	20
WT015	28/08/2017	310	< 1	20	10	< 5
WT015	19/02/2018	< 50	< 1	60	10	20
WT015	22/05/2018	< 50	< 1	10	0	20
WT015	24/05/2021	< 50	< 1	14	6	5
WT019	5/10/2010	< 50	---	10	---	< 5
WT019	7/06/2011	< 50	---	10	---	< 5
WT025	12/04/2010	120	---	10	---	30
WT025	13/06/2010	< 50	---	10	---	< 5
WT025	6/10/2010	< 50	---	10	---	< 5
WT025	16/12/2010	< 50	---	10	---	< 5
WT025	7/06/2011	70	---	10	---	< 5
WT025	19/09/2011	< 50	---	10	---	< 5
WT025	22/11/2011	< 50	---	10	---	< 5
WT025	16/02/2012	60	---	10	---	< 5
WT025	30/04/2012	170	---	30	---	10
WT025	10/09/2012	< 50	---	0	---	< 5
WT025	18/11/2012	< 50	---	10	---	< 5
WT025	11/02/2013	< 50	---	10	---	< 5
WT025	20/05/2013	< 50	---	10	---	10
WT025	19/08/2013	480	---	20	---	10
WT025	4/11/2013	60	---	10	---	< 5
WT025	12/02/2014	< 50	---	10	---	< 5

	CHEMICAL_NAME REPORT_RESULT_UNIT	Iron µg/L	Lead µg/L	Manganese µg/L	Nickel µg/L	Zinc µg/L
WT025	10/11/2014	< 50	0	20	10	30
WT025	11/02/2015	< 50	0	10	10	20
WT025	12/05/2015	< 50	0	10	10	30
WT025	10/08/2015	< 50	0	10	0	70
WT025	8/02/2016	120	0	10	0	20
WT025	27/05/2016	< 50	0	10	0	20
WT025	28/02/2017	< 50	< 1	10	10	10
WT025	15/05/2017	< 50	< 1	10	0	10
WT025	28/08/2017	< 50	< 1	10	10	< 5
WT025	30/11/2017	60	< 1	20	0	10
WT025	19/02/2018	< 50	< 1	10	0	20
WT025	22/05/2018	< 50	< 1	10	0	20
WT025	30/08/2018	< 50	< 1	19	1	19
WT025	14/02/2019	140	2	35	12	31
WT025	28/05/2019	< 50	6	17	3	16
WT025	2/02/2021	< 50	< 1	20	3	26
WT025	24/05/2021	< 50	8	15	8	< 5
WT029	7/06/2011	< 50	---	20	---	< 5
WT029	30/04/2012	< 50	---	20	---	< 5
WT029	11/02/2015	170	0	210	10	40
WT029	12/05/2015	720	< 1	360	10	70

Table 3: Long term tip monitoring data (nutrients and bacteria).

CHEMICAL_NAME REPORT_RESULT_UNIT		Ammonium as N mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Enterococci CFU/100mL	Escherichia coli CFU/100mL	Escherichia coli mg/L	Organic Nitrogen as N mg/L	Potassium mg/L	Total Phosphorus as P mg/L
SYS_LOC_CODE	SAMPLE_DATE	REPORT_RESULT_TEXT	REPORT_RESULT_TEXT	REPORT_RESULT_TEXT	REPORT_RESULT_TEXT	REPORT_RESULT_TEXT	REPORT_RESULT_TEXT	REPORT_RESULT_TEXT	REPORT_RESULT_TEXT	REPORT_RESULT_TEXT
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	---	---	---	---	< 10	---	1	---
WT002A	12/02/2014	0.03	---	---	10	---	< 10	---	< 1	---
WT007	13/06/2010	0.05	---	---	---	---	---	---	4	---
WT007	5/10/2010	0.09	---	---	---	---	---	---	4	0.21
WT007	15/12/2010	0.22	---	---	---	---	---	---	4	---

