

RECEIVED: 29/11/2024



APPENDIX 7-4

GROUNDWATER LABORATORY
RESULTS

RECEIVED: 29/11/2024

Client: Hydro-Environmental Services
22
Lower Main Street
Dungarvan
Co. Waterford.
Waterford
IRELAND

Certificate Code: AR-23-M3-026995-01

Page Number: Page 21 of 36

PO reference:

Sample number	966-2023-00030724	Received on	07/07/2023
Your sample reference	Ballyquin GW1	Analysis started on	07/07/2023
Sample Matrix	Ground water		
Sample Condition on Arrival	Satisfactory	Sample Date	06/07/2023
Time Sampled	17:00		

Test Code Analyte	SUB ⁵ Analysis Started	Method	LOQ ³	SPEC ²	Result	Units	ACCRED ⁴
Biochemical Oxygen Demand (BOD) [M3003]							
Biochemical oxygen demand (BOD) 5d	07/07/23 17:49	EW001	1		5.8	mg/l	C6
Chemical Oxygen Demand (COD) [M3004]							
Chemical oxygen demand (COD)	07/07/23 13:39	EW094	8		<8	mg/l	C6
Total Dissolved Solids (TDS) [M3006]							
Total dissolved solids @ 180°C	10/07/23 09:48	EW046	15		19	mg/l	C6
Total Nitrogen [M3007]							
Total Nitrogen	10/07/23 14:20	EW140	1		1.17	mg/l	C6
Sulphate mg/L - Gallery [M300N]							
Sulphate mg/L - Gallery	07/07/23 18:29	EW175	1		7.61	mg/l	C6
Phosphate (Ortho/MRP) as P - Gallery [M300P]							
Phosphate (Ortho/MRP) as P - Gallery	07/07/23 18:29	EW175	0.05		<0.05	mg/l	C6
Chloride mg/L - Gallery [M300S]							
Chloride mg/L - Gallery	07/07/23 18:29	EW175	5		15.6	mg/l	C6
Nitrite (as N) - Gallery [M3016]							

Signed:



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NOTES

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- 7A. This result is compromised as it was tested outside of stability times.
- 7C. Sample not received in appropriate containers, therefore results may be compromised.
- 7D. This result is comprised as the sample was received by the laboratory outside of the holding time.
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PO reference:

Nitrite (as N) - Gallery	07/07/23 18:29	EW175	0.01	<0.01	mg/l	
Nitrate (as N) - Gallery [M301A]						
Nitrate (as N) - Gallery	07/07/23 18:29	EW175	1	1.056	mg/l	C6
Total Phosphorus-TP [M3045]						
Total Phosphorus-TP	13/07/23 10:17	EW146	0.2	<0.2	mg/l	C6
Boron - Dissolved [M3163]						
Boron (B)	10/07/23 10:02	EW188	0.21	<0.21	mg/l	C6
Cadmium - Dissolved [M3164]						
Cadmium (Cd)	10/07/23 10:02	EW188		<0.1	µg/l	C6
Copper - Dissolved [M3168]						
Copper (Cu)	10/07/23 10:02	EW188	0.003	<0.003	mg/l	C6
Iron - Dissolved [M3172]						
Iron (Fe)	10/07/23 10:02	EW188	5	<5	µg/l	C6
Lead - Dissolved [M3173]						
Lead (Pb)	10/07/23 10:02	EW188	0.51	<0.51	µg/l	C6
Magnesium - Dissolved [M3174]						
Magnesium (Mg)	10/07/23 10:02	EW188	1.11	7.746	mg/l	C6
Manganese - Dissolved [M3175]						
Manganese (Mn)	10/07/23 10:02	EW188		<1	µg/l	C6
Nickel - Dissolved [M3178]						
Nickel (Ni)	10/07/23 10:02	EW188		<0.5	µg/l	C6
Potassium - Dissolved [M3180]						
Potassium (K)	10/07/23 10:02	EW188	0.15	2.31	mg/l	C6
Sodium - Dissolved [M3184]						

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PO reference:

Sodium (Na)	10/07/23 10:02	EW188	1.5	10.897	mg/l	C6
Zinc - Dissolved [M3194]						
Zinc (Zn)	10/07/23 10:02	EW188	1	12.4	µg/l	C6
Ammonia (Gallery) [M3278]						
Ammonia as N	07/07/23 18:29	EW175		0.116	mg/l	
pH [M3282]						
pH	07/07/23 16:08	EW158		6.7		C6
Conductivity [M3283]						
Conductivity	07/07/23 16:08	EW153	100	219	µS/cm	C6
TPH 3 Band (C6-10-21-40) in water [M502B]						
TPH >C10-C21	* 07/07/23 13:50		0.1	<0.1	µg/l	
TPH >C21-C40	* 07/07/23 13:50		0.1	<0.1	µg/l	
TPH >C6-C10	* 07/07/23 13:50		0.1	<0.1	µg/l	
TPH Total >C6-C40	* 07/07/23 13:50		10	<10	µg/l	
Oils, fats and grease water (HEM) gravimetric [RZPGR]						
Oil, fat and grease (HEM)	* 07/07/23 12:02		10	<50	mg/l	JV
Faecal Coliforms E (Water) [IE Env] <1 >100 /100 ml (0) m-FC Agar-F						
Faecal Coliforms	* 07/07/23 12:02		1	< 1	cfu/100 ml	
Coliforms E (Water) [IE Env] <1 >2 420 /100 ml (0) Colilert-18-Q MDW						
Coliforms	* 07/07/23 12:02		1	1	MPN/100 ml	
Escherichia Coli E (Water) [IE Env] <1 >2 420 /100 ml (0) Colilert-18-Q						
Escherichia coli	* 07/07/23 12:02		1	< 1	MPN/100 ml	



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PO reference:

⁴ Accreditation Information

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

JV: SFS-EN ISO/IEC 17025:2017 FINAS T039



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PO reference:

Sample number	966-2023-00030725	Received on	07/07/2023
Your sample reference	Ballyquin GW2	Analysis started on	07/07/2023
Sample Matrix	Ground water		
Sample Condition on Arrival	Satisfactory	Sample Date	06/07/2023
Time Sampled	17:00		

Test Code Analyte	SUB ⁵ Analysis Started	Method	LOQ ³	SPEC ²	Result	Units	ACCRED ⁴
Biochemical Oxygen Demand (BOD) [M3003]							
Biochemical oxygen demand (BOD) 5d	07/07/23 17:49	EW001	1		9.6	mg/l	C6
Chemical Oxygen Demand (COD) [M3004]							
Chemical oxygen demand (COD)	07/07/23 13:39	EW094	8		25	mg/l	C6
Total Dissolved Solids (TDS) [M3006]							
Total dissolved solids @ 180°C	10/07/23 09:48	EW046	15		16	mg/l	C6
Total Nitrogen [M3007]							
Total Nitrogen	10/07/23 16:20	EW140	1		<1	mg/l	C6
Sulphate mg/L - Gallery [M300N]							
Sulphate mg/L - Gallery	07/07/23 18:29	EW175	1		5.17	mg/l	C6
Phosphate (Ortho/MRP) as P - Gallery [M300P]							
Phosphate (Ortho/MRP) as P - Gallery	07/07/23 18:29	EW175	0.05		<0.05	mg/l	C6
Chloride mg/L - Gallery [M300S]							
Chloride mg/L - Gallery	07/07/23 18:29	EW175	5		8.02	mg/l	C6
Nitrite (as N) - Gallery [M3016]							

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PO reference:

Nitrite (as N) - Gallery	07/07/23 18:29	EW175	0.01	<0.01	mg/l	
Nitrate (as N) - Gallery [M301A]						
Nitrate (as N) - Gallery	07/07/23 18:29	EW175	1	<1	mg/l	C6
Total Phosphorus-TP [M3045]						
Total Phosphorus-TP	13/07/23 10:15	EW146	0.2	0.26	mg/l	C6
Boron - Dissolved [M3163]						
Boron (B)	10/07/23 10:02	EW188	0.21	<0.21	mg/l	C6
Cadmium - Dissolved [M3164]						
Cadmium (Cd)	10/07/23 10:02	EW188		<0.1	µg/l	C6
Copper - Dissolved [M3168]						
Copper (Cu)	10/07/23 10:02	EW188	0.003	<0.003	mg/l	C6
Iron - Dissolved [M3172]						
Iron (Fe)	10/07/23 10:02	EW188	5	6.009	µg/l	C6
Lead - Dissolved [M3173]						
Lead (Pb)	10/07/23 10:02	EW188	0.51	<0.51	µg/l	C6
Magnesium - Dissolved [M3174]						
Magnesium (Mg)	10/07/23 10:02	EW188	1.11	4.293	mg/l	C6
Manganese - Dissolved [M3175]						
Manganese (Mn)	10/07/23 10:02	EW188		2.555	µg/l	C6
Nickel - Dissolved [M3178]						
Nickel (Ni)	10/07/23 10:02	EW188		0.583	µg/l	C6
Potassium - Dissolved [M3180]						
Potassium (K)	10/07/23 10:02	EW188	0.15	1.704	mg/l	C6
Sodium - Dissolved [M3184]						

