

Tipperary County Council Historic Landfill Site Inspection Record

Name of Historic Landfill Site Inspected: Kilsheelan Landfill

Date: 22/11/2022

Time: 08.55

Completed By: G Sweeney & B Quaid

Weather Conditions: overcast & damp.

Instructions: Walk the entire site and site boundary as far as is possible to check for and record any evidence of the items listed below and anything else of interest. Take photographs if appropriate.

- illegal dumping / litter
- odour
- leachate break out
- vegetation die-back
- general condition of the site
- invasive species

Record of findings:

Nothing to report of concern.

Kilsheelan Landfill Monitoring Report

Date & time: 22/11/2022

Completed by: G Sweeney & B Quaid

Weather Conditions: Dry, Damp, Cold.

LW1	
CH4	13.6
CO2	12.2
O2	2.2
Comment:	R.W.L. 7.60 @ 10.05

LW2	
CH4	5.2
CO2	17.4
O2	1.2
Comment:	R.W.L. @ 10.30 = 5.60



Low Flow Water Quality Sampling Record Sheet

Project Name: Kilsheelan Landfill,

Sampled By: G Sweeney & B Quaid

Sampling Location: GW2

Date & Time of Sampling: 22/11/2022

Suite:

Sample Type: Groundwater

Weather: Dry, overcast

Air Pressure (mm Hg): 740.6

Low Flow Sampling Setup Details (If K>0.2m/d then fill/dischg. ~ 4 to 8 sec each; if K<0.2m/d then fill 20 to 30 sec & dischg. ~8 sec)

Hydraulic Conductivity (m/d)	
Ground Level (mOD)	
Datum Level (mOD)	
Datum (D)	Top of 2 inch pipe
Rest Water Level: Date: 22/11/2022; & Time:	09:05
Rest Water Level (mbD) (RWL)	6.61
Min GWL Record (mbD)	
Top of Screen (mbD)	
Total Depth Dip (mbD)	
Calc. Screen length below RWL (m)	
Actual Pump Intake Installation Depth (mbD)	
Pump Type, length and intake location	Solinst pump, 0.71m @base,

Field Parameter Record: (Record Every 3 to 5 mins: Stabilisation = all params stable for 3 successive readings)

Stabilisation Criteria:

- Water Quality: +/-0.1 pH units; +/-3% EC; +/-10mV for ORP; +/-10% D.O;
- Level & Flow: Groundwater Level Drawdown <0.1m; Flow Rate 0.1 to 0.5 l/min

Time	T (°C)	pH [-]	EC μ S/cm	ORP (mV)	D.O. (mg/l O ₂)	D.O. (% Sat)	Water Level (mbD)	Flow Rate (l/min)	Fill Time (Sec)	Discharge Time (Sec)
09:20	10.9	6.75	1417		1.06	9.4	6.61	0.32	10	10
09:28	11.1	6.57	1419		0.47	4.3	6.61			
09:26	11.2	6.54	1416		0.39	3.6	6.61			
09:29	11.3	6.53	1413		0.34	3.1	6.61			

Sample Details (record container type and volume; sample filtration (if any); sample preservation (if any), No. of bottle rinses (if any); and, required analysis for each container.)

Comments:

09:20 → 09:25

Cloudy, grey colour.

No odour.



Low Flow Water Quality Sampling Record Sheet

Project Name: Kilsheelan Landfill,

Sampled By: G Sweeney & B Quaid

Sampling Location: GW3

Date & Time of Sampling: 22/11/2022

Suite:

Sample Type: Groundwater

Weather: Dry, Sunny

Air Pressure (mm Hg): 741.2

Low Flow Sampling Setup Details (If $K > 0.2\text{m/d}$ then fill/dischg. ~ 4 to 8 sec each; if $K < 0.2\text{m/d}$ then fill 20 to 30 sec & dischg. ~8 sec)

Hydraulic Conductivity (m/d)	
Ground Level (mOD)	
Datum Level (mOD)	
Datum (D)	Top of 2 inch pipe
Rest Water Level: Date: 22/11/2022; & Time:	13.05
Rest Water Level (mbD) (RWL)	3.86
Min GWL Record (mbD)	
Top of Screen (mbD)	
Total Depth Dip (mbD)	
Calc. Screen length below RWL (m)	
Actual Pump Intake Installation Depth (mbD)	
Pump Type, length and intake location	Solinst pump, 0.71m @base,

Field Parameter Record: (Record Every 3 to 5 mins: Stabilisation = all params stable for 3 successive readings)

Stabilisation Criteria:

- Water Quality: +/-0.1 pH units; +/-3% EC; +/-10mV for ORP; +/-10% D.O;
- Level & Flow: Groundwater Level Drawdown <0.1m; Flow Rate 0.1 to 0.5 l/min

Time	T (°C)	pH [-]	EC $\mu\text{S/cm}$	ORP (mV)	D.O. (mg/l O ₂)	D.O. (% Sat)	Water Level (mbD)	Flow Rate (l/min)	Fill Time (Sec)	Discharge Time (Sec)
13.12	10.2	7.24	730		7.98	71.1	3.86	0.280	10	10
13.15	10.5	6.99	731		7.46	67.1	3.86			
13.18	10.6	6.98	730		7.41	66.7	3.86			
13.21	10.6	6.94	730		7.39	66.6	3.86			

Sample Details (record container type and volume; sample filtration (if any); sample preservation (if any), No. of bottle rinses (if any); and, required analysis for each container.)

Comments: 13.12 → 13.17

Grey, cloudy appearance. No odour.



Low Flow Water Quality Sampling Record Sheet

Project Name: Kilsheelan Landfill

Sampled By: G.S. & B.Q.

