Infiltration Basin Sediment Analysis
Earnshaw Street, Golden Beach

Prepared for:
Yolanda Burt
Transport and Infrastructure Policy
Regional Strategy and Planning
Sunshine Coast Council

Report Number: J000196-0018-R-Rev0

July 2017

Table of Contents

Plates

Appendices

1.0 INTRODUCTION

Core Consultants Pty Ltd (Core) was requested by Sunshine Coast Council (SCC) (Yolanda Burt) to undertake a sediment sampling and analysis program of sediments contained within an infiltration basin located at Earnshaw Street, Golden Beach. The aim of the sampling and analysis program was to determine if the sediments contained any potential contaminants of concern and the extent to which any potentially contaminated sediment had infiltrated within the subsurface soil profile. The location of the site is shown on Plate 1.

2.0 SITE DESCRIPTION

The infiltration basin is located at the junction of Earnshaw Street and The Esplanade, Golden Beach. The site is owned and maintained by Sunshine Coast Council and is surrounded by parkland and recreational facilities with Pumicestone Passage located approximately 10 metres to the east. The infiltration basin is vegetated with a mixture of typical wetland species both native and introduced grasses and reeds.

Plate 1: Site locality and Borehole Location.

3.0 INVESTIGATION METHODOLOGY

3.1 Field Investigation

For the purpose of this investigation Core undertook one borehole within the infiltration basin to identify subsurface conditions at the site (refer Plate 1).

The borehole was undertaken using a hand auger to recover soil samples to a depth of 0.70 m below ground level (m BGL). The fieldwork was carried out by an experienced environmental scientist from Core on 8 June 2017. The approximate location of the borehole was recorded using a hand-held GPS unit with a differential correction signal, having an accuracy of ± 5 m. Borehole coordinates are presented on the borehole report and accompanying photographs in Appendix A. Subsurface conditions are discussed in Section 4.1.

3.2 Sampling and Handling Procedures

Sediment samples were collected at the following depth intervals

- Surface 0.0 – 0.1 m BGL

- 0.4 to 0.5 m BGL and
- 0.6 to 0.7 m BGL

The selected samples were submitted for laboratory analysis for the following chemical compounds:

- Total Recoverable Hydrocarbons (TRH), Benzene Toluene Ethylbenzene Xylenes and Naphthalene (BTEXN), Total Nitrogen, Total Phosphorous, and Heavy Metals (Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Zinc and Mercury);
- E.Coli plus Faecal Coliforms;
- Particle Size Distribution (PSD) analysis (via Sieve and Hydrometer).

Laboratory analysis was conducted by Eurofins/MGT. Eurofins/MGT are National Association of Testing Authorities (NATA) accredited for the tests conducted.

- All equipment used in the sampling process was decontaminated on arrival at site and prior to collection of each sample. Decontamination included the scrubbing and washing of equipment with a biodegradable phosphate free detergent, followed by washing in potable water and then rinsing with de-ionised water.
- Nitrile gloves were replaced for each investigation location and sampling procedures used were aimed at preventing cross-contamination of samples.
- Sample containers appropriate for the analysis proposed were supplied by the testing laboratories. Sample containers were marked with a unique sample number, the sample location, the date and Core job number.
- Samples were immediately placed in airtight containers supplied by the testing laboratory and then placed into a chilled insulated esky for transportation to the laboratory.
- Chain of custody and analysis request forms were completed and sent with surface water samples to the testing laboratory.

3.3 Laboratory QA/QC

The laboratory prepared and analysed the following QA/QC samples:

- Laboratory duplicates (DUP);
- Method blanks (MB);
- Surrogate spikes;
- Matrix spikes (MS); and
- Laboratory control samples (LCS).

4.0 RESULTS OF THE INVESTIGATION

4.1 Subsurface Conditions

The subsurface soil profile encountered within the infiltration basin generally consisted of:

- Silty Sand: comprising fine to medium grained sand, pale grey, wet, medium dense with roots to a depth of approximately 0.1 m BGL; overlying
- Sand: generally comprising fine to medium grained sand, pale grey, wet, medium dense, to depth of investigation (0.70 m BGL)

No visual or olfactory evidence of contamination was observed within the sediment profiles during drilling/coring (Refer Appendix A).

