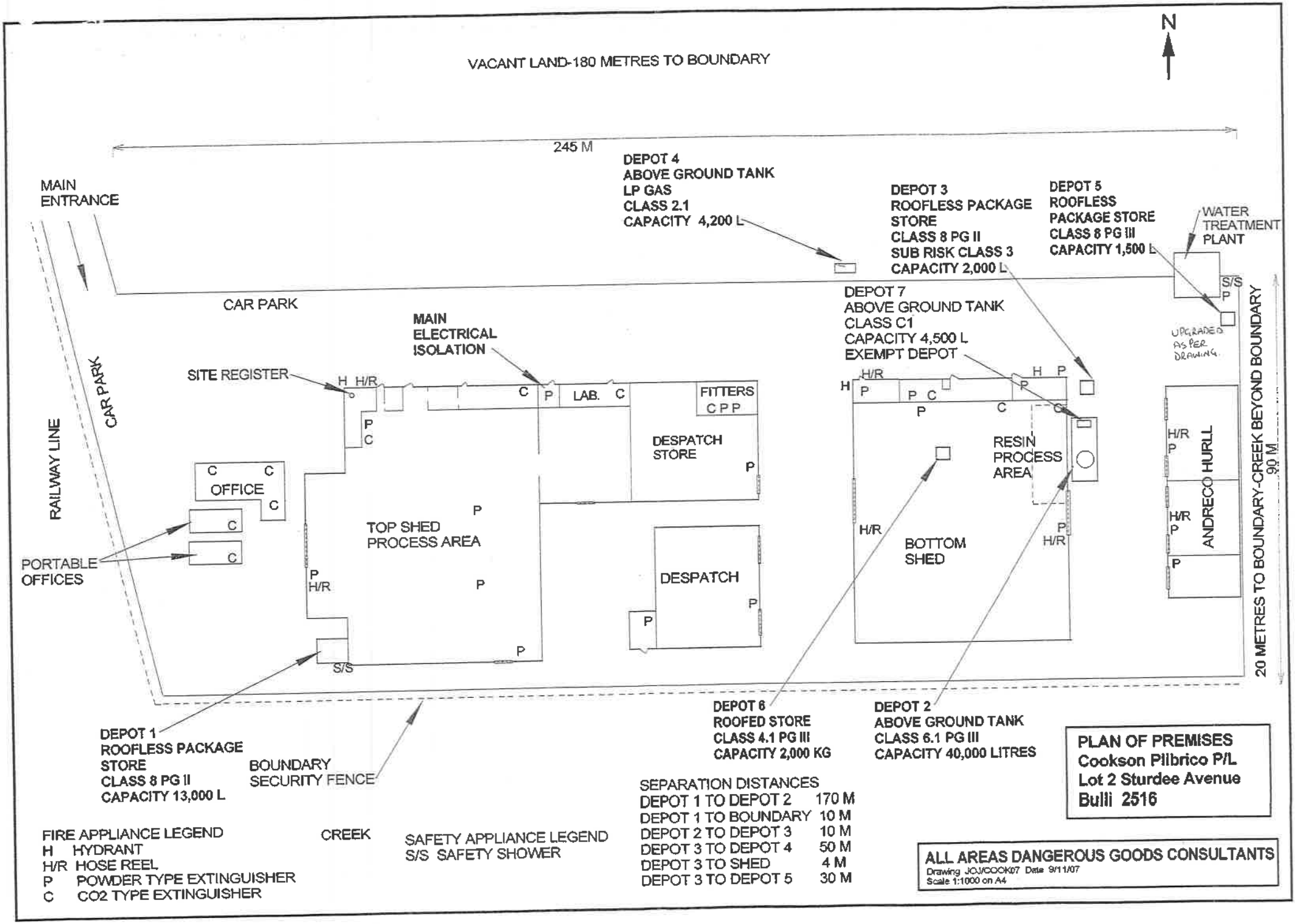
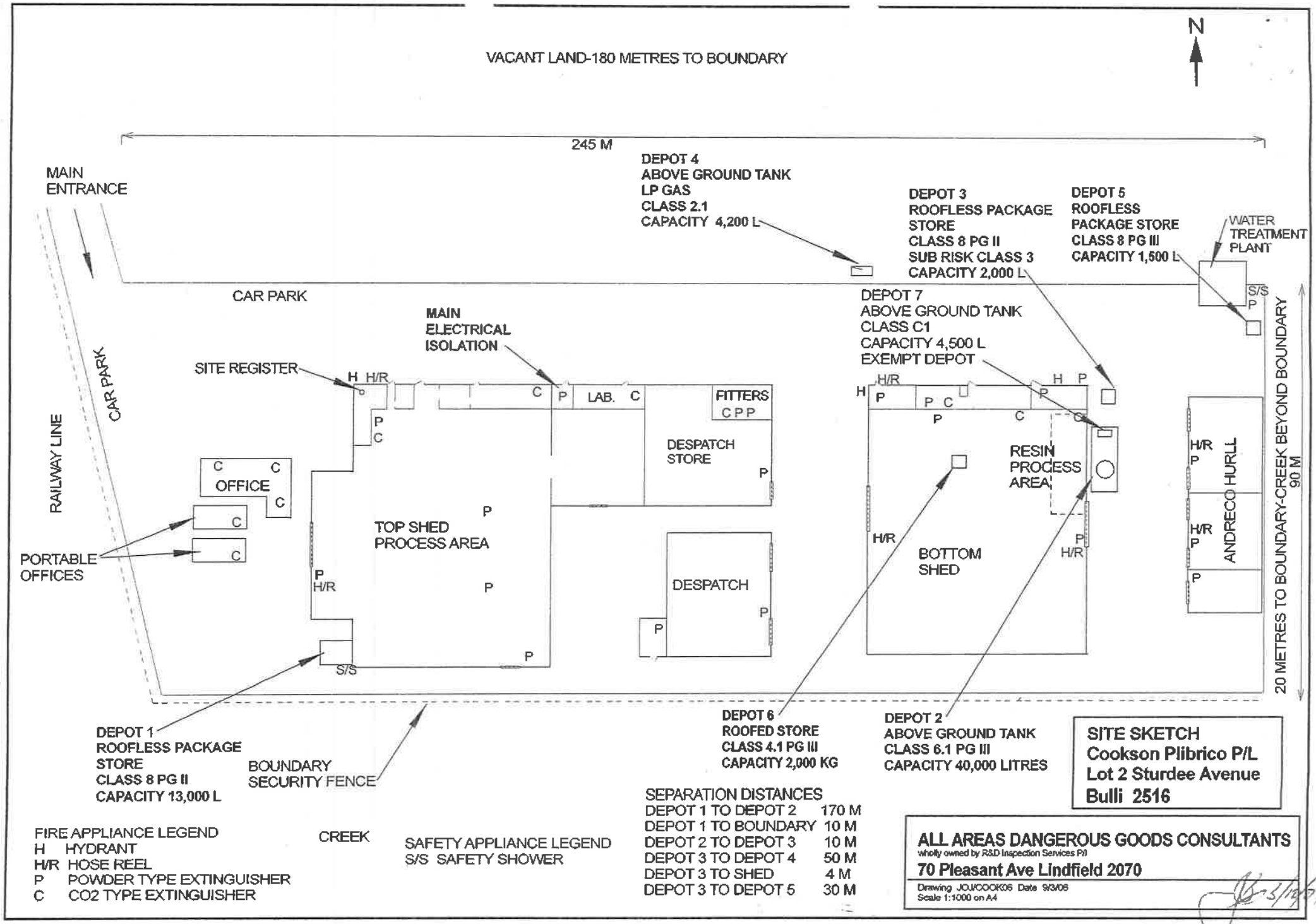

N
VACANT LAND-180 METRES TO BOUNDARY
245 M
MAIN ENTRANCE
DEPOT 4
ABOVE GROUND TANK
LP GAS
CLASS 2.1
CAPACITY 4,200 L
DEPOT 3
ROOFLESS PACKAGE STORE
CLASS 8 PG II
SUB RISK CLASS 3
CAPACITY 2,000 L
DEPOT 5
ROOFLESS PACKAGE STORE
CLASS 8 PG III
CAPACITY 1,500 L
WATER TREATMENT PLANT
S/S
P
CAR PARK
MAIN ELECTRICAL ISOLATION
DEPOT 7
ABOVE GROUND TANK
CLASS C1
CAPACITY 4,500 L
EXEMPT DEPOT
UPGRADED AS PER DRAWING
SITE REGISTER
H H/R
C
P
LAB.
FITTERS
C P P
DESPATCH STORE
P
RAILWAY LINE
CAR PARK
C C
OFFICE
C
C
C
PORTABLE OFFICES
P
C
TOP SHED PROCESS AREA
P
P
H/R
P
S/S
DESPATCH
P
P
P
H/R
P
H
P
P C
P
C
C
RESIN PROCESS AREA
H/R
BOTTOM SHED
P
H/R
H/R
P
ANDRECO HURLL
H/R
P
P
20 METRES TO BOUNDARY-CREEK BEYOND BOUNDARY
90 M
DEPOT 1
ROOFLESS PACKAGE STORE
CLASS 8 PG II
CAPACITY 13,000 L
BOUNDARY SECURITY FENCE
DEPOT 6
ROOFED STORE
CLASS 4.1 PG III
CAPACITY 2,000 KG
DEPOT 2
ABOVE GROUND TANK
CLASS 6.1 PG III
CAPACITY 40,000 LITRES
CREEK
SEPARATION DISTANCES
DEPOT 1 TO DEPOT 2 170 M
DEPOT 1 TO BOUNDARY 10 M
DEPOT 2 TO DEPOT 3 10 M
DEPOT 3 TO DEPOT 4 50 M
DEPOT 3 TO SHED 4 M
DEPOT 3 TO DEPOT 5 30 M
FIRE APPLIANCE LEGEND
H HYDRANT
H/R HOSE REEL
P POWDER TYPE EXTINGUISHER
C CO2 TYPE EXTINGUISHER
SAFETY APPLIANCE LEGEND
S/S SAFETY SHOWER
PLAN OF PREMISES
Cookson Pilbrico P/L
Lot 2 Sturdee Avenue
Bulli 2516
ALL AREAS DANGEROUS GOODS CONSULTANTS
Drawing JCJ/COOK07 Date 9/11/07
Scale 1:1000 on A4


N
VACANT LAND-180 METRES TO BOUNDARY
245 M
MAIN ENTRANCE
DEPOT 4
ABOVE GROUND TANK
LP GAS
CLASS 2.1
CAPACITY 4,200 L
DEPOT 3
ROOFLESS PACKAGE STORE
CLASS 8 PG II
SUB RISK CLASS 3
CAPACITY 2,000 L
DEPOT 5
ROOFLESS PACKAGE STORE
CLASS 8 PG III
CAPACITY 1,500 L
WATER TREATMENT PLANT
CAR PARK
MAIN ELECTRICAL ISOLATION
DEPOT 7
ABOVE GROUND TANK
CLASS C1
CAPACITY 4,500 L
EXEMPT DEPOT
SITE REGISTER
RAILWAY LINE
CAR PARK
OFFICE
PORTABLE OFFICES
TOP SHED PROCESS AREA
LAB.
FITTERS
DESPATCH STORE
DESPATCH
RESIN PROCESS AREA
BOTTOM SHED
ANDRECO HURLL
20 METRES TO BOUNDARY-CREEK BEYOND BOUNDARY
90 M
DEPOT 1
ROOFLESS PACKAGE STORE
CLASS 8 PG II
CAPACITY 13,000 L
BOUNDARY SECURITY FENCE
DEPOT 6
ROOFED STORE
CLASS 4.1 PG III
CAPACITY 2,000 KG
DEPOT 2
ABOVE GROUND TANK
CLASS 6.1 PG III
CAPACITY 40,000 LITRES
CREEK
FIRE APPLIANCE LEGEND
H HYDRANT
H/R HOSE REEL
P POWDER TYPE EXTINGUISHER
C CO2 TYPE EXTINGUISHER
SAFETY APPLIANCE LEGEND
S/S SAFETY SHOWER
SEPARATION DISTANCES
DEPOT 1 TO DEPOT 2 170 M
DEPOT 1 TO BOUNDARY 10 M
DEPOT 2 TO DEPOT 3 10 M
DEPOT 3 TO DEPOT 4 50 M
DEPOT 3 TO SHED 4 M
DEPOT 3 TO DEPOT 5 30 M
SITE SKETCH
Cookson Plibrico P/L
Lot 2 Sturdee Avenue
Bulli 2516
ALL AREAS DANGEROUS GOODS CONSULTANTS
wholly owned by R3D Inspection Services P/l
70 Pleasant Ave Lindfield 2070
Drawing JOJ/COOK06 Date 9/3/06
Scale 1:1000 on A4

Quality Endorsed Company
AS 3901 Lic No 354
Standards Australia

Cookson Plibrico
A Cookson Group Company

Cookson Plibrico Pty Limited
A.C.N. 003 691 245

Lot 2 Sturdee Avenue, Bulli. N.S.W. 2516
P.O. Box 92, Bulli. N.S.W. 2516

Telephone: (042) 68 1188
Facsimile: (042) 68 1150

March 28 1996

35-017382
15/9/96

Mr P.L. Butt
Chief Inspector of Dangerous Goods
Workcover Authority of NSW
Locked bag 10
Clarence Street
SYDNEY NSW 2000

Dear Sir,

At our premises at Sturdee Ave Bulli we have a 27,780 litre diesel storage tank. It currently has a masonry bund which has a 1 metre separation distance to the adjacent shed.
It is our intention to discontinue to use this tank as diesel storage. To this end we have converted our plant that previously used diesel fuel to natural gas (mid 1995) and have gradually run down the quantities of diesel held in this tank. At today's date there is 3,500 litres in the tank and it is not being refilled.

We request exemption under Clause 28(i) of the Dangerous Goods Regulation 1978 from the full requirements of AS1940. In particular we require exemption from Clause 5.8.2 (table 5.4).

We ask for this exemption for a period of 6 months in which time we believe we will empty the contents of the tank. A diagram of the site and tank is attached.

Should you have any questions in relation to this please advise.

Yours faithfully,

Paul Kunkler

Paul Kunkler
Financial Controller

THE NEW SOUTH WALES GOVERNMENT
Putting people first by managing better

PART A
SCIENTIFIC SERVICES BRANCH
30 AUG 1993
DANGEROUS GOODS

WorkCover Authority

LICENCE TO KEEP DANGEROUS GOODS

(Dangerous Goods Act 1975)

Application for new licence, amendment or transfer

A/C >10x Exemption Amounts & Class 2 CSD 22.7

1. Name of applicant — ACN
   Jackson Plastics Pty Limited | 003 691 245
2. Site to be licensed
   No: 1 | Street: Sturdee Avenue
   Suburb/Town: Bulli | Postcode: 2516
3. Previous licence number (if known): 35 · 017387
4. Nature of site: Manufacturing
5. Emergency contact on site:
   Phone: 042 681188 | Name: Nick 210 GAS
6. Site staffing: Hours per day: 8 | Days per week: 5
7. Major supplier of dangerous goods: KLGAS, Genkem, Albright & Wilson
8. If new site or significant modification
   Plan stamped by: Accredited consultant's name: N/A | Date stamped: N/A
9. Number of dangerous goods depots at site: 3
10. Trading name or occupier's name
    Jackson Plastics Pty Limited
11. Postal address of applicant
    P.O. Box 92 | Suburb/Town: Bulli | Postcode: 2516
12. Contact for licence enquiries:
    Phone: 042 681188 | Fax: 042 681150 | Name: Nick 210 GAS

I certify that the details contained in this application (or the accompanying computer disk) are true and correct

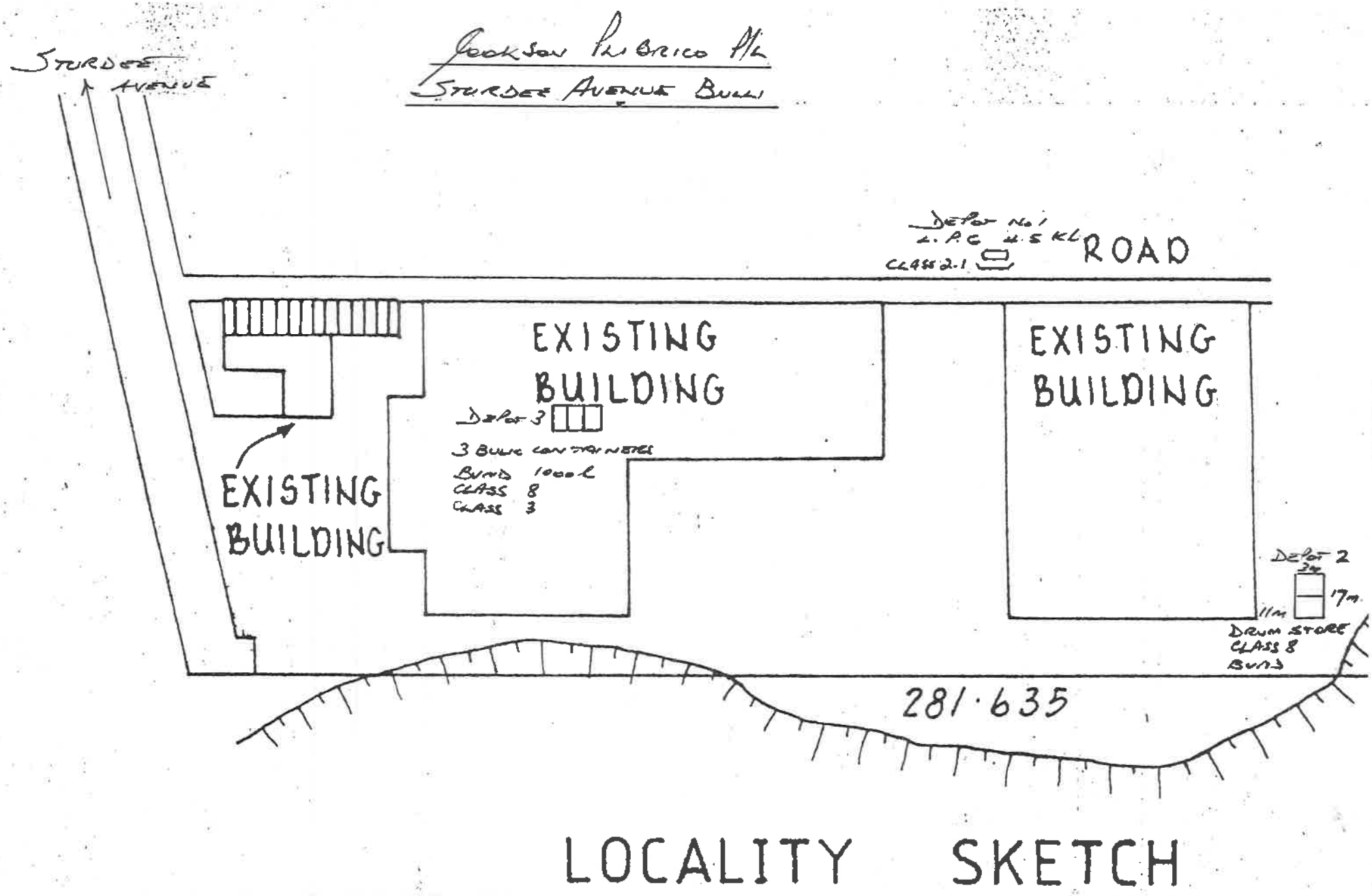
13. Signature of applicant: [signature] | Date: 17.8.93

Please complete attached site sketch, depot listing and check sheet (if required) and return to WorkCover Authority in envelope provided.

Form DG1

Site Sketch

Please carefully read the instructions in Part B of the guide before sketching the site.



PART B

PART C

CHEMICAL STORAGE

Complete 1 section per depot

If you have more depots than the space provided, photocopy sufficient sheets first.

Depot number	Type of depot	Class	Licensed maximum storage capacity
1	TANK	2.1	4.5 KL

UN number	Shipping name	Pkg. Class	Pkg. Group	Pkg. EPG	Product or common name	Typical quantity	Unit eg. L, kg, m³
	L. P. G	2.1	N/A	2A2	L. P. G	4.5	KL

Depot number	Type of depot	Class	Licensed maximum storage capacity
2	DRUM STORAGE	8	15,000 L

UN number	Shipping name	Pkg. Class	Pkg. Group	Pkg. EPG	Product or common name	Typical quantity	Unit eg. L, kg, m³
1805	PHOSPHORIC ACID	8	3	8A1	PHOSPHORIC ACID	5000	L.
1760	ALUMINIUM OXIDE PHOSPHATE	8	3	8A1	ALUMINIUM OXIDE PHOSPHATE	10 000	L

Depot number	Type of depot	Class	Licensed maximum storage capacity

UN number	Shipping name	Pkg. Class	Pkg. Group	Pkg. EPG	Product or common name	Typical quantity	Unit eg. L, kg, m³

Depot number	Type of depot	Class	Licensed maximum storage capacity

UN number	Shipping name	Pkg. Class	Pkg. Group	Pkg. EPG	Product or common name	Typical quantity	Unit eg. L, kg, m³

Complete 1 section per depot

If you have more depots than the space provided, photocopy sufficient sheets first.

Depot number	Type of depot	Class	Licensed maximum storage capacity
3	Production Bulk Storage	8 & 3	N/A

UN number	Shipping name	Pkg. Class	Pkg. Group	Pkg. EPG	Product or common name	Typical quantity	Unit eg. L, kg, m³
1805	Phosphoric Acid	8	3	8A1	Phosphoric Acid	1000	L
1760	Aluminium ortho Phosphate	8	3	8A1	Aluminium ortho Phosphate	1000	L
1866	Phenol - Formalde 4435 Resin	3	3	3A1	Resinox IN 1438	1000	L

Depot number	Type of depot	Class	Licensed maximum storage capacity

UN number	Shipping name	Pkg. Class	Pkg. Group	Pkg. EPG	Product or common name	Typical quantity	Unit eg. L, kg, m³

PROPOSED 4.5 SDU WITH VAPOUR SERVICE TO LPG BURNER

16ME TO CREEK EDGE

116M TO PROPERTY BOUNDRY (VACANT LAND SWAMP)

SECURITY FENCE

10M

CONCRETE SLAB

SLAB

4.5 KL TANK

TRAFFIC PROTECTION

FORK FILL POINT

3M

11M

KERBED ROADWAY.

WATER

WORKSHOP

HP VAPOURLINE

WORKSHOP.

This plan conforms with the Dangerous Goods Act NSW 1975 and Austr Standard AS 1596 signed for Elgas Limited.

.....Date 19.11.92

This plan conforms with current NSW regulations

Drawing Number

Register Number 539

Installation Details: 4.5 KL SDU

Contractors Authority Number A 2263

Date 19/11/92

Signed

ELGAS

CLIENT: COOKSON PLIBRICO PTY LTD.

ADDRESS: STURDEE AVE

BOLLI

ORIGINATOR: ELGAS WOLLONGONG C.R.CLEAVES

Application is hereby made for —*the transfer of the licence
premises described below.

(*delete whichever is not required)

INSPECTORS FIELD COLLECTION
RECEIPT No. 19855
DATE 11.9.79
AMOUNT 10-00

VERIFIED — 2

9596 12/10/79 038

FEE: $10.00 per Depot

Name of Applicant in full (see over)	Surname ~~THORN~~ Given Names ~~JOHN WILLIAM~~ V.
Trading name or occupier's name (if any)	SOUTH COAST REFRACTORIES. PTY LTD
Postal address	STUDDEE AVENUE BULLI Postcode 2516
Telephone number of applicant	STD Code 042 Number 672055
Address of the premises in or on which the depot or depots are situated (including street number, if any)	SOUTH COAST REFRACTORIES PTY LTD STUDDEE AVENUE BULLI. 2516 Postcode
Nature of premises (see over)	

PLEASE ATTACH ~~SITE~~ PLAN Supplied

Particulars of type of depots and maximum quantities of dangerous goods to be kept at any one time.

Depot number	Type of depot (see over)	Storage capacity	Dangerous goods: Product being stored	Dangerous goods: C & C Office use only
1	ABOVE GROUND TANK	4500 L	LPG. DD	1.100.33
2	✓	4750 L	LPG	1.100.53
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

Name of company supplying flammable liquid (if any) C.I.G. - BOREE 689

Have premises previously been licensed? Yes

If known, state name of previous occupier AMENDMENT ONLY. Licence No. 17387

Signature of applicant John Seeley. Date 20.8.79

For external explosives magazine(s), please fill in side 2.

FOR OFFICE USE ONLY

CERTIFICATE OF INSPECTION

I, Wallace being an Inspector under the Dangerous Goods Act, 1975, do hereby certify that the premises described above do comply with the requirements of the Dangerous Goods Act, 1975, and the Dangerous Goods Regulation with regard to their situation and construction for the keeping of dangerous goods of the nature and in the quantity specified.

