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Envirolab Services (WA) Pty Ltd trading as  
MPL Laboratories | ABN 53 140 099 207

## CERTIFICATE OF ANALYSIS 197728

**Client:**  
**Cash Sale**

**Attention:** Philip Doust

### Sample log in details:

Your Reference:	<b><u>Doust Plumbing Products</u></b>
No. of samples:	3 waters
Date/Time samples received:	4/07/2017 / 12:35
Date completed instructions received:	4/07/2017
Location:	

### Analysis Details:

Please refer to the following pages for results, methodology summary and quality control data. Samples were analysed as received from the client. Results relate specifically to the samples as received. Results are reported on a dry weight basis for solids and on an as received basis for other matrices.  
***Please refer to the last pages of this report for any comments relating to the results.***

### Report Details:

Date results requested by:	10/07/17
Date of Preliminary Report:	Not issued
Issue Date:	10/07/17

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**Tests not covered by NATA are denoted with \*.**

### Results Approved By:

  
\_\_\_\_\_  
Joshua Lim  
Operations Manager

MPL Reference: 197728  
Revision No: R 00



**Client Reference:      Doust Plumbing Products**

Health Department DWA Our Reference: Your Reference  Type of sample Time Sampled	UNITS -----  -----	197728-1 Dalkieth Water tap water	197728-2 Rainwater (Cloth) water	197728-3 Rainwater (Absorb it) water
Date prepared	-	05/07/2017	05/07/2017	05/07/2017
Date analysed	-	05/07/2017	05/07/2017	05/07/2017
pH	pH Units	8.1	7.6	6.6
Electrical Conductivity (EC)	µS/cm	790	58	82
Total Dissolved Solids (grav)	mg/L	470	35	49
Total Suspended Solids	mg/L	<5	<5	<5
Turbidity	NTU	<0.1	0.4	0.3
Colour (True)	HZU	<5	<5	<5
Aluminium-Total	mg/L	0.01	0.01	<0.01
Cadmium-Total	mg/L	<0.0001	<0.0001	<0.0001
Copper-Total	mg/L	0.024	0.013	<0.001
Iron-Total	mg/L	0.01	<0.01	<0.01
Lead-Total	mg/L	<0.001	0.01	<0.001
Nickel-Total	mg/L	<0.001	0.003	<0.001
Zinc-Total	mg/L	0.003	0.044	0.020
Calcium - Dissolved	mg/L	27	2.1	1.2
Potassium - Dissolved	mg/L	4.5	<0.5	0.5
Magnesium - Dissolved	mg/L	4.6	0.6	1
Sodium - Dissolved	mg/L	120	6.8	11
Bicarbonate HCO <sub>3</sub> as CaCO <sub>3</sub>	mg/L	83	29	<5
Carbonate CO <sub>3</sub> <sup>2-</sup> as CaCO <sub>3</sub>	mg/L	<5	<5	<5
Hydroxide OH <sup>-</sup> as CaCO <sub>3</sub>	mg/L	<5	<5	<5
Total Alkalinity as CaCO <sub>3</sub>	mg/L	83	29	<5
Chloride	mg/L	180	10	20
Sulphate	mg/L	13	2	3
Nitrate as NO <sub>3</sub>	mg/L	1.3	0.8	0.5
Nitrite as NO <sub>2</sub>	mg/L	<0.5	<0.5	<0.5
Hardness as CaCO <sub>3</sub>	mg/L	85	8	7
Ionic Balance	%	0.26	-33	2.2

**Client Reference:      Doust Plumbing Products**

Total Metals in water Our Reference: Your Reference  Type of sample Time Sampled	UNITS -----  -----	197728-1 Dalkieth Water tap water	197728-2 Rainwater (Cloth) water	197728-3 Rainwater (Absorb it) water
Date digested	-	05/07/2017	05/07/2017	05/07/2017
Date analysed	-	05/07/2017	05/07/2017	05/07/2017
Antimony-Total	mg/L	<0.001	<0.001	<0.001
Arsenic-Total	mg/L	<0.001	<0.001	<0.001
Barium-Total	mg/L	0.11	0.008	0.002
Chromium-Total	mg/L	<0.001	<0.001	<0.001
Manganese-Total	mg/L	<0.005	<0.005	<0.005
Molybdenum-Total	mg/L	<0.001	<0.001	<0.001
Selenium-Total	mg/L	<0.001	<0.001	<0.001
Silver-Total	mg/L	<0.001	<0.001	<0.001
Tin-Total	mg/L	<0.001	<0.001	<0.001

