



APPENDIX 9-4

**GROUNDWATER LABORATORY
CERTIFICATES**



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

Certificate Code: AR-22-M3-006890-01

Page Number: Page 1 of 8

PO reference: P1508

Certificate of Analysis

Sample number	966-2022-00009415	Received on	08/04/2022
Your sample reference	Clonbern PW1	Analysis started on	12/04/2022
Sample Matrix	Ground water		
Additional Information	Satisfactory	Sample Date	07/04/2022
Time Sampled	15:00		

Test Code Analyte	SUB ⁵	Analysis Started	Method	LOQ ³	SPEC ²	Result	Units	ACCRED ⁴
Alkalinity (Dublin) [BB00B]								
Alkalinity	*	12/04/22 14:27		30		274	mg/l CaCO3	
Sulphate mg/L - Gallery [M300N]								
Sulphate mg/L - Gallery		12/04/22 11:06	EW175	1		85.063	mg/l	CN
Chloride mg/L - Gallery [M300S]								
Chloride mg/L - Gallery		12/04/22 11:06	EW175	5		25.93	mg/l	CN
Ammonium as NH4 (calc) - Gallery [M300T]								
Ammonium as NH4 (calc) - Gallery		12/04/22 11:06	EW175	0.06		<0.06	mg/l	CN
Phosphate (Ortho/MRP) as P2O5 (Calc) - Gallery [M300V]								
Phosphate (Ortho/MRP) as P2O5 (Calc) - Gallery		12/04/22 11:06	EW175	0.11		<0.11	mg/l	
This parameter result is compromised as it was tested outside of the recommended holding time.								
Ammonia as N - Gallery [M300Z]								
Ammonia as N - Gallery		12/04/22 11:06	EW175	0.05		<0.05	mg/l	CN
Nitrite (as N) - Gallery [M3016]								
Nitrite (as N) - Gallery		12/04/22 11:06	EW175	0.1		<0.1	mg/l	
This parameter result is compromised as it was tested outside of the recommended holding time.								
Nitrate (as N) - Gallery [M301A]								
Nitrate (as N) - Gallery		12/04/22 11:06	EW175	1		<1	mg/l	
This parameter result is compromised as it was tested outside of the recommended holding time.								
Aluminium - Dissolved [M3157]								
Aluminium		19/04/22 12:17	EW188			297.715	µg/l	CN
Arsenic - Dissolved [M3159]								
Arsenic		19/04/22 12:17	EW188			<0.2	µg/l	CN
Calcium - Dissolved [M3165]								

Signed: _____

22/04/2022

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- *** indicates the test was sub-contracted
- Deviation: This Parameter result is indicative as no holding time data was provided.
- 7A. Deviation: This parameter result is indicative as it was tested outside of the recommended holding time.



ENVIRONMENTAL LABORATORY SERVICES
EXCELLENCE THROUGH ACCREDITATION

Client: Hydro-Environmental Services
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Certificate Code: AR-22-M3-006890-01

Page Number: Page 2 of 8

PO reference: P1508

Calcium (Ca)	19/04/22 12:17	EW188	1.08	186.871	mg/l	
Iron - Dissolved [M3172]						
Iron (Fe)	19/04/22 12:17	EW188	5	2969.737	µg/l	
Magnesium - Dissolved [M3174]						
Magnesium (Mg)	19/04/22 12:17	EW188	1.11	12.964	mg/l	CN
Manganese - Dissolved [M3175]						
Manganese (Mn)	19/04/22 12:17	EW188		34.87	µg/l	CN
Potassium - Dissolved [M3180]						
Potassium (K)	19/04/22 12:17	EW188	0.15	4.4	mg/l	CN
Sodium - Dissolved [M3184]						
Sodium (Na)	19/04/22 12:17	EW188	1.5	13.507	mg/l	CN
Total Hardness - Dissolved [M3191]						
Total hardness	21/04/22 19:41	EW188		520.0026	mg/l CaCO3	
pH [M3282]						
pH	12/04/22 10:22 ^{7A}	EW158		7.0		
Conductivity [M3283]						
Conductivity	12/04/22 10:22	EW153	100	678.1	µS/cm	CN
Coliforms and E.Coli 100ml Shan [YX312]						
Escherichia coli	* 12/04/22 14:02		1	4.1	MPN/100 ml	
Sample was received into the Laboratory outside of the holding time for this parameter results may be compromised						
Total coliforms	* 12/04/22 14:02		1	142.1	MPN/100 ml	
Sample was received into the Laboratory outside of the holding time for this parameter results may be compromised						

⁴ Accreditation Information

CN: ISO/IEC 17025:2017 INAB 111-T

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IRELAND**Certificate Code:** AR-22-M3-006890-01**Page Number:** Page 3 of 8**PO reference:** P1508

