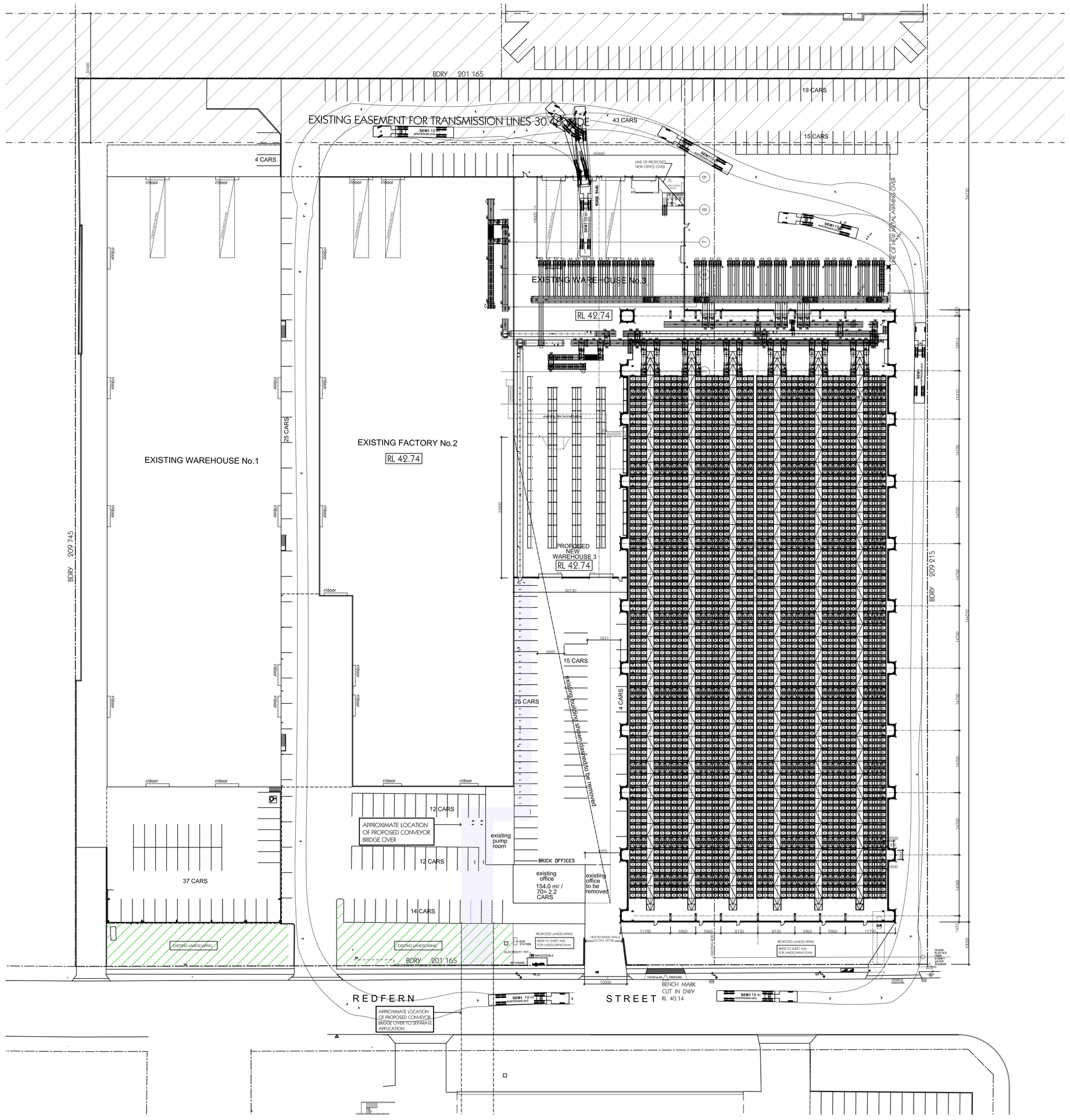

HIGH RACK BUILDING PLAN 1:500

Issue	Description	Date	Drawn	Issued
A	FOR DA	10-08-2016	MC	CZ

General Notes

1) All dimensions and floor areas are to be verified by the Builder prior to the commencement of any building work. Any discrepancies are to be brought to the attention of the designer.
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5) Where engineering drawings are required such must take preference to this drawing.
6) Stormwater to be discharged to Councils' requirements and AS 3500.3-1990.
7) All services to be located and verified by the Builder with relevant authorities before any building work commences.

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Project
PROPOSED EXPANSION TO EXIST. INDUST. DEVEL.
AT LOT 234 DP 1037039, LOT 5 DP 3082 No 58-72 REDFERN STREET, WETHERILL PARK

Client
ABC Tissue Products

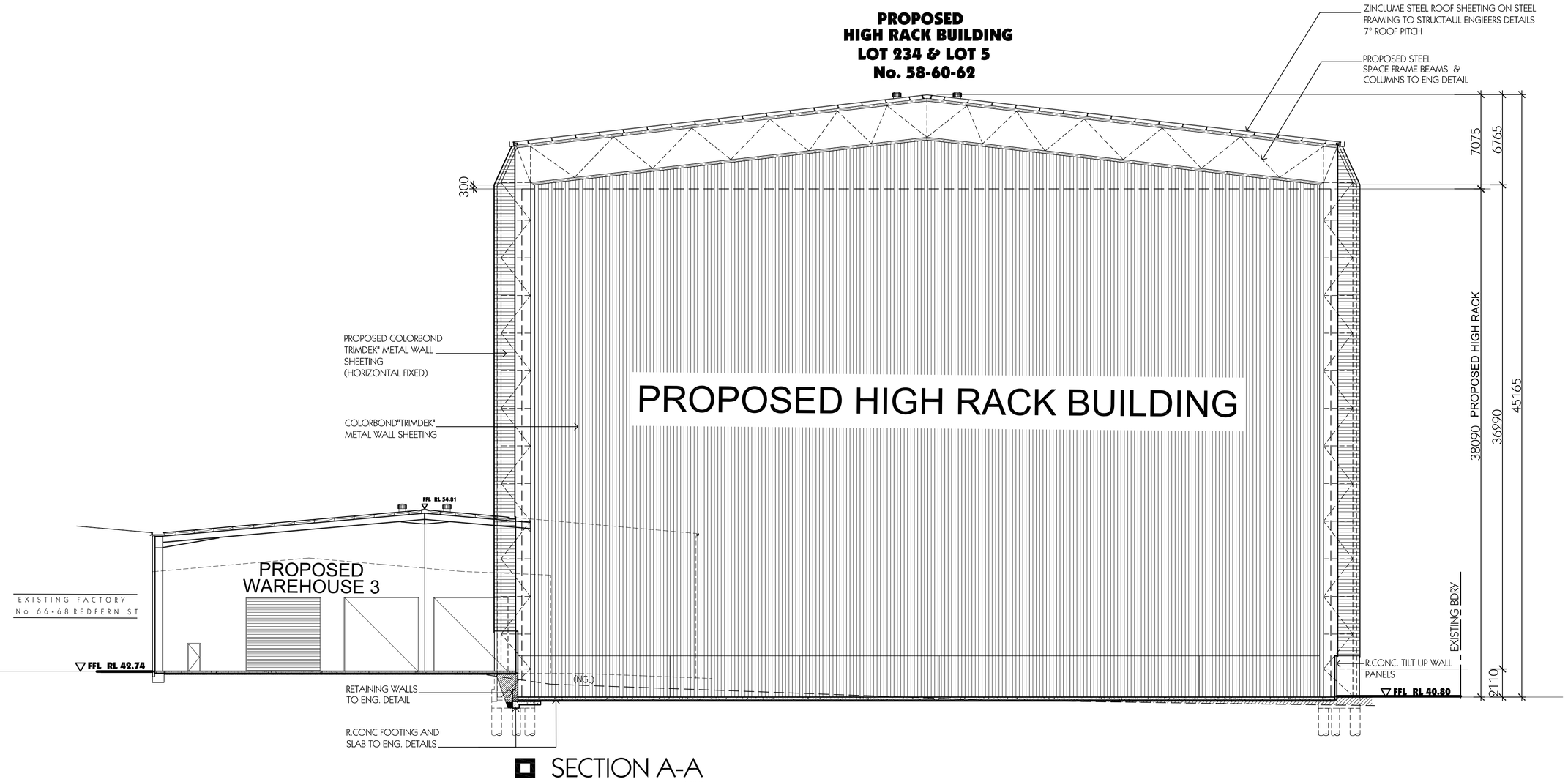
Title
HIGH RACK PLAN

Drawn	Checked	Date
MC	CZ	JUNE 2016

Activity Type:	Job #	Scale @ B1
DA	1129-16	1:500

Project #	Sheet No.:	Issue
P3808	A02	A

PROPOSED
HIGH RACK BUILDING
LOT 234 & LOT 5
No. 58-60-62

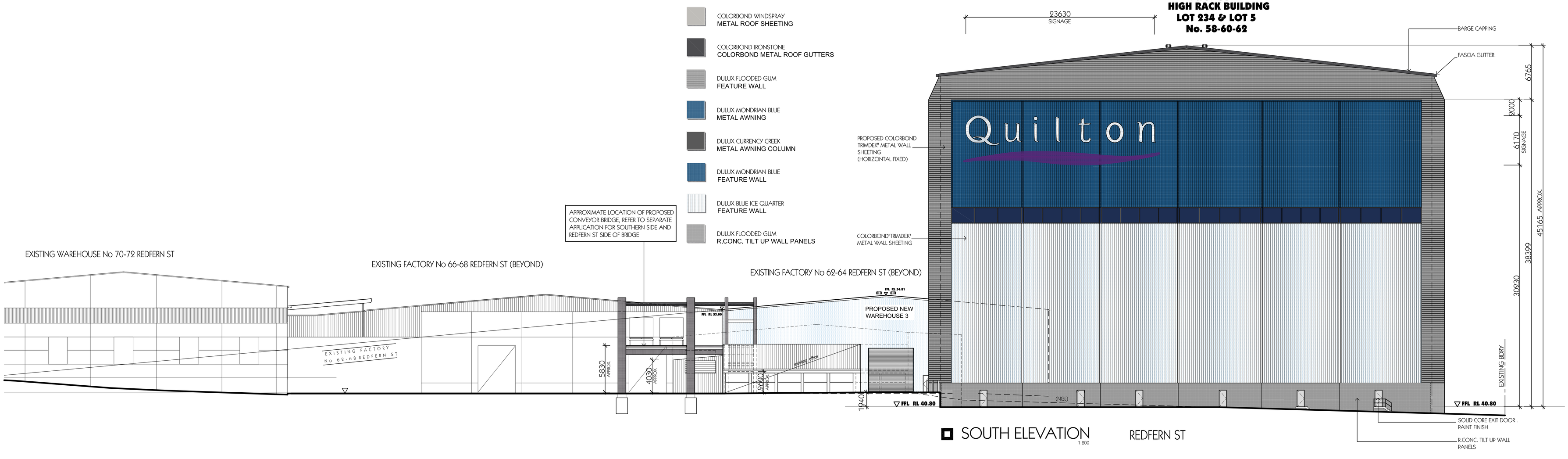


SECTION A-A
1:200

PROPOSED COLOUR SCHEDULE

- COLORBOND WINDSPRAY — METAL ROOF SHEETING
- COLORBOND IRONSTONE — COLORBOND METAL ROOF GUTTERS
- DULUX FLOODED GUM — FEATURE WALL
- DULUX MONDRIAN BLUE — METAL AWNING
- DULUX CURRENCY CREEK — METAL AWNING COLUMN
- DULUX MONDRIAN BLUE — FEATURE WALL
- DULUX BLUE ICE QUARTER — FEATURE WALL
- DULUX FLOODED GUM — R.CONC. TILT UP WALL PANELS

PROPOSED
HIGH RACK BUILDING
LOT 234 & LOT 5
No. 58-60-62



SOUTH ELEVATION
1:200

REDFERN ST

Issue	Description	Date	Drawn	Issued
A	FOR DA	10-08-2016	MC	CZ

General Notes

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Project
PROPOSED EXPANSION TO EXIST. INDUST. DEVEL.
AT LOT 234 DP 1037039, LOT 5 DP 3082 No 58-72 REDFERN STREET, WETHERILL PARK

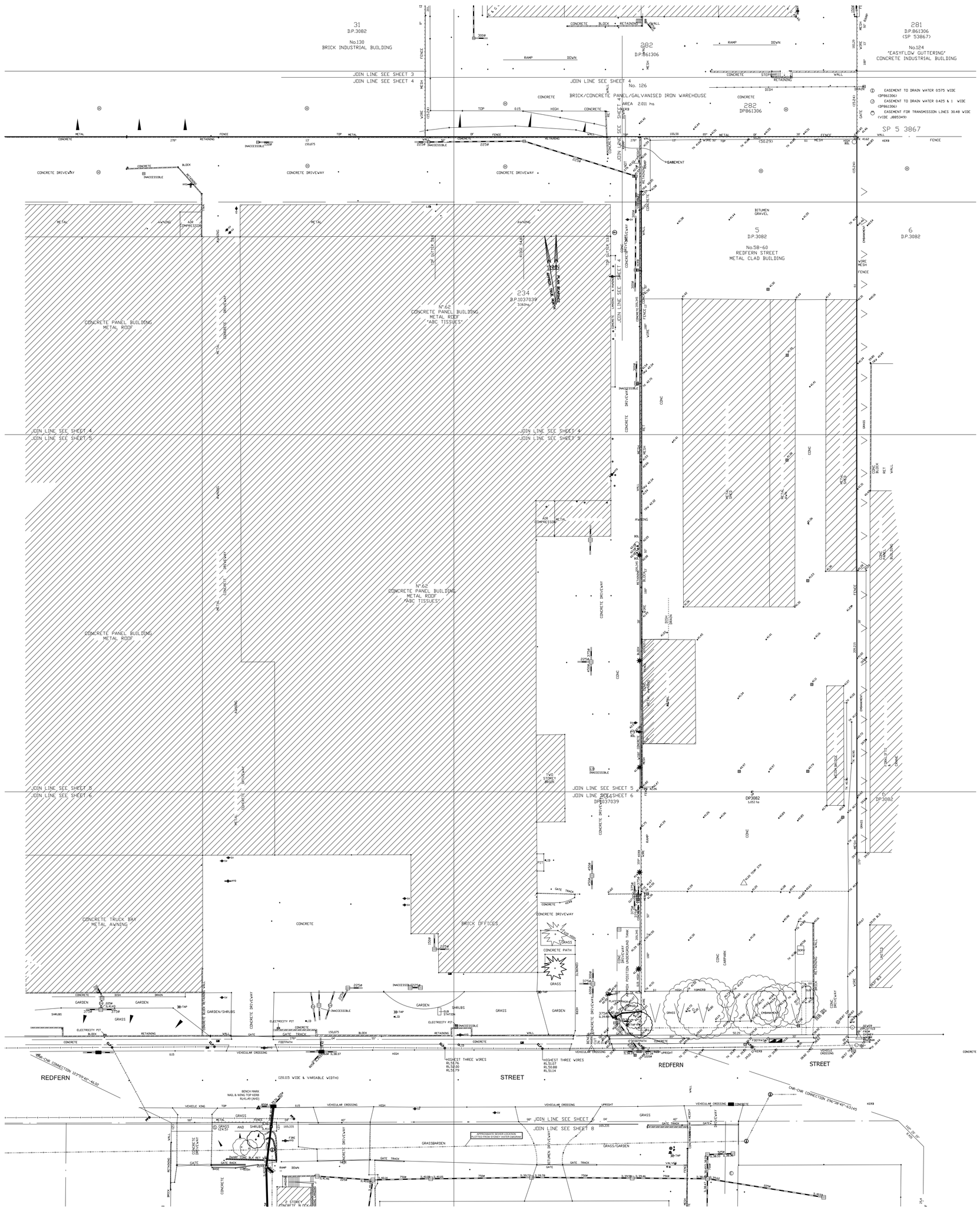
Client
ABC Tissue Products

Title
ELEVATION & SECTION

Drawn	Checked	Date
MC	CZ	JUNE 2016

Activity Type:	Job #	Scale @ B1
DA	1129-16	1:200

Project #	Sheet No.:	Issue
P3808	A04	A



SURVEY PLAN 1:500

Issue	Description	Date	Drawn	Issued
A	FOR DA	10-08-2016	MC	CZ

General Notes

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Project
PROPOSED EXPANSION TO EXIST. INDUST. DEVEL.
AT LOT 234 DP 1037039, LOT 5 DP 3082 No 58-72 REDFERN STREET, WETHERILL PARK

