

QUALITY CONTROL REPORT

Work Order	: EM2104707	Page	: 1 of 7
Client	: Dept for Environment & Water	Laboratory	: Environmental Division Melbourne
Contact	: Mr FRANK MANGERUCA	Contact	: Kieren Burns
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Project	: HCHB	Date Samples Received	: 19-Mar-2021
Order number	: ----	Date Analysis Commenced	: 19-Mar-2021
C-O-C number	: ----	Issue Date	: 26-Mar-2021
Sampler	: JOSHUA CASTLE		
Site	: ----		
Quote number	: AD/052/20 V2		
No. of samples received	: 20		
No. of samples analysed	: 20		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Arenie Vijayaratham	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Samantha Smith	Laboratory Coordinator	WRG Subcontracting, Springvale, VIC



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EK055G-SW: Ammonia as N by Discrete Analyser in Saline Water (QC Lot: 3577830)									
EM2104707-001	Stony Well	EK055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	<0.02	<0.02	0.00	No Limit
EM2104707-010	Tilley Swamp Drain U/S Morella	EK055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	0.05	0.05	0.00	No Limit
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 3579511)									
EM2104707-002	North Jacks Point	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	125000	124000	1.04	0% - 20%
EM2104555-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	7660	7840	2.40	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 3579514)									
EM2104707-013	DS Tauwicheere	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	530	508	4.05	0% - 20%
EM2104742-002	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	578	552	4.60	0% - 20%
EA045: Turbidity (QC Lot: 3575519)									
EM2104707-001	Stony Well	EA045: Turbidity	----	0.1	NTU	18.8	18.8	0.00	0% - 20%
EM2104707-010	Tilley Swamp Drain U/S Morella	EA045: Turbidity	----	0.1	NTU	2.0	2.0	0.00	0% - 50%
ED037P: Alkalinity by PC Titrator (QC Lot: 3582418)									
EM2104574-004	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	420	420	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	420	420	0.00	0% - 20%
EM2104707-008	1.8km West of Salt Creek	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	228	229	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	228	229	0.00	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 3582421)									
EM2104707-018	McGrath Flat North	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit

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Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
ED037P: Alkalinity by PC Titrator (QC Lot: 3582421) - continued									
EM2104707-018	McGrath Flat North	ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	25	27	5.57	0% - 20%
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	148	148	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	174	174	0.00	0% - 20%
EM2104747-005	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	43	46	6.89	0% - 20%
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	207	203	1.91	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	250	249	0.00	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 3575358)									
EM2104707-001	Stony Well	ED045G: Chloride	16887-00-6	1	mg/L	71400	73400	2.74	0% - 20%
EM2104707-009	3.2km South of Salt Creek (Land)	ED045G: Chloride	16887-00-6	1	mg/L	76900	78000	1.37	0% - 20%
EG052G: Silica by Discrete Analyser (QC Lot: 3575356)									
EM2104707-001	Stony Well	EG052G: Reactive Silica	----	0.05	mg/L	3.07	3.10	0.908	0% - 20%
EM2104707-009	3.2km South of Salt Creek (Land)	EG052G: Reactive Silica	----	0.05	mg/L	6.21	6.29	1.31	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 3575355)									
EM2104664-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.20	0.20	0.00	0% - 20%
EM2104707-009	3.2km South of Salt Creek (Land)	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 3575359)									
EM2104707-020	Villa de Yumpa	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM2104742-009	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.03	0.03	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 3577828)									
EM2104574-003	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	5.94	5.90	0.524	0% - 20%
EM2104682-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.85	0.85	0.00	0% - 20%
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 3577831)									
EM2104707-009	3.2km South of Salt Creek (Land)	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM2104707-018	McGrath Flat North	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 3578625)									
EM2104707-003	South Policeman Point/ Seagull Island	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	4.0	3.6	10.8	0% - 20%
EM2104670-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	62.4	76.0	19.6	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 3578627)									
EM2104707-014	Mark Point	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.1	1.0	14.0	0% - 50%
EM2104784-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	145	142	2.38	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 3578624)									
EM2104670-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	18.9	18.7	1.01	0% - 20%

