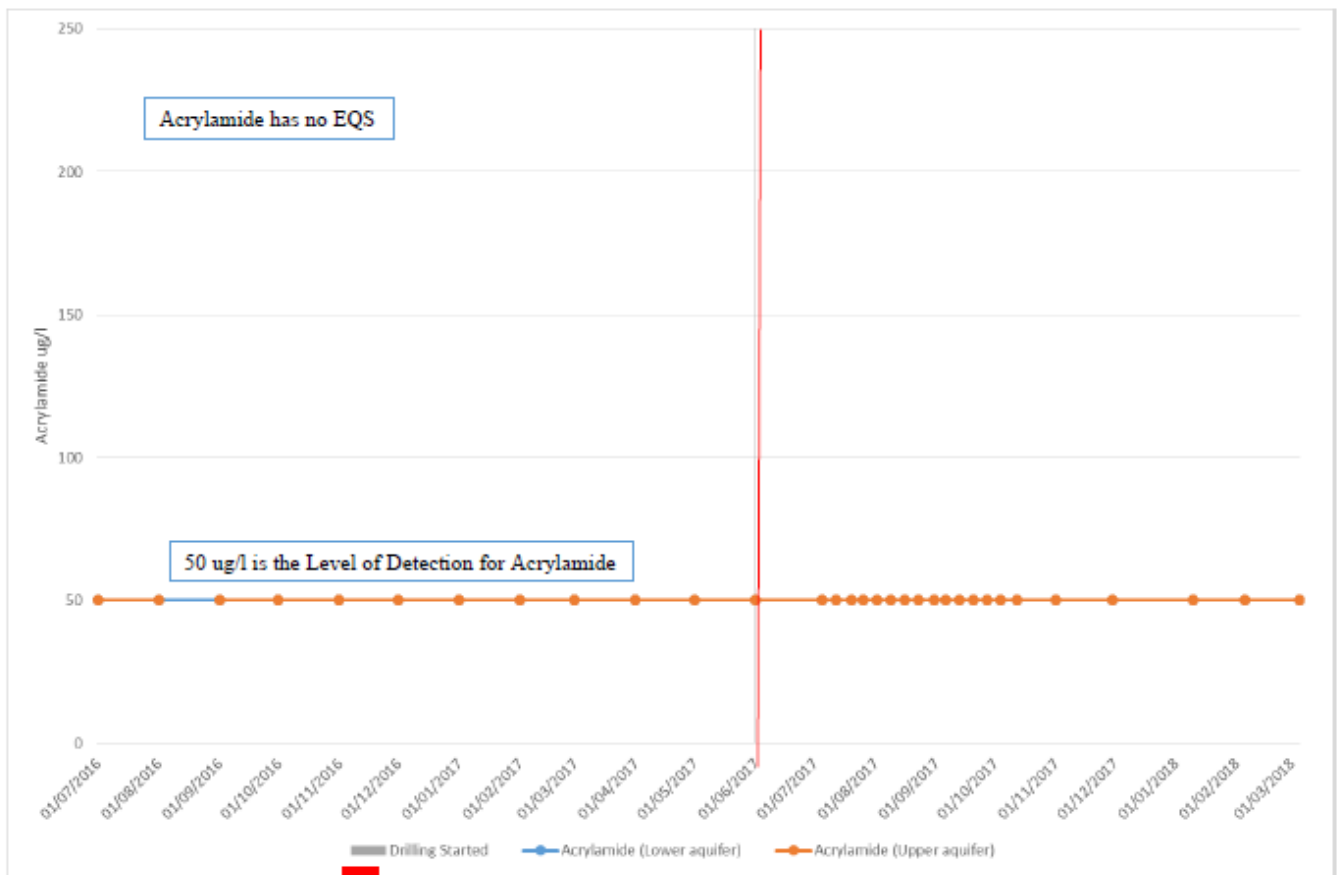


Preston New Road Groundwater Monitoring Data Q1 2018

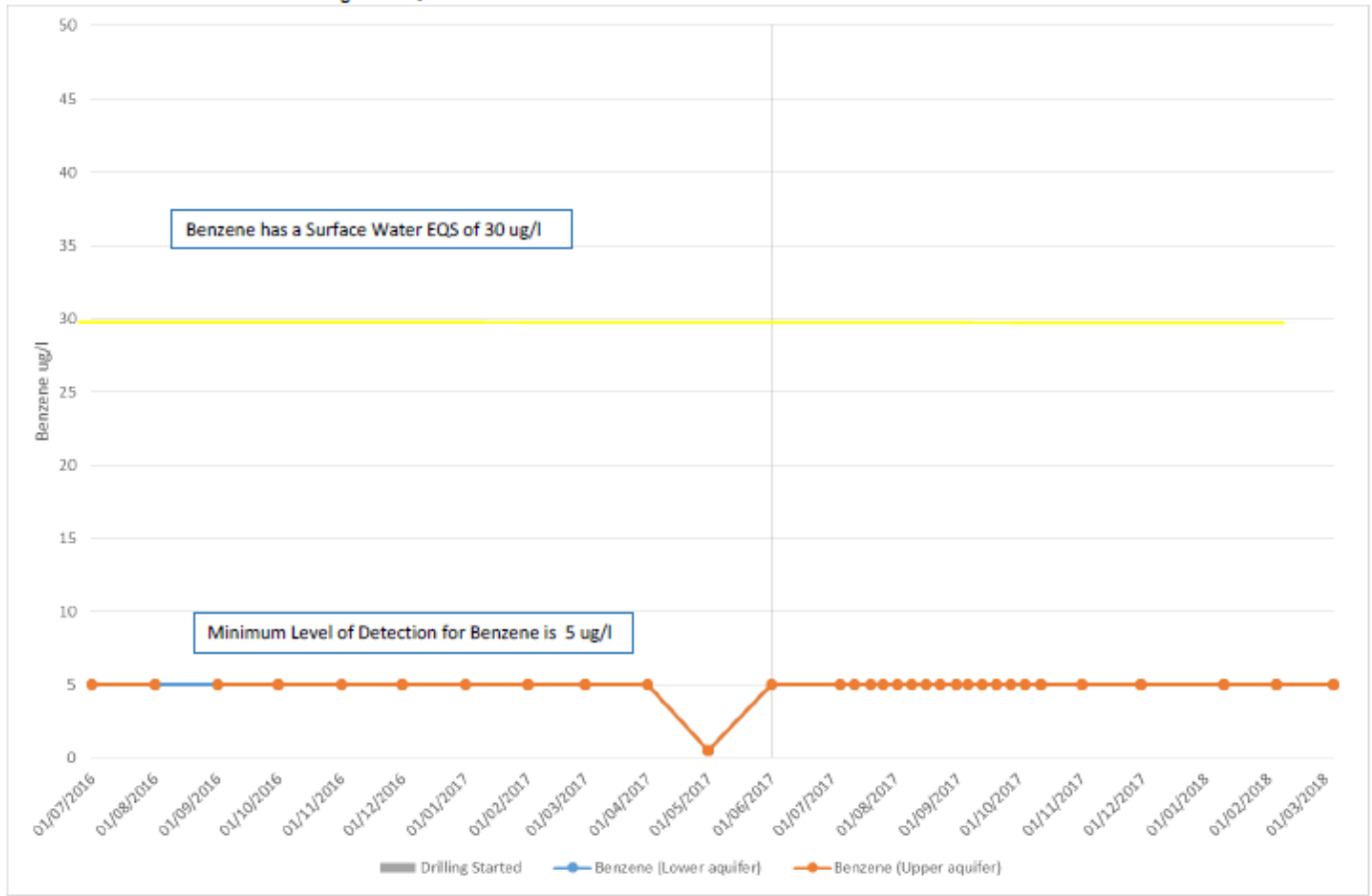
The following report includes Cuadrilla's quarterly groundwater monitoring data for Q1 2018 (January - March 2018).