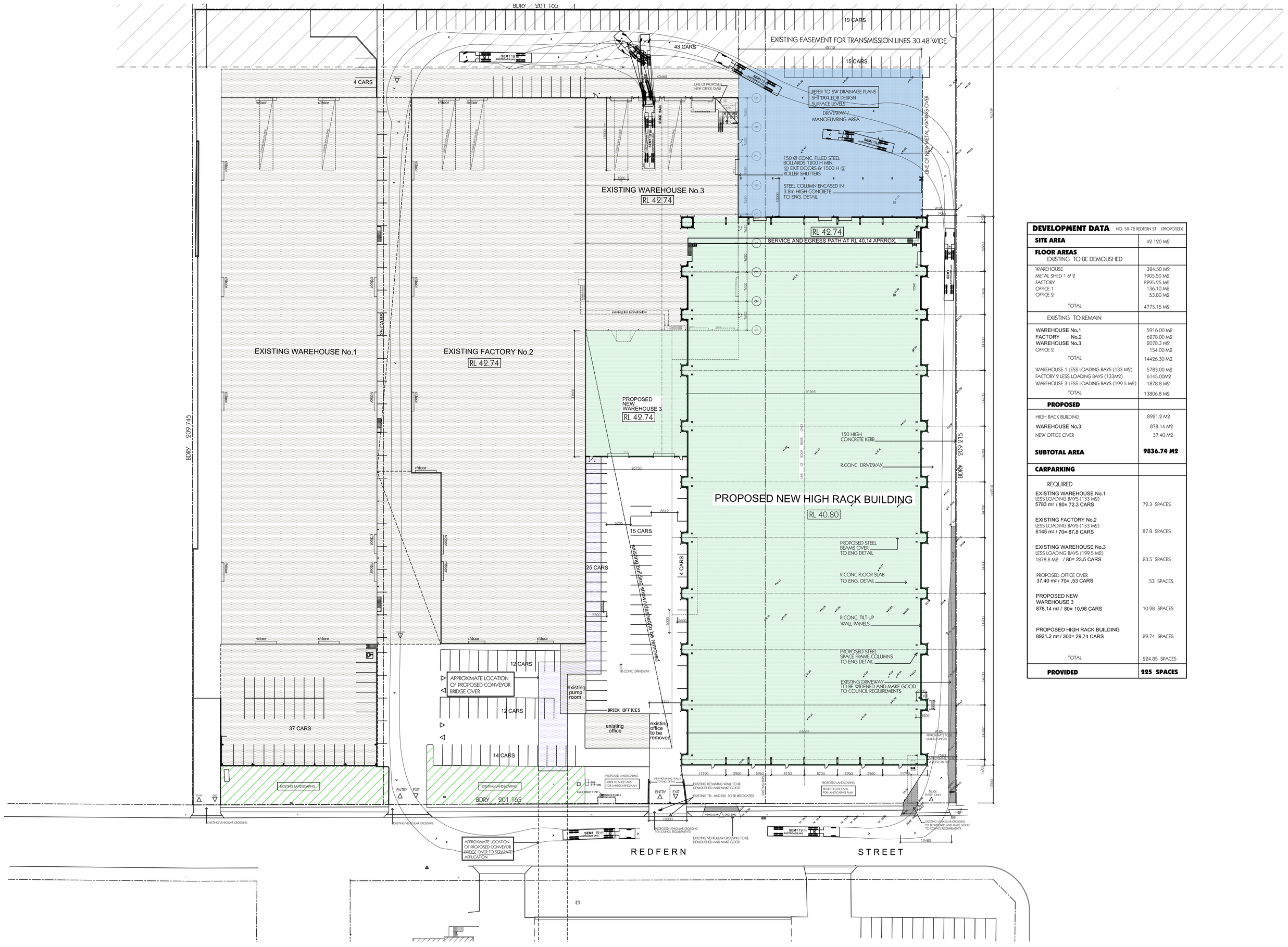
Client
ABC Tissue Products

Title
SURVEY PLAN

Drawn	Checked	Date
MC	CZ	JUNE 2016

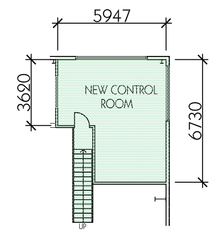
Activity Type:	Job #	Scale @ B1
DA	1129-16	1:500

Project #	Sheet No.:	Issue
P3808	A03	A



SITE AND FLOOR PLAN 1:500

DEVELOPMENT DATA NO. 58-72 REDFERN ST (PROPOSED)	
SITE AREA	49 190 M2
FLOOR AREAS EXISTING TO BE DEMOLISHED	
WAREHOUSE	384.50 M2
METAL SHED 1 & 2	1905.50 M2
FACTORY	2995.25 M2
OFFICE 1	136.10 M2
OFFICE 2	53.80 M2
TOTAL	4775.15 M2
EXISTING TO REMAIN	
WAREHOUSE No.1	5916.00 M2
FACTORY No.2	6078.00 M2
WAREHOUSE No.3	9078.3 M2
OFFICE 2	154.00 M2
TOTAL	14496.30 M2
WAREHOUSE 1 LESS LOADING BAYS (133 M2)	5783.00 M2
FACTORY 2 LESS LOADING BAYS (133M2)	6145.00M2
WAREHOUSE 3 LESS LOADING BAYS (199.5 M2)	1878.8 M2
TOTAL	13806.8 M2
PROPOSED	
HIGH RACK BUILDING	8991.2 M2
WAREHOUSE No.3	878.14 M2
NEW OFFICE OVER	37.40 M2
SUBTOTAL AREA	**9836.74 M2**
CARPARKING	
REQUIRED	
EXISTING WAREHOUSE No.1 LESS LOADING BAYS (133 M2) 5783 m² / 80= 72.3 CARS	72.3 SPACES
EXISTING FACTORY No.2 LESS LOADING BAYS (133 M2) 6145 m² / 70= 87.8 CARS	87.8 SPACES
EXISTING WAREHOUSE No.3 LESS LOADING BAYS (199.5 M2) 1878.8 M2 / 80= 23.5 CARS	23.5 SPACES
PROPOSED OFFICE OVER 37.40 m² / 70= .53 CARS	.53 SPACES
PROPOSED NEW WAREHOUSE 3 878,14 m² / 80= 10,98 CARS	10.98 SPACES
PROPOSED HIGH RACK BUILDING 8921,2 m² / 300= 29,74 CARS	29.74 SPACES
TOTAL	224.85 SPACES
PROVIDED	**225 SPACES**



FIRST FLOOR OFFICE PLAN 1:200

Issue	Description	Date	Drawn	Issued
A	FOR DA	10-08-2016	MC	CZ

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Project
PROPOSED EXPANSION TO EXIST. INDUST. DEVEL.
AT LOT 234 DP 1037039, LOT 5 DP 3082 No 58-72 REDFERN STREET, WETHERILL PARK

Client
ABC Tissue Products

Title
SITE PLAN

Drawn	Checked	Date
MC	CZ	JUNE 2016
Activity Type: DA	Job # 1129-16	Scale @ B1 1:500
Project # P3808	Sheet No.: A01	Issue A

Appendix B: Borehole Logs

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **301** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: C.I.R. CONSTRUCTION PTY LTD

Project: PROPOSED COMMERCIAL DEVELOPMENT

Location: 58-62 REDFERN STREET, WETHERILL PARK, NSW

Job No. E29923K **Method:** SPIRAL AUGER JK205 **R.L. Surface:** N/A

Date: 6-4-17 **Datum:**

Logged/Checked by: J.D.C./G.F.

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			CONCRETE: 260mm.t				
					N = 22 11,12,10	1		-	FILL: Silty sandy gravel, fine to medium grained igneous, grey, trace of ash and slag.	M			
					N = 8 2,4,4	2			FILL: Silty clay, medium to high plasticity, light brown, trace of fine to medium grained shale gravel and ash.	MC>PL			
▼ ON 7/6/17													
					N = 9 3,4,5	3			as above, but grey and fine to medium grained ironstone gravel.				
						4							
						5		-	SHALE: light grey.	XW			MONITORING WELL INSTALLED TO 6.0m, CLASS 18 MACHINE SLOTTED 50mm PVC STANDPIPE 6.0m TO 3.0m, CASING 3.0m TO SURFACE, 2mm SAND FILTER PACK 6.0m TO 3.0m, BENTONITE SEAL FROM 3.0m TO 2.5m, BACKFILLED WITH SAND TO SURFACE AND COMPLETED WITH A CONCRETED GATIC COVER
						6			END OF BOREHOLE AT 6.0m				
						7							

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ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **302** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: C.I.R. CONSTRUCTION PTY LTD

Project: PROPOSED COMMERCIAL DEVELOPMENT

Location: 58-62 REDFERN STREET, WETHERILL PARK, NSW

Job No. E29923K **Method:** SPIRAL AUGER JK205 **R.L. Surface:** N/A

Date: 6-4-17 **Datum:**

Logged/Checked by: J.D.C./G.F.

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			CONCRETE: 250mm.t				
	■	■			N = 7 1,3,4			-	FILL: Silty clay, medium to high plasticity, brown, trace of fine to medium grained igneous gravel and ash.	MC<PL			
						1							
								CL-CH	SILTY CLAY: medium to high plasticity, light grey and red brown and orange brown, with fine to medium grained ironstone gravel.	MC≈PL			
	■	■			N = 7 1,2,5	2							
								-	SHALE: light grey.	XW			
						3			as above, but dark grey.	DW			
▼ ON 7/6/17	■					4							MONITORING WELL INSTALLED TO 6.0m, CLASS 18 MACHINE SLOTTED 50mm PVC STANDPIPE 6.0m TO 2.0m, CASING 2.0m TO SURFACE, 2mm SAND FILTER PACK 6.0m TO 2.0m, BENTONITE SEAL FROM 2.0m TO 0.5m, BACKFILLED WITH SAND TO SURFACE AND COMPLETED WITH A CONCRETED GATIC COVER
						5							
						6			END OF BOREHOLE AT 6.0m				
						7							

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ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **303** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: C.I.R. CONSTRUCTION PTY LTD

Project: PROPOSED COMMERCIAL DEVELOPMENT

Location: 58-62 REDFERN STREET, WETHERILL PARK, NSW

Job No. E29923K **Method:** SPIRAL AUGER JK205 **R.L. Surface:** N/A

Date: 6-4-17 **Datum:**

Logged/Checked by: J.D.C./G.F.

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			CONCRETE: 250mm.t				
								CL-CH	SILTY CLAY: medium to high plasticity, orange brown, trace of fine to medium grained ironstone gravel.	MC<PL			
	■		■		N = 12 3,5,7			-	SHALE: light grey.	XW			
						1							
						2							
▼ ON 7/6/17						3			as above, but with ironstone bands.	DW			
▶						4							MONITORING WELL INSTALLED TO 6.0m, CLASS 18 MACHINE SLOTTED 50mm PVC STANDPIPE 6.0m TO 0.8m, CASING 0.8m TO SURFACE, 2mm SAND FILTER PACK 6.0m TO 0.8m, BENTONITE SEAL FROM 0.8m TO 0.3m, BACKFILLED WITH SAND TO SURFACE AND COMPLETED WITH A CONCRETED GATIC COVER
						5							
						6			END OF BOREHOLE AT 6.0m				
						7							

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ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **304** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: C.I.R. CONSTRUCTION PTY LTD

Project: PROPOSED COMMERCIAL DEVELOPMENT

Location: 58-62 REDFERN STREET, WETHERILL PARK, NSW

Job No. E29923K **Method:** EZIPROBE **R.L. Surface:** N/A

Date: 6-4-17 **Datum:**

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

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 COMPLETION	■		■			0			ASPHALTIC CONCRETE: 150mm.t				
									FILL: Silty clay, medium to high plasticity, orange brown, trace of fine to coarse grained shale gravel.	MC≤PL			
	■		■					-	SHALE: dark grey.	XW			
						1			SHALE: grey.	XW-DW			
									END OF BOREHOLE AT 1.5m				
						2							
						3							
						4							
						5							
						6							
						7							

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ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **305** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: C.I.R. CONSTRUCTION PTY LTD

Project: PROPOSED COMMERCIAL DEVELOPMENT

Location: 58-62 REDFERN STREET, WETHERILL PARK, NSW

Job No. E29923K **Method:** SPIRAL AUGER JK205 **R.L. Surface:** N/A

Date: 6-4-17 **Datum:**

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

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 COMPLETION						0			ASPHALTIC CONCRETE: 150mm.t				
									FILL: Silty sandy clay, medium to high plasticity, brown and grey, trace of fine to coarse grained igneous and ironstone gravel.	MC≤PL			
								-	SHALE: grey, with iron indurated bands.	XW			
						1							
									END OF BOREHOLE AT 1.4m				
						2							
						3							
						4							
						5							
						6							
						7							

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ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **306** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: C.I.R. CONSTRUCTION PTY LTD

Project: PROPOSED COMMERCIAL DEVELOPMENT

Location: 58-62 REDFERN STREET, WETHERILL PARK, NSW

Job No. E29923K **Method:** EZIPROBE **R.L. Surface:** N/A

Date: 6-4-17 **Datum:**

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

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 COMPLETION						0			CONCRETE: 130mm.t				
								-	FILL: Silty clay, medium plasticity, brown and dark grey brown, trace of fine to coarse grained igneous and ironstone gravel.	MC<PL			SLIGHT HYDROCARBON ODOUR
						1			as above, but dark grey brown mottled dark brown.				
						2							
						3			FILL: Silty clay, medium to high plasticity, dark grey brown, trace of organic material and fine to coarse grained igneous gravel.	MC<PL			STRONG ORGANIC ODOUR
								CL-CH	SILTY CLAY: medium to high plasticity, grey mottled red brown, trace of fine to coarse grained ironstone gravel.	MC<PL			
						4			as above, but red brown.	MC<PL			
						5			END OF BOREHOLE AT 4.7m				EZIPROBE REFUSAL
						6							
						7							

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ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **307** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: C.I.R. CONSTRUCTION PTY LTD

Project: PROPOSED COMMERCIAL DEVELOPMENT

Location: 58-62 REDFERN STREET, WETHERILL PARK, NSW

Job No. E29923K **Method:** EZIPROBE **R.L. Surface:** N/A

Date: 6-4-17 **Datum:**

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

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 COMPLET-ION						0			CONCRETE: 210mm.t				
								-	VOID				
									END OF BOREHOLE AT 0.52m				PROBE REFUSAL ON SUSPECTED CONCRETE SLAB
						1							
						2							
						3							
						4							
						5							
						6							
						7							

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ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **308** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: C.I.R. CONSTRUCTION PTY LTD

Project: PROPOSED COMMERCIAL DEVELOPMENT

Location: 58-62 REDFERN STREET, WETHERILL PARK, NSW

Job No. E29923K **Method:** EZIPROBE **R.L. Surface:** N/A

Date: 6-4-17 **Datum:**

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

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 COMPLET-ION						0			CONCRETE: 300mm.t				
	■		■					-	FILL: Silty gravelly clay, low to medium plasticity, brown and dark red brown, trace of fine to coarse grained igneous and ironstone gravel and ash.	MC≤PL			
	■		■			1							
								CL-CH	SILTY CLAY: medium to high plasticity, light grey mottled red brown, trace of fine to coarse grained ironstone gravel.	MC<PL			
						2							
									END OF BOREHOLE AT 2.8m				
						3							
						4							
						5							
						6							
						7							

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ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **309** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: C.I.R. CONSTRUCTION PTY LTD

Project: PROPOSED COMMERCIAL DEVELOPMENT

Location: 58-62 REDFERN STREET, WETHERILL PARK, NSW

Job No. E29923K **Method:** EZIPROBE **R.L. Surface:** N/A

Date: 6-4-17 **Datum:**

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

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 COMPLETION	■		■			0			CONCRETE: 210mm.t				
								-	FILL: Silty clay, low to medium plasticity, orange brown, trace of fine to coarse grained ironstone and igneous gravel and ash.	MC≤PL			
	■		■			1			as above, but orange brown mottled grey.	MC<PL			
	■		■			2			as above, but dark grey brown.				
	■		■			3							
	■		■			4		CL-CH	SILTY CLAY: medium to high plasticity, grey mottled orange brown, trace of fine to coarse grained ironstone gravel.	MC<PL			
								-	SHALE: grey.	XW			
						5			END OF BOREHOLE AT 4.5m				
						6							
						7							

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ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. **310** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: C.I.R. CONSTRUCTION PTY LTD

Project: PROPOSED COMMERCIAL DEVELOPMENT

Location: 58-62 REDFERN STREET, WETHERILL PARK, NSW

Job No. E29923K **Method:** EZIPROBE **R.L. Surface:** N/A

Date: 6-4-17 **Datum:**

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

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 COMPLETION						0			CONCRETE: 150mm.t				
								-	FILL: Silty clay, low to medium plasticity, brown and dark brown, trace of fine to coarse grained igneous gravel and ash.	MC≥PL			
								CL	SILTY CLAY: low to medium plasticity, grey mottled orange brown.	MC≤PL			
						1		-	SHALE: grey.	XW			
									END OF BOREHOLE AT 1.3m				
						2							
						3							
						4							
						5							
						6							
						7							

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ENVIRONMENTAL LOG

Borehole No. **311** **1/1**

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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 COMPLETION						0			CONCRETE: 120mm.t				
								-	FILL: Silty sandy clay, low to medium plasticity, grey and orange brown.	MC≥PL			
								-	SHALE: grey and dark grey.	XW			
						1				DW			
									END OF BOREHOLE AT 1.4m				
						2							
						3							
						4							
						5							
						6							
						7							

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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 COMPLETION	■		■			0		-	CONCRETE: 110mm.t FILL: Silty clay, low to medium plasticity, grey and dark brown, trace of fine to coarse grained igneous and ironstone gravel and ash.	MC≥PL			
	■		■			1			as above, but dark grey and brown.	MC≥PL			STRONG ORGANIC ODOUR
	■		■			2							
									END OF BOREHOLE AT 2.25m				EZIPROBE REFUSAL
						3							
						4							
						5							
						6							
						7							

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Date: 6-4-17 **Datum:**

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

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 COMPLET-ION	■		■			0			CONCRETE: 300mm.t				
	■		■					-	FILL: Sandy gravelly clay, low to medium plasticity, with fine to coarse grained igneous gravel.	MC>PL			
										MC≥PL			
						1			FILL: Silty clay, low to medium plasticity, dark brown and orange brown, trace of fine to coarse grained igneous gravel, ash and fine to coarse grained ironstone gravel.				
						2							
	■		■						as above, but medium to high plasticity, dark grey.	MC<PL			
						3							
	■		■					-	SHALE: grey, with iron indurated bands.	XW			
						4			END OF BOREHOLE AT 3.9m				EZIPROBE REFUSAL
						5							
						6							
						7							

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Borehole No. **314** **1/1**

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Client: C.I.R. CONSTRUCTION PTY LTD

Project: PROPOSED COMMERCIAL DEVELOPMENT

Location: 58-62 REDFERN STREET, WETHERILL PARK, NSW

Job No. E29923K **Method:** EZIPROBE **R.L. Surface:** N/A

Date: 6-4-17 **Datum:**

Logged/Checked by: J.D.C./G.F.

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 COMPLETION	■		■			0			CONCRETE: 120mm.t				
								-	FILL: Silty clay, medium to high plasticity, light brown, with fine to medium grained shale gravel and ash.	MC>PL			
	■		■			1							
									as above, but dark grey.				
	■		■			2							
								CL-CH	SILTY CLAY: medium to high plasticity, light grey mottled orange brown, with fine to coarse grained ironstone gravel.	MC≈PL			
	■		■			3		-	SHALE: light grey.	XW			
									END OF BOREHOLE AT 3.0m				
						4							
						5							
						6							
						7							

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ENVIRONMENTAL LOG

Borehole No. **315** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: C.I.R. CONSTRUCTION PTY LTD

Project: PROPOSED COMMERCIAL DEVELOPMENT

Location: 58-62 REDFERN STREET, WETHERILL PARK, NSW

Job No. E29923K **Method:** SPIRAL AUGER JK205 **R.L. Surface:** N/A

Date: 6-4-17 **Datum:**

Logged/Checked by: J.D.C./G.F.