Signature of Inspector WAD

Date 11.9.79

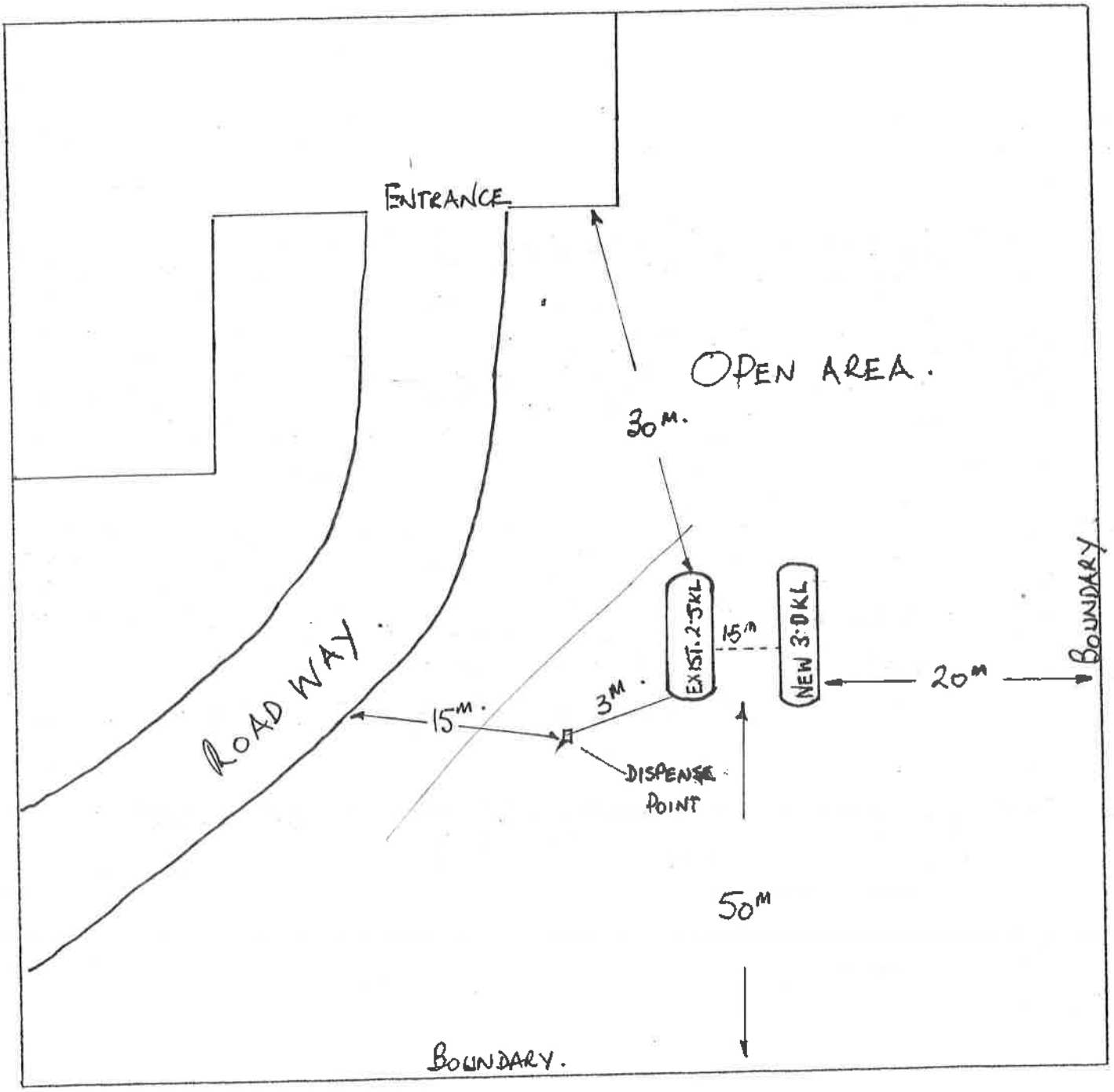
NK SIZE: ADDITIONAL 3·0 KL APPLICATION: FORK LIFT

ALE: N.T.S. REP: DWG:

RAL GAS (NSW) PTY LTD, BURROWS ROAD SOUTH, ST PETERS 2044

TE SKETCH SUBMITTED TO MINES DEPT BY: PETE WILSON DATE: 19.3.79 APPROVED / NOT APPROVED DATE: .....

ROPOSED. ADDITIONAL STORAGE STURDEE. AVE. BULLI.

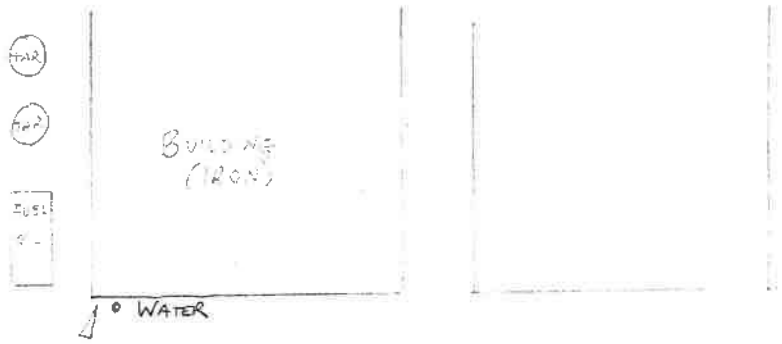


DANGEROUS GOODS BRANCH
PASSED
FOR CHIEF INSPECTOR
23 MAR 1979
SUBJECT TO COMPLIANCE WITH REGULATIONS

including Rule 11

PROPOSED INSTALLATION - 2 TONNE L.P. GAS VESSEL

SOUTH COAST REFRIGERATION LTD.



20'

L.P. GAS

DANGEROUS GOODS BRANCH
PASSED
26/4/79
SUBJECT TO COMPLIANCE WITH REGULATIONS

N

DIRECTIONS

1. Applications must be forwarded to the Chief Inspector of Inflammable Liquid, Explosives Department, Box R.216, Royal Exchange Sydney, N.S.W. 2000 and must be accompanied by the prescribed fee, as set out hereunder:

Registration of Premises (Fee $3.00 p.a.) – For quantities not exceeding 300 gallons of mineral oil and 100 gallons of mineral spirit, if kept together; or 800 gallons of mineral oil and 100 gallons of mineral spirit, if kept separate depots; or 500 gallons of mineral spirit, if kept in an underground tank depot; or 800 gallons of mineral oil and 500 gallons of mineral spirit, if mineral spirit is kept in an underground tank depot.

In addition to, or in lieu of the above, similar quantities of Dangerous Goods of Classes 1 and 2 may be kept under the like conditions; reading Dangerous Goods of Class 1 for the words Mineral Spirit and Dangerous Goods of Class 2 for the words Mineral Oil.

Store License, Div. A (Fee, $6.50 p.a.) – For quantities in excess of those stated above, but not exceeding 4,000 gallons mineral oil and/or mineral spirit, and/or Dangerous Goods of Classes 1, 2 and 9.

Store License, Div. B (Fee, See Regulation 7) – For quantities exceeding 4,000 gallons of mineral spirit, and/or dangerous goods of Classes 1 and 2, and/or dangerous goods of Class 3.
For the keeping of Dangerous Goods of Classes 3 and/or 4. ($15.00 p.a.).

Fees for the keeping of inflammable liquid and dangerous goods in excess of the above stated quantities and also for Liquid Petroleum Gas storage are set out in Regulation 7.

New Store Licence

1. Name of occupier including full christian names. —

2. Trading Name (if any) — South Coast Refreshments Pty

3. Locality of the premises in which the depot or depots are situated — No. or Name —
Street — 12 Nordic Ave
Town — Bulli

4. Postal address — Postcode 2516

5. Occupation —

6. Nature of premises (dwelling, garage etc.) — Factory

7. Particulars of construction of depots and maximum quantities of inflammable liquid and/or Dangerous Goods to be kept at any one time.

PLEASE ATTACH PLAN OF PREMISES

Depot No.	Construction of depots*			Inflammable liquid		Dangerous goods					
	Walls	Roof	Floor	Mineral spirit gallons	Mineral oil gallons	Class 1 gallons	Class 2 gallons	Class 3 lb	Class 4 cu ft	Class 5A water gal	Class 9 gallons
1	Aboveground		tank							500	
2											
3											
4											
5											
6											
7								PUBLIC REVENUE A/C.			
8								CHQ.		$ 6.50.	
9										3/2/71	
10								(Date) Receipt No.			6219

* If product is kept in tanks describe depots as underground or aboveground tanks.

Signature of applicant —

Date of application 22-1-1971

CERTIFICATE OF INSPECTION

I, Eric Olsen being an Inspector under the Inflammable Liquid Act, 1915 (as amended), do hereby certify that the premises or store herein referred to and described is suitable with regard to its situation and construction for the safe keeping of inflammable liquid and/or dangerous goods in quantity and nature specified.

Place Sydney 27/1/71. Signature of Inspector E Olsen

ME 35

INSPECTION RECORD

Licence No. A 17387

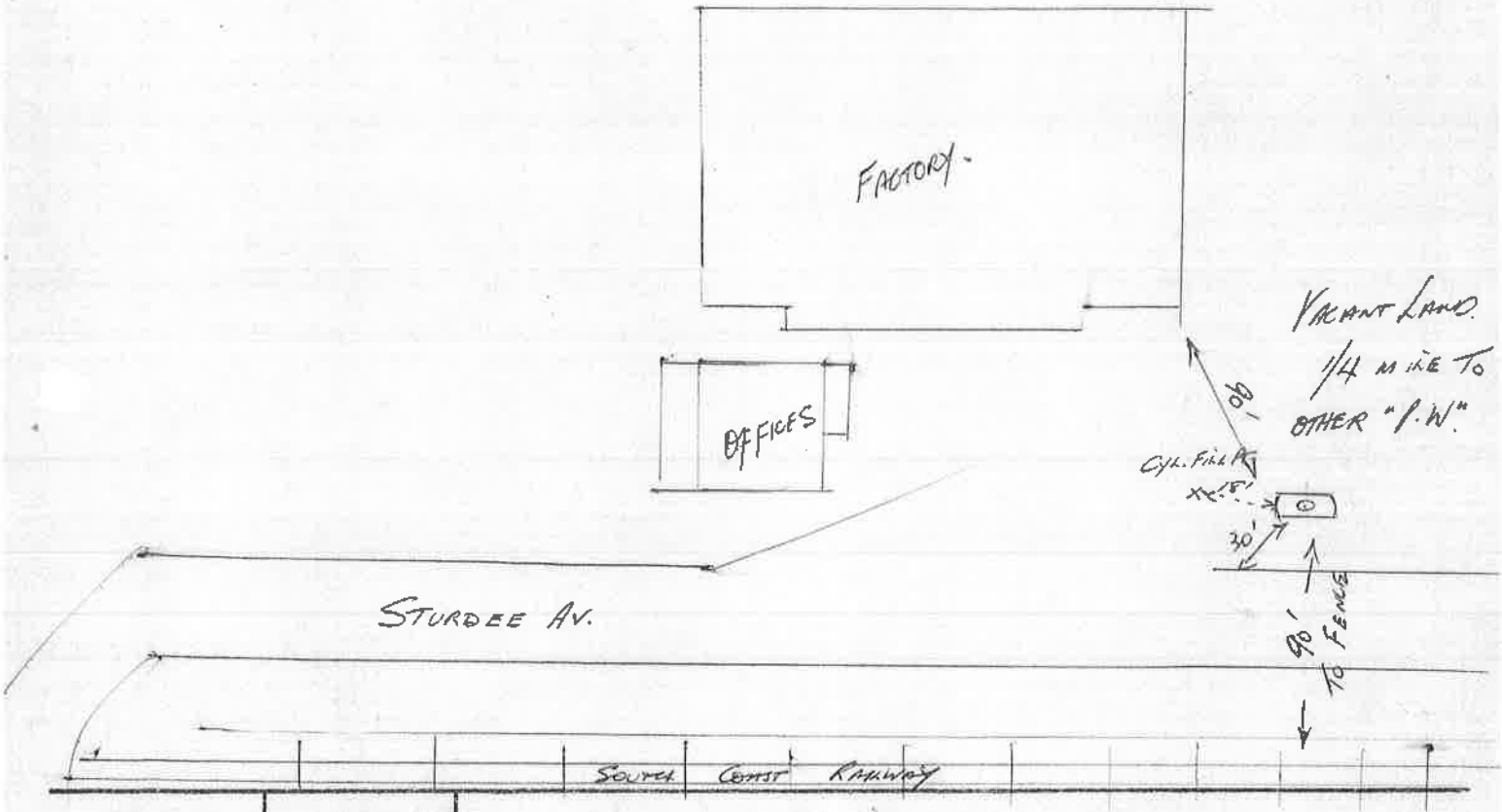
Licensee: South Coast Refractories Ltd

Address: Sturdee Av. Burnt.

Storage licensed: 1/500 U/G Tank. D.6.SA

Specific-Cons.

Sketch of Premises (Dimensions of depot and distance of same from adjoining "protected works" to be shown).



Inspected	Initials	Requisitions made or state of depot
10/8/71.	WDS	Satisfactory.

Appendix B: Borehole Logs

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

EIS

Borehole No. **1** **1/1**

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Client: ANGLICAN RETIREMENT VILLAGES

Project: PROPOSED RETIREMENT VILLAGE DEVELOPMENT

Location: GERAGHTY STREET, BULLI, NSW,

Job No. E25232KH **Method:** SPIRAL AUGER JK250 **R.L. Surface:** N/A

Date: 10-2-15 **Datum:**

Logged/Checked by: G.F./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPL -ETION						0			CONCRETE: 150mm.t.				
								-	FILL: Silty clay, high plasticity, grey and brown, trace of fine to medium grained sand.	MC>PL			POSSIBLY NATURAL
					N = 12 2,6,6			CH	SILTY CLAY: high plasticity, grey, trace of root fibres.	MC>PL			
						1			SILTY CLAY: high plasticity, light grey mottled red brown, trace fine to medium grained ironstone gravel.				
						2							
						3							
						4							
								-	SANDSTONE: light grey and orange brown.				Monitoring Well Installed to 6m, Class 18 50mm dia.Machine slotted PVC from 6m to 3m, Casing from 3m to surface, 2mm sand filter pack from 6m to 1m, Bentonite seal from 1m to 0.1m, Backfilled with sand (and/or cuttings) to surface and completed with a steel gatic cover and lockable cap.
						5							
						6			END OF BOREHOLE AT 6.0m				
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **2** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: ANGLICAN RETIREMENT VILLAGES

Project: PROPOSED RETIREMENT VILLAGE DEVELOPMENT

Location: GERAGHTY STREET, BULLI, NSW,

Job No. E25232KH **Method:** SPIRAL AUGER JK250 **R.L. Surface:** N/A

Date: 10-2-15 **Datum:**

Logged/Checked by: G.F./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPL -ETION	■		■			0			FILL: silty clay, medium plasticity, dark brown, trace root fibres and fine to medium grained ironstone gravel.	MC>PL			GRASS COVER
								CH	SILTY CLAY: high plasticity, brown, trace root fibres.	MC>PL			
	■				N = 6 4,3,3	1							
	■								SILTY CLAY: high plasticity, light grey and orange brown.				
									END OF BOREHOLE AT 1.50m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **3** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: ANGLICAN RETIREMENT VILLAGES

Project: PROPOSED RETIREMENT VILLAGE DEVELOPMENT

Location: GERAGHTY STREET, BULLI, NSW,

Job No. E25232KH **Method:** SPIRAL AUGER JK250 **R.L. Surface:** N/A

Date: 10-2-15 **Datum:**

Logged/Checked by: G.F./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPL -ETION	■		■			0		CL	SILTY CLAY: medium plasticity, dark brown, trace root fibres.	MC>PL			GRASS COVER POSSIBLY FILL
	■				N = 11 5,5,6			CL-CH	SILTY CLAY: medium to high plasticity, grey brown, trace root fibres, fine to medium grained ironstone gravel and ash.				
	■					1		CL	SANDY SILTY CLAY: medium plasticity, light grey mottled red brown.				
									END OF BOREHOLE AT 1.5m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **4** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: ANGLICAN RETIREMENT VILLAGES

Project: PROPOSED RETIREMENT VILLAGE DEVELOPMENT

Location: GERAGHTY STREET, BULLI, NSW,

Job No. E25232KH **Method:** SPIRAL AUGER JK250 **R.L. Surface:** N/A

Date: 10-2-15 **Datum:**

Logged/Checked by: G.F./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPL -ETION	■		■			0			FILL: Gravelly sandy clay, low plasticity, fine to medium grained igneous and concrete gravel, brown.	MC<PL			
								CH		MC≈PL			
	■				N = 12 6,6,6				SILTY CLAY: high plasticity, brown, trace ash and root fibres.				
						1							
	■							-	SHALE: grey.				
									END OF BOREHOLE AT 1.50m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **5** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: ANGLICAN RETIREMENT VILLAGES

Project: PROPOSED RETIREMENT VILLAGE DEVELOPMENT

Location: GERAGHTY STREET, BULLI, NSW,

Job No. E25232KH **Method:** SPIRAL AUGER JK250 AND HAND AUGER **R.L. Surface:** N/A

Date: 3-2-15 & 11-2-15 **Datum:**

Logged/Checked by: G.F./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPL -ETION	■		■			0			CONCRETE: 100mm.t.				
								-	FILL: Silty clay, low plasticity, brown, trace root fibres, ash and fine to medium grained ironstone and sandstone gravel.	MC<PL			
					N =SPT 3/0mm REFUSAL			-	SANDSTONE: fine to medium grained, orange brown.				
						1			END OF BOREHOLE AT 0.5m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **6** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: ANGLICAN RETIREMENT VILLAGES

Project: PROPOSED RETIREMENT VILLAGE DEVELOPMENT

Location: GERAGHTY STREET, BULLI, NSW,

Job No. E25232KH **Method:** SPIRAL AUGER JK250 AND HAND AUGER **R.L. Surface:** N/A

Date: 3-2-15 & 11-2-15 **Datum:**

Logged/Checked by: G.F./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPL -ETION	■		■			0			FILL: Silty clay, low plasticity, brown, trace fine to medium grained ironstone and sandstone gravel and root fibres.	MC<PL			
	■				N = 7 2,3,4			CH	SILTY CLAY: high plasticity, light brown and orange brown.	MC>PL			
						1			END OF BOREHOLE AT 0.96m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **7** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: ANGLICAN RETIREMENT VILLAGES

Project: PROPOSED RETIREMENT VILLAGE DEVELOPMENT

Location: GERAGHTY STREET, BULLI, NSW,

Job No. E25232KH **Method:** HAND AUGER AND SPIRAL AUGER JK250 **R.L. Surface:** N/A

Date: 2-2-15 & 11-2-15 **Datum:**

Logged/Checked by: G.F./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPL -ETION	■		■			0			FILL: Silty clay, medium plasticity, dark brown, trace root fibres and fine to medium grained ironstone gravel.	MC≈PL			GRASS COVER
	■		■		N = 7 3,3,4				FILL: Silty clay, high plasticity, brown, trace fine to medium grained sandstone gravel and root fibres.				POSSIBLY NATURAL
						1							
	■							CH	SILTY CLAY: high plasticity, grey mottled red brown.	MC>PL			
									END OF BOREHOLE AT 1.50m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **8** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: ANGLICAN RETIREMENT VILLAGES

Project: PROPOSED RETIREMENT VILLAGE DEVELOPMENT

Location: GERAGHTY STREET, BULLI, NSW,

Job No. E25232KH **Method:** HAND AUGER AND SPIRAL AUGER JK250 **R.L. Surface:** N/A

Date: 3-2-15 & 11-2-15 **Datum:**

Logged/Checked by: G.F./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPL -ETION	■		■			0			FILL: Gravelly sity clay, low plasticity, brown, fine to medium grained igneous, brick, concrete and ironstone gravel, trace root fibres and slag.	MC<PL			GRASS COVER
	■				N = 6 2,2,4			CL	FILL: Sandy silty clay, low plasticity, dark brown, trace root fibres, ash and fine grained ironstone gravel.	MC>PL			
						1		CL-CH	SILTY CLAY: medium plasticity, light brown, trace root fibres, ash and fine grained sand.				
									SILTY CLAY: medium to high plasticity, red/brown and orange brown.				
						2			END OF BOREHOLE AT 1.50m				
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **9** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: ANGLICAN RETIREMENT VILLAGES

Project: PROPOSED RETIREMENT VILLAGE DEVELOPMENT

Location: GERAGHTY STREET, BULLI, NSW,

Job No. E25232KH **Method:** SPIRAL AUGER JK250 **R.L. Surface:** N/A

Date: 10-2-15 **Datum:**

Logged/Checked by: G.F./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPL -ETION	■		■			0			FILL: silty clay, medium plasticity, dark brown, trace root fibres and fine to medium grained sandstone and ironstone gravel.	MC>PL			GRASS COVER
								CH		MC>PL			
	■				N = 6 4,3,3				SILTY CLAY: high plasticity, brown, trace root fibres.				
						1			SILTY CLAY: high plasticity, red brown and light brown.				
	■								END OF BOREHOLE AT 1.50m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **10** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: ANGLICAN RETIREMENT VILLAGES

Project: PROPOSED RETIREMENT VILLAGE DEVELOPMENT

Location: GERAGHTY STREET, BULLI, NSW,

Job No. E25232KH **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 11-2-15 **Datum:**

Logged/Checked by: G.F./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPL -ETION	■					0		CL-CH	SILTY CLAY: medium to high plasticity, light grey mottled red brown.	MC<PL			
									END OF BOREHOLE AT 0.3m				HAND AUGER REFUSAL
						1							
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **11** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: ANGLICAN RETIREMENT VILLAGES

Project: PROPOSED RETIREMENT VILLAGE DEVELOPMENT

Location: GERAGHTY STREET, BULLI, NSW,

Job No. E25232KH **Method:** SPIRAL AUGER JK250 AND HAND AUGER **R.L. Surface:** N/A

Date: 4-2-15 & 11-2-15 **Datum:**

Logged/Checked by: G.F./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	■					0			FILL: Silty clay, medium plasticity, brown, trace roots and fine to medium grained ironstone gravel.	MC≈PL			GRASS COVER
▼ OM COMPL -ETION	■		■		N = 6 3,2,4	1		CH	SILTY CLAY: high plasticity, light brown and red brown.				
									END OF BOREHOLE AT 1.50m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **12** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: ANGLICAN RETIREMENT VILLAGES

Project: PROPOSED RETIREMENT VILLAGE DEVELOPMENT

Location: GERAGHTY STREET, BULLI, NSW,

Job No. E25232KH **Method:** SPIRAL AUGER JK250 AND HAND AUGER **R.L. Surface:** N/A

Date: 3-2-15 AND 11-2-15 **Datum:**

Logged/Checked by: G.F./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPL -ETION	■		■			0			FILL: Silty clay, low to medium plasticity, dark brown, trace roots and fine to medium grained ironstone gravel.	MC≈PL			GRASS COVER
								CH		MC>PL			
	■				N = 7 2,4,3				SILTY CLAY: high plasticity, light brown and orange brown.				
						1			SILTY CLAY: high plasticity, light grey mottled orange brown.				
									END OF BOREHOLE AT 1.50m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **13** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: ANGLICAN RETIREMENT VILLAGES

Project: PROPOSED RETIREMENT VILLAGE DEVELOPMENT

Location: GERAGHTY STREET, BULLI, NSW,

Job No. E25232KH **Method:** SPIRAL AUGER JK250 AND HAND AUGER **R.L. Surface:** N/A

Date: 3-2-15 & 10-2-15 **Datum:**

Logged/Checked by: G.F./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	■		■			0			FILL: Sandy silty clay: low plasticity, dark brown, trace fine to coarse grained sandstone gravel and roots.	MC<PL			GRASS COVER
	■				N = 6 3,3,3	1		CH	SILTY CLAY: high plasticity, orange brown and light brown, trace of ash, root fibres and fine to medium grained sand.	MC>PL			
								CL	SANDY SILTY CLAY: medium plasticity, light grey mottled orange brown, trace fine to medium grained ironstone gravel.				
	■				N = 8 4,4,4	2							
						3		CH	SILTY CLAY: high plasticity, light grey mottled red brown and light brown.				
▶						4							Monitoring Well Installed to 6m, Class 18 50mm dia. Machine slotted PVC from 6m to 3m, Casing from 3m to surface, 2mm sand filter pack from 6m to 1m, Bentonite seal from 1m to 0.1m, Backfilled with sand (and/or cuttings) to surface and completed with a steel gatic cover and lockable cap.
						5							
						6			END OF BOREHOLE AT 6.0m				
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **14** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: ANGLICAN RETIREMENT VILLAGES

Project: PROPOSED RETIREMENT VILLAGE DEVELOPMENT

Location: GERAGHTY STREET, BULLI, NSW,

Job No. E25232KH **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 11-2-15 **Datum:**

Logged/Checked by: G.F./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPL -ETION	■		■			0			FILL: Silty clay, low plasticity, dark brown, trace glass, root fibres and fine to medium grained ironstone gravel.	MC≈PL			GRASS COVER
	■							CH	SILTY CLAY: high plasticity, light brown and brown, trace fine to medium grained ironstone gravel.	MC>PL			
									END OF BOREHOLE AT 0.6M				HAND AUGER REFUSAL
						1							
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **15** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: ANGLICAN RETIREMENT VILLAGES

Project: PROPOSED RETIREMENT VILLAGE DEVELOPMENT

Location: GERAGHTY STREET, BULLI, NSW,

Job No. E25232KH **Method:** SPIRAL AUGER JK250 AND HAND AUGER **R.L. Surface:** N/A

Date: 4-2-15 AND 10-2-15 **Datum:**

Logged/Checked by: G.F./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPL -ETION	■		■			0		CH	FILL: silty clay, medium plasticity, brown, trace root fibres and fine to medium grained ironstone and sandstone gravel.	MC>PL			GRASS COVER
	■				N = 6 2,3,3				SILTY CLAY: high plasticity, light brown and ornage brown, trace root fibres.	MC>PL			
						1			SILTY CLAY: high plasticity, light grey mottled red brown, trace fine to medium grained ironstone gravel.				
						2							
						3							
						4							Monitoring Well Installed to 5.5m, Class 18 50mm dia. Machine slotted PVC from 5.5m to 2.5m, Casing from 2.5m to surface, 2mm sand filter pack from 5.5m to 1m, Bentonite seal from 1m to 0.1m, Backfilled with sand (and/or cuttings) to surface and completed with a steel gatic cover and lockable cap.
						5							
						6			END OF BOREHOLE AT 5.5m				
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **16** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: ANGLICAN RETIREMENT VILLAGES

Project: PROPOSED RETIREMENT VILLAGE DEVELOPMENT

Location: GERAGHTY STREET, BULLI, NSW,

Job No. E25232KH **Method:** SPIRAL AUGER JK250 AND HAND AUGER **R.L. Surface:** N/A

Date: 3-2-15 & 11-2-15 **Datum:**

Logged/Checked by: G.F./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPL -ETION	■		■			0			FILL: Silty clay, low plasticity, dark brown, trace roots, ash and fine to medium grained sandstone and ironstone gravel.				GRASS COVER
								CH		MC>PL			
	■				N = 11 5,5,6				SILTY CLAY: high plasticity, brown, trace root fibres and fine to medium grained ironstone gravel.				
						1							
									END OF BOREHOLE AT 1.50m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **17** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: ANGLICAN RETIREMENT VILLAGES

Project: PROPOSED RETIREMENT VILLAGE DEVELOPMENT

Location: GERAGHTY STREET, BULLI, NSW,

Job No. E25232KH **Method:** SPIRAL AUGER JK250 AND HAND AUGER **R.L. Surface:** N/A

Date: 3-2-15 AND 11-2-15 **Datum:**

Logged/Checked by: G.F./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPL -ETION	■		■			0			FILL: Sandy silty clay, low plasticity, dark brown, trace roots and fine to coarse grained sandstone gravel.	MC≈PL			GRASS COVER
								CH	SILTY CLAY: high plasticity, light brown and orange brown, trace of roots.				
	■				N = 7 3,3,4	1							
									END OF BOREHOLE AT 1.50m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **18** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: ANGLICAN RETIREMENT VILLAGES

Project: PROPOSED RETIREMENT VILLAGE DEVELOPMENT

Location: GERAGHTY STREET, BULLI, NSW,

Job No. E25232KH **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 4-2-12 **Datum:**

Logged/Checked by: G.F./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPL -ETION	■		■			0			FILL: Gravelly silty clay, low plasticity, brown and dark grey, fine to coarse grained igneous, trace of root fibres and ash.	MC≈PL			GRASS COVER
									END OF BOREHOLE AT 0.2m				HAND AUGER REFUSAL
						1							
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **19** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: ANGLICAN RETIREMENT VILLAGES

Project: PROPOSED RETIREMENT VILLAGE DEVELOPMENT

Location: GERAGHTY STREET, BULLI, NSW,

Job No. E25232KH **Method:** SPIRAL AUGER JK250 AND HAND AUGER **R.L. Surface:** N/A

Date: 4-2-12 **Datum:**

Logged/Checked by: G.F./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPL -ETION	■		■			0			FILL: Silty clay, high plasticity, dark brown, trace root fibres, fine to medium grained ironstone and sandstone gravel and ash.	MC>PL			GRASS COVER
	■							CH	SILTY CLAY: high plasticity, brown.	MC>PL			
						1			END OF BOREHOLE AT 1.0m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **20** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: ANGLICAN RETIREMENT VILLAGES

Project: PROPOSED RETIREMENT VILLAGE DEVELOPMENT

Location: GERAGHTY STREET, BULLI, NSW,

Job No. E25232KH **Method:** SPIRAL AUGER JK250 AND HAND AUGER **R.L. Surface:** N/A

Date: 4-2-15 **Datum:**

Logged/Checked by: G.F./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPL -ETION	■		■			0			FILL: Silty clay, medium plasticity, dark brown, with root fibres, trace fine to medium grained sandstone and ironstone gravel.	MC≈PL			GRASS COVER
	■				N = 7 3,3,4			CH	SILTY CLAY: high plasticity, light brown and orange brown.				
						1							
									END OF BOREHOLE AT 1.50m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **21** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: ANGLICAN RETIREMENT VILLAGES

Project: PROPOSED RETIREMENT VILLAGE DEVELOPMENT

Location: GERAGHTY STREET, BULLI, NSW,

Job No. E25232KH **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 4-2-15 **Datum:**

Logged/Checked by: G.F./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPL -ETION	■		■			0			FILL: Silty clay, medium to high plasticity, orange brown.	MC≈PL			GRASS COVER
									FILL: Clayey silty gravel, fine to medium grained igneous, ash and slag gravel, dark grey, trace fine to medium grained shale gravel.	D			HAND AUGER REFUSAL
									END OF BOREHOLE AT 0.25m				
						1							
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL LOGS EXPLANATORY NOTES

INTRODUCTION

These notes have been provided to amplify the environmental report in regard to classification methods, field procedures and certain matters relating to the logging of soil and rock. Not all notes are necessarily relevant to all reports.