4.2 Sediment Contamination Analytical Results

Samples analysed for the contamination suite of parameters recorded concentrations below the laboratory level of reporting (LOR) in all samples except for BH1 0.0-0.1 and BH1 0.4-0.5 where concentrations of zinc (16 mg/kg and 9.3 mg/kg respectively) were recorded above the level of reporting. However, it should be noted that these concentrations do not exceed the NEPM 2013 Environmental Investigation Limits for Urban Residential and Public Open Space.

High levels of total nitrogen and total kjeldahl nitrogen were recorded in BH1 (0.0-0.1 m BGL) with concentrations of 630 mg/kg and 620 mg/kg respectively. The concentrations of total nitrogen and total kjeldahl nitrogen decrease down the soil profile but still remained elevated at 78 mg/kg in sample BH1 0.6-0.7. High total nitrogen and total kjeldahl nitrogen concentrations would be expected in a constructed wetland environment such as the infiltration basin.

From a contamination perspective the above results suggest that the surface sediments within the infiltration basin pose a low risk to the surrounding environment, while the sediments from the lower soil profile do not indicate a potential contamination risk to surrounding environment or human health. These findings are considered typical of an infiltration or sediment basin scenario, as such, the infiltration basin is operating as it should in trapping the sediments, particular matter and potential contaminants from the water column.

Laboratory certificates of analysis are presented in Appendix C.

4.3 Pathogens

The results of pathogen analysis of the samples analysed indicated that E. Coli concentrations within the soil profile of BH1 were found to be below the laboratory LOR <10 MPN/g respectively. While concentrations of thermotolerant coliforms were found to range from 110 MPN/g to >9,200 MPN/g with the highest concentrations being recorded in the surface sample BH1 (0.0-0.1 m BGL).

The above results of the pathogen analysis suggest that the surface sediments within the infiltration basin, if released, could pose a potential risk to the surrounding environment and human health.

Laboratory certificates of analysis are presented in Appendix C.

It is worth noting for comparative purposes that the ANZECC Guidelines Section 5.2 (Recreational Waters Secondary Contact) criteria for thermotolerant coliforms lists the following concentration criteria; *secondary contact should not exceed 1000 organisms/100 ml*.

5.0 CONCLUSION

Based on the results of this sediment analysis assessment there appears to be an indication of historical or current contamination impact on the surface sediments within the infiltration basin, while the underlying sediments generally indicate little or no contamination impact. On the basis of these findings and from a contamination perspective, the surface sediments within the infiltration would be considered to pose a low risk to the surrounding environment and human health. However, results of pathogen analysis indicate that surface sediments could potentially pose a risk to the environment and human health if released.

It is recommended that Council develop and implement a regular (6 monthly) maintenance program for the removal and appropriate disposal of the surface sediments from within the infiltration basin to a licensed landfill facility.

6.0 LIMITATIONS

Should you require any further information please contact the undersigned. We draw your attention to the document, Limitations, which is included in Appendix D.

Core Consultants Pty Ltd

Yours sincerely,

Samuel Rouse BSc (EnvSc)
Environmental Scientist

Josh Mitchell BSc (EnvSc) MEIANZ CEnvP CPSS
Senior Environmental Scientist / Associate

SR/JM/sr

A.B.N. 75 603 384 050

APPENDIX A

Borehole Log Report

REPORT OF BOREHOLE: BH 01

consultants pty ltd

CLIENT:	Sunshine Coast Council	EAST:	512099.0 m	SHEET	1 OF 1
PROJECT:	Sediment Sampling	NORTH:	70434003.0 m	LOGGED:	SR
LOCATION:	Earnshaw Street, Golden Beach	CONTRACTOR:	SR	LOGGED DATE:	08/06/17
JOB NO:	J000196	DRILL RIG:	Hand Auger	CHECKED:	JM
		INCLINATION:	-90°	CHECKED DATE:	17/07/17

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0.0		0.00 m			SM	SILTY SAND: fine to medium grained sand, pale grey, with rootlets	W		
				0.10				SP	SAND: fine to medium grained sand, pale grey and grey, trace silt			
			0.5									
				0.70					END OF BOREHOLE @ 0.70 m COLLAPSE BACKFILLED			
			1.0									