Sampling Location: LW1

Date & Time of Sampling: 22/11/2022

Suite:

Sample Type: Leachate

Weather: *Overcast, Cold*

Air Pressure (mm Hg): *740-8*

Low Flow Sampling Setup Details (If K>0.2m/d then fill/dischg. ~ 4 to 8 sec each; if K<0.2m/d then fill 20 to 30 sec & dischg. ~8 sec)

Hydraulic Conductivity (m/d)	
Ground Level (mOD)	
Datum Level (mOD)	
Datum (D)	Top of 2inch pipe
Rest Water Level: Date: 22/11/2022; & Time:	<i>10.05</i>
Rest Water Level (mbD) (RWL)	<i>7.60</i>
Min GWL Record (mbD)	
Top of Screen (mbD)	
Total Depth Dip (mbD)	
Calc. Screen length below RWL (m)	
Actual Pump Intake Installation Depth (mbD)	
Pump Type, length and intake location	Solinst pump, 0.71m @base,

Field Parameter Record: (Record Every 3 to 5 mins: Stabilisation = all params stable for 3 successive readings)

Stabilisation Criteria:

- Water Quality: +/-0.1 pH units; +/-3% EC; +/-10mV for ORP; +/-10% D.O;
- Level & Flow: Groundwater Level Drawdown <0.1m; Flow Rate 0.1 to 0.5 l/min

Time	T (°C)	pH [-]	EC μ S/cm	ORP (mV)	D.O. (mg/l O ₂)	D.O. (% Sat)	Water Level (mbD)	Flow Rate (l/min)	Fill Time (Sec)	Discharge Time (Sec)
<i>10.10</i>	<i>11.7</i>	<i>6.74</i>	<i>2029</i>		<i>2.48</i>	<i>22.4</i>	<i>7.48</i>	<i>N/A.</i>		
<i>10.13</i>	<i>11.9</i>	<i>6.71</i>	<i>2061</i>		<i>1.49</i>	<i>13.3</i>	<i>7.42</i>			
<i>10.16</i>	<i>12.6</i>	<i>6.72</i>	<i>2049</i>		<i>1.41</i>	<i>13.1</i>	<i>7.40</i>			

Sample Details (record container type and volume; sample filtration (if any); sample preservation (if any), No. of bottle rinses (if any); and, required analysis for each container.)

Comments:

*Very strong leachate odour.
Grey colour. Small suspended matter
in sample.
Sheen on sample surface*



Low Flow Water Quality Sampling Record Sheet

Project Name: Kilsheelan Landfill

Sampled By: G.S. & B.Q.

Sampling Location: LW2

Date & Time of Sampling: 22/11/2022

Suite:

Sample Type: Leachate Weather: Dry, Cold Air Pressure (mm Hg): 741.3

Low Flow Sampling Setup Details (If $K > 0.2\text{m/d}$ then fill/dischg. ~ 4 to 8 sec each; if $K < 0.2\text{m/d}$ then fill 20 to 30 sec & dischg. ~8 sec)

Hydraulic Conductivity (m/d)	
Ground Level (mOD)	
Datum Level (mOD)	
Datum (D)	Top of 2 inch pipe
Rest Water Level: Date: 22/11/2022; & Time:	10.30
Rest Water Level (mbD) (RWL)	5.60
Min GWL Record (mbD)	
Top of Screen (mbD)	
Total Depth Dip (mbD)	
Calc. Screen length below RWL (m)	
Actual Pump Intake Installation Depth (mbD)	
Pump Type, length and intake location	Solinst pump, 0.71m @base,

Field Parameter Record: (Record Every 3 to 5 mins: Stabilisation = all params stable for 3 successive readings)

Stabilisation Criteria:

- Water Quality: +/-0.1 pH units; +/-3% EC; +/-10mV for ORP; +/-10% D.O;
- Level & Flow: Groundwater Level Drawdown <0.1m; Flow Rate 0.1 to 0.5 l/min

Time	T (°C)	pH [-]	EC $\mu\text{S/cm}$	ORP (mV)	D.O. (mg/l O ₂)	D.O. (% Sat)	Water Level (mbD)	Flow Rate (l/min)	Fill Time (Sec)	Discharge Time (Sec)
10.35	12.4	6.53	2512		2.26	21.3	5.45	N/A		
10.38	12.5	6.53	2604		2.16	20.5	5.41			
10.41	12.5	6.54	2591		2.18	21.1	5.35			

Sample Details (record container type and volume; sample filtration (if any); sample preservation (if any), No. of bottle rinses (if any); and, required analysis for each container.)

Comments:

Extremely dirty sample
odorous.
Lot of suspended matter in sample.

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Certificate of Analysis

Sample number	966-2022-00040800	Received on	22/11/2022
Your sample reference	LW1 Kilsheelan	Analysis started on	23/11/2022
Sample Matrix	Waste water		
Sample Condition on Arrival	Satisfactory	Sample Date	22/11/2022
Time Sampled	10:25		