CHEMICAL_NAME REPORT_RESULT_UNIT		Ammonium as N mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Enterococci CFU/100mL	Escherichia coli CFU/100mL	Escherichia coli mg/L	Organic Nitrogen as N mg/L	Potassium mg/L	Total Phosphorus as P mg/L
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	---
WT007	11/02/2013	0.21	---	---	---	---	---	---	3	---
WT007	20/05/2013	0.1	---	---	---	---	---	---	3	---
WT007	19/08/2013	0.08	---	---	---	---	< 10	---	2	---
WT007	12/02/2014	0.01	---	---	< 10	---	< 10	---	2	---
WT007	10/11/2014	< 0.01	---	---	< 1	---	< 1	---	2	0.01
WT007	12/05/2015	< 0.01	---	---	< 1	---	< 1	---	2	< 0.01
WT007	28/02/2017	< 0.01	---	---	10	< 10	---	---	3	0.05
WT007	15/05/2017	0.05	---	---	< 1	< 10	---	---	3	< 0.01
WT007	28/08/2017	0.04	---	---	1	< 1	---	---	3	0.15
WT007	19/02/2018	0.07	---	---	1	< 1	---	---	2	0.03
WT007	22/05/2018	0.04	---	---	210	190	---	---	3	0.04

CHEMICAL_NAME REPORT_RESULT_UNIT		Ammonium as N mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Enterococci CFU/100mL	Escherichia coli CFU/100mL	Escherichia coli mg/L	Organic Nitrogen as N mg/L	Potassium mg/L	Total Phosphorus as P mg/L
WT007	28/05/2019	< 0.01	16	4	1	< 1	---	0.4	2	0.02
WT007	24/05/2021	< 0.01	13	7	< 1	< 1	---	0.5	3	< 0.05
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	---	---	---	---	< 10	---	2	---
WT009	4/11/2013	0.11	---	---	---	---	---	---	2	---
WT009	12/02/2014	0.02	---	---	10	---	< 10	---	1	---

CHEMICAL_NAME REPORT_RESULT_UNIT		Ammonium as N mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Enterococci CFU/100mL	Escherichia coli CFU/100mL	Escherichia coli mg/L	Organic Nitrogen as N mg/L	Potassium mg/L	Total Phosphorus as P mg/L
WT009	10/11/2014	0.05	---	---	< 1	---	< 1	---	1	0.02
WT009	11/02/2015	0.04	---	---	500	---	< 1	---	1	0.04
WT009	12/05/2015	< 0.01	---	---	< 2	---	< 2	---	1	< 0.01
WT009	10/08/2015	< 0.01	---	---	< 2	---	< 2	---	1	< 0.01
WT009	28/02/2017	0.03	---	---	< 10	< 10	---	---	1	< 0.01
WT009	15/05/2017	0.06	---	---	< 1	< 1	---	---	1	0.02
WT009	28/08/2017	0.01	---	---	< 1	< 1	---	---	1	0.03
WT009	19/02/2018	0.16	---	---	< 1	< 1	---	---	1	0.01
WT009	22/05/2018	0.04	---	---	< 1	< 1	---	---	1	0.02
WT009	28/05/2019	0.04	< 10	8	< 1	< 1	---	< 0.1	1	0.02
WT009	24/05/2021	< 0.01	< 10	12	< 1	< 1	---	---	2	---
WT011A	5/10/2010	0.03	---	---	---	---	---	---	< 1	---
WT011A	16/12/2010	0.22	---	---	---	---	---	---	< 1	---
WT011A	7/06/2011	0.01	---	---	---	---	---	---	< 1	---
WT011A	19/09/2011	0.02	---	---	---	---	---	---	< 1	---
WT011A	23/11/2011	0.06	---	---	---	---	---	---	< 1	---
WT011A	16/02/2012	0.02	---	---	---	---	---	---	< 1	---
WT011A	30/04/2012	0.04	---	---	---	---	---	---	< 1	---