This report must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

EXPLANATION OF NOTES, ABBREVIATIONS & TERMS USED ON BOREHOLE AND TEST PIT REPORTS

DRILLING/EXCAVATION METHOD

AS*	Auger Screwing	RD	Rotary blade or drag bit	NQ	Diamond Core - 47 mm
AD*	Auger Drilling	RT	Rotary Tricone bit	NMLC	Diamond Core - 52 mm
*V	V-Bit	RAB	Rotary Air Blast	HQ	Diamond Core - 63 mm
*T	TC-Bit, e.g. ADT	RC	Reverse Circulation	HMLC	Diamond Core – 63mm
HA	Hand Auger	PT	Push Tube	BH	Tractor Mounted Backhoe
ADH	Hollow Auger	CT	Cable Tool Rig	EX	Tracked Hydraulic Excavator
DTC	Diatube Coring	JET	Jetting	EE	Existing Excavation
WB	Washbore or Bailer	NDD	Non-destructive digging	HAND	Excavated by Hand Methods

PENETRATION/EXCAVATION RESISTANCE

L **Low resistance.** Rapid penetration possible with little effort from the equipment used.

M **Medium resistance.** Excavation/possible at an acceptable rate with moderate effort from the equipment used.

H **High resistance** to penetration/excavation. Further penetration is possible at a slow rate and requires significant effort from the equipment.

R **Refusal or Practical Refusal.** No further progress possible without the risk of damage or unacceptable wear to the digging implement or machine.

These assessments are subjective and are dependent on many factors including the equipment power, weight, condition of excavation or drilling tools, and the experience of the operator.

WATER

▽	Water level at date shown	◁	Partial water loss
▷	Water inflow	◀	Complete water loss

GROUNDWATER NOT OBSERVED	The observation of groundwater, whether present or not, was not possible due to drilling water, surface seepage or cave in of the borehole/test pit.
GROUNDWATER NOT ENCOUNTERED	The borehole/test pit was dry soon after excavation. However, groundwater could be present in less permeable strata. Inflow may have been observed had the borehole/test pit been left open for a longer period.

SAMPLING AND TESTING

SPT	Standard Penetration Test to AS1289.6.3.1-2004
4,7,11 N=18	4,7,11 = Blows per 150mm. N = Blows per 300mm penetration following 150mm seating
30/80mm	Where practical refusal occurs, the blows and penetration for that interval are reported
RW	Penetration occurred under the rod weight only
HW	Penetration occurred under the hammer and rod weight only
HB	Hammer double bouncing on anvil
DS	Disturbed sample
BDS	Bulk disturbed sample
G	Gas Sample
W	Water Sample
FP	Field permeability test over section noted
FV	Field vane shear test expressed as uncorrected shear strength (s_v = peak value, s_r = residual value)
PID	Photoionisation Detector reading in ppm
PM	Pressuremeter test over section noted
PP	Pocket penetrometer test expressed as instrument reading in kPa
U63	Thin walled tube sample - number indicates nominal sample diameter in millimetres
WPT	Water pressure tests
DCP	Dynamic cone penetration test
CPT	Static cone penetration test
CPTu	Static cone penetration test with pore pressure (u) measurement

Ranking of Visually Observable Contamination and Odour (for specific soil contamination assessment projects)

R = 0	No visible evidence of contamination	R = A	No non-natural odours identified
R = 1	Slight evidence of visible contamination	R = B	Slight non-natural odours identified
R = 2	Visible contamination	R = C	Moderate non-natural odours identified
R = 3	Significant visible contamination	R = D	Strong non-natural odours identified

ROCK CORE RECOVERY

TCR = Total Core Recovery (%)

$$= \frac{\text{Length of core recovered}}{\text{Length of core run}} \times 100$$

SCR = Solid Core Recovery (%)

$$= \frac{\sum \text{Length of cylindrical core recovered}}{\text{Length of core run}} \times 100$$

RQD = Rock Quality Designation (%)

$$= \frac{\sum \text{Axial lengths of core} > 100 \text{ mm}}{\text{Length of core run}} \times 100$$

METHOD OF SOIL DESCRIPTION USED ON BOREHOLE AND TEST PIT REPORTS

 FILL

 GRAVEL (GP or GW)

 SAND (SP or SW)

 SILT (ML or MH)

 CLAY (CL, CI or CH)

 ORGANIC SOILS (OL or OH or Pt)

 COBBLES or BOULDERS

Combinations of these basic symbols may be used to indicate mixed materials such as sandy clay.