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 COMPLET-ION						0			CONCRETE: 180mm.t				
								-	FILL: Silty clay, low to medium plasticity, trace of fine to medium grained shale gravel and ash.	MC<PL			
	■	■			N = 5 1,2,3	1							
								CL-CH	SILTY CLAY: medium to high plasticity, orange brown, with fine to medium grained ironstone gravel.	MC<PL			
								-		XW			
	■	■			N = 16 4,8,8				SHALE: light grey, with clay and ironstone bands.				
						2			END OF BOREHOLE AT 1.95m				
						3							
						4							
						5							
						6							
						7							

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ENVIRONMENTAL LOG

Borehole No. **316** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: C.I.R. CONSTRUCTION PTY LTD

Project: PROPOSED COMMERCIAL DEVELOPMENT

Location: 58-62 REDFERN STREET, WETHERILL PARK, NSW

Job No. E29923K **Method:** SPIRAL AUGER JK205 **R.L. Surface:** N/A

Date: 6-4-17 **Datum:**

Logged/Checked by: J.D.C./G.F.

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 COMPLETION			■			0			CONCRETE: 200mm.t				
	■							-	FILL: Silty clay, low to medium plasticity, trace of fine to medium grained shale gravel and ash.	MC<PL			
									END OF BOREHOLE AT 0.5m				EZIPROBE REFUSAL POSSIBLY ON SUSPECTED BURIED CONCRETE OR SERVICE
						1							
						2							
						3							
						4							
						5							
						6							
						7							

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Job No. E29923K **Method:** SPIRAL AUGER JK205 **R.L. Surface:** N/A

Date: 6-4-17 **Datum:**

Logged/Checked by: J.D.C./G.F.

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 COMPLETION	■		■			0			CONCRETE: 180mm.t				
								-	FILL: Silty clay, low to medium plasticity, grey trace of fine to medium grained shale gravel and ash.	MC≈PL			
	■		■		N = 15 5,7,8			-	SHALE: light grey.	XW			
						1			END OF BOREHOLE AT 0.95m				
						2							
						3							
						4							
						5							
						6							
						7							

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EXPLANATORY NOTES – ENVIRONMENTAL LOGS

INTRODUCTION

These notes have been provided to supplement the environmental report with regards to drilling and field logging. 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 manmade processes and therefore exhibits a variety of characteristics and properties which vary from place to place and can change with time. Environmental studies involve gathering and assimilating limited facts about these characteristics and properties in order to understand the ground on a particular site under certain conditions. These conditions 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, the SAA Site Investigation Code. 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 geotechnical practice.

Soil types are described according to the predominating particle size and behaviour as set out in the attached Unified Soil Classification Table qualified by the grading of other particles present (e.g. sandy clay) as set out below (note that unless stated in the report, the soil classification is based on a qualitative field assessment, not laboratory testing):

Soil Classification	Particle Size
Clay	less than 0.002mm
Silt	0.002 to 0.075mm
Sand	0.075 to 2mm
Gravel	2 to 60mm

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	less than 4
Loose	4 – 10
Medium dense	10 – 30
Dense	30 – 50
Very Dense	greater than 50

Cohesive soils are classified on the basis of strength (consistency) either by use of hand penetrometer, laboratory testing or engineering examination. The strength terms are defined as shown in the following table:

Classification	Unconfined Compressive Strength kPa
Very Soft	less than 25
Soft	25 – 50
Firm	50 – 100
Stiff	100 – 200
Very Stiff	200 – 400
Hard	Greater than 400
Friable	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 thinly bedded to laminated siltstone.

DRILLING OR EXCAVATION METHODS

The following is a brief summary of drilling and excavation methods currently adopted by the Company, and some comments on their use and application. All except test pits and hand auger drilling require the use of a mechanical drilling rig.

Test Pits: These are normally excavated with a backhoe or a tracked excavator, allowing close examination of the in-situ soils if it is safe to descend into the pit. The depth of penetration is limited to approximately 3m for a backhoe and up to 6m for an excavator. Limitations of test pits include problems associated with disturbance and difficulty of reinstatement; and the consequent effects on nearby structures. Care must be taken if construction is to be carried out near test pit locations to either properly re-compact 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. Premature refusal of the hand augers can occur on a variety of materials such as fill, hard clay, gravel or ironstone, 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 in-situ 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 relatively lower 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 fragments. 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 determined 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 such as Revert or Biogel. The mud tends to mask the cuttings and reliable identification is only possible from intermittent intact sampling (e.g. 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, an NMLC triple tube core barrel, which gives a core of about 50mm diameter, 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 CORE LOSS. The locations of losses are determined on site by the supervising engineer; where the location is uncertain, the loss is placed at the top end 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, "Methods of Testing Soils for Engineering Purposes" – Test F3.1.

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 63kg 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. Occasionally, the drop hammer is used to drive 50mm diameter thin walled sample tubes (U50) in clays. In such circumstances, the test results are shown on the borehole logs in brackets.

A modification to the SPT test 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 "Nc" 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 attached explanatory notes define the terms and symbols used in preparation of the logs.

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; and
- 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 water observations are to be made.

More reliable measurements can be made by installing standpipes which are read after stabilising 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 (e.g. bricks, concrete, plastic, slag/ash, 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 determine the extent of the fill.

The presence of fill materials is usually regarded with caution as the possible variation in density, strength and material type is much greater than with natural soil deposits. If the volume and quality 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 classifications and rocks strengths indicated on the environmental logs unless noted in the report.

SITE ANOMALIES

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, EIS should be notified immediately.

GRAPHIC LOG SYMBOLS FOR SOIL AND ROCKS

SOIL


FILL


TOPSOIL


CLAY (CL, CH)


SILT (ML, MH)


SAND (SP, SW)


GRAVEL (GP, GW)


SANDY CLAY (CL, CH)


SILTY CLAY (CL, CH)


CLAYEY SAND (SC)


SILTY SAND (SM)


GRAVELLY CLAY (CL, CH)


CLAYEY GRAVEL (GC)


SANDY SILT (ML)


PEAT AND ORGANIC SOILS

ROCK


CONGLOMERATE


SANDSTONE


SHALE


SILTSTONE, MUDSTONE, CLAYSTONE


LIMESTONE


PHYLLITE, SCHIST


TUFF


GRANITE, GABBRO


DOLERITE, DIORITE


BASALT, ANDESITE


QUARTZITE

DEFECTS AND INCLUSIONS


CLAY SEAM


SHEARED OR CRUSHED SEAM


BRECCIATED OR SHATTERED SEAM/ZONE


IRONSTONE GRAVEL


ORGANIC MATERIAL

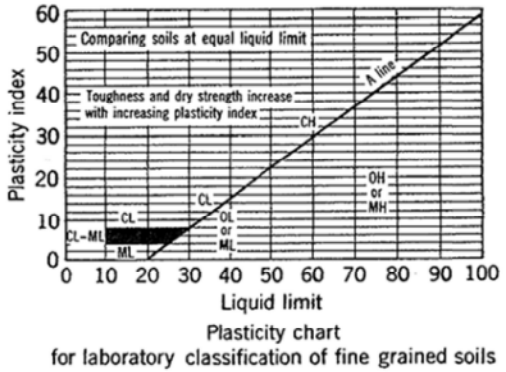
OTHER MATERIALS


CONCRETE


BITUMINOUS CONCRETE, COAL


COLLUVIUM

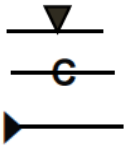
Field Identification Procedures (Excluding particles larger than 75 μm and basing fractions on estimated weights)						Group Symbols [a]	Typical Names	Information Required for Describing Soils	Laboratory Classification Criteria
Coarse-grained soils More than half of material is *larger* than 75 μm sieve size[b] (The 75 μm sieve size is about the smallest particle visible to naked eye)	Gravels More than half of coarse fraction is larger than 4 mm sieve size	Clean gravels (little or no fines)	Wide range in grain size and substantial amounts of all intermediate particle sizes			*GW*	Well graded gravels, gravel-sand mixtures, little or no fines	Give typical name; indicate approximate percentages of sand and gravel; maximum size; angularity, surface condition, and hardness of the coarse grains; local or geologic name and other pertinent descriptive information; and symbols in parentheses For undisturbed soils add information on stratification, degree of compactness, cementation, moisture conditions and drainage characteristics Example: *Silty sand*, gravelly; about 20% hard, angular gravel particles 12 mm maximum size; rounded and subangular sand grains coarse to fine, about 15% non-plastic fines with low dry strength; well compacted and moist in place; alluvial sand; (*SM*)	Determine percentages of gravel and sand from grain size curve Depending on percentage of fines (fraction smaller than 75 μm sieve size) coarse grained soils are classified as follows: Less than 5% *GW, GP, SW, SP* More than 12% *GM, GC, SM, SC* 5% to 12% *Borderline* cases requiring use of dual symbols Use grain size curve in identifying the fractions as given under field identification
			Predominantly one size or a range of sizes with some intermediate sizes missing			*GP*	Poorly graded gravels, gravel-sand mixtures, little or no fines		
		Gravels with fines (appreciable amount of fines)	Nonplastic fines (for identification procedures see *ML* below)			*GM*	Silty gravels, poorly graded gravel-sand-silt mixtures		
			Plastic fines (for identification procedures, see *CL* below)			*GC*	Clayey gravels, poorly graded gravel-sand-clay mixtures		
	Sands More than half of coarse fraction is smaller than 4 mm sieve size	Clean sands (little or no fines)	Wide range in grain sizes and substantial amounts of all intermediate particle sizes			*SW*	Well graded sands, gravelly sands, little or no fines		$C_U = \frac{D_{60}}{D_{10}}$ Greater than 4 $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3 Not meeting all gradation requirements for *GW* Atterberg limits below "A" line, or *PI* less than 4 — Above "A" line with *PI* between 4 and 7 are *borderline* cases requiring use of dual symbols Atterberg limits above "A" line, with *PI* greater than 7
			Predominantly one size or a range of sizes with some intermediate sizes missing			*SP*	Poorly graded sands, gravelly sands, little or no fines		
		Sands with fines (appreciable amount of fines)	Nonplastic fines (for identification procedures, see *ML* below)			*SM*	Silty sands, poorly graded sand-silt mixtures		
			Plastic fines (for identification procedures, see *CL* below)			*SC*	Clayey sands, poorly graded sand-clay mixtures		$C_U = \frac{D_{60}}{D_{10}}$ Greater than 6 $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3 Not meeting all gradation requirements for *SW* Atterberg limits below "A" line or *PI* less than 5 — Above "A" line with *PI* between 4 and 7 are *borderline* cases requiring use of dual symbols Atterberg limits below "A" line with *PI* greater than 7
Fine-grained soils More than half of material is *smaller* than 75 μm sieve size (The 75 μm sieve size is about the smallest particle visible to naked eye)	Identification Procedures on Fraction Smaller than 380 μm Sieve Size								
	Silts and clays liquid limit less than 50		Dry Strength (crushing characteristics)	Dilatancy (reaction to shaking)	Toughness (consistency near plastic limit)				
			None to slight	Quick to slow	None	*ML*	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands with slight plasticity	Give typical name; indicate degree and character of plasticity, amount and maximum size of coarse grains; colour in wet condition, odour if any, local or geologic name, and other pertinent descriptive information, and symbol in parentheses For undisturbed soils add information on structure, stratification, consistency in undisturbed and remoulded states, moisture and drainage conditions Example: *Clayey silt*, brown; slightly plastic; small percentage of fine sand; numerous vertical root holes; firm and dry in place; loess; (*ML*)	
			Medium to high	None to very slow	Medium	*CL*	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays		
			Slight to medium	Slow	Slight	*OL*	Organic silts and organic silt-clays of low plasticity		
	Silts and clays liquid limit greater than 50		Slight to medium	Slow to none	Slight to medium	*MH*	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts		
			High to very high	None	High	*CH*	Inorganic clays of high plasticity, fat clays		
			Medium to high	None to very slow	Slight to medium	*OH*	Organic clays of medium to high plasticity		
Highly Organic Soils			Readily identified by colour, odour, spongy feel and frequently by fibrous texture			*Pt*	Peat and other highly organic soils		



Plasticity chart
for laboratory classification of fine grained soils

Note: 1 Soils possessing characteristics of two groups are designated by combinations of group symbols (eg. GW-GC, well graded gravel-sand mixture with clay fines).
2 Soils with liquid limits of the order of 35 to 50 may be visually classified as being of medium plasticity.

LOG SYMBOLS

LOG COLUMN	SYMBOL	DEFINITION
Groundwater Record		Standing water level. Time delay following completion of drilling may be shown. Extent of borehole collapse shortly after drilling. Groundwater seepage into borehole or excavation noted during drilling or excavation.
Samples	ES U50 DB DS ASB ASS SAL	Soil 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 screening. 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 show blows per 150mm penetration. 'R' as noted below.
	N_c = 5 7 3 R	Solid Cone Penetration Test (SCPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration for 60 degree 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 heads pace test).
Moisture (Cohesive Soils) (Cohesionless)	MC > PL MC ≈ PL MC < PL D M W	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. 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 H ( )	VERY SOFT – Unconfined compressive strength less than 25kPa SOFT – Unconfined compressive strength 25-5 0kPa FIRM – Unconfined compressive strength 50-1 00kPa STIFF – Unconfined compressive strength 100- 200kPa VERY STIFF – Unconfined compressive strength 200- 400kPa HARD – Unconfined compressive strength greater than 400kPa Bracketed symbol indicates estimated consistency based o n tactile examination or other tests.
Density Index/ Relative Density (Cohesionless Soils)	VL L MD D VD ( )	**Density Index (ID) Range (%)** / **SPT ' N' Value Range (Blows/300mm)** Very Loose <15 — 0-4 Loose 15-35 — 4-10 Medium Dense 35-65 — 10-30 Dense 65-85 — 30-50 Very Dense >85 — >50 Bracketed symbol indicates estimated density based on ease of drilling or other tests.
Hand Penetrometer Readings	300 250	Numbers indicate individual test results in kPa on representative undisturbed material unless noted otherwise
Remarks	'V' bit 'TC' bit T_{60}	Hardened steel 'V' shaped bit. Tungsten carbide wing bit. Penetration of auger string in mm under static load of rig applied by drill head hydraulics without rotation of augers.

LOG SYMBOLS CONTINUED

ROCK STRENGTH

Rock strength is defined by the Point Load Strength Index (Is 50) and refers to the strength of the rock substance in the bedding. The test procedure is described by the International Journal of Rock Mechanics, Mining and Geomechanics Abstract Volume 22, No 2, 1985.

TERM	SYMBOL	Is (50) MPa	FIELD GUIDE
Extremely Low:	EL	0.03	Easily remoulded by hand to a material with soil properties.
Very Low:	VL	0.1	May be crumbled in the hand. Sandstone is "sugary" and friable.
Low:	L	0.3	A piece of core 150 mm long x 50mm dia. may be broken by hand and easily scored with a knife. Sharp edges of core may be friable and break during handling.
Medium Strength:	M	1	A piece of core 150 mm long x 50mm dia. can be broken by hand with difficulty. Readily scored with knife.
High:	H	3	A piece of core 150 mm long x 50mm dia. core cannot be broken by hand, can be slightly scratched or scored with knife; rock rings under hammer.
Very High:	VH	10	A piece of core 150 mm long x 50mm dia. may be broken with hand-held pick after more than one blow. Cannot be scratched with pen knife; rock rings under hammer.
Extremely High:	EH		A piece of core 150 mm long x 50mm dia. is very difficult to break with h and-held hammer . Rings when struck with a hammer.

ROCK STRENGTH

ABBREVIATION	DESCRIPTION	NOTES
Be	Bedding Plane Parting	Defect orientations measured relative to the normal to (i.e. relative to horizontal for vertical holes)
CS	Clay Seam	
J	Joint	
P	Planar	
Un	Undulating	
S	Smooth	
R	Rough	
IS	Iron stained	
XWS	Extremely Weathered Seam	
Cr	Crushed Seam	
60t	Thickness of defect in millimetres	

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

SAMPLE RECEIPT ADVICE

Client Details	
Client	Environmental Investigation Services
Attention	Jake Cashman

Sample Login Details	
Your Reference	E29923K, Wetherill Park
Envirolab Reference	**165176**
Date Sample Received	12/04/2017
Date Instructions Received	12/04/2017
Date Results Expected to be Reported	**21/04/2017**

Sample Condition	
Samples received in appropriate condition for analysis	YES
No. of Samples Provided	5 waters
Turnaround Time Requested	Standard
Temperature on receipt (°C)	19.5
Cooling Method	Ice Pack
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	*VOCs in water*	*vTRH(C6-C10)/BTEXN in Water*	*svTRH (C10-C40) in Water*	*PAHs in Water - Low Level*	*HM in water - dissolved*	*Electrical Conductivity*	*pH*
MW301	✓	✓	✓	✓	✓	✓	✓
MW302	✓	✓	✓	✓	✓	✓	✓
MW303	✓	✓	✓	✓	✓	✓	✓
DupJDCW		✓	✓	✓	✓		
TS		✓					

The '✓' indicates the testing you have requested. ***THIS IS NOT A REPORT OF THE RESULTS****.*

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD	EIS Job Number: E29923K	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: Jake Cashman

Location:	Wetherill Park	Sample Preserved in Esky on Ice
Sampler:	JDC	Tests Required

Date Sampled	Lab Ref:	Sample Number	Sample Containers	PID	Sample Description	Combo 3L	VOCs	pH / EC	pH / EC	TRH/BTEX							
12/04/2017	1	MW301	G1, G2, 4x V, H, PVC	0	Groundwater	x	x	x									
12/04/2017	2	MW302	G1, G2, 4x V, H, PVC	0	Groundwater	x	x	x									
12/04/2017	3	MW303	G1, G2, 4x V, H, PVC	0	Groundwater	x	x	x									
12/04/2017	4	DupJDCW	G1, G2, 2x V, H	-	Groundwater	x											
12/04/2017	5	TS	V	-	Water					x							

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

Job No: 165776
Date Received: 12/4/17
Time Received: 14.15
Received by: JE
Temp: Cool/Ambient 19.5°C
Cooling: Ice/Icepack
Security: Intact/Broken/None

Remarks (comments/detection limits required):	Sample Containers:
All analysis PQLs to ANZECC (2000) Detection Limits Please	G1 - 500mL Amber Glass Bottle G2 - 1L Amber Glass Bottle V - BTEX Vial H - HNO3 Wash PVC PVC - HDPE Plastic Bottles

Relinquished By:	Date:	Time:	Received By:	Date:
Jake Cashman	12/4/2017	14.15	JE & CLS	12/4/17

12 Ashley Street, Chatswood, NSW 2067
tel: +61 2 9910 6200

email: sydney@envirolab.com.au
envirolab.com.au

Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

CERTIFICATE OF ANALYSIS 165176

Client:

Environmental Investigation Services
PO Box 976
North Ryde BC
NSW 1670

Attention: Jake Cashman

Sample log in details:

Your Reference:	**E29923K, Wetherill Park**		
No. of samples:	5 waters		
Date samples received / completed instructions received	12/04/17	/	12/04/17

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:	21/04/17	/	21/04/17
Date of Preliminary Report:	Not Issued		

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

Results Approved By:

David Springer
General Manager

VOCs in water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- - ---------- 	165176-1 MW301 12/04/2017 Water	165176-2 MW302 12/04/2017 Water	165176-3 MW303 12/04/2017 Water
Date extracted	-	13/04/2017	13/04/2017	13/04/2017
Date analysed	-	13/04/2017	13/04/2017	13/04/2017
Dichlorodifluoromethane	µg/L	<10	<10	<10
Chloromethane	µg/L	<10	<10	<10
Vinyl Chloride	µg/L	<10	<10	<10
Bromomethane	µg/L	<10	<10	<10
Chloroethane	µg/L	<10	<10	<10
Trichlorofluoromethane	µg/L	<10	<10	<10
1,1-Dichloroethene	µg/L	<1	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<1
1,1-dichloroethane	µg/L	<1	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<1
Bromochloromethane	µg/L	<1	<1	<1
Chloroform	µg/L	<1	<1	<1
2,2-dichloropropane	µg/L	<1	<1	<1
1,2-dichloroethane	µg/L	<1	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1	<1
1,1-dichloropropene	µg/L	<1	<1	<1
Cyclohexane	µg/L	<1	<1	<1
Carbon tetrachloride	µg/L	<1	<1	<1
Benzene	µg/L	<1	<1	<1
Dibromomethane	µg/L	<1	<1	<1
1,2-dichloropropane	µg/L	<1	<1	<1
Trichloroethene	µg/L	<1	<1	<1
Bromodichloromethane	µg/L	<1	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1	<1
Toluene	µg/L	<1	<1	<1
1,3-dichloropropane	µg/L	<1	<1	<1
Dibromochloromethane	µg/L	<1	<1	<1
1,2-dibromoethane	µg/L	<1	<1	<1
Tetrachloroethene	µg/L	<1	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<1
Chlorobenzene	µg/L	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1
Bromoform	µg/L	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2
Styrene	µg/L	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<1
o-xylene	µg/L	<1	<1	<1

VOCs in water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- - ----------	165176-1 MW301 12/04/2017 Water	165176-2 MW302 12/04/2017 Water	165176-3 MW303 12/04/2017 Water
1,2,3-trichloropropane	µg/L	<1	<1	<1
Isopropylbenzene	µg/L	<1	<1	<1
Bromobenzene	µg/L	<1	<1	<1
n-propyl benzene	µg/L	<1	<1	<1
2-chlorotoluene	µg/L	<1	<1	<1
4-chlorotoluene	µg/L	<1	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1	<1
Tert-butyl benzene	µg/L	<1	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1	<1
Sec-butyl benzene	µg/L	<1	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1	<1
4-isopropyl toluene	µg/L	<1	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1	<1
n-butyl benzene	µg/L	<1	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<1
Hexachlorobutadiene	µg/L	<1	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1	<1
Surrogate Dibromofluoromethane	%	104	103	105
Surrogate toluene-d8	%	100	97	99
Surrogate 4-BFB	%	104	103	102

vTRH(C6-C10)/BTEXN in Water						
Our Reference:	UNITS	165176-1	165176-2	165176-3	165176-4	165176-5
Your Reference	---------- -	MW301	MW302	MW303	DupJDCW	TS
Date Sampled	----------	12/04/2017	12/04/2017	12/04/2017	12/04/2017	12/04/2017
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	13/04/2017	13/04/2017	13/04/2017	13/04/2017	12/04/2017
Date analysed	-	13/04/2017	13/04/2017	13/04/2017	13/04/2017	12/04/2017
TRHC$_6$ - C$_9$	µg/L	<10	<10	<10	<10	[NA]
TRHC$_6$ - C$_{10}$	µg/L	<10	<10	<10	<10	[NA]
TRHC$_6$ - C$_{10}$ less BTEX (F1)	µg/L	<10	<10	<10	<10	[NA]
Benzene	µg/L	<1	<1	<1	<1	93%
Toluene	µg/L	<1	<1	<1	<1	94%
Ethylbenzene	µg/L	<1	<1	<1	<1	100%
m+p-xylene	µg/L	<2	<2	<2	<2	101%
o-xylene	µg/L	<1	<1	<1	<1	100%
Naphthalene	µg/L	<1	<1	<1	<1	[NA]
Surrogate Dibromofluoromethane	%	104	103	105	102	96
Surrogate toluene-d8	%	100	97	99	99	99
Surrogate 4-BFB	%	104	103	102	105	101

svTRH (C10-C40) in Water					
Our Reference:	UNITS	165176-1	165176-2	165176-3	165176-4
Your Reference	---------- -	MW301	MW302	MW303	DupJDCW
Date Sampled	----------	12/04/2017	12/04/2017	12/04/2017	12/04/2017
Type of sample		Water	Water	Water	Water
Date extracted	-	13/04/2017	13/04/2017	13/04/2017	13/04/2017
Date analysed	-	13/04/2017	13/04/2017	13/04/2017	13/04/2017
TRHC$_{10}$ - C$_{14}$	µg/L	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	µg/L	400	<100	<100	510
TRHC$_{29}$ - C$_{36}$	µg/L	<100	<100	<100	<100
TRH>C$_{10}$ - C$_{16}$	µg/L	69	<50	<50	88
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	µg/L	69	<50	<50	88
TRH>C$_{16}$ - C$_{34}$	µg/L	350	<100	<100	470
TRH>C$_{34}$ - C$_{40}$	µg/L	<100	<100	<100	<100
Surrogate o-Terphenyl	%	77	90	89	89

PAHs in Water - Low Level Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- - ----------	165176-1 MW301 12/04/2017 Water	165176-2 MW302 12/04/2017 Water	165176-3 MW303 12/04/2017 Water	165176-4 DupJDCW 12/04/2017 Water
Date extracted	-	13/04/2017	13/04/2017	13/04/2017	13/04/2017
Date analysed	-	18/04/2017	18/04/2017	18/04/2017	18/04/2017
Naphthalene	µg/L	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	94	127	126	111

HM in water - dissolved Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- - ---------- 	165176-1 MW301 12/04/2017 Water	165176-2 MW302 12/04/2017 Water	165176-3 MW303 12/04/2017 Water	165176-4 DupJDCW 12/04/2017 Water
Date prepared	-	18/04/2017	18/04/2017	18/04/2017	18/04/2017
Date analysed	-	18/04/2017	18/04/2017	18/04/2017	18/04/2017
Arsenic-Dissolved	µg/L	<1	1	3	<1
Cadmium-Dissolved	µg/L	<0.1	0.3	0.7	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1
Copper-Dissolved	µg/L	6	<1	<1	8
Lead-Dissolved	µg/L	<1	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	33	22	27	35
Zinc-Dissolved	µg/L	38	18	28	36

Miscellaneous Inorganics				
Our Reference:	UNITS	165176-1	165176-2	165176-3
Your Reference	----------	MW301	MW302	MW303
	-			
Date Sampled	----------	12/04/2017	12/04/2017	12/04/2017
Type of sample		Water	Water	Water
Date prepared	-	13/04/2017	13/04/2017	13/04/2017
Date analysed	-	13/04/2017	13/04/2017	13/04/2017
pH	pH Units	6.8	7.0	7.0
Electrical Conductivity	µS/cm	2,800	19,000	21,000

Method ID	Methodology Summary
Org-013	Water samples are analysed directly by purge and trap GC-MS.
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-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	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	Determination of various metals by ICP-MS.
Metals-021	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 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.

QUALITY CONTROL VOCs in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			13/04/2017	[NT]	[NT]	LCS-W1	13/04/2017
Date analysed	-			13/04/2017	[NT]	[NT]	LCS-W1	13/04/2017
Dichlorodifluoromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Chloromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Vinyl Chloride	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Bromomethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Chloroethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Trichlorofluoromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
1,1-Dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Trans-1,2-dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,1-dichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	98%
Cis-1,2-dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Bromochloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Chloroform	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	99%
2,2-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	98%
1,1,1-trichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	99%
1,1-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Cyclohexane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Carbon tetrachloride	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Dibromomethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Trichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	121%
Bromodichloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	99%
trans-1,3-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
cis-1,3-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,1,2-trichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Toluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,3-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Dibromochloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	97%
1,2-dibromoethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Tetrachloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	98%
1,1,1,2-tetrachloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Chlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Ethylbenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Bromoform	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
m+p-xylene	µg/L	2	Org-013	<2	[NT]	[NT]	[NR]	[NR]
Styrene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,1,2,2-tetrachloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
o-xylene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL VOCs in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
1,2,3-trichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Isopropylbenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Bromobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
n-propyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
2-chlorotoluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
4-chlorotoluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,3,5-trimethyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Tert-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2,4-trimethyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,3-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Sec-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,4-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
4-isopropyl toluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
n-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dibromo-3-chloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2,4-trichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Hexachlorobutadiene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2,3-trichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-013	103	[NT]	[NT]	LCS-W1	102%
Surrogate toluene-d8	%		Org-013	99	[NT]	[NT]	LCS-W1	101%
Surrogate 4-BFB	%		Org-013	103	[NT]	[NT]	LCS-W1	105%

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			13/04/2017	[NT]	[NT]	LCS-W1	13/04/2017
Date analysed	-			13/04/2017	[NT]	[NT]	LCS-W1	13/04/2017
TRH C_6 - C_9	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W1	100%
TRH C_6 - C_{10}	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W1	100%
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	99%
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	97%
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	101%
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	LCS-W1	102%
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	102%
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-016	103	[NT]	[NT]	LCS-W1	102%
Surrogate toluene-d8	%		Org-016	99	[NT]	[NT]	LCS-W1	101%
Surrogate 4-BFB	%		Org-016	103	[NT]	[NT]	LCS-W1	105%
QUALITY CONTROL svTRH (C10-C40) in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			18/04/2017	[NT]	[NT]	LCS-W1	18/04/2017
Date analysed	-			18/04/2017	[NT]	[NT]	LCS-W1	18/04/2017
TRH C_{10} - C_{14}	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	91%
TRH C_{15} - C_{28}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	91%
TRH C_{29} - C_{36}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	122%
TRH>C_{10} - C_{16}	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	91%
TRH>C_{16} - C_{34}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	91%
TRH>C_{34} - C_{40}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	122%
Surrogate o-Terphenyl	%		Org-003	90	[NT]	[NT]	LCS-W1	86%
QUALITY CONTROL PAHs in Water - Low Level	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			13/04/2017	[NT]	[NT]	LCS-W2	13/04/2017
Date analysed	-			18/04/2017	[NT]	[NT]	LCS-W2	18/04/2017
Naphthalene	µg/L	0.2	Org-012	<0.2	[NT]	[NT]	LCS-W2	70%
Acenaphthylene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	LCS-W2	74%
Phenanthrene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	LCS-W2	80%
Anthracene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	LCS-W2	79%
Pyrene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	LCS-W2	76%

QUALITY CONTROL PAHs in Water - Low Level	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Benzo(a)anthracene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Chrysene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	LCS-W2	74%
Benzo(b,j+k) fluoranthene	µg/L	0.2	Org-012	<0.2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	LCS-W2	87%
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012	131	[NT]	[NT]	LCS-W2	109%
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	-			18/04/2017	165176-2	18/04/2017 II 18/04/2017	LCS-W2	18/04/2017
Date analysed	-			18/04/2017	165176-2	18/04/2017 II 18/04/2017	LCS-W2	18/04/2017
Arsenic-Dissolved	µg/L	1	Metals-022	<1	165176-2	1 II 1 II RPD: 0	LCS-W2	100%
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	165176-2	0.3 II 0.3 II RPD: 0	LCS-W2	105%
Chromium-Dissolved	µg/L	1	Metals-022	<1	165176-2	<1 II <1	LCS-W2	90%
Copper-Dissolved	µg/L	1	Metals-022	<1	165176-2	<1 II <1	LCS-W2	91%
Lead-Dissolved	µg/L	1	Metals-022	<1	165176-2	<1 II <1	LCS-W2	110%
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	165176-2	<0.05 II [N/T]	LCS-W2	96%
Nickel-Dissolved	µg/L	1	Metals-022	<1	165176-2	22 II 23 II RPD: 4	LCS-W2	92%
Zinc-Dissolved	µg/L	1	Metals-022	<1	165176-2	18 II 19 II RPD: 5	LCS-W2	98%
QUALITY CONTROL Miscellaneous Inorganics	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			13/04/2017	[NT]	[NT]	LCS-W1	13/04/2017
Date analysed	-			13/04/2017	[NT]	[NT]	LCS-W1	13/04/2017
pH	pH Units		Inorg-001	[NT]	[NT]	[NT]	LCS-W1	101%
Electrical Conductivity	µS/cm	1	Inorg-002	<1	[NT]	[NT]	LCS-W1	106%

Report Comments:

8 HM in Water - Dissolved:
For the determination of dissolved metals in samples 1 and 4, the unpreserved sample was filtered through 0.45um filter at the lab due to the appearance of colloids and/or sediment in the supplied HNO3 bottle.

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
NR: 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 (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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 Details	
Client	Environmental Investigation Services
Attention	Jake Cashman

Sample Login Details	
Your Reference	E29923K, Wetherill Park
Envirolab Reference	**164998**
Date Sample Received	10/04/2017
Date Instructions Received	10/04/2017
Date Results Expected to be Reported	**19/04/2017**

Sample Condition	
Samples received in appropriate condition for analysis	YES
No. of Samples Provided	49 Soils
Turnaround Time Requested	Standard
Temperature on receipt (°C)	13.5
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

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ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
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Sample Id	*vTRH(C6-C10)/BTEXN in Soil*	*svTRH (C10-C40) in Soil*	*PAHs in Soil*	*Organochlorine Pesticides in soil*	*Organophosphorus Pesticides*	*PCBs in Soil*	*Acid Extractable metals in soil*	*Asbestos ID - soils*	*On Hold*
BH301-0.26-0.4	✓	✓	✓	✓	✓	✓	✓	✓	
BH301-0.5-0.95									✓
BH301-1.5-1.7									✓
BH301-3.0-3.2	✓	✓	✓				✓		
BH302-0.25-0.45	✓	✓	✓	✓	✓	✓	✓	✓	
BH302-0.7-0.95									✓
BH302-1.7-1.95									✓
BH302-4.0-4.5									✓
BH303-0.5-0.8	✓	✓	✓	✓	✓	✓	✓	✓	
BH303-0.8-0.95									✓
BH304-0.15-0.3	✓	✓	✓	✓	✓	✓	✓	✓	
BH304-0.6-0.8									✓
BH305-0.15-0.35	✓	✓	✓	✓	✓	✓	✓	✓	
BH305-0.5-0.7									✓
BH306-0.13-0.3	✓	✓	✓	✓	✓	✓	✓	✓	
BH306-0.8-1.0									✓
BH306-1.8-2.0									✓
BH306-3.0-3.2	✓	✓	✓				✓		
BH306-3.6-3.8									✓
BH308-0.3-0.6	✓	✓	✓	✓	✓	✓	✓	✓	
BH308-1.1-1.3									✓
BH309-0.21-0.4	✓	✓	✓	✓	✓	✓	✓	✓	
BH309-1.0-1.2									✓
BH309-2.0-2.2	✓	✓	✓	✓	✓	✓	✓	✓	
BH309-3.5-3.7									✓
BH310-0.15-0.35	✓	✓	✓	✓	✓	✓	✓	✓	
BH310-0.4-0.6									✓
BH311-0.12-0.3	✓	✓	✓				✓		
BH311-0.3-0.5									✓
BH312-0.11-0.3	✓	✓	✓				✓		
BH312-1.1-1.3									✓
BH312-2.0-2.2									✓
BH313-0.3-0.5	✓	✓	✓				✓		
BH313-0.5-0.7									✓
BH313-2.5-2.7									✓
BH313-3.6-3.8									✓
BH314-0.2-0.4	✓	✓	✓				✓		
BH314-0.8-1.0	✓	✓	✓				✓		
BH314-2.0-2.2									✓
BH314-2.6-2.8									✓
BH315-0.5-0.95	✓	✓	✓				✓		

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12 Ashley St Chatswood NSW 2067
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Sample Id	*vTRH(C6-C10)/BTEXN in Soil*	*svTRH (C10-C40) in Soil*	*PAHs in Soil*	*Organochlorine Pesticides in soil*	*Organophosphorus Pesticides*	*PCBs in Soil*	*Acid Extractable metals in soil*	*Asbestos ID - soils*	*On Hold*
BH315-1.6-1.8									✓
BH316-0.2-0.5	✓	✓	✓				✓		
BH317-0.18-0.38	✓	✓	✓				✓		
BH317-0.6-0.95									✓
DUPJDC2	✓	✓	✓				✓		
DUPHL1									✓
DUPHL2	✓	✓	✓				✓		
TB	✓								

The '✓' indicates the testing you have requested. ***THIS IS NOT A REPORT OF THE RESULTS****.*

SAMPLE AND CHAIN OF CUSTODY FORM

TO:
ENVIROLAB SERVICES PTY LTD
12 ASHLEY STREET
CHATSWOOD NSW 2067
P: (02) 99106200
F: (02) 99106201

Attention: Aileen

EIS Job Number: E29923K

Date Results Required: STANDARD

Page: 1 of 2

FROM:
ENVIRONMENTAL INVESTIGATION SERVICES
REAR OF 115 WICKS ROAD
MACQUARIE PARK, NSW 2113
P: 02-9888 5000 F: 02-9888 5001
Attention: Jake Cashman

Location: Wetherill Park
Sampler: JDC + HL

Sample Preserved in Esky on Ice

Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 6a	Combo 3	BTEX
6/04/2017	1	BH301	0.16-0.4	G, A	0	F.11	X		
	2		0.5-0.95						
	3		1.5-1.7						
	4		2-3.2					X	
	5	BH302	0.35-0.45			F.11	X		
	6		0.7-0.95						
	7		1.7-1.95						
	8		4.45	G		Shale			
	9	BH303	0.5-0.8	G, A		F.11	X		
	10		0.8-0.95			Shale			
	11	BH304	0.15-0.3		0.5	F.11	X		
	12		0.6-0.8		0	Shale			
	13	BH305	0.15-0.35			F.11	X		
	14		0.5-0.7			Shale			
	15	BH306	0.13-0.3			F.11	X		
	16		0.8-1						
	17		1.8-2						
~~Ziplock Bag not detected~~	18		2.0-3.2					X	
	19		3.6-3.8			Silty Clay			
	20	BH309	0.3-0.6			F.11	X		
	21		1.1-1.3			Silty Clay			
	22	BH309	0.21-0.4			F.11	X		
	23		1-1.2						
	24		2-2.2		0.6		X		
	25		3.5-3.7		0	Silty Clay			