Sample number	966-2022-00009416	Received on	08/04/2022
Your sample reference	Clonbern BH1	Analysis started on	12/04/2022
Sample Matrix	Ground water		
Additional Information	Satisfactory	Sample Date	07/04/2022
Time Sampled	15:00		

Test Code Analyte	SUB ⁵	Analysis Started	Method	LOQ ³	SPEC ²	Result	Units	ACCRED ⁴
Alkalinity (Dublin) [BB00B]								
Alkalinity	*	12/04/22 14:27		30		295	mg/l CaCO3	
Sulphate mg/L - Gallery [M300N]								
Sulphate mg/L - Gallery		12/04/22 11:06	EW175	1		4.815	mg/l	CN
Chloride mg/L - Gallery [M300S]								
Chloride mg/L - Gallery		12/04/22 11:06	EW175	5		13.652	mg/l	CN
Ammonium as NH4 (calc) - Gallery [M300T]								
Ammonium as NH4 (calc) - Gallery		12/04/22 11:06	EW175	0.06		1.33	mg/l	
Phosphate (Ortho/MRP) as P2O5 (Calc) - Gallery [M300V]								
Phosphate (Ortho/MRP) as P2O5 (Calc) - Gallery		12/04/22 11:06	EW175	0.11		<0.11	mg/l	
This parameter result is compromised as it was tested outside of the recommended holding time.								
Ammonia as N - Gallery [M300Z]								
Ammonia as N - Gallery		12/04/22 11:06	EW175	0.05		1.03	mg/l	
Nitrite (as N) - Gallery [M3016]								
Nitrite (as N) - Gallery		12/04/22 11:06	EW175	0.1		<0.1	mg/l	
This parameter result is compromised as it was tested outside of the recommended holding time.								
Nitrate (as N) - Gallery [M301A]								
Nitrate (as N) - Gallery		12/04/22 11:06	EW175	1		<1	mg/l	
This parameter result is compromised as it was tested outside of the recommended holding time.								
Aluminium - Dissolved [M3157]								
Aluminium		19/04/22 12:17	EW188			24.131	µg/l	CN
Arsenic - Dissolved [M3159]								
Arsenic		19/04/22 12:17	EW188			6.979	µg/l	CN
Calcium - Dissolved [M3165]								
Calcium (Ca)		19/04/22 12:17	EW188	1.08		120.497	mg/l	
Iron - Dissolved [M3172]								

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Iron (Fe)	19/04/22 12:17	EW188	5	381.894	µg/l	CN
Magnesium - Dissolved [M3174]						
Magnesium (Mg)	19/04/22 12:17	EW188	1.11	10.543	mg/l	CN
Manganese - Dissolved [M3175]						
Manganese (Mn)	19/04/22 12:17	EW188		116.914	µg/l	CN
Potassium - Dissolved [M3180]						
Potassium (K)	19/04/22 12:17	EW188	0.15	2.25	mg/l	CN
Sodium - Dissolved [M3184]						
Sodium (Na)	19/04/22 12:17	EW188	1.5	10.577	mg/l	CN
Total Hardness - Dissolved [M3191]						
Total hardness	21/04/22 19:41	EW188		344.2971	mg/l CaCO ₃	
pH [M3282]						
pH	12/04/22 10:22 ^{7A}	EW158		6.8		
Conductivity [M3283]						
Conductivity	12/04/22 10:22	EW153	100	545.7	µS/cm	CN
Coliforms and E.Coli 100ml Shan [YX312]						
Escherichia coli	* 12/04/22 14:02		1	<1.0	MPN/100 ml	
	Sample was received into the Laboratory outside of the holding time for this parameter results may be compromised					
Total coliforms	* 12/04/22 14:02		1	<1.0	MPN/100 ml	
	Sample was received into the Laboratory outside of the holding time for this parameter results may be compromised					

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Sample number	966-2022-00009417	Received on	08/04/2022
Your sample reference	Clonbern BH2	Analysis started on	12/04/2022
Sample Matrix	Ground water		
Additional Information	Satisfactory	Sample Date	07/04/2022
Time Sampled	15:00		