Test Code Analyte	SUB ⁵ Analysis Started	Method	LOQ ³	SPEC ²	Result	Units	ACCRED ⁴
Sulphate mg/L - Gallery [M300N]							
Sulphate mg/L - Gallery	24/11/22 10:30	EW175	1		182	mg/l	
Phosphate (Ortho/MRP) as P - Gallery [M300P]							
Phosphate (Ortho/MRP) as P - Gallery	24/11/22 10:30	EW175	0.05		0.125	mg/l	C6
Chloride mg/L - Gallery [M300S]							
Chloride mg/L - Gallery	24/11/22 10:30	EW175	5		34.4	mg/l	C6
Total Oxidised Nitrogen (TON) as N - Gallery [M300U]							
Total Oxidised Nitrogen (TON) as N - Gallery	24/11/22 10:29	EW175	1		<1	mg/l	C6
Ammonia as N - Gallery [M300Z]							
Ammonia as N - Gallery	24/11/22 10:29	EW175	0.05		22.54	mg/l	
VOC Full Suite [M3023]							
1,1,1,2-Tetrachloroethane	* 08/12/22 08:59		0.2		< 2.0	µg/l	
1,1,1-Trichloroethane	* 08/12/22 08:59		0.1		< 1.0	µg/l	
1,1,2,2 Tetrachloroethane	* 08/12/22 08:59		0.5		< 50	µg/l	
1,1,2-Trichloroethane	* 08/12/22 08:59		0.1		< 10	µg/l	
1,1-Dichloroethane	* 08/12/22 08:59		0.1		< 1.0	µg/l	



Signed: _____

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16/01/2023

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1,1-Dichloroethene	*	08/12/22 08:59	0.1	< 1.0	µg/l
1,1-Dichloropropene	*	08/12/22 08:59	0.1	< 1.0	µg/l
1,2,3-Trichlorobenzene	*	08/12/22 08:59	0.2	< 2.0	µg/l
1,2,3-Trichloropropane	*	08/12/22 08:59	5	< 50	µg/l
1,2,4-Trichlorobenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
1,2,4-Trimethylbenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
1,2-Dibromo-3-chloropropane	*	08/12/22 08:59	5	< 50	µg/l
1,2-Dibromoethane	*	08/12/22 08:59	0.5	< 5	µg/l
1,2-dichlorobenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
1,2-Dichloroethane	*	08/12/22 08:59	0.2	< 2.0	µg/l
1,2-Dichloropropane	*	08/12/22 08:59	0.1	< 1.0	µg/l
1,3,5-Trimethylbenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
1,3-Dichlorobenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
1,3-Dichloropropane	*	08/12/22 08:59	0.2	< 2.0	µg/l
1,4-dichlorobenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
1-Chlorobutane	*	08/12/22 08:59	1	< 5	µg/l
2,2-Dichloropropane	*	08/12/22 08:59	1	< 50	µg/l
2-Butanone (butanone)	*	08/12/22 08:59	1	< 10	µg/l
2-Chlorotoluene	*	08/12/22 08:59	0.1	< 1.0	µg/l
2-Hexanone	*	08/12/22 08:59	1	< 10	µg/l
4-Chlorotoluene	*	08/12/22 08:59	0.1	< 1.0	µg/l
Acetone	*	08/12/22 08:59	1	< 1.0	µg/l
Acrylonitrile	*	08/12/22 08:59	2	< 10	µg/l
Benzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
Bromobenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l



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Bromochloromethane	*	08/12/22 08:59	0.5	< 5	µg/l
Bromodichloromethane	*	08/12/22 08:59	0.5	< 5	µg/l
Bromoform	*	08/12/22 08:59	1	< 10	µg/l
Bromomethane	*	08/12/22 08:59	2	< 5	µg/l
Carbon tetrachloride	*	08/12/22 08:59	1	< 10	µg/l
Carbondisulphide (CS2)	*	08/12/22 08:59	50	< 50	µg/l
Chlorobenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
Chloroform	*	08/12/22 08:59	1	< 10	µg/l
Chloromethane	*	08/12/22 08:59	0.1	< 1.0	µg/l
cis-1,2-Dichloroethene	*	08/12/22 08:59	0.1	< 1.0	µg/l
cis-1,3-Dichloropropene	*	08/12/22 08:59	1	< 10	µg/l
Dibromochloromethane	*	08/12/22 08:59	1	< 10	µg/l
Dibromomethane	*	08/12/22 08:59	0.1	< 10	µg/l
Dichlorodifluoromethane	*	08/12/22 08:59	0.1	< 1.0	µg/l
Dichloromethane	*	08/12/22 08:59	50	< 50	µg/l
Diethylether	*	08/12/22 08:59	1	< 10	µg/l
Epichlorhydrin	*	08/12/22 08:59	5	< 10	µg/l
Ethyl Chloride	*	08/12/22 08:59	0.2	< 2.0	µg/l
Ethylbenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
Hexachlorobutadiene	*	08/12/22 08:59	0.1	< 1.0	µg/l
Hexachloroethane	*	08/12/22 08:59	1	< 10	µg/l
Iodomethane	*	08/12/22 08:59	10	< 10	µg/l
Isopropylbenzene (Cumene)	*	08/12/22 08:59	0.1	< 1.0	µg/l
m-/p-Xylene	*	08/12/22 08:59	0.1	< 1.0	µg/l
Methacrylonitrile	*	08/12/22 08:59	0.2	< 10	µg/l



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Methylmethacrylate	*	08/12/22 08:59		0.2	< 2.0	µg/l	
Methyl-tert-butylether (MTBE)	*	08/12/22 08:59		0.1	< 1.0	µg/l	
MIBK/4 Methyl 2 Pentanone	*	08/12/22 08:59		1	< 10	µg/l	
Naphthalene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
n-Butylbenzene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
Nitrobenzene	*	08/12/22 08:59		0.5	< 10	µg/l	
o-Xylene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
p-Isopropyltoluene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
Propylbenzene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
sec-Butylbenzene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
Styrene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
tert-Butylbenzene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
Tetrachloroethene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
Tetrahydrofuran	*	08/12/22 08:59		1	< 5	µg/l	
Toluene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
trans-1,2-Dichloroethene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
trans-1,3-Dichloropropene	*	08/12/22 08:59		1	< 10	µg/l	
Trans-1,4-dichloro-2-butene (2)	*	08/12/22 08:59		1	< 10	µg/l	
Trichloroethene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
Trichloromonofluoromethane	*	08/12/22 08:59		0.1	< 1.0	µg/l	
Vinyl chloride	*	08/12/22 08:59		0.1	< 1.0	µg/l	
Aluminium-Total [M3198]							
Aluminium-Total		24/11/22 11:15	EW187	15	<15	µg/l	C6
Arsenic-Total [M3200]							
Arsenic-Total		24/11/22 11:15	EW187	0.6	<0.6	µg/l	C6
Barium-Total [M3201]							