CHEMICAL_NAME REPORT_RESULT_UNIT		Ammonium as N mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Enterococci CFU/100mL	Escherichia coli CFU/100mL	Escherichia coli mg/L	Organic Nitrogen as N mg/L	Potassium mg/L	Total Phosphorus as P mg/L
WT011A	10/09/2012	0.03	---	---	---	---	---	---	< 1	---
WT011A	18/11/2012	0.09	---	---	---	---	---	---	< 1	---
WT011A	11/02/2013	0.07	---	---	---	---	---	---	< 1	---
WT011A	20/05/2013	0.08	---	---	---	---	---	---	< 1	---
WT011A	19/08/2013	0.12	---	---	---	---	< 10	---	< 1	---
WT011A	4/11/2013	0.07	---	---	---	---	---	---	< 1	---
WT011A	12/02/2014	0.12	---	---	< 10	---	< 10	---	< 1	---
WT011A	10/11/2014	< 0.01	---	---	< 1	---	< 1	---	< 1	0.02
WT011A	28/02/2017	0.09	---	---	7	< 100	---	---	< 1	< 0.01
WT011A	15/05/2017	0.06	---	---	< 1	< 1	---	---	< 1	0.01
WT011A	28/08/2017	0.04	---	---	< 1	< 1	---	---	< 1	0.11
WT011A	19/02/2018	0.14	---	---	2	< 1	---	---	< 1	0.02
WT011A	22/05/2018	0.02	---	---	87	< 10	---	---	< 1	< 0.01
WT012	19/08/2013	0.1	---	---	---	---	< 10	---	< 1	---
WT012	4/11/2013	0.06	---	---	---	---	---	---	< 1	---
WT012	12/02/2014	0.05	---	---	< 10	---	< 10	---	< 1	---
WT012	10/11/2014	< 0.01	---	---	< 1	---	< 1	---	< 1	0.01
WT012	11/02/2015	0.01	---	---	30	---	< 10	---	< 1	0.06

CHEMICAL_NAME REPORT_RESULT_UNIT		Ammonium as N mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Enterococci CFU/100mL	Escherichia coli CFU/100mL	Escherichia coli mg/L	Organic Nitrogen as N mg/L	Potassium mg/L	Total Phosphorus as P mg/L
WT012	12/05/2015	< 0.01	---	---	< 10	---	< 10	---	< 1	0.01
WT012	10/08/2015	< 0.01	---	---	< 2	---	< 2	---	< 1	< 0.01
WT012	28/02/2017	0.03	---	---	< 10	< 10	---	---	< 1	< 0.01
WT012	15/05/2017	0.1	---	---	< 1	< 1	---	---	< 1	0.01
WT012	28/08/2017	0.06	---	---	< 1	< 1	---	---	< 1	0.14
WT012	30/11/2017	0.27	---	---	6	< 2	---	---	< 1	0.02
WT012	19/02/2018	0.36	---	---	< 10	< 10	---	---	< 1	< 0.01
WT012	22/05/2018	0.07	---	---	1000	< 1	---	---	< 1	< 0.01
WT012	30/08/2018	---	< 10	4	< 1	< 1	---	< 0.1	< 1	< 0.01
WT012	28/05/2019	< 0.01	< 10	5	< 1	< 10	---	< 0.1	< 1	< 0.01
WT012	24/05/2021	0.02	< 10	4	< 1	< 1	---	< 0.1	< 1	< 0.01
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	---

CHEMICAL_NAME REPORT_RESULT_UNIT		Ammonium as N mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Enterococci CFU/100mL	Escherichia coli CFU/100mL	Escherichia coli mg/L	Organic Nitrogen as N mg/L	Potassium mg/L	Total Phosphorus as P mg/L
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	---
WT015	20/05/2013	0.15	---	---	---	---		---	< 1	---
WT015	19/08/2013	1.22	---	---	---	---	< 10	---	< 1	---
WT015	4/11/2013	0.07	---	---	---	---		---	< 1	---
WT015	12/02/2014	0.06	---	---	< 2	---	< 2	---	< 1	---
WT015	10/11/2014	< 0.01	---	---	< 1	---	< 1	---	< 1	0.11
WT015	11/02/2015	0.01	---	---	2	---	< 2	---	< 1	0.04
WT015	12/05/2015	< 0.01	---	---	< 1	---	< 1	---	< 1	< 0.01
WT015	10/08/2015	0.04	---	---	< 2	---	< 2	---	< 1	< 0.01
WT015	28/02/2017	0.21	---	---	< 10	< 10	---	---	< 1	0.12
WT015	15/05/2017	0.05	---	---	< 1	< 1	---	---	< 1	< 0.01
WT015	28/08/2017	0.04	---	---	< 1	< 1	---	---	< 1	0.02
WT015	19/02/2018	0.04	---	---	< 1	< 1	---	---	< 1	< 0.01
WT015	22/05/2018	0.04	---	---	6	< 1	---	---	< 1	< 0.01