Test Code Analyte	SUB ⁵	Analysis Started	Method	LOQ ³	SPEC ²	Result	Units	ACCRED ⁴
Alkalinity (Dublin) [BB00B]								
Alkalinity	*	12/04/22 14:27		30		310	mg/l CaCO3	
Sulphate mg/L - Gallery [M300N]								
Sulphate mg/L - Gallery		12/04/22 11:06	EW175	1		3.629	mg/l	CN
Chloride mg/L - Gallery [M300S]								
Chloride mg/L - Gallery		12/04/22 11:06	EW175	5		20.567	mg/l	CN
Ammonium as NH4 (calc) - Gallery [M300T]								
Ammonium as NH4 (calc) - Gallery		12/04/22 11:06	EW175	0.06		1.55	mg/l	
Phosphate (Ortho/MRP) as P2O5 (Calc) - Gallery [M300V]								
Phosphate (Ortho/MRP) as P2O5 (Calc) - Gallery		12/04/22 11:06	EW175	0.11		<0.11	mg/l	
This parameter result is compromised as it was tested outside of the recommended holding time.								
Ammonia as N - Gallery [M300Z]								
Ammonia as N - Gallery		12/04/22 11:06	EW175	0.05		1.20	mg/l	
Nitrite (as N) - Gallery [M3016]								
Nitrite (as N) - Gallery		12/04/22 11:06	EW175	0.1		<0.1	mg/l	
This parameter result is compromised as it was tested outside of the recommended holding time.								
Nitrate (as N) - Gallery [M301A]								
Nitrate (as N) - Gallery		12/04/22 11:06	EW175	1		<1	mg/l	
This parameter result is compromised as it was tested outside of the recommended holding time.								
Aluminium - Dissolved [M3157]								
Aluminium		19/04/22 12:17	EW188			36.928	µg/l	CN
Arsenic - Dissolved [M3159]								
Arsenic		19/04/22 12:17	EW188			16.741	µg/l	CN
Calcium - Dissolved [M3165]								
Calcium (Ca)		19/04/22 12:17	EW188	1.08		106.055	mg/l	
Iron - Dissolved [M3172]								

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Certificate Code: AR-22-M3-006890-01

Page Number: Page 6 of 8

PO reference: P1508

Iron (Fe)	19/04/22 12:17	EW188	5	3537.443	µg/l	
Magnesium - Dissolved [M3174]						
Magnesium (Mg)	19/04/22 12:17	EW188	1.11	11.351	mg/l	CN
Manganese - Dissolved [M3175]						
Manganese (Mn)	19/04/22 12:17	EW188		80.678	µg/l	CN
Potassium - Dissolved [M3180]						
Potassium (K)	19/04/22 12:17	EW188	0.15	4.749	mg/l	CN
Sodium - Dissolved [M3184]						
Sodium (Na)	19/04/22 12:17	EW188	1.5	21.467	mg/l	CN
Total Hardness - Dissolved [M3191]						
Total hardness	21/04/22 19:41	EW188		311.5628	mg/l CaCO3	CN
pH [M3282]						
pH	12/04/22 10:22 ^{7A}	EW158		6.8		
Conductivity [M3283]						
Conductivity	12/04/22 10:22	EW153	100	590.5	µS/cm	CN
Coliforms and E.Coli 100ml Shan [YX312]						
Escherichia coli	* 12/04/22 14:02		1	<1.0	MPN/100 ml	
Sample was received into the Laboratory outside of the holding time for this parameter results may be compromised						
Total coliforms	* 12/04/22 14:02		1	<1.0	MPN/100 ml	
Sample was received into the Laboratory outside of the holding time for this parameter results may be compromised						

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**ENVIRONMENTAL LABORATORY SERVICES**
EXCELLENCE THROUGH ACCREDITATION**Client:** Hydro-Environmental Services
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IRELAND**Certificate Code:** AR-22-M3-006890-01**Page Number:** Page 7 of 8**PO reference:** P1508

Sample number	966-2022-00009418	Received on	08/04/2022
Your sample reference	Spring	Analysis started on	12/04/2022
Sample Matrix	Ground water		
Additional Information	Satisfactory	Sample Date	07/04/2022
Time Sampled	15:00		

Test Code Analyte	SUB ⁵	Analysis Started	Method	LOQ ³	SPEC ²	Result	Units	ACCRED ⁴
Alkalinity (Dublin) [BB00B]								
Alkalinity	*	12/04/22 14:27		30		320	mg/l CaCO3	
Sulphate mg/L - Gallery [M300N]								
Sulphate mg/L - Gallery		12/04/22 11:06	EW175	1		11.599	mg/l	CN
Chloride mg/L - Gallery [M300S]								
Chloride mg/L - Gallery		12/04/22 11:06	EW175	5		18.951	mg/l	CN
Ammonium as NH4 (calc) - Gallery [M300T]								
Ammonium as NH4 (calc) - Gallery		12/04/22 11:06	EW175	0.06		<0.06	mg/l	CN
Phosphate (Ortho/MRP) as P2O5 (Calc) - Gallery [M300V]								
Phosphate (Ortho/MRP) as P2O5 (Calc) - Gallery		12/04/22 11:06	EW175	0.11		<0.11	mg/l	
This parameter result is compromised as it was tested outside of the recommended holding time.								
Ammonia as N - Gallery [M300Z]								
Ammonia as N - Gallery		12/04/22 11:06	EW175	0.05		<0.05	mg/l	CN
Nitrite (as N) - Gallery [M3016]								
Nitrite (as N) - Gallery		12/04/22 11:06	EW175	0.1		<0.1	mg/l	
This parameter result is compromised as it was tested outside of the recommended holding time.								
Nitrate (as N) - Gallery [M301A]								
Nitrate (as N) - Gallery		12/04/22 11:06	EW175	1		2.61	mg/l	
This parameter result is compromised as it was tested outside of the recommended holding time.								
Aluminium - Dissolved [M3157]								
Aluminium		19/04/22 12:17	EW188			<5	µg/l	CN
Arsenic - Dissolved [M3159]								
Arsenic		19/04/22 12:17	EW188			0.446	µg/l	CN
Calcium - Dissolved [M3165]								
Calcium (Ca)		19/04/22 12:17	EW188	1.08		141.976	mg/l	
Iron - Dissolved [M3172]								

