

# QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM2108900** Page : 1 of 11

Client : Dept for Environment & Water : Environmental Division Melbourne

 Contact
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 : +61881625130

 Project
 : Water Samples
 Date Samples Received
 : 14-May-2021

 Site
 : --- Issue Date
 : 21-May-2021

Sampler :--- No. of samples received : 20 Order number :--- No. of samples analysed : 20

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

## **Summary of Outliers**

### **Outliers: Quality Control Samples**

This report highlights outliers flagged in the Quality Control (QC) Report.

- NO Method Blank value outliers occur.
- NO Duplicate outliers occur.
- NO Laboratory Control outliers occur.
- Matrix Spike outliers exist please see following pages for full details.
- For all regular sample matrices, NO surrogate recovery outliers occur.

### **Outliers: Analysis Holding Time Compliance**

• NO Analysis Holding Time Outliers exist.

### **Outliers: Frequency of Quality Control Samples**

Quality Control Sample Frequency Outliers exist - please see following pages for full details.

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#### **Outliers: Quality Control Samples**

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: WATER

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
ED045G: Chloride by Discrete Analyser	EM2108900017	Bonneys	Chloride	16887-00-6	Not		MS recovery not determined,
					Determined		background level greater than or
							equal to 4x spike level.
EG052G: Silica by Discrete Analyser	EM2108900002	North Jacks Point	Reactive Silica		76.4 %	80.0-120%	Recovery less than lower data quality
							objective
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser	EM2108843002	Anonymous	Total Kjeldahl Nitrogen		33.3 %	70.0-130%	Recovery less than lower data quality
			as N				objective
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser	EM2108900003	South Policeman Point	Total Kjeldahl Nitrogen		54.4 %	70.0-130%	Recovery less than lower data quality
			as N				objective
EK067G: Total Phosphorus as P by Discrete Analyser	EM2108900003	South Policeman Point	Total Phosphorus as P		Not		MS recovery not determined,
					Determined		background level greater than or
							equal to 4x spike level.

#### **Outliers: Frequency of Quality Control Samples**

Matrix: WATER

Wattis. WATER					
Quality Control Sample Type	Count Rate (%) Quality		(%)	Quality Control Specification	
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Chlorophyll a, b and c	0	20	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	3	40	7.50	10.00	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)					
Chlorophyll a, b and c	0	20	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

## **Analysis Holding Time Compliance**

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for <u>VOC in soils</u> vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive <u>or</u> Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: WATER

Evaluation: **x** = Holding time breach; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation					
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation

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Method   Container / Client Sample ID(s)   Extraction   Preparation   Evaluation	Date analysed	Analysis  Due for analysis	Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C   Clear Plastic Bottle - Natural (EA015H)   Sidny Well,   North Jacks Point,   Snipe Point,   Morella Basin @ Odutet Regulator,   Morella Basin @ Gauge,   Salt Creek Outlet,   1.8km West of Salt Creek,   3.2km South of Salt Creek (Land),   Parmka Point,   Morella Bottle - Natural (EA015H)   Murray Mouth,   US Tauwitchere,   Mark Point,   Noonameena,   Sidny Point,   North Jacks Point,   North Ja		Due for analysis	Evaluation
Clear Plastic Bottle - Natural (EA015H)   Story Well,   South Policeman Point,   Snipe Point,   Morella Basin @ Gauge,   Sait Creek Outlet,   1.8km West of Sait Creek,   3.2km South of Sait Creek (Land),   False Point,   Willade Yumpa   13-May-2021	18-May-2021		
Stony Well, South Policeman Point, South Policeman Point, Morella Basin @ Outlet Regulator, Sait Creek Outlet, 3.2 km South of Salt Creek (Land), Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA045) Stony Well, South Policeman Point, Morella Basin @ Outlet Regulator, South of Salt Creek (Land), Parnka Point, Murray Mouth, US Tauwitchere, Long Point, Bonneys  Clear Plastic Bottle - Natural (EA045) Stony Well, South Policeman Point, Morella Basin @ Outlet Regulator, South Policeman Point, Morella Basin @ Outlet Regulator, Salt Creek Outlet, 3.2 km South of Salt Creek (Land), Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA045) Stony Well, South of Salt Creek (Land), Parnka Point, Morella Basin @ Outlet Regulator, Morella Basin @ Outlet Regulator, Salt Creek Outlet, 3.2 km South of Salt Creek (Land), Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA045) Murray Mouth, DS Tauwitchere, Mark Point, Murray Mouth, DS Tauwitchere, Mark Point, Mark Poi	18-May-2021		
South Policeman Point, Snipe Point, Morella Basin @ Gauge, Morella Basin @ Gauge, Salt Creek Outlet, 1.8km West of Salt Creek, 1.8km West of Salt Creek, 3.2km South of Salt Creek (Land), Tilley Swamp Drain U/S Morella, Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA015H) Murray Mouth, DS Tauwitchere, Mark Point, Noonameena, Bonneys  EA045: Turbidity  Clear Plastic Bottle - Natural (EA045) Slow Well, North Jacks Point, Morella Basin @ Gauge, Salt Creek Outlet, 1.8km West of Salt Creek, 3.2km South of Salt Creek (Land), Tilley Swamp Drain U/S Morella, Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA045) Slow Well, North Jacks Point, Morella Basin @ Gauge, Salt Creek (Land), Tilley Swamp Drain U/S Morella, Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA045) Tilley Swamp Drain U/S Morella, Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA045) Murray Mouth, US Tauwitchere, Mark Point, Mark Point,	18-May-2021		
Morella Basin @ Outlet Regulator, Morella Basin @ Gauge, Salt Creek Outlet, 1.8km West of Salt Creek, 3.2km South of Salt Creek (Land), Tilley Swamp Drain U/S Morella, Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA015H) Murray Mouth, Noonameena, Bonneys  EA045: Turbidity  Clear Plastic Bottle - Natural (EA045) Stony Well, North Jacks Point, Morella Basin @ Outlet Regulator, Morella Basin @ Gauge, Salt Creek Outlet, 1.8km West of Salt Creek, 3.2km South of Salt Creek (Land), Tilley Swamp Drain U/S Morella, Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA045) Stony Mell, South of Salt Creek (Land), Tilley Swamp Drain U/S Morella, Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA045) Murray Mouth, US Tauwitchere, 13-May-2021 Murray Mouth, DS Tauwitchere, Mark Point,	,	19-May-2021	✓
Salt Creek Outlet, 3.2km South of Salt Creek (Land), Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA015H) Murray Mouth, DS Tauwitchere, Long Point, Bonneys  EA045: Turbidity Clear Plastic Bottle - Natural (EA045) Stony Well, South Policeman Point, Morella Basin @ Outlet Regulator, Salt Creek Outlet, 3.2km South of Salt Creek (Land), Parnka Point, McGrath Flat North, Villa de Yumpa  13-May-2021  13-May-2021  12-May-2021  12-May-2021  12-May-2021  12-May-2021  13-May-2021			
3.2km South of Salt Creek (Land), Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA015H) Murray Mouth, US Tauwitchere, Mark Point, Noonameena, Bonneys  EA045: Turbidity  Clear Plastic Bottle - Natural (EA045) Stony Well, North Jacks Point, Snipe Point, Morella Basin @ Gauge, Salt Creek Outlet, 3.2km South of Salt Creek (Land), Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA045) Salt Creek Outlet, 1.8km West of Salt Creek, 3.2km South of Salt Creek (Land), Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA045) Murray Mouth, US Tauwitchere, Mark Point,			
Parnka Point, McGrath Flat North, Clear Plastic Bottle - Natural (EA015H) Murray Mouth, DS Tauwitchere, Long Point, Bonneys  EA045: Turbidity Clear Plastic Bottle - Natural (EA045) Stony Well, South Policeman Point, Morella Basin @ Outlet Regulator, Salt Creek Outlet, 3.2km South of Salt Creek (Land), Parnka Point, McGrath Flat North, Clear Plastic Bottle - Natural (EA045)  Salt Creek Bottle - Natural (EA045)  Salt Creek Outlet, South Policeman Point, Morella Basin @ Gauge, Salt Creek Outlet, South of Salt Creek (Land), Parnka Point, McGrath Flat North, Clear Plastic Bottle - Natural (EA045)  Wurray Mouth, McGrath Flat North, US Tauwitchere, Mark Point,			
McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA015H) Murray Mouth, US Tauwitchere, 13-May-2021 DS Tauwitchere, Mark Point, Long Point, Noonameena, Bonneys  EA045: Turbidity  Clear Plastic Bottle - Natural (EA045) Stony Well, North Jacks Point, South Policeman Point, Snipe Point, Morella Basin @ Outlet Regulator, Salt Creek Outlet, 1.8km West of Salt Creek, 3.2km South of Salt Creek (Land), Tilley Swamp Drain U/S Morella, Parnka Point, McGrath Flat North,  Clear Plastic Bottle - Natural (EA045)  Murray Mouth - Natural (EA045) Murray Mouth, US Tauwitchere, Mark Point,			
Clear Plastic Bottle - Natural (EA015H) Murray Mouth, DS Tauwitchere, Mark Point, Noonameena, Bonneys  EA045: Turbidity  Clear Plastic Bottle - Natural (EA045) Stony Well, South Policeman Point, Morella Basin @ Outlet Regulator, Salt Creek Outlet, 3.2km South of Salt Creek (Land), Parnka Point, McGrath Flat North, Clear Plastic Bottle - Natural (EA045)  Stiny Well, South Policeman Point, Morella Basin @ Gauge, Salt Creek Outlet, 1.8km West of Salt Creek, 3.2km South of Salt Creek (Land), Parnka Point, McGrath Flat North, Clear Plastic Bottle - Natural (EA045) Murray Mouth, DS Tauwitchere, Mark Point, Mdrk Point,  US Tauwitchere, Mark Point,			
Murray Mouth, US Tauwitchere, Mark Point, Noonameena, Sonneys Story Well, South Policeman Point, South Policeman Point, Morella Basin @ Outlet Regulator, Salt Creek Outlet, 3.2km South of Salt Creek (Land), Parnka Point, McGrath Flat North, Willa de Yumpa  Clear Plastic Bottle - Natural (EA045)  Story Well, South Policeman Point, Snipe Point, Morella Basin @ Gauge, Salt Creek Outlet, 1.8km West of Salt Creek, 3.2km South of Salt Creek (Land), Tilley Swamp Drain U/S Morella, Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA045)  Murray Mouth, US Tauwitchere, Mark Point,			
DS Tauwitchere, Mark Point, Long Point, Noonameena,  EA045: Turbidity  Clear Plastic Bottle - Natural (EA045) Stony Well, North Jacks Point, South Policeman Point, Snipe Point, Morella Basin @ Outlet Regulator, Morella Basin @ Gauge, Salt Creek Outlet, 1.8km West of Salt Creek, 3.2km South of Salt Creek (Land), Tilley Swamp Drain U/S Morella, Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA045) Murray Mouth, DS Tauwitchere, Mark Point,  Wark Point,  Mark Point,  Mark Point,  Mark Point,  Mark Point,  Mark Point,  Mark Point,  Moonameena,  Noonameena,  12-May-2021  13-May-2021  13-May-2021  13-May-2021  13-May-2021  13-May-2021  13-May-2021			
Long Point, Bonneys  EA045: Turbidity  Clear Plastic Bottle - Natural (EA045) Stony Well, North Jacks Point, South Policeman Point, Morella Basin @ Outlet Regulator, Morella Basin @ Gauge, Salt Creek Outlet, 1.8km West of Salt Creek, 3.2km South of Salt Creek (Land), Tilley Swamp Drain U/S Morella, Parnka Point, WcGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA045) Murray Mouth, US Tauwitchere, Mark Point, DS Tauwitchere, Mark Point,	18-May-2021	20-May-2021	<b>✓</b>
EA045: Turbidity  Clear Plastic Bottle - Natural (EA045) Stony Well, South Policeman Point, Morella Basin @ Outlet Regulator, Salt Creek Outlet, 3.2km South of Salt Creek (Land), Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA045) Murray Mouth, DS Tauwitchere, Mark Point, Mark Point, Mark Point, Mark Point, Mark Point,  EA045: Turbidity  12-May-2021			
EA045: Turbidity  Clear Plastic Bottle - Natural (EA045) Stony Well, South Policeman Point, Morella Basin @ Outlet Regulator, Salt Creek Outlet, 3.2km South of Salt Creek (Land), Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA045) Murray Mouth, DS Tauwitchere, Mark Point,  North Jacks Point, 12-May-2021			
EA045: Turbidity  Clear Plastic Bottle - Natural (EA045) Stony Well, South Policeman Point, Morella Basin @ Outlet Regulator, Salt Creek Outlet, 3.2km South of Salt Creek (Land), Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA045) Murray Mouth, DS Tauwitchere, Mark Point,  North Jacks Point, Gauge, Gauge, Gauge, Gauge, Ja-May-2021			
Clear Plastic Bottle - Natural (EA045) Stony Well, North Jacks Point, South Policeman Point, Morella Basin @ Outlet Regulator, Salt Creek Outlet, 3.2km South of Salt Creek (Land), Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA045) Murray Mouth, DS Tauwitchere, Mark Point,			
Stony Well, North Jacks Point, Snipe Point, Snipe Point, Morella Basin @ Outlet Regulator, Morella Basin @ Gauge, Salt Creek Outlet, 1.8km West of Salt Creek, 3.2km South of Salt Creek (Land), Tilley Swamp Drain U/S Morella, Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA045) Murray Mouth, DS Tauwitchere, Mark Point,  Mark Point, Mark Point,  Mark Point, Mark Point,			
Morella Basin @ Outlet Regulator, Salt Creek Outlet, 1.8km West of Salt Creek, 3.2km South of Salt Creek (Land), Tilley Swamp Drain U/S Morella, Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA045) Murray Mouth, DS Tauwitchere, Mark Point, Morella Basin @ Gauge, 1.8km West of Salt Creek, 1.8km	14-May-2021	14-May-2021	<b>✓</b>
Morella Basin @ Outlet Regulator, Salt Creek Outlet, 1.8km West of Salt Creek, 3.2km South of Salt Creek (Land), Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA045) Murray Mouth, DS Tauwitchere, Mark Point, Morella Basin @ Gauge, 1.8km West of Salt Creek, 1.8km West			
Salt Creek Outlet, 1.8km West of Salt Creek, 3.2km South of Salt Creek (Land), Tilley Swamp Drain U/S Morella, Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA045)			
3.2km South of Salt Creek (Land), Tilley Swamp Drain U/S Morella, Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA045) Murray Mouth, US Tauwitchere, Mark Point,  13-May-2021			
Parnka Point, McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA045) Murray Mouth, DS Tauwitchere, Mark Point,  13-May-2021			
McGrath Flat North, Villa de Yumpa  Clear Plastic Bottle - Natural (EA045)  Murray Mouth, US Tauwitchere, 13-May-2021  DS Tauwitchere, Mark Point,			
Clear Plastic Bottle - Natural (EA045)  Murray Mouth,  DS Tauwitchere,  Mark Point,  US Tauwitchere,  13-May-2021			
Murray Mouth, US Tauwitchere, 13-May-2021 DS Tauwitchere, Mark Point,			
DS Tauwitchere, Mark Point,	14-May-2021	15-May-2021	<b>✓</b>
			•
Bonneys			
ED037P: Alkalinity by PC Titrator			
Clear Plastic Bottle - Natural (ED037-P)			
Stony Well, North Jacks Point, 12-May-2021	18-May-2021	26-May-2021	<b>✓</b>
South Policeman Point, Snipe Point,			
Morella Basin @ Outlet Regulator, Morella Basin @ Gauge,			
Salt Creek Outlet, 1.8km West of Salt Creek,			
3.2km South of Salt Creek (Land), Tilley Swamp Drain U/S Morella,			
Parnka Point,			
McGrath Flat North, Villa de Yumpa			
Clear Plastic Bottle - Natural (ED037-P)	+		
Murray Mouth, US Tauwitchere, 13-May-2021	18-May-2021	27-May-2021	1
DS Tauwitchere, Mark Point,			
Long Point, Noonameena,			
Bonneys			

