

The logo consists of the text "Energy in action." in a blue sans-serif font, with a trademark symbol (TM) to the right of "action.". The text is positioned in the upper left corner of a large, light brown rounded rectangle. Below this rectangle are three smaller, light brown rounded rectangles of varying sizes, arranged in a descending staircase pattern from left to right. At the bottom right of the entire graphic is the AGL logo, which features a blue square containing a white sunburst icon and the letters "AGL" in white.

AGL UPSTREAM INVESTMENTS PTY LTD

GLOUCESTER GAS PROJECT

**February 2016 Monitoring Report:  
Tiedman Irrigation Program  
EPL 20358**

Reporting Period: January 2016

AGL Upstream Investments Pty Ltd

ABN 58 115 063 744

Locked Bag 1837, St Leonards NSW 2065

Level 22, 101 Miller Street, North Sydney NSW 2060

Telephone: 02 9921 2999 Facsimile: 02 9921 2474

Complaints Line (24 hours): 1300 799 716



## Foreword

<b>PREMISES</b>	Gloucester Coal Seam Gas Project Bucketts Way Gloucester NSW 2422
<b>LICENCE DETAILS</b>	<a href="#"><u>Environment Protection Licence 20358</u></a>
<b>LICENCEE</b>	AGL Upstream Investments Pty Limited (AGL)
<b>LICENCEE'S ADDRESS</b>	Locked Bag 1837, North Sydney, NSW 2060
<b>MONITORING DATE</b>	5 and 6 January 2016
<b>MONITORING BY</b>	AGL
<b>ANALYSIS BY</b>	ALS Laboratory, Smithfield (Work orders: ES1600214)
<b>DATE AGL OBTAINED DATA</b>	15 January 2016
<b>REPORT DATE</b>	5 February 2016
<b>REPORT PREPARED BY</b>	Nicola Fry, Hydrogeologist



## Introduction

AGL is proposing to build the Gloucester Gas Project (GGP) which comprises several stages of development facilitating the extraction of coal seam gas (CSG) from the Gloucester Basin. Concept plan and project approval (Part 3A Approval) for the Stage 1 Gas Field Development Area (GFDA) was granted on 22 February 2011 under Part 3A of the Environmental Planning and Assessment Act (1979) (EP&A Act). In addition the project received approval under the Environment Protection and Biodiversity Conservation Act (1999) (EPBC Act) (EPBC Approval) on 11 February 2013.

The GGP will involve depressurising of deep groundwater and the extraction of gas from multiple coal seams within the Gloucester coal measures. Target coal seam depths will vary from site to site but are expected to range between 200 and 1,000 m below ground level (mbgl). The current GGP includes the construction, operation, and decommissioning of not more than 110 coal seam gas wells and associated infrastructure, including gas and water gathering lines within the Stage 1 GFDA. A comprehensive groundwater investigation (Phase 2 Groundwater Investigations) was completed in early 2012 to confirm the hydrogeological conceptual model across the Stage 1 GFDA (PB, 2012). Surface water and groundwater investigations are ongoing.

This Monitoring Report relates to the water monitoring activities specified in Part 5, Monitoring and Recording Conditions, of the Environment Protection Licence 20358. This report relates specifically to the monitoring surrounding the Tiedman Irrigation Program, and details:

1. Monitoring results from a catch dam overflow event at the Tiedman Irrigation Program (5 and 6 January 2016).

As per the Licence, the monitoring encompasses the monitoring points at the locations as shown in Table 1 and Figure 1. The specific analytes and frequency tested are shown in Table 2. The monitoring results for this reporting period are shown in Table 3 and Table 4.

The monitoring points that are the subject of this report are part of the GGP groundwater monitoring network, as described in AGL's Water Management Plan for the Tiedman Irrigation Program (AGL, 2012a) and Soil Quality Monitoring and Management Program (AGL, 2012b)). Water monitoring results for the irrigation program are presented in a baseline water monitoring report (PB, 2013a) and six-monthly compliance reports (PB, 2013a, 2013b, 2014a, 2014b, 2015a, and 2015b).

The following sampling methods were used to obtain surface water and groundwater samples:

- Grab sample using a telescopic sampler for surface water and dam water samples.