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EXCELLENCE THROUGH ACCREDITATION**Client:** Hydro-Environmental Services
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Iron (Fe)	19/04/22 12:17	EW188	5	91.01	µg/l	CN
Magnesium - Dissolved [M3174]						
Magnesium (Mg)	19/04/22 12:17	EW188	1.11	5.685	mg/l	CN
Manganese - Dissolved [M3175]						
Manganese (Mn)	19/04/22 12:17	EW188		3.547	µg/l	CN
Potassium - Dissolved [M3180]						
Potassium (K)	19/04/22 12:17	EW188	0.15	3.091	mg/l	CN
Sodium - Dissolved [M3184]						
Sodium (Na)	19/04/22 12:17	EW188	1.5	9.182	mg/l	CN
Total Hardness - Dissolved [M3191]						
Total hardness	21/04/22 19:41	EW188		377.9249	mg/l CaCO ₃	
pH [M3282]						
pH	12/04/22 10:22 ^{7A}	EW158		6.6		
Conductivity [M3283]						
Conductivity	12/04/22 10:22	EW153	100	641.8	µS/cm	CN
Coliforms and E.Coli 100ml Shan [YX312]						
Escherichia coli	* 12/04/22 14:02		1	1	MPN/100 ml	
Sample was received into the Laboratory outside of the holding time for this parameter results may be compromised						
Total coliforms	* 12/04/22 14:02		1	34.5	MPN/100 ml	
Sample was received into the Laboratory outside of the holding time for this parameter results may be compromised						

⁴ Accreditation Information

CN: ISO/IEC 17025:2017 INAB 111-T

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- 7A. Deviation: This parameter result is indicative as it was tested outside of the recommended holding time.

Client: Hydro-Environmental Services
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Waterford
IRELAND

Certificate Code: AR-23-M3-019932-01

Page Number: Page 1 of 15

PO reference: P1508

Certificate of Analysis

Sample number	966-2023-00016486	Received on	30/03/2023
Your sample reference	Clonbern-BH1	Analysis started on	31/03/2023
Sample Matrix	Ground water		
Sample Condition on Arrival	Satisfactory	Sample Date	29/03/2023
Time Sampled	16:00		

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	31/03/23 09:23	EW001	1		1.5	mg/l	C6
Total Dissolved Solids (TDS) [M3006]							
Total dissolved solids @ 180°C	31/03/23 08:31	EW046	15		303	mg/l	C6
Sulphate mg/L - Gallery [M300N]							
Sulphate mg/L - Gallery	31/03/23 10:11	EW175	1		<1	mg/l	C6
Phosphate (Ortho/MRP) as P - Gallery [M300P]							
Phosphate (Ortho/MRP) as P - Gallery	31/03/23 10:11	EW175	0.05		0.08	mg/l	C6
Chloride mg/L - Gallery [M300S]							
Chloride mg/L - Gallery	31/03/23 10:11	EW175	5		14.3	mg/l	C6
Ammonia as N - Gallery [M300Z]							
Ammonia as N - Gallery	31/03/23 10:11	EW175	0.05		0.76	mg/l	C6
Nitrite (as N) - Gallery [M3016]							
Nitrite (as N) - Gallery	31/03/23 10:11	EW175	0.01		<0.01	mg/l	C6

Signed: _____



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31/05/2023

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- ACCRED = Indicates accreditation for the test, a blank field indicates not accredited
- *** indicates the test was sub-contracted
- No date of sampling was supplied, sample stability cannot be assessed, results may be compromised.
- 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.
- This notification is based on the numerical result for the test without consideration of the uncertainty of measurement of the result, unless otherwise agreed in writing.
Uncertainty of measurement has been calculated for all INAB accredited tests and is available upon request
- Report is issued as per out standard T&C of sale.