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Matrix: WATER					Evaluation	: x = Holding time	breach ; ✓ = Withi	n holding tim
Method		Sample Date	E	xtraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED045G: Chloride by Discrete Analyser								
Clear Plastic Bottle - Natural (ED045G)								
Stony Well,	North Jacks Point,	12-May-2021				17-May-2021	09-Jun-2021	✓
South Policeman Point,	Snipe Point,							
Morella Basin @ Outlet Regulator,	Morella Basin @ Gauge,							
Salt Creek Outlet,	1.8km West of Salt Creek,							
3.2km South of Salt Creek (Land),	Tilley Swamp Drain U/S Morella,							
Parnka Point,								
McGrath Flat North,	Villa de Yumpa							
Clear Plastic Bottle - Natural (ED045G)								
Murray Mouth,	US Tauwitchere,	13-May-2021				17-May-2021	10-Jun-2021	<b>✓</b>
DS Tauwitchere,	Mark Point,							
Long Point,	Noonameena,							
Bonneys								
EG052G: Silica by Discrete Analyser								
Clear Plastic Bottle - Natural (EG052G)								
Stony Well,	North Jacks Point,	12-May-2021				17-May-2021	09-Jun-2021	1
South Policeman Point,	Snipe Point,							·
Morella Basin @ Outlet Regulator,	Morella Basin @ Gauge,							
Salt Creek Outlet,	1.8km West of Salt Creek,							
3.2km South of Salt Creek (Land),	Tilley Swamp Drain U/S Morella,							
Parnka Point,	,							
McGrath Flat North,	Villa de Yumpa							
Clear Plastic Bottle - Natural (EG052G)	Tima do Tampa							
Murray Mouth,	US Tauwitchere,	13-May-2021				17-May-2021	10-Jun-2021	1
DS Tauwitchere,	Mark Point,					_		•
Long Point,	Noonameena,							
Bonneys	. roonamoona,							
EK055G-SW: Ammonia as N by Discrete Analyser in	Saline Water							
Clear Plastic Bottle - Sulfuric Acid (EK055G-SW)								
Stony Well,	North Jacks Point,	12-May-2021				21-May-2021	09-Jun-2021	✓
South Policeman Point,	Snipe Point,							
Morella Basin @ Outlet Regulator,	Morella Basin @ Gauge,							
Salt Creek Outlet,	1.8km West of Salt Creek,							
3.2km South of Salt Creek (Land),	Tilley Swamp Drain U/S Morella,							
Parnka Point,	,							
McGrath Flat North,	Villa de Yumpa							
Clear Plastic Bottle - Sulfuric Acid (EK055G-SW)	1							
Murray Mouth,	US Tauwitchere,	13-May-2021				21-May-2021	10-Jun-2021	✓
DS Tauwitchere,	Mark Point,							
Long Point,	Noonameena,							
Bonneys								