Where geotechnical borehole logs are utilised for environmental purpose, reference should also be made to the explanatory notes included in the geotechnical report. Environmental logs are not suitable for geotechnical purposes.

The ground is a product of continuing natural and man-made processes and therefore exhibits a variety of characteristics and properties which vary from place to place and can change with time. Environmental studies include gathering and assimilating limited facts about these characteristics and properties in order to understand or predict the behaviour of the ground on a particular site under certain conditions. This report may contain such facts obtained by inspection, excavation, probing, sampling, testing or other means of investigation. If so, they are directly relevant only to the ground at the place where and time when the investigation was carried out.

DESCRIPTION AND CLASSIFICATION METHODS

The methods of description and classification of soils and rocks used in this report are based on Australian Standard 1726:2017 *'Geotechnical Site Investigations'*. In general, descriptions cover the following properties – soil or rock type, colour, structure, strength or density, and inclusions. Identification and classification of soil and rock involves judgement and the Company infers accuracy only to the extent that is common in current geoenvironmental practice.

Soil types are described according to the predominating particle size and behaviour as set out in the attached soil classification table qualified by the grading of other particles present (eg. sandy clay) as set out below:

Soil Classification	Particle Size
Clay	< 0.002mm
Silt	0.002 to 0.075mm
Sand	0.075 to 2.36mm
Gravel	2.36 to 63mm
Cobbles	63 to 200mm
Boulders	> 200mm

Non-cohesive soils are classified on the basis of relative density, generally from the results of Standard Penetration Test (SPT) as below:

Relative Density	SPT 'N' Value (blows/300mm)
Very loose (VL)	< 4
Loose (L)	4 to 10
Medium dense (MD)	10 to 30
Dense (D)	30 to 50
Very Dense (VD)	> 50

Cohesive soils are classified on the basis of strength (consistency) either by use of a hand penetrometer, vane shear, laboratory testing and/or tactile engineering examination. The strength terms are defined as follows.

Classification	Unconfined Compressive Strength (kPa)	Indicative Undrained Shear Strength (kPa)
Very Soft (VS)	≤ 25	≤ 12
Soft (S)	> 25 and ≤ 50	> 12 and ≤ 25
Firm (F)	> 50 and ≤ 100	> 25 and ≤ 50
Stiff (St)	> 100 and ≤ 200	> 50 and ≤ 100
Very Stiff (VSt)	> 200 and ≤ 400	> 100 and ≤ 200
Hard (Hd)	> 400	> 200
Friable (Fr)	Strength not attainable – soil crumbles	

Rock types are classified by their geological names, together with descriptive terms regarding weathering, strength, defects, etc. Where relevant, further information regarding rock classification is given in the text of the report. In the Sydney Basin, 'shale' is used to describe fissile mudstone, with a weakness parallel to bedding. Rocks with alternating inter-laminations of different grain size (eg. siltstone/claystone and siltstone/fine grained sandstone) are referred to as 'laminite'.

INVESTIGATION METHODS

The following is a brief summary of investigation methods currently adopted by the Company and some comments on their use and application. All methods except test pits, hand auger drilling and portable Dynamic Cone Penetrometers require the use of a mechanical rig which is commonly mounted on a truck chassis or track base.

Test Pits: These are normally excavated with a backhoe or a tracked excavator, allowing close examination of the insitu soils and 'weaker' bedrock if it is safe to descend into the pit. The depth of penetration is limited to about 3m for a backhoe and up to 6m for a large excavator. Limitations of test pits are the problems associated with disturbance and difficulty of reinstatement and the consequent effects on close-by structures. Care must be taken if construction is to be carried out near test pit locations to either properly recompact the backfill during construction or to design and construct the structure so as not to be adversely affected by poorly compacted backfill at the test pit location.

Hand Auger Drilling: A borehole of 50mm to 100mm diameter is advanced by manually operated equipment. Refusal of the hand auger can occur on a variety of materials such as obstructions within any fill, tree roots, hard clay, gravel or ironstone, cobbles and boulders, and does not necessarily indicate rock level.

Continuous Spiral Flight Augers: The borehole is advanced using 75mm to 115mm diameter continuous spiral flight augers, which are withdrawn at intervals to allow sampling and insitu testing. This is a relatively economical means of drilling in clays and in sands above the water table. Samples are returned to the surface by the flights or may be collected after withdrawal of the auger flights, but they can be very disturbed and layers may become mixed. Information from the auger sampling (as distinct from specific sampling by SPTs or undisturbed samples) is of limited reliability due to mixing or softening of samples by groundwater, or uncertainties as to the original depth of the samples. Augering below the groundwater table is of even lesser reliability than augering above the water table.

Rock Augering: Use can be made of a Tungsten Carbide (TC) bit for auger drilling into rock to indicate rock quality and continuity by variation in drilling resistance and from examination of recovered rock cuttings. This method of investigation is quick and relatively inexpensive but provides only an indication of the likely rock strength and predicted values may be in error by a strength order. Where rock strengths may have a significant impact on construction feasibility or costs, then further investigation by means of cored boreholes may be warranted.

Wash Boring: The borehole is usually advanced by a rotary bit, with water being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be assessed from the cuttings, together with some information from "feel" and rate of penetration.

Mud Stabilised Drilling: Either Wash Boring or Continuous Core Drilling can use drilling mud as a circulating fluid to stabilise the borehole. The term 'mud' encompasses a range of products ranging from bentonite to polymers. The mud tends to mask the cuttings and reliable identification is only possible from intermittent intact sampling (eg. from SPT and U50 samples) or from rock coring, etc.

Continuous Core Drilling: A continuous core sample is obtained using a diamond tipped core barrel. Provided full core recovery is achieved (which is not always possible in very low strength rocks and granular soils), this technique provides a very reliable (but relatively expensive) method of investigation. In rocks, NMLC or HQ triple tube core barrels, which give a core of about 50mm and 61mm diameter, respectively, is usually used with water flush. The length of core recovered is compared to the length drilled and any length not recovered is shown as NO CORE. The location of NO CORE recovery is determined on site by the supervising engineer; where the location is uncertain, the loss is placed at the bottom of the drill run.

Standard Penetration Tests: Standard Penetration Tests (SPT) are used mainly in non-cohesive soils, but can also be used in cohesive soils, as a means of indicating density or strength and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289.6.3.1–2004 (R2016) *'Methods of Testing Soils for Engineering Purposes, Soil Strength and Consolidation Tests – Determination of the Penetration Resistance of a Soil – Standard Penetration Test (SPT)'*.

The test is carried out in a borehole by driving a 50mm diameter split sample tube with a tapered shoe, under the impact of a 63.5kg hammer with a free fall of 760mm. It is normal for the tube to be driven in three successive 150mm increments and the 'N' value is taken as the number of blows for the last 300mm. In dense sands, very hard clays or weak rock, the full 450mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form:

- In the case where full penetration is obtained with successive blow counts for each 150mm of, say, 4, 6 and 7 blows, as

  N = 13
  4, 6, 7

- In a case where the test is discontinued short of full penetration, say after 15 blows for the first 150mm and 30 blows for the next 40mm, as

  N > 30
  15, 30/40mm

The results of the test can be related empirically to the engineering properties of the soil.

A modification to the SPT is where the same driving system is used with a solid 60° tipped steel cone of the same diameter as the SPT hollow sampler. The solid cone can be continuously driven for some distance in soft clays or loose sands, or may be used where damage would otherwise occur to the SPT. The results of this Solid Cone Penetration Test (SCPT) are shown as 'N_c' on the borehole logs, together with the number of blows per 150mm penetration.

LOGS

The borehole or test pit logs presented herein are an interpretation of the subsurface conditions, and their reliability will depend to some extent on the frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will enable the most reliable assessment, but is not always practicable or possible to justify on economic grounds. In any case, the boreholes or test pits represent only a very small sample of the total subsurface conditions.

The terms and symbols used in preparation of the logs are defined in the following pages.

Interpretation of the information shown on the logs, and its application to design and construction, should therefore take into account the spacing of boreholes or test pits, the method of drilling or excavation, the frequency of sampling and testing and the possibility of other than 'straight line' variations between the boreholes or test pits. Subsurface conditions between boreholes or test pits may vary significantly from conditions encountered at the borehole or test pit locations.

GROUNDWATER

Where groundwater levels are measured in boreholes, there are several potential problems:

- Although groundwater may be present, in low permeability soils it may enter the hole slowly or perhaps not at all during the time it is left open.
- A localised perched water table may lead to an erroneous indication of the true water table.
- Water table levels will vary from time to time with seasons or recent weather changes and may not be the same at the time of construction.
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must be washed out of the hole or 'reverted' chemically if reliable water observations are to be made.

More reliable measurements can be made by installing standpipes which are read after the groundwater level has stabilised at intervals ranging from several days to perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from perched water tables or surface water.

FILL

The presence of fill materials can often be determined only by the inclusion of foreign objects (eg. bricks, steel, etc) or by distinctly unusual colour, texture or fabric. Identification of the extent of fill materials will also depend on investigation methods and frequency. Where natural soils similar to those at the site are used for fill, it may be difficult with limited testing and sampling to reliably assess the extent of the fill.

The presence of fill materials is usually regarded with caution as the possible variation in density and material type is much greater than with natural soil deposits. Consequently, there is an increased risk of adverse environmental characteristics or behaviour. If the volume and nature of fill is of importance to a project, then frequent test pit excavations are preferable to boreholes.

LABORATORY TESTING

Laboratory testing has not been undertaken to confirm the soil classification and rock strengths indicated on the environmental logs unless noted in the report.

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SYMBOL LEGENDS

SOIL


FILL


TOPSOIL


CLAY (CL, CI, CH)


SILT (ML, MH)


SAND (SP, SW)


GRAVEL (GP, GW)


SANDY CLAY (CL, CI, CH)


SILTY CLAY (CL, CI, CH)


CLAYEY SAND (SC)


SILTY SAND (SM)


GRAVELLY CLAY (CL, CI, CH)


CLAYEY GRAVEL (GC)


SANDY SILT (ML, MH)


PEAT AND HIGHLY ORGANIC SOILS (Pt)

ROCK


CONGLOMERATE


SANDSTONE


SHALE/MUDSTONE


SILTSTONE


CLAYSTONE


COAL


LAMINITE


LIMESTONE


PHYLLITE, SCHIST


TUFF


GRANITE, GABBRO


DOLERITE, DIORITE


BASALT, ANDESITE


QUARTZITE

OTHER MATERIALS


BRICKS OR PAVERS


CONCRETE


ASPHALTIC CONCRETE

CLASSIFICATION OF COARSE AND FINE GRAINED SOILS

Major Divisions		Group Symbol	Typical Names	Field Classification of Sand and Gravel	Laboratory Classification	
Coarse grained soil (more than 65% of soil excluding oversize fraction is greater than 0.075mm)	GRAVEL (more than half of coarse fraction is larger than 2.36mm	GW	Gravel and gravel-sand mixtures, little or no fines	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	$C_u > 4$ $1 < C_c < 3$
		GP	Gravel and gravel-sand mixtures, little or no fines, uniform gravels	Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	Fails to comply with above
		GM	Gravel-silt mixtures and gravel-sand-silt mixtures	'Dirty' materials with excess of non-plastic fines, zero to medium dry strength	≥ 12% fines, fines are silty	Fines behave as silt
		GC	Gravel-clay mixtures and gravel-sand-clay mixtures	'Dirty' materials with excess of plastic fines, medium to high dry strength	≥ 12% fines, fines are clayey	Fines behave as clay
	SAND (more than half of coarse fraction is smaller than 2.36mm)	SW	Sand and gravel-sand mixtures, little or no fines	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	$C_u > 6$ $1 < C_c < 3$
		SP	Sand and gravel-sand mixtures, little or no fines	Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	Fails to comply with above
		SM	Sand-silt mixtures	'Dirty' materials with excess of non-plastic fines, zero to medium dry strength	≥ 12% fines, fines are silty	N/A
		SC	Sand-clay mixtures	'Dirty' materials with excess of plastic fines, medium to high dry strength	≥ 12% fines, fines are clayey	

Major Divisions		Group Symbol	Typical Names	Field Classification of Silt and Clay			Laboratory Classification
				Dry Strength	Dilatancy	Toughness	% < 0.075mm
ine grained soils (more than 35% of soil excluding oversize fraction is less than 0.075mm)	SILT and CLAY (low to medium plasticity)	ML	Inorganic silt and very fine sand, rock flour, silty or clayey fine sand or silt with low plasticity	None to low	Slow to rapid	Low	Below A line
		CL, CI	Inorganic clay of low to medium plasticity, gravelly clay, sandy clay	Medium to high	None to slow	Medium	Above A line
		OL	Organic silt	Low to medium	Slow	Low	Below A line
	SILT and CLAY (high plasticity)	MH	Inorganic silt	Low to medium	None to slow	Low to medium	Below A line
		CH	Inorganic clay of high plasticity	High to very high	None	High	Above A line
		OH	Organic clay of medium to high plasticity, organic silt	Medium to high	None to very slow	Low to medium	Below A line
	Highly organic soil	Pt	Peat, highly organic soil	–	–	–	–

Laboratory Classification Criteria

A well graded coarse grained soil is one for which the coefficient of uniformity $Cu > 4$ and the coefficient of curvature $1 < C_c < 3$. Otherwise, the soil is poorly graded. These coefficients are given by:

$$C_u = \frac{D_{60}}{D_{10}} \quad \text{and} \quad C_c = \frac{(D_{30})^2}{D_{10}\ D_{60}}$$

Where D_{10}, D_{30} and D_{60} are those grain sizes for which 10%, 30% and 60% of the soil grains, respectively, are smaller.

NOTES:

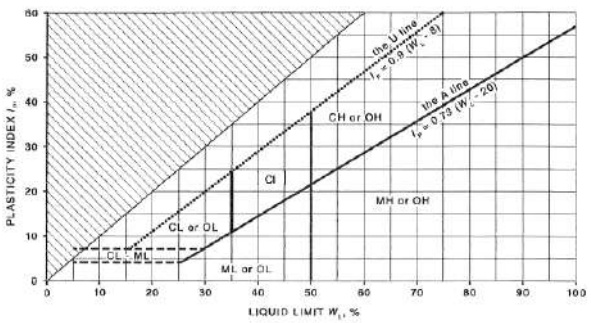
1 For a coarse grained soil with a fines content between 5% and 12%, the soil is given a dual classification comprising the two group symbols separated by a dash; for example, for a poorly graded gravel with between 5% and 12% silt fines, the classification is GP-GM.

2 Where the grading is determined from laboratory tests, it is defined by coefficients of curvature (C_c) and uniformity (C_u) derived from the particle size distribution curve.

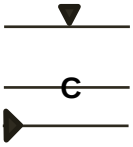
3 Clay soils with liquid limits > 35% and ≤ 50% may be classified as being of medium plasticity.

4 The U line on the Modified Casagrande Chart is an approximate upper bound for most natural soils.

Modified Casagrande Chart for Classifying Silts and Clays according to their Behaviour



LOG SYMBOLS

Log Column	Symbol	Definition
Groundwater Record		Standing water level. Time delay following completion of drilling/excavation may be shown. Extent of borehole/test pit collapse shortly after drilling/excavation. Groundwater seepage into borehole or test pit noted during drilling or excavation.
Samples	ES U50 DB DS ASB ASS SAL	Sample taken over depth indicated, for environmental analysis. Undisturbed 50mm diameter tube sample taken over depth indicated. Bulk disturbed sample taken over depth indicated. Small disturbed bag sample taken over depth indicated. Soil sample taken over depth indicated, for asbestos analysis. Soil sample taken over depth indicated, for acid sulfate soil analysis. Soil sample taken over depth indicated, for salinity analysis.
Field Tests	N = 17 4, 7, 10	Standard Penetration Test (SPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration. 'Refusal' refers to apparent hammer refusal within the corresponding 150mm depth increment.
	N_c = 5 7 3R	Solid Cone Penetration Test (SCPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration for 60° solid cone driven by SPT hammer. 'R' refers to apparent hammer refusal within the corresponding 150mm depth increment.
	VNS = 25 PID = 100	Vane shear reading in kPa of undrained shear strength. Photoionisation detector reading in ppm (soil sample headspace test).
Moisture Condition (Fine Grained Soils)	w > PL $w \approx$ PL w < PL $w \approx$ LL w > LL	Moisture content estimated to be greater than plastic limit. Moisture content estimated to be approximately equal to plastic limit. Moisture content estimated to be less than plastic limit. Moisture content estimated to be near liquid limit. Moisture content estimated to be wet of liquid limit.
(Coarse Grained Soils)	D M W	DRY – runs freely through fingers. MOIST – does not run freely but no free water visible on soil surface. WET – free water visible on soil surface.
Strength (Consistency) Cohesive Soils	VS S F St VSt Hd Fr ( )	VERY SOFT – unconfined compressive strength ≤ 25kPa. SOFT – unconfined compressive strength > 25kPa and ≤ 50kPa. FIRM – unconfined compressive strength > 50kPa and ≤ 100kPa. STIFF – unconfined compressive strength > 100kPa and ≤ 200kPa. VERY STIFF – unconfined compressive strength > 200kPa and ≤ 400kPa. HARD – unconfined compressive strength > 400kPa. FRIABLE – strength not attainable, soil crumbles. Bracketed symbol indicates estimated consistency based on tactile examination or other assessment.
Density Index/ Relative Density (Cohesionless Soils)	VL L MD D VD ( )	**Density Index (I_D) Range (%)** / **SPT 'N' Value Range (Blows/300mm)** VERY LOOSE ≤ 15 — 0 – 4 LOOSE > 15 and ≤ 35 — 4 – 10 MEDIUM DENSE > 35 and ≤ 65 — 10 – 30 DENSE > 65 and ≤ 85 — 30 – 50 VERY DENSE > 85 — > 50 Bracketed symbol indicates estimated density based on ease of drilling or other assessment.
Hand Penetrometer Readings	300 250	Measures reading in kPa of unconfined compressive strength. Numbers indicate individual test results on representative undisturbed material unless noted otherwise.

Log Column	Symbol	Definition
Remarks	'V' bit	Hardened steel 'V' shaped bit.
	'TC' bit	Twin pronged tungsten carbide bit.
	T_{60}	Penetration of auger string in mm under static load of rig applied by drill head hydraulics without rotation of augers.
	Soil Origin	The geological origin of the soil can generally be described as:
		RESIDUAL – soil formed directly from insitu weathering of the underlying rock. No visible structure or fabric of the parent rock.
		EXTREMELY WEATHERED – soil formed directly from insitu weathering of the underlying rock. Material is of soil strength but retains the structure and/or fabric of the parent rock.
		ALLUVIAL – soil deposited by creeks and rivers.
		ESTUARINE – soil deposited in coastal estuaries, including sediments caused by inflowing creeks and rivers, and tidal currents.
		MARINE – soil deposited in a marine environment.
		AEOLIAN – soil carried and deposited by wind.
		COLLUVIAL – soil and rock debris transported downslope by gravity, with or without the assistance of flowing water. Colluvium is usually a thick deposit formed from a landslide. The description 'slopewash' is used for thinner surficial deposits.
		LITTORAL – beach deposited soil.

Classification of Material Weathering

Term		Abbreviation		Definition
Residual Soil		RS		Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported.
Extremely Weathered		XW		Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible.
Highly Weathered	Distinctly Weathered (Note 1)	HW	DW	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.
Moderately Weathered		MW		The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable, but shows little or no change of strength from fresh rock.
Slightly Weathered		SW		Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.
Fresh		FR		Rock shows no sign of decomposition of individual minerals or colour changes.

NOTE 1: The term 'Distinctly Weathered' is used where it is not practicable to distinguish between 'Highly Weathered' and 'Moderately Weathered' rock. 'Distinctly Weathered' is defined as follows: *'Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores'*. There is some change in rock strength.