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Page Number: Page 2 of 15

PO reference: P1508

Nitrate (as N) - Gallery [M301A]

Nitrate (as N) - Gallery	31/03/23 10:11	EW175	1	<1	mg/l	
Arsenic - Dissolved [M3159]						
Arsenic	31/03/23 11:09	EW188		22.393	µg/l	
Cadmium - Dissolved [M3164]						
Cadmium (Cd)	31/03/23 11:09	EW188		<0.1	µg/l	C6
Chromium - Dissolved [M3166]						
Chromium (Cr)	31/03/23 11:09	EW188		<1	µg/l	C6
Copper - Dissolved [M3168]						
Copper (Cu)	31/03/23 11:09	EW188	0.003	<0.003	mg/l	C6
Iron - Dissolved [M3172]						
Iron (Fe)	31/03/23 11:09	EW188	5	1392.409	µg/l	
Lead - Dissolved [M3173]						
Lead (Pb)	31/03/23 11:09	EW188	0.51	<0.51	µg/l	C6
Magnesium - Dissolved [M3174]						
Magnesium (Mg)	31/03/23 11:09	EW188	1.11	8.627	mg/l	C6
Manganese - Dissolved [M3175]						
Manganese (Mn)	31/03/23 11:09	EW188		180.682	µg/l	C6
Mercury - Dissolved [M3176]						
Mercury	31/03/23 11:09	EW188	0.03	<0.03	µg/l	C6
Nickel - Dissolved [M3178]						
Nickel (Ni)	31/03/23 11:09	EW188		1.718	µg/l	C6
Zinc - Dissolved [M3194]						
Zinc (Zn)	31/03/23 11:09	EW188	1	2.87	µg/l	C6

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Certificate Code: AR-23-M3-019932-01

Page Number: Page 3 of 15

PO reference: P1508

TPH 3 Band (C6-10-21-40) in water [M502B]

TPH >C10-C21	*	31/03/23 14:17	0.1	<0.10	µg/l	
TPH >C21-C40	*	31/03/23 14:17	0.1	<0.10	µg/l	
TPH >C6-C10	*	31/03/23 14:17	0.1	<0.10	µg/l	
TPH Total >C6-C40	*	31/03/23 14:17	10	<10	µg/l	YA

4 Accreditation Information

C6: ISO/IEC 17025:2017 INAB 138-T
YA: Accredited (External Subcontractor)

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Page Number: Page 4 of 15

PO reference: P1508

Sample number	966-2023-00016487	Received on	30/03/2023
Your sample reference	Clonbern-BH2	Analysis started on	31/03/2023
Sample Matrix	Ground water		
Sample Condition on Arrival	Satisfactory	Sample Date	29/03/2023
Time Sampled	16:00		

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	31/03/23 09:23	EW001	1		10.4	mg/l	C6
Total Dissolved Solids (TDS) [M3006]							
Total dissolved solids @ 180°C	31/03/23 08:31	EW046	15		374	mg/l	C6
Sulphate mg/L - Gallery [M300N]							
Sulphate mg/L - Gallery	31/03/23 10:11	EW175	1		<1	mg/l	C6
Phosphate (Ortho/MRP) as P - Gallery [M300P]							
Phosphate (Ortho/MRP) as P - Gallery	31/03/23 10:11	EW175	0.05		<0.05	mg/l	C6
Chloride mg/L - Gallery [M300S]							
Chloride mg/L - Gallery	31/03/23 10:11	EW175	5		18.3	mg/l	C6
Ammonia as N - Gallery [M300Z]							
Ammonia as N - Gallery	31/03/23 10:11	EW175	0.05		4.32	mg/l	
Nitrite (as N) - Gallery [M3016]							
Nitrite (as N) - Gallery	31/03/23 10:11	EW175	0.01		<0.01	mg/l	
Nitrate (as N) - Gallery [M301A]							

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Page Number: Page 5 of 15

PO reference: P1508

Nitrate (as N) - Gallery	31/03/23 10:11	EW175	1	<1	mg/l	C6
Arsenic - Dissolved [M3159]						
Arsenic	31/03/23 11:09	EW188		29.895	µg/l	
Cadmium - Dissolved [M3164]						
Cadmium (Cd)	31/03/23 11:09	EW188		<0.1	µg/l	C6
Chromium - Dissolved [M3166]						
Chromium (Cr)	31/03/23 11:09	EW188		<1	µg/l	C6
Copper - Dissolved [M3168]						
Copper (Cu)	31/03/23 11:09	EW188	0.003	<0.003	mg/l	C6
Iron - Dissolved [M3172]						
Iron (Fe)	31/03/23 11:09	EW188	5	8795.599	µg/l	
Lead - Dissolved [M3173]						
Lead (Pb)	31/03/23 11:09	EW188	0.51	<0.51	µg/l	C6
Magnesium - Dissolved [M3174]						
Magnesium (Mg)	31/03/23 11:09	EW188	1.11	3.788	mg/l	C6
Manganese - Dissolved [M3175]						
Manganese (Mn)	31/03/23 11:09	EW188		113.318	µg/l	C6
Mercury - Dissolved [M3176]						
Mercury	31/03/23 11:09	EW188	0.03	<0.03	µg/l	C6
Nickel - Dissolved [M3178]						
Nickel (Ni)	31/03/23 11:09	EW188		22.841	µg/l	C6
Zinc - Dissolved [M3194]						
Zinc (Zn)	31/03/23 11:09	EW188	1	4.32	µg/l	C6
TPH 3 Band (C6-10-21-40) in water [M502B]						