Acrylamide



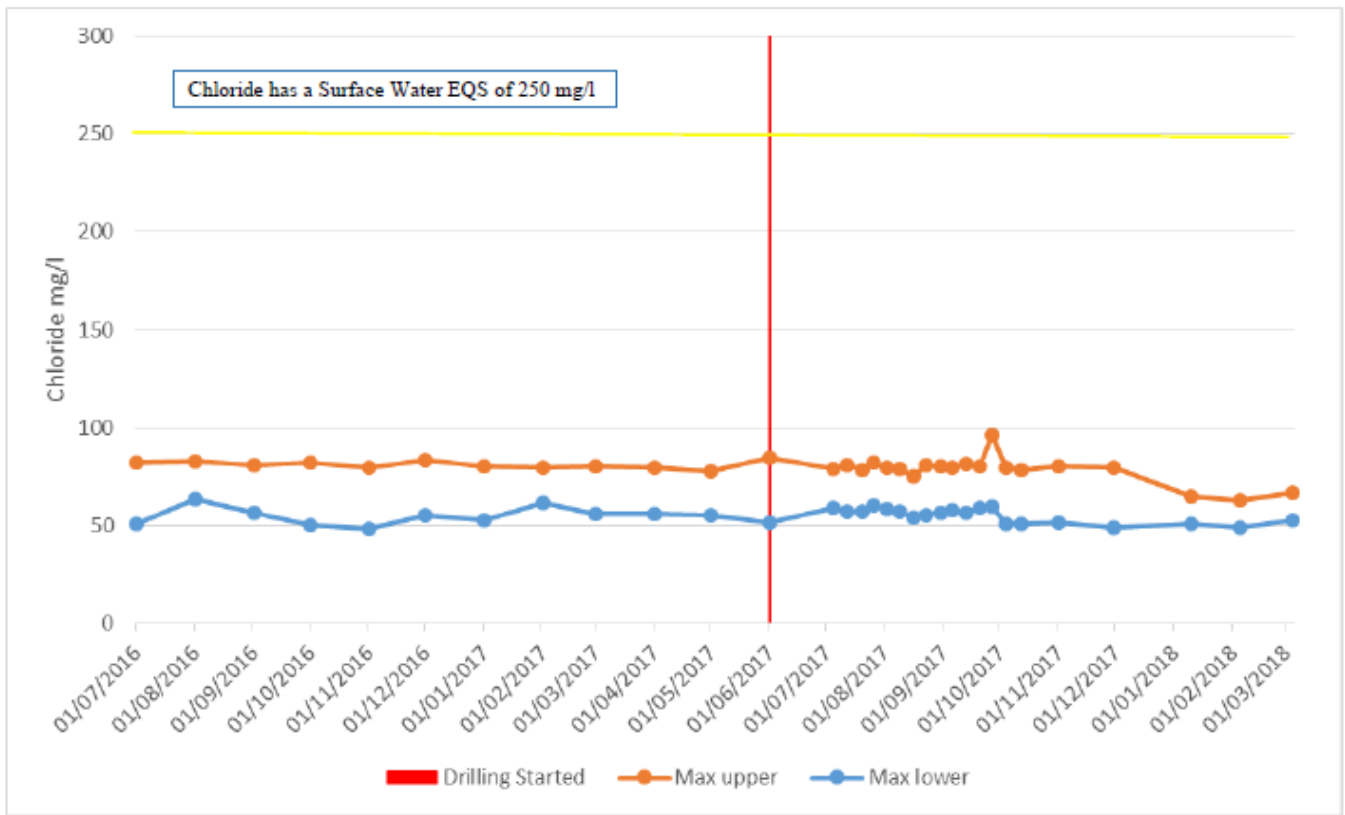
Groundwater Monitoring Preston New Road Acrylamide in 2 aquifers