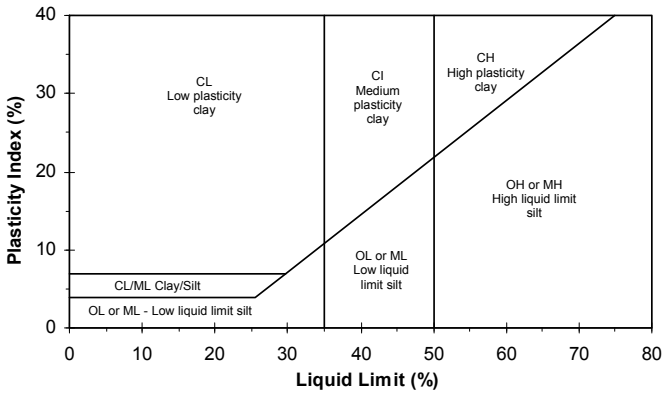
CLASSIFICATION AND INFERRED STRATIGRAPHY

Soil and Rock is classified and described in Reports of Boreholes and Test Pits using the preferred method given in AS1726 – 1993, (Amdt1 – 1994 and Amdt2 – 1994), Appendix A. The material properties are assessed in the field by visual/tactile methods.

Particle Size

Major Division	Sub Division	Particle Size
BOULDERS		> 200 mm
COBBLES		63 to 200 mm
GRAVEL	Coarse	20 to 63 mm
	Medium	6.0 to 20 mm
	Fine	2.0 to 6.0 mm
SAND	Coarse	0.6 to 2.0 mm
	Medium	0.2 to 0.6 mm
	Fine	0.075 to 0.2 mm
SILT		0.002 to 0.075 mm
CLAY		< 0.002 mm

Plasticity Properties



MOISTURE CONDITION

AS1726 - 1993

Symbol	Term	Description
D	Dry	Sands and gravels are free flowing. Clays & Silts may be brittle or friable and powdery.
M	Moist	Soils are darker than in the dry condition & may feel cool. Sands and gravels tend to cohere.
W	Wet	Soils exude free water. Sands and gravels tend to cohere.

CONSISTENCY AND DENSITY

AS1726 - 1993

Symbol	Term	Undrained Shear Strength
VS	Very Soft	0 to 12 kPa
S	Soft	12 to 25 kPa
F	Firm	25 to 50 kPa
St	Stiff	50 to 100 kPa
VSt	Very Stiff	100 to 200 kPa
H	Hard	Above 200 kPa

Symbol	Term	Density Index %	SPT "N" #
VL	Very Loose	Less than 15	0 to 4
L	Loose	15 to 35	4 to 10
MD	Medium Dense	35 to 65	10 to 30
D	Dense	65 to 85	30 to 50
VD	Very Dense	Above 85	Above 50

In the absence of test results, consistency and density may be assessed from correlations with the observed behaviour of the material.

SPT correlations are not stated in AS1726 – 1993, and may be subject to corrections for overburden pressure and equipment type.

APPENDIX B

Particle Size Distribution; Certificates of Analysis

eastwest
geo ag enviro

82 Plain Street Tamworth NSW 2340
e admin@eastwestonline.com.au
t 02 6762 1733
f 02 6765 9109
abn 82 125 442 382

eastwestonline.com.au

ANALYSIS REPORT SOIL

PROJECT NO: EW170915		**Date of Issue:**	**19/06/2017**
Customer:	EUROFINS BRISBANE	Report No:	1
Address:	1/21 Smallwood Place MURARRIE QLD 4172	Date Received:	13/06/2017
		Matrix:	Soil
Attention:	Ryan Gilbert	Location:	549676
Phone:	07 39024600	Sampler ID:	client
Fax:		Date of Sampling:	8/06/2017
Email:	enviroreportsAU@eurofins.com	Sample Condition:	Acceptable

Results apply to the samples as submitted. All pages of this report have been checked and approved for release.

Signed: Anne Michie

ASPAC
PROFICIENT LAB
Visit www.aspac-australasia.com to view our certification details.