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Page Number: Page 6 of 15

PO reference: P1508

TPH >C10-C21	*	31/03/23 14:17	0.1	<0.10	µg/l	
TPH >C21-C40	*	31/03/23 14:17	0.1	<0.10	µg/l	
TPH >C6-C10	*	31/03/23 14:17	0.1	<0.10	µg/l	
TPH Total >C6-C40	*	31/03/23 14:17	10	<10	µg/l	YA

4 Accreditation Information

C6: ISO/IEC 17025:2017 INAB 138-T
YA: Accredited (External Subcontractor)

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Page Number: Page 7 of 15

PO reference: P1508

Sample number	966-2023-00016488	Received on	30/03/2023
Your sample reference	Clonbern-BH5	Analysis started on	31/03/2023
Sample Matrix	Ground water		
Sample Condition on Arrival	Satisfactory	Sample Date	29/03/2023
Time Sampled	16:00		

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	31/03/23 09:23	EW001	1		2.1	mg/l	C6
Total Dissolved Solids (TDS) [M3006]							
Total dissolved solids @ 180°C	31/03/23 08:31	EW046	15		480	mg/l	C6
Sulphate mg/L - Gallery [M300N]							
Sulphate mg/L - Gallery	31/03/23 10:11	EW175	1		64.8	mg/l	C6
Phosphate (Ortho/MRP) as P - Gallery [M300P]							
Phosphate (Ortho/MRP) as P - Gallery	31/03/23 10:11	EW175	0.05		<0.05	mg/l	
Chloride mg/L - Gallery [M300S]							
Chloride mg/L - Gallery	31/03/23 10:11	EW175	5		33.1	mg/l	C6
Ammonia as N - Gallery [M300Z]							
Ammonia as N - Gallery	31/03/23 10:11	EW175	0.05		<0.05	mg/l	C6
Nitrite (as N) - Gallery [M3016]							
Nitrite (as N) - Gallery	31/03/23 10:11	EW175	0.01		<0.01	mg/l	
Nitrate (as N) - Gallery [M301A]							

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Page Number: Page 8 of 15

PO reference: P1508

Nitrate (as N) - Gallery	31/03/23 10:11	EW175	1	<1	mg/l	C6
Arsenic - Dissolved [M3159]						
Arsenic	31/03/23 11:09	EW188		1.27	µg/l	C6
Cadmium - Dissolved [M3164]						
Cadmium (Cd)	31/03/23 11:09	EW188		<0.1	µg/l	C6
Chromium - Dissolved [M3166]						
Chromium (Cr)	31/03/23 11:09	EW188		<1	µg/l	C6
Copper - Dissolved [M3168]						
Copper (Cu)	31/03/23 11:09	EW188	0.003	<0.003	mg/l	C6
Iron - Dissolved [M3172]						
Iron (Fe)	31/03/23 11:09	EW188	5	<5	µg/l	C6
Lead - Dissolved [M3173]						
Lead (Pb)	31/03/23 11:09	EW188	0.51	<0.51	µg/l	C6
Magnesium - Dissolved [M3174]						
Magnesium (Mg)	31/03/23 11:09	EW188	1.11	15.273	mg/l	C6
Manganese - Dissolved [M3175]						
Manganese (Mn)	31/03/23 11:09	EW188		84.989	µg/l	C6
Mercury - Dissolved [M3176]						
Mercury	31/03/23 11:09	EW188	0.03	<0.03	µg/l	C6
Nickel - Dissolved [M3178]						
Nickel (Ni)	31/03/23 11:09	EW188		3.992	µg/l	C6
Zinc - Dissolved [M3194]						
Zinc (Zn)	31/03/23 11:09	EW188	1	2.70	µg/l	C6
TPH 3 Band (C6-10-21-40) in water [M502B]						