Benzene



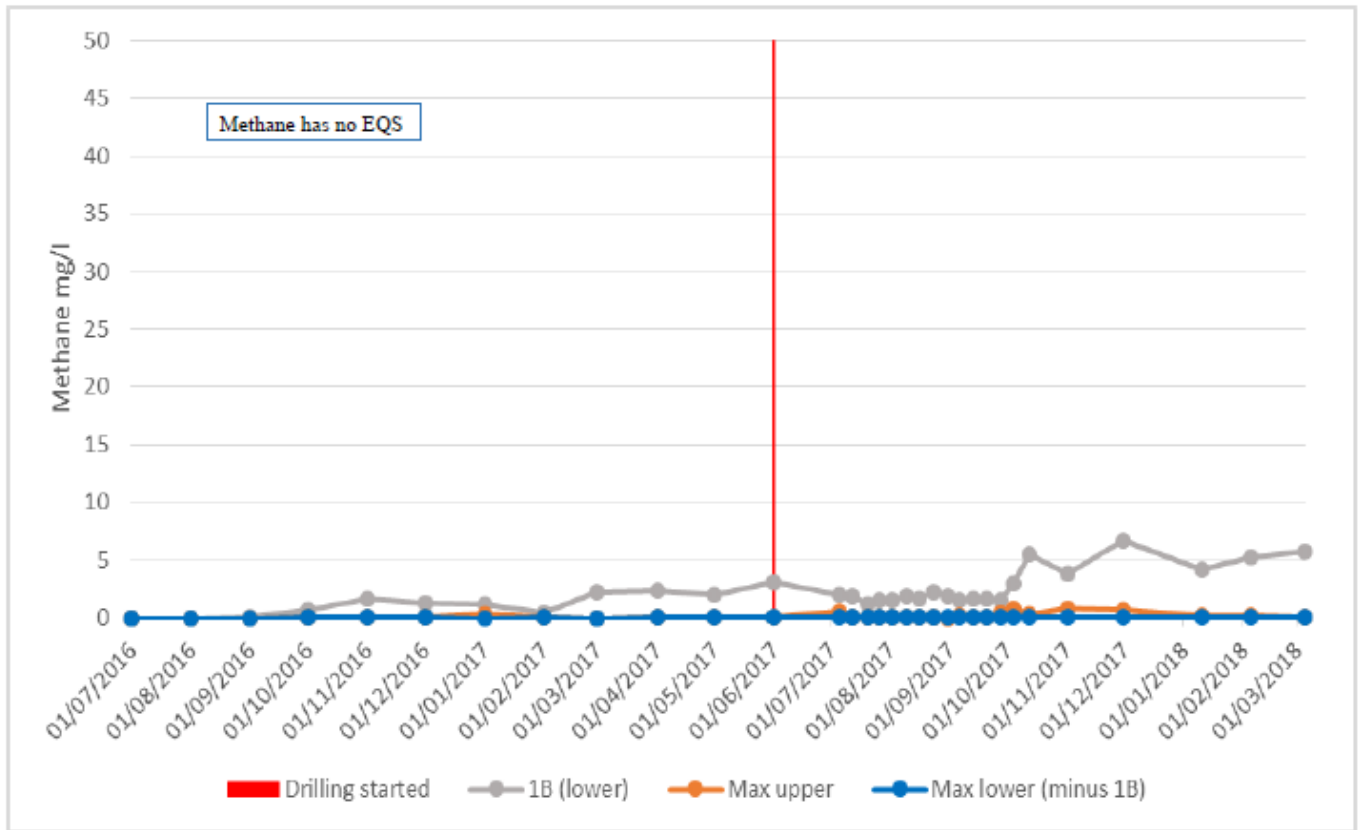
Groundwater Monitoring Preston New Road Benzene in 2 Aquifers (Maximum Values)

Chloride



Groundwater Monitoring Preston New Road Chloride in 2 Aquifers (Maximum Values)

Methane



Groundwater Monitoring Preston New Road Methane in 2 aquifers (Maximum Values)

Cuadrilla Preston New Road Groundwater Quality Monitoring Q1 2018 - Upper Aquifer