Rock Material Strength Classification

Term	Abbreviation	Uniaxial Compressive Strength (MPa)	Guide to Strength	
			Point Load Strength Index $Is_{(50)}$ (MPa)	Field Assessment
Very Low Strength	VL	0.6 to 2	0.03 to 0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxial sample by hand. Pieces up to 30mm thick can be broken by finger pressure.
Low Strength	L	2 to 6	0.1 to 0.3	Easily scored with a knife; indentations 1mm to 3mm show in the specimen with firm blows of the pick point; has dull sound under hammer. A piece of core 150mm long by 50mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Medium Strength	M	6 to 20	0.3 to 1	Scored with a knife; a piece of core 150mm long by 50mm diameter can be broken by hand with difficulty.
High Strength	H	20 to 60	1 to 3	A piece of core 150mm long by 50mm diameter cannot be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Very High Strength	VH	60 to 200	3 to 10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
Extremely High Strength	EH	> 200	> 10	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

Appendix C: Laboratory Report/s & COC Documents

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 123151

Client:

Environmental Investigation Services
PO Box 976
North Ryde BC
NSW 1670

Attention: Todd Hore

Sample log in details:

Your Reference:	**E25232KH, Bulli**		
No. of samples:	19 soils		
Date samples received / completed instructions received	06/02/15	/	06/02/15

Analysis Details:

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

Report Details:

Date results requested by: / Issue Date:	13/02/15	/	12/02/15
Date of Preliminary Report:	Not Issued		

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Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with *.**

Results Approved By:

Jacinta Hurst
Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	123151-1	123151-2	123151-3	123151-4	123151-6
Your Reference	----------	BH5	BH6	BH7	BH8	BH11
Depth	----------	0.1-0.3	0-0.1	0-0.1	0-0.1	0-0.2
Date Sampled		03/02/2015	03/02/2015	02/02/2015	02/02/2015	04/02/2015
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/02/2015	09/02/2015	09/02/2015	09/02/2015	09/02/2015
Date analysed	-	11/02/2015	11/02/2015	11/02/2015	11/02/2015	11/02/2015
TRHC6 - C9	mg/kg	<25	<25	<25	<25	<25
TRHC6 - C10	mg/kg	<25	<25	<25	<25	<25
vTPHC6 - C10 less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	102	96	91	60	60

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	123151-7	123151-8	123151-9	123151-10	123151-11
Your Reference	----------	BH12	BH13	BH15	BH16	BH17
Depth	----------	0-0.15	0-0.2	0-0.1	0-0.2	0-0.2
Date Sampled		03/02/2015	03/02/2015	04/02/2015	03/02/2015	03/02/2015
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/02/2015	09/02/2015	09/02/2015	09/02/2015	09/02/2015
Date analysed	-	11/02/2015	11/02/2015	11/02/2015	11/02/2015	11/02/2015
TRHC6 - C9	mg/kg	<25	<25	<25	<25	<25
TRHC6 - C10	mg/kg	<25	<25	<25	<25	<25
vTPHC6 - C10 less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	105	63	117	108	105

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	123151-12	123151-13	123151-14	123151-15	123151-16
Your Reference	----------	BH18	BH19	BH19	BH20	BH21
Depth	----------	0-0.2	0-0.2	0.5-0.8	0-0.2	0-0.1
Date Sampled		04/02/2015	04/02/2015	04/02/2015	04/02/2015	04/02/2015
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/02/2015	09/02/2015	09/02/2015	09/02/2015	09/02/2015
Date analysed	-	11/02/2015	11/02/2015	11/02/2015	11/02/2015	11/02/2015
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	<25
vTPHC$_6$ - C$_{10}$ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	102	98	100	103	94

vTRH(C6-C10)/BTEXN in Soil			
Our Reference:	UNITS	123151-18	123151-19
Your Reference	----------	DUPGFS1	DUPGFS2
Depth	----------	-	-
Date Sampled		04/02/2015	04/02/2015
Type of sample		soil	soil
Date extracted	-	09/02/2015	09/02/2015
Date analysed	-	11/02/2015	11/02/2015
TRHC$_6$ - C$_9$	mg/kg	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25
vTPHC$_6$ - C$_{10}$ less BTEX (F1)	mg/kg	<25	<25
Benzene	mg/kg	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1
m+p-xylene	mg/kg	<2	<2
o-Xylene	mg/kg	<1	<1
naphthalene	mg/kg	<1	<1
Surrogate aaa-Trifluorotoluene	%	102	100

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	123151-1	123151-2	123151-3	123151-4	123151-6
Your Reference	----------	BH5	BH6	BH7	BH8	BH11
Depth	----------	0.1-0.3	0-0.1	0-0.1	0-0.1	0-0.2
Date Sampled		03/02/2015	03/02/2015	02/02/2015	02/02/2015	04/02/2015
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/02/2015	09/02/2015	09/02/2015	09/02/2015	09/02/2015
Date analysed	-	10/02/2015	10/02/2015	10/02/2015	10/02/2015	10/02/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	92	89	86	89	86

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	123151-7	123151-8	123151-9	123151-10	123151-11
Your Reference	----------	BH12	BH13	BH15	BH16	BH17
Depth	----------	0-0.15	0-0.2	0-0.1	0-0.2	0-0.2
Date Sampled		03/02/2015	03/02/2015	04/02/2015	03/02/2015	03/02/2015
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/02/2015	09/02/2015	09/02/2015	09/02/2015	09/02/2015
Date analysed	-	10/02/2015	10/02/2015	10/02/2015	10/02/2015	10/02/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	86	88	88	84	87

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	123151-12	123151-13	123151-14	123151-15	123151-16
Your Reference	----------	BH18	BH19	BH19	BH20	BH21
Depth	----------	0-0.2	0-0.2	0.5-0.8	0-0.2	0-0.1
Date Sampled		04/02/2015	04/02/2015	04/02/2015	04/02/2015	04/02/2015
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/02/2015	09/02/2015	09/02/2015	09/02/2015	09/02/2015
Date analysed	-	10/02/2015	10/02/2015	10/02/2015	10/02/2015	10/02/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	150	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	170	<100	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	280	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	90	87	85	85	89

svTRH (C10-C40) in Soil			
Our Reference:	UNITS	123151-18	123151-19
Your Reference	----------	DUPGFS1	DUPGFS2
Depth	----------	-	-
Date Sampled		04/02/2015	04/02/2015
Type of sample		soil	soil
Date extracted	-	09/02/2015	09/02/2015
Date analysed	-	10/02/2015	10/02/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	160	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	190	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	300	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100
Surrogate o-Terphenyl	%	93	86

PAHs in Soil						
Our Reference:	UNITS	123151-1	123151-2	123151-3	123151-4	123151-6
Your Reference	----------	BH5	BH6	BH7	BH8	BH11
Depth	----------	0.1-0.3	0-0.1	0-0.1	0-0.1	0-0.2
Date Sampled		03/02/2015	03/02/2015	02/02/2015	02/02/2015	04/02/2015
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	9/02/2015	9/02/2015	09/02/2015	09/02/2015	09/02/2015
Date analysed	-	10/02/2015	10/02/2015	11/02/2015	11/02/2015	11/02/2015
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.1	<0.1	2.2	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	0.4	<0.1
Fluoranthene	mg/kg	<0.1	0.4	0.3	3.4	<0.1
Pyrene	mg/kg	<0.1	0.4	0.3	2.8	<0.1
Benzo(a)anthracene	mg/kg	<0.1	0.2	0.1	1.2	<0.1
Chrysene	mg/kg	<0.1	0.2	0.2	1.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.4	0.3	2.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.2	0.2	1.2	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.2	0.1	0.9	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.2	0.1	0.9	<0.1
Benzo(a)pyrene TEQ NEPM B1	mg/kg	<0.5	<0.5	<0.5	1.7	<0.5
Total Positive PAHs	mg/kg	NIL (+)VE	2.3	1.6	17	NIL (+)VE
Surrogate p-Terphenyl-d14	%	119	109	111	113	107

PAHs in Soil						
Our Reference:	UNITS	123151-7	123151-8	123151-9	123151-10	123151-11
Your Reference	----------	BH12	BH13	BH15	BH16	BH17
Depth	----------	0-0.15	0-0.2	0-0.1	0-0.2	0-0.2
Date Sampled		03/02/2015	03/02/2015	04/02/2015	03/02/2015	03/02/2015
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/02/2015	09/02/2015	09/02/2015	09/02/2015	09/02/2015
Date analysed	-	11/02/2015	11/02/2015	11/02/2015	11/02/2015	11/02/2015
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.1	<0.1	0.1	0.1
Pyrene	mg/kg	<0.1	0.1	<0.1	0.1	0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	0.1	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ NEPM B1	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total Positive PAHs	mg/kg	NIL (+)VE	0.20	NIL (+)VE	0.79	0.20
Surrogate p-Terphenyl-d14	%	106	115	112	103	111

PAHs in Soil						
Our Reference:	UNITS	123151-12	123151-13	123151-14	123151-15	123151-16
Your Reference	----------	BH18	BH19	BH19	BH20	BH21
Depth	----------	0-0.2	0-0.2	0.5-0.8	0-0.2	0-0.1
Date Sampled		04/02/2015	04/02/2015	04/02/2015	04/02/2015	04/02/2015
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/02/2015	09/02/2015	09/02/2015	09/02/2015	09/02/2015
Date analysed	-	11/02/2015	11/02/2015	11/02/2015	11/02/2015	11/02/2015
Naphthalene	mg/kg	0.6	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.6	<0.1	<0.1	<0.1	0.7
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.3
Fluoranthene	mg/kg	0.7	<0.1	<0.1	0.3	2.3
Pyrene	mg/kg	0.7	<0.1	<0.1	0.3	2.7
Benzo(a)anthracene	mg/kg	0.6	<0.1	<0.1	0.2	1.8
Chrysene	mg/kg	0.7	<0.1	<0.1	0.2	2.5
Benzo(b,j+k)fluoranthene	mg/kg	2	<0.2	<0.2	0.4	2.9
Benzo(a)pyrene	mg/kg	0.81	<0.05	<0.05	0.2	1.3
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5	<0.1	<0.1	0.1	0.6
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Benzo(g,h,i)perylene	mg/kg	0.5	<0.1	<0.1	0.1	0.5
Benzo(a)pyrene TEQ NEPM B1	mg/kg	1.1	<0.5	<0.5	<0.5	2.0
Total Positive PAHs	mg/kg	7.4	NIL (+)VE	NIL (+)VE	1.9	16
Surrogate p-Terphenyl-d14	%	97	91	110	109	111

PAHs in Soil			
Our Reference:	UNITS	123151-18	123151-19
Your Reference	----------	DUPGFS1	DUPGFS2
Depth	----------	-	-
Date Sampled		04/02/2015	04/02/2015
Type of sample		soil	soil
Date extracted	-	09/02/2015	09/02/2015
Date analysed	-	11/02/2015	11/02/2015
Naphthalene	mg/kg	0.6	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1
Phenanthrene	mg/kg	0.6	<0.1
Anthracene	mg/kg	<0.1	<0.1
Fluoranthene	mg/kg	0.9	0.1
Pyrene	mg/kg	0.9	0.2
Benzo(a)anthracene	mg/kg	0.8	0.1
Chrysene	mg/kg	0.9	0.1
Benzo(b,j+k)fluoranthene	mg/kg	2	0.2
Benzo(a)pyrene	mg/kg	1.0	0.06
Indeno(1,2,3-c,d)pyrene	mg/kg	0.7	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.6	0.1
Benzo(a)pyrene TEQ NEPM B1	mg/kg	1.4	<0.5
Total Positive PAHs	mg/kg	8.9	0.94
Surrogate p-Terphenyl-d14	%	112	109

Organochlorine Pesticides in soil						
Our Reference:	UNITS	123151-1	123151-2	123151-3	123151-4	123151-6
Your Reference	----------	BH5	BH6	BH7	BH8	BH11
Depth	----------	0.1-0.3	0-0.1	0-0.1	0-0.1	0-0.2
Date Sampled		03/02/2015	03/02/2015	02/02/2015	02/02/2015	04/02/2015
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/02/2015	09/02/2015	09/02/2015	09/02/2015	09/02/2015
Date analysed	-	10/02/2015	10/02/2015	10/02/2015	10/02/2015	10/02/2015
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	100	95	88	98	90

Organochlorine Pesticides in soil						
Our Reference:	UNITS	123151-7	123151-8	123151-9	123151-10	123151-11
Your Reference	----------	BH12	BH13	BH15	BH16	BH17
Depth	----------	0-0.15	0-0.2	0-0.1	0-0.2	0-0.2
Date Sampled		03/02/2015	03/02/2015	04/02/2015	03/02/2015	03/02/2015
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/02/2015	09/02/2015	09/02/2015	09/02/2015	09/02/2015
Date analysed	-	10/02/2015	10/02/2015	10/02/2015	10/02/2015	10/02/2015
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	92	95	94	90	94

Organochlorine Pesticides in soil					
Our Reference:	UNITS	123151-12	123151-13	123151-15	123151-16
Your Reference	----------	BH18	BH19	BH20	BH21
Depth	----------	0-0.2	0-0.2	0-0.2	0-0.1
Date Sampled		04/02/2015	04/02/2015	04/02/2015	04/02/2015
Type of sample		soil	soil	soil	soil
Date extracted	-	09/02/2015	09/02/2015	09/02/2015	09/02/2015
Date analysed	-	10/02/2015	10/02/2015	10/02/2015	10/02/2015
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	96	100	87	94

Organophosphorus Pesticides						
Our Reference:	UNITS	123151-1	123151-2	123151-3	123151-4	123151-6
Your Reference	----------	BH5	BH6	BH7	BH8	BH11
Depth	----------	0.1-0.3	0-0.1	0-0.1	0-0.1	0-0.2
Date Sampled		03/02/2015	03/02/2015	02/02/2015	02/02/2015	04/02/2015
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/02/2015	09/02/2015	09/02/2015	09/02/2015	09/02/2015
Date analysed	-	10/02/2015	10/02/2015	10/02/2015	10/02/2015	10/02/2015
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	100	95	88	98	90

Organophosphorus Pesticides						
Our Reference:	UNITS	123151-7	123151-8	123151-9	123151-10	123151-11
Your Reference	----------	BH12	BH13	BH15	BH16	BH17
Depth	----------	0-0.15	0-0.2	0-0.1	0-0.2	0-0.2
Date Sampled		03/02/2015	03/02/2015	04/02/2015	03/02/2015	03/02/2015
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/02/2015	09/02/2015	09/02/2015	09/02/2015	09/02/2015
Date analysed	-	10/02/2015	10/02/2015	10/02/2015	10/02/2015	10/02/2015
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	92	95	94	90	94

Organophosphorus Pesticides					
Our Reference:	UNITS	123151-12	123151-13	123151-15	123151-16
Your Reference	----------	BH18	BH19	BH20	BH21
Depth	----------	0-0.2	0-0.2	0-0.2	0-0.1
Date Sampled		04/02/2015	04/02/2015	04/02/2015	04/02/2015
Type of sample		soil	soil	soil	soil
Date extracted	-	09/02/2015	09/02/2015	09/02/2015	09/02/2015
Date analysed	-	10/02/2015	10/02/2015	10/02/2015	10/02/2015
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	96	100	87	94

PCBs in Soil						
Our Reference:	UNITS	123151-1	123151-2	123151-3	123151-4	123151-6
Your Reference	----------	BH5	BH6	BH7	BH8	BH11
Depth	----------	0.1-0.3	0-0.1	0-0.1	0-0.1	0-0.2
Date Sampled		03/02/2015	03/02/2015	02/02/2015	02/02/2015	04/02/2015
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/02/2015	09/02/2015	09/02/2015	09/02/2015	09/02/2015
Date analysed	-	10/02/2015	10/02/2015	10/02/2015	10/02/2015	10/02/2015
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	100	95	88	98	90

PCBs in Soil						
Our Reference:	UNITS	123151-7	123151-8	123151-9	123151-10	123151-11
Your Reference	----------	BH12	BH13	BH15	BH16	BH17
Depth	----------	0-0.15	0-0.2	0-0.1	0-0.2	0-0.2
Date Sampled		03/02/2015	03/02/2015	04/02/2015	03/02/2015	03/02/2015
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/02/2015	09/02/2015	09/02/2015	09/02/2015	09/02/2015
Date analysed	-	10/02/2015	10/02/2015	10/02/2015	10/02/2015	10/02/2015
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	92	95	94	90	94

PCBs in Soil					
Our Reference:	UNITS	123151-12	123151-13	123151-15	123151-16
Your Reference	----------	BH18	BH19	BH20	BH21
Depth	----------	0-0.2	0-0.2	0-0.2	0-0.1
Date Sampled		04/02/2015	04/02/2015	04/02/2015	04/02/2015
Type of sample		soil	soil	soil	soil
Date extracted	-	09/02/2015	09/02/2015	09/02/2015	09/02/2015
Date analysed	-	10/02/2015	10/02/2015	10/02/2015	10/02/2015
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1
Arochlor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	96	100	78	94

Acid Extractable metals in soil						
Our Reference:	UNITS	123151-1	123151-2	123151-3	123151-4	123151-6
Your Reference	----------	BH5	BH6	BH7	BH8	BH11
Depth	----------	0.1-0.3	0-0.1	0-0.1	0-0.1	0-0.2
Date Sampled		03/02/2015	03/02/2015	02/02/2015	02/02/2015	04/02/2015
Type of sample		soil	soil	soil	soil	soil
Date digested	-	09/02/2015	09/02/2015	09/02/2015	09/02/2015	09/02/2015
Date analysed	-	09/02/2015	09/02/2015	09/02/2015	09/02/2015	09/02/2015
Arsenic	mg/kg	<4	7	9	7	7
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	10	14	18	18	15
Copper	mg/kg	4	22	21	47	6
Lead	mg/kg	18	26	31	26	18
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	3	4	5	10	2
Zinc	mg/kg	31	50	78	75	10

Acid Extractable metals in soil						
Our Reference:	UNITS	123151-7	123151-8	123151-9	123151-10	123151-11
Your Reference	----------	BH12	BH13	BH15	BH16	BH17
Depth	----------	0-0.15	0-0.2	0-0.1	0-0.2	0-0.2
Date Sampled		03/02/2015	03/02/2015	04/02/2015	03/02/2015	03/02/2015
Type of sample		soil	soil	soil	soil	soil
Date digested	-	09/02/2015	09/02/2015	09/02/2015	09/02/2015	09/02/2015
Date analysed	-	09/02/2015	09/02/2015	09/02/2015	09/02/2015	09/02/2015
Arsenic	mg/kg	7	5	8	9	4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	19	29	20	25	26
Copper	mg/kg	8	16	11	12	13
Lead	mg/kg	17	24	98	28	21
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	3	9	3	5	5
Zinc	mg/kg	9	30	67	19	26

Acid Extractable metals in soil						
Our Reference:	UNITS	123151-12	123151-13	123151-14	123151-15	123151-16
Your Reference	----------	BH18	BH19	BH19	BH20	BH21
Depth	----------	0-0.2	0-0.2	0.5-0.8	0-0.2	0-0.1
Date Sampled		04/02/2015	04/02/2015	04/02/2015	04/02/2015	04/02/2015
Type of sample		soil	soil	soil	soil	soil
Date digested	-	09/02/2015	09/02/2015	09/02/2015	09/02/2015	09/02/2015
Date analysed	-	09/02/2015	09/02/2015	09/02/2015	09/02/2015	09/02/2015
Arsenic	mg/kg	63	4	<4	8	<4
Cadmium	mg/kg	0.8	<0.4	<0.4	<0.4	0.6
Chromium	mg/kg	53	23	34	30	70
Copper	mg/kg	120	12	7	16	38
Lead	mg/kg	160	16	13	26	11
Mercury	mg/kg	0.2	<0.1	<0.1	<0.1	0.2
Nickel	mg/kg	18	7	8	6	24
Zinc	mg/kg	230	76	8	27	82

Acid Extractable metals in soil			
Our Reference:	UNITS	123151-18	123151-19
Your Reference	----------	DUPGFS1	DUPGFS2
Depth	----------	-	-
Date Sampled		04/02/2015	04/02/2015
Type of sample		soil	soil
Date digested	-	09/02/2015	09/02/2015
Date analysed	-	09/02/2015	09/02/2015
Arsenic	mg/kg	46	5
Cadmium	mg/kg	0.7	<0.4
Chromium	mg/kg	53	26
Copper	mg/kg	110	13
Lead	mg/kg	140	19
Mercury	mg/kg	0.2	<0.1
Nickel	mg/kg	15	7
Zinc	mg/kg	190	51

Moisture						
Our Reference:	UNITS	123151-1	123151-2	123151-3	123151-4	123151-6
Your Reference	----------	BH5	BH6	BH7	BH8	BH11
Depth	----------	0.1-0.3	0-0.1	0-0.1	0-0.1	0-0.2
Date Sampled		03/02/2015	03/02/2015	02/02/2015	02/02/2015	04/02/2015
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	9/02/2015	9/02/2015	9/02/2015	9/02/2015	9/02/2015
Date analysed	-	10/02/2015	10/02/2015	10/02/2015	10/02/2015	10/02/2015
Moisture	%	12	16	38	14	21

Moisture						
Our Reference:	UNITS	123151-7	123151-8	123151-9	123151-10	123151-11
Your Reference	----------	BH12	BH13	BH15	BH16	BH17
Depth	----------	0-0.15	0-0.2	0-0.1	0-0.2	0-0.2
Date Sampled		03/02/2015	03/02/2015	04/02/2015	03/02/2015	03/02/2015
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	9/02/2015	9/02/2015	9/02/2015	9/02/2015	9/02/2015
Date analysed	-	10/02/2015	10/02/2015	10/02/2015	10/02/2015	10/02/2015
Moisture	%	21	29	23	22	26

Moisture						
Our Reference:	UNITS	123151-12	123151-13	123151-14	123151-15	123151-16
Your Reference	----------	BH18	BH19	BH19	BH20	BH21
Depth	----------	0-0.2	0-0.2	0.5-0.8	0-0.2	0-0.1
Date Sampled		04/02/2015	04/02/2015	04/02/2015	04/02/2015	04/02/2015
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	9/02/2015	9/02/2015	9/02/2015	9/02/2015	9/02/2015
Date analysed	-	10/02/2015	10/02/2015	10/02/2015	10/02/2015	10/02/2015
Moisture	%	27	26	25	29	29

Moisture			
Our Reference:	UNITS	123151-18	123151-19
Your Reference	----------	DUPGFS1	DUPGFS2
Depth	----------	-	-
Date Sampled		04/02/2015	04/02/2015
Type of sample		soil	soil
Date prepared	-	9/02/2015	9/02/2015
Date analysed	-	10/02/2015	10/02/2015
Moisture	%	14	27

Asbestos ID - soils						
Our Reference:	UNITS	123151-1	123151-2	123151-3	123151-4	123151-6
Your Reference	----------	BH5	BH6	BH7	BH8	BH11
Depth	----------	0.1-0.3	0-0.1	0-0.1	0-0.1	0-0.2
Date Sampled		03/02/2015	03/02/2015	02/02/2015	02/02/2015	04/02/2015
Type of sample		soil	soil	soil	soil	soil
Date analysed	-	12/02/2015	12/02/2015	12/02/2015	12/02/2015	12/02/2015
Sample mass tested	g	Approx 40g	Approx 40g	Approx 20g	Approx 50g	Approx 45g
Sample Description	-	Brown coarse grain soil	Brown coarse grain soil & rocks	Brown coarse grain soil	Brown coarse grain soil & rocks	Brown coarse grain soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils						
Our Reference:	UNITS	123151-7	123151-8	123151-9	123151-10	123151-11
Your Reference	----------	BH12	BH13	BH15	BH16	BH17
Depth	----------	0-0.15	0-0.2	0-0.1	0-0.2	0-0.2
Date Sampled		03/02/2015	03/02/2015	04/02/2015	03/02/2015	03/02/2015
Type of sample		soil	soil	soil	soil	soil
Date analysed	-	12/02/2015	12/02/2015	12/02/2015	12/02/2015	12/02/2015
Sample mass tested	g	Approx 45g	Approx 25g	Approx 35g	Approx 40g	Approx 40g
Sample Description	-	Brown coarse grain soil & rocks	Brown coarse grain soil	Brown coarse grain soil & rocks	Brown coarse grain soil	Brown coarse grain soil
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils					
Our Reference:	UNITS	123151-12	123151-13	123151-15	123151-16
Your Reference	----------	BH18	BH19	BH20	BH21
Depth	----------	0-0.2	0-0.2	0-0.2	0-0.1
Date Sampled		04/02/2015	04/02/2015	04/02/2015	04/02/2015
Type of sample		soil	soil	soil	soil
Date analysed	-	12/02/2015	12/02/2015	12/02/2015	12/02/2015
Sample mass tested	g	Approx 50g	Approx 30g	Approx 40g	Approx 35g
Sample Description	-	Dark brown coarse grain soil & rocks	Brown coarse grain soil & rocks	Brown coarse grain soil	Brown coarse grain soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			09/02/2015	123151-1	09/02/2015 || 09/02/2015	LCS-8	09/02/2015
Date analysed	-			11/02/2015	123151-1	11/02/2015 || 11/02/2015	LCS-8	11/02/2015
TRHC$_6$ - C$_9$	mg/kg	25	Org-016	<25	123151-1	<25 || <25	LCS-8	97%
TRHC$_6$ - C$_{10}$	mg/kg	25	Org-016	<25	123151-1	<25 || <25	LCS-8	97%
Benzene	mg/kg	0.2	Org-016	<0.2	123151-1	<0.2 || <0.2	LCS-8	102%
Toluene	mg/kg	0.5	Org-016	<0.5	123151-1	<0.5 || <0.5	LCS-8	104%
Ethylbenzene	mg/kg	1	Org-016	<1	123151-1	<1 || <1	LCS-8	104%
m+p-xylene	mg/kg	2	Org-016	<2	123151-1	<2 || <2	LCS-8	88%
o-Xylene	mg/kg	1	Org-016	<1	123151-1	<1 || <1	LCS-8	84%
naphthalene	mg/kg	1	Org-014	<1	123151-1	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	107	123151-1	102 || 102 || RPD: 0	LCS-8	99%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			09/02/2015	123151-1	09/02/2015 || 09/02/2015	LCS-8	09/02/2015
Date analysed	-			10/02/2015	123151-1	10/02/2015 || 10/02/2015	LCS-8	10/02/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	50	Org-003	<50	123151-1	<50 || <50	LCS-8	101%
TRHC$_{15}$ - C$_{28}$	mg/kg	100	Org-003	<100	123151-1	<100 || <100	LCS-8	110%
TRHC$_{29}$ - C$_{36}$	mg/kg	100	Org-003	<100	123151-1	<100 || <100	LCS-8	99%
TRH>C$_{10}$-C$_{16}$	mg/kg	50	Org-003	<50	123151-1	<50 || <50	LCS-8	101%
TRH>C$_{16}$-C$_{34}$	mg/kg	100	Org-003	<100	123151-1	<100 || <100	LCS-8	110%
TRH>C$_{34}$-C$_{40}$	mg/kg	100	Org-003	<100	123151-1	<100 || <100	LCS-8	99%
Surrogate o-Terphenyl	%		Org-003	87	123151-1	92 || 90 || RPD: 2	LCS-8	105%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			09/02/2015	123151-1	9/02/2015 || 9/02/2015	LCS-8	09/02/2015
Date analysed	-			09/02/2015	123151-1	10/02/2015 || 10/02/2015	LCS-8	09/02/2015
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	123151-1	<0.1 || <0.1	LCS-8	97%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	123151-1	<0.1 || <0.1	LCS-8	98%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	123151-1	<0.1 || <0.1	LCS-8	91%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	123151-1	<0.1 || <0.1	LCS-8	95%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	123151-1	<0.1 || <0.1	LCS-8	111%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	123151-1	<0.1 || <0.1	LCS-8	89%
Benzo(b,j+k) fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	123151-1	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	123151-1	<0.05 || <0.05	LCS-8	104%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	110	123151-1	119 || 109 || RPD: 9	LCS-8	104%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			09/02/2015	123151-1	09/02/2015 || 09/02/2015	LCS-8	09/02/2015
Date analysed	-			10/02/2015	123151-1	10/02/2015 || 10/02/2015	LCS-8	10/02/2015
HCB	mg/kg	0.1	Org-005	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	123151-1	<0.1 || <0.1	LCS-8	84%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	123151-1	<0.1 || <0.1	LCS-8	82%
Heptachlor	mg/kg	0.1	Org-005	<0.1	123151-1	<0.1 || <0.1	LCS-8	81%
delta-BHC	mg/kg	0.1	Org-005	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	123151-1	<0.1 || <0.1	LCS-8	83%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	123151-1	<0.1 || <0.1	LCS-8	85%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	123151-1	<0.1 || <0.1	LCS-8	80%
Dieldrin	mg/kg	0.1	Org-005	<0.1	123151-1	<0.1 || <0.1	LCS-8	87%
Endrin	mg/kg	0.1	Org-005	<0.1	123151-1	<0.1 || <0.1	LCS-8	85%
pp-DDD	mg/kg	0.1	Org-005	<0.1	123151-1	<0.1 || <0.1	LCS-8	92%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	123151-1	<0.1 || <0.1	LCS-8	90%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-005	94	123151-1	100 || 91 || RPD: 9	LCS-8	85%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			09/02/2015	123151-1	09/02/2015 || 09/02/2015	LCS-8	09/02/2015
Date analysed	-			10/02/2015	123151-1	10/02/2015 || 10/02/2015	LCS-8	10/02/2015
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	123151-1	<0.1 || <0.1	LCS-8	113%
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Diazinon	mg/kg	0.1	Org-008	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Dimethoate	mg/kg	0.1	Org-008	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Ethion	mg/kg	0.1	Org-008	<0.1	123151-1	<0.1 || <0.1	LCS-8	116%
Fenitrothion	mg/kg	0.1	Org-008	<0.1	123151-1	<0.1 || <0.1	LCS-8	91%
Malathion	mg/kg	0.1	Org-008	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Parathion	mg/kg	0.1	Org-008	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Ronnel	mg/kg	0.1	Org-008	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-008	94	123151-1	100 || 91 || RPD: 9	LCS-8	93%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			09/02/2015	123151-1	09/02/2015 || 09/02/2015	LCS-8	09/02/2015
Date analysed	-			10/02/2015	123151-1	10/02/2015 || 10/02/2015	LCS-8	10/02/2015
Arochlor 1016	mg/kg	0.1	Org-006	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1221	mg/kg	0.1	Org-006	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	Org-006	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	Org-006	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	Org-006	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	Org-006	<0.1	123151-1	<0.1 || <0.1	LCS-8	112%
Arochlor 1260	mg/kg	0.1	Org-006	<0.1	123151-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-006	94	123151-1	100 || 91 || RPD: 9	LCS-8	115%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date digested	-			09/02/2015	123151-1	09/02/2015 || 09/02/2015	LCS-1	09/02/2015
Date analysed	-			09/02/2015	123151-1	09/02/2015 || 09/02/2015	LCS-1	09/02/2015
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	123151-1	<4 || <4	LCS-1	116%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	123151-1	<0.4 || <0.4	LCS-1	98%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	123151-1	10 || 9 || RPD: 11	LCS-1	109%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	123151-1	4 || 4 || RPD: 0	LCS-1	113%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	123151-1	18 || 19 || RPD: 5	LCS-1	98%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	123151-1	<0.1 || <0.1	LCS-1	103%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	123151-1	3 || 3 || RPD: 0	LCS-1	102%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	123151-1	31 || 30 || RPD: 3	LCS-1	103%