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Matrix: WATER					Evaluation	ı: 🗴 = Holding time	breach ; ✓ = Withi	n holding tim	
Method		Sample Date	E	xtraction / Preparation		Analysis			
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EK057G: Nitrite as N by Discrete Analyser									
Clear Plastic Bottle - Natural (EK057G)									
Stony Well,	North Jacks Point,	12-May-2021				14-May-2021	14-May-2021	✓	
South Policeman Point,	Snipe Point,								
Morella Basin @ Outlet Regulator,	Morella Basin @ Gauge,								
Salt Creek Outlet,	1.8km West of Salt Creek,								
3.2km South of Salt Creek (Land),	Tilley Swamp Drain U/S Morella,								
Parnka Point,									
McGrath Flat North,	Villa de Yumpa								
Clear Plastic Bottle - Natural (EK057G)									
Murray Mouth,	US Tauwitchere,	13-May-2021				14-May-2021	15-May-2021	✓	
DS Tauwitchere,	Mark Point,								
Long Point,	Noonameena,								
Bonneys									
EK059G: Nitrite plus Nitrate as N (NOx) by Discre	te Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G)									
Stony Well,	North Jacks Point,	12-May-2021				18-May-2021	09-Jun-2021	✓	
South Policeman Point,	Snipe Point,								
Morella Basin @ Outlet Regulator,	Morella Basin @ Gauge,								
Salt Creek Outlet,	1.8km West of Salt Creek,								
3.2km South of Salt Creek (Land),	Tilley Swamp Drain U/S Morella,								
Parnka Point,	,								
McGrath Flat North,	Villa de Yumpa								
Clear Plastic Bottle - Sulfuric Acid (EK059G)	7 ma do 1 dinpa								
Murray Mouth,	US Tauwitchere,	13-May-2021				18-May-2021	10-Jun-2021	1	
DS Tauwitchere,	Mark Point,							•	
Long Point,	Noonameena,								
Bonneys									
EK061G: Total Kjeldahl Nitrogen By Discrete Anal	vser								
Clear Plastic Bottle - Sulfuric Acid (EK061G)	,								
Stony Well,	North Jacks Point,	12-May-2021	17-May-2021	09-Jun-2021	1	19-May-2021	09-Jun-2021	<b>✓</b>	
South Policeman Point,	Snipe Point,								
Morella Basin @ Outlet Regulator,	Morella Basin @ Gauge,								
Salt Creek Outlet,	1.8km West of Salt Creek,								
3.2km South of Salt Creek (Land),	Tilley Swamp Drain U/S Morella,								
Parnka Point,	.,								
McGrath Flat North,	Villa de Yumpa								
Clear Plastic Bottle - Sulfuric Acid (EK061G)									
Murray Mouth,	US Tauwitchere,	13-May-2021	17-May-2021	10-Jun-2021	1	19-May-2021	10-Jun-2021	<b>✓</b>	
DS Tauwitchere,	Mark Point,							•	
Long Point,	Noonameena,								
Bonneys									

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Client : Dept for Environment & Water