Substance/ Parameter	Units	BH01 (A)			BH02 (A)			BH03 (CMT1)			BH04 (A)		
		10-Jan-18	05-Feb-18	05-Mar-18	11-Jan-18	05-Feb-18	05-Mar-18	11-Jan-18	05-Feb-18	05-Mar-18	10-Jan-18	05-Feb-18	05-Mar-18
Dissolved Aluminium #	ug/l	20	20	20	20	20	20	20	20	20	20	20	20
Dissolved Antimony #	ug/l	2	2	2	2	2	2	3	2	2	2	2	2
Dissolved Arsenic #	ug/l	2.7	5	2.5	2.5	3.8	2.5	5.1	4.3	2.5	2.5	2.6	2.7
Dissolved Barium #	ug/l	167	166	160	106	99	99	50	46	47	142	138	131
Dissolved Beryllium	ug/l	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Dissolved Boron	ug/l	29	23	30	40	39	45	52	47	46	26	23	31
Dissolved Cadmium #	ug/l	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Dissolved Calcium #	mg/l	116.6	125.4	116.1	117	123.8	113.1	115.7	121.8	114	119.1	127.1	114.2
Total Dissolved Chromium #	ug/l	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Dissolved Cobalt #	ug/l	2	2	2	2	2	2	2	2	2	2	2	2
Dissolved Copper #	ug/l	7	7	7	7	7	7	7	7	7	7	7	7
Total Dissolved Iron #	ug/l	20	20	20	20	20	20	50	26	22	20	20	20
Dissolved Lead #	ug/l	5	5	5	5	5	5	5	5	5	5	5	5
Dissolved Lithium	ug/l	12	12	9	12	15	13	16	16	15	10	12	10
Dissolved Magnesium #	mg/l	36	37.9	37.1	35.9	37.1	35.8	34.6	35.5	34.8	36.3	37	35.9
Dissolved Mercury #	ug/l	1	1	1	1	1	1	1	1	1	1	1	1
Dissolved Nickel #	ug/l	2	2	2	2	2	2	2	2	6	2	2	2
Dissolved Potassium #	mg/l	2.3	2.6	2.5	2.9	3.1	3	1.8	2	1.9	1.6	1.7	1.6
Dissolved Selenium #	ug/l	3	3	3	3	3	3	3	3	3	3	3	3
Dissolved Silver	ug/l	5	5	5	5	5	5	5	5	5	5	5	5
Dissolved Sodium #	mg/l	30.8	33.6	31	26.1	27.9	25.7	31	33.5	30.9	39.7	41.5	38.3
Dissolved Strontium	ug/l	239	240	243	296	299	294	568	554	572	222	231	229
Dissolved Vanadium #	ug/l	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Dissolved Zinc #	ug/l	3	3	3	3	3	3	5	3	3	3	3	3
EPH (C8-C40) #	ug/l	10	10	10	10	10	10	10	10	10	10	10	10
GRO (>C4-C8) #	ug/l	10	10	10	10	10	10	10	10	10	10	10	10
GRO (>C8-C12) #	ug/l	10	10	10	10	10	10	10	10	10	10	10	10
GRO (>C4-C12) #	ug/l	10	10	10	10	10	10	10	10	10	10	10	10
MTBE #	ug/l	5	5	5	5	5	5	5	5	5	5	5	5
Benzene #	ug/l	5	5	5	5	5	5	5	5	5	5	5	5
Toluene #	ug/l	5	5	5	5	5	5	5	5	5	5	5	5
Ethylbenzene #	ug/l	5	5	5	5	5	5	5	5	5	5	5	5
m/p-Xylene #	ug/l	5	5	5	5	5	5	5	5	5	5	5	5
o-Xylene #	ug/l	5	5	5	5	5	5	5	5	5	5	5	5
Fluoride	mg/l	0.3	0.3	1	0.3	0.3	1.3	0.3	0.3	1.7	0.3	0.3	1.2
Bromide	mg/l	0.05	0.05	0.05	0.05	0.05	0.11	0.05	0.05	0.12	0.05	0.05	0.13
Chloride #	mg/l	64.8	63.1	66.9	53.3	51.8	55.5	56	53.8	58.2	81.5	78.3	83.9
Nitrate as NO3 #	mg/l	44.2	40.2	41.6	45.4	42.1	43.3	0.8	0.6	1.1	31.2	26.8	28
Nitrite as NO2 #	mg/l	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02
Ammoniacal Nitrogen as NH4 #	mg/l	0.03	0.03	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Dissolved Ethene #	ug/l	1	1	1	1	1	1	1	1	1	1	1	1
Dissolved Ethane #	ug/l	1	1	1	1	1	1	1	1	1	1	1	1
Dissolved Butane	ug/l	2	2	2	2	2	2	2	2	2	2	2	2
Dissolved Propane	ug/l	2	2	2	2	2	2	2	2	2	2	2	2
Dissolved Methane	mg/l	0.64	0.02	0.01	0.01	0.01	0.01	0.15	0.16	0.1	0.01	0.01	0.01
Dissolved Carbon Dioxide	mg/l	41.8	39.3	40.6	42.3	43.6	42.2	31.7	33.6	31.5	39.7	44.6	45.5
δ13C - CH4	ppm ‰ VPDB	-58.6	-	-	-	-	-	-	-	-	-	-	-
δ13C - CO2	ppm ‰ VPDB	-23	-26.3	-23.2	-22.6	-24.1	-23.5	-22.4	-25.1	-22.5	-22.5	-23.1	-23.7
Total Alkalinity as CaCO3 #	mg/l	374	374	332	370	346	348	348	342	334	380	360	360
Acrylamide	ug/l	50	50	50	50	50	50	50	50	50	50	50	50
Laurylamine	ug/l	50	50	50	50	50	50	50	50	50	50	50	50
Hydroxyethyl ethylene diamine	ug/l	50	50	50	50	50	50	50	50	50	50	50	50
Myristyl dimethylamine	ug/l	50	50	50	50	50	50	50	50	50	50	50	50
Octyldimethylamine	ug/l	50	50	50	50	50	50	50	50	50	50	50	50
para phenylene diamine	ug/l	50	50	50	50	50	50	50	50	50	50	50	50
BOD (Settled) #	mg/l	32	1	1	9	1	1	1	1	1	1	1	1
COD (Settled) #	mg/l	22	7	7	9	7	7	7	7	7	10	7	7
pH #	pH units	7.42	7.47	7.45	7.3	7.35	7.25	7.38	7.47	7.35	7.33	7.35	7.22
Salinity	%	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total Dissolved Solids #	mg/l	536	600	548	574	553	565	536	588	559	570	584	611
Total Suspended Solids #	mg/l	43	91	23	10	10	10	10	10	10	10	10	10