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Page Number: Page 27 of 36

PO reference:

Sodium (Na)	10/07/23 10:02	EW188	1.5	6.221	mg/l	C6
Zinc - Dissolved [M3194]						
Zinc (Zn)	10/07/23 10:02	EW188	1	1.15	µg/l	C6
Ammonia (Gallery) [M3278]						
Ammonia as N	07/07/23 18:29	EW175		0.101	mg/l	
pH [M3282]						
pH	07/07/23 16:08	EW158		7.4		C6
Conductivity [M3283]						
Conductivity	07/07/23 16:08	EW153	100	197	µS/cm	C6
TPH 3 Band (C6-10-21-40) in water [M502B]						
TPH >C10-C21	* 07/07/23 13:50		0.1	<0.1	µg/l	
TPH >C21-C40	* 07/07/23 13:50		0.1	<0.1	µg/l	
TPH >C6-C10	* 07/07/23 13:50		0.1	<0.1	µg/l	
TPH Total >C6-C40	* 07/07/23 13:50		10	<10	µg/l	
Oils, fats and grease water (HEM) gravimetric [RZPGR]						
Oil, fat and grease (HEM)	* 07/07/23 12:02		10	<50	mg/l	JV
Faecal Coliforms E (Water) [IE Env] <1 >100 /100 ml (0) m-FC Agar-F						
Faecal Coliforms	* 07/07/23 12:02		1	> 100	cfu/100 ml	
Coliforms E (Water) [IE Env] <1 >2 420 /100 ml (0) Colilert-18-Q MDW						
Coliforms	* 07/07/23 12:02		1	> 2420	MPN/100 ml	
Escherichia Coli E (Water) [IE Env] <1 >2 420 /100 ml (0) Colilert-18-Q						
Escherichia coli	* 07/07/23 12:02		1	2419.6	MPN/100 ml	



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PO reference:

⁴ Accreditation Information

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

JV: SFS-EN ISO/IEC 17025:2017 FINAS T039



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PO reference:

Sample number	966-2023-00030726	Received on	07/07/2023
Your sample reference	Ballyquin GW3	Analysis started on	07/07/2023
Sample Matrix	Ground water		
Sample Condition on Arrival	Satisfactory	Sample Date	06/07/2023
Time Sampled	17:00		

Test Code Analyte	SUB ⁵ Analysis Started	Method	LOQ ³	SPEC ²	Result	Units	ACCRED ⁴
Biochemical Oxygen Demand (BOD) [M3003]							
Biochemical oxygen demand (BOD) 5d	07/07/23 17:49	EW001	1		326.4	mg/l	C6
Chemical Oxygen Demand (COD) [M3004]							
Chemical oxygen demand (COD)	07/07/23 13:39	EW094	8		880	mg/l	C6
Total Dissolved Solids (TDS) [M3006]							
Total dissolved solids @ 180°C	10/07/23 09:48	EW046	15		536	mg/l	C6
Total Nitrogen [M3007]							
Total Nitrogen	11/07/23 15:34	EW140	1		3.24	mg/l	C6
Sulphate mg/L - Gallery [M300N]							
Sulphate mg/L - Gallery	07/07/23 18:29	EW175	1		<1	mg/l	C6
Phosphate (Ortho/MRP) as P - Gallery [M300P]							
Phosphate (Ortho/MRP) as P - Gallery	07/07/23 18:29	EW175	0.05		<0.05	mg/l	C6
Chloride mg/L - Gallery [M300S]							
Chloride mg/L - Gallery	07/07/23 18:29	EW175	5		<5	mg/l	C6
Nitrite (as N) - Gallery [M3016]							

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PO reference:

Nitrite (as N) - Gallery	07/07/23 18:29	EW175	0.01	<0.01	mg/l	
Nitrate (as N) - Gallery [M301A]						
Nitrate (as N) - Gallery	07/07/23 18:29	EW175	1	<1	mg/l	C6
Total Phosphorus-TP [M3045]						
Total Phosphorus-TP	13/07/23 10:17	EW146	0.2	0.49	mg/l	C6
Boron - Dissolved [M3163]						
Boron (B)	10/07/23 10:02	EW188	0.21	<0.21	mg/l	C6
Cadmium - Dissolved [M3164]						
Cadmium (Cd)	10/07/23 10:02	EW188		<0.1	µg/l	C6
Copper - Dissolved [M3168]						
Copper (Cu)	10/07/23 10:02	EW188	0.003	<0.003	mg/l	C6
Iron - Dissolved [M3172]						
Iron (Fe)	10/07/23 10:02	EW188	5	16.326	µg/l	C6
Lead - Dissolved [M3173]						
Lead (Pb)	10/07/23 10:02	EW188	0.51	<0.51	µg/l	C6
Magnesium - Dissolved [M3174]						
Magnesium (Mg)	10/07/23 10:02	EW188	1.11	8.918	mg/l	C6
Manganese - Dissolved [M3175]						
Manganese (Mn)	10/07/23 10:02	EW188		50.945	µg/l	C6
Nickel - Dissolved [M3178]						
Nickel (Ni)	10/07/23 10:02	EW188		2.797	µg/l	C6
Potassium - Dissolved [M3180]						
Potassium (K)	10/07/23 10:02	EW188	0.15	1.53	mg/l	C6
Sodium - Dissolved [M3184]						



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Certificate Code: AR-23-M3-026995-01

Page Number: Page 31 of 36

PO reference:

Sodium (Na)	10/07/23 10:02	EW188	1.5	16.919	mg/l	C6
Zinc - Dissolved [M3194]						
Zinc (Zn)	10/07/23 10:02	EW188	1	1.71	µg/l	C6
Ammonia (Gallery) [M3278]						
Ammonia as N	07/07/23 18:29	EW175		<0.005	mg/l	
pH [M3282]						
pH	07/07/23 14:14	EW158		7.6		C6
Conductivity [M3283]						
Conductivity	07/07/23 14:14	EW153	100	297	µS/cm	C6
TPH 3 Band (C6-10-21-40) in water [M502B]						
TPH >C10-C21	* 07/07/23 13:50		0.1	<0.1	µg/l	
TPH >C21-C40	* 07/07/23 13:50		0.1	<0.1	µg/l	
TPH >C6-C10	* 07/07/23 13:50		0.1	<0.1	µg/l	
TPH Total >C6-C40	* 07/07/23 13:50		10	<10	µg/l	
Oils, fats and grease water (HEM) gravimetric [RZPGR]						
Oil, fat and grease (HEM)	* 07/07/23 12:02		10	<40	mg/l	JV
Faecal Coliforms E (Water) [IE Env] <1 >100 /100 ml (0) m-FC Agar-F						
Faecal Coliforms	* 07/07/23 12:02		1	54	cfu/100 ml	
Coliforms E (Water) [IE Env] <1 >2 420 /100 ml (0) Colilert-18-Q MDW						
Coliforms	* 07/07/23 12:02		1	165	MPN/100 ml	
Escherichia Coli E (Water) [IE Env] <1 >2 420 /100 ml (0) Colilert-18-Q						
Escherichia coli	* 07/07/23 12:02		1	35.9	MPN/100 ml	



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- 7A. This result is compromised as it was tested outside of stability times.
- 7C. Sample not received in appropriate containers, therefore results may be compromised.
- 7D. This result is comprised as the sample was received by the laboratory outside of the holding time.
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9. Report is issued as per out standard T&C of sale.

Client: Hydro-Environmental Services
22
Lower Main Street
Dungarvan
Co. Waterford.
Waterford
IRELAND

Certificate Code: AR-23-M3-026995-01

Page Number: Page 32 of 36

PO reference:

⁴ Accreditation Information

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

JV: SFS-EN ISO/IEC 17025:2017 FINAS T039



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Certificate Code: AR-23-M3-026995-01

Page Number: Page 33 of 36

PO reference:

Sample number	966-2023-00030727	Received on	07/07/2023
Your sample reference	Ballyquin GW4	Analysis started on	07/07/2023
Sample Matrix	Ground water		
Sample Condition on Arrival	Satisfactory	Sample Date	06/07/2023
Time Sampled	17:00		