Method		Sample Date	Extraction / Preparation Analysis					Within holding tir
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluatio
EK067G: Total Phosphorus as P by Discrete Analy	yser						-	
Clear Plastic Bottle - Sulfuric Acid (EK067G)								
Stony Well,	North Jacks Point,	12-May-2021	17-May-2021	09-Jun-2021	✓	19-May-2021	09-Jun-2021	✓
South Policeman Point,	Snipe Point,							
Morella Basin @ Outlet Regulator,	Morella Basin @ Gauge,							
Salt Creek Outlet,	1.8km West of Salt Creek,							
3.2km South of Salt Creek (Land),	Tilley Swamp Drain U/S Morella,							
Parnka Point,								
McGrath Flat North,	Villa de Yumpa							
Clear Plastic Bottle - Sulfuric Acid (EK067G)	·							
Murray Mouth,	US Tauwitchere,	13-May-2021	17-May-2021	10-Jun-2021	✓	19-May-2021	10-Jun-2021	<b>✓</b>
DS Tauwitchere,	Mark Point,							
Long Point,	Noonameena,							
Bonneys								
EK071G: Reactive Phosphorus as P by discrete a	nalyser							
Clear Plastic Bottle - Natural (EK071G)								
Stony Well,	North Jacks Point,	12-May-2021				14-May-2021	14-May-2021	✓
South Policeman Point,	Snipe Point,							
Morella Basin @ Outlet Regulator,	Morella Basin @ Gauge,							
Salt Creek Outlet,	1.8km West of Salt Creek,							
3.2km South of Salt Creek (Land),	Tilley Swamp Drain U/S Morella,							
Parnka Point,								
McGrath Flat North,	Villa de Yumpa							
Clear Plastic Bottle - Natural (EK071G)								
Murray Mouth,	US Tauwitchere,	13-May-2021				14-May-2021	15-May-2021	✓
DS Tauwitchere,	Mark Point,							
Long Point,	Noonameena,							
Bonneys								
EP002: Dissolved Organic Carbon (DOC)								
Amber DOC Filtered- Sulfuric Preserved (EP002)								
Stony Well,	North Jacks Point,	12-May-2021				20-May-2021	09-Jun-2021	✓
South Policeman Point,	Snipe Point,							
Morella Basin @ Outlet Regulator,	Morella Basin @ Gauge,							
Salt Creek Outlet,	1.8km West of Salt Creek,							
3.2km South of Salt Creek (Land),	Tilley Swamp Drain U/S Morella,							
Parnka Point,								
McGrath Flat North,	Villa de Yumpa							
Amber DOC Filtered- Sulfuric Preserved (EP002)	·							
Murray Mouth,	US Tauwitchere,	13-May-2021				20-May-2021	10-Jun-2021	<b>✓</b>
DS Tauwitchere,	Mark Point,							
Long Point,	Noonameena,							
Bonneys								

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Matrix: WATER					Evaluation	n: 🗴 = Holding time	breach ; ✓ = With	in holding tim
Method		Sample Date	Ex	traction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP005: Total Organic Carbon (TOC)								
Amber TOC Vial - Sulfuric Acid (EP005)								
Stony Well,	North Jacks Point,	12-May-2021				20-May-2021	09-Jun-2021	✓
South Policeman Point,	Snipe Point,							
Morella Basin @ Outlet Regulator,	Morella Basin @ Gauge,							
Salt Creek Outlet,	1.8km West of Salt Creek,							
3.2km South of Salt Creek (Land),	Tilley Swamp Drain U/S Morella,							
Parnka Point,								
McGrath Flat North,	Villa de Yumpa							
Amber TOC Vial - Sulfuric Acid (EP005)								
Murray Mouth,	US Tauwitchere,	13-May-2021				20-May-2021	10-Jun-2021	✓
DS Tauwitchere,	Mark Point,							
Long Point,	Noonameena,							
Bonneys								
EP008: Chlorophyll								
Glass Fibre Filter Paper (Chlorophyll) (EP008B)								
Stony Well,	North Jacks Point,	12-May-2021				19-May-2021	02-Jun-2021	✓
South Policeman Point,	Snipe Point,							
Morella Basin @ Outlet Regulator,	Morella Basin @ Gauge,							
Salt Creek Outlet,	1.8km West of Salt Creek,							
3.2km South of Salt Creek (Land),	Tilley Swamp Drain U/S Morella,							
Parnka Point,								
McGrath Flat North,	Villa de Yumpa							
Glass Fibre Filter Paper (Chlorophyll) (EP008B)								
Murray Mouth,	US Tauwitchere,	13-May-2021				19-May-2021	03-Jun-2021	✓
DS Tauwitchere,	Mark Point,							
Long Point,	Noonameena,							
Bonneys								

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Dept for Environment & Water Client

Project Water Samples



## **Quality Control Parameter Frequency Compliance**

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to

the expected rate. A listing of breaches is provided in the Summary of Outliers.