customer service line
03708 506 506

incident hotline
0800 80 70 60

floodline
03459 88 11 88

Interpretation of Data

The data highlighted in yellow show marginal increases over the background monitoring undertaken in the first year, but are not considered to be statistically significant. The detection of Fluoride on 5 March 2018 is being referred back to Cuadrilla and samples reanalysed. BH1A had high values of BOD and COD in the sample from 10 January 2018 which are possibly a function of sediment in the sample analysed.

Cuadrilla Preston New Road Groundwater Quality Monitoring Q1 2018 - Lower Aquifer

Substance/ Parameter	Units	BH01 (B)			BH02 (B)			BH03 (CMTS)			BH04 (B)		
		10-Jan-18	05-Feb-18	05-Mar-18	11-Jan-18	05-Feb-18	05-Mar-18	10-Jan-18	05-Feb-18	05-Mar-18	10-Jan-18	05-Feb-18	05-Mar-18
Dissolved Aluminium #	ug/l	20	20	20	20	20	20	20	20	20	20	20	20
Dissolved Antimony #	ug/l	2	2	2	2	2	2	4	2	2	2	2	2
Dissolved Arsenic #	ug/l	2.5	2.5	2.5	14.8	15	14.4	2.5	2.7	2.8	18.6	19.5	17.1
Dissolved Barium #	ug/l	153	136	132	70	67	66	62	57	55	68	65	64
Dissolved Beryllium	ug/l	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Dissolved Boron	ug/l	45	31	42	46	45	48	45	43	47	44	42	46
Dissolved Cadmium #	ug/l	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Dissolved Calcium #	mg/l	102.6	109.1	101	114.7	122.8	112	111.3	117.8	108	119.2	122	112.9
Total Dissolved Chromium #	ug/l	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Dissolved Cobalt #	ug/l	2	2	2	2	2	2	2	2	2	2	2	2
Dissolved Copper #	ug/l	7	7	7	7	7	7	7	7	7	7	7	7
Total Dissolved Iron #	ug/l	20	20	20	720	636	605	575	534	530	798	756	705
Dissolved Lead #	ug/l	5	5	5	5	5	5	5	5	5	5	5	5
Dissolved Lithium	ug/l	10	12	11	12	15	16	14	17	13	15	14	16
Dissolved Magnesium #	mg/l	35.7	38.1	37.8	33.9	35.8	34.7	32.9	33.8	33	36.3	36.1	35.2
Dissolved Mercury #	ug/l	1	1	1	1	1	1	1	1	1	1	1	1
Dissolved Nickel #	ug/l	2	2	2	2	2	2	2	2	2	2	2	2
Dissolved Potassium #	mg/l	1.8	2	1.9	1.7	1.9	1.8	1.7	2	1.8	1.8	1.9	1.8
Dissolved Selenium #	ug/l	3	3	3	3	3	3	3	3	3	3	3	3
Dissolved Silver	ug/l	5	5	5	5	5	5	5	5	5	5	5	5
Dissolved Sodium #	mg/l	37.5	44.3	40.9	28.1	30.4	27.7	26.9	28.3	26.4	26.7	27.8	26.1
Dissolved Strontium	ug/l	241	232	218	549	583	610	471	492	522	550	548	544
Dissolved Vanadium #	ug/l	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Dissolved Zinc #	ug/l	6	3	3	3	3	3	3	3	3	3	3	3
EPH (C8-C40) #	ug/l	10	10	10	10	10	10	10	10	10	10	10	10
GRO (>C4-C8) #	ug/l	10	10	10	10	10	10	10	10	10	10	10	10
GRO (>C8-C12) #	ug/l	10	10	10	10	10	10	10	10	10	10	10	10
GRO (>C4-C12) #	ug/l	10	10	10	10	10	10	10	10	10	10	10	10
MTBE #	ug/l	5	5	5	5	5	5	5	5	5	5	5	5
Benzene #	ug/l	5	5	5	5	5	5	5	5	5	5	5	5
Toluene #	ug/l	5	5	5	5	5	5	5	5	5	5	5	5
Ethylbenzene #	ug/l	5	5	5	5	5	5	5	5	5	5	5	5