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Barium-Total	24/11/22 11:15	EW187		433.1	µg/l	C6
Boron-Total [M3203]						
Boron-Total	24/11/22 11:15	EW187		0.7	mg/l	C6
Calcium-Total [M3205]						
Calcium-Total	24/11/22 11:15	EW187		319.8	mg/l	C6
Chromium-Total [M3206]						
Chromium-Total	24/11/22 11:15	EW187	3	3.90	µg/l	C6
Copper-Total [M3208]						
Copper-Total	24/11/22 11:15	EW187	0.09	<1.8	mg/l	C6
Iron-Total [M3209]						
Iron-Total	24/11/22 11:15	EW187		10670.8	µg/l	C6
Lead-Total [M3210]						
Lead-Total	24/11/22 11:15	EW187	0.9	<0.9	µg/l	C6
Magnesium-Total [M3211]						
Magnesium-Total	24/11/22 11:15	EW187		66.3	mg/l	C6
Manganese-Total [M3212]						
Manganese-Total	24/11/22 11:15	EW187	3	940.1	µg/l	C6
Nickel-Total [M3215]						
Nickel-Total	24/11/22 11:15	EW187	1.5	<1.5	µg/l	C6
Potassium-Total [M3217]						
Potassium-Total	24/11/22 11:15	EW187		39.7	mg/l	C6
Zinc-Total [M3233]						
Zinc-Total	24/11/22 11:15	EW187	20	<20	µg/l	C6
Conductivity [M3283]						
Conductivity	23/11/22 15:43	EW153	100	1858	µS/cm	C6



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PO reference: 400368805

⁴ Accreditation Information

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Certificate of Analysis

Sample number	966-2022-00040801	Received on	22/11/2022
Your sample reference	LW2 Kilsheelan	Analysis started on	23/11/2022
Sample Matrix	Waste water		
Sample Condition on Arrival	Satisfactory	Sample Date	22/11/2022
Time Sampled	11:00		

Test Code Analyte	SUB ⁵ Analysis Started	Method	LOQ ³	SPEC ²	Result	Units	ACCRED ⁴
Sulphate mg/L - Gallery [M300N]							
Sulphate mg/L - Gallery	24/11/22 10:30	EW175	1		706	mg/l	
Phosphate (Ortho/MRP) as P - Gallery [M300P]							
Phosphate (Ortho/MRP) as P - Gallery	24/11/22 10:30	EW175	0.05		0.218	mg/l	C6
Chloride mg/L - Gallery [M300S]							
Chloride mg/L - Gallery	24/11/22 10:30	EW175	5		28.6	mg/l	C6
Total Oxidised Nitrogen (TON) as N - Gallery [M300U]							
Total Oxidised Nitrogen (TON) as N - Gallery	24/11/22 10:29	EW175	1		<1	mg/l	C6
Ammonia as N - Gallery [M300Z]							
Ammonia as N - Gallery	24/11/22 10:29	EW175	0.05		19.71	mg/l	
VOC Full Suite [M3023]							
1,1,1,2-Tetrachloroethane	* 08/12/22 08:59		0.2		< 2.0	µg/l	
1,1,1-Trichloroethane	* 08/12/22 08:59		0.1		< 1.0	µg/l	
1,1,2,2 Tetrachloroethane	* 08/12/22 08:59		0.5		< 50	µg/l	
1,1,2-Trichloroethane	* 08/12/22 08:59		0.1		< 10	µg/l	
1,1-Dichloroethane	* 08/12/22 08:59		0.1		< 1.0	µg/l	



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1,1-Dichloroethene	*	08/12/22 08:59	0.1	< 1.0	µg/l
1,1-Dichloropropene	*	08/12/22 08:59	0.1	< 1.0	µg/l
1,2,3-Trichlorobenzene	*	08/12/22 08:59	0.2	< 2.0	µg/l
1,2,3-Trichloropropane	*	08/12/22 08:59	5	< 50	µg/l
1,2,4-Trichlorobenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
1,2,4-Trimethylbenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
1,2-Dibromo-3-chloropropane	*	08/12/22 08:59	5	< 50	µg/l
1,2-Dibromoethane	*	08/12/22 08:59	0.5	< 5	µg/l
1,2-dichlorobenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
1,2-Dichloroethane	*	08/12/22 08:59	0.2	< 2.0	µg/l
1,2-Dichloropropane	*	08/12/22 08:59	0.1	< 1.0	µg/l
1,3,5-Trimethylbenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
1,3-Dichlorobenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
1,3-Dichloropropane	*	08/12/22 08:59	0.2	< 2.0	µg/l
1,4-dichlorobenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
1-Chlorobutane	*	08/12/22 08:59	1	< 5	µg/l
2,2-Dichloropropane	*	08/12/22 08:59	1	< 50	µg/l
2-Butanone (butanone)	*	08/12/22 08:59	1	< 10	µg/l
2-Chlorotoluene	*	08/12/22 08:59	0.1	< 1.0	µg/l
2-Hexanone	*	08/12/22 08:59	1	< 10	µg/l
4-Chlorotoluene	*	08/12/22 08:59	0.1	< 1.0	µg/l
Acetone	*	08/12/22 08:59	1	< 1.0	µg/l
Acrylonitrile	*	08/12/22 08:59	2	< 10	µg/l
Benzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
Bromobenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l