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Page Number: Page 9 of 15

PO reference: P1508

TPH >C10-C21	*	31/03/23 14:17	0.1	<0.10	µg/l
TPH >C21-C40	*	31/03/23 14:17	0.1	<0.10	µg/l
TPH >C6-C10	*	31/03/23 14:17	0.1	<0.10	µg/l
TPH Total >C6-C40	*	31/03/23 14:17	10	<10	µg/l
Faecal Coliforms E (Water) [IE Env] <1 >100 /100 ml (0) m-FC Agar-F					
Faecal Coliforms	*	30/03/23 12:25	1	< 1	cfu/100 ml
Coliforms E (Water) [IE Env] <1 >2 420 /100 ml (0) Colilert-18-Q MDW					
Coliforms	*	30/03/23 12:25	1	223	MPN/100 ml
Escherichia Coli E (Water) [IE Env] <1 >2 420 /100 ml (0) Colilert-18-Q					
Escherichia coli	*	30/03/23 12:25	1	< 1	MPN/100 ml

⁴ Accreditation Information

C6: ISO/IEC 17025:2017 INAB 138-T
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Page Number: Page 10 of 15

PO reference: P1508

Sample number	966-2023-00016489	Received on	30/03/2023
Your sample reference	Clonbern-Spring	Analysis started on	31/03/2023
Sample Matrix	Ground water		
Sample Condition on Arrival	Satisfactory	Sample Date	29/03/2023
Time Sampled	16:00		

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	31/03/23 09:23	EW001	1		<1	mg/l	C6
Total Dissolved Solids (TDS) [M3006]							
Total dissolved solids @ 180°C	31/03/23 08:31	EW046	15		410	mg/l	C6
Sulphate mg/L - Gallery [M300N]							
Sulphate mg/L - Gallery	31/03/23 10:11	EW175	1		8.74	mg/l	C6
Phosphate (Ortho/MRP) as P - Gallery [M300P]							
Phosphate (Ortho/MRP) as P - Gallery	31/03/23 10:11	EW175	0.05		<0.05	mg/l	C6
Chloride mg/L - Gallery [M300S]							
Chloride mg/L - Gallery	31/03/23 10:11	EW175	5		18.6	mg/l	C6
Ammonia as N - Gallery [M300Z]							
Ammonia as N - Gallery	31/03/23 10:11	EW175	0.05		<0.05	mg/l	C6
Nitrite (as N) - Gallery [M3016]							
Nitrite (as N) - Gallery	31/03/23 10:11	EW175	0.01		<0.01	mg/l	C6
Nitrate (as N) - Gallery [M301A]							

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Page Number: Page 11 of 15

PO reference: P1508

Nitrate (as N) - Gallery	31/03/23 10:11	EW175	1	1.768	mg/l	C6
Arsenic - Dissolved [M3159]						
Arsenic	31/03/23 11:09	EW188		0.332	µg/l	C6
Cadmium - Dissolved [M3164]						
Cadmium (Cd)	31/03/23 11:09	EW188		<0.1	µg/l	C6
Chromium - Dissolved [M3166]						
Chromium (Cr)	31/03/23 11:09	EW188		<1	µg/l	C6
Copper - Dissolved [M3168]						
Copper (Cu)	31/03/23 11:09	EW188	0.003	<0.003	mg/l	C6
Iron - Dissolved [M3172]						
Iron (Fe)	31/03/23 11:09	EW188	5	12.799	µg/l	C6
Lead - Dissolved [M3173]						
Lead (Pb)	31/03/23 11:09	EW188	0.51	<0.51	µg/l	C6
Magnesium - Dissolved [M3174]						
Magnesium (Mg)	31/03/23 11:09	EW188	1.11	5.023	mg/l	C6
Manganese - Dissolved [M3175]						
Manganese (Mn)	31/03/23 11:09	EW188		1.577	µg/l	C6
Mercury - Dissolved [M3176]						
Mercury	31/03/23 11:09	EW188	0.03	<0.03	µg/l	C6
Nickel - Dissolved [M3178]						
Nickel (Ni)	31/03/23 11:09	EW188		1.322	µg/l	C6
Zinc - Dissolved [M3194]						
Zinc (Zn)	31/03/23 11:09	EW188	1	10.9	µg/l	C6
TPH 3 Band (C6-10-21-40) in water [M502B]						

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Page Number: Page 12 of 15

PO reference: P1508

TPH >C10-C21	*	31/03/23 14:17	0.1	<0.10	µg/l
TPH >C21-C40	*	31/03/23 14:17	0.1	<0.10	µg/l
TPH >C6-C10	*	31/03/23 14:17	0.1	<0.10	µg/l
TPH Total >C6-C40	*	31/03/23 14:17	10	<10	µg/l
Faecal Coliforms E (Water) [IE Env] <1 >100 /100 ml (0) m-FC Agar-F					
Faecal Coliforms	*	30/03/23 12:26	1	3	cfu/100 ml
Coliforms E (Water) [IE Env] <1 >2 420 /100 ml (0) Colilert-18-Q MDW					
Coliforms	*	30/03/23 12:26	1	16.9	MPN/100 ml
Escherichia Coli E (Water) [IE Env] <1 >2 420 /100 ml (0) Colilert-18-Q					
Escherichia coli	*	30/03/23 12:26	1	4	MPN/100 ml