Analysis   Method   OC   Resolute   Actual   Expected   Evented	Matrix: WATER				Evaluatio	n: × = Quality Co	ntrol frequency	not within specification; ✓ = Quality Control frequency within specification
Abbinators   Discrete Analyser   Control   C	Quality Control Sample Type		Co	ount		Rate (%)		Quality Control Specification
Alkalmity by PC Titrator   ED037-P   4   40   10.00   10.00	Analytical Methods	Method	OC	Reaular	Actual	Expected	Evaluation	
Armonia as N (Saline Water)	Laboratory Duplicates (DUP)							
Chloride by Discrete Analyser	Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chlorophyll a. b and c	Ammonia as N (Saline Water)	EK055G-SW	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Organic Carbon   E0022   2   20   10,00   10,00   NEPM 2013 83 & ALS OC Standard Nitrite as N ty Discrete Analyser   EK056G   2   20   10,00   10,00   NEPM 2013 83 & ALS OC Standard Nitrite as N ty Discrete Analyser   EK0716   2   20   10,00   10,00   NEPM 2013 83 & ALS OC Standard Nitrite as N ty Discrete Analyser   EK0716   2   20   10,00   10,00   NEPM 2013 83 & ALS OC Standard Nitrite as N ty Discrete Analyser   EK0716   2   20   10,00   10,00   NEPM 2013 83 & ALS OC Standard Nitrite as N ty Discrete Analyser   EK0716   2   20   10,00   10,00   NEPM 2013 83 & ALS OC Standard Nitrite as N ty Discrete Analyser   EK0716   4   40   10,00   10,00   NEPM 2013 83 & ALS OC Standard Nitrite as N ty Discrete Analyser   EK0616   4   40   10,00   10,00   NEPM 2013 83 & ALS OC Standard Nitrite Nitrit	Chloride by Discrete Analyser	ED045G	4	32	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nimite as N (NOx) by Discrete Analyser   EK050G   2   20   10.00   10.00	Chlorophyll a, b and c	EP008B	0	20	0.00	10.00	3e	NEPM 2013 B3 & ALS QC Standard
Niltric as N by Discrete Analyser	Dissolved Organic Carbon	EP002	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Silica (Reactive) by Discrete Analyser	Nitrite as N by Discrete Analyser	EK057G	4	28	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)  EA015H  4 40 10.00  10.00  FEPM 2013 B3 & ALS QC Standard  Total Organic Garbon  ER005 2 20  10.00  10.00  FEPM 2013 B3 & ALS QC Standard  Total Organic Garbon  ER005 3 40  FER07G 3 40  FE	Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total (Kjeldah Nitrogen as N By Discrete Analyser	Silica (Reactive) by Discrete Analyser	EG052G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	Total Dissolved Solids (High Level)	EA015H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)	Total Organic Carbon	EP005	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator         ED037-P         2         40         5.00         5.00         √         NEPM 2013 B3 & ALS QC Standard           Ammonia as N (Saline Water)         EK055G-SW         1         20         5.00         5.00         √         NEPM 2013 B3 & ALS QC Standard           Chlorojbyll a and Pheophytin a         ED045G         4         32         12.50         10.00         √         NEPM 2013 B3 & ALS QC Standard           Chlorophyll a and Pheophytin a         EP008         1         20         5.00         5.00         √         NEPM 2013 B3 & ALS QC Standard           Chlorophyll a, b and c         EP008B         0         20         0.00         5.00         √         NEPM 2013 B3 & ALS QC Standard           Dissolved Organic Carbon         EP0029         1         20         5.00         5.00         √         NEPM 2013 B3 & ALS QC Standard           Nitrite and Nitrate as N (NOx) by Discrete Analyser         EK059G         1         20         5.00         5.00         √         NEPM 2013 B3 & ALS QC Standard           Nitrite and Nitrate as N (NOx) by Discrete Analyser         EK057G         2         28         7.14         5.00         √         NEPM 2013 B3 & ALS QC Standard           Nitrite and Nitrate as N (Selandard Standard Standard Standard Standa	Total Phosphorus as P By Discrete Analyser	EK067G	3	40	7.50	10.00	×	NEPM 2013 B3 & ALS QC Standard
Alkalinify by PC Titrator  ED037-P  EK055G-SW  1  20  5.00  5.00  √  NEPM 2013 B3 & ALS QC Standard  Ammonia as N (Saline Water)  EE045G 4  32  12.50  10.00  √  NEPM 2013 B3 & ALS QC Standard  Chlorophyll a and Pheophytin a  EP008  1  20  5.00  5.00  √  NEPM 2013 B3 & ALS QC Standard  Chlorophyll a, b and c  EP008B  0  20  0.00  5.00  ★  NEPM 2013 B3 & ALS QC Standard  Chlorophyll a, b and c  EP008B  0  20  0.00  5.00  ★  NEPM 2013 B3 & ALS QC Standard  Chlorophyll a B1 & ALS QC Standard  Chlorophyll a, b and c  EP008B  1  20  5.00  5.00  ★  NEPM 2013 B3 & ALS QC Standard  Nitrite and Nitrate as N (NOx) by Discrete Analyser  EK059G  1  20  5.00  5.00  ★  NEPM 2013 B3 & ALS QC Standard  Nitrite and Nitrate as N (NOx) by Discrete Analyser  EK057G  EK057G  2  28  7.14  5.00  ★  NEPM 2013 B3 & ALS QC Standard  Nitrite and Nitrate as N (NOx) by Discrete Analyser  EK057G  EK057G  EK057G  1  20  5.00  5.00  ★  NEPM 2013 B3 & ALS QC Standard  Nitrite and Nitrate as N (NOx) by Discrete Analyser  EK057G  EK057G  1  20  5.00  5.00  ★  NEPM 2013 B3 & ALS QC Standard  NEPM 2013 B3 & ALS QC Standard  NEPM 2013 B3 & ALS QC Standard  Total Dissolved Solids (High Level)  EK057G  EK057G  EK061G  2  40  5.00  5.00  ★  NEPM 2013 B3 & ALS QC Standard  Total Ploscore Analyser  EK061G  EF005  EK061G  EF005  1  20  5.00  5.00  ★  NEPM 2013 B3 & ALS QC Standard  Total Ploscore Analyser  EK061G  EF005  EK061G  EF005  EK067G	Turbidity	EA045	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinify by PC Titrator  ED037-P  EK055G-SW  1  20  5.00  5.00  √  NEPM 2013 B3 & ALS QC Standard  Ammonia as N (Saline Water)  EE045G 4  32  12.50  10.00  √  NEPM 2013 B3 & ALS QC Standard  Chlorophyll a and Pheophytin a  EP008  1  20  5.00  5.00  √  NEPM 2013 B3 & ALS QC Standard  Chlorophyll a, b and c  EP008B  0  20  0.00  5.00  ★  NEPM 2013 B3 & ALS QC Standard  Chlorophyll a, b and c  EP008B  0  20  0.00  5.00  ★  NEPM 2013 B3 & ALS QC Standard  Chlorophyll a B1 & ALS QC Standard  Chlorophyll a, b and c  EP008B  1  20  5.00  5.00  ★  NEPM 2013 B3 & ALS QC Standard  Nitrite and Nitrate as N (NOx) by Discrete Analyser  EK059G  1  20  5.00  5.00  ★  NEPM 2013 B3 & ALS QC Standard  Nitrite and Nitrate as N (NOx) by Discrete Analyser  EK057G  EK057G  2  28  7.14  5.00  ★  NEPM 2013 B3 & ALS QC Standard  Nitrite and Nitrate as N (NOx) by Discrete Analyser  EK057G  EK057G  EK057G  1  20  5.00  5.00  ★  NEPM 2013 B3 & ALS QC Standard  Nitrite and Nitrate as N (NOx) by Discrete Analyser  EK057G  EK057G  1  20  5.00  5.00  ★  NEPM 2013 B3 & ALS QC Standard  NEPM 2013 B3 & ALS QC Standard  NEPM 2013 B3 & ALS QC Standard  Total Dissolved Solids (High Level)  EK057G  EK057G  EK061G  2  40  5.00  5.00  ★  NEPM 2013 B3 & ALS QC Standard  Total Ploscore Analyser  EK061G  EF005  EK061G  EF005  1  20  5.00  5.00  ★  NEPM 2013 B3 & ALS QC Standard  Total Ploscore Analyser  EK061G  EF005  EK061G  EF005  EK067G	Laboratory Control Samples (LCS)							