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	123151-11	09/02/2015 || 09/02/2015	123151-2	09/02/2015
Date analysed	-	123151-11	11/02/2015 || 11/02/2015	123151-2	11/02/2015
TRHC$_6$ - C$_9$	mg/kg	123151-11	<25 || <25	123151-2	97%
TRHC$_6$ - C$_{10}$	mg/kg	123151-11	<25 || <25	123151-2	97%
Benzene	mg/kg	123151-11	<0.2 || <0.2	123151-2	91%
Toluene	mg/kg	123151-11	<0.5 || <0.5	123151-2	102%
Ethylbenzene	mg/kg	123151-11	<1 || <1	123151-2	94%
m+p-xylene	mg/kg	123151-11	<2 || <2	123151-2	100%
o-Xylene	mg/kg	123151-11	<1 || <1	123151-2	98%
naphthalene	mg/kg	123151-11	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%	123151-11	105 || 91 || RPD: 14	123151-2	62%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	123151-11	09/02/2015 || 09/02/2015	123151-2	09/02/2015
Date analysed	-	123151-11	10/02/2015 || 10/02/2015	123151-2	10/02/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	123151-11	<50 || <50	123151-2	96%
TRHC$_{15}$ - C$_{28}$	mg/kg	123151-11	<100 || <100	123151-2	108%
TRHC$_{29}$ - C$_{36}$	mg/kg	123151-11	<100 || <100	123151-2	80%
TRH>C$_{10}$-C$_{16}$	mg/kg	123151-11	<50 || <50	123151-2	96%
TRH>C$_{16}$-C$_{34}$	mg/kg	123151-11	<100 || <100	123151-2	108%
TRH>C$_{34}$-C$_{40}$	mg/kg	123151-11	<100 || <100	123151-2	80%
Surrogate o-Terphenyl	%	123151-11	87 || 85 || RPD: 2	123151-2	106%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	123151-11	09/02/2015 || 09/02/2015	123151-2	9/02/2015
Date analysed	-	123151-11	11/02/2015 || 11/02/2015	123151-2	10/02/2015
Naphthalene	mg/kg	123151-11	<0.1 || <0.1	123151-2	95%
Acenaphthylene	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	123151-11	<0.1 || <0.1	123151-2	99%
Phenanthrene	mg/kg	123151-11	<0.1 || <0.1	123151-2	96%
Anthracene	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	123151-11	0.1 || 0.1 || RPD: 0	123151-2	119%
Pyrene	mg/kg	123151-11	0.1 || 0.1 || RPD: 0	123151-2	131%
Benzo(a)anthracene	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	123151-11	<0.1 || <0.1	123151-2	95%
Benzo(b,j+k)fluoranthene	mg/kg	123151-11	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	123151-11	<0.05 || <0.05	123151-2	114%
Indeno(1,2,3-c,d)pyrene	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	123151-11	111 || 115 || RPD: 4	123151-2	105%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	123151-11	09/02/2015 || 09/02/2015	123151-2	09/02/2015
Date analysed	-	123151-11	10/02/2015 || 10/02/2015	123151-2	10/02/2015
HCB	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	123151-11	<0.1 || <0.1	123151-2	103%
gamma-BHC	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	123151-11	<0.1 || <0.1	123151-2	98%
Heptachlor	mg/kg	123151-11	<0.1 || <0.1	123151-2	98%
delta-BHC	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	123151-11	<0.1 || <0.1	123151-2	100%
Heptachlor Epoxide	mg/kg	123151-11	<0.1 || <0.1	123151-2	100%
gamma-Chlordane	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	123151-11	<0.1 || <0.1	123151-2	95%
Dieldrin	mg/kg	123151-11	<0.1 || <0.1	123151-2	103%
Endrin	mg/kg	123151-11	<0.1 || <0.1	123151-2	101%
pp-DDD	mg/kg	123151-11	<0.1 || <0.1	123151-2	102%
Endosulfan II	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	123151-11	<0.1 || <0.1	123151-2	105%
Methoxychlor	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%	123151-11	94 || 88 || RPD: 7	123151-2	87%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	123151-11	09/02/2015 || 09/02/2015	123151-2	09/02/2015
Date analysed	-	123151-11	10/02/2015 || 10/02/2015	123151-2	10/02/2015
Azinphos-methyl (Guthion)	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Bromophos-ethyl	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos	mg/kg	123151-11	<0.1 || <0.1	123151-2	116%
Chlorpyriphos-methyl	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Diazinon	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Dichlorvos	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Dimethoate	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Ethion	mg/kg	123151-11	<0.1 || <0.1	123151-2	120%
Fenitrothion	mg/kg	123151-11	<0.1 || <0.1	123151-2	90%
Malathion	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Parathion	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Ronnel	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%	123151-11	94 || 88 || RPD: 7	123151-2	91%

QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	123151-11	09/02/2015 || 09/02/2015	123151-2	09/02/2015
Date analysed	-	123151-11	10/02/2015 || 10/02/2015	123151-2	10/02/2015
Arochlor 1016	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Arochlor 1221	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	123151-11	<0.1 || <0.1	123151-2	92%
Arochlor 1260	mg/kg	123151-11	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%	123151-11	94 || 88 || RPD: 7	123151-2	116%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	123151-11	09/02/2015 || 09/02/2015	123151-2	09/02/2015
Date analysed	-	123151-11	09/02/2015 || 09/02/2015	123151-2	09/02/2015
Arsenic	mg/kg	123151-11	4 || 4 || RPD: 0	123151-2	102%
Cadmium	mg/kg	123151-11	<0.4 || <0.4	123151-2	92%
Chromium	mg/kg	123151-11	26 || 26 || RPD: 0	123151-2	101%
Copper	mg/kg	123151-11	13 || 13 || RPD: 0	123151-2	122%
Lead	mg/kg	123151-11	21 || 20 || RPD: 5	123151-2	94%
Mercury	mg/kg	123151-11	<0.1 || <0.1	123151-2	110%
Nickel	mg/kg	123151-11	5 || 5 || RPD: 0	123151-2	93%
Zinc	mg/kg	123151-11	26 || 24 || RPD: 8	123151-2	87%

Report Comments:

Asbestos ID was analysed by Approved Identifier: Paul Ching
Asbestos ID was authorised by Approved Signatory: Paul Ching

INS: Insufficient sample for this test
NA: Test not required
<: Less than

PQL: Practical Quantitation Limit
RPD: Relative Percent Difference
>: Greater than

NT: Not tested
NA: Test not required
LCS: Laboratory Control Sample

Quality Control Definitions

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

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

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

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

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

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.
Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.
Spikes for Physical and Aggregate Tests are not applicable.
For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

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

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

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD	EIS Job Number: E25232KH	ENVIRONMENTAL INVESTIGATION SERVICES
12 ASHLEY STREET		REAR OF 115 WICKS ROAD
CHATSWOOD NSW 2067		MACQUARIE PARK, NSW 2113
P: (02) 99106200	Date Results Required: STANDARD	P: 02-9888 5000 F: 02-9888 5001
F: (02) 99106201		
Attention: Aileen	Page: 1 of 1	Attention: Todd Hore

Location: Bulli

Sampler: GF

Sample Preserved in Esky on Ice

Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	#6A	#3
3/2/15	1	BH5	0.1-0.3	G,A		Fill	X	
↓	2	BH6	0-0.1				X	
2/2/15	3	BH7	0-0.1				X	
	4	BH8	0-0.1				X	
↓	5	↓	0.2-0.3					
4/2/15	6	BH11	0-0.2				X	
3/2/15	7	BH12	0-0.15				X	
↓	8	BH13	0-0.2				X	
4/2/15	9	BH15	0-0.1				X	
3/2/15	10	BH16	0-0.2				X	
↓	11	BH17	0-0.2				X	
4/2/15	12	BH18	0-0.2				X	
	13	BH19	0-0.2				X	
	14	↓	0.5-0.8			Clay		X
	15	BH20	0-0.2			Fill	X	
	16	BH21	0-0.1				X	
↓	17	↓	0.1-0.25	↓		↓		
4/2/15	18	Dup/FS1	—	G		Soil		X
↓	19	Dup/FS2	—	G		↓		X

ENVIROLAB

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 12315 1

Date Received: 6/2/15

Time Received: 17:45

Received by: PT

Temp: Cool/Ambient

Cooling: Ice/Icepack

Security: Intact/Broken/None

Remarks (comments/detection limits required):

Sample Containers:
G - 250mg Glass Jar
A - Ziplock Asbestos Bag
P - Plastic Bag

Relinquished By:	Date:	Time:	Received By:	Date:
	6/2/15	5pm	PT	6/2/15

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
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SAMPLE RECEIPT ADVICE

Client:

Environmental Investigation Services
PO Box 976
North Ryde BC NSW 1670

ph: 02 9888 5000
Fax: 02 9888 5001

Attention: Todd Hore

Sample log in details:

Your reference:	**E25232KH, Bulli**
Envirolab Reference:	**123151**
Date received:	06/02/15
Date results expected to be reported:	**13/02/15**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	19 soils
Turnaround time requested:	Standard
Temperature on receipt (°C)	11.8
Cooling Method:	Ice
Sampling Date Provided:	YES

Comments:

If there is sufficient sample after testing, samples will be held for the following time frames from date of receipt of samples:
Water samples - 1 month
Soil and other solid samples - 2 months
Samples collected in canisters - 1 week. Canisters will then be cleaned.
All other samples are not retained after analysis
If you require samples to be retained for longer periods then retention fees will apply as per our pricelist.

Contact details:

Please direct any queries to Aileen Hie or Jacinta Hurst
ph: 02 9910 6200 fax: 02 9910 6201
email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

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CERTIFICATE OF ANALYSIS 123480

Client:

Environmental Investigation Services
PO Box 976
North Ryde BC
NSW 1670

Attention: Todd Hore

Sample log in details:

Your Reference:	**E25232KH, Bulli**		
No. of samples:	33 soils		
Date samples received / completed instructions received	12/02/15	/	12/02/15

Analysis Details:

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

Report Details:

Date results requested by: / Issue Date:	19/02/15	/	18/02/15
Date of Preliminary Report:	Not Issued		

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Results Approved By:

Jacinta Hurst
Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	123480-1	123480-2	123480-4	123480-7	123480-10
Your Reference	----------	BH1	BH1	BH2	BH3	BH4
Depth	----------	0.15-0.25	0.25-0.4	0-0.2	0-0.2	0-0.1
Date Sampled		10/02/2015	10/02/2015	10/02/2015	10/02/2015	10/02/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Date analysed	-	17/02/2015	17/02/2015	17/02/2015	17/02/2015	17/02/2015
TRHC6 - C9	mg/kg	<25	<25	<25	<25	<25
TRHC6 - C10	mg/kg	<25	<25	<25	<25	<25
vTPHC6 - C10 less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	97	95	91	94	98

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	123480-11	123480-14	123480-18	123480-19	123480-21
Your Reference	----------	BH4	BH6	BH9	BH9	BH10
Depth	----------	0.5-0.8	0.5-0.95	0-0.2	0.5-0.95	0-0.25
Date Sampled		10/02/2015	11/02/2015	10/02/2015	10/02/2015	11/02/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Date analysed	-	17/02/2015	17/02/2015	17/02/2015	17/02/2015	17/02/2015
TRHC6 - C9	mg/kg	<25	<25	<25	<25	<25
TRHC6 - C10	mg/kg	<25	<25	<25	<25	<25
vTPHC6 - C10 less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	96	96	93	97	98

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	123480-23	123480-26	123480-31	123480-32	123480-33
Your Reference	----------	BH12	BH14	BH20	DUPGFS3	TB
Depth	----------	0.5-0.95	0-0.2	0.5-0.95	-	-
Date Sampled		11/02/2015	11/02/2015	11/02/2015	11/02/2015	11/02/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Date analysed	-	17/02/2015	17/02/2015	17/02/2015	17/02/2015	17/02/2015
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	<25
vTPHC$_6$ - C$_{10}$ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	95	94	92	95	103

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	123480-1	123480-2	123480-4	123480-7	123480-10
Your Reference	----------	BH1	BH1	BH2	BH3	BH4
Depth	----------	0.15-0.25	0.25-0.4	0-0.2	0-0.2	0-0.1
Date Sampled		10/02/2015	10/02/2015	10/02/2015	10/02/2015	10/02/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Date analysed	-	17/02/2015	17/02/2015	17/02/2015	17/02/2015	17/02/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100	180
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100	<100	<100	200
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	220
Surrogate o-Terphenyl	%	76	90	74	84	82

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	123480-11	123480-14	123480-18	123480-19	123480-21
Your Reference	----------	BH4	BH6	BH9	BH9	BH10
Depth	----------	0.5-0.8	0.5-0.95	0-0.2	0.5-0.95	0-0.25
Date Sampled		10/02/2015	11/02/2015	10/02/2015	10/02/2015	11/02/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Date analysed	-	17/02/2015	17/02/2015	17/02/2015	17/02/2015	17/02/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	77	85	82	81	83

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	123480-23	123480-26	123480-31	123480-32	123480-33
Your Reference	----------	BH12	BH14	BH20	DUPGFS3	TB
Depth	----------	0.5-0.95	0-0.2	0.5-0.95	-	-
Date Sampled		11/02/2015	11/02/2015	11/02/2015	11/02/2015	11/02/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Date analysed	-	17/02/2015	17/02/2015	17/02/2015	17/02/2015	17/02/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	91	83	85	85	87

PAHs in Soil						
Our Reference:	UNITS	123480-1	123480-2	123480-4	123480-7	123480-10
Your Reference	----------	BH1	BH1	BH2	BH3	BH4
Depth	----------	0.15-0.25	0.25-0.4	0-0.2	0-0.2	0-0.1
Date Sampled		10/02/2015	10/02/2015	10/02/2015	10/02/2015	10/02/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Date analysed	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.7
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.4
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	5.8
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	1.2
Fluoranthene	mg/kg	<0.1	<0.1	0.2	<0.1	6.8
Pyrene	mg/kg	<0.1	<0.1	0.2	<0.1	5.4
Benzo(a)anthracene	mg/kg	<0.1	<0.1	0.1	<0.1	2.2
Chrysene	mg/kg	<0.1	<0.1	0.1	<0.1	1.9
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	0.2	<0.2	3.5
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.08	<0.05	1.8
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	0.1	<0.1	2.7
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	1.8
Benzo(a)pyrene TEQ NEPM B1	mg/kg	<0.5	<0.5	<0.5	<0.5	2.9
Total Positive PAHs	mg/kg	NIL (+)VE	NIL (+)VE	1.1	NIL (+)VE	34
Surrogate p-Terphenyl-d14	%	108	111	106	116	107

PAHs in Soil						
Our Reference:	UNITS	123480-11	123480-14	123480-18	123480-19	123480-21
Your Reference	----------	BH4	BH6	BH9	BH9	BH10
Depth	----------	0.5-0.8	0.5-0.95	0-0.2	0.5-0.95	0-0.25
Date Sampled		10/02/2015	11/02/2015	10/02/2015	10/02/2015	11/02/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Date analysed	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	0.3	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.1	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Benzo(a)pyrene TEQ NEPM B1	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total Positive PAHs	mg/kg	NIL (+)VE	NIL (+)VE	1.4	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	108	111	107	113	110

PAHs in Soil					
Our Reference:	UNITS	123480-23	123480-26	123480-31	123480-32
Your Reference	----------	BH12	BH14	BH20	DUPGFS3
Depth	----------	0.5-0.95	0-0.2	0.5-0.95	-
Date Sampled		11/02/2015	11/02/2015	11/02/2015	11/02/2015
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Date analysed	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.07	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ NEPM B1	mg/kg	<0.5	<0.5	<0.5	<0.5
Total Positive PAHs	mg/kg	NIL (+)VE	0.18	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	112	114	112	111

Organochlorine Pesticides in soil						
Our Reference:	UNITS	123480-1	123480-4	123480-7	123480-10	123480-18
Your Reference	----------	BH1	BH2	BH3	BH4	BH9
Depth	----------	0.15-0.25	0-0.2	0-0.2	0-0.1	0-0.2
Date Sampled		10/02/2015	10/02/2015	10/02/2015	10/02/2015	10/02/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Date analysed	-	17/02/2015	17/02/2015	17/02/2015	17/02/2015	17/02/2015
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	100	98	107	101	104

Organochlorine Pesticides in soil			
Our Reference:	UNITS	123480-21	123480-26
Your Reference	----------	BH10	BH14
Depth	----------	0-0.25	0-0.2
Date Sampled		11/02/2015	11/02/2015
Type of sample		Soil	Soil
Date extracted	-	16/02/2015	16/02/2015
Date analysed	-	17/02/2015	17/02/2015
HCB	mg/kg	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1
Surrogate TCMX	%	99	102

Organophosphorus Pesticides						
Our Reference:	UNITS	123480-1	123480-4	123480-7	123480-10	123480-18
Your Reference	----------	BH1	BH2	BH3	BH4	BH9
Depth	----------	0.15-0.25	0-0.2	0-0.2	0-0.1	0-0.2
Date Sampled		10/02/2015	10/02/2015	10/02/2015	10/02/2015	10/02/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Date analysed	-	17/02/2015	17/02/2015	17/02/2015	17/02/2015	17/02/2015
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	100	98	107	101	104

Organophosphorus Pesticides			
Our Reference:	UNITS	123480-21	123480-26
Your Reference	----------	BH10	BH14
Depth	----------	0-0.25	0-0.2
Date Sampled		11/02/2015	11/02/2015
Type of sample		Soil	Soil
Date extracted	-	16/02/2015	16/02/2015
Date analysed	-	17/02/2015	17/02/2015
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1
Surrogate TCMX	%	99	102

PCBs in Soil						
Our Reference:	UNITS	123480-1	123480-4	123480-7	123480-10	123480-18
Your Reference	----------	BH1	BH2	BH3	BH4	BH9
Depth	----------	0.15-0.25	0-0.2	0-0.2	0-0.1	0-0.2
Date Sampled		10/02/2015	10/02/2015	10/02/2015	10/02/2015	10/02/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Date analysed	-	17/02/2015	17/02/2015	17/02/2015	17/02/2015	17/02/2015
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	100	98	107	101	104

PCBs in Soil			
Our Reference:	UNITS	123480-21	123480-26
Your Reference	----------	BH10	BH14
Depth	----------	0-0.25	0-0.2
Date Sampled		11/02/2015	11/02/2015
Type of sample		Soil	Soil
Date extracted	-	16/02/2015	16/02/2015
Date analysed	-	17/02/2015	17/02/2015
Arochlor 1016	mg/kg	<0.1	<0.1
Arochlor 1221	mg/kg	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1
Surrogate TCLMX	%	99	102

Acid Extractable metals in soil						
Our Reference:	UNITS	123480-1	123480-2	123480-4	123480-7	123480-10
Your Reference	----------	BH1	BH1	BH2	BH3	BH4
Depth	----------	0.15-0.25	0.25-0.4	0-0.2	0-0.2	0-0.1
Date Sampled		10/02/2015	10/02/2015	10/02/2015	10/02/2015	10/02/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Date analysed	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Arsenic	mg/kg	<4	<4	<4	<4	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	21	24	28	15	30
Copper	mg/kg	4	3	22	10	67
Lead	mg/kg	17	21	35	29	23
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	9	8	8	4	10
Zinc	mg/kg	5	4	54	17	57

Acid Extractable metals in soil						
Our Reference:	UNITS	123480-11	123480-14	123480-18	123480-19	123480-21
Your Reference	----------	BH4	BH6	BH9	BH9	BH10
Depth	----------	0.5-0.8	0.5-0.95	0-0.2	0.5-0.95	0-0.25
Date Sampled		10/02/2015	11/02/2015	10/02/2015	10/02/2015	11/02/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Date analysed	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Arsenic	mg/kg	7	15	4	<4	24
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	26	29	17	44	39
Copper	mg/kg	24	<1	28	5	7
Lead	mg/kg	21	21	43	16	23
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	8	<1	5	9	<1
Zinc	mg/kg	4	1	75	16	<1

Acid Extractable metals in soil					
Our Reference:	UNITS	123480-23	123480-26	123480-31	123480-32
Your Reference	----------	BH12	BH14	BH20	DUPGFS3
Depth	----------	0.5-0.95	0-0.2	0.5-0.95	-
Date Sampled		11/02/2015	11/02/2015	11/02/2015	11/02/2015
Type of sample		Soil	Soil	Soil	Soil
Date digested	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Date analysed	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Arsenic	mg/kg	9	5	5	4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	27	16	43	15
Copper	mg/kg	7	16	14	14
Lead	mg/kg	16	25	15	25
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	3	4	8	7
Zinc	mg/kg	6	33	16	32

Moisture						
Our Reference:	UNITS	123480-1	123480-2	123480-4	123480-7	123480-10
Your Reference	----------	BH1	BH1	BH2	BH3	BH4
Depth	----------	0.15-0.25	0.25-0.4	0-0.2	0-0.2	0-0.1
Date Sampled		10/02/2015	10/02/2015	10/02/2015	10/02/2015	10/02/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Date analysed	-	17/02/2015	17/02/2015	17/02/2015	17/02/2015	17/02/2015
Moisture	%	23	26	30	22	7.0

Moisture						
Our Reference:	UNITS	123480-11	123480-14	123480-18	123480-19	123480-21
Your Reference	----------	BH4	BH6	BH9	BH9	BH10
Depth	----------	0.5-0.8	0.5-0.95	0-0.2	0.5-0.95	0-0.25
Date Sampled		10/02/2015	11/02/2015	10/02/2015	10/02/2015	11/02/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Date analysed	-	17/02/2015	17/02/2015	17/02/2015	17/02/2015	17/02/2015
Moisture	%	18	23	23	26	14

Moisture					
Our Reference:	UNITS	123480-23	123480-26	123480-31	123480-32
Your Reference	----------	BH12	BH14	BH20	DUPGFS3
Depth	----------	0.5-0.95	0-0.2	0.5-0.95	-
Date Sampled		11/02/2015	11/02/2015	11/02/2015	11/02/2015
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Date analysed	-	17/02/2015	17/02/2015	17/02/2015	17/02/2015
Moisture	%	23	24	23	24