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Bromochloromethane	*	08/12/22 08:59	0.5	< 5	µg/l
Bromodichloromethane	*	08/12/22 08:59	0.5	< 5	µg/l
Bromoform	*	08/12/22 08:59	1	< 10	µg/l
Bromomethane	*	08/12/22 08:59	2	< 5	µg/l
Carbon tetrachloride	*	08/12/22 08:59	1	< 10	µg/l
Carbondisulphide (CS2)	*	08/12/22 08:59	50	< 50	µg/l
Chlorobenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
Chloroform	*	08/12/22 08:59	1	< 10	µg/l
Chloromethane	*	08/12/22 08:59	0.1	< 1.0	µg/l
cis-1,2-Dichloroethene	*	08/12/22 08:59	0.1	< 1.0	µg/l
cis-1,3-Dichloropropene	*	08/12/22 08:59	1	< 10	µg/l
Dibromochloromethane	*	08/12/22 08:59	1	< 10	µg/l
Dibromomethane	*	08/12/22 08:59	0.1	< 10	µg/l
Dichlorodifluoromethane	*	08/12/22 08:59	0.1	< 1.0	µg/l
Dichloromethane	*	08/12/22 08:59	50	< 50	µg/l
Diethylether	*	08/12/22 08:59	1	< 10	µg/l
Epichlorhydrin	*	08/12/22 08:59	5	< 10	µg/l
Ethyl Chloride	*	08/12/22 08:59	0.2	< 2.0	µg/l
Ethylbenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
Hexachlorobutadiene	*	08/12/22 08:59	0.1	< 1.0	µg/l
Hexachloroethane	*	08/12/22 08:59	1	< 10	µg/l
Iodomethane	*	08/12/22 08:59	10	< 10	µg/l
Isopropylbenzene (Cumene)	*	08/12/22 08:59	0.1	< 1.0	µg/l
m-/p-Xylene	*	08/12/22 08:59	0.1	< 1.0	µg/l
Methacrylonitrile	*	08/12/22 08:59	0.2	< 10	µg/l



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Methylmethacrylate	*	08/12/22 08:59		0.2	< 2.0	µg/l	
Methyl-tert-butylether (MTBE)	*	08/12/22 08:59		0.1	< 1.0	µg/l	
MIBK/4 Methyl 2 Pentanone	*	08/12/22 08:59		1	< 10	µg/l	
Naphthalene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
n-Butylbenzene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
Nitrobenzene	*	08/12/22 08:59		0.5	< 10	µg/l	
o-Xylene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
p-Isopropyltoluene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
Propylbenzene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
sec-Butylbenzene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
Styrene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
tert-Butylbenzene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
Tetrachloroethene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
Tetrahydrofuran	*	08/12/22 08:59		1	< 5	µg/l	
Toluene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
trans-1,2-Dichloroethene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
trans-1,3-Dichloropropene	*	08/12/22 08:59		1	< 10	µg/l	
Trans-1,4-dichloro-2-butene (2)	*	08/12/22 08:59		1	< 10	µg/l	
Trichloroethene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
Trichloromonofluoromethane	*	08/12/22 08:59		0.1	< 1.0	µg/l	
Vinyl chloride	*	08/12/22 08:59		0.1	< 1.0	µg/l	
Aluminium-Total [M3198]							
Aluminium-Total		24/11/22 11:15	EW187	15	19.9	µg/l	C6
Arsenic-Total [M3200]							
Arsenic-Total		24/11/22 11:15	EW187	0.6	4.0	µg/l	C6
Barium-Total [M3201]							



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Barium-Total	24/11/22 11:15	EW187		65	µg/l	C6
Boron-Total [M3203]						
Boron-Total	24/11/22 11:15	EW187		1	mg/l	C6
Calcium-Total [M3205]						
Calcium-Total	24/11/22 11:15	EW187		459.4	mg/l	C6
Chromium-Total [M3206]						
Chromium-Total	24/11/22 11:15	EW187	3	3.00	µg/l	C6
Copper-Total [M3208]						
Copper-Total	24/11/22 11:15	EW187	0.09	<1.8	mg/l	C6
Iron-Total [M3209]						
Iron-Total	24/11/22 11:15	EW187		2817.7	µg/l	C6
Lead-Total [M3210]						
Lead-Total	24/11/22 11:15	EW187	0.9	2.0	µg/l	C6
Magnesium-Total [M3211]						
Magnesium-Total	24/11/22 11:15	EW187		128.1	mg/l	C6
Manganese-Total [M3212]						
Manganese-Total	24/11/22 11:15	EW187	3	1644.7	µg/l	C6
Nickel-Total [M3215]						
Nickel-Total	24/11/22 11:15	EW187	1.5	19.30	µg/l	C6
Potassium-Total [M3217]						
Potassium-Total	24/11/22 11:15	EW187		36.4	mg/l	C6
Zinc-Total [M3233]						
Zinc-Total	24/11/22 11:15	EW187	20	88	µg/l	C6
Conductivity [M3283]						
Conductivity	23/11/22 15:43	EW153	100	2359	µS/cm	C6



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PO reference: 400368805

Certificate of Analysis

Sample number	966-2022-00040805	Received on	22/11/2022
Your sample reference	GW2 Kilsheelan	Analysis started on	23/11/2022
Sample Matrix	Ground water		
Sample Condition on Arrival	Satisfactory	Sample Date	22/11/2022
Time Sampled	09:35		