Ammonia as N (Saline Water)  EK055G-SW  EK055G-SW  ED045G  ED045G  ED045G  ED045G  ED045G  ED085G  ED	Alkalinity by PC Titrator	ED037-P	2	40	5.00	5.00		NEPM 2013 B3 & ALS QC Standard
Chlorophyll a and Pheophytin a	Ammonia as N (Saline Water)	EK055G-SW	1	20	5.00	5.00		NEPM 2013 B3 & ALS QC Standard
Chlorophyll a and Pheophytin a	Chloride by Discrete Analyser	ED045G	4	32	12.50	10.00	<u>√</u>	NEPM 2013 B3 & ALS QC Standard
Dissolved Organic Carbon  EP002  1  20  5.00  5.00  ✓ NEPM 2013 B3 & ALS QC Standard  Nitrite and Nitrate as N (NOx) by Discrete Analyser  EK059G  1  20  5.00  5.00  ✓ NEPM 2013 B3 & ALS QC Standard  Nitrite as N by Discrete Analyser  EK057G  EK067G  EK	Chlorophyll a and Pheophytin a		1	20	5.00	5.00		NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser  EK059G  1  20  5.00  5.00  ✓ NEPM 2013 B3 & ALS QC Standard  Nitrite as N by Discrete Analyser  EK057G  2  28  7.14  5.00  ✓ NEPM 2013 B3 & ALS QC Standard  Reactive Phosphorus as P-By Discrete Analyser  EK071G  1  20  5.00  5.00  ✓ NEPM 2013 B3 & ALS QC Standard  Silica (Reactive) by Discrete Analyser  EK071G  EK071G  1  20  5.00  5.00  ✓ NEPM 2013 B3 & ALS QC Standard  NEPM 2013 B3 & ALS QC Standard  Dotal Dissolved Solids (High Level)  EA015H  4  40  10.00  10.00  ✓ NEPM 2013 B3 & ALS QC Standard  Total Dissolved Solids (High Level)  EK061G  E	Chlorophyll a, b and c	EP008B	0	20	0.00	5.00	<u>.</u>	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser  EK059G  EK057G	Dissolved Organic Carbon	EP002	1	20	5.00	5.00	1	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	-	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser         EK071G         1         20         5.00         5.00         ✓         NEPM 2013 B3 & ALS QC Standard           Silica (Reactive) by Discrete Analyser         EG052G         1         20         5.00         5.00         ✓         NEPM 2013 B3 & ALS QC Standard           Total Dissolved Solids (High Level)         EA015H         4         40         10.00         10.00         ✓         NEPM 2013 B3 & ALS QC Standard           Total Organic Carbon         EK061G         2         40         5.00         5.00         ✓         NEPM 2013 B3 & ALS QC Standard           Total Organic Carbon         EK067G         2         40         5.00         5.00         ✓         NEPM 2013 B3 & ALS QC Standard           Total Phosphorus as P By Discrete Analyser         EK067G         2         40         5.00         5.00         ✓         NEPM 2013 B3 & ALS QC Standard           Total Phosphorus as P By Discrete Analyser         EK067G         2         40         5.00         5.00         ✓         NEPM 2013 B3 & ALS QC Standard           Wethod Blanks (MB)           Method Blanks (MB)           Ammonia as N (Saline Water)         EK055G-SW         1         20         5.00         5.00         ✓	Nitrite as N by Discrete Analyser	EK057G	2	28	7.14	5.00	<u> </u>	NEPM 2013 B3 & ALS QC Standard
Silica (Reactive) by Discrete Analyser	Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	20	5.00	5.00		NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)  EA015H	Silica (Reactive) by Discrete Analyser		1	20	5.00	5.00		NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	Total Dissolved Solids (High Level)		4	40	10.00	10.00		NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	40	5.00	5.00		NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser  EK067G  EK045  EK045  EK045  EK045  EK045  EK045  EK045  EK045G  EK045G  EK055G-SW  EK055G-SW  EK055G-SW  EK055G-SW  EEV045G  EK045G  EEV045G  EEV04G  EEV045G  EEV04	Total Organic Carbon		1	20	5.00	5.00		NEPM 2013 B3 & ALS QC Standard
Turbidity EA045 1 20 5.00 5.00 ✓ NEPM 2013 B3 & ALS QC Standard    Method Blanks (MB)	Total Phosphorus as P By Discrete Analyser		2	40	5.00	5.00		NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)           Ammonia as N (Saline Water)         EK055G-SW         1         20         5.00         5.00         ✓ NEPM 2013 B3 & ALS QC Standard           Chloride by Discrete Analyser         ED045G         2         32         6.25         5.00         ✓ NEPM 2013 B3 & ALS QC Standard           Chlorophyll a and Pheophytin a         EP008         1         20         5.00         5.00         ✓ NEPM 2013 B3 & ALS QC Standard           Chlorophyll a, b and c         EP008B         1         20         5.00         5.00         ✓ NEPM 2013 B3 & ALS QC Standard	Turbidity			20	5.00	5.00		NEPM 2013 B3 & ALS QC Standard
Ammonia as N (Saline Water)         EK055G-SW         1         20         5.00         5.00         ✓         NEPM 2013 B3 & ALS QC Standard           Chloride by Discrete Analyser         ED045G         2         32         6.25         5.00         ✓         NEPM 2013 B3 & ALS QC Standard           Chlorophyll a and Pheophytin a         EP008         1         20         5.00         5.00         ✓         NEPM 2013 B3 & ALS QC Standard           Chlorophyll a, b and c         EP008B         1         20         5.00         5.00         ✓         NEPM 2013 B3 & ALS QC Standard	Method Blanks (MB)							
Chloride by Discrete Analyser         ED045G         2         32         6.25         5.00         ✓         NEPM 2013 B3 & ALS QC Standard           Chlorophyll a and Pheophytin a         EP008         1         20         5.00         5.00         ✓         NEPM 2013 B3 & ALS QC Standard           Chlorophyll a, b and c         EP008B         1         20         5.00         5.00         ✓         NEPM 2013 B3 & ALS QC Standard	Ammonia as N (Saline Water)	EK055G-SW	1	20	5.00	5.00	1	NEPM 2013 B3 & ALS QC Standard
Chlorophyll a and Pheophytin a         EP008         1         20         5.00         5.00         ✓         NEPM 2013 B3 & ALS QC Standard           Chlorophyll a, b and c         EP008B         1         20         5.00         5.00         ✓         NEPM 2013 B3 & ALS QC Standard	Chloride by Discrete Analyser		2	32	6.25	5.00		NEPM 2013 B3 & ALS QC Standard
Chlorophyll a, b and c EP008B 1 20 <b>5.00 5.00</b> ✓ NEPM 2013 B3 & ALS QC Standard	Chlorophyll a and Pheophytin a	EP008	1	20	5.00	5.00		NEPM 2013 B3 & ALS QC Standard
	Chlorophyll a, b and c	EP008B	1	20	5.00	5.00		NEPM 2013 B3 & ALS QC Standard
	Dissolved Organic Carbon	EP002	1	20	5.00	5.00		NEPM 2013 B3 & ALS QC Standard