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 164998
Date Received: 10/4
Time Received: 10:45
Received by: MW
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/none

Remarks (comments/detection limits required):
Send Disposal - To VIC

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

Relinquished By:	Date:	Time:	Received By:	Date:
Jake Cashman	10/4/2017	10:45	ELS / MW	10/4

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	EIS Job Number: E29923K Date Results Required: STANDARD Page: 2 of 2	ENVIRONMENTAL INVESTIGATION SERVICES REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Jake Cashman

Location: Wetherill Park

Sampler: JDC + HL

Sample Preserved in Esky on Ice

Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 6a	Combo 3	BTEX
6/04/2017	26	BH310	0.15-0.35	G, A	0.2	Fill	X		
	27	↓	0.4-0.6	~~A~~, G	0	Silty Clay			
	28	BH311	0.1-0.3	G, A		Fill		X	
	29	↓	0.3-0.5			Shale			
	30	BH312	0.1-0.3			Fill		X	
	31	↓	1.1-1.3			↓			
	32	↓	2-2.2			↓			
	33	BH313	0.3-0.5			Fill		X	
	34	↓	0.5-0.7			↓			
	35	↓	2.5-2.7			↓			
	36	↓	3.6-3.8			Shale			
	37	BH314	0.2-0.4			Fill		X	
	38	↓	0.8-1			↓		X	
	39	↓	2-2.2			↓			
	40	↓	2.6-2.8			Silty Clay			
	41	BH315	0.5-0.95			Fill		X	
	42	↓	1.6-1.8			Shale			
	43	BH316	0.2-0.5			Fill		X	
	44	BH317	0.15-0.35			↓		X	
	45	↓	0.6-0.95	↓	↓	Shale			
		DUPSOIL	-	G	-	-		X	
	46	DUPSOIL2	-	↓	-	-		X	
	47	DUPHL1	-		-	-			
	48	DUPHL2	-		-	-		X	
↓	49	TB	-	↓	-	Sand			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:
		10:45	ECS MW	10/4

8bb791

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Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

CERTIFICATE OF ANALYSIS **164998-A**

Client:

Environmental Investigation Services
PO Box 976
North Ryde BC
NSW 1670

Attention: Jake Cashman

Sample log in details:

Your Reference:	**E29923K, Wetherill Park**
No. of samples:	Additional Testing on 7 Soils
Date samples received / completed instructions received	10/04/17 / 26/04/17

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:	3/05/17 / 2/05/17
Date of Preliminary Report:	Not Issued

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

Results Approved By:

David Springer
General Manager

vTRH(C6-C10)/BTEXN in Soil					
Our Reference:	UNITS	164998-A-19	164998-A-21	164998-A-29	164998-A-36
Your Reference	---------- -	BH306	BH308	BH311	BH313
Depth	----------	3.6-3.8	1.1-1.3	0.3-0.5	3.6-3.8
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Date analysed	-	27/04/2017	27/04/2017	27/04/2017	27/04/2017
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25
vTPHC$_6$ - C$_{10}$ less BTEX (F1)	mg/kg	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	94	99	92	91

svTRH (C10-C40) in Soil					
Our Reference:	UNITS	164998-A-19	164998-A-21	164998-A-29	164998-A-36
Your Reference	----------	BH306	BH308	BH311	BH313
	-				
Depth	----------	3.6-3.8	1.1-1.3	0.3-0.5	3.6-3.8
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Date analysed	-	28/04/2017	28/04/2017	28/04/2017	28/04/2017
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50
Surrogate o-Terphenyl	%	83	92	91	91

PAHs in Soil Our Reference: Your Reference	UNITS ----------	164998-A-19 BH306	164998-A-21 BH308	164998-A-29 BH311	164998-A-36 BH313
Depth	----------	3.6-3.8	1.1-1.3	0.3-0.5	3.6-3.8
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Date analysed	-	28/04/2017	28/04/2017	28/04/2017	28/04/2017
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	<0.05	<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 calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05
Surrogate p-Terphenyl-d14	%	99	90	94	94

Acid Extractable metals in soil					
Our Reference:	UNITS	164998-A-19	164998-A-21	164998-A-29	164998-A-36
Your Reference	----------	BH306	BH308	BH311	BH313
Depth	----------	3.6-3.8	1.1-1.3	0.3-0.5	3.6-3.8
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Date analysed	-	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Arsenic	mg/kg	6	<4	<4	7
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	14	8	2	4
Copper	mg/kg	14	35	34	20
Lead	mg/kg	15	14	17	9
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	4	2	13	5
Zinc	mg/kg	14	22	14	26

Misc Inorg - Soil		
Our Reference:	UNITS	164998-A-33
Your Reference	---------- -	BH313
Depth	----------	0.3-0.5
Date Sampled		6/04/2017
Type of sample		Soil
Date prepared	-	28/04/2017
Date analysed	-	28/04/2017
pH 1:5 soil:water	pH Units	9.9

Clay 50-120g		
Our Reference:	UNITS	164998-A-33
Your Reference	----------	BH313
	-	
Depth	----------	0.3-0.5
Date Sampled		6/04/2017
Type of sample		Soil
Date prepared	-	28/04/2017
Date analysed	-	01/05/2017
Clay in soils <2µm	% (w/w)	8

CEC Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- - ---------- 	 164998-A-33 BH313 0.3-0.5 6/04/2017 Soil
Date prepared	-	28/04/2017
Date analysed	-	28/04/2017
Exchangeable Ca	meq/100g	40
Exchangeable K	meq/100g	0.6
Exchangeable Mg	meq/100g	0.46
Exchangeable Na	meq/100g	0.87
Cation Exchange Capacity	meq/100g	42

Moisture Our Reference: Your Reference	UNITS ----------	164998-A-19 BH306	164998-A-21 BH308	164998-A-29 BH311	164998-A-36 BH313
Depth	----------	3.6-3.8	1.1-1.3	0.3-0.5	3.6-3.8
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Date analysed	-	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Moisture	%	15	18	12	14

Metals in TCLP USEPA1311				
Our Reference:	UNITS	164998-A-1	164998-A-33	164998-A-43
Your Reference	----------	BH301	BH313	BH316
	-			
Depth	----------	0.26-0.4	0.3-0.5	0.2-0.5
Date Sampled		6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil
Date extracted	-	28/04/2017	28/04/2017	28/04/2017
Date analysed	-	[NA]	28/04/2017	28/04/2017
pH of soil for fluid# determ.	pH units	10.5	10.6	9.3
pH of soil TCLP (after HCl)	pH units	2.1	1.9	1.8
Extraction fluid used	-	1	1	1
pH of final Leachate	pH units	5.4	5.4	4.9
Nickel in TCLP	mg/L	[NA]	0.04	0.07

PAHs in TCLP (USEPA 1311)		
Our Reference:	UNITS	164998-A-1
Your Reference	----------	BH301
	-	
Depth	----------	0.26-0.4
Date Sampled		6/04/2017
Type of sample		Soil
Date extracted	-	28/04/2017
Date analysed	-	28/04/2017
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	%	90

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-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. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.
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-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. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-012	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. For soil results:- 1. 'TEQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'TEQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'TEQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	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.
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 <2µm reported.
Metals-009	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004.
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.

Method ID	Methodology Summary
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Org-012	Leachates are extracted with Dichloromethane and analysed by GC-MS.
Org-012	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 vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			27/04/2017	[NT]	[NT]	LCS-3	27/04/2017
Date analysed	-			27/04/2017	[NT]	[NT]	LCS-3	27/04/2017
TRHC$_{6}$ - C$_{9}$	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-3	107%
TRHC$_{6}$ - C$_{10}$	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-3	107%
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	LCS-3	106%
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	LCS-3	104%
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-3	106%
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	LCS-3	109%
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-3	106%
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	101	[NT]	[NT]	LCS-3	99%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			27/04/2017	[NT]	[NT]	LCS-3	27/04/2017
Date analysed	-			27/04/2017	[NT]	[NT]	LCS-3	28/04/2017
TRHC$_{10}$ - C$_{14}$	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-3	92%
TRHC$_{15}$ - C$_{28}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-3	91%
TRHC$_{29}$ - C$_{36}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-3	76%
TRH>C$_{10}$-C$_{16}$	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-3	92%
TRH>C$_{16}$-C$_{34}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-3	91%
TRH>C$_{34}$-C$_{40}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-3	76%
Surrogate o-Terphenyl	%		Org-003	85	[NT]	[NT]	LCS-3	83%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			27/04/2017	[NT]	[NT]	LCS-3	27/04/2017
Date analysed	-			28/04/2017	[NT]	[NT]	LCS-3	28/04/2017
Naphthalene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-3	94%
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-3	91%
Phenanthrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-3	93%
Anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-3	93%
Pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-3	92%
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-3	89%
Benzo(b,j+k) fluoranthene	mg/kg	0.2	Org-012	<0.2	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	[NT]	[NT]	LCS-3	78%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012	96	[NT]	[NT]	LCS-3	113%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			27/04/2017	[NT]	[NT]	LCS-3	27/04/2017
Date analysed	-			27/04/2017	[NT]	[NT]	LCS-3	27/04/2017
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	LCS-3	117%
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	LCS-3	103%
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	LCS-3	109%
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	LCS-3	108%
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	LCS-3	104%
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	LCS-3	102%
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	LCS-3	102%
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	LCS-3	103%
QUALITY CONTROL Misc Inorg - Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			28/04/2017	[NT]	[NT]	LCS-3	28/04/2017
Date analysed	-			28/04/2017	[NT]	[NT]	LCS-3	28/04/2017
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	LCS-3	101%
QUALITY CONTROL Clay 50-120g	UNITS	PQL	METHOD	Blank				
Date prepared	-			[NT]				
Date analysed	-			[NT]				
Clay in soils <2µm	% (w/w)		AS1289.3.6.3	[NT]				
QUALITY CONTROL CEC	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			28/04/2017	[NT]	[NT]	LCS-3	28/04/2017
Date analysed	-			28/04/2017	[NT]	[NT]	LCS-3	28/04/2017
Exchangeable Ca	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-3	107%
Exchangeable K	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-3	108%
Exchangeable Mg	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-3	105%

QUALITY CONTROL CEC	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Exchangeable Na	meq/100 g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-3	119%

QUALITY CONTROL Metals in TCLP USEPA1311	UNITS	PQL	METHOD	Blank
Date extracted	-			28/04/2017
Date analysed	-			28/04/2017
Nickel in TCLP	mg/L	0.02	Metals-020 ICP-AES	<0.02

QUALITY CONTROL PAHs in TCLP (USEPA 1311)	UNITS	PQL	METHOD	Blank
Date extracted	-			28/04/2017
Date analysed	-			01/05/2017
Naphthalene in TCLP	mg/L	0.001	Org-012	<0.001
Acenaphthylene in TCLP	mg/L	0.001	Org-012	<0.001
Acenaphthene in TCLP	mg/L	0.001	Org-012	<0.001
Fluorene in TCLP	mg/L	0.001	Org-012	<0.001
Phenanthrene in TCLP	mg/L	0.001	Org-012	<0.001
Anthracene in TCLP	mg/L	0.001	Org-012	<0.001
Fluoranthene in TCLP	mg/L	0.001	Org-012	<0.001
Pyrene in TCLP	mg/L	0.001	Org-012	<0.001
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-012	<0.001
Chrysene in TCLP	mg/L	0.001	Org-012	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-012	<0.002
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-012	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-012	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-012	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-012	<0.001
Surrogate p-Terphenyl-d14	%		Org-012	120

QUALITY CONTROL Metals in TCLP USEPA1311	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	LCS-W1	28/04/2017
Date analysed	-	[NT]	[NT]	LCS-W1	28/04/2017
Nickel in TCLP	mg/L	[NT]	[NT]	LCS-W1	99%

QUALITY CONTROL PAHs in TCLP (USEPA 1311)	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	LCS-W1	28/04/2017
Date analysed	-	[NT]	[NT]	LCS-W1	01/05/2017
Naphthalene in TCLP	mg/L	[NT]	[NT]	LCS-W1	76%
Acenaphthylene in TCLP	mg/L	[NT]	[NT]	[NR]	[NR]
Acenaphthene in TCLP	mg/L	[NT]	[NT]	[NR]	[NR]
Fluorene in TCLP	mg/L	[NT]	[NT]	LCS-W1	85%
Phenanthrene in TCLP	mg/L	[NT]	[NT]	LCS-W1	94%
Anthracene in TCLP	mg/L	[NT]	[NT]	[NR]	[NR]
Fluoranthene in TCLP	mg/L	[NT]	[NT]	LCS-W1	86%
Pyrene in TCLP	mg/L	[NT]	[NT]	LCS-W1	84%
Benzo(a)anthracene in TCLP	mg/L	[NT]	[NT]	[NR]	[NR]
Chrysene in TCLP	mg/L	[NT]	[NT]	LCS-W1	83%
Benzo(bjk)fluoranthene in TCLP	mg/L	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene in TCLP	mg/L	[NT]	[NT]	LCS-W1	85%
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene in TCLP	mg/L	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene in TCLP	mg/L	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	[NT]	[NT]	LCS-W1	92%

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
NR: 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 (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Aileen Hie

From: Jake Cashman <JCashman@jkgroup.net.au>
Sent: Wednesday, 26 April 2017 3:14 PM
To: Aileen Hie
Subject: 164098 E20923K, Wetherill Park

Aileen,

Can you please arrange the following analysis:

PH, CEC and Clay content.

33 • BH313 (0.3-0.5m).

TCLP

1 • BH301 (0.26-0.4m) for TCLP (PAHs);
33 • BH313 (0.3-0.5m) for TCLP (Nickel); and
43 • BH316 (0.2-0.5m) for TCLP (Nickel)

The following samples for Coffey:

36 • BH313 (3.5-3.8m).
21 • BH315 (1.1-1.4m);
29 • BH316 (0.2-0.5m); and
19 • BH306 (3.5-4.8m).

Envirolab Ref. 164098 A
Due: 3/5/17
Std TA.

Regards,

Jake Cashman
Environmental Scientist

T: +612 9888 5000
F: +612 9888 5001
E: JCashman@jkgroup.net.au
W: www.jkgroup.net.au

ENVIRONMENTAL INVESTIGATION SERVICES
CONSULTING ENVIRONMENTAL ENGINEERS AND SCIENTISTS
PO Box 976, North Ryde BC NSW 1670
115 Wicks Rd, Macquarie Park NSW 2113

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12 Ashley Street, Chatswood, NSW 2067
tel: +61 2 9910 6200

email: sydney@envirolab.com.au
envirolab.com.au

Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

CERTIFICATE OF ANALYSIS 164998

Client:

Environmental Investigation Services
PO Box 976
North Ryde BC
NSW 1670

Attention: Jake Cashman

Sample log in details:

Your Reference:	**E29923K, Wetherill Park**		
No. of samples:	49 Soils		
Date samples received / completed instructions received	10/04/17	/	10/04/17

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:	19/04/17	/	18/04/17
Date of Preliminary Report:	Not Issued		

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

Results Approved By:

David Springer
General Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	164998-1	164998-4	164998-5	164998-9	164998-11
Your Reference	---------- -	BH301	BH301	BH302	BH303	BH304
Depth	----------	0.26-0.4	3.0-3.2	0.25-0.45	0.5-0.8	0.15-0.3
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
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
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	100	97	102	98	102

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	164998-13	164998-15	164998-18	164998-20	164998-22
Your Reference	---------- -	BH305	BH306	BH306	BH308	BH309
Depth	----------	0.15-0.35	0.13-0.3	3.0-3.2	0.3-0.6	0.21-0.4
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
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
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	99	98	111	101	96

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	164998-24	164998-26	164998-28	164998-30	164998-33
Your Reference	---------- -	BH309	BH310	BH311	BH312	BH313
Depth	----------	2.0-2.2	0.15-0.35	0.12-0.3	0.11-0.3	0.3-0.5
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
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
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	110	137	108	105	111

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	164998-37	164998-38	164998-41	164998-43	164998-44
Your Reference	---------- -	BH314	BH314	BH315	BH316	BH317
Depth	----------	0.2-0.4	0.8-1.0	0.5-0.95	0.2-0.5	0.18-0.38
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
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
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	113	111	108	101	111

vTRH(C6-C10)/BTEXN in Soil				
Our Reference:	UNITS	164998-46	164998-48	164998-49
Your Reference	---------- -	DUPJDC2	DUPHL2	TB
Depth	----------	-	-	-
Date Sampled		6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil
Date extracted	-	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	11/04/2017	11/04/2017	11/04/2017
TRHC$_6$ - C$_9$	mg/kg	<25	<25	[NA]
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	[NA]
vTPHC$_6$ - C$_{10}$ less BTEX (F1)	mg/kg	<25	<25	[NA]
Benzene	mg/kg	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	[NA]
naphthalene	mg/kg	<1	<1	[NA]
Surrogate aaa-Trifluorotoluene	%	107	112	114

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	164998-1	164998-4	164998-5	164998-9	164998-11
Your Reference	---------- -	BH301	BH301	BH302	BH303	BH304
Depth	----------	0.26-0.4	3.0-3.2	0.25-0.45	0.5-0.8	0.15-0.3
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	280	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	730	<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	700	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	920	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	1,600	<50	<50	<50	<50
Surrogate o-Terphenyl	%	83	70	72	70	74

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	164998-13	164998-15	164998-18	164998-20	164998-22
Your Reference	---------- -	BH305	BH306	BH306	BH308	BH309
Depth	----------	0.15-0.35	0.13-0.3	3.0-3.2	0.3-0.6	0.21-0.4
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
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
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	72	82	71	81	85

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	164998-24	164998-26	164998-28	164998-30	164998-33
Your Reference	---------- -	BH309	BH310	BH311	BH312	BH313
Depth	----------	2.0-2.2	0.15-0.35	0.12-0.3	0.11-0.3	0.3-0.5
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	11/04/2017	11/04/2017	12/04/2017	12/04/2017	12/04/2017
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100	120
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100	320
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	300
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	430
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	730
Surrogate o-Terphenyl	%	86	85	71	72	73