EC and pH were monitored during purging to ensure that they had stabilised prior to sample collection. The water quality samples are analysed by an external NATA certified laboratory (ALS Environmental, Smithfield), in accordance with the EPA Approved Methods Publication "*Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales*" (EPA, 2004), with the exception of calcium, which underwent filtration rather than acid extraction as a preliminary treatment prior to analysis.

This report is prepared in accordance with the *Requirements for Publishing Pollution Monitoring Data* (EPA, 2012) (Publication Requirements).

The remaining water and land monitoring points in EPL 20358 will be reported in subsequent reports when the requirement for monitoring is triggered.

More information on the groundwater monitoring of the GGP is available on the project website: [agl.com.au/Gloucester](http://agl.com.au/Gloucester)

Table 1: Water quality monitoring points: Irrigation Program (as per EPL 20358)

EPA ID no.	Monitoring Point	Type of monitoring point	Easting (m)	Northing (m)
27	TND	Produced water storage dam	Tiedman property	
28	TSD	Produced water storage dam	Tiedman property	
29	TED	Produced water storage dam	Tiedman property	
30	TMB04	Groundwater quality monitoring	402558.1	6448921.7
31	TMB05	Groundwater quality monitoring	402650.1	6448725.3
33	CDE	Surface water quality monitoring – catch dam east	Tiedman property	
34	CDW	Surface water quality monitoring – catch dam west	Tiedman property	
35	FSW01	Surface water quality monitoring	402001	6449646
36	ASW01	Surface water quality monitoring	401711.09	6449092.2
37	TSW01	Surface water quality monitoring	401993.98	6449416.7
38	TSW02	Surface water quality monitoring	401922.1	6448740.9
39	TMB01	Groundwater quality monitoring	401996.98	6449419.7
40	TMB02	Groundwater quality monitoring	401905.11	6449100.6
41	TMB03	Groundwater quality monitoring	401969.53	6448755
42	S4MB01	Groundwater quality monitoring	402581.88	6449409.7
43	TCMB01	Groundwater quality monitoring	402501.7	6448899
44	TTMB02	Groundwater quality monitoring	402699	6449358
45	SP1B	Soil water quality monitoring	402570.3	6449381.3
46	SP2B	Soil water quality monitoring	402444.2	6449100.1
47	SP4B	Soil water quality monitoring	402252	6449131.3
48	SP6B	Soil water quality monitoring	402103.5	6449178.6
49	SP7B	Soil water quality monitoring	402144.8	6449292.1
50	SP8B	Soil water quality monitoring	402159.1	6449454.8
51	SP9B	Soil water quality monitoring	402387.5	6449016.9
52	SP10B	Soil water quality monitoring	402344.2	6448840.6

Coordinate reference system: Map Grid of Australia 1994

Figure 1: Location of groundwater and surface water quality monitoring points: Irrigation Program (as per EPL 20358)