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Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 3578624) - continued									
EM2104707-003	South Policeman Point/ Seagull Island	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.22	0.25	12.6	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 3578626)									
EM2104784-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.34	0.33	0.00	0% - 20%
EM2104707-014	Mark Point	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.08	0.09	0.00	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 3575357)									
EM2104707-001	Stony Well	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM2104707-009	3.2km South of Salt Creek (Land)	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP002: Dissolved Organic Carbon (DOC) (QC Lot: 3580276)									
EM2104667-001	Anonymous	EP002: Dissolved Organic Carbon	----	1	mg/L	6	6	0.00	No Limit
EP002: Dissolved Organic Carbon (DOC) (QC Lot: 3582305)									
EM2104707-007	Salt Creek Outlet	EP002: Dissolved Organic Carbon	----	1	mg/L	45	45	0.00	0% - 20%
EM2104707-016	Noonameena	EP002: Dissolved Organic Carbon	----	1	mg/L	14	13	0.00	0% - 50%
EP005: Total Organic Carbon (TOC) (QC Lot: 3580275)									
EM2104599-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	<5	<5	0.00	No Limit
EM2104682-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	<1	<1	0.00	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 3582304)									
EM2104707-007	Salt Creek Outlet	EP005: Total Organic Carbon	----	1	mg/L	57	52	8.55	0% - 20%
EM2104707-016	Noonameena	EP005: Total Organic Carbon	----	1	mg/L	15	14	0.00	0% - 50%



Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EK055G-SW: Ammonia as N by Discrete Analyser in Saline Water (QCLot: 3577830)								
EK055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	<0.02	0.5 mg/L	110	81.1	124
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 3579511)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	97.5	91.0	110
				<10	293 mg/L	103	91.0	110
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 3579514)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	102	91.0	110
				<10	293 mg/L	110	91.0	110
EA045: Turbidity (QCLot: 3575519)								
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	100	88.1	110
ED037P: Alkalinity by PC Titrator (QCLot: 3582418)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	99.7	85.0	116
ED037P: Alkalinity by PC Titrator (QCLot: 3582421)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	99.2	85.0	116
ED045G: Chloride by Discrete Analyser (QCLot: 3575358)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	94.2	85.0	115
				<1	1000 mg/L	107	85.0	122
EG052G: Silica by Discrete Analyser (QCLot: 3575356)								
EG052G: Reactive Silica	----	0.05	mg/L	<0.05	5 mg/L	89.4	78.9	118
EK057G: Nitrite as N by Discrete Analyser (QCLot: 3575355)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	110	90.9	112
EK057G: Nitrite as N by Discrete Analyser (QCLot: 3575359)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	107	90.9	112
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3577828)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	111	90.0	117
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3577831)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	112	90.0	117
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 3578625)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	5 mg/L	93.3	70.0	117
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 3578627)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	5 mg/L	95.3	70.0	117
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 3578624)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	2.21 mg/L	93.1	71.9	114

Matrix Spike (MS) Report

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK055G-SW: Ammonia as N by Discrete Analyser in Saline Water (QCLot: 3577830)							
EM2104707-002	North Jacks Point	EK055G-SW: Ammonia as N	7664-41-7	0.5 mg/L	# 52.5	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 3575358)							
EM2104707-002	North Jacks Point	ED045G: Chloride	16887-00-6	400 mg/L	# Not Determined	70.0	142
EG052G: Silica by Discrete Analyser (QCLot: 3575356)							
EM2104707-002	North Jacks Point	EG052G: Reactive Silica	----	5 mg/L	85.1	80.0	120
EK057G: Nitrite as N by Discrete Analyser (QCLot: 3575355)							
EM2104707-002	North Jacks Point	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	95.2	80.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 3575359)							
EM2104742-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	104	80.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3577828)							

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Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3577828) - continued							
EM2104574-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	# Not Determined	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3577831)							
EM2104707-010	Tilley Swamp Drain U/S Morella	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	99.4	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 3578625)							
EM2104674-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	98.2	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 3578627)							
EM2104707-015	Long Point	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	104	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 3578624)							
EM2104674-001	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	104	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 3578626)							
EM2104707-015	Long Point	EK067G: Total Phosphorus as P	----	1 mg/L	96.2	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 3575357)							
EM2104707-002	North Jacks Point	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	108	79.0	123
EP002: Dissolved Organic Carbon (DOC) (QCLot: 3580276)							
EM2104667-002	Anonymous	EP002: Dissolved Organic Carbon	----	100 mg/L	111	75.0	117
EP002: Dissolved Organic Carbon (DOC) (QCLot: 3582305)							
EM2104707-008	1.8km West of Salt Creek	EP002: Dissolved Organic Carbon	----	100 mg/L	106	75.0	117
EP005: Total Organic Carbon (TOC) (QCLot: 3580275)							
EM2104599-003	Anonymous	EP005: Total Organic Carbon	----	500 mg/L	112	76.6	125
EP005: Total Organic Carbon (TOC) (QCLot: 3582304)							
EM2104707-008	1.8km West of Salt Creek	EP005: Total Organic Carbon	----	100 mg/L	103	76.6	125