⁴ Accreditation Information

C6: ISO/IEC 17025:2017 INAB 138-T
YA: Accredited (External Subcontractor)

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

Certificate Code: AR-23-M3-019932-01

Page Number: Page 13 of 15

PO reference: P1508

Sample number	966-2023-00016490	Received on	30/03/2023
Your sample reference	Clonbern-Farm Well	Analysis started on	31/03/2023
Sample Matrix	Ground water		
Sample Condition on Arrival	Satisfactory	Sample Date	29/03/2023
Time Sampled	16:00		

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	31/03/23 09:23	EW001	1		<1	mg/l	C6
Total Dissolved Solids (TDS) [M3006]							
Total dissolved solids @ 180°C	31/03/23 08:31	EW046	15		565	mg/l	C6
Sulphate mg/L - Gallery [M300N]							
Sulphate mg/L - Gallery	31/03/23 10:11	EW175	1		34.0	mg/l	C6
Phosphate (Ortho/MRP) as P - Gallery [M300P]							
Phosphate (Ortho/MRP) as P - Gallery	31/03/23 10:11	EW175	0.05		<0.05	mg/l	C6
Chloride mg/L - Gallery [M300S]							
Chloride mg/L - Gallery	31/03/23 10:11	EW175	5		55.4	mg/l	C6
Ammonia as N - Gallery [M300Z]							
Ammonia as N - Gallery	31/03/23 10:11	EW175	0.05		0.26	mg/l	C6
Nitrite (as N) - Gallery [M3016]							
Nitrite (as N) - Gallery	31/03/23 10:11	EW175	0.01		<0.01	mg/l	C6
Nitrate (as N) - Gallery [M301A]							

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Page Number: Page 14 of 15

PO reference: P1508

Nitrate (as N) - Gallery	31/03/23 10:11	EW175	1	<1	mg/l	C6
Arsenic - Dissolved [M3159]						
Arsenic	31/03/23 11:09	EW188		1.851	µg/l	C6
Cadmium - Dissolved [M3164]						
Cadmium (Cd)	31/03/23 11:09	EW188		0.107	µg/l	C6
Chromium - Dissolved [M3166]						
Chromium (Cr)	31/03/23 11:09	EW188		<1	µg/l	C6
Copper - Dissolved [M3168]						
Copper (Cu)	31/03/23 11:09	EW188	0.003	<0.003	mg/l	C6
Iron - Dissolved [M3172]						
Iron (Fe)	31/03/23 11:09	EW188	5	271.496	µg/l	C6
Lead - Dissolved [M3173]						
Lead (Pb)	31/03/23 11:09	EW188	0.51	<0.51	µg/l	C6
Magnesium - Dissolved [M3174]						
Magnesium (Mg)	31/03/23 11:09	EW188	1.11	13.806	mg/l	C6
Manganese - Dissolved [M3175]						
Manganese (Mn)	31/03/23 11:09	EW188		654.626	µg/l	C6
Mercury - Dissolved [M3176]						
Mercury	31/03/23 11:09	EW188	0.03	<0.03	µg/l	C6
Nickel - Dissolved [M3178]						
Nickel (Ni)	31/03/23 11:09	EW188		5.727	µg/l	C6
Zinc - Dissolved [M3194]						
Zinc (Zn)	31/03/23 11:09	EW188	1	5.28	µg/l	C6
TPH 3 Band (C6-10-21-40) in water [M502B]						

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Page Number: Page 15 of 15

PO reference: P1508

TPH >C10-C21	*	31/03/23 14:17	0.1	<0.10	µg/l
TPH >C21-C40	*	31/03/23 14:17	0.1	<0.10	µg/l
TPH >C6-C10	*	31/03/23 14:17	0.1	<0.10	µg/l
TPH Total >C6-C40	*	31/03/23 14:17	10	<10	µg/l
Faecal Coliforms E (Water) [IE Env] <1 >100 /100 ml (0) m-FC Agar-F					
Faecal Coliforms	*	30/03/23 12:26	1	< 1	cfu/100 ml
Coliforms E (Water) [IE Env] <1 >2 420 /100 ml (0) Colilert-18-Q MDW					
Coliforms	*	30/03/23 12:26	1	10	MPN/100 ml
Escherichia Coli E (Water) [IE Env] <1 >2 420 /100 ml (0) Colilert-18-Q					
Escherichia coli	*	30/03/23 12:26	1	< 1	MPN/100 ml

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