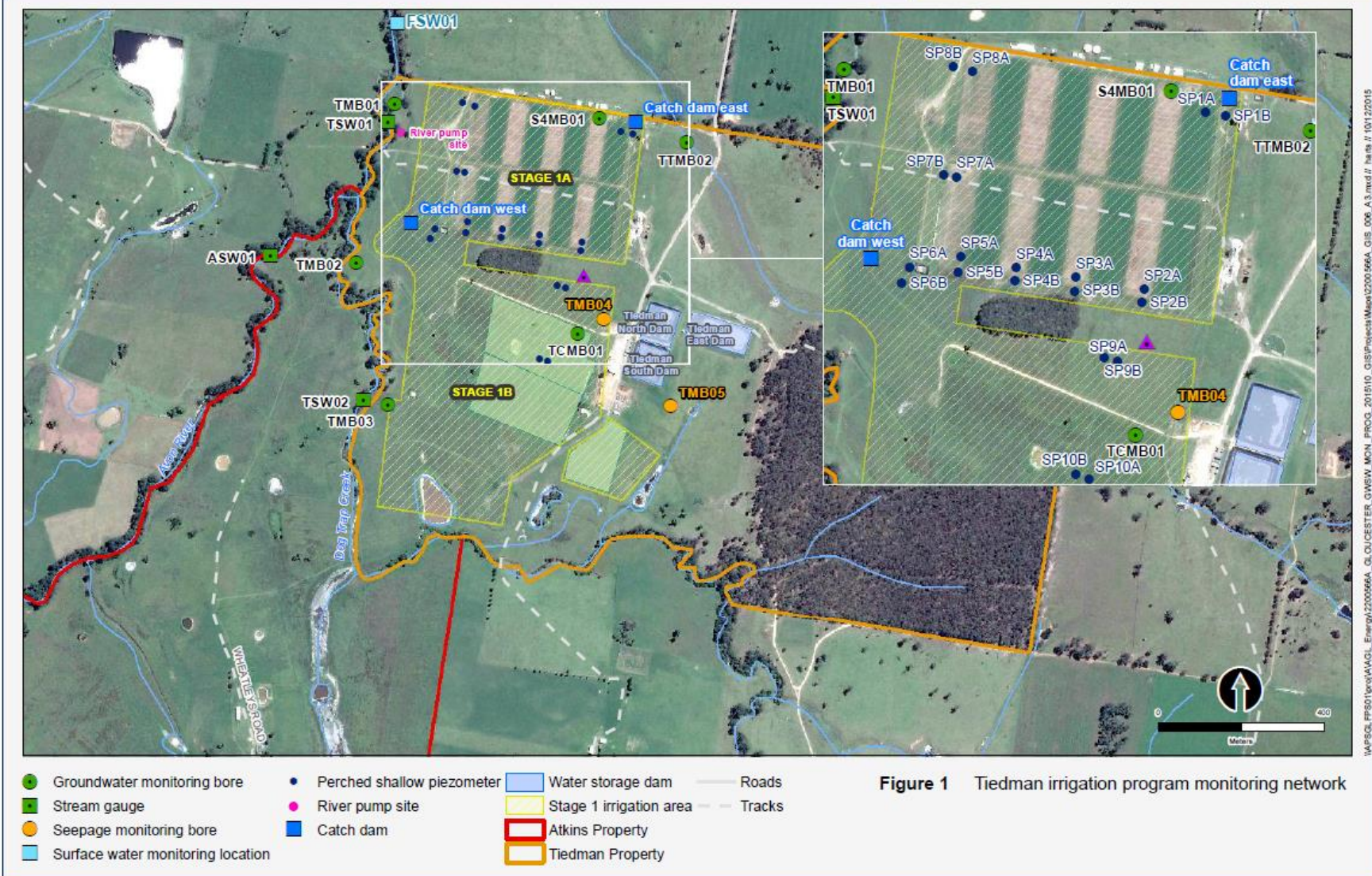


Figure 1 Tiedman irrigation program monitoring network

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**Table 2: Analytes monitored and frequency- monitoring points 27 – 52, as per the EPL 20358 version valid at the time of sampling (version 24 December 2015)**

Analyte	Units of measure	Monitoring points															
		27		28		29		30,31		33,34		35, 36,37,38		39,40,41,42,43,44		45,46,47,48,49,50,51, 52	
		Frequency	sampling method	Frequency	sampling method	Frequency	sampling method	Frequency	sampling method	Frequency	sampling method	Frequency	sampling method	Frequency	sampling method	Frequency	sampling method
Aluminium	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Ammonia	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Arsenic	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Barium	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Benzene	micrograms per litre <sup>a</sup>					Weekly <sup>b</sup>	Grab sample	Special Frequency 1	Grab sample			Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Beryllium	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Bicarbonate	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample								
Boron	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Cadmium	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Calcium	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Chloride	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample								
Chromium	milligrams per litre									Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Cobalt	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Copper	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Dissolved oxygen	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Electrical conductivity	microsiemens per centimetre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Special Frequency 8	Special method 5	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Ethyl benzene	micrograms per litre <sup>a</sup>					Weekly <sup>b</sup>	Grab sample*	Special Frequency 1	Grab sample			Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Iron	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Lead	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Magnesium	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Manganese	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Mercury	milligrams per litre									Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Molybdenum	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Nickel	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Nitrate	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Nitrite	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample			Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
pH	pH	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Phosphorus (total)	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Potassium	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Reactive Phosphorus	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample								
Redox potential	millivolts	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Selenium	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Silica	milligrams per litre									Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Sodium	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Sodium Adsorption Ratio	sodium adsorption ratio			Quarterly	Special Method 4												
Standing water level	meters (Australian Height Datum)							Special frequency 8	Special method 5					Special frequency 8	Special method 5	Quarterly	Special method 1
Strontium (dissolved)	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Sulfate	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Toluene	micrograms per litre <sup>a</sup>					Weekly <sup>b</sup>	Grab sample*	Special Frequency 1	Grab sample			Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Total alkalinity	milligrams per litre									Each overflow event	Grab sample			Quarterly	Grab sample	Quarterly	Grab sample
Total dissolved solids	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Total organic carbon	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample								
Total suspended solids	milligrams per litre									Each overflow event	Grab sample	Quarterly	Grab sample				
Uranium	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Vanadium	milligrams per litre	Quarterly	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample	Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Xylene	micrograms per litre <sup>a</sup>					Weekly <sup>b</sup>	Grab sample*	Special Frequency 1	Grab sample			Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample
Zinc	milligrams per litre							Special Frequency 1	Grab sample	Each overflow event	Grab sample	Special Frequency 10	Grab sample	Quarterly	Grab sample	Quarterly	Grab sample