Test Code Analyte	SUB ⁵ Analysis Started	Method	LOQ ³	SPEC ²	Result	Units	ACCRED ⁴
Sulphate mg/L - Gallery [M300N]							
Sulphate mg/L - Gallery	24/11/22 09:59	EW175	1		90.2	mg/l	C6
Phosphate (Ortho/MRP) as P - Gallery [M300P]							
Phosphate (Ortho/MRP) as P - Gallery	24/11/22 09:59	EW175	0.05		<0.05	mg/l	C6
Chloride mg/L - Gallery [M300S]							
Chloride mg/L - Gallery	24/11/22 09:59	EW175	5		65.1	mg/l	C6
Total Oxidised Nitrogen (TON) as N - Gallery [M300U]							
Total Oxidised Nitrogen (TON) as N - Gallery	24/11/22 09:58	EW175	1		5.639	mg/l	C6
Ammonia as N - Gallery [M300Z]							
Ammonia as N - Gallery	24/11/22 09:58	EW175	0.05		1.18	mg/l	
VOC Full Suite [M3023]							
1,1,1,2-Tetrachloroethane	* 08/12/22 08:59		0.2		< 2.0	µg/l	
1,1,1-Trichloroethane	* 08/12/22 08:59		0.1		< 1.0	µg/l	
1,1,2,2 Tetrachloroethane	* 08/12/22 08:59		0.5		< 50	µg/l	
1,1,2-Trichloroethane	* 08/12/22 08:59		0.1		< 10	µg/l	
1,1-Dichloroethane	* 08/12/22 08:59		0.1		< 1.0	µg/l	



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1,1-Dichloroethene	*	08/12/22 08:59	0.1	< 1.0	µg/l
1,1-Dichloropropene	*	08/12/22 08:59	0.1	< 1.0	µg/l
1,2,3-Trichlorobenzene	*	08/12/22 08:59	0.2	< 2.0	µg/l
1,2,3-Trichloropropane	*	08/12/22 08:59	5	< 50	µg/l
1,2,4-Trichlorobenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
1,2,4-Trimethylbenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
1,2-Dibromo-3-chloropropane	*	08/12/22 08:59	5	< 50	µg/l
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1,2-Dichloropropane	*	08/12/22 08:59	0.1	< 1.0	µg/l
1,3,5-Trimethylbenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
1,3-Dichlorobenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
1,3-Dichloropropane	*	08/12/22 08:59	0.2	< 2.0	µg/l
1,4-dichlorobenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
1-Chlorobutane	*	08/12/22 08:59	1	< 5	µg/l
2,2-Dichloropropane	*	08/12/22 08:59	1	< 50	µg/l
2-Butanone (butanone)	*	08/12/22 08:59	1	< 10	µg/l
2-Chlorotoluene	*	08/12/22 08:59	0.1	< 1.0	µg/l
2-Hexanone	*	08/12/22 08:59	1	< 10	µg/l
4-Chlorotoluene	*	08/12/22 08:59	0.1	< 1.0	µg/l
Acetone	*	08/12/22 08:59	1	< 1.0	µg/l
Acrylonitrile	*	08/12/22 08:59	2	< 10	µg/l
Benzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
Bromobenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l



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Bromochloromethane	*	08/12/22 08:59	0.5	< 5	µg/l
Bromodichloromethane	*	08/12/22 08:59	0.5	< 5	µg/l
Bromoform	*	08/12/22 08:59	1	< 10	µg/l
Bromomethane	*	08/12/22 08:59	2	< 5	µg/l
Carbon tetrachloride	*	08/12/22 08:59	1	< 10	µg/l
Carbondisulphide (CS ₂)	*	08/12/22 08:59	50	< 50	µg/l
Chlorobenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
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Dibromomethane	*	08/12/22 08:59	0.1	< 10	µg/l
Dichlorodifluoromethane	*	08/12/22 08:59	0.1	< 1.0	µg/l
Dichloromethane	*	08/12/22 08:59	50	< 50	µg/l
Diethylether	*	08/12/22 08:59	1	< 10	µg/l
Epichlorhydrin	*	08/12/22 08:59	5	< 10	µg/l
Ethyl Chloride	*	08/12/22 08:59	0.2	< 2.0	µg/l
Ethylbenzene	*	08/12/22 08:59	0.1	< 1.0	µg/l
Hexachlorobutadiene	*	08/12/22 08:59	0.1	< 1.0	µg/l
Hexachloroethane	*	08/12/22 08:59	1	< 10	µg/l
Iodomethane	*	08/12/22 08:59	10	< 10	µg/l
Isopropylbenzene (Cumene)	*	08/12/22 08:59	0.1	< 1.0	µg/l
m-/p-Xylene	*	08/12/22 08:59	0.1	< 1.0	µg/l
Methacrylonitrile	*	08/12/22 08:59	0.2	< 10	µg/l



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Methylmethacrylate	*	08/12/22 08:59		0.2	< 2.0	µg/l	
Methyl-tert-butylether (MTBE)	*	08/12/22 08:59		0.1	< 1.0	µg/l	
MIBK/4 Methyl 2 Pentanone	*	08/12/22 08:59		1	< 10	µg/l	
Naphthalene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
n-Butylbenzene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
Nitrobenzene	*	08/12/22 08:59		0.5	< 10	µg/l	
o-Xylene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
p-Isopropyltoluene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
Propylbenzene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
sec-Butylbenzene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
Styrene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
tert-Butylbenzene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
Tetrachloroethene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
Tetrahydrofuran	*	08/12/22 08:59		1	< 5	µg/l	
Toluene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
trans-1,2-Dichloroethene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
trans-1,3-Dichloropropene	*	08/12/22 08:59		1	< 10	µg/l	
Trans-1,4-dichloro-2-butene (2)	*	08/12/22 08:59		1	< 10	µg/l	
Trichloroethene	*	08/12/22 08:59		0.1	< 1.0	µg/l	
Trichloromonofluoromethane	*	08/12/22 08:59		0.1	< 1.0	µg/l	
Vinyl chloride	*	08/12/22 08:59		0.1	< 1.0	µg/l	
Aluminium - Dissolved [M3157]							
Aluminium		24/11/22 11:22	EW188	5	8.4	µg/l	C6
Arsenic - Dissolved [M3159]							
Arsenic		24/11/22 11:22	EW188		0.244	µg/l	C6
Barium - Dissolved [M3160]							



