

### CERTIFICATE OF ANALYSIS

Client : Michael J. Murphy  
 Kiltiernan Group Water Scheme  
 Caheradoo  
 Kilcolgan  
 Co. Galway

Report No. : 355320  
 Date of Receipt : 21/02/2018  
 Start Date of Analysis : 21/02/2018  
 Date of Report : 09/03/2018  
 Order Number :  
 Sample taken by : CLS

Lab No	Sample Description	Test	Ref.	Result	Units
844228	Kiltiernan GWS. Raw Water. 21/02/2018 @09:00	BOD	I, R	<1	mg/l
		Colour	I, R	<4	0
		COD	I, R	<10	mg/l
		Turbidity	I, R	0.3	N.T.U.
		pH	I, R	7.1	pH Units
		Conductivity @20C	I, R	604	uS/cm
		Nitrite as N	I, R	<0.005	mg/l
		Copper, total	I, R	2	ug/l
		Sodium, total	I, R	23	mg/l
		Chloride	I, R	48.8	mg/l
		Ammonium as NH4	I, R	0.015	mg/l
		Nitrate as NO3	I, R	11.2	mg/l
		Dissolved Oxygen (%)	R	66.4	%Sat
		Iron, total	I, R	<10	ug/l
		Potassium, total	I, R	4	mg/l
		Total Hardness (Kone)	I, R	378	mg/l CaCO3
		Magnesium, total	I, R	7	mg/l
		Silica as Si O2 (reactive)	S,	1.84	mg/l
		Sulphate	I, R	14	mg/l
		Orthophosphate as PO4-P	I, R	0.033	mg/l
		Arsenic, total	I, R	<0.5	ug/l
		Manganese, total	I, R	<5	ug/l
		Zinc, total	I, R	<5	ug/l
		Calcium, total	I, R	115	mg/l
		Aluminium, dissolved	I, R	2	ug/l
		Iron, dissolved	I, R	<10	ug/l
		Manganese, dissolved	I, R	<5	ug/l
		Copper, dissolved	I, R	2	ug/l
		Lead, dissolved	I, R	<0.5	ug/l
		Chromium, dissolved	I, R	<0.5	ug/l
		Nickel, dissolved	I, R	<0.5	ug/l
		Cadmium, dissolved	I, R	<0.5	ug/l
		Arsenic, dissolved	I, R	<0.5	ug/l
		Zinc, dissolved	I, R	<5	ug/l
		Barium, dissolved	I, R	8	ug/l
		PAH 16 by GCMS	S,	<0.01	ug/l
		TOC	I, R	1.78	mg/l
		Clostridium Perfringens in Water	I, R	0	cfu/100ml
		Strontium, dissolved	I, R	187	ug/l
		E coli (Filtration) (Environmental Waters)	I, R	2	cfu/100ml
Total Coliforms (Filtration) (Environmental Waters)	I, R	2	cfu/100ml		
TPH (>C5 - C44) by GC-FID	I, R	81 **Unknown Pattern	ug/l		

\*\* Note: The comment expressed here is an interpretation and is not INAB accredited



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Approved by:

*Barbara Lee*

**Barbara Lee  
Environmental  
Scientist**

See below for test specifications and accreditation status.

This report only relates to items tested and shall not be reproduced but in full with the permission of CLS.

0cfu is reported in waters, this refers to 'not detected in volume tested'

It is recommended that water samples requiring microbiological analysis should be tested within 24 hours of sampling.



In-House Test	Specification	17025	GMP/FDA*	ISO**
BOD	CLS 12	Yes	No	Yes
Colour	CLS 29	Yes	No	Yes
COD	CLS 52	Yes	No	Yes
Turbidity	CLS 30	Yes	No	Yes
pH	CLS 26	Yes	No	Yes
Conductivity @20C	CLS 67	Yes	No	Yes
Nitrite as N	Konelab CLS 37	Yes	No	Yes
Copper, total	ICP-MS CLS 129	Yes	No	Yes
Sodium, total	ICP-MS CLS129	Yes	No	Yes
Chloride	Konelab CLS 36	Yes	No	Yes
Ammonium as NH4	Konelab CLS 40	Yes	No	Yes
Nitrate as NO3	Konelab CLS 39	Yes	No	Yes
Dissolved Oxygen (%)	CLS 75	No	No	Yes
Iron, total	ICP-MS CLS129	Yes	No	Yes
Potassium, total	ICP-MS CLS129	Yes	No	Yes
Total Hardness (Kone)	Konelab CLS 77	Yes	No	Yes
Magnesium, total	ICP-MS CLS129	Yes	No	Yes
Sulphate	Konelab CLS 88	Yes	No	Yes
Orthophosphate as PO4-P	Konelab CLS 35	Yes	No	Yes
Arsenic, total	ICP-MS CLS 129	Yes	No	Yes
Manganese, total	ICP-MS CLS129	Yes	No	Yes
Zinc, total	ICP-MS CLS 129	Yes	No	Yes
Calcium, total	ICP-MS CLS129	Yes	No	Yes
Aluminium, dissolved	ICP-MS CLS129	Yes	No	Yes
Iron, dissolved	ICP-MS CLS 129	Yes	No	Yes
Manganese, dissolved	ICP-MS CLS129	Yes	No	Yes
Copper, dissolved	ICP-MS CLS 129	Yes	No	Yes
Lead, dissolved	ICP-MS CLS129	Yes	No	Yes
Chromium, dissolved	ICP-MS CLS 129	Yes	No	Yes
Nickel, dissolved	ICP-MS CLS129	Yes	No	Yes
Cadmium, dissolved	ICP-MS CLS129	Yes	No	Yes
Arsenic, dissolved	ICP-MS CLS129	Yes	No	Yes
Zinc, dissolved	ICP-MS CLS 129	Yes	No	Yes
Barium, dissolved	ICP-MS CLS129	Yes	No	Yes
TOC	CLS 150	Yes	No	Yes
Clostridium Perfringens in Water	CLS 43	Yes	No	Yes
Strontium, dissolved	ICP-MS CLS129	Yes	No	Yes
E coli (Filtration) (Environmental Waters)	CLS 16	Yes	No	Yes
Total Coliforms (Filtration) (Environmental Waters)	CLS 16	Yes	No	Yes
TPH (>C5 - C44) by GC-FID	CLS 193	Yes	No	Yes

\*Analysis carried out in a GMP approved, FDA inspected facility (MedPharma site only).

\*\*Laboratory Analysis, Sampling and Food Safety Monitoring are all ISO 9001 certified (Rosmuc site only).

Lab No	Sample ID	Sample Condition on Receipt	Sampling Date
844228	Kiltiernan GWS. Raw Water. 21/02/2018 @09:00	Good condition	21/02/2018