Notes:  
 Special Frequency 1 - Quarterly if inflow within 12 hours of purging dry.  
 Special Frequency 8 - Every 6 hours  
 Special Frequency 10 - Quarterly, and daily during any discharge from points 33 or 34  
 Special Method 1 - Manual dip                      Special Method 4 - By calculation  
 Special Method 5 - Automated datalogger  
 Shaded grey - not required to be analysed

<sup>a</sup>EPL20358 (issued 17 September 2015) contains inconsistencies in the required Units of Measure for Benzene, Toluene, Ethyl Benzene and Xylene. For consistency with laboratory data BTEX concentrations are reported here in micrograms per litre.

<sup>b</sup>Weekly sampling from Monitoring Point 29 (Tiedman East Dam) only required if/when flowback water from the Waukivory Pilot Project is transferred to TED.



Surface water monitoring results

Table 3: Water monitoring results for monitoring points 33 - 38 during the 5 and 6 January 2016 catch dam overflow event

Analyte	Units of measure	33		34		35		36		37		38		
		CDE		CDW		FSW01		ASW01		TSW01		TSW02		
		Location	Location	Location	Location	Location	Location	Location	Location	Location	Location	Location	Location	
		Sampled date	Sampled date	Sampled date	Sampled date	Sampled date	Sampled date	Sampled date	Sampled date	Sampled date	Sampled date	Sampled date	Sampled date	
		15/01/2016	15/01/2016	15/01/2016	15/01/2016	15/01/2016	15/01/2016	15/01/2016	15/01/2016	15/01/2016	15/01/2016	15/01/2016	15/01/2016	
		Date AGL obtained data		Date AGL obtained data		Date AGL obtained data		Date AGL obtained data		Date AGL obtained data		Date AGL obtained data		
		15/01/2016	15/01/2016	15/01/2016	15/01/2016	15/01/2016	15/01/2016	15/01/2016	15/01/2016	15/01/2016	15/01/2016	15/01/2016	15/01/2016	
		Limit of reporting		Limit of reporting		Limit of reporting		Limit of reporting		Limit of reporting		Limit of reporting		
Aluminium	mg/L	0.01	0.81	0.43	0.32	0.04	0.29	1.04	0.9	0.78	0.58	na	0.41	0.6
Ammonia	mg/L	0.01	0.05	0.04	0.02	0.03	0.03	0.02	<0.01	0.01	0.04	na	0.27	0.03
Arsenic	mg/L	0.001	<0.001	0.002	0.002	0.003	0.002	0.001	<0.001	<0.001	0.001	na	0.003	0.001
Barium	mg/L	0.001	0.032	0.041	0.025	0.035	0.033	0.017	0.025	0.017	0.024	na	0.035	0.026
Benzene	ug/L	1				<1	<1	<1	<1	<1	<1	na	<1	<1
Beryllium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	na	<0.001	<0.001
Bicarbonate	mg/L	1												
Boron	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	<0.05	<0.05
Cadmium	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	na	<0.0001	<0.0001
Calcium	mg/L	1	5	11	18	30	10	3	4	4	5	na	8	6
Chloride	mg/L	0.1												
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	na	<0.001	<0.001
Cobalt	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	na	0.002	<0.001
Copper	mg/L	0.001	0.002	0.004	0.003	0.004	<0.001	0.004	0.002	0.002	0.003	na	0.002	0.004
Dissolved Oxygen	mg/L	0.01	1.28	1.42	1.92	1.2	0.66	0.93	1.46	3.47	1.34	na	1.06	0.76
Electrical conductivity	µS/cm	1	113	164	238	363	209	120	97	82	115	na	225	193
Ethyl benzene	ug/L	2				<2	<2	<2	<2	<2	<2	na	<2	<2
