

**Preston New Road - Background  
Groundwater Quality Monitoring  
2016 -2017.**

There are 4 groundwater monitoring boreholes at the Preston New Road site where samples are collected by Cuadrilla. The analysis of these is sent to us as a requirement of their Environmental Permit. All samples collected encountered shallow groundwater in the near surface glacial sands and gravels. These sands and gravel are separated by a clay into upper and lower units. The information below is a composite of the water quality from these 4 boreholes over a 12 months period. Sampling being undertaken monthly.

Substance/ Parameter	Units	Upper Aquifer		Lower Aquifer	
		MIN	MAX	MIN	MAX
Dissolved Aluminium #	ug/l	20	20	20	45
Dissolved Antimony #	ug/l	2	3	2	4
Dissolved Arsenic #	ug/l	2.5	12.7	2.5	18.8
Dissolved Barium #	ug/l	40	421	51	397
Dissolved Beryllium	ug/l	0.5	0.5	0.5	0.5
Dissolved Boron	ug/l	22	57	28	50
Dissolved Cadmium #	ug/l	0.5	0.5	0.5	0.5
Dissolved Calcium #	mg/l	101.9	124.3	100.5	124.5
Total Dissolved Chromium #	ug/l	1.5	1.5	1.5	1.5
Dissolved Cobalt #	ug/l	2	2	2	2
Dissolved Copper #	ug/l	7	8	7	7
Total Dissolved Iron #	ug/l	20	2012	20	3472
Dissolved Lead #	ug/l	5	5	5	5
Dissolved Lithium	ug/l	8	18	7	17
Dissolved Magnesium #	mg/l	32.1	39.7	31.4	39.1
Dissolved Mercury #	ug/l	1	1	1	1
Dissolved Nickel #	ug/l	2	3	2	5
Dissolved Potassium #	mg/l	1.5	3.2	1.7	3
Dissolved Selenium #	ug/l	3	10	3	3
Dissolved Silver	ug/l	5	5	5	5
Dissolved Sodium #	mg/l	24.1	42.3	24.9	53.1
Dissolved Strontium	ug/l	217	579	224	635
Dissolved Vanadium #	ug/l	1.5	1.5	1.5	1.5
Dissolved Zinc #	ug/l	0	33	0	28
EPH (C8-C40) #	ug/l	10	620	10	11
GRO (>C4-C8) #	ug/l	10	87	10	60
GRO (>C8-C12) #	ug/l	10	18	10	37
GRO (>C4-C12) #	ug/l	10	101	10	97
MTBE #	ug/l	0.1	5	0.1	5
Benzene #	ug/l	0.5	5	0.5	5
Toluene #	ug/l	5	5	5	5
Ethylbenzene #	ug/l	1	5	1	5

m/p-Xylene #	ug/l	2	5	2	5
o-Xylene #	ug/l	1	5	1	5
Fluoride	mg/l	0.03	0.3	0.3	0.4
Bromide	mg/l	0.05	0.18	0.05	0.16
Chloride #	mg/l	24.6	84.4	43.2	61.6
Nitrate as NO3 #	mg/l	0.2	42.8	0.2	10.2
Nitrite as NO2 #	mg/l	0.02	0.7	0.02	0.24
Ammoniacal Nitrogen as NH4 #	mg/l	0.03	0.43	0.03	0.16
Dissolved Ethene #	ug/l	1	1	1	1
Dissolved Ethane #	ug/l	1	1	1	1
Dissolved Butane	ug/l	1	2	2	2
Dissolved Propane	ug/l	1	2	2	2
Dissolved Methane	mg/l	0.01	0.38	0.01	3.08
Dissolved Carbon Dioxide	mg/l	17.4	47.9	9.8	47.9
δ13C - CH4	ppm	-74.6	0	-73.6	0
δ13C - CO2	‰ VPDB	-31.81	29.16	-33.47	27.1
Total Alkalinity as CaCO3 #	mg/l	250	600	300	460
Acrylamide	ug/l	50	50	50	50
Laurylamine	ug/l	50	50	50	50
Hydroxyethyl ethylene diamine	ug/l	50	50	50	50
Myristyl dimethylamine	ug/l	50	50	50	50
Octyldimethylamine	ug/l	50	50	50	50
para phenylene diamine	ug/l	50	50	50	50
		0	0	0	0
BOD (Settled) #	mg/l	1	2	1	15
COD (Settled) #	mg/l	7	15	7	24
pH #	pH units	7.11	7.95	7.14	7.98
Salinity	%	0.1	11.2	0.1	10.4
Total Dissolved Solids #	mg/l	384	900	419	680
Total Suspended Solids #	mg/l	10	7669	10	3014

This data represents the groundwater quality before drilling commenced on site in June this year. The groundwater quality seen in this table is considered to be natural for agricultural land in this part of Lancashire. The parameters for analysis of the groundwater are chosen in the unlikely event of any contaminants that may result from future activities. The quality of the groundwater from these boreholes will act as the background to compare future samples in order to detect any potential variation.