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Barium (Ba)	24/11/22 11:22	EW188	1.77	57.723	µg/l	C6
Boron - Dissolved [M3163]						
Boron (B)	24/11/22 11:22	EW188	0.21	1.645	mg/l	C6
Calcium - Dissolved [M3165]						
Calcium (Ca)	24/11/22 11:22	EW188	1.08	209.312	mg/l	C6
Copper - Dissolved [M3168]						
Copper (Cu)	24/11/22 11:22	EW188	0.6	<0.6	mg/l	C6
Iron - Dissolved [M3172]						
Iron (Fe)	24/11/22 11:22	EW188	5	15.116	µg/l	C6
Lead - Dissolved [M3173]						
Lead (Pb)	24/11/22 11:22	EW188	0.51	<0.51	µg/l	C6
Magnesium - Dissolved [M3174]						
Magnesium (Mg)	24/11/22 11:22	EW188	1.11	37.146	mg/l	C6
Manganese - Dissolved [M3175]						
Manganese (Mn)	24/11/22 11:22	EW188		13	µg/l	C6
Nickel - Dissolved [M3178]						
Nickel (Ni)	24/11/22 11:22	EW188		3.197	µg/l	C6
Potassium - Dissolved [M3180]						
Potassium (K)	24/11/22 11:22	EW188	0.15	21.494	mg/l	C6
Zinc - Dissolved [M3194]						
Zinc (Zn)	24/11/22 11:22	EW188	1	41.6	µg/l	C6
Chromium-Total [M3206]						
Chromium-Total	24/11/22 11:15	EW187	3	<3	µg/l	C6
pH [M3282]						
pH	23/11/22 15:43 ^{7A}	EW158		6.6		
Conductivity [M3283]						
Conductivity	23/11/22 15:43	EW153	100	1286	µS/cm	C6



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⁴ Accreditation Information

C6: ISO/IEC 17025:2017 INAB 138-T



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Certificate of Analysis

Sample number	966-2022-00040806	Received on	22/11/2022
Your sample reference	GW3 Kilsheelan	Analysis started on	23/11/2022
Sample Matrix	Ground water		
Sample Condition on Arrival	Satisfactory	Sample Date	22/11/2022
Time Sampled	13:30		

Test Code Analyte	SUB ⁵ Analysis Started	Method	LOQ ³	SPEC ²	Result	Units	ACCRED ⁴
Sulphate mg/L - Gallery [M300N]							
Sulphate mg/L - Gallery	24/11/22 09:59	EW175	1		25.3	mg/l	C6
Phosphate (Ortho/MRP) as P - Gallery [M300P]							
Phosphate (Ortho/MRP) as P - Gallery	24/11/22 09:59	EW175	0.05		<0.05	mg/l	C6
Chloride mg/L - Gallery [M300S]							
Chloride mg/L - Gallery	24/11/22 09:59	EW175	5		22.4	mg/l	C6
Total Oxidised Nitrogen (TON) as N - Gallery [M300U]							
Total Oxidised Nitrogen (TON) as N - Gallery	24/11/22 09:58	EW175	1		8.655	mg/l	C6
Ammonia as N - Gallery [M300Z]							
Ammonia as N - Gallery	24/11/22 09:58	EW175	0.05		<0.05	mg/l	C6
Aluminium - Dissolved [M3157]							
Aluminium	24/11/22 11:22	EW188	5		<5	µg/l	C6
Arsenic - Dissolved [M3159]							
Arsenic	24/11/22 11:22	EW188			<0.2	µg/l	C6
Barium - Dissolved [M3160]							
Barium (Ba)	24/11/22 11:22	EW188	1.77		44.04	µg/l	C6



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Boron - Dissolved [M3163]

Boron (B)	24/11/22 11:22	EW188	0.21	<0.21	mg/l	C6
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Calcium - Dissolved [M3165]

Calcium (Ca)	24/11/22 11:22	EW188	1.08	133.175	mg/l	C6
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Copper - Dissolved [M3168]

Copper (Cu)	24/11/22 11:22	EW188	0.6	<0.6	mg/l	C6
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Iron - Dissolved [M3172]

Iron (Fe)	24/11/22 11:22	EW188	5	9.802	µg/l	C6
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Lead - Dissolved [M3173]

Lead (Pb)	24/11/22 11:22	EW188	0.51	<0.51	µg/l	C6
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Magnesium - Dissolved [M3174]

Magnesium (Mg)	24/11/22 11:22	EW188	1.11	12.582	mg/l	C6
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Manganese - Dissolved [M3175]

Manganese (Mn)	24/11/22 11:22	EW188		3.515	µg/l	C6
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Nickel - Dissolved [M3178]

Nickel (Ni)	24/11/22 11:22	EW188		1.042	µg/l	C6
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Potassium - Dissolved [M3180]

Potassium (K)	24/11/22 11:22	EW188	0.15	2.6	mg/l	C6
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Zinc - Dissolved [M3194]

Zinc (Zn)	24/11/22 11:22	EW188	1	9.24	µg/l	C6
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Chromium-Total [M3206]