East West is certified by the Australian-Asian Soil & Plant Analysis Council to perform various soil and plant tissue analysis. The tests reported herein have been performed in accordance with our terms of accreditation.

This report must not be reproduced except in full and EWEA takes no responsibility of the end use of the results within this report.

This analysis relates to the sample submitted and it is the client's responsibility to make certain the sample is representative of the matrix to be tested.

Samples will be discarded one month after the date of this report. Please advise if you wish to have your sample/s returned.

ANALYSIS REPORT

PROJECT NO: EW170915 **Location: 549676**

				CLIENT SAMPLE ID	B17_Jn09116	B17_Jn09117	B17_Jn09118	
				DEPTH	-	-	-	
Test Parameter	**Method Description**	**Method Reference**	**Units**	**LOR**	**170915-1**	**170915-2**	**170915-3**	
Gravel 2.36-4.75mm	Sieve	AS1289.3.6.3	%	na	1.7	0.2	0.2	
Very Coarse Sand 1.18-2.36mm	Sieve	AS1289.3.6.3	%	na	1.0	3.1	0.9	
Coarse Sand 0.6-1.18mm	Sieve	AS1289.3.6.3	%	na	2.4	5.1	6.1	
Medium Sand 0.3-0.6mm	Sieve	AS1289.3.6.3	%	na	33.3	49.0	53.3	
Fine Sand 0.15-0.30mm	Sieve	AS1289.3.6.3	%	na	32.9	22.2	20.6	
Very Fine Sand 0.075-0.15mm	Sieve	AS1289.3.6.3	%	na	7.4	7.4	7.4	
Coarse Silt 0.02-0.075mm	Hydrometer	AS1289.3.6.3	%	na	18.2	11.4	9.5	
Fine Silt 0.002-0.020mm	Hydrometer	AS1289.3.6.3	%	na	0.4	0.4	0.4	
Clay <0.002mm	Hydrometer	AS1289.3.6.3	%	na	8.3	6.9	8.2	

NB: LOR is the Lowest Obtainable Reading.

DOCUMENT END

APPENDIX C

Laboratory Certificates of Analysis and Chain of Custody Documentation

TEST REQUEST FORM

Eurofins I MGT
Unit 1/21 Smallwood Place, QLD 4172
Phone: 3902 4600

Order No.:	PO001454 TR-02
Job No.:	J000196
Job Name:	Infiltration Basin
C.O.C. No.:	TR-02 **Quotation No.** #150306COR
Sampled By:	Sam Rouse **Contact Name:** Josh Mitchell 0408984011
Email Report to:	srouse@coreconsultants.com.au; jmitchell@coreconsultants.com.au
Prior Storage:	

SAMPLE ID	Sample Depth (m)	Media	No. of Bags	No. of Bottles	SAMPLE DATE	Suite B6 - TRH/BTEXN/8 Metals	MIC6 - E.Coli plus Faecal Coliforms	Total Nitrogen	Total Phorphorus	PSD Analysis (Sieve and Hydrometer)	Remarks and or Other Details
BH1	0.0-0.1	Soil	1	1	8/06/2017	X	X	X	X	X	
BH1	0.4 - 0.5	Soil	1	1	8/06/2017	X	X	X	X	X	
BH1	0.6 - 0.7	Soil	1	1	8/06/2017	X	X	X	X	X	

Checked by:

Date Sent: 8/6/17

Date Received By Eurofins: 9/6/17

core consultants pty ltd
55 Kingsford Smith Parade
Maroochydore QLD 4558
Phone: 5475 5900

CON NOTES

L CN HD CR AP

3 : ccofn
9/6/17

8.0
12.0
11.6
10.53

eurofins | mgt

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261 Site # 18217

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**Core Consultants Pty Ltd**
Contact name:	Josh Mitchell
Project name:	INFILTRATION BASIN
Project ID:	J000196
COC number:	TR_02
Turn around time:	5 Day
Date/Time received:	Jun 9, 2017 3:40 PM
Eurofins | mgt reference:	**549676**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Ryan Gilbert on Phone : or by e.mail: RyanGilbert@eurofins.com

Results will be delivered electronically via e.mail to Josh Mitchell - jmitchell@coreconsultants.com.au.