m/p-Xylene #	ug/l	5	5	5	5	5	5	5	5	5	5	5	5
o-Xylene #	ug/l	5	5	5	5	5	5	5	5	5	5	5	5
Fluoride	mg/l	0.3	0.3	1.7	0.3	0.3	1.6	0.3	0.3	1.6	0.3	0.3	1.4
Bromide	mg/l	0.05	0.05	0.1	0.05	0.05	0.09	0.05	0.05	0.05	0.05	0.05	0.07
Chloride #	mg/l	46.7	46.8	50.5	51	49	52.6	49.4	47.4	51.1	45.3	43.9	47.3
Nitrate as NO3 #	mg/l	5	12.6	6	0.2	0.2	0.4	2.3	0.7	0.5	0.2	0.2	0.5
Nitrite as NO2 #	mg/l	0.08	0.2	0.17	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Ammoniacal Nitrogen as NH4 #	mg/l	0.04	0.03	0.03	0.04	0.03	0.04	0.03	0.03	0.03	0.05	0.04	0.07
Dissolved Ethene #	ug/l	1	1	1	1	1	1	1	1	1	1	1	1
Dissolved Ethane #	ug/l	1	1	1	1	1	1	1	1	1	1	1	1
Dissolved Butane	ug/l	2	2	2	2	2	2	2	2	2	2	2	2
Dissolved Propane	ug/l	2	2	2	2	2	2	2	2	2	2	2	2
Dissolved Methane	mg/l	4.16	5.21	5.75	0.01	0.01	0.01	0.05	0.1	0.07	0.01	0.01	0.01
Dissolved Carbon Dioxide	mg/l	40.1	42.6	39.6	35.3	33.9	33.8	27.6	28.3	27.8	39.7	37.3	38.4
δ13C - CH4	ppm % VPDB	-53	-56.4	-62.4	-	-	-	-	-	-	-	-	-
δ13C - CO2	ppm % VPDB	-24.7	-27.2	-30.3	-35.3	-23.1	-33.8	-21.5	-24.1	-27.8	-22.5	-24.4	-22.4
Total Alkalinity as CaCO3 #	mg/l	404	384	386	362	342	352	352	310	324	368	316	334
Acrylamide	ug/l	50	50	50	50	50	50	50	50	50	50	50	50
Laurylamine	ug/l	50	50	50	50	50	50	50	50	50	50	50	50
Hydroxyethyl ethylene diamine	ug/l	50	50	50	50	50	50	50	50	50	50	50	50
Myristyl dimethylamine	ug/l	50	50	50	50	50	50	50	50	50	50	50	50
Octyldimethylamine	ug/l	50	50	50	50	50	50	50	50	50	50	50	50
para phenylene diamine	ug/l	50	50	50	50	50	50	50	50	50	50	50	50
BOD (Settled) #	mg/l	4	7	3	1	1	1	1	1	1	1	1	1
COD (Settled) #	mg/l	13	7	7	7	7	7	7	11	7	7	7	26
pH #	pH units	7.31	7.45	7.3	7.38	7.45	7.34	7.45	7.6	7.44	7.38	7.42	7.28
Salinity	%	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total Dissolved Solids #	mg/l	497	562	535	554	583	533	523	604	523	528	577	582
Total Suspended Solids #	mg/l	146	10	164	10	10	10	10	10	10	10	10	11

customer service line
03708 506 506

incident hotline
0800 80 70 60

floodline
03459 88 11 88

Interpretation of Data

The data highlighted in yellow show marginal increases over the background monitoring undertaken in the first year, but are not considered to be statistically significant. The detection of Fluoride on 5 March 2018 is being referred back to Cuadrilla and samples reanalysed. Dissolved Methane is seen to increase against the background maximum recorded within the first year in BH1(B). The British Geological Survey have also detected Methane in other parts of the aquifer and stated that Methane (CH₄) is also often detected, though rarely at high concentrations. The composition of CH₄, where present, suggests that it has been produced in the superficial sediments by microbial reaction of organic matter.