CHEMICAL_NAME REPORT_RESULT_UNIT		Ammonium as N mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Enterococci CFU/100mL	Escherichia coli CFU/100mL	Escherichia coli mg/L	Organic Nitrogen as N mg/L	Potassium mg/L	Total Phosphorus as P mg/L
WT015	24/05/2021	< 0.01	< 10	20	< 1	< 1	---	< 0.1	< 1	< 0.01
WT019	5/10/2010	0.04	---	---	---	---	---	---	< 1	0.04
WT019	7/06/2011	0.06	---	---	---	---	---	---	< 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	---

CHEMICAL_NAME REPORT_RESULT_UNIT		Ammonium as N mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Enterococci CFU/100mL	Escherichia coli CFU/100mL	Escherichia coli mg/L	Organic Nitrogen as N mg/L	Potassium mg/L	Total Phosphorus as P mg/L
WT025	12/02/2014	0.04	---	---	< 10	---	< 10	---	< 1	
WT025	10/11/2014	0.04	---	---	< 1	---	< 1	---	< 1	< 0.01
WT025	11/02/2015	0.02	---	---	< 1	---	< 1	---	< 1	0.04
WT025	12/05/2015	< 0.01	---	---	< 1	---	< 1	---	< 1	< 0.01
WT025	10/08/2015	< 0.01	---	---	< 1	---	< 1	---	< 1	< 0.01
WT025	8/02/2016	0.03	---	---	< 1	---	---	---	< 1	< 0.01
WT025	27/05/2016	0.02	---	---	< 1	< 1	---	---	< 1	< 0.01
WT025	28/02/2017	0.14	---	---	< 2	< 2	---	---	< 1	0.05
WT025	15/05/2017	0.05	---	---	< 1	< 1	---	---	< 1	< 0.01
WT025	28/08/2017	0.08	---	---	< 1	< 1	---	---	< 1	< 0.01
WT025	30/11/2017	0.12	---	---	< 2	< 2	---	---	< 1	0.03
WT025	19/02/2018	0.16	---	---	< 1	< 1	---	---	< 1	< 0.01
WT025	22/05/2018	0.01	---	---	2	3	---	---	< 1	< 0.01
WT025	30/08/2018		< 10	28	< 1	< 1	---	< 0.1	< 1	< 0.01
WT025	14/02/2019		< 10	52	< 1	1	---	< 1	< 1	< 0.01
WT025	28/05/2019	0.06	< 10	22	2	< 1	---	< 0.1	< 1	< 0.01
WT025	2/02/2021	< 0.01	< 10	22	< 1	< 1	---	< 0.1	< 1	< 0.01
WT025	24/05/2021	< 0.01	< 10	21	< 1	< 1	---	0.1	< 1	< 0.01

CHEMICAL_NAME REPORT_RESULT_UNIT		Ammonium as N mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Enterococci CFU/100mL	Escherichia coli CFU/100mL	Escherichia coli mg/L	Organic Nitrogen as N mg/L	Potassium mg/L	Total Phosphorus as P mg/L
WT029	7/06/2011	0.02	---	---	---	---	---	---	< 1	---
WT029	30/04/2012	0.04	---	---	---	---	---	---	< 1	---
WT029	11/02/2015	0.03	---	---	< 10	---	< 10	---	< 1	0.04
WT029	12/05/2015	< 0.01	---	---	< 10	---	< 10	---	< 1	0.08