ABN– 50 005 085 521
e.mail : EnviroSales@eurofins.com
web : www.eurofins.com.au

Melbourne
2-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 18217

Company Name: Core Consultants Pty Ltd
Address: 55 Kingford Smith Parade
Maroochydore
QLD 4558

Project Name: INFILTRATION BASIN
Project ID: J000196

Order No.: PO001454
Report #: 549676
Phone: 07 5475 5900
Fax:

Received: Jun 9, 2017 3:40 PM
Due: Jun 16, 2017
Priority: 5 Day
Contact Name: Josh Mitchell

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						Particle Size Distribution by Sieve and Hydrometer	Phosphorus	Total Nitrogen Set (as N)	Micro - Faecal Screen	Moisture Set	Eurofins | mgt Suite B6
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X
Sydney Laboratory - NATA Site # 18217											
Brisbane Laboratory - NATA Site # 20794											
Perth Laboratory - NATA Site # 18217											
External Laboratory						X					
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**						
1	BH1_0.0_0.1	Jun 08, 2017		Soil	B17-Jn09116	X	X	X	X	X	X
2	BH1_0.4_0.5	Jun 08, 2017		Soil	B17-Jn09117	X	X	X	X	X	X
3	BH1_0.6_0.7	Jun 08, 2017		Soil	B17-Jn09118	X	X	X	X	X	X
Test Counts						3	3	3	3	3	3

eurofins | mgt

Certificate of Analysis

Core Consultants Pty Ltd
55 Kingford Smith Parade
Maroochydore
QLD 4558

NATA Accredited
Accreditation Number 1261
Site Number 20794 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Josh Mitchell**

Report **549676-S**
Project name INFILTRATION BASIN
Project ID J000196
Received Date Jun 09, 2017

Client Sample ID			[M01]**BH1_0.0_0.1**	[M01]**BH1_0.4_0.5**	[M01]**BH1_0.6_0.7**
Sample Matrix			**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**B17-Jn09116**	**B17-Jn09117**	**B17-Jn09118**
Date Sampled			**Jun 08, 2017**	**Jun 08, 2017**	**Jun 08, 2017**
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50
BTEX					
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	91	104	82
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20
TRH C6-C10	20	mg/kg	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100
Nitrate & Nitrite (as N)	5	mg/kg	5.3	5.5	< 5
Total Kjeldahl Nitrogen (as N)	10	mg/kg	620	160	78
Total Nitrogen (as N)	10	mg/kg	630	170	78
Phosphorus	5	mg/kg	< 50	< 50	< 50
% Moisture	1	%	35	18	19
Particle Size Distribution by Sieve and Hydrometer			see attached	see attached	see attached
Heavy Metals					
Arsenic	2	mg/kg	< 2	< 2	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	< 5	< 5	< 5
Copper	5	mg/kg	< 5	< 5	< 5
Lead	5	mg/kg	< 5	< 5	< 5
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1

Client Sample ID			[M01]BH1_0.0_0.1	[M01]BH1_0.4_0.5	[M01]BH1_0.6_0.7
Sample Matrix			**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**B17-Jn09116**	**B17-Jn09117**	**B17-Jn09118**
Date Sampled			**Jun 08, 2017**	**Jun 08, 2017**	**Jun 08, 2017**
Test/Reference	LOR	Unit			
Heavy Metals					
Nickel	5	mg/kg	< 5	< 5	< 5
Zinc	5	mg/kg	16	9.3	< 5
Pathogens					
E.coli	1	MPN/g	<10	<10	<10
Thermotolerant Coliforms	1	MPN/g	[M10]9200	[M10]230	[M10]110

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins | mgt Suite B6			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Jun 13, 2017	14 Day
- Method: LTM-ORG-2010 TRH C6-C36			
BTEX	Melbourne	Jun 13, 2017	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Jun 13, 2017	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Jun 13, 2017	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Metals M8	Melbourne	Jun 13, 2017	28 Days
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N)	Melbourne	Jun 14, 2017	28 Day
- Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA			
Total Kjeldahl Nitrogen (as N)	Melbourne	Jun 14, 2017	28 Day
- Method: APHA 4500 TKN			
Phosphorus	Melbourne	Jun 13, 2017	180 Day
- Method: USEPA 6010			
E.coli	Melbourne	Jun 16, 2017	72 Hour
- Method: LTM-MIC-6621			
Thermotolerant Coliforms	Melbourne	Jun 16, 2017	72 Hour
- Method: Inhouse: Thermotolerant Coliforms in Soil by MPN*			
% Moisture	Melbourne	Jun 09, 2017	14 Day
- Method: LTM-GEN-7080 Moisture			

eurofins | mgt

ABN– 50 005 085 521
e.mail : EnviroSales@eurofins.com
web : www.eurofins.com.au

Melbourne
2-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 18217

Company Name: Core Consultants Pty Ltd
Address: 55 Kingford Smith Parade
Maroochydore
QLD 4558