Asbestos ID - soils						
Our Reference:	UNITS	123480-1	123480-4	123480-7	123480-10	123480-18
Your Reference	----------	BH1	BH2	BH3	BH4	BH9
Depth	----------	0.15-0.25	0-0.2	0-0.2	0-0.1	0-0.2
Date Sampled		10/02/2015	10/02/2015	10/02/2015	10/02/2015	10/02/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	17/02/2015	17/02/2015	17/02/2015	17/02/2015	17/02/2015
Sample mass tested	g	Approx 40g	Approx 35g	Approx 45g	Approx 60g	Approx 35g
Sample Description	-	Brown coarse grain soil & rocks	Brown coarse grain soil & rocks	Brown coarse grain soil & rocks	Brown coarse grain soil & rocks	Brown coarse grain soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils			
Our Reference:	UNITS	123480-21	123480-26
Your Reference	----------	BH10	BH14
Depth	----------	0-0.25	0-0.2
Date Sampled		11/02/2015	11/02/2015
Type of sample		Soil	Soil
Date analysed	-	17/02/2015	17/02/2015
Sample mass tested	g	Approx 45g	Approx 30g
Sample Description	-	Pinkish fine grain soil & rocks	Brown coarse grain soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			16/02/2015	123480-1	16/02/2015 || 16/02/2015	LCS-2	16/02/2015
Date analysed	-			17/02/2015	123480-1	17/02/2015 || 17/02/2015	LCS-2	17/02/2015
TRHC$_6$ - C$_9$	mg/kg	25	Org-016	<25	123480-1	<25 || <25	LCS-2	110%
TRHC$_6$ - C$_{10}$	mg/kg	25	Org-016	<25	123480-1	<25 || <25	LCS-2	110%
Benzene	mg/kg	0.2	Org-016	<0.2	123480-1	<0.2 || <0.2	LCS-2	107%
Toluene	mg/kg	0.5	Org-016	<0.5	123480-1	<0.5 || <0.5	LCS-2	110%
Ethylbenzene	mg/kg	1	Org-016	<1	123480-1	<1 || <1	LCS-2	107%
m+p-xylene	mg/kg	2	Org-016	<2	123480-1	<2 || <2	LCS-2	113%
o-Xylene	mg/kg	1	Org-016	<1	123480-1	<1 || <1	LCS-2	111%
naphthalene	mg/kg	1	Org-014	<1	123480-1	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	99	123480-1	97 || 99 || RPD: 2	LCS-2	98%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			16/02/2015	123480-1	16/02/2015 || 16/02/2015	LCS-2	16/02/2015
Date analysed	-			17/02/2015	123480-1	17/02/2015 || 17/02/2015	LCS-2	17/02/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	50	Org-003	<50	123480-1	<50 || <50	LCS-2	90%
TRHC$_{15}$ - C$_{28}$	mg/kg	100	Org-003	<100	123480-1	<100 || <100	LCS-2	92%
TRHC$_{29}$ - C$_{36}$	mg/kg	100	Org-003	<100	123480-1	<100 || <100	LCS-2	94%
TRH>C$_{10}$-C$_{16}$	mg/kg	50	Org-003	<50	123480-1	<50 || <50	LCS-2	90%
TRH>C$_{16}$-C$_{34}$	mg/kg	100	Org-003	<100	123480-1	<100 || <100	LCS-2	92%
TRH>C$_{34}$-C$_{40}$	mg/kg	100	Org-003	<100	123480-1	<100 || <100	LCS-2	94%
Surrogate o-Terphenyl	%		Org-003	74	123480-1	76 || 88 || RPD: 15	LCS-2	89%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			16/02/2015	123480-1	16/02/2015 || 16/02/2015	LCS-2	16/02/2015
Date analysed	-			16/02/2015	123480-1	16/02/2015 || 16/02/2015	LCS-2	16/02/2015
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	123480-1	<0.1 || <0.1	LCS-2	97%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	123480-1	<0.1 || <0.1	LCS-2	105%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	123480-1	<0.1 || <0.1	LCS-2	100%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	123480-1	<0.1 || <0.1	LCS-2	100%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	123480-1	<0.1 || <0.1	LCS-2	120%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	123480-1	<0.1 || <0.1	LCS-2	89%
Benzo(b,j+k) fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	123480-1	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	123480-1	<0.05 || <0.05	LCS-2	102%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	109	123480-1	108 || 113 || RPD: 5	LCS-2	113%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			16/02/2015	123480-1	16/02/2015 || 16/02/2015	LCS-2	16/02/2015
Date analysed	-			17/02/2015	123480-1	17/02/2015 || 17/02/2015	LCS-2	17/02/2015
HCB	mg/kg	0.1	Org-005	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	123480-1	<0.1 || <0.1	LCS-2	118%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	123480-1	<0.1 || <0.1	LCS-2	106%
Heptachlor	mg/kg	0.1	Org-005	<0.1	123480-1	<0.1 || <0.1	LCS-2	91%
delta-BHC	mg/kg	0.1	Org-005	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	123480-1	<0.1 || <0.1	LCS-2	112%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	123480-1	<0.1 || <0.1	LCS-2	96%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	123480-1	<0.1 || <0.1	LCS-2	101%
Dieldrin	mg/kg	0.1	Org-005	<0.1	123480-1	<0.1 || <0.1	LCS-2	97%
Endrin	mg/kg	0.1	Org-005	<0.1	123480-1	<0.1 || <0.1	LCS-2	97%
pp-DDD	mg/kg	0.1	Org-005	<0.1	123480-1	<0.1 || <0.1	LCS-2	98%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	123480-1	<0.1 || <0.1	LCS-2	104%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-005	95	123480-1	100 || 99 || RPD: 1	LCS-2	96%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			16/02/2015	123480-1	16/02/2015 || 16/02/2015	LCS-2	16/02/2015
Date analysed	-			17/02/2015	123480-1	17/02/2015 || 17/02/2015	LCS-2	17/02/2015
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	123480-1	<0.1 || <0.1	LCS-2	129%
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Diazinon	mg/kg	0.1	Org-008	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Dimethoate	mg/kg	0.1	Org-008	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Ethion	mg/kg	0.1	Org-008	<0.1	123480-1	<0.1 || <0.1	LCS-2	123%
Fenitrothion	mg/kg	0.1	Org-008	<0.1	123480-1	<0.1 || <0.1	LCS-2	103%
Malathion	mg/kg	0.1	Org-008	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Parathion	mg/kg	0.1	Org-008	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Ronnel	mg/kg	0.1	Org-008	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-008	95	123480-1	100 || 99 || RPD: 1	LCS-2	97%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			16/02/2015	123480-1	16/02/2015 || 16/02/2015	LCS-2	16/02/2015
Date analysed	-			17/02/2015	123480-1	17/02/2015 || 17/02/2015	LCS-2	17/02/2015
Arochlor 1016	mg/kg	0.1	Org-006	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1221	mg/kg	0.1	Org-006	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	Org-006	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	Org-006	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	Org-006	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	Org-006	<0.1	123480-1	<0.1 || <0.1	LCS-2	100%
Arochlor 1260	mg/kg	0.1	Org-006	<0.1	123480-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-006	95	123480-1	100 || 99 || RPD: 1	LCS-2	121%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date digested	-			16/02/2015	123480-1	16/02/2015 || 16/02/2015	LCS-7	16/02/2015
Date analysed	-			16/02/2015	123480-1	16/02/2015 || 16/02/2015	LCS-7	16/02/2015
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	123480-1	<4 || <4	LCS-7	112%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	123480-1	<0.4 || <0.4	LCS-7	100%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	123480-1	21 || 21 || RPD: 0	LCS-7	106%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	123480-1	4 || 5 || RPD: 22	LCS-7	107%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	123480-1	17 || 17 || RPD: 0	LCS-7	103%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	123480-1	<0.1 || <0.1	LCS-7	97%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	123480-1	9 || 9 || RPD: 0	LCS-7	103%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	123480-1	5 || 5 || RPD: 0	LCS-7	103%

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	123480-26	16/02/2015 || 16/02/2015	123480-4	16/02/2015
Date analysed	-	123480-26	17/02/2015 || 17/02/2015	123480-4	17/02/2015
TRHC$_6$ - C$_9$	mg/kg	123480-26	<25 || <25	123480-4	101%
TRHC$_6$ - C$_{10}$	mg/kg	123480-26	<25 || <25	123480-4	101%
Benzene	mg/kg	123480-26	<0.2 || <0.2	123480-4	99%
Toluene	mg/kg	123480-26	<0.5 || <0.5	123480-4	101%
Ethylbenzene	mg/kg	123480-26	<1 || <1	123480-4	98%
m+p-xylene	mg/kg	123480-26	<2 || <2	123480-4	103%
o-Xylene	mg/kg	123480-26	<1 || <1	123480-4	114%
naphthalene	mg/kg	123480-26	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%	123480-26	94 || 94 || RPD: 0	123480-4	91%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	123480-26	16/02/2015 || 16/02/2015	123480-4	16/02/2015
Date analysed	-	123480-26	17/02/2015 || 17/02/2015	123480-4	17/02/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	123480-26	<50 || <50	123480-4	89%
TRHC$_{15}$ - C$_{28}$	mg/kg	123480-26	<100 || <100	123480-4	93%
TRHC$_{29}$ - C$_{36}$	mg/kg	123480-26	<100 || <100	123480-4	96%
TRH>C$_{10}$-C$_{16}$	mg/kg	123480-26	<50 || <50	123480-4	89%
TRH>C$_{16}$-C$_{34}$	mg/kg	123480-26	100 || 120 || RPD: 18	123480-4	93%
TRH>C$_{34}$-C$_{40}$	mg/kg	123480-26	<100 || <100	123480-4	96%
Surrogate o-Terphenyl	%	123480-26	83 || 89 || RPD: 7	123480-4	87%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	123480-26	16/02/2015 || 16/02/2015	123480-4	16/02/2015
Date analysed	-	123480-26	16/02/2015 || 16/02/2015	123480-4	16/02/2015
Naphthalene	mg/kg	123480-26	<0.1 || <0.1	123480-4	95%
Acenaphthylene	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	123480-26	<0.1 || <0.1	123480-4	100%
Phenanthrene	mg/kg	123480-26	<0.1 || <0.1	123480-4	97%
Anthracene	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	123480-26	0.1 || <0.1	123480-4	97%
Pyrene	mg/kg	123480-26	<0.1 || <0.1	123480-4	113%
Benzo(a)anthracene	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	123480-26	<0.1 || <0.1	123480-4	84%
Benzo(b,j+k)fluoranthene	mg/kg	123480-26	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	123480-26	0.07 || <0.05	123480-4	102%
Indeno(1,2,3-c,d)pyrene	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	123480-26	114 || 104 || RPD: 9	123480-4	106%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	123480-26	16/02/2015 || 16/02/2015	123480-4	16/02/2015
Date analysed	-	123480-26	17/02/2015 || 17/02/2015	123480-4	17/02/2015
HCB	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	123480-26	<0.1 || <0.1	123480-4	119%
gamma-BHC	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	123480-26	<0.1 || <0.1	123480-4	105%
Heptachlor	mg/kg	123480-26	<0.1 || <0.1	123480-4	94%
delta-BHC	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	123480-26	<0.1 || <0.1	123480-4	114%
Heptachlor Epoxide	mg/kg	123480-26	<0.1 || <0.1	123480-4	98%
gamma-Chlordane	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	123480-26	<0.1 || <0.1	123480-4	104%
Dieldrin	mg/kg	123480-26	<0.1 || <0.1	123480-4	100%
Endrin	mg/kg	123480-26	<0.1 || <0.1	123480-4	100%
pp-DDD	mg/kg	123480-26	<0.1 || <0.1	123480-4	100%
Endosulfan II	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	123480-26	<0.1 || <0.1	123480-4	109%
Methoxychlor	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%	123480-26	102 || 98 || RPD: 4	123480-4	96%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	123480-26	16/02/2015 || 16/02/2015	123480-4	16/02/2015
Date analysed	-	123480-26	17/02/2015 || 17/02/2015	123480-4	17/02/2015
Azinphos-methyl (Guthion)	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Bromophos-ethyl	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos	mg/kg	123480-26	<0.1 || <0.1	123480-4	136%
Chlorpyriphos-methyl	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Diazinon	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Dichlorvos	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Dimethoate	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Ethion	mg/kg	123480-26	<0.1 || <0.1	123480-4	136%
Fenitrothion	mg/kg	123480-26	<0.1 || <0.1	123480-4	94%
Malathion	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Parathion	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Ronnel	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%	123480-26	102 || 98 || RPD: 4	123480-4	101%
QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	123480-26	16/02/2015 || 16/02/2015	123480-4	16/02/2015
Date analysed	-	123480-26	17/02/2015 || 17/02/2015	123480-4	17/02/2015
Arochlor 1016	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Arochlor 1221	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	123480-26	<0.1 || <0.1	123480-4	101%
Arochlor 1260	mg/kg	123480-26	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%	123480-26	102 || 98 || RPD: 4	123480-4	130%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	123480-26	16/02/2015 || 16/02/2015	123480-4	16/02/2015
Date analysed	-	123480-26	16/02/2015 || 16/02/2015	123480-4	16/02/2015
Arsenic	mg/kg	123480-26	5 || 5 || RPD: 0	123480-4	82%
Cadmium	mg/kg	123480-26	<0.4 || <0.4	123480-4	103%
Chromium	mg/kg	123480-26	16 || 15 || RPD: 6	123480-4	111%
Copper	mg/kg	123480-26	16 || 15 || RPD: 6	123480-4	109%
Lead	mg/kg	123480-26	25 || 23 || RPD: 8	123480-4	100%
Mercury	mg/kg	123480-26	<0.1 || <0.1	123480-4	93%
Nickel	mg/kg	123480-26	4 || 4 || RPD: 0	123480-4	106%
Zinc	mg/kg	123480-26	33 || 30 || RPD: 10	123480-4	105%

Report Comments:

Asbestos 123480-21: A portion of the supplied sample was sub-sampled for asbestos analysis according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g of sample in its own container.

Asbestos ID was analysed by Approved Identifier: Lulu Guo
Asbestos ID was authorised by Approved Signatory: Lulu Guo

INS: Insufficient sample for this test
NA: Test not required
<: Less than

PQL: Practical Quantitation Limit
RPD: Relative Percent Difference
>: Greater than

NT: Not tested
NA: Test not required
LCS: Laboratory Control Sample

Quality Control Definitions

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

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

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

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

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

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.
Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.
Spikes for Physical and Aggregate Tests are not applicable.
For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

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

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

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD	EIS Job Number: E25232KH	ENVIRONMENTAL INVESTIGATION SERVICES
12 ASHLEY STREET		REAR OF 115 WICKS ROAD
CHATSWOOD NSW 2067	Date Results Required: STANDARD	MACQUARIE PARK, NSW 2113
P: (02) 99106200		P: 02-9888 5000 F: 02-9888 5001
F: (02) 99106201	Page: 1 of 2	Attention: Todd Hore
Attention: Aileen		

Location: Bulli — Sample Preserved in Esky on Ice

Sampler: GF — Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	#6A	#7	TPH/BTEXN								
10/2/15	1	BH1	0.5-0.25	G,A	0	Fill	X										
	2		0.25-0.4	G	0	clay		X									
	3		0.5-0.95		0												
	4	BH2	0-0.2	G,A	0	Fill	X										
	5		0.5-0.8	G	0	clay											
	6		1.3-1.5		0												
	7	BH3	0-0.2	G,A	0		X										
	8		0.5-0.8	G	0												
	9		1.3-1.5		0												
	10	BH4	0-0.1	G,A	0	Fill	X										
	11		0.5-0.8	G	0	clay		X									
	12		1.3-1.5		0	Shale											
11/2/15	13	BH5	0.5		0	Sandstone		limited sample									
	14	BH6	0.5-0.95		0	Clay		X									
	15	BH7	0.5-0.95	G,A	0	Fill											
	16		1.2-1.5	G	0	clay											
	17	BH8	0.5-0.55		0	clay											
10/2/15	18	BH9	0-0.2	G,A	0	Fill	X										
	19		0.5-0.95	G	0	clay		X									
	20		1.2-1.5		0												
11/2/15	21	BH10	0-0.25		0		X										
	22	BH 11	0.5-0.8		0												
	23	BH 12	0.5-0.95		0			X									
10/2/15	24	BH 13	0.5-0.95		0												
	25		1.5-1.8		0												

ENVIROLAB

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 123480

Date Received: 12/2/15

Time Received: 18.30

Received by: PR

Temp: Cool/Ambient

Cooling: Ice/Icepack

Security: Intact/Broken/None

10.5

Remarks (comments/detection limits required):

Sample Containers:
G - 250mg Glass Jar
A - Ziplock Asbestos Bag
P - Plastic Bag

Relinquished By:	Date:	Time:	Received By:	Date:
	12/2/15	Phag	18.30	12/2/15

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD	EIS Job Number: E25232KH	ENVIRONMENTAL INVESTIGATION SERVICES
12 ASHLEY STREET		REAR OF 115 WICKS ROAD
CHATSWOOD NSW 2067	Date Results Required: STANDARD	MACQUARIE PARK, NSW 2113
P: (02) 99106200		P: 02-9888 5000 F: 02-9888 5001
F: (02) 99106201	Page: 2 of 2	Attention: Todd Hore
Attention: Aileen		

Location: Bulli

Sampler: GF

Sample Preserved in Esky on Ice

Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	#6A	#3	TRH/BTEXN
11/2/15	26	BH14	0-0.2	G, A	0	Fill	X		
↓	27	↓	0.3-0.5	G	0	Clay			
10/2/15	28	BH15	0.5-0.8	|	0	|			
11/2/15	29	BH16	0.5-0.9	|	0	|			
|	30	BH17	0.5-0.95	|	0	|			
|	31	BH20	0.5-0.95	|	0	|		X	
|	32	DupFS3		|	-	Soil		X	
↓	33	TB		↓	-	Soil			X

Remarks (comments/detection limits required):

Sample Containers:
G - 250mg Glass Jar
A - Ziplock Asbestos Bag
P - Plastic Bag

Relinquished By:	Date:	Time:	Received By:	Date:
	12/2/15	18.30		12/2/15

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

SAMPLE RECEIPT ADVICE

Client:

Environmental Investigation Services
PO Box 976
North Ryde BC NSW 1670

ph: 02 9888 5000
Fax: 02 9888 5001

Attention: Todd Hore

Sample log in details:

Your reference:	**E25232KH, Bulli**
Envirolab Reference:	**123480**
Date received:	12/02/15
Date results expected to be reported:	**19/02/15**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	33 soils
Turnaround time requested:	Standard
Temperature on receipt (°C)	10.5
Cooling Method:	Ice
Sampling Date Provided:	YES

Comments:

If there is sufficient sample after testing, samples will be held for the following time frames from date of receipt of samples:
Water samples - 1 month
Soil and other solid samples - 2 months
Samples collected in canisters - 1 week. Canisters will then be cleaned.
All other samples are not retained after analysis
If you require samples to be retained for longer periods then retention fees will apply as per our pricelist.

Contact details:

Please direct any queries to Aileen Hie or Jacinta Hurst
ph: 02 9910 6200 fax: 02 9910 6201
email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 123653

Client:

Environmental Investigation Services
PO Box 976
North Ryde BC
NSW 1670

Attention: Todd Hore

Sample log in details:

Your Reference:	**E25232KH, Bulli**		
No. of samples:	4 waters		
Date samples received / completed instructions received	17/02/15	/	17/02/15

Analysis Details:

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

Report Details:

Date results requested by: / Issue Date:	24/02/15	/	24/02/15
Date of Preliminary Report:	Not Issued		

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Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with *.**

Results Approved By:

Jacinta Hurst
Laboratory Manager

vTRH(C6-C10)/BTEXN in Water					
Our Reference:	UNITS	123653-1	123653-2	123653-3	123653-4
Your Reference	----------	MW1	MW13	MW15	DUP A
Date Sampled	----------	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Type of sample		Water	Water	Water	Water
Date extracted	-	17/02/2015	17/02/2015	17/02/2015	17/02/2015
Date analysed	-	18/02/2015	18/02/2015	18/02/2015	18/02/2015
TRHC$_6$ - C$_9$	µg/L	<10	<10	<10	<10
TRHC$_6$ - C$_{10}$	µg/L	<10	<10	<10	<10
TRHC$_6$ - C$_{10}$ less BTEX (F1)	µg/L	<10	<10	<10	<10
Benzene	µg/L	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	100	99	101	100
Surrogate toluene-d8	%	97	98	97	97
Surrogate 4-BFB	%	95	95	97	96

svTRH (C10-C40) in Water					
Our Reference:	UNITS	123653-1	123653-2	123653-3	123653-4
Your Reference	----------	MW1	MW13	MW15	DUP A
Date Sampled	----------	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Type of sample		Water	Water	Water	Water
Date extracted	-	18/02/2015	18/02/2015	18/02/2015	18/02/2015
Date analysed	-	19/02/2015	19/02/2015	19/02/2015	19/02/2015
TRHC$_{10}$ - C$_{14}$	µg/L	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	µg/L	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	µg/L	<100	<100	<100	<100
TRH>C$_{10}$ - C$_{16}$	µg/L	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	µg/L	<50	<50	<50	<50
TRH>C$_{16}$ - C$_{34}$	µg/L	<100	<100	<100	<100
TRH>C$_{34}$ - C$_{40}$	µg/L	<100	<100	<100	<100
Surrogate o-Terphenyl	%	107	102	105	104

PAHs in Water - Low Level Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	123653-1 MW1 16/02/2015 Water	123653-2 MW13 16/02/2015 Water	123653-3 MW15 16/02/2015 Water
Date extracted	-	18/02/2015	18/02/2015	18/02/2015
Date analysed	-	18/02/2015	18/02/2015	18/02/2015
Naphthalene	µg/L	<0.2	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	104	99	99

HM in water - dissolved				
Our Reference:	UNITS	123653-1	123653-2	123653-3
Your Reference	----------	MW1	MW13	MW15
Date Sampled	----------	16/02/2015	16/02/2015	16/02/2015
Type of sample		Water	Water	Water
Date prepared	-	18/02/2015	18/02/2015	18/02/2015
Date analysed	-	18/02/2015	18/02/2015	18/02/2015
Arsenic-Dissolved	µg/L	<1	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1
Copper-Dissolved	µg/L	<1	<1	<1
Lead-Dissolved	µg/L	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	1	7	2
Zinc-Dissolved	µg/L	43	31	31

Miscellaneous Inorganics				
Our Reference:	UNITS	123653-1	123653-2	123653-3
Your Reference	----------	MW1	MW13	MW15
Date Sampled	----------	16/02/2015	16/02/2015	16/02/2015
Type of sample		Water	Water	Water
Date prepared	-	17/02/2015	17/02/2015	17/02/2015
Date analysed	-	17/02/2015	17/02/2015	17/02/2015
pH	pH Units	6.3	5.9	6.3
Electrical Conductivity	µS/cm	310	320	900
Hardness	mgCaCO3 /L	56	26	54
Calcium - Dissolved	mg/L	16	4.3	12
Magnesium - Dissolved	mg/L	4.1	3.7	5.7

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Metals-022 ICP-MS	Determination of various metals by ICP-MS.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25oC in accordance with APHA latest edition 2510 and Rayment & Lyons.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			17/02/2015	123653-1	17/02/2015 || 18/02/2015	LCS-W1	17/02/2015
Date analysed	-			18/02/2015	123653-1	18/02/2015 || 18/02/2015	LCS-W1	18/02/2015
TRHC$_6$ - C$_9$	µg/L	10	Org-016	<10	123653-1	<10 || <10	LCS-W1	102%
TRHC$_6$ - C$_{10}$	µg/L	10	Org-016	<10	123653-1	<10 || <10	LCS-W1	102%
Benzene	µg/L	1	Org-016	<1	123653-1	<1 || <1	LCS-W1	98%
Toluene	µg/L	1	Org-016	<1	123653-1	<1 || <1	LCS-W1	97%
Ethylbenzene	µg/L	1	Org-016	<1	123653-1	<1 || <1	LCS-W1	104%
m+p-xylene	µg/L	2	Org-016	<2	123653-1	<2 || <2	LCS-W1	105%
o-xylene	µg/L	1	Org-016	<1	123653-1	<1 || <1	LCS-W1	103%
Naphthalene	µg/L	1	Org-013	<1	123653-1	<1 || <1	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-016	101	123653-1	100 || 102 || RPD: 2	LCS-W1	103%
Surrogate toluene-d8	%		Org-016	96	123653-1	97 || 97 || RPD: 0	LCS-W1	100%
Surrogate 4-BFB	%		Org-016	97	123653-1	95 || 96 || RPD: 1	LCS-W1	97%

QUALITY CONTROL svTRH (C10-C40) in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			18/02/2015	[NT]	[NT]	LCS-W1	18/02/2015
Date analysed	-			18/02/2015	[NT]	[NT]	LCS-W1	18/02/2015
TRHC$_{10}$ - C$_{14}$	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	121%
TRHC$_{15}$ - C$_{28}$	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	114%
TRHC$_{29}$ - C$_{36}$	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	108%
TRH>C$_{10}$ - C$_{16}$	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	121%
TRH>C$_{16}$ - C$_{34}$	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	114%
TRH>C$_{34}$ - C$_{40}$	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	108%
Surrogate o-Terphenyl	%		Org-003	91	[NT]	[NT]	LCS-W1	85%

QUALITY CONTROL PAHs in Water - Low Level	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			18/02/2015	[NT]	[NT]	LCS-W1	18/02/2015
Date analysed	-			18/02/2015	[NT]	[NT]	LCS-W1	18/02/2015
Naphthalene	µg/L	0.2	Org-012 subset	<0.2	[NT]	[NT]	LCS-W1	97%
Acenaphthylene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-W1	101%
Phenanthrene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-W1	100%

QUALITY CONTROL PAHs in Water - Low Level	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Anthracene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-W1	99%
Pyrene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-W1	116%
Benzo(a)anthracene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Chrysene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-W1	92%
Benzo(b,j+k) fluoranthene	µg/L	0.2	Org-012 subset	<0.2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-W1	105%
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	96	[NT]	[NT]	LCS-W1	111%
QUALITY CONTROL HM in water - dissolved	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			18/02/2015	123653-1	18/02/2015 || 18/02/2015	LCS-W1	18/02/2015
Date analysed	-			18/02/2015	123653-1	18/02/2015 || 18/02/2015	LCS-W1	18/02/2015
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	123653-1	<1 || <1	LCS-W1	99%
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	123653-1	<0.1 || <0.1	LCS-W1	101%
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	123653-1	<1 || <1	LCS-W1	99%
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	123653-1	<1 || <1	LCS-W1	96%
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	123653-1	<1 || <1	LCS-W1	107%
Mercury-Dissolved	µg/L	0.05	Metals-021 CV-AAS	<0.05	123653-1	<0.05 || <0.05	LCS-W1	96%
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	123653-1	1 || 1 || RPD: 0	LCS-W1	101%
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	123653-1	43 || 43 || RPD: 0	LCS-W1	99%

QUALITY CONTROL Miscellaneous Inorganics	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			17/02/2015	123653-1	17/02/2015 || 17/02/2015	LCS-W1	17/02/2015
Date analysed	-			17/02/2015	123653-1	17/02/2015 || 17/02/2015	LCS-W1	17/02/2015
pH	pH Units		Inorg-001	[NT]	123653-1	6.3 || 6.2 || RPD: 2	LCS-W1	103%
Electrical Conductivity	µS/cm	1	Inorg-002	<1	123653-1	310 || 310 || RPD: 0	LCS-W1	105%
Hardness	mgCaCO3/L	3		[NT]	123653-1	56 || 57 || RPD: 2	[NR]	[NR]
Calcium - Dissolved	mg/L	0.5	Metals-020 ICP-AES	<0.5	123653-1	16 || 16 || RPD: 0	LCS-W1	100%
Magnesium - Dissolved	mg/L	0.5	Metals-020 ICP-AES	<0.5	123653-1	4.1 || 4.2 || RPD: 2	LCS-W1	101%

QUALITY CONTROL HM in water - dissolved	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	123653-2	18/02/2015
Date analysed	-	[NT]	[NT]	123653-2	18/02/2015
Arsenic-Dissolved	µg/L	[NT]	[NT]	123653-2	98%
Cadmium-Dissolved	µg/L	[NT]	[NT]	123653-2	104%
Chromium-Dissolved	µg/L	[NT]	[NT]	123653-2	85%
Copper-Dissolved	µg/L	[NT]	[NT]	123653-2	85%
Lead-Dissolved	µg/L	[NT]	[NT]	123653-2	98%
Mercury-Dissolved	µg/L	[NT]	[NT]	123653-2	96%
Nickel-Dissolved	µg/L	[NT]	[NT]	123653-2	88%
Zinc-Dissolved	µg/L	[NT]	[NT]	123653-2	93%