Method ID	Methodology Summary
<b>INORG-001</b>	pH - Measured using pH meter and electrode base on APHA latest edition, Method 4500-H+. Please note that the results for water analyses may be indicative only, as analysis can be completed outside of the APHA recommended holding times. Soils are reported from a 1:5 water extract unless otherwise specified.
<b>INORG-002</b>	Conductivity and Salinity - measured using a conductivity cell at 25°C based on APHA latest edition Method 2510. Soils reported from a 1:5 water extract unless otherwise specified.
<b>INORG-018</b>	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180±5°C
<b>INORG-019</b>	Suspended Solids - determined gravimetrically by filtration of the sample. The samples are dried at 104+/-5oC.
<b>INORG-022</b>	Turbidity - measured nephelometrically using a turbidimeter, in accordance with APHA latest edition, 2130 B.
<b>INORG-028</b>	Colour - measured by visual comparsion and/or spectrophotometrically.
<b>METALS-022</b>	Determination of various metals by ICP-MS.
<b>METALS-020</b>	Metals in soil and water by ICP-OES.
<b>INORG-006</b>	Alkalinity - determined titrimetrically based on APHA latest edition, Method 2320-B. Soils reported from a 1:5 water extract unless otherwise specified.
<b>INORG-081</b>	Anions - a range of anions are determined by Ion Chromatography based on APHA latest edition Method 4110 -B. Soils and other sample types reported from a water extract unless otherwise specified (standard soil extract ratio 1:5).
<b>METALS-008</b>	Hardness calculated from Calcium and Magnesium as per APHA latest edition 2340B.
<b>INORG-040</b>	Ion Balance Calculation: Cations in water by ICP-OES; Anions in water by IC; Alkalinity in water by Titration using APHA methods.