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	164998-37	164998-38	164998-41	164998-43	164998-44
Your Reference	---------- -	BH314	BH314	BH315	BH316	BH317
Depth	----------	0.2-0.4	0.8-1.0	0.5-0.95	0.2-0.5	0.18-0.38
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	12/04/2017	12/04/2017	12/04/2017	12/04/2017	12/04/2017
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
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	85	70	74	75	76

svTRH (C10-C40) in Soil			
Our Reference:	UNITS	164998-46	164998-48
Your Reference	---------- -	DUPJDC2	DUPHL2
Depth	----------	-	-
Date Sampled		6/04/2017	6/04/2017
Type of sample		Soil	Soil
Date extracted	-	11/04/2017	11/04/2017
Date analysed	-	12/04/2017	12/04/2017
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<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	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50
Surrogate o-Terphenyl	%	75	76

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- - ---------- 	164998-1 BH301 0.26-0.4 6/04/2017 Soil	164998-4 BH301 3.0-3.2 6/04/2017 Soil	164998-5 BH302 0.25-0.45 6/04/2017 Soil	164998-9 BH303 0.5-0.8 6/04/2017 Soil	164998-11 BH304 0.15-0.3 6/04/2017 Soil
Date extracted	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
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	1.0	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.3	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	2.5	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	2.7	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	1.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.9	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	1	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.88	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	0.6	<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	0.8	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	1.2	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	1.2	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	1.2	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	mg/kg	12	<0.05	<0.05	<0.05	<0.05
Surrogate p-Terphenyl-d14	%	83	89	84	87	86

PAHs in Soil Our Reference: Your Reference	UNITS ----------	164998-13 BH305	164998-15 BH306	164998-18 BH306	164998-20 BH308	164998-22 BH309
Depth	----------	0.15-0.35	0.13-0.3	3.0-3.2	0.3-0.6	0.21-0.4
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
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	<0.05	<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 calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Surrogate p-Terphenyl-d14	%	81	95	94	81	87

PAHs in Soil Our Reference: Your Reference	UNITS ----------	164998-24 BH309	164998-26 BH310	164998-28 BH311	164998-30 BH312	164998-33 BH313
Depth	----------	2.0-2.2	0.15-0.35	0.12-0.3	0.11-0.3	0.3-0.5
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
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	0.4
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	1.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	1.2
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.4
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.4
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	0.5
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
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	0.3
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	4.8
Surrogate p-Terphenyl-d14	%	82	80	86	79	96

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- - ---------- 	164998-37 BH314 0.2-0.4 6/04/2017 Soil	164998-38 BH314 0.8-1.0 6/04/2017 Soil	164998-41 BH315 0.5-0.95 6/04/2017 Soil	164998-43 BH316 0.2-0.5 6/04/2017 Soil	164998-44 BH317 0.18-0.38 6/04/2017 Soil
Date extracted	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
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	<0.05	<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 calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Surrogate p-Terphenyl-d14	%	95	83	106	90	97

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- - ---------- 	164998-46 DUPJDC2 - 6/04/2017 Soil	164998-48 DUPHL2 - 6/04/2017 Soil
Date extracted	-	11/04/2017	11/04/2017
Date analysed	-	11/04/2017	11/04/2017
Naphthalene	mg/kg	<0.1	<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	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5
Total +ve PAH's	mg/kg	<0.05	<0.05
Surrogate p-Terphenyl-d14	%	93	84

Organochlorine Pesticides in soil						
Our Reference:	UNITS	164998-1	164998-5	164998-9	164998-11	164998-13
Your Reference	----------	BH301	BH302	BH303	BH304	BH305
Depth	----------	0.26-0.4	0.25-0.45	0.5-0.8	0.15-0.3	0.15-0.35
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
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
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	76	91	83	84	85

Organochlorine Pesticides in soil						
Our Reference:	UNITS	164998-15	164998-20	164998-22	164998-24	164998-26
Your Reference	----------	BH306	BH308	BH309	BH309	BH310
Depth	- ----------	0.13-0.3	0.3-0.6	0.21-0.4	2.0-2.2	0.15-0.35
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
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
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	87	89	82	89	92

Organophosphorus Pesticides						
Our Reference:	UNITS	164998-1	164998-5	164998-9	164998-11	164998-13
Your Reference	---------- -	BH301	BH302	BH303	BH304	BH305
Depth	----------	0.26-0.4	0.25-0.45	0.5-0.8	0.15-0.3	0.15-0.35
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
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	%	76	91	83	84	85

Organophosphorus Pesticides						
Our Reference:	UNITS	164998-15	164998-20	164998-22	164998-24	164998-26
Your Reference	---------- -	BH306	BH308	BH309	BH309	BH310
Depth	----------	0.13-0.3	0.3-0.6	0.21-0.4	2.0-2.2	0.15-0.35
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
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	%	87	89	82	89	92

PCBs in Soil Our Reference: Your Reference	UNITS ----------	164998-1 BH301	164998-5 BH302	164998-9 BH303	164998-11 BH304	164998-13 BH305
Depth	----------	0.26-0.4	0.25-0.45	0.5-0.8	0.15-0.3	0.15-0.35
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	76	91	83	84	85

PCBs in Soil Our Reference: Your Reference	UNITS ----------	164998-15 BH306	164998-20 BH308	164998-22 BH309	164998-24 BH309	164998-26 BH310
Depth	----------	0.13-0.3	0.3-0.6	0.21-0.4	2.0-2.2	0.15-0.35
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	87	89	82	89	92

Acid Extractable metals in soil						
Our Reference:	UNITS	164998-1	164998-4	164998-5	164998-9	164998-11
Your Reference	----------	BH301	BH301	BH302	BH303	BH304
Depth	- ----------	0.26-0.4	3.0-3.2	0.25-0.45	0.5-0.8	0.15-0.3
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Arsenic	mg/kg	<4	16	6	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	27	26	16	9	11
Copper	mg/kg	74	15	39	11	50
Lead	mg/kg	10	22	19	10	17
Mercury	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Nickel	mg/kg	24	14	17	10	17
Zinc	mg/kg	39	28	83	34	110

Acid Extractable metals in soil						
Our Reference:	UNITS	164998-13	164998-15	164998-18	164998-20	164998-22
Your Reference	----------	BH305	BH306	BH306	BH308	BH309
Depth	- ----------	0.15-0.35	0.13-0.3	3.0-3.2	0.3-0.6	0.21-0.4
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Arsenic	mg/kg	<4	4	6	5	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	17	12	27	15	11
Copper	mg/kg	41	36	18	42	39
Lead	mg/kg	17	17	23	19	20
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	23	15	15	18	13
Zinc	mg/kg	79	68	47	93	75

Acid Extractable metals in soil						
Our Reference:	UNITS	164998-24	164998-26	164998-28	164998-30	164998-33
Your Reference	---------- -	BH309	BH310	BH311	BH312	BH313
Depth	----------	2.0-2.2	0.15-0.35	0.12-0.3	0.11-0.3	0.3-0.5
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Arsenic	mg/kg	6	6	6	7	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	23	10	2	14	17
Copper	mg/kg	40	47	15	42	54
Lead	mg/kg	22	19	6	19	10
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	14	12	14	17	70
Zinc	mg/kg	61	65	38	96	130

Acid Extractable metals in soil						
Our Reference:	UNITS	164998-37	164998-38	164998-41	164998-43	164998-44
Your Reference	---------- -	BH314	BH314	BH315	BH316	BH317
Depth	----------	0.2-0.4	0.8-1.0	0.5-0.95	0.2-0.5	0.18-0.38
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Arsenic	mg/kg	6	5	6	<4	12
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	13	19	11	11	4
Copper	mg/kg	41	31	32	78	39
Lead	mg/kg	19	21	16	12	13
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	20	10	9	47	22
Zinc	mg/kg	120	47	53	58	65

Acid Extractable metals in soil				
Our Reference:	UNITS	164998-46	164998-48	164998-50
Your Reference	---------- -	DUPJDC2	DUPHL2	BH316 - [TRIPLICATE]
Depth	----------	-	-	0.2-0.5
Date Sampled		6/04/2017	6/04/2017	06/04/2017
Type of sample		Soil	Soil	Soil
Date prepared	-	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	11/04/2017	11/04/2017	11/04/2017
Arsenic	mg/kg	7	6	6
Cadmium	mg/kg	<0.4	<0.4	<0.4
Chromium	mg/kg	12	12	11
Copper	mg/kg	43	40	51
Lead	mg/kg	20	20	14
Mercury	mg/kg	<0.1	<0.1	<0.1
Nickel	mg/kg	18	14	39
Zinc	mg/kg	81	77	67

Moisture						
Our Reference:	UNITS	164998-1	164998-4	164998-5	164998-9	164998-11
Your Reference	---------- -	BH301	BH301	BH302	BH303	BH304
Depth	----------	0.26-0.4	3.0-3.2	0.25-0.45	0.5-0.8	0.15-0.3
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	12/04/2017	12/04/2017	12/04/2017	12/04/2017	12/04/2017
Moisture	%	15	19	23	18	21

Moisture						
Our Reference:	UNITS	164998-13	164998-15	164998-18	164998-20	164998-22
Your Reference	---------- -	BH305	BH306	BH306	BH308	BH309
Depth	----------	0.15-0.35	0.13-0.3	3.0-3.2	0.3-0.6	0.21-0.4
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	12/04/2017	12/04/2017	12/04/2017	12/04/2017	12/04/2017
Moisture	%	23	17	22	20	19

Moisture						
Our Reference:	UNITS	164998-24	164998-26	164998-28	164998-30	164998-33
Your Reference	---------- -	BH309	BH310	BH311	BH312	BH313
Depth	----------	2.0-2.2	0.15-0.35	0.12-0.3	0.11-0.3	0.3-0.5
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	12/04/2017	12/04/2017	12/04/2017	12/04/2017	12/04/2017
Moisture	%	21	23	22	22	14

Moisture						
Our Reference:	UNITS	164998-37	164998-38	164998-41	164998-43	164998-44
Your Reference	---------- -	BH314	BH314	BH315	BH316	BH317
Depth	----------	0.2-0.4	0.8-1.0	0.5-0.95	0.2-0.5	0.18-0.38
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
Date analysed	-	12/04/2017	12/04/2017	12/04/2017	12/04/2017	12/04/2017
Moisture	%	23	22	23	21	24

Moisture			
Our Reference:	UNITS	164998-46	164998-48
Your Reference	----------	DUPJDC2	DUPHL2
	-		
Depth	----------	-	-
Date Sampled		6/04/2017	6/04/2017
Type of sample		Soil	Soil
Date prepared	-	11/04/2017	11/04/2017
Date analysed	-	12/04/2017	12/04/2017
Moisture	%	21	18

Asbestos ID - soils						
Our Reference:	UNITS	164998-1	164998-5	164998-9	164998-11	164998-13
Your Reference	---------- -	BH301	BH302	BH303	BH304	BH305
Depth	----------	0.26-0.4	0.25-0.45	0.5-0.8	0.15-0.3	0.15-0.35
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	12/04/2017	12/04/2017	12/04/2017	12/04/2017	12/04/2017
Sample mass tested	g	Approx. 20g	Approx. 20g	Approx. 5g	Approx. 20g	Approx. 15g
Sample Description	-	Brown coarse-grained soil & rocks	Brown clayey soil	Brown clayey soil	Brown clayey soil	Brown clayey 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	164998-15	164998-20	164998-22	164998-24	164998-26
Your Reference	---------- -	BH306	BH308	BH309	BH309	BH310
Depth	----------	0.13-0.3	0.3-0.6	0.21-0.4	2.0-2.2	0.15-0.35
Date Sampled		6/04/2017	6/04/2017	6/04/2017	6/04/2017	6/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	12/04/2017	12/04/2017	12/04/2017	12/04/2017	12/04/2017
Sample mass tested	g	Approx. 15g	Approx. 25g	Approx. 35g	Approx. 40g	Approx. 35g
Sample Description	-	Brown clayey soil	Brown clayey soil	Brown clayey soil	Brown clayey soil	Brown clayey 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

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-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. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.
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-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. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-012	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. For soil results:- 1. 'TEQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'TEQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'TEQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
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.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.

Method ID	Methodology Summary
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 °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	-			11/04/2017	164998-1	11/04/2017 || 11/04/2017	LCS-1	11/04/2017
Date analysed	-			11/04/2017	164998-1	11/04/2017 || 11/04/2017	LCS-1	11/04/2017
TRHC6 - C9	mg/kg	25	Org-016	<25	164998-1	<25 || <25	LCS-1	94%
TRHC6 - C10	mg/kg	25	Org-016	<25	164998-1	<25 || <25	LCS-1	94%
Benzene	mg/kg	0.2	Org-016	<0.2	164998-1	<0.2 || <0.2	LCS-1	83%
Toluene	mg/kg	0.5	Org-016	<0.5	164998-1	<0.5 || <0.5	LCS-1	92%
Ethylbenzene	mg/kg	1	Org-016	<1	164998-1	<1 || <1	LCS-1	97%
m+p-xylene	mg/kg	2	Org-016	<2	164998-1	<2 || <2	LCS-1	98%
o-Xylene	mg/kg	1	Org-016	<1	164998-1	<1 || <1	LCS-1	99%
naphthalene	mg/kg	1	Org-014	<1	164998-1	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	116	164998-1	100 || 98 || RPD: 2	LCS-1	100%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			11/04/2017	164998-1	11/04/2017 || 11/04/2017	LCS-1	11/04/2017
Date analysed	-			11/04/2017	164998-1	11/04/2017 || 11/04/2017	LCS-1	11/04/2017
TRHC10 - C14	mg/kg	50	Org-003	<50	164998-1	<50 || <50	LCS-1	133%
TRHC15 - C28	mg/kg	100	Org-003	<100	164998-1	280 || 280 || RPD: 0	LCS-1	125%
TRHC29 - C36	mg/kg	100	Org-003	<100	164998-1	730 || 840 || RPD: 14	LCS-1	121%
TRH>C10-C16	mg/kg	50	Org-003	<50	164998-1	<50 || <50	LCS-1	133%
TRH>C16-C34	mg/kg	100	Org-003	<100	164998-1	700 || 770 || RPD: 10	LCS-1	125%
TRH>C34-C40	mg/kg	100	Org-003	<100	164998-1	920 || 1100 || RPD: 18	LCS-1	121%
Surrogate o-Terphenyl	%		Org-003	89	164998-1	83 || 79 || RPD: 5	LCS-1	120%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			11/04/2017	164998-1	11/04/2017 || 11/04/2017	LCS-1	11/04/2017
Date analysed	-			11/04/2017	164998-1	11/04/2017 || 11/04/2017	LCS-1	11/04/2017
Naphthalene	mg/kg	0.1	Org-012	<0.1	164998-1	<0.1 || <0.1	LCS-1	92%
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	164998-1	<0.1 || 0.2	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	164998-1	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012	<0.1	164998-1	<0.1 || <0.1	LCS-1	97%
Phenanthrene	mg/kg	0.1	Org-012	<0.1	164998-1	1.0 || 1.2 || RPD: 18	LCS-1	108%
Anthracene	mg/kg	0.1	Org-012	<0.1	164998-1	0.3 || 0.2 || RPD: 40	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	164998-1	2.5 || 2.3 || RPD: 8	LCS-1	96%
Pyrene	mg/kg	0.1	Org-012	<0.1	164998-1	2.7 || 2.5 || RPD: 8	LCS-1	93%
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	164998-1	1.1 || 1 || RPD: 10	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012	<0.1	164998-1	0.9 || 0.9 || RPD: 0	LCS-1	87%
Benzo(b,j +k)fluoranthene	mg/kg	0.2	Org-012	<0.2	164998-1	1 || 1 || RPD: 0	[NR]	[NR]

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	164998-1	0.88 || 0.78 || RPD: 12	LCS-1	73%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	164998-1	0.6 || 0.6 || RPD: 0	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	164998-1	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	164998-1	0.8 || 0.9 || RPD: 12	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012	99	164998-1	83 || 87 || RPD: 5	LCS-1	125%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			11/04/2017	164998-1	11/04/2017 || 11/04/2017	LCS-1	11/04/2017
Date analysed	-			11/04/2017	164998-1	11/04/2017 || 11/04/2017	LCS-1	11/04/2017
HCB	mg/kg	0.1	Org-005	<0.1	164998-1	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	164998-1	<0.1 || <0.1	LCS-1	119%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	164998-1	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	164998-1	<0.1 || <0.1	LCS-1	108%
Heptachlor	mg/kg	0.1	Org-005	<0.1	164998-1	<0.1 || <0.1	LCS-1	114%
delta-BHC	mg/kg	0.1	Org-005	<0.1	164998-1	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	164998-1	<0.1 || <0.1	LCS-1	111%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	164998-1	<0.1 || <0.1	LCS-1	109%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	164998-1	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	164998-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	164998-1	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	164998-1	<0.1 || <0.1	LCS-1	109%
Dieldrin	mg/kg	0.1	Org-005	<0.1	164998-1	<0.1 || <0.1	LCS-1	126%
Endrin	mg/kg	0.1	Org-005	<0.1	164998-1	<0.1 || <0.1	LCS-1	113%
pp-DDD	mg/kg	0.1	Org-005	<0.1	164998-1	<0.1 || <0.1	LCS-1	111%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	164998-1	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	164998-1	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	164998-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	164998-1	<0.1 || <0.1	LCS-1	109%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	164998-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-005	99	164998-1	76 || 78 || RPD: 3	LCS-1	121%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			11/04/2017	164998-1	11/04/2017 || 11/04/2017	LCS-1	11/04/2017
Date analysed	-			11/04/2017	164998-1	11/04/2017 || 11/04/2017	LCS-1	11/04/2017
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	164998-1	<0.1 || <0.1	[NR]	[NR]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	164998-1	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	164998-1	<0.1 || <0.1	LCS-1	95%
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	164998-1	<0.1 || <0.1	[NR]	[NR]
Diazinon	mg/kg	0.1	Org-008	<0.1	164998-1	<0.1 || <0.1	[NR]	[NR]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	164998-1	<0.1 || <0.1	LCS-1	94%
Dimethoate	mg/kg	0.1	Org-008	<0.1	164998-1	<0.1 || <0.1	[NR]	[NR]
Ethion	mg/kg	0.1	Org-008	<0.1	164998-1	<0.1 || <0.1	LCS-1	102%
Fenitrothion	mg/kg	0.1	Org-008	<0.1	164998-1	<0.1 || <0.1	LCS-1	98%
Malathion	mg/kg	0.1	Org-008	<0.1	164998-1	<0.1 || <0.1	LCS-1	86%
Parathion	mg/kg	0.1	Org-008	<0.1	164998-1	<0.1 || <0.1	LCS-1	102%
Ronnel	mg/kg	0.1	Org-008	<0.1	164998-1	<0.1 || <0.1	LCS-1	89%
Surrogate TCMX	%		Org-008	99	164998-1	76 || 78 || RPD: 3	LCS-1	92%
QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			11/04/2017	164998-1	11/04/2017 || 11/04/2017	LCS-1	11/04/2017
Date analysed	-			11/04/2017	164998-1	11/04/2017 || 11/04/2017	LCS-1	11/04/2017
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	164998-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	164998-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	164998-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	164998-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	164998-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	164998-1	<0.1 || <0.1	LCS-1	102%
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	164998-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-006	99	164998-1	76 || 78 || RPD: 3	LCS-1	92%