Iron	mg/L	0.05	0.46	0.36	0.24	0.14	1.01	0.84	0.85	0.58	0.75	na	0.92	0.62
Lead	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	na	<0.001	<0.001
Magnesium	mg/L	1	3	5	7	8	6	2	3	2	3	na	7	5
Manganese	mg/L	0.001	0.009	0.006	0.003	0.006	0.09	0.023	0.023	0.018	0.029	na	0.19	0.022
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	na	<0.0001	<0.0001
Molybdenum	mg/L	0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	na	<0.001	<0.001
Nickel	mg/L	0.001	0.001	0.002	0.001	0.002	<0.001	0.002	0.001	0.002	0.001	na	0.002	0.002
Nitrate	mg/L	0.01	0.11	0.09	0.17	0.04	0.06	0.09	0.05	0.08	0.08	na	0.14	0.06
Nitrite	mg/L	0.01				<0.01	<0.01	<0.01	<0.01	<0.01	0.01	na	0.03	<0.01
pH*	pH	0.01	9.98	8.94	9.09	8.81	7.78	8.66	6.26	6.52	7.11	na	6.67	10.24
Phosphorus (total)	mg/L	0.01	0.58	0.61	1.15	1.03	0.18	0.28	0.23	0.15	0.25	na	0.5	0.2
Potassium	mg/L	1	8	10	11	10	4	4	4	3	4	na	9	4
Reactive Phosphorus	mg/L	0.01												
Resistivity	mV	0.1	110.5	184.8	160.4	102.7	151.2	138.6	176.2	194.2	193.1	na	159.1	153.7
Selenium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	na	<0.01	<0.01
Silica	mg/L	0.05	7.82	9.53	11.8	16.6	15.9	11.5	10.2	13.7	10.9	na	12.6	10.6
Sodium	mg/L	1	12	14	23	31	26	9	13	10	14	na	26	27
Sodium Adsorption Ratio	ratio	0.01												
Standing water level	m AHD	-												
Strontium (dissolved)	mg/L	0.001	0.026	0.05	0.083	0.147	0.104	0.021	0.045	0.028	0.045	na	0.07	0.054
Sulfate	mg/L	1	<10*	1	34	46	5	17	<10*	<10*	3	na	8	16
Toluene	ug/L	2				<2	<2	<2	<2	<2	<2	na	<2	<2
Total alkalinity	mg/L	1	31	46	68	99								
Total dissolved solids	mg/L	10	136	187	229	305	167	182	159	167	167	na	214	192
Total organic carbon	mg/L	1												
Total suspended	mg/L	5	19	10	28	<5								
Uranium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	na	<0.001	<0.001
Vanadium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	na	<0.01	<0.01
Xylene	ug/L	2				<2	<2	<2	<2	<2	<2	na	<2	<2
Zinc	mg/L	0.005	0.02	0.034	0.012	0.016	0.007	0.021	0.01	0.031	0.009	na	0.008	0.018

Key:  
 Shaded grey = not required to be analysed  
 \* measured with calibrated field meter  
 † limit of reporting raised due to matrix interferences  
 na - not analysed as no sample collected



**Table 4: Continuous electrical conductivity monitoring results for monitoring points 33, 34, 36, 37 and 38 for the period 24 August 2015 – 6 January 2016**

Monitoring point	33	34
Location	CDE	CDW
Data type	Electrical conductivity	
Units	µS/cm	
Data date range	24/8/2015 – 17/11/2015	24/08/2015 – 06/01/2016
Date data downloaded	06/01/2016*	06/01/2016
Date data supplied to AGL	21/01/2016	21/01/2016
Monitoring frequency required by EPL 20358	Every 6 hours	Every 6 hours
Actual monitoring frequency	Every 1 hour	Every 1 hour
No. of times measured during monitoring period	2055	3250
Min. value	15	165
Mean value	226	415
Median value	233	395
Max. value	513	1010

\*CDE datalogger was not communicating on 06/01/2016. Currently with the supplier for inspection and data retrieval.



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