QUALITY CONTROL Miscellaneous Inorganics	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	123653-2	18/02/2015
Date analysed	-	[NT]	[NT]	123653-2	18/02/2015
pH	pH Units	[NT]	[NT]	[NR]	[NR]
Electrical Conductivity	µS/cm	[NT]	[NT]	[NR]	[NR]
Hardness	mgCaCO3/L	[NT]	[NT]	[NR]	[NR]
Calcium - Dissolved	mg/L	[NT]	[NT]	123653-2	95%
Magnesium - Dissolved	mg/L	[NT]	[NT]	123653-2	102%

Report Comments:

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

Quality Control Definitions

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

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

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

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

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

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.
Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.
Spikes for Physical and Aggregate Tests are not applicable.
For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

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

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

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD	EIS Job Number: E25232KH	ENVIRONMENTAL INVESTIGATION SERVICES
12 ASHLEY STREET		REAR OF 115 WICKS ROAD
CHATSWOOD NSW 2067		MACQUARIE PARK, NSW 2113
P: (02) 99106200	Date Results Required: STANDARD	P: 02-9888 5000 F: 02-9888 5001
F: (02) 99106201		
Attention: Aileen	Page: 16/2/15	Attention: Todd Hore

Location: Bulli

Sampler: TH

Sample Preserved in Esky on Ice

Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 3L	EC/pH/Hardness	Combo 6	Combo 6a	8 Metals	PAHs	TRH/BTEXN	BTEX	Asbestos			
16/02/2015	1	MW1		B, A, H		Water	X	X										
16/02/2015	2	MW13		B, A, H		Water	X	X										
16/02/2015	3	MW15		B, A, H		Water	X	X										
16/02/2015	4	Dup A		B, A, H		Water							X					

ENVIROLAB

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 236533

Date Received: 17/2/15

Time Received: 10.00

Received by: CBB

Temp: Cool/Ambient

Cooling: Ice/Icepack 7.8°

Security: Intact/Broken/None

Remarks (comments/detection limits required):

Sample Containers:
B - BTEX Vial
A - 500mL Amber
H - HNO3 Bottle

Relinquished By:	Date:	Time:	Received By:	Date:
	17/2/15	8.30am	CBB ECB	17/2/15

10.00

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

SAMPLE RECIEPT ADVICE

Client Details	
Client	Environmental Investigation Services
Attention	Todd Hore

Sample Login Details	
Your Reference	E25232KH, Bulli
Envirolab Reference	123653
Date Sample Received	17/02/2015
Date Instructions Received	17/02/2015
Date Results Expected to be Reported	24/02/2015

Sample Condition	
Samples received in appropriate condition for analysis	YES
No. of Samples Provided	4 waters
Turnaround Time Requested	Standard
Temperature on receipt (°C)	7.8
Cooling Method	Ice
Sampling Date Provided	YES

Comments
Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	Phone: 02 9910 6200
Fax: 02 9910 6201	Fax: 02 9910 6201
Email: ahie@envirolabservices.com.au	Email: jhurst@envirolabservices.com.au

Sample and Testing Details on following page

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

Sample Id	*Calcium - Dissolved*	*Electrical Conductivity*	*Hardness*	*HM in water - dissolved*	*Magnesium - Dissolved*	*PAHs in Water - Low Level*	*pH*	*svTRH (C10-C40) in Water*	*vTRH(C6-C10)/BTEXN in Water*
MW1	✓	✓	✓	✓	✓	✓	✓	✓	✓
MW13	✓	✓	✓	✓	✓	✓	✓	✓	✓
MW15	✓	✓	✓	✓	✓	✓	✓	✓	✓
DUP A								✓	✓

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 123151-A

Client:

Environmental Investigation Services
PO Box 976
North Ryde BC
NSW 1670

Attention: Todd Hore

Sample log in details:

Your Reference:	**E25232KH, Bulli**
No. of samples:	Additional testing on 1 soil
Date samples received / completed instructions received	06/02/15 / 12/02/15

Analysis Details:

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

Report Details:

Date results requested by: / Issue Date:	19/02/15 / 19/02/15
Date of Preliminary Report:	Not Issued

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Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with *.**

Results Approved By:

Jacinta Hurst
Laboratory Manager

Misc Inorg - Soil		
Our Reference:	UNITS	123151-A-12
Your Reference	----------	BH18
Depth	----------	0-0.2
Date Sampled		04/02/2015
Type of sample		soil
Date prepared	-	17/02/2015
Date analysed	-	18/02/2015
pH 1:5 soil:water	pH Units	7.6
Clay in soils <2um	% (w/w)	13

Metals in TCLP USEPA1311		
Our Reference:	UNITS	123151-A-12
Your Reference	----------	BH18
Depth	----------	0-0.2
Date Sampled		04/02/2015
Type of sample		soil
Date extracted	-	17/02/2015
Date analysed	-	17/02/2015
pH of soil for fluid# determ.	pH units	7.0
pH of soil for fluid # determ. (acid)	pH units	1.7
Extraction fluid used	-	1
pH of final Leachate	pH units	5.2
Lead in TCLP	mg/L	0.04

CEC		
Our Reference:	UNITS	123151-A-12
Your Reference	----------	BH18
Depth	----------	0-0.2
Date Sampled		04/02/2015
Type of sample		soil
Date extracted	-	17/02/2015
Date analysed	-	17/02/2015
Exchangeable Ca	meq/100g	8.7
Exchangeable K	meq/100g	0.2
Exchangeable Mg	meq/100g	3.0
Exchangeable Na	meq/100g	<0.1
Cation Exchange Capacity	meq/100g	12

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
AS1289.3.6.3	Determination Particle Size Analysis using AS1289.3.6.3 and AS1289.3.6.1 and in house method INORG-107. Clay fraction at <2um reported.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using AS 4439 and USEPA 1311 and in house method INORG-004.
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP).
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-009	Determination of exchangeable cations and cation exchange capacity in soil based on Rayment and Lyons 2011.

QUALITY CONTROL Misc Inorg - Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			[NT]	[NT]	[NT]	LCS-1	17/02/2015
Date analysed	-			[NT]	[NT]	[NT]	LCS-1	18/02/2015
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	LCS-1	101%
Clay in soils <2um	% (w/w)		AS1289.3.6.3	[NT]	[NT]	[NT]	[NR]	[NR]
QUALITY CONTROL Metals in TCLP USEPA1311	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			17/02/2015	[NT]	[NT]	LCS-2	17/02/2015
Date analysed	-			17/02/2015	[NT]	[NT]	LCS-2	17/02/2015
Lead in TCLP	mg/L	0.03	Metals-020 ICP-AES	<0.03	[NT]	[NT]	LCS-2	95%
QUALITY CONTROL CEC	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			17/02/2015	[NT]	[NT]	LCS-1	17/02/2015
Date analysed	-			17/02/2015	[NT]	[NT]	LCS-1	17/02/2015
Exchangeable Ca	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-1	106%
Exchangeable K	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-1	103%
Exchangeable Mg	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-1	106%
Exchangeable Na	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-1	116%
Cation Exchange Capacity	meq/100g	1	Metals-009	<1.0	[NT]	[NT]	[NR]	[NR]

Report Comments:

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

Quality Control Definitions

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

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

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

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

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

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.
Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.
Spikes for Physical and Aggregate Tests are not applicable.
For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

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

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

Aileen Hie

From: Todd Hore <thore@jkgroup.net.au>
Sent: Thursday, 12 February 2015 4:45 PM
To: Aileen Hie
Subject: 123151

Aileen,
could you please schedule the following additional analyses for the EIS project E25232KH, Bulli:

- 123151-12 – TCLP lead;
- 123151-12 – pH, CEC, Clay Content;

Please undertake the above on a standard turnaround.

123151 A
std T/A
due 19/2

Regards,

Todd Hore
Associate

EIS Environmental Investigation Services
CONSULTING ENVIRONMENTAL ENGINEERS AND SCIENTISTS

Tel: 02 9888 5000 PO Box 976 115 Wicks Road
Fax: 02 9888 5001 North Ryde BC NSW 1670 Macquarie Park NSW 2113
thore@jkgroup.net.au
www.jkgeotechnics.com.au

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 123480-A

Client:

Environmental Investigation Services
PO Box 976
North Ryde BC
NSW 1670

Attention: Todd Hore

Sample log in details:

Your Reference:	**E25232KH, Bulli**
No. of samples:	Additional Testing on 1 Soil
Date samples received / completed instructions received	12/02/15 / 18/02/15

Analysis Details:

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

Report Details:

Date results requested by: / Issue Date:	25/02/15 / 20/02/15
Date of Preliminary Report:	Not Issued

NATA accreditation number 2901. This document shall not be reproduced except in full.
Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with *.**

Results Approved By:

Jacinta Hurst
Laboratory Manager

PAHs in TCLP (USEPA 1311)		
Our Reference:	UNITS	123480-A-10
Your Reference	----------	BH4
Depth	----------	0-0.1
Date Sampled		10/02/2015
Type of sample		Soil
pH of soil for fluid# determ.	pH units	9.3
pH of soil for fluid # determ. (acid)	pH units	1.7
Extraction fluid used	-	1
pH of final Leachate	pH units	6.3
Date extracted	-	19/02/2015
Date analysed	-	19/02/2015
Naphthalene in TCLP	mg/L	<0.001
Acenaphthylene in TCLP	mg/L	<0.001
Acenaphthene in TCLP	mg/L	<0.001
Fluorene in TCLP	mg/L	<0.001
Phenanthrene in TCLP	mg/L	<0.001
Anthracene in TCLP	mg/L	<0.001
Fluoranthene in TCLP	mg/L	<0.001
Pyrene in TCLP	mg/L	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001
Chrysene in TCLP	mg/L	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001
Total +ve PAH's	mg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	109

Method ID	Methodology Summary
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using AS 4439 and USEPA 1311 and in house method INORG-004.
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP).
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Org-012 subset	Leachates are extracted with Dichloromethane and analysed by GC-MS.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.

QUALITY CONTROL PAHs in TCLP (USEPA 1311)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			19/02/2015	[NT]	[NT]	LCS-W1	19/02/2015
Date analysed	-			19/02/2015	[NT]	[NT]	LCS-W1	19/02/2015
Naphthalene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	LCS-W1	84%
Acenaphthylene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Acenaphthene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Fluorene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	LCS-W1	96%
Phenanthrene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	LCS-W1	96%
Anthracene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Fluoranthene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	LCS-W1	94%
Pyrene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	LCS-W1	111%
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Chrysene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	LCS-W1	84%
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-012 subset	<0.002	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	LCS-W1	95%
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012	99	[NT]	[NT]	LCS-W1	107%

Report Comments:

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job

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

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
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When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Appendix D: Report Explanatory Notes

STANDARD SAMPLING PROCEDURE

These protocols specify the basic procedures to be used when sampling soils or groundwater for environmental site assessments undertaken by EIS. The purpose of these protocols is to provide standard methods for: sampling, decontamination procedures for sampling equipment, sample preservation, sample storage and sample handling. Deviations from these procedures must be recorded.

Soil Sampling

- Prepare a borehole/test pit log or made a note of the sample description for stockpiles.
- Layout sampling equipment on clean plastic sheeting to prevent direct contact with ground surface. The work area should be at a distance from the drill rig/excavator such that the machine can operate in a safe manner.
- Ensure all sampling equipment has been decontaminated prior to use.
- Remove any surface debris from the immediate area of the sampling location.
- Collect samples and place in glass jar with a Teflon seal. This should be undertaken as quickly as possible to prevent the loss of any volatiles. If possible, fill the glass jars completely.
- Collect samples for asbestos analysis and place in a zip-lock plastic bag.
- Label the sampling containers with the EIS job number, sample location (eg. BH1), sampling depth interval and date. If more than one sample container is used, this should also be indicated (eg. 2 = Sample jar 1 of 2 jars).
- Photoionisation detector (PID) screening of volatile organic compounds (VOCs) should be undertaken on samples using the soil sample headspace method. Headspace measurements are taken following equilibration of the headspace gasses in partly filled zip-lock plastic bags. PID headspace data is recorded on the borehole/test pit log and the chain of custody forms.
- Record the lithology of the sample and sample depth on the borehole/test pit log generally in accordance with AS1726-1993[22].
- Store the sample in a sample container cooled with ice or chill packs. On completion of the sampling the sample container should be delivered to the lab immediately or stored in the refrigerator prior to delivery to the lab. All samples are preserved in accordance with the standards outlined in the report.
- Check for the presence of groundwater after completion of each borehole using an electronic dip metre or water whistle. Boreholes should be left open until the end of fieldwork where it is safe to do so. All groundwater levels in the boreholes should be rechecked on the completion of the fieldwork.
- Backfill the boreholes/test pits with the excavation cuttings or clean sand prior to leaving the site.

Decontamination Procedures for Soil Sampling Equipment

- All sampling equipment should be decontaminated between every sampling location. This excludes single use PVC tubing used for push tubes etc. Equipment and materials required for the decontamination include:
  - Phosphate free detergent (Decon 90);
  - Potable water;
  - Stiff brushes; and
  - Plastic sheets.
- Ensure the decontamination materials are clean prior to proceeding with the decontamination.
- Fill both buckets with clean potable water and add phosphate free detergent to one bucket.

[22] Standards Australia, (1993), *Geotechnical Site Investigations.* (AS1726-1993)

- In the bucket containing the detergent, scrub the sampling equipment until all the material attached to the equipment has been removed.
- Rinse sampling equipment in the bucket containing potable water.
- Place cleaned equipment on clean plastic sheets.

If all materials are not removed by this procedure, high-pressure water cleaning is recommended. If any equipment is not completely decontaminated by both these processes, then the equipment should not be used until it has been thoroughly cleaned.

Groundwater Sampling

Groundwater samples are more sensitive to contamination than soil samples and therefore adhesion to this protocol is particularly important to obtain reliable, reproducible results. The recommendations detailed in AS/NZS 5667.1:1998 are considered to form a minimum standard.

The basis of this protocol is to maintain the security of the borehole and obtain accurate and representative groundwater samples. The following procedure should be used for collection of groundwater samples from previously installed groundwater monitoring wells.

- After monitoring well installation, at least three bore volumes should be pumped from the monitoring wells (well development) to remove any water introduced during the drilling process and/or the water that is disturbed during installation of the monitoring well. This should be completed prior to purging and sampling.
- Groundwater monitoring wells should then be left to recharge for at least three days before purging and sampling. Prior to purging or sampling, the condition of each well should observed and any anomalies recorded on the field data sheets. The following information should be noted: the condition of the well, noting any signs of damage, tampering or complete destruction; the condition and operation of the well lock; the condition of the protective casing and the cement footing (raised or cracked); and, the presence of water between protective casing and well.
- Measure the groundwater level from the collar of the piezometer/monitoring well using an electronic dip meter. The collar level should be taken (if required) during the site visit using a dumpy level and staff.
- Purging and sampling of piezometers/monitoring wells is done on the same site visit when using micro-purge (or other low flow) techniques.
- Layout and organize all equipment associated with groundwater sampling in a location where they will not interfere with the sampling procedure and will not pose a risk of contaminating samples. Equipment generally required includes:
  - Stericup single-use filters (for heavy metals samples);
  - Bucket with volume increments;
  - Sample containers: teflon bottles with 1 ml nitric acid, 75mL glass vials with 1 mL hydrochloric acid, 1 L amber glass bottles;
  - Bucket with volume increments;
  - Flow cell;
  - pH/EC/Eh/Temperature meters;
  - Plastic drums used for transportation of purged water;
  - Esky and ice;
  - Nitrile gloves;
  - Distilled water (for cleaning);
  - Electronic dip meter;
  - Low flow peristaltic pump and associated tubing; and
  - Groundwater sampling forms.

- Ensure all non-disposable sampling equipment is decontaminated or that new disposable equipment is available prior to any work commencing at a new location. The procedure for decontamination of groundwater equipment is outlined at the end of this section.
- Disposable gloves should be used whenever samples are taken to protect the sampler and to assist in avoidance of contamination.
- Groundwater samples are obtained from the monitoring wells using low flow sampling equipment to reduce the disturbance of the water column and loss of volatiles.
- During pumping to purge the well, the pH, temperature, conductivity, dissolved oxygen, redox potential and groundwater levels are monitored (where possible) using calibrated field instruments to assess the development of steady state conditions. Steady state conditions are generally considered to have been achieved when the difference in the pH measurements was less than 0.2 units and the difference in conductivity was less than 10%.
- All measurements are recorded on specific data sheets.
- Once steady state conditions are considered to have been achieved, groundwater samples are obtained directly from the pump tubing and placed in appropriate glass bottles, BTEX vials or plastic bottles.
- All samples are preserved in accordance with water sampling requirements specified by the laboratory and placed in an insulated container with ice. Groundwater samples are preserved by immediate storage in an insulated sample container with ice.
- At the end of each water sampling complete a chain of custody form for samples being sent to the laboratory.

Decontamination Procedures for Groundwater Sampling Equipment

- All equipment associated with the groundwater sampling procedure (other than single-use items) should be decontaminated between every sampling location.
- The following equipment and materials are required for the decontamination procedure:
  - Phosphate free detergent;
  - Potable water;
  - Distilled water; and
  - Plastic Sheets or bulk bags (plastic bags).
- Fill one bucket with clean potable water and phosphate free detergent, and one bucket with distilled water.
- Flush potable water and detergent through pump head. Wash sampling equipment and pump head using brushes in the bucket containing detergent until all materials attached to the equipment are removed.
- Flush pump head with distilled water.
- Change water and detergent solution after each sampling location.
- Rinse sampling equipment in the bucket containing distilled water.
- Place cleaned equipment on clean plastic sheets.
- If all materials are not removed by this procedure that equipment should not be used until it has been thoroughly cleaned

QA/QC DEFINITIONS

The QA/QC terms used in this report are defined below. The definitions are in accordance with US EPA publication SW-846, entitled *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (1994)[23] methods and those described in *Environmental Sampling and Analysis, A Practical Guide,* (1991)[24].

Practical Quantitation Limit (PQL), Limit of Reporting (LOR) & Estimated Quantitation Limit (EQL)

These terms all refer to the concentration above which results can be expressed with a minimum 95% confidence level. The laboratory reporting limits are generally set at ten times the standard deviation for the Method Detection Limit for each specific analyte. For the purposes of this report the LOR, PQL, and EQL are considered to be equivalent.

When assessing laboratory data it should be borne in mind that values at or near the PQL have two important limitations: *"The uncertainty of the measurement value can approach, and be even equal, the reported value. Secondly, confirmation of the analytes reported is virtually impossible unless identification uses highly selective methods. These issues diminish when reliably measurable amounts of analytes are present. Accordingly, legal and regulatory actions should be limited to data at or above the reliable detection limit"* (Keith, 1991).

Precision

The degree to which data generated from repeated measurements differ from one another due to random errors. Precision is measured using the standard deviation or Relative Percent Difference (RPD).

Accuracy

Accuracy is a measure of the agreement between an experimental result and the true value of the parameter being measured (i.e. the proximity of an averaged result to the true value, where all random errors have been statistically removed). The assessment of accuracy for an analysis can be achieved through the analysis of known reference materials or assessed by the analysis of surrogates, field blanks, trip spikes and matrix spikes. Accuracy is typically reported as percent recovery.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is primarily dependent upon the design and implementation of the sampling program. Representativeness of the data is partially ensured by the avoidance of contamination, adherence to sample handing and analysis protocols and use of proper chain-of-custody and documentation procedures.

Completeness

Completeness is a measure of the number of valid measurements in a data set compared to the total number of measurements made and overall performance against DQIs. The following information is assessed for completeness:

- Chain-of-custody forms;
- Sample receipt form;
- All sample results reported;

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[23] US EPA, (1994). *SW-846: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* (US EPA SW-846)

[24] Keith., H, (1991). *Environmental Sampling and Analysis, A Practical Guide.*

- All blank data reported;
- All laboratory duplicate and RPDs calculated;
- All surrogate spike data reported;
- All matrix spike and lab control spike (LCS) data reported and RPDs calculated;
- Spike recovery acceptable limits reported; and
- NATA stamp on reports.

Comparability

Comparability is the evaluation of the similarity of conditions (e.g. sample depth, sample homogeneity) under which separate sets of data are produced. Data comparability checks include a bias assessment that may arise from the following sources:

- Collection and analysis of samples by different personnel; Use of different techniques;
- Collection and analysis by the same personnel using the same methods but at different times; and
- Spatial and temporal changes (due to environmental dynamics).

Blanks

The purpose of laboratory and field blanks is to check for artefacts and interferences that may arise during sampling, transport and analysis.

Matrix Spikes

Samples are spiked with laboratory grade standards to detect interactive effects between the sample matrix and the analytes being measured. Matrix Spikes are reported as a percent recovery and are prepared for 1 in every 20 samples. Sample batches that contain less than 20 samples may be reported with a Matrix Spike from another batch. The percent recovery is calculated using the formula below. Acceptable recovery limits are 70% to 130%.

$$\frac{\text{(Spike Sample Result – Sample Result) x 100}}{\text{Concentration of Spike Added}}$$

Surrogate Spikes

Samples are spiked with a known concentration of compounds that are chemically related to the analyte being investigated but unlikely to be detected in the environment. The purpose of the Surrogate Spikes is to check the accuracy of the analytical technique. Surrogate Spikes are reported as percent recovery.

Duplicates

Laboratory duplicates measure precision, expressed as Relative Percent Difference. Duplicates are prepared from a single field sample and analysed as two separate extraction procedures in the laboratory. The RPD is calculated using the formula where D1 is the sample concentration and D2 is the duplicate sample concentration:

$$\frac{(D1 - D2) \times 100}{\{(D1 + D2)/2\}}$$

SCREENING CRITERIA DEFINITIONS

The following definitions have been adopted based on Schedule B(1) of NEPM (2013) and are relevant to Tier 1 screening criteria adopted for contamination assessments.

Health investigation levels (HILs) have been developed for a broad range of metals and organic substances. The HILs are applicable for assessing human health risk via all relevant pathways of exposure. The HILs are generic to all soil types and apply generally to a depth of 3 m below the surface for residential use. Site-specific conditions should determine the depth to which HILs apply for other land uses.

Health screening levels (HSLs) have been developed for selected petroleum compounds and fractions and are applicable to assessing human health risk via the inhalation and direct contact pathways. The HSLs depend on specific soil physicochemical properties, land use scenarios, and the characteristics of building structures. They apply to different soil types, and depths below surface to >4 m. HSLs have also been developed for asbestos and apply to the top 3m of soil.

Ecological investigation levels (EILs) have been developed for selected metals and organic substances and are applicable for assessing risk to terrestrial ecosystems. EILs depend on specific soil physicochemical properties and land use scenarios and generally apply to the top 2 m of soil.

Ecological screening levels (ESLs) have been developed for selected petroleum hydrocarbon compounds and total petroleum/recoverable hydrocarbon (TPH/TRH) fractions and are applicable for assessing risk to terrestrial ecosystems. ESLs broadly apply to coarse- and fine-grained soils and various land uses. They are generally applicable to the top 2 m of soil.

Groundwater investigation levels (GILs) are the concentrations of a contaminant in groundwater above which further investigation (point of extraction) or a response (point of use) is required. GILs are based on Australian water quality guidelines and drinking water guidelines and are applicable for assessing human health risk and ecological risk from direct contact (including consumption) with groundwater.

Management Limits for Petroleum hydrocarbons are applicable to petroleum hydrocarbon compounds only. They are applicable as screening levels following evaluation of human health and ecological risks and risks to groundwater resources. They are relevant for operating sites where significant sub-surface leakage of petroleum compounds has occurred and when decommissioning industrial and commercial sites.

Interim soil vapour health investigation levels (interim HILs) have been developed for selected volatile organic chlorinated compounds (VOCCs) and are applicable to assessing human health risk by the inhalational pathway. They have interim status pending further scientific work on volatile gas modelling from the sub-surface to building interiors for chlorinated compounds.

Appendix E: Data (QA/QC) Evaluation

DATA (QA/QC) EVALUATION

INTRODUCTION

This Data (QA/QC) Evaluation forms part of the validation process for the DQOs documented in Section 6.1 of this report. Checks were made to assess the data in terms of precision, accuracy, representativeness,2comparability2and2completeness.2These2'PARCC'2parameters2are2referred2to2 collectively as DQIs and are defined in the Report Explanatory Notes attached in the report appendices.

Field and Laboratory Considerations

The quality of the analytical data produced for this project has been considered in relation to the following:

- Sample collection, storage, transport and analysis;
- Laboratory PQLs;
- Field QA/QC results; and
- Laboratory QA/QC results.

Field QA/QC Samples and Analysis

A summary of the field QA/QC samples collected and analysed for this assessment is provided in the following table:

Sample Type	Sample Identification	Frequency (of Sample Type)	Analysis Performed
Intra-laboratory duplicate (soil)	Dup GFS1 (primary sample BH18 (0-0.2m))	Approximately 10% of primary samples	Heavy metals, TRH/BTEX, PAHs
Intra-laboratory duplicate (soil)	Dup GFS2 (primary sample BH19 (0-0.2m))	As above	Heavy metals, TRH/BTEX, PAHs
Intra-laboratory duplicate (soil)	Dup GFS3 (primary sample BH14 (0-0.2m))	As above	Heavy metals, TRH/BTEX, PAHs
Intra-laboratory duplicate (water	Dup A (primary sample MW13)	Approximately 30% of primary samples	TRH/BTEX
Trip blank (soil)	TB1 (11/2/2015)	One for the assessment to demonstrate adequacy of storage and transport methods	TRH/BTEX

The results for the field QA/QC samples are detailed in the laboratory summary tables (Table L to Table M inclusive) attached to the assessment report and are discussed in the subsequent sections of this Data (QA/QC) Evaluation report.

Data Assessment Criteria

EIS adopted the following criteria for assessing the field and laboratory QA/QC analytical results:

Field Duplicates

Acceptable targets for precision of field duplicates in this report will be less than 50% RPD for concentrations greater than 10 times the PQL, less than 75% RPD for concentrations between five and 10 times the PQL and less than 100% RPD for concentrations that are less than five times the PQL. RPD failures will be considered qualitatively on a case-by-case basis taking into account factors such as the sample type, collection methods and the specific analyte where the RPD exceedance was reported.

Field Blanks

Acceptable targets for field blank samples in this report will be less than the PQL for organic analytes..

Laboratory QA/QC

The suitability of the laboratory data is assessed against the laboratory QA/QC criteria which is outlined in the laboratory reports. These criteria were developed and implemented in accordance with the laboratory's NATA accreditation and align with the acceptable limits for QA/QC samples as outlined in NEPM (2013) and other relevant guidelines.