**Client Reference: Doust Plumbing Products**

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Health Department DWA						Base    Duplicate    %RPD		
Date prepared	-			05/07/2017	197728-1	05/07/2017    05/07/2017	LCS-1	05/07/2017
Date analysed	-			05/07/2017	197728-1	05/07/2017    05/07/2017	LCS-1	05/07/2017
pH	pH Units		INORG-001	[NT]	197728-1	8.1    [N/T]	LCS-1	102%
Electrical Conductivity (EC)	µS/cm	1	INORG-002	<1	197728-1	790    [N/T]	LCS-1	100%
Total Dissolved Solids (grav)	mg/L	5	INORG-018	≤5	197728-1	470    [N/T]	[NR]	[NR]
Total Suspended Solids	mg/L	5	INORG-019	≤5	197728-1	<5    [N/T]	LCS-1	100%
Turbidity	NTU	0.1	INORG-022	<0.1	197728-1	<0.1    [N/T]	LCS-1	100%
Colour (True)	HZU	5	INORG-028	≤5	197728-1	<5    [N/T]	LCS-1	92%
Aluminium-Total	mg/L	0.01	METALS-022	<0.01	197728-1	0.01    0.01    RPD: 0	LCS-1	84%
Cadmium-Total	mg/L	0.0001	METALS-022	<0.0001	197728-1	<0.0001    <0.0001	LCS-1	93%
Copper-Total	mg/L	0.001	METALS-022	<0.001	197728-1	0.024    0.024    RPD: 0	LCS-1	87%
Iron-Total	mg/L	0.01	METALS-022	<0.01	197728-1	0.01    0.01    RPD: 0	LCS-1	93%
Lead-Total	mg/L	0.001	METALS-022	<0.001	197728-1	<0.001    <0.001	LCS-1	94%
Nickel-Total	mg/L	0.001	METALS-022	<0.001	197728-1	<0.001    <0.001	LCS-1	87%
Zinc-Total	mg/L	0.001	METALS-022	<0.001	197728-1	0.003    0.003    RPD: 0	LCS-1	92%
Calcium - Dissolved	mg/L	0.5	METALS-020	<0.5	197728-1	27    26    RPD: 4	LCS-1	99%
Potassium - Dissolved	mg/L	0.5	METALS-020	<0.5	197728-1	4.5    4.4    RPD: 2	LCS-1	101%
Magnesium - Dissolved	mg/L	0.5	METALS-020	<0.5	197728-1	4.6    4.1    RPD: 11	LCS-1	98%
Sodium - Dissolved	mg/L	0.5	METALS-020	<0.5	197728-1	120    110    RPD: 9	LCS-1	103%
Bicarbonate HCO <sub>3</sub> as CaCO <sub>3</sub>	mg/L	5	INORG-006	≤5	197728-1	83    [N/T]	LCS-1	104%
Carbonate CO <sub>3</sub> <sup>2-</sup> - as CaCO <sub>3</sub>	mg/L	5	INORG-006	≤5	197728-1	<5    [N/T]	LCS-1	104%
Total Alkalinity as CaCO <sub>3</sub>	mg/L	5	INORG-006	≤5	197728-1	83    [N/T]	LCS-1	104%
Chloride	mg/L	1	INORG-081	<1	197728-1	180    180    RPD: 0	LCS-1	90%
Sulphate	mg/L	1	INORG-081	<1	197728-1	13    13    RPD: 0	LCS-1	107%
Nitrate as NO <sub>3</sub>	mg/L	0.5	INORG-081	<0.5	197728-1	1.3    1.2    RPD: 8	LCS-1	92%
Nitrite as NO <sub>2</sub>	mg/L	0.5	INORG-081	<0.5	197728-1	<0.5    <0.5	LCS-1	98%
Hardness as CaCO <sub>3</sub>	mg/L	3	METALS-008	≤3	197728-1	85    82    RPD: 4	[NR]	[NR]

**Client Reference:      Doust Plumbing Products**

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Total Metals in water						Base    Duplicate    %RPD		
Date digested	-			05/07/2017	197728-1	05/07/2017    05/07/2017	LCS-1	05/07/2017
Date analysed	-			05/07/2017	197728-1	05/07/2017    05/07/2017	LCS-1	05/07/2017
Antimony-Total	mg/L	0.001	METALS-022	<0.001	197728-1	<0.001    <0.001	LCS-1	101%
Arsenic-Total	mg/L	0.001	METALS-022	<0.001	197728-1	<0.001    <0.001	LCS-1	93%
Barium-Total	mg/L	0.001	METALS-022	<0.001	197728-1	0.11    0.10    RPD: 10	LCS-1	98%
Chromium-Total	mg/L	0.001	METALS-022	<0.001	197728-1	<0.001    <0.001	LCS-1	89%
Manganese-Total	mg/L	0.005	METALS-022	<0.005	197728-1	<0.005    <0.005	LCS-1	90%
Molybdenum-Total	mg/L	0.001	METALS-022	<0.001	197728-1	<0.001    <0.001	LCS-1	95%
Selenium-Total	mg/L	0.001	METALS-022	<0.001	197728-1	<0.001    <0.001	LCS-1	93%
Silver-Total	mg/L	0.001	METALS-022	<0.001	197728-1	<0.001    <0.001	LCS-1	103%
Tin-Total	mg/L	0.001	METALS-022	<0.001	197728-1	<0.001    <0.001	LCS-1	98%