Project Name: INFILTRATION BASIN
Project ID: J000196

Order No.: PO001454
Report #: 549676
Phone: 07 5475 5900
Fax:

Received: Jun 9, 2017 3:40 PM
Due: Jun 16, 2017
Priority: 5 Day
Contact Name: Josh Mitchell

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						Particle Size Distribution by Sieve and Hydrometer	Phosphorus	Total Nitrogen Set (as N)	Micro - Faecal Screen	Moisture Set	Eurofins | mgt Suite B6
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X
Sydney Laboratory - NATA Site # 18217											
Brisbane Laboratory - NATA Site # 20794											
Perth Laboratory - NATA Site # 18217											
External Laboratory						X					
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**						
1	BH1_0.0_0.1	Jun 08, 2017		Soil	B17-Jn09116	X	X	X	X	X	X
2	BH1_0.4_0.5	Jun 08, 2017		Soil	B17-Jn09117	X	X	X	X	X	X
3	BH1_0.6_0.7	Jun 08, 2017		Soil	B17-Jn09118	X	X	X	X	X	X
Test Counts						3	3	3	3	3	3

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Nitrate & Nitrite (as N)	mg/kg	< 5			5	Pass	
Total Kjeldahl Nitrogen (as N)	mg/kg	< 10			10	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	99			70-130	Pass	
TRH C10-C14	%	80			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	94			70-130	Pass	
Toluene	%	92			70-130	Pass	
Ethylbenzene	%	92			70-130	Pass	
m&p-Xylenes	%	88			70-130	Pass	
Xylenes - Total	%	88			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	110			70-130	Pass	
TRH C6-C10	%	98			70-130	Pass	
TRH >C10-C16	%	104			70-130	Pass	
LCS - % Recovery							
Nitrate & Nitrite (as N)	%	111			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Total Kjeldahl Nitrogen (as N)			%	113			70-130	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	87			80-120	Pass	
Cadmium			%	100			80-120	Pass	
Chromium			%	101			80-120	Pass	
Copper			%	102			80-120	Pass	
Lead			%	103			80-120	Pass	
Mercury			%	102			75-125	Pass	
Nickel			%	104			80-120	Pass	
Zinc			%	107			80-120	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M17-Jn06447	NCP	%	92			70-130	Pass	
TRH C10-C14	B17-Jn08974	NCP	%	74			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	M17-Jn06447	NCP	%	89			70-130	Pass	
Toluene	M17-Jn06447	NCP	%	93			70-130	Pass	
Ethylbenzene	M17-Jn06447	NCP	%	90			70-130	Pass	
m&p-Xylenes	M17-Jn06447	NCP	%	87			70-130	Pass	
o-Xylene	M17-Jn06447	NCP	%	93			70-130	Pass	
Xylenes - Total	M17-Jn06447	NCP	%	89			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M17-Jn06447	NCP	%	91			70-130	Pass	
TRH C6-C10	M17-Jn06447	NCP	%	91			70-130	Pass	
TRH >C10-C16	B17-Jn08974	NCP	%	94			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	B17-Jn08972	NCP	%	50			75-125	Fail	Q08
Cadmium	B17-Jn08972	NCP	%	95			75-125	Pass	
Chromium	B17-Jn08972	NCP	%	52			75-125	Fail	Q08
Copper	B17-Jn08972	NCP	%	44			75-125	Fail	Q08
Lead	B17-Jn08972	NCP	%	95			75-125	Pass	
Mercury	M17-Jn07800	NCP	%	92			70-130	Pass	
Nickel	B17-Jn08972	NCP	%	86			75-125	Pass	
Zinc	B17-Jn08972	NCP	%	83			75-125	Pass	
Spike - % Recovery									
				Result 1					
Nitrate & Nitrite (as N)	B17-Jn09117	CP	%	91			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M17-Jn11008	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	B17-Jn08973	NCP	mg/kg	1700	1700	3.0	30%	Pass	
TRH C15-C28	B17-Jn08973	NCP	mg/kg	130	150	11	30%	Pass	
TRH C29-C36	B17-Jn08973	NCP	mg/kg	< 50	< 50	<1	30%	Pass	

Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M17-Jn11008	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	M17-Jn11008	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	M17-Jn11008	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	M17-Jn11008	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	M17-Jn11008	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	M17-Jn11008	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M17-Jn11008	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M17-Jn11008	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	B17-Jn08973	NCP	mg/kg	1600	1600	4.0	30%	Pass	
TRH >C16-C34	B17-Jn08973	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	B17-Jn08973	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Nitrate & Nitrite (as N)	B17-Jn09116	CP	mg/kg	5.3	5.4	1.0	30%	Pass	
% Moisture	M17-Jn09513	NCP	%	14	12	17	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	B17-Jn08971	NCP	mg/kg	49	50	2.0	30%	Pass	
Cadmium	B17-Jn08971	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	B17-Jn08971	NCP	mg/kg	130	130	2.0	30%	Pass	
Copper	B17-Jn08971	NCP	mg/kg	110	110	2.0	30%	Pass	
Lead	B17-Jn08971	NCP	mg/kg	< 5	5.1	4.0	30%	Pass	
Mercury	B17-Jn08533	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	B17-Jn08971	NCP	mg/kg	13	13	2.0	30%	Pass	
Zinc	B17-Jn08971	NCP	mg/kg	25	26	3.0	30%	Pass	

Comments

PSD conducted by East West, PROJECT NO: EW170915.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M01	Microbiological Testing performed outside the recommended holding time
M10	NATA accreditation does not cover the performance of this service in soil matrices
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference

Authorised By

Ryan Gilbert	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Alex Petridis	Senior Analyst-Organic (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)

Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

APPENDIX D

Limitations

LIMITATIONS

This Document has been provided by Core Consultants Pty Ltd ("Core") subject to the following limitations:

This Document has been prepared for the particular purpose outlined in Core's proposal and no responsibility is accepted for the use of this Document, in whole or in part, in other contexts or for any other purpose.

The scope and the period of Core's Services are as described in Core's proposal, and are subject to restrictions and limitations. Core did not perform a complete assessment of all possible conditions or circumstances that may exist at the site referenced in the Document. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by Core in regards to it.

Conditions may exist which were undetectable given the limited nature of the enquiry Core was retained to undertake with respect to the site. Variations in conditions may occur between investigatory locations, and there may be special conditions pertaining to the site which have not been revealed by the investigation and which have not therefore been taken into account in the Document. Accordingly, additional studies and actions may be required.

In addition, it is recognised that the passage of time affects the information and assessment provided in this Document. Core's opinions are based upon information that existed at the time of the production of the Document. It is understood that the Services provided allowed Core to form no more than an opinion of the actual conditions of the site at the time the site was visited and cannot be used to assess the effect of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.

Any assessments made in this Document are based on the conditions indicated from published sources and the investigation described. No warranty is included, either express or implied, that the actual conditions will conform exactly to the assessments contained in this Document.

Where data supplied by the client or other external sources, including previous site investigation data, have been used, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by Core for incomplete or inaccurate data supplied by others.

Core may have retained subconsultants affiliated with Core to provide Services for the benefit of Core. To the maximum extent allowed by law, the Client acknowledges and agrees it will not have any direct legal recourse to, and waives any claim, demand, or cause of action against, Core's affiliated companies, and their employees, officers and directors.

This Document is provided for sole use by the Client and is confidential to it and its professional advisers. No responsibility whatsoever for the contents of this Document will be accepted to any person other than the Client. Any use which a third party makes of this Document, or any reliance on or decisions to be made based on it, is the responsibility of such third parties. Core accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this Document.

Core Consultants Pty Ltd. • T +61 7 5475 5900 • admin@coreconsult.com.au • **www.coreconsult.com.au** • ABN 75 603 384 050
55 Kingsford Smith Parade, Maroochydore, Queensland 4558, Australia • PO Box 5569, Maroochydore BC, QLD 4558