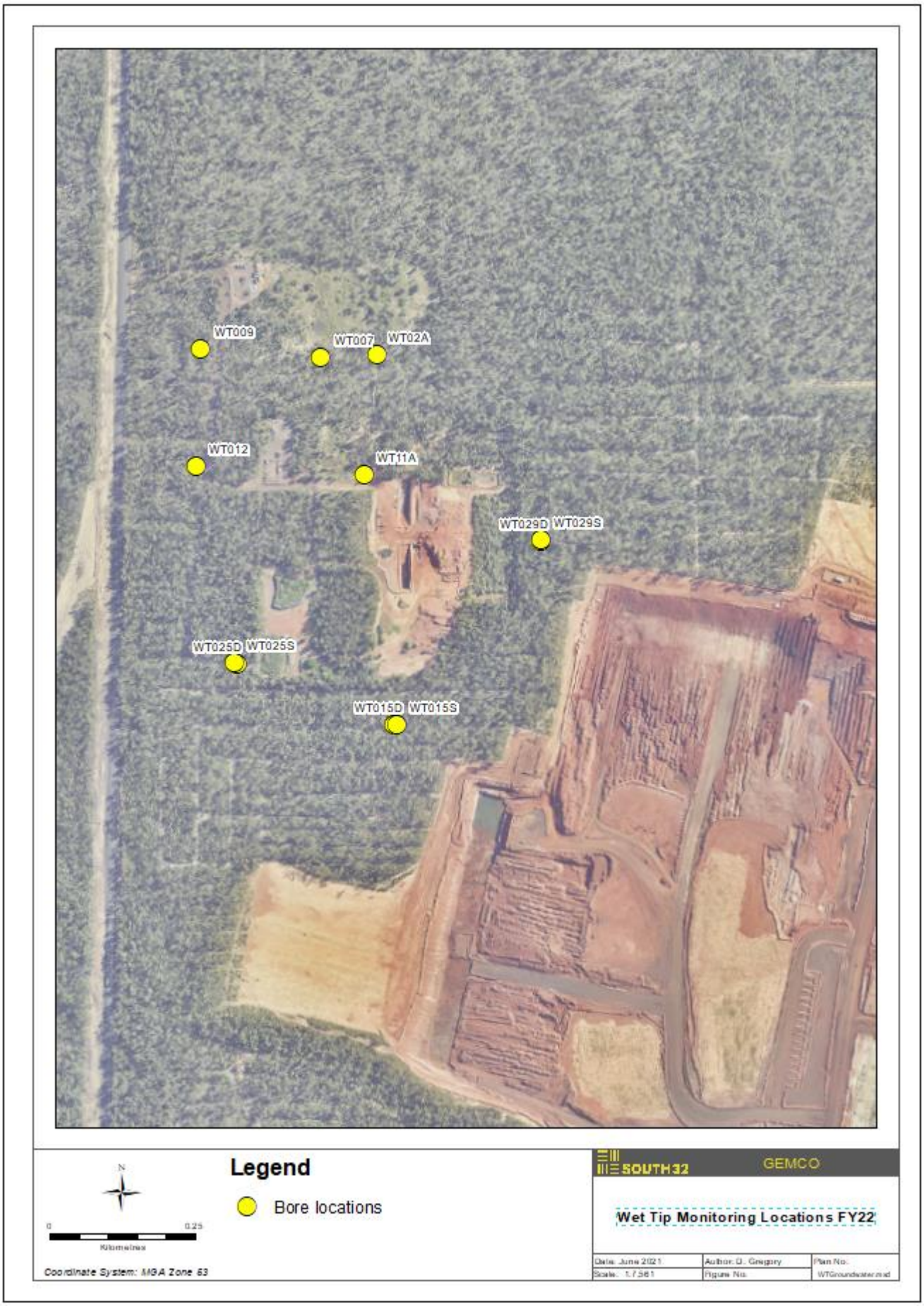

Figure 2: Revised groundwater monitoring locations FY22.