QUALITYCONTROL	UNITS	Dup. Sm#	Duplicate	Spike Sm#	Spike % Recovery
Health Department DWA			Base + Duplicate + %RPD		
Date prepared	-	[NT]	[NT]	197728-2	05/07/2017
Date analysed	-	[NT]	[NT]	197728-2	05/07/2017
pH	pH Units	[NT]	[NT]	[NR]	[NR]
Electrical Conductivity (EC)	µS/cm	[NT]	[NT]	[NR]	[NR]
Total Dissolved Solids (grav)	mg/L	[NT]	[NT]	[NR]	[NR]
Total Suspended Solids	mg/L	[NT]	[NT]	[NR]	[NR]
Turbidity	NTU	[NT]	[NT]	[NR]	[NR]
Colour (True)	HZU	[NT]	[NT]	[NR]	[NR]
Aluminium-Total	mg/L	[NT]	[NT]	197728-2	85%
Cadmium-Total	mg/L	[NT]	[NT]	197728-2	92%
Copper-Total	mg/L	[NT]	[NT]	197728-2	84%
Iron-Total	mg/L	[NT]	[NT]	197728-2	93%
Lead-Total	mg/L	[NT]	[NT]	197728-2	119%
Nickel-Total	mg/L	[NT]	[NT]	197728-2	85%
Zinc-Total	mg/L	[NT]	[NT]	197728-2	82%
Calcium - Dissolved	mg/L	[NT]	[NT]	[NR]	[NR]
Potassium - Dissolved	mg/L	[NT]	[NT]	[NR]	[NR]
Magnesium - Dissolved	mg/L	[NT]	[NT]	[NR]	[NR]
Sodium - Dissolved	mg/L	[NT]	[NT]	[NR]	[NR]
Bicarbonate HCO <sub>3</sub> as CaCO <sub>3</sub>	mg/L	[NT]	[NT]	[NR]	[NR]

**Client Reference:      Doust Plumbing Products**

QUALITYCONTROL Health Department DWA	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Carbonate CO <sub>3</sub> <sup>2-</sup> as CaCO <sub>3</sub>	mg/L	[NT]	[NT]	[NR]	[NR]
Total Alkalinity as CaCO <sub>3</sub>	mg/L	[NT]	[NT]	[NR]	[NR]
Chloride	mg/L	[NT]	[NT]	[NR]	[NR]
Sulphate	mg/L	[NT]	[NT]	[NR]	[NR]
Nitrate as NO <sub>3</sub>	mg/L	[NT]	[NT]	[NR]	[NR]
Nitrite as NO <sub>2</sub>	mg/L	[NT]	[NT]	[NR]	[NR]
Hardness as CaCO <sub>3</sub>	mg/L	[NT]	[NT]	[NR]	[NR]
QUALITYCONTROL Total Metals in water	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	[NT]	[NT]	197728-2	05/07/2017
Date analysed	-	[NT]	[NT]	197728-2	05/07/2017
Antimony-Total	mg/L	[NT]	[NT]	197728-2	*
Arsenic-Total	mg/L	[NT]	[NT]	197728-2	91%
Barium-Total	mg/L	[NT]	[NT]	197728-2	126%
Chromium-Total	mg/L	[NT]	[NT]	197728-2	88%
Manganese-Total	mg/L	[NT]	[NT]	197728-2	89%
Molybdenum-Total	mg/L	[NT]	[NT]	197728-2	97%
Selenium-Total	mg/L	[NT]	[NT]	197728-2	93%
Silver-Total	mg/L	[NT]	[NT]	197728-2	127%
Tin-Total	mg/L	[NT]	[NT]	197728-2	99%

**Report Comments:**

# Percent recovery not available due to matrix interference. An acceptable recovery was achieved for the LCS.

**Definitions:**

NT: Not tested   NA: Test not required   INS: Insufficient sample for this test   PQL: Practical Quantitation Limit  
<: Less than   >: Greater than   RPD: Relative Percent Difference   LCS: Laboratory Control Sample  
NS: Not Specified   NEPM: National Environmental Protection Measure   NR: Not Reported

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011



### Quality Control Definitions

**Blank:** This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

**Duplicate:** This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

**Matrix Spike :** A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

**LCS (Laboratory Control Sample) :** This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

**Surrogate Spike:** Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

### Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.