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 prepared	-			11/04/2017	164998-1	11/04/2017 || 11/04/2017	LCS-1	11/04/2017
Date analysed	-			11/04/2017	164998-1	11/04/2017 || 11/04/2017	LCS-1	11/04/2017
Arsenic	mg/kg	4	Metals-020	<4	164998-1	<4 || <4	LCS-1	111%
Cadmium	mg/kg	0.4	Metals-020	<0.4	164998-1	<0.4 || <0.4	LCS-1	101%
Chromium	mg/kg	1	Metals-020	<1	164998-1	27 || 24 || RPD: 12	LCS-1	106%
Copper	mg/kg	1	Metals-020	<1	164998-1	74 || 74 || RPD: 0	LCS-1	107%
Lead	mg/kg	1	Metals-020	<1	164998-1	10 || 11 || RPD: 10	LCS-1	103%
Mercury	mg/kg	0.1	Metals-021	<0.1	164998-1	<0.1 || <0.1	LCS-1	94%
Nickel	mg/kg	1	Metals-020	<1	164998-1	24 || 21 || RPD: 13	LCS-1	99%
Zinc	mg/kg	1	Metals-020	<1	164998-1	39 || 40 || RPD: 3	LCS-1	101%

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	164998-22	11/04/2017 || 11/04/2017	LCS-2	11/04/2017
Date analysed	-	164998-22	11/04/2017 || 11/04/2017	LCS-2	11/04/2017
$TRHC_6$ - C_9	mg/kg	164998-22	<25 || <25	LCS-2	107%
$TRHC_6$ - C_{10}	mg/kg	164998-22	<25 || <25	LCS-2	107%
Benzene	mg/kg	164998-22	<0.2 || <0.2	LCS-2	98%
Toluene	mg/kg	164998-22	<0.5 || <0.5	LCS-2	109%
Ethylbenzene	mg/kg	164998-22	<1 || <1	LCS-2	109%
m+p-xylene	mg/kg	164998-22	<2 || <2	LCS-2	110%
o-Xylene	mg/kg	164998-22	<1 || <1	LCS-2	111%
naphthalene	mg/kg	164998-22	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%	164998-22	96 || 104 || RPD: 8	LCS-2	114%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	164998-22	11/04/2017 || 11/04/2017	LCS-2	11/04/2017
Date analysed	-	164998-22	11/04/2017 || 11/04/2017	LCS-2	11/04/2017
$TRHC_{10}$ - C_{14}	mg/kg	164998-22	<50 || <50	LCS-2	115%
$TRHC_{15}$ - C_{28}	mg/kg	164998-22	<100 || <100	LCS-2	112%
$TRHC_{29}$ - C_{36}	mg/kg	164998-22	<100 || <100	LCS-2	121%
$TRH>C_{10}$-C_{16}	mg/kg	164998-22	<50 || <50	LCS-2	115%
$TRH>C_{16}$-C_{34}	mg/kg	164998-22	<100 || <100	LCS-2	112%
$TRH>C_{34}$-C_{40}	mg/kg	164998-22	<100 || <100	LCS-2	121%
Surrogate o-Terphenyl	%	164998-22	85 || 84 || RPD: 1	LCS-2	107%

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	164998-22	11/04/2017 || 11/04/2017	LCS-2	11/04/2017
Date analysed	-	164998-22	11/04/2017 || 11/04/2017	LCS-2	11/04/2017
Naphthalene	mg/kg	164998-22	<0.1 || <0.1	LCS-2	100%
Acenaphthylene	mg/kg	164998-22	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	164998-22	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	164998-22	<0.1 || <0.1	LCS-2	101%
Phenanthrene	mg/kg	164998-22	<0.1 || <0.1	LCS-2	113%
Anthracene	mg/kg	164998-22	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	164998-22	<0.1 || <0.1	LCS-2	96%
Pyrene	mg/kg	164998-22	<0.1 || <0.1	LCS-2	93%
Benzo(a)anthracene	mg/kg	164998-22	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	164998-22	<0.1 || <0.1	LCS-2	92%
Benzo(b,j+k)fluoranthene	mg/kg	164998-22	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	164998-22	<0.05 || <0.05	LCS-2	75%
Indeno(1,2,3-c,d)pyrene	mg/kg	164998-22	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	164998-22	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	164998-22	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	164998-22	87 || 79 || RPD: 10	LCS-2	124%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	164998-22	11/04/2017 || 11/04/2017
Date analysed	-	164998-22	11/04/2017 || 11/04/2017
HCB	mg/kg	164998-22	<0.1 || <0.1
alpha-BHC	mg/kg	164998-22	<0.1 || <0.1
gamma-BHC	mg/kg	164998-22	<0.1 || <0.1
beta-BHC	mg/kg	164998-22	<0.1 || <0.1
Heptachlor	mg/kg	164998-22	<0.1 || <0.1
delta-BHC	mg/kg	164998-22	<0.1 || <0.1
Aldrin	mg/kg	164998-22	<0.1 || <0.1
Heptachlor Epoxide	mg/kg	164998-22	<0.1 || <0.1
gamma-Chlordane	mg/kg	164998-22	<0.1 || <0.1
alpha-chlordane	mg/kg	164998-22	<0.1 || <0.1
Endosulfan I	mg/kg	164998-22	<0.1 || <0.1
pp-DDE	mg/kg	164998-22	<0.1 || <0.1
Dieldrin	mg/kg	164998-22	<0.1 || <0.1
Endrin	mg/kg	164998-22	<0.1 || <0.1
pp-DDD	mg/kg	164998-22	<0.1 || <0.1
Endosulfan II	mg/kg	164998-22	<0.1 || <0.1
pp-DDT	mg/kg	164998-22	<0.1 || <0.1
Endrin Aldehyde	mg/kg	164998-22	<0.1 || <0.1
Endosulfan Sulphate	mg/kg	164998-22	<0.1 || <0.1

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Methoxychlor	mg/kg	164998-22	<0.1 || <0.1
Surrogate TCMX	%	164998-22	82 || 83 || RPD: 1
QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	164998-22	11/04/2017 || 11/04/2017
Date analysed	-	164998-22	11/04/2017 || 11/04/2017
Azinphos-methyl (Guthion)	mg/kg	164998-22	<0.1 || <0.1
Bromophos-ethyl	mg/kg	164998-22	<0.1 || <0.1
Chlorpyriphos	mg/kg	164998-22	<0.1 || <0.1
Chlorpyriphos-methyl	mg/kg	164998-22	<0.1 || <0.1
Diazinon	mg/kg	164998-22	<0.1 || <0.1
Dichlorvos	mg/kg	164998-22	<0.1 || <0.1
Dimethoate	mg/kg	164998-22	<0.1 || <0.1
Ethion	mg/kg	164998-22	<0.1 || <0.1
Fenitrothion	mg/kg	164998-22	<0.1 || <0.1
Malathion	mg/kg	164998-22	<0.1 || <0.1
Parathion	mg/kg	164998-22	<0.1 || <0.1
Ronnel	mg/kg	164998-22	<0.1 || <0.1
Surrogate TCMX	%	164998-22	82 || 83 || RPD: 1
QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	164998-22	11/04/2017 || 11/04/2017
Date analysed	-	164998-22	11/04/2017 || 11/04/2017
Aroclor 1016	mg/kg	164998-22	<0.1 || <0.1
Aroclor 1221	mg/kg	164998-22	<0.1 || <0.1
Aroclor 1232	mg/kg	164998-22	<0.1 || <0.1
Aroclor 1242	mg/kg	164998-22	<0.1 || <0.1
Aroclor 1248	mg/kg	164998-22	<0.1 || <0.1
Aroclor 1254	mg/kg	164998-22	<0.1 || <0.1
Aroclor 1260	mg/kg	164998-22	<0.1 || <0.1
Surrogate TCLMX	%	164998-22	82 || 83 || RPD: 1

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	164998-22	11/04/2017 || 11/04/2017	LCS-2	11/04/2017
Date analysed	-	164998-22	11/04/2017 || 11/04/2017	LCS-2	11/04/2017
Arsenic	mg/kg	164998-22	6 || 5 || RPD: 18	LCS-2	112%
Cadmium	mg/kg	164998-22	<0.4 || <0.4	LCS-2	103%
Chromium	mg/kg	164998-22	11 || 11 || RPD: 0	LCS-2	108%
Copper	mg/kg	164998-22	39 || 37 || RPD: 5	LCS-2	110%
Lead	mg/kg	164998-22	20 || 18 || RPD: 11	LCS-2	103%
Mercury	mg/kg	164998-22	<0.1 || <0.1	LCS-2	96%
Nickel	mg/kg	164998-22	13 || 12 || RPD: 8	LCS-2	101%
Zinc	mg/kg	164998-22	75 || 71 || RPD: 5	LCS-2	102%
QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	164998-43	11/04/2017 || 11/04/2017	164998-5	11/04/2017
Date analysed	-	164998-43	11/04/2017 || 11/04/2017	164998-5	11/04/2017
$TRHC_6$ - C_9	mg/kg	164998-43	<25 || <25	164998-5	103%
$TRHC_6$ - C_{10}	mg/kg	164998-43	<25 || <25	164998-5	103%
Benzene	mg/kg	164998-43	<0.2 || <0.2	164998-5	92%
Toluene	mg/kg	164998-43	<0.5 || <0.5	164998-5	103%
Ethylbenzene	mg/kg	164998-43	<1 || <1	164998-5	105%
m+p-xylene	mg/kg	164998-43	<2 || <2	164998-5	107%
o-Xylene	mg/kg	164998-43	<1 || <1	164998-5	107%
naphthalene	mg/kg	164998-43	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%	164998-43	101 || 107 || RPD: 6	164998-5	111%
QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	164998-43	11/04/2017 || 11/04/2017	164998-5	11/04/2017
Date analysed	-	164998-43	12/04/2017 || 12/04/2017	164998-5	11/04/2017
$TRHC_{10}$ - C_{14}	mg/kg	164998-43	<50 || <50	164998-5	110%
$TRHC_{15}$ - C_{28}	mg/kg	164998-43	<100 || <100	164998-5	101%
$TRHC_{29}$ - C_{36}	mg/kg	164998-43	<100 || <100	164998-5	109%
$TRH>C_{10}$-C_{16}	mg/kg	164998-43	<50 || <50	164998-5	110%
$TRH>C_{16}$-C_{34}	mg/kg	164998-43	<100 || <100	164998-5	101%
$TRH>C_{34}$-C_{40}	mg/kg	164998-43	<100 || <100	164998-5	109%
Surrogate o-Terphenyl	%	164998-43	75 || 75 || RPD: 0	164998-5	72%

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	164998-43	11/04/2017 || 11/04/2017	164998-5	11/04/2017
Date analysed	-	164998-43	11/04/2017 || 11/04/2017	164998-5	11/04/2017
Naphthalene	mg/kg	164998-43	<0.1 || <0.1	164998-5	96%
Acenaphthylene	mg/kg	164998-43	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	164998-43	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	164998-43	<0.1 || <0.1	164998-5	92%
Phenanthrene	mg/kg	164998-43	<0.1 || <0.1	164998-5	96%
Anthracene	mg/kg	164998-43	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	164998-43	<0.1 || <0.1	164998-5	83%
Pyrene	mg/kg	164998-43	<0.1 || <0.1	164998-5	84%
Benzo(a)anthracene	mg/kg	164998-43	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	164998-43	<0.1 || <0.1	164998-5	81%
Benzo(b,j+k)fluoranthene	mg/kg	164998-43	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	164998-43	<0.05 || <0.05	164998-5	67%
Indeno(1,2,3-c,d)pyrene	mg/kg	164998-43	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	164998-43	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	164998-43	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	164998-43	90 || 95 || RPD: 5	164998-5	113%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	164998-5	11/04/2017
Date analysed	-	[NT]	[NT]	164998-5	11/04/2017
HCB	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	[NT]	[NT]	164998-5	113%
gamma-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	[NT]	[NT]	164998-5	105%
Heptachlor	mg/kg	[NT]	[NT]	164998-5	113%
delta-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	[NT]	[NT]	164998-5	109%
Heptachlor Epoxide	mg/kg	[NT]	[NT]	164998-5	111%
gamma-Chlordane	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-chlordane	mg/kg	[NT]	[NT]	[NR]	[NR]
Endosulfan I	mg/kg	[NT]	[NT]	[NR]	[NR]
pp-DDE	mg/kg	[NT]	[NT]	164998-5	105%
Dieldrin	mg/kg	[NT]	[NT]	164998-5	121%
Endrin	mg/kg	[NT]	[NT]	164998-5	108%
pp-DDD	mg/kg	[NT]	[NT]	164998-5	105%
Endosulfan II	mg/kg	[NT]	[NT]	[NR]	[NR]
pp-DDT	mg/kg	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	mg/kg	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	mg/kg	[NT]	[NT]	164998-5	104%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Methoxychlor	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCMX	%	[NT]	[NT]	164998-5	117%
QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	164998-5	11/04/2017
Date analysed	-	[NT]	[NT]	164998-5	11/04/2017
Azinphos-methyl (Guthion)	mg/kg	[NT]	[NT]	[NR]	[NR]
Bromophos-ethyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos	mg/kg	[NT]	[NT]	164998-5	99%
Chlorpyriphos-methyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Diazinon	mg/kg	[NT]	[NT]	[NR]	[NR]
Dichlorvos	mg/kg	[NT]	[NT]	164998-5	83%
Dimethoate	mg/kg	[NT]	[NT]	[NR]	[NR]
Ethion	mg/kg	[NT]	[NT]	164998-5	105%
Fenitrothion	mg/kg	[NT]	[NT]	164998-5	88%
Malathion	mg/kg	[NT]	[NT]	164998-5	106%
Parathion	mg/kg	[NT]	[NT]	164998-5	105%
Ronnel	mg/kg	[NT]	[NT]	164998-5	90%
Surrogate TCMX	%	[NT]	[NT]	164998-5	89%
QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	164998-5	11/04/2017
Date analysed	-	[NT]	[NT]	164998-5	11/04/2017
Aroclor 1016	mg/kg	[NT]	[NT]	[NR]	[NR]
Aroclor 1221	mg/kg	[NT]	[NT]	[NR]	[NR]
Aroclor 1232	mg/kg	[NT]	[NT]	[NR]	[NR]
Aroclor 1242	mg/kg	[NT]	[NT]	[NR]	[NR]
Aroclor 1248	mg/kg	[NT]	[NT]	[NR]	[NR]
Aroclor 1254	mg/kg	[NT]	[NT]	164998-5	104%
Aroclor 1260	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%	[NT]	[NT]	164998-5	89%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	164998-43	11/04/2017 || 11/04/2017	164998-5	11/04/2017
Date analysed	-	164998-43	11/04/2017 || 11/04/2017	164998-5	11/04/2017
Arsenic	mg/kg	164998-43	<4 || 4	164998-5	90%
Cadmium	mg/kg	164998-43	<0.4 || <0.4	164998-5	94%
Chromium	mg/kg	164998-43	11 || 9 || RPD: 20	164998-5	96%
Copper	mg/kg	164998-43	78 || 42 || RPD: 60	164998-5	100%
Lead	mg/kg	164998-43	12 || 14 || RPD: 15	164998-5	84%
Mercury	mg/kg	164998-43	<0.1 || <0.1	164998-5	98%
Nickel	mg/kg	164998-43	47 || 33 || RPD: 35	164998-5	93%
Zinc	mg/kg	164998-43	58 || 61 || RPD: 5	164998-5	95%
QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	164998-44	11/04/2017
Date analysed	-	[NT]	[NT]	164998-44	11/04/2017
TRHC$_6$ - C$_9$	mg/kg	[NT]	[NT]	164998-44	107%
TRHC$_6$ - C$_{10}$	mg/kg	[NT]	[NT]	164998-44	107%
Benzene	mg/kg	[NT]	[NT]	164998-44	97%
Toluene	mg/kg	[NT]	[NT]	164998-44	107%
Ethylbenzene	mg/kg	[NT]	[NT]	164998-44	109%
m+p-xylene	mg/kg	[NT]	[NT]	164998-44	110%
o-Xylene	mg/kg	[NT]	[NT]	164998-44	110%
naphthalene	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%	[NT]	[NT]	164998-44	114%
QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	164998-44	11/04/2017
Date analysed	-	[NT]	[NT]	164998-44	12/04/2017
TRHC$_{10}$ - C$_{14}$	mg/kg	[NT]	[NT]	164998-44	124%
TRHC$_{15}$ - C$_{28}$	mg/kg	[NT]	[NT]	164998-44	115%
TRHC$_{29}$ - C$_{36}$	mg/kg	[NT]	[NT]	164998-44	96%
TRH>C$_{10}$-C$_{16}$	mg/kg	[NT]	[NT]	164998-44	124%
TRH>C$_{16}$-C$_{34}$	mg/kg	[NT]	[NT]	164998-44	115%
TRH>C$_{34}$-C$_{40}$	mg/kg	[NT]	[NT]	164998-44	96%
Surrogate o-Terphenyl	%	[NT]	[NT]	164998-44	76%

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	164998-44	11/04/2017
Date analysed	-	[NT]	[NT]	164998-44	11/04/2017
Naphthalene	mg/kg	[NT]	[NT]	164998-44	90%
Acenaphthylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	[NT]	[NT]	164998-44	93%
Phenanthrene	mg/kg	[NT]	[NT]	164998-44	95%
Anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	[NT]	[NT]	164998-44	85%
Pyrene	mg/kg	[NT]	[NT]	164998-44	88%
Benzo(a)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	[NT]	[NT]	164998-44	82%
Benzo(b,j+k)fluoranthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	[NT]	[NT]	164998-44	80%
Indeno(1,2,3-c,d)pyrene	mg/kg	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	[NT]	[NT]	164998-44	118%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	164998-44	11/04/2017
Date analysed	-	[NT]	[NT]	164998-44	11/04/2017
Arsenic	mg/kg	[NT]	[NT]	164998-44	94%
Cadmium	mg/kg	[NT]	[NT]	164998-44	100%
Chromium	mg/kg	[NT]	[NT]	164998-44	101%
Copper	mg/kg	[NT]	[NT]	164998-44	95%
Lead	mg/kg	[NT]	[NT]	164998-44	96%
Mercury	mg/kg	[NT]	[NT]	164998-44	95%
Nickel	mg/kg	[NT]	[NT]	164998-44	94%
Zinc	mg/kg	[NT]	[NT]	164998-44	98%

Report Comments:

Asbestos: Excessive sample volume was provided for asbestos analysis. A portion of the supplied sample was sub-sampled according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g (50mL) of sample in its own container as per AS4964-2004.
Note: Samples 164998-5, 9, 20, 22 & 24 were sub-sampled from bags provided by the client.