Test Code Analyte	SUB ⁵ Analysis Started	Method	LOQ ³	SPEC ²	Result	Units	ACCRED ⁴
Biochemical Oxygen Demand (BOD) [M3003]							
Biochemical oxygen demand (BOD) 5d	07/07/23 17:49	EW001	1		20	mg/l	C6
Chemical Oxygen Demand (COD) [M3004]							
Chemical oxygen demand (COD)	07/07/23 13:39	EW094	8		55	mg/l	C6
Total Dissolved Solids (TDS) [M3006]							
Total dissolved solids @ 180°C	10/07/23 09:48	EW046	15		175	mg/l	C6
Total Nitrogen [M3007]							
Total Nitrogen	10/07/23 16:20	EW140	1		1.47	mg/l	C6
Sulphate mg/L - Gallery [M300N]							
Sulphate mg/L - Gallery	07/07/23 18:29	EW175	1		12.9	mg/l	C6
Phosphate (Ortho/MRP) as P - Gallery [M300P]							
Phosphate (Ortho/MRP) as P - Gallery	07/07/23 18:29	EW175	0.05		<0.05	mg/l	
Chloride mg/L - Gallery [M300S]							
Chloride mg/L - Gallery	07/07/23 18:29	EW175	5		22.3	mg/l	C6
Nitrite (as N) - Gallery [M3016]							

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PO reference:

Nitrite (as N) - Gallery	07/07/23 18:29	EW175	0.01	<0.01	mg/l	
Nitrate (as N) - Gallery [M301A]						
Nitrate (as N) - Gallery	07/07/23 18:29	EW175	1	1.218	mg/l	C6
Total Phosphorus-TP [M3045]						
Total Phosphorus-TP	13/07/23 10:17	EW146	0.2	0.30	mg/l	C6
Boron - Dissolved [M3163]						
Boron (B)	10/07/23 10:02	EW188	0.21	<0.21	mg/l	C6
Cadmium - Dissolved [M3164]						
Cadmium (Cd)	10/07/23 10:02	EW188		<0.1	µg/l	C6
Copper - Dissolved [M3168]						
Copper (Cu)	10/07/23 10:02	EW188	0.003	<0.003	mg/l	C6
Iron - Dissolved [M3172]						
Iron (Fe)	10/07/23 10:02	EW188	5	<5	µg/l	C6
Lead - Dissolved [M3173]						
Lead (Pb)	10/07/23 10:02	EW188	0.51	<0.51	µg/l	C6
Magnesium - Dissolved [M3174]						
Magnesium (Mg)	10/07/23 10:02	EW188	1.11	5.244	mg/l	C6
Manganese - Dissolved [M3175]						
Manganese (Mn)	10/07/23 10:02	EW188		5.182	µg/l	C6
Nickel - Dissolved [M3178]						
Nickel (Ni)	10/07/23 10:02	EW188		<0.5	µg/l	C6
Potassium - Dissolved [M3180]						
Potassium (K)	10/07/23 10:02	EW188	0.15	0.781	mg/l	C6
Sodium - Dissolved [M3184]						



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PO reference:

Sodium (Na)	10/07/23 10:02	EW188	1.5	11.4	mg/l	C6
Zinc - Dissolved [M3194]						
Zinc (Zn)	10/07/23 10:02	EW188	1	7.17	µg/l	C6
Ammonia (Gallery) [M3278]						
Ammonia as N	07/07/23 18:29	EW175		0.012	mg/l	
pH [M3282]						
pH	07/07/23 14:14	EW158		6.7		C6
Conductivity [M3283]						
Conductivity	07/07/23 14:14	EW153	100	186	µS/cm	C6
TPH 3 Band (C6-10-21-40) in water [M502B]						
TPH >C10-C21	* 07/07/23 13:50		0.1	<0.1	µg/l	
TPH >C21-C40	* 07/07/23 13:50		0.1	<0.1	µg/l	
TPH >C6-C10	* 07/07/23 13:50		0.1	<0.1	µg/l	
TPH Total >C6-C40	* 07/07/23 13:50		10	<10	µg/l	
Oils, fats and grease water (HEM) gravimetric [RZPGR]						
Oil, fat and grease (HEM)	* 07/07/23 12:02		10	<40	mg/l	JV
Faecal Coliforms E (Water) [IE Env] <1 >100 /100 ml (0) m-FC Agar-F						
Faecal Coliforms	* 07/07/23 12:02		1	7	cfu/100 ml	
Coliforms E (Water) [IE Env] <1 >2 420 /100 ml (0) Colilert-18-Q MDW						
Coliforms	* 07/07/23 12:02		1	3.1	MPN/100 ml	
Escherichia Coli E (Water) [IE Env] <1 >2 420 /100 ml (0) Colilert-18-Q						
Escherichia coli	* 07/07/23 12:02		1	< 1	MPN/100 ml	



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