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Matrix: WATER				Evaluation	n: 🗴 = Quality Co	ontrol frequency	not within specification; ✓ = Quality Control frequency within specificatio
Quality Control Sample Type		Co	ount		Rate (%)		Quality Control Specification
Analytical Methods	Method	OC	Reaular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Silica (Reactive) by Discrete Analyser	EG052G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N (Saline Water)	EK055G-SW	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Organic Carbon	EP002	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Silica (Reactive) by Discrete Analyser	EG052G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

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Project : Water Samples



## **Brief Method Summaries**

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Algal Count	BM010	WATER	Specialist microbiological analysis subcontracted to ALS Scoresby (NATA Accredited Laboratory No. 992).
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue
			in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is
			evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC
			Titrate) on a settled supernatant aliquot of the sample using pH 4.5 for indicating the total alkalinity end-point.
			This method is compliant with NEPM Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 CI - G.The thiocyanate ion is liberated from mercuric thiocyanate through
			sequestration of mercury by the chloride ion to form non-ionised mercuric chloride.in the presence of ferric ions
			the librated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm APHA seal method 2 017-1-L
Silica (Reactive) by Discrete Analyser	EG052G	WATER	In house: Referenced to APHA 4500-SiO2 D: Under Acdic conditions reactive silicon combines with ammonium
			molybdate to form a yellow molybdosilicic acid complex. This is reduced by 1-amino-2-naphthol-4-sulfonic acid
			to a silicomolybdenum blue complex which is measured by discrete analyser at 670 nm. This method is
			compliant with NEPM Schedule B(3).
Ammonia as N (Saline Water)	EK055G-SW	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser.
			This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser.
NIII O A L		WATER	This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed
			by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate
Nitrite and Nitrate as N. (NOv.) by Discrete	EK059G	WATER	calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	ENUSSG	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM
Allalysei			Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high
Analyser			temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined
			colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3 This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid
Analyser			digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with
			ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its
			concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)

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Analytical Methods	Method	Matrix	Method Descriptions
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Dissolved Organic Carbon	EP002	WATER	In house: Referenced to APHA 5310 B. This method is compliant with NEPM Schedule B(3). Samples are combusted at high termperature in the presence of an oxidative catalyst. The evolved carbon dioxide is quantified using an IR detector.
Total Organic Carbon	EP005	WATER	In house: Referenced to APHA 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM Schedule B(3)
Chlorophyll a and Pheophytin a	EP008	WATER	In house: Referenced to APHA 10200 H. The pigments are extracted into aqueous acetone. The optical density of the extract before and after acidification at both 664 nm and 665 nm is determined spectrometrically.
Chlorophyll a, b and c	EP008B	WATER	In house: Referenced to APHA 10200 H. The pigments are extracted into aqueous acetone. The trichromatic method is used by determining the optical density of the extract at 664 nm, 647nm and 630 nm spectrometrically.
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)