A summary of the acceptable limits adopted by the primary laboratory (Envirolab) is provided below:

RPDs

- Results that are <5 times the PQL, any RPD is acceptable; and
- Results >5 times the PQL, RPDs between 0-50% are acceptable.

Laboratory Control Samples (LCS) and Matrix Spikes

- 70-130% recovery acceptable for metals and inorganics;
- 60-140% recovery acceptable for organics; and
- 10-140% recovery acceptable for VOCs.

Surrogate Spikes

- 60-140% recovery acceptable for general organics; and
- 10-140% recovery acceptable for VOCs.

Method Blanks

- All results less than PQL.

DATA EVALUATION

Sample Collection, Storage, Transport and Analysis

Samples were collected by trained field staff in accordance with the EIS SSP. The SSP was developed to be consistent with relevant guidelines, including NEPM (2013) and other guidelines made under the CLM Act 1997.

Appropriate sample preservation, handling and storage procedures were adopted. Laboratory analysis was undertaken within specified holding times in accordance with Schedule B(3) of NEPM (2013) and the laboratory NATA accredited methodologies.

Review of the project data also indicated that:

- COC documentation was adequately maintained;
- Sample receipt advice documentation was provided for all sample batches;
- All analytical results were reported; and
- Consistent units were used to report the analysis results.

Laboratory PQLs

Appropriate PQLs were adopted for the analysis and all PQLs were below the SAC with the exception of the anthracene PQL for groundwater analysis which was 10 times greater than the ecological and human contact SAC. In light of the PAH concentrations reported for soil and groundwater, EIS are of the opinion that this is not significant, and it does not affect the quality of the dataset as a whole or the outcome of the assessment.

Field QA/QC Sample Results

Field Duplicates

The results indicated that field precision was acceptable. An elevated RPDs was reported for pyrene in Dup GSF2/BH19 (0-0.2m). This is the result of the very low concentrations of pyrene in both samples. As both the primary and duplicate sample results were less than the SAC, the exceedances are not considered to have had an adverse impact on the data set as a whole.

Field Blanks

During the investigation, one soil trip blank was placed in the esky during sampling and transported back to the laboratory. The results were all less than the PQLs, therefore cross contamination between samples that may have significance for data validity did not occur.

Laboratory QA/QC

The analytical methods implemented by the laboratory were performed in accordance with their NATA accreditation and were consistent with Schedule B(3) of NEPM (2013). The frequency of data reported for the laboratory QA/QC (i.e. duplicates, spikes, blanks, LCS) was considered to be acceptable for the purpose of this assessment.

DATA QUALITY SUMMARY

EIS are of the opinion that the data are adequately precise, accurate, representative, comparable and complete to serve as a basis for interpretation to achieve the investigation objectives.

There was only one groundwater monitoring event undertaken for the assessment. On this basis there is some uncertainty around the representativeness of the groundwater data, particularly during different climatic conditions and after wet/dry periods.

Appendix F: Field Work Documents

EIS

Groundwater Monitoring Well Development Report

Client:		Job No.:	
Project:		Well No.:	1
Location:		Depth (m):	

WELL FINISH DETAILS

	Gatic Cover		Standpipe		PVC Pipe

WELL DEVELOPMENT DETAILS

Method:		SWL – Before: (m)	4.85 TOC
Date:	11/2/15	Time – Before:	
Undertaken By:		SWL – After: (m)	
Total Vol. Removed:	4	Time – After:	
PID Reading (ppm):			

Comments:

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/m)	pH	Eh (mV)
	22.8	6.9	386.5	6.57	76.7
2	21.8	7.2	348.0	6.33	72.2
3	21.7	7.3	327.4	6.16	71.1

Comments: Purged effectively dry,

Tested By:	
Date Tested:	
Checked By:	
Date:	

Remarks:

- All measurements are corrected to ground level
- All stated Volumes are in Litres
- SWL is an abbreviation for standing water level
- Steady state conditions - difference in the pH less than 0.2 units and difference in conductivity less than 10%
- Minimum 3 monitoring well volumes are purged

Groundwater Monitoring Well Development Report

Client:		**Job No.:**	
Project:		**Well No.:**	13
Location:		**Depth (m):**	

WELL FINISH DETAILS

	Gatic Cover	X	Standpipe		PVC Pipe

WELL DEVELOPMENT DETAILS

Method:	Peristaltic Pump	**SWL – Before: (m)**	1.15 TOPVC
Date:	11/2/15	**Time – Before:**	
Undertaken By:	GF	**SWL – After: (m)**	
Total Vol. Removed:	20	**Time – After:**	
PID Reading (ppm):		YSI	2

Comments:

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/m)	pH	Eh (mV)
Flowcell	19.0	5.0	5731	6.25	194.3
2	18.0	4.8	328.1	5.47	143.6
4	17.9	3.8	316.9	5.46	98.8
7	17.9	2.6	320.9	5.46	96.3
20.	18.0	2.4	317.5	5.42	104.1

Comments:

Tested By:	
Date Tested:	
Checked By:	
Date:	

Remarks:

- All measurements are corrected to ground level
- All stated Volumes are in Litres
- SWL is an abbreviation for standing water level
- Steady state conditions - difference in the pH less than 0.2 units and difference in conductivity less than 10%
- Minimum 3 monitoring well volumes are purged

EIS

Groundwater Monitoring Well Development Report

Client:		**Job No.:**	
Project:		**Well No.:**	15
Location:		**Depth (m):**	

WELL FINISH DETAILS

	Gatic Cover	X	Standpipe		PVC Pipe

WELL DEVELOPMENT DETAILS

Method:		**SWL – Before: (m)**	3.55 TOPVC
Date:		**Time – Before:**	
Undertaken By:		**SWL – After: (m)**	
Total Vol. Removed:		**Time – After:**	
PID Reading (ppm):			

Comments:

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/m)	pH	Eh (mV)
1	20.3	2.9	733	5.84	99.8
4	18.7	3.1	762	5.76	98.2
	18.5	3.1	767	5.76	94.0
10	18.5	3.4	823	5.86	93.4
14.	18.5	3.6	848	5.91	94.0

Comments:

Tested By:	
Date Tested:	
Checked By:	
Date:	

Remarks:

- All measurements are corrected to ground level
- All stated Volumes are in Litres
- SWL is an abbreviation for standing water level
- Steady state conditions - difference in the pH less than 0.2 units and difference in conductivity less than 10%
- Minimum 3 monitoring well volumes are purged

Groundwater Sampling Report

EIS

Client:	ARV	**Job No.:**	E25232KH
Project:	Proposed Retirement Village	**Well No.:**	MW1
Location:	2 Sturdee Ave, Bulli	**Depth (m):**	6

WELL FINISH

✓	**Gatic Cover**		**Standpipe**		**PVC Pipe**

WELL PURGE DETAILS:

Method:	Peristaltic Pump	**SWL – Before:**	4.67
Date:	16/2/15	**Time – Before:**	4.15pm
Undertaken By:	TH	**Total Vol Removed:**	
Pump Program No:		**PID (ppm):**	

PURGING / SAMPLING MEASUREMENTS

Time (min)	CMP	Vol (L)	SWL (m)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
1	10.28	0.3	4.87	25.6	4.7	408.9	6.46	62.7
3	"	0.9	5.00	23.7	4.5	325.8	6.11	56.7
5	"	1.6	5.2	23.2	4.8	308.6	5.98	60.1
7	"	2	5.34	23.1	5.1	308.9	5.96	63.0
9	"	2.3	5.41	23.2	5.0	305.5	5.97	64.2
10	"	2.5	5.44	23.4	5.3	303.3	5.97	64.8

Containers Used/Comments 2 x ISTEX, 1 Amber, HNO_3

Tested By:	TH
Date Tested:	16/2/15
Checked By:	
Date:	

Remarks:

- All measurements are corrected to ground level
- SWL is an abbreviation for standing water level
- Steady state conditions - difference in the pH less than 0.2 units and difference in conductivity less than 10%

Groundwater Sampling Report

Client:	ARV	**Job No.:**	E25232KH
Project:	Proposed Retirement Village	**Well No.:**	MW13
Location:	2 Sturdee Ave, Bulli	**Depth (m):**	6

WELL FINISH

Gatic Cover	Standpipe 0.16m	PVC Pipe

WELL PURGE DETAILS:

Method:	Peristaltic Pump	**SWL – Before:**	1.15m
Date:	16/2/15	**Time – Before:**	2.32pm
Undertaken By:	TH	**Total Vol Removed:**	18L
Pump Program No:	10	**PID (ppm):**	

PURGING / SAMPLING MEASUREMENTS

Time (min)	CMP	Vol (L)	SWL (m)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
1	7.11	0.3	1.36	24.4	3.0	325	5.82	82.3
3	10.51	1	1.71	21.6	2.4	3103	5.63	81.4
5	"	1.5	1.98	21.5	1.8	307	5.57	78.9
8	"	2.8	2.28	20.4	1.4	311.4	5.59	77.4
10	"	3.5	2.48	20.3	1.2	313.7	5.58	77.5
12	"	4.6	2.64	20.2	1.1	312.3	5.54	77.9
14	"	5.5	2.80	20.0	1.0	3094	5.49	79.0
15	"	6.1	2.85	19.9	1.0	309.7	5.48	79.3

Containers Used/Comments Pump A

2x BTEX, 2x Amber, HNO_3

Tested By:	TA
Date Tested:	16/2/15
Checked By:	
Date:	

Remarks:

- All measurements are corrected to ground level
- SWL is an abbreviation for standing water level
- Steady state conditions - difference in the pH less than 0.2 units and difference in conductivity less than 10%

Groundwater Sampling Report

Client:	ARV	**Job No.:**	E25232KH
Project:	Proposed Retirement Village	**Well No.:**	MW15
Location:	2 Sturdee Ave, Bulli	**Depth (m):**	5.5

WELL FINISH

Gatic Cover	**Standpipe** 0.35m	**PVC Pipe**

WELL PURGE DETAILS:

Method:	Peristaltic Pump	**SWL – Before:**	3.43
Date:	16/2/15	**Time – Before:**	3.20pm
Undertaken By:	TH	**Total Vol Removed:**	
Pump Program No:		**PID (ppm):**	

PURGING / SAMPLING MEASUREMENTS

Time (min)	CMP	Vol (L)	SWL (m)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
2	12.5	0.2	3.45	25.6	6.1	912	6.55	88.3
6	13.46	1.3	3.82	21.4	5.8	907	6.02	86.8
9	"	2.5	4.15	19.4	3.9	877	5.89	86.7
12	"	3.8	4.38	19.0	4.6	845	5.88	85.7
14	"	4.6	4.52	19.0	5.3	850	5.92	84.1
15	"	5.0	4.53	19.1	5.7	854	5.95	84.2

Containers Used/Comments 2x 125ml / amber, HNO_3

Tested By: TH	**Remarks:**
Date Tested: 16/2/15	- All measurements are corrected to ground level
Checked By:	- SWL is an abbreviation for standing water level
Date:	- Steady state conditions - difference in the pH less than 0.2 units and difference in conductivity less than 10%

Time and Date	Conductance (uS/cm)	Oxygen (mg/L)	ORP_1 (mV)	pH_1 (Units)	Temperature (C)	Site	Folder	Unit ID
Development								
11/02/2015 11:57	445.4	5.1	183.8	6.43	19	E25232KH	MW13	EIS YSI2
11/02/2015 11:58	334.5	4.8	168.4	5.6	18.3	E25232KH	MW13	EIS YSI2
11/02/2015 11:59	325.7	4.8	139.8	5.46	17.9	E25232KH	MW13	EIS YSI2
11/02/2015 12:00	321.5	4.6	124.8	5.44	17.9	E25232KH	MW13	EIS YSI2
11/02/2015 12:01	318.4	4.3	113.9	5.43	17.8	E25232KH	MW13	EIS YSI2
11/02/2015 12:02	316.8	4.1	106.3	5.45	17.8	E25232KH	MW13	EIS YSI2
11/02/2015 12:03	319.8	4	102.6	5.45	18.1	E25232KH	MW13	EIS YSI2
11/02/2015 12:04	317.3	3.7	98.8	5.46	17.9	E25232KH	MW13	EIS YSI2
11/02/2015 12:05	318.4	3.4	96.6	5.47	17.9	E25232KH	MW13	EIS YSI2
11/02/2015 12:06	318.4	3.1	95.6	5.46	17.9	E25232KH	MW13	EIS YSI2
11/02/2015 12:07	317.6	2.9	95.5	5.44	17.9	E25232KH	MW13	EIS YSI2
11/02/2015 12:08	319.1	2.8	95	5.46	17.9	E25232KH	MW13	EIS YSI2
11/02/2015 12:09	320.2	2.6	95.1	5.46	17.9	E25232KH	MW13	EIS YSI2
11/02/2015 12:10	321	2.6	96.9	5.46	17.9	E25232KH	MW13	EIS YSI2
11/02/2015 12:11	320.4	2.5	98.5	5.45	18	E25232KH	MW13	EIS YSI2
11/02/2015 12:12	319.7	2.5	99	5.45	17.9	E25232KH	MW13	EIS YSI2
11/02/2015 12:13	318	2.4	101.6	5.43	17.9	E25232KH	MW13	EIS YSI2
11/02/2015 12:14	317.7	2.4	103.7	5.42	17.9	E25232KH	MW13	EIS YSI2
11/02/2015 12:23	668	3.1	103.5	5.93	21.5	E25232KH	MW15	EIS YSI2
11/02/2015 12:24	743	2.9	99.3	5.82	19.7	E25232KH	MW15	EIS YSI2
11/02/2015 12:25	758	3	98.3	5.77	18.8	E25232KH	MW15	EIS YSI2
11/02/2015 12:26	765	3.1	97.6	5.76	18.5	E25232KH	MW15	EIS YSI2
11/02/2015 12:27	773	3.1	93.7	5.76	18.5	E25232KH	MW15	EIS YSI2
11/02/2015 12:28	824	3.4	93.4	5.86	18.5	E25232KH	MW15	EIS YSI2
11/02/2015 12:51	390.2	7	78.6	6.58	22.8	E25232KH	MW1	EIS YSI2
11/02/2015 12:52	355.3	7.1	73.1	6.48	22.1	E25232KH	MW1	EIS YSI2
11/02/2015 12:53	347.6	7.2	72.2	6.32	21.8	E25232KH	MW1	EIS YSI2
11/02/2015 12:53	341.4	7.3	71.6	6.22	21.7	E25232KH	MW1	EIS YSI2
Sampling								
16/02/2015 14:32	17.9	5.4	80.7	6.71	32.4	E25232KH	MW13	EIS YSI2
16/02/2015 14:33	340.7	3.1	84.7	6	25.8	E25232KH	MW13	EIS YSI2
16/02/2015 14:34	322.7	3	82.9	5.74	23.5	E25232KH	MW13	EIS YSI2
16/02/2015 14:35	313.5	2.6	81.5	5.65	21.8	E25232KH	MW13	EIS YSI2
16/02/2015 14:36	307.5	2	81.2	5.62	22	E25232KH	MW13	EIS YSI2
16/02/2015 14:37	305.4	1.9	79.4	5.59	21.7	E25232KH	MW13	EIS YSI2
16/02/2015 14:38	309	1.7	78.1	5.58	20.8	E25232KH	MW13	EIS YSI2
16/02/2015 14:39	309.4	1.6	77.6	5.59	20.7	E25232KH	MW13	EIS YSI2
16/02/2015 14:40	311.5	1.4	77.5	5.57	20.4	E25232KH	MW13	EIS YSI2
16/02/2015 14:41	311.5	1.3	77.4	5.58	20.5	E25232KH	MW13	EIS YSI2
16/02/2015 14:42	313.7	1.2	77.5	5.58	20.3	E25232KH	MW13	EIS YSI2
16/02/2015 14:43	314.4	1.1	77.5	5.57	20.2	E25232KH	MW13	EIS YSI2
16/02/2015 14:44	312.3	1.1	77.5	5.55	20.2	E25232KH	MW13	EIS YSI2
16/02/2015 14:45	308.6	1.1	78.2	5.51	20.2	E25232KH	MW13	EIS YSI2
16/02/2015 14:46	308.8	1.1	78.4	5.49	20	E25232KH	MW13	EIS YSI2
16/02/2015 14:47	309	1	78.9	5.49	19.9	E25232KH	MW13	EIS YSI2
16/02/2015 14:48	309.6	1	79.6	5.46	19.9	E25232KH	MW13	EIS YSI2
16/02/2015 14:49	307.7	0.9	79.3	5.45	20.2	E25232KH	MW13	EIS YSI2
16/02/2015 14:50	307.8	0.8	78.8	5.46	20.3	E25232KH	MW13	EIS YSI2
16/02/2015 14:51	308.1	0.8	77.4	5.5	20.4	E25232KH	MW13	EIS YSI2
16/02/2015 15:19	33.3	7.5	109.6	6.23	27.3	E25232KH	MW15	EIS YSI2

16/02/2015 15:20	496	6.9	109.2	6.66	26	E25232KH	MW15	EIS YSI2
16/02/2015 15:21	846	6.1	89.8	6.53	25.5	E25232KH	MW15	EIS YSI2
16/02/2015 15:22	912	6.1	88.4	6.55	25.6	E25232KH	MW15	EIS YSI2
16/02/2015 15:23	913	6.3	88.3	6.52	25.2	E25232KH	MW15	EIS YSI2
16/02/2015 15:24	913	6.3	86.2	6.51	24.9	E25232KH	MW15	EIS YSI2
16/02/2015 15:25	910	6.4	86.1	6.19	22.7	E25232KH	MW15	EIS YSI2
16/02/2015 15:26	902	5.4	87	5.97	20.6	E25232KH	MW15	EIS YSI2
16/02/2015 15:27	885	4.3	86.9	5.9	20.3	E25232KH	MW15	EIS YSI2
16/02/2015 15:28	882	3.9	86.9	5.89	19.6	E25232KH	MW15	EIS YSI2
16/02/2015 15:29	863	4.1	86.4	5.88	19.2	E25232KH	MW15	EIS YSI2
16/02/2015 15:30	848	4.3	86.2	5.87	19	E25232KH	MW15	EIS YSI2
16/02/2015 15:31	845	4.6	85.8	5.88	19	E25232KH	MW15	EIS YSI2
16/02/2015 15:32	847	4.9	85.3	5.9	19	E25232KH	MW15	EIS YSI2
16/02/2015 15:33	850	5.2	84.9	5.91	19	E25232KH	MW15	EIS YSI2
16/02/2015 15:34	854	5.6	84.4	5.94	19.1	E25232KH	MW15	EIS YSI2
16/02/2015 15:35	854	5.8	83.5	5.97	19.3	E25232KH	MW15	EIS YSI2
16/02/2015 15:36	853	5.6	82.5	5.98	19.5	E25232KH	MW15	EIS YSI2
16/02/2015 15:37	853	5.5	81.7	6	19.6	E25232KH	MW15	EIS YSI2
16/02/2015 16:16	415.4	4.3	71.3	6.56	25.6	E25232KH	MW1	EIS YSI2
16/02/2015 16:17	354	4.1	57	6.27	24.4	E25232KH	MW1	EIS YSI2
16/02/2015 16:18	325.9	4.5	56.6	6.12	23.7	E25232KH	MW1	EIS YSI2
16/02/2015 16:19	314.6	4.5	57.4	6.04	23.3	E25232KH	MW1	EIS YSI2
16/02/2015 16:20	309.5	4.7	59.3	5.99	23.2	E25232KH	MW1	EIS YSI2
16/02/2015 16:21	308.6	4.8	60.9	5.97	23.1	E25232KH	MW1	EIS YSI2
16/02/2015 16:22	308.9	4.9	62.6	5.93	23.1	E25232KH	MW1	EIS YSI2
16/02/2015 16:23	308.6	4.9	63.5	5.96	23.1	E25232KH	MW1	EIS YSI2
16/02/2015 16:24	306.3	4.9	64.2	5.93	23.2	E25232KH	MW1	EIS YSI2
16/02/2015 16:25	303.1	5.4	64.8	5.97	23.4	E25232KH	MW1	EIS YSI2
16/02/2015 16:26	302	4.6	64.5	5.99	23.6	E25232KH	MW1	EIS YSI2
16/02/2015 16:27	301.7	4.2	64.2	6.02	23.7	E25232KH	MW1	EIS YSI2
16/02/2015 16:28	301.9	4.1	64.5	6.03	23.7	E25232KH	MW1	EIS YSI2
16/02/2015 16:29	302.4	3.9	65.2	6.03	23.7	E25232KH	MW1	EIS YSI2
16/02/2015 16:30	302.5	3.9	66	6.03	23.8	E25232KH	MW1	EIS YSI2
16/02/2015 16:31	302.5	3.9	66.6	6.03	23.9	E25232KH	MW1	EIS YSI2
9/03/2015 13:48	9352	5.3	240	7.06	27.3	E25232KH	MW1	EIS YSI2
9/03/2015 13:49	28.6	8.4	132.5	7.27	24.4	E25232KH	MW1	EIS YSI2
9/03/2015 13:50	1306	7	181.2	7.09	27	E25232KH	MW1	EIS YSI2

***** Calibrate: ORP

Date 11/02/15 DD/MM/YY

Time 11:45:53 24-hour

User ID: GF

Cal Solution Value: 229.139999 ORP mV

Sensor Value: 233.600006 ORP mV

Temperature 27.200001 °C

Offset 36.560010

Calibrate Status Calibrated

***** Calibrate: pH

Date 11/02/15 DD/MM/YY

Time 11:45:16 24-hour

User ID: GF

Buffer Value 6.995401 pH

Sensor Value: -27.600000 pH mV

Temperature 27.749994 °C

Buffer Value 4.008523 pH

Sensor Value: 149.899994 pH mV

Temperature 27.950006 °C

Slope 58.844301 mV/pH

Slope 99.533662 % of Ideal pH Value

Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 11/02/15 DD/MM/YY

Time 11:43:13 24-hour

User ID: GF

Method Conductance

Cal Value: 2002.000000 C-uS/cm

Sensor Value: 2014.000000 C-uS/cm

Temperature Ref. 20.000000 °C

Temperature Comp. 1.910000 %/C

TDS Constant 0.650000

Temperature 26.900000 °C

Cal Cell Constant: 4.971699

Calibrate Status Calibrated

***** Calibrate: DO

Date 11/02/15 DD/MM/YY

Time 11:42:12 24-hour

User ID: GF

Method DO Air Calibrate

Cal Value: 100.000000 %

Sensor Value: 7.613542 uA

Sensor Type Polarographic

Membrane Type 1.25 PE Yellow

Salinity Mode 7.613542 Auto

Temperature 27.400000 °C

Barometer 767.500000 mmHg

Calibrate Status Calibrated

Date 16/02/15 DD/MM/YY

Time 10:15:48 24-hour

User ID: BP

Method DO Air Calibrate

Cal Value: 100.000000 %

Sensor Value: 5.509523 uA

Sensor Type Polarographic

Membrane Type 1.25 PE Yellow

Salinity Mode 5.509523 Auto

Temperature 21.299999 °C

Barometer 759.400024 mmHg

Calibrate Status Calibrated

***** Calibrate: ORP

Date 16/02/15 DD/MM/YY

Time 09:57:06 24-hour

User ID: BP

Cal Solution Value: 231.869995 ORP mV

Sensor Value: 245.199997 ORP mV

Temperature 25.100000 °C

Offset 30.030011

Calibrate Status Calibrated

***** Calibrate: pH

Date 16/02/15 DD/MM/YY

Time 09:55:44 24-hour

User ID: BP

Buffer Value 4.005164 pH

Sensor Value: 147.800003 pH mV

Temperature 24.850000 °C

Slope 58.291875 mV/pH

Slope 98.599247 % of Ideal pH Value

Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 16/02/15 DD/MM/YY

Time 09:44:12 24-hour

User ID: BP

Method Conductance

Cal Value: 1404.000000 C-uS/cm

Sensor Value: 1404.000000 C-uS/cm

Temperature Ref. 20.000000 °C

Temperature Comp. 1.910000 %/C

TDS Constant 0.650000

Temperature 24.799999 °C

Cal Cell Constant: 4.968185

Calibrate Status Calibrated

Appendix G: Site Photographs

Selected Site Photos Taken on 26 June 2018

Photograph 1: Dense forest area.

Photograph 2: The burnt out dairy factory and car.

Photograph 3: South Section of site - Brick office building.

Photograph 4: South section of site - Northern view of the factory.

	**Photograph 5:** Metal building at the southeast corner.
	**Photograph 6:** South section of the site - Inside view of warehouse.
	**Photograph 7:** South section of the site - Inside view of a metal building.
	**Photograph 8:** P South section of the site – possible asbestos insulation at kiln / Furnace.

	**Photograph 9:** South section of the site - Possible UST close to the two storey brick building.
	**Photograph 10:** Scattered building rubble at the northeast of the site.
	**Photograph 11:** South section of the site- Disused concrete tank / bund and former water treatment station at the background.
	**Photograph 12:** South section of the site - Possible UST at the tank/bund.

Appendix H: Guidelines and Reference Documents

Acid Sulfate Soils Management Advisory Committee (ASSMAC), (1998). Acid Sulfate Soils Manual

Australian and New Zealand Environment Conservation Council (ANZECC), (2000). Australian and New Zealand Guidelines for Fresh and Marine Water Quality

CRC Care, (2011). Technical Report No. 10 – Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document

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Contaminated Land Management Act 1997 (NSW)

Department of Land and Water Conservation, (1997). 1:25,000 Acid Sulfate Soil Risk Map (Series 9130N3, Ed 2)

Managing Land Contamination, Planning Guidelines SEPP55 – Remediation of Land (1998)

National Health and Medical Research Council (NHMRC), (2011). National Water Quality Management Strategy, Australian Drinking Water Guidelines

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NSW EPA, (1995). Contaminated Sites Sampling Design Guidelines

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NSW EPA, (2015). Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997

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National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)

Olszowy, H., Torr, P., and Imray, P., (1995). Trace Element Concentrations in Soils from Rural and Urban Areas of Australia. Contaminated Sites Monograph Series No. 4. Department of Human Services and Health, Environment Protection Agency, and South Australian Health Commission

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State Environmental Planning Policy No.55 – Remediation of Land 1998 (NSW)

World Health Organisation (WHO), (2008). Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality

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