Chromium-Total	24/11/22 11:15	EW187	3	<3	µg/l	C6
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pH [M3282]

pH	23/11/22 15:43 ^{7A}	EW158		6.9		
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Conductivity [M3283]

Conductivity	23/11/22 15:43	EW153	100	678.2	µS/cm	C6
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Volatile organic compounds(VOC) low level in water [M502Z]



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1,1,1,2-Tetrachloroethane	*	29/11/22 08:52	0.2	<0.2	µg/l
1,1,1-Trichloroethane	*	29/11/22 08:52	0.1	<0.1	µg/l
1,1,2-Trichloroethane	*	29/11/22 08:52	0.1	<0.1	µg/l
1,1-Dichloroethane	*	29/11/22 08:52	0.1	<0.1	µg/l
1,1-Dichloroethene	*	29/11/22 08:52	0.1	<0.1	µg/l
1,1-Dichloropropene	*	29/11/22 08:52	0.1	<0.1	µg/l
1,2,3-Trichlorobenzene	*	29/11/22 08:52	0.2	<0.2	µg/l
1,2,3-Trichloropropane	*	29/11/22 08:52	5	<5	µg/l
1,2,4-Trichlorobenzene	*	29/11/22 08:52	0.1	<0.1	µg/l
1,2,4-Trimethylbenzene	*	29/11/22 08:52	0.1	<0.1	µg/l
1,2-Dibromo-3-chloropropane	*	29/11/22 08:52	5	<5	µg/l
1,2-Dibromoethane	*	29/11/22 08:52	0.5	<0.5	µg/l
1,2-Dichlorobenzene	*	29/11/22 08:52	0.1	<0.1	µg/l
1,2-Dichloroethane	*	29/11/22 08:52	0.2	<0.2	µg/l
1,2-Dichloropropane	*	29/11/22 08:52	0.1	<0.1	µg/l
1,3,5-trimethylbenzene	*	29/11/22 08:52	0.1	<0.1	µg/l
1,3-Dichlorobenzene	*	29/11/22 08:52	0.1	<0.1	µg/l
1,3-Dichloropropane	*	29/11/22 08:52	0.2	<0.2	µg/l
1,4-dichlorobenzene	*	29/11/22 08:52	0.1	<0.1	µg/l
2-Chlorotoluene	*	29/11/22 08:52	0.1	<0.1	µg/l
4-Chlorotoluene	*	29/11/22 08:52	0.1	<0.1	µg/l
Benzene	*	29/11/22 08:52	0.1	<0.1	µg/l
Bromobenzene	*	29/11/22 08:52	0.1	<0.1	µg/l
Bromochloromethane	*	29/11/22 08:52	0.5	<0.5	µg/l
Bromodichloromethane	*	29/11/22 08:52	0.5	<0.5	µg/l



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Bromomethane	*	29/11/22 08:52	2	<2	µg/l
Chlorobenzene	*	29/11/22 08:52	0.1	<0.1	µg/l
Chloroethane	*	29/11/22 08:52	0.2	<0.2	µg/l
Chloroform (Trichloromethane)	*	29/11/22 08:52	0.1	<0.1	µg/l
Chloromethane	*	29/11/22 08:52	0.1	<0.1	µg/l
cis-1,2-Dichloroethene	*	29/11/22 08:52	0.1	<0.1	µg/l
cis-1,3-Dichloropropene	*	29/11/22 08:52	1	<1	µg/l
Dibromochloromethane	*	29/11/22 08:52	1	<1	µg/l
Dibromomethane	*	29/11/22 08:52	0.1	<0.1	µg/l
Dichlorodifluoromethane	*	29/11/22 08:52	0.1	<0.1	µg/l
Ethylbenzene	*	29/11/22 08:52	0.1	<0.1	µg/l
Hexachlorobutadiene	*	29/11/22 08:52	0.1	<0.1	µg/l
iso-Propylbenzene	*	29/11/22 08:52	0.1	<0.1	µg/l
m-/p-Xylene	*	29/11/22 08:52	0.1	<0.1	µg/l
Methyl-tert-butylether (MTBE)	*	29/11/22 08:52	0.1	<0.1	µg/l
n-Butylbenzene	*	29/11/22 08:52	0.1	<0.1	µg/l
n-Propylbenzene	*	29/11/22 08:52	0.1	<0.1	µg/l
o-Xylene	*	29/11/22 08:52	0.1	<0.1	µg/l
p-Isopropyltoluene	*	29/11/22 08:52	0.1	<0.1	µg/l
sec-Butylbenzene	*	29/11/22 08:52	0.1	<0.1	µg/l
Styrene	*	29/11/22 08:52	0.1	<0.1	µg/l
tert-Butylbenzene	*	29/11/22 08:52	0.1	<0.1	µg/l
Tetrachloroethene	*	29/11/22 08:52	0.1	<0.1	µg/l
Tetrachloromethane	*	29/11/22 08:52	0.1	<0.1	µg/l
Toluene	*	29/11/22 08:52	0.1	<0.1	µg/l



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trans-1,2-Dichloroethene	*	29/11/22 08:52	0.1	<0.1	µg/l
trans-1,3-Dichloropropene	*	29/11/22 08:52	1	<1	µg/l
Tribromomethane	*	29/11/22 08:52	1	<1	µg/l
Trichloroethene	*	29/11/22 08:52	0.1	<0.1	µg/l
Trichlorofluoromethane	*	29/11/22 08:52	0.1	<0.1	µg/l
Vinyl chloride	*	29/11/22 08:52	0.1	<0.1	µg/l

4 Accreditation Information

C6: ISO/IEC 17025:2017 INAB 138-T



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