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 164998-43 for Cu. Therefore a triplicate result has been issued as laboratory sample number 164998-50.

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

INS: Insufficient sample for this test
NR: 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 (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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SAMPLE RECEIPT ADVICE

Client Details	
Client	Environmental Investigation Services
Attention	Jake Cashman

Sample Login Details	
Your Reference	E29923K - Wetherill Park
Envirolab Reference	**10552**
Date Sample Received	11/04/2017
Date Instructions Received	11/04/2017
Date Results Expected to be Reported	**19/04/2017**

Sample Condition	
Samples received in appropriate condition for analysis	YES
No. of Samples Provided	1 Soil
Turnaround Time Requested	Standard
Temperature on receipt (°C)	15.2C
Cooling Method	Ice Pack
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:

Pamela Adams	Analisa Mathrick
Phone: 03 9763 2500	Phone: 03 9763 2500
Fax: 03 9763 2633	Fax: 03 9763 2633
Email: padams@envirolab.com.au	Email: amathrick@envirolab.com.au

Sample and Testing Details on following page

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Sample Id	*vTRH(C6-C10)/BTEXN in Soil*	*TRH Soil C10-C40 NEPM*	*PAHs in Soil*	*Acid Extractable metals in soil*
DUPJDC1	✓	✓	✓	✓

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tel: +61 3 9763 2500

email: melbourne@envirolab.com.au
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Envirolab Services Pty Ltd - Melbourne | ABN 37 112 535 645 - 002

CERTIFICATE OF ANALYSIS 10552

Client:

Environmental Investigation Services
PO Box 976
North Ryde BC
NSW 1670

Attention: Jake Cashman

Sample log in details:

Your Reference:	**E29923K - Wetherill Park**
No. of samples:	1 Soil
Date samples received / completed instructions received	11/04/2017 / 11/04/2017

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:	19/04/17 / 19/04/17
Date of Preliminary Report:	Not Issued

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

Results Approved By:

Pamela Adams
Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference:	UNITS	10552-1
Your Reference	----------	DUPJDC1
Date Sampled	----------	06/04/2017
Type of sample		Soil
Date extracted	-	12/04/2017
Date analysed	-	14/04/2017
vTRH C_6 - C_9	mg/kg	<25
vTRH C_6 - C_{10}	mg/kg	<25
TRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
Naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	93

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TRH Soil C10-C40 NEPM		
Our Reference:	UNITS	10552-1
Your Reference	----------	DUPJDC1
Date Sampled	----------	06/04/2017
Type of sample		Soil
Date extracted	-	12/04/2017
Date analysed	-	18/04/2017
TRHC$_{10}$ - C$_{14}$	mg/kg	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	410
Total +ve TRH (C10-C36)	mg/kg	410
TRH>C$_{10}$-C$_{16}$	mg/kg	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	390
TRH>C$_{34}$-C$_{40}$	mg/kg	560
Total +ve TRH (>C10-C40)	mg/kg	950
Surrogate o-Terphenyl	%	93

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PAHs in Soil		
Our Reference:	UNITS	10552-1
Your Reference	----------	DUPJDC1
Date Sampled	----------	06/04/2017
Type of sample		Soil
Date extracted	-	12/04/2017
Date analysed	-	19/04/2017
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	0.2
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	1
Anthracene	mg/kg	0.3
Fluoranthene	mg/kg	2.6
Pyrene	mg/kg	2.8
Benzo(a)anthracene	mg/kg	1.1
Chrysene	mg/kg	1.3
Benzo(b,j&k)fluoranthene	mg/kg	1.9
Benzo(a)pyrene	mg/kg	1.1
Indeno(1,2,3-c,d)pyrene	mg/kg	0.6
Dibenzo(a,h)anthracene	mg/kg	0.2
Benzo(g,h,i)perylene	mg/kg	0.8
Total +ve PAH's	mg/kg	14
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	1.7
Benzo(a)pyrene TEQ calc (Half)	mg/kg	1.7
Benzo(a)pyrene TEQ calc (PQL)	mg/kg	1.7
Surrogate p-Terphenyl-d_{14}	%	84

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Acid Extractable metals in soil		
Our Reference:	UNITS	10552-1
Your Reference	----------	DUPJDC1
Date Sampled	----------	06/04/2017
Type of sample		Soil
Date digested	-	13/04/2017
Date analysed	-	13/04/2017
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	210
Copper	mg/kg	70
Lead	mg/kg	10
Mercury	mg/kg	<0.1
Nickel	mg/kg	19
Zinc	mg/kg	34

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Moisture		
Our Reference:	UNITS	10552-1
Your Reference	----------	DUPJDC1
Date Sampled	----------	06/04/2017
Type of sample		Soil
Date prepared	-	13/04/2017
Date analysed	-	18/04/2017
Moisture	%	15

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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. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.
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. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-012	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. For soil results:- 1. 'TEQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'TEQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'TEQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PAHs" is simply a sum of the positive individual PAHs.
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 deg C for a minimum of 12 hours.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			12/04/2017	[NT]	[NT]	LCS-1	12/04/2017
Date analysed	-			14/04/2017	[NT]	[NT]	LCS-1	14/04/2017
vTRH C_6 - C_9	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-1	97%
vTRH C_6 - C_{10}	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-1	97%
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	LCS-1	99%
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	LCS-1	95%
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-1	95%
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	LCS-1	97%
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-1	94%
Naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	99	[NT]	[NT]	LCS-1	97%

QUALITY CONTROL TRH Soil C10-C40 NEPM	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			12/04/2017	[NT]	[NT]	LCS-1	12/04/2017
Date analysed	-			14/04/2017	[NT]	[NT]	LCS-1	14/04/2017
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-1	84%
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	88%
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	107%
TRH >C_{10}-C_{16}	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-1	84%
TRH >C_{16}-C_{34}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	88%
TRH >C_{34}-C_{40}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	107%
Surrogate o-Terphenyl	%		Org-003	79	[NT]	[NT]	LCS-1	106%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			12/04/2017	[NT]	[NT]	LCS-1	12/04/2017
Date analysed	-			19/04/2017	[NT]	[NT]	LCS-1	19/04/2017
Naphthalene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-1	90%
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-1	88%
Acenaphthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-1	90%
Phenanthrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-1	86%
Anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-1	92%
Pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-1	94%
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-1	108%

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QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Benzo (b,j&k)fluoranthene	mg/kg	0.2	Org-012	<0.2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	[NT]	[NT]	LCS-1	80%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		Org-012	86	[NT]	[NT]	LCS-1	90%
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	-			13/04/2017	[NT]	[NT]	LCS-1	13/04/2017
Date analysed	-			13/04/2017	[NT]	[NT]	LCS-1	13/04/2017
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	[NT]	[NT]	LCS-1	102%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	[NT]	[NT]	LCS-1	107%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	109%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	106%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	105%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	[NT]	[NT]	LCS-1	119%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	107%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	106%

QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank
Date prepared	-			[NT]
Date analysed	-			[NT]
Moisture	%	0.1	Inorg-008	[NT]

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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
NR: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

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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 batched of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.
Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.
Spikes for Physical and Aggregate Tests are not applicable.
For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

NATA
ACCREDITED FOR TECHNICAL COMPETENCE

SAMPLE AND CHAIN OF CUSTODY FORM

TO: ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	EIS Job Number: E29923K Date Results Required: STANDARD Page: 1 of 2	FROM: EIS ENVIRONMENTAL INVESTIGATION SERVICES REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02 9888 5001 Attention: Jake Cashman

Location: Wetherill Park

Sampler: JDC + HL

Sample Preserved in Esky on Ice

Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 6a	Combo 3	BTEX
9/04/2017	1	BH301	0.2-0.4	G,A	0	Fill	X		
	2	↓	0.5-0.95						
	3		1.5-1.95						
	4	↓	3-3.2			↓		X	
	5	BH302	0.25-0.45			Fill	X		
	6		0.7-0.95						
	7		1.5-1.95	↓		↓			
	8	↓	6-6.5	G		Shale			
	9	BH303	[illegible]	G,A		Fill	X		
	10	↓	0.8-0.95		[illegible]	Shale			
	11	BH304	0.15-0.2		0.5	Fill	X		
	12	↓	0.6-0.8		0	Shale			
	13	BH305	0.5-0.95			Fill	X		
	14	↓	[illegible]			Shale			
	15	BH306	0.15-0.?			Fill	X		
	16		0.8-1						
	17		1.8-2			↓			
	18		3.0-3.2			↓		X	
	19	↓	3.6-3.8			Silty Clay			
	20	BH307	0.3-0.6			Fill	X		
	21	↓	1.1-1.2			Silty Clay			
	22	BH308	0.2-0.5			Fill	X		
	23		1-1.2						
	24		2-2.2		0.6	↓	X		
↓	25	↓	3.?-3.?	↓	0	Silty Clay			

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
ENVIROLAB
Job No: 164993
Date Received: 10/4
Time Received: 10:45
Received by: MV
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Envirolab Services
25 Dalmore Drive
Caribbean Park
Scoresby VIC 3179
Ph: (03) 9763 2500
ENVIROLAB
Job No: 10552
Date Received: 11/4/17
Time Received: 11:30
Received by: MS 15.2°C
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Remarks (comments/detection limits required):
Send [illegible] - TS [illegible]

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

Relinquished By:	Date:	Time:	Received By:	Date:
Jake Cashman	10/4/2017	10:45	ELS MV	10/4

Relin: JACK EMBLEN ELS
10/4/17 14:30

SAMPLE AND CHAIN OF CUSTODY FORM

TO: ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	EIS Job Number: E29625K Date Results Required: STANDARD Page: 2 of 2	FROM: ENVIRONMENTAL INVESTIGATION SERVICES REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: John Cashman

Location: Wetherill Park

Sampler: JDC + HL

Samples Preserved in Esky on ice

Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Cyclic 8a	Combo 3	BTEX							
6/04/2017	26	BH3a	0.15-0.35	G,A	0.6	FILL	X									
	27	↓	0.4-0.6	X,G	0	F. Ryolite										
	28	BH311	0.12-0.3	G,A		FILL		X								
	29	↓	0.3-0.5			Shale										
	30	BH312	0.1-0.3			FILL		X								
	31	↓	1.1-1.3			↓										
	32	↓	2-2.2			↓										
	33	BH313	0.3-0.5			FILL		X								
	34	↓	0.5-0.7			↓										
	35	↓	2.5-2.7			↓										
	36	↓	3.6-3.8			Shale										
	37	BH314	0.2-0.3			FILL		X								
	38	↓	0.5-1			↓		X								
	39	↓	2-2.2			↓										
	40	↓	2.6-2.8			Clayey										
	41	BH315	0.5-0.15			FILL		X								
	42	↓	1.6-1.8			Shale										
	43	BH316	0.2-0.5			FILL		X								
	44	BH317	0.15-0.35			↓		X								
	45	↓	0.5-0.45	↓	↓	Shale										
1		DUP09	-	G	-	-		X								
	46	BH302	-		-	-		X								
	47	DUP01	-		-	-										
	48	DUP02	-		-	-		X								
↓	49	TB	-	↓	-	Sand			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
		10:45	ECS	10/4

Appendix D: Report Explanatory Notes

STANDARD SAMPLING PROCEDURE (SSP)

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[17].
- 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. 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.

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

- 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.
- 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.
- Take 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:
  - Micropore filtration system or Stericup single-use filters (for heavy metals samples);
  - Filter paper for Micropore filtration system; 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/T meters;
  - Plastic drums used for transportation of purged water;
  - Esky and ice;
  - Nitrile gloves;
  - Distilled water (for cleaning);
  - Electronic dip meter;

- Low flow pump pack and associated tubing; and
- Groundwater sampling forms.

- If single-use stericup filtration is not used, clean the Micropore filtration system thoroughly with distilled water prior to use and between each sample. Filter paper should be changed between samples. 0.45um filter paper should be placed below the glass fibre filter paper in the filtration system.
- 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/micro-purge 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 detailed in the NEPM 2013 and placed in an insulated container with ice. Groundwater samples are preserved by immediate storage in an insulated sample container with ice as outlined in the report text.
- Record the sample on the appropriate log in accordance with AS1726:1993. At the end of each water sampling complete a chain of custody form.

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[18]) methods and those described in *Environmental Sampling and Analysis, A Practical Guide,* (H. Keith 1991[19]).

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 (MDL) 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 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). Acceptable targets for precision in this report will be less than 50% RPD for concentrations greater than ten times the PQL, less than 75% RPD for concentrations between five and ten times the PQL and less than 100% RPD for concentrations that are less than five times the PQL.

Accuracy

Accuracy is a measure of the agreement between an experimental result and the true value of the parameter being measured. 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.

The proximity of an averaged result to the true value, where all random errors have been statistically removed. Accuracy is measured by percent recovery. Acceptable limits for accuracy generally lie between 70% to 130% recoveries. Certain laboratory methods may allow for values that lie outside these limits.

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.

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

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

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; 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 (eg. 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 artifacts and interferences that may arise during sampling 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:

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

Appendix E: Field Work Documents

Groundwater Sampling Report

EIS

Client:	C I R. Construction Pty Ltd	Job No.:	E29923K
Project:	Proposed New Warehouse	Well No.:	MW3#1
Location:	58-62 Redfern Street, Wetherill Park, NSW	Depth (m):	[illegible]

WELL FINISH

X	Gatic Cover		Standpipe		PVC Pipe

WELL PURGE DETAILS:

Method:	Low Flow Sample	**SWL – Before:**	4.57
Date:	12/4/2017	**Time – Before:**	8.00
Undertaken By:	JDC	**Total Vol Removed:**	5L
Pump Program No:	– YSI (4)	**PID (ppm):**	0

PURGING / SAMPLING MEASUREMENTS

Time (min)	CMP	Vol (L)	SWL (m)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
8:16	2.37	0.5	4.70	22.6	0.1	3303	6.26	95.1
8:17	2.37	0.6	4.73	22.5	0.5	3208	6.27	84.0
8.19	2.37	0.7	4.74	22.7	0.4	3323	6.28	73.0
8.22	2.37	0.9	4.80	23.1	0.6	3356	6.29	61.4
8:24	1.60	1.0	4.83	22.7	0.4	3349	6.30	55.2
8:25	1.60	1.1	4.84	22.7	0.4	3348	6.30	54.6
Started	Sampling	@	8:25am					

Containers Used/Comments 2 glass 1 pvc 1 metals 4 BTEX vials. (DUP 2017)

Very silty, no odours, no free phase, no sheen, Beware too silty.

Tested By:	JDC	**Remarks:**
Date Tested:	12/4/2017	- All measurements are corrected to ground level
Checked By:	GK	- SWL is an abbreviation for standing water level
Date	10/5/17	- Steady state conditions - difference in the pH less than 0.2 units and difference in conductivity less than 10%

Groundwater Sampling Report

EIS

Client:	C.I.R. Construction Pty Ltd	Job No.:	E29923K
Project:	Proposed New Warehouse	Well No.:	702
Location:	58-62 Redfern Street, Wetherill Park, NSW	Depth (m):	[illegible]

WELL FINISH

X	Gatic Cover		Standpipe		PVC Pipe

WELL PURGE DETAILS:

Method:	Low Flow Sample	SWL – Before:	3.77
Date:	12/4/2017	Time – Before:	9:55
Undertaken By:	JDC	Total Vol Removed:	[illegible]
Pump Program No:	–	PID (ppm):	[illegible]

PURGING / SAMPLING MEASUREMENTS

Time (min)	CMP	Vol (L)	SWL (m)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
10.00	5.23	0.5	4.18	23.3	0.8	22816	6.68	94.4
10.03	5.23	0.8	4.24	23.2	0.6	22117	6.63	86.7
10.06	4.86	1.2	4.30	23.1	0.5	21464	6.60	85.7
10.09	4.86	1.5	4.37	23.4	0.5	23578	6.58	86.5
10.11	4.86	1.7	4.37	23.5	0.6	23617	6.57	85.2
10.11	4.86	1.8	4.37	23.5	0.6	23637	6.59	84.7
10.13	4.86	1.8	4.37	23.5	0.6	23646	6.58	84.3
Started	Sampling	@	10.13					

Containers Used/Comments 2 [illegible], 1 PVC, [illegible]
Water in [illegible]
[illegible] (Same as MW [illegible])

Tested By:	JDC
Date Tested:	12/4/2017
Checked By:	[illegible]
Date:	10/5/17

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:	C.I.R. Construction Pty Ltd	Job No.:	E29623K
Project:	Proposed New Warehouse	Well No.:	MW709
Location:	58-62 Redfern Street, Wetherill Park, NSW	Depth (m):	4.95

WELL FINISH

X	Gatic Cover		Standpipe		PVC Pipe

WELL PURGE DETAILS:

Method:	Low Flow Sample	SWL – Before:	3.22
Date:	12/4/2017	Time – Before:	9 05
Undertaken By:	JDC	Total Vol Removed:	4 L
Pump Program No:	–	PID (ppm):	0

PURGING / SAMPLING MEASUREMENTS

Time (min)	CMP	Vol (L)	SWL (m)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
9 12	4.53	0.5	3.36	22.8	2.1	24475	6.51	163.4
9 14	4.53	0.8	3.43	23.0	1.9	24612	6.53	159.0
9 16	3.17	1.0	3.50	23.0	1.8	24670	6.55	153.0
9 18	3.17	1.2	3.58	23.1	1.8	24729	6.56	149.2
9 20	3.17	1.5	3.60	23.1	1.8	24733	6.56	148.2
9 21	3.17	1.6	3.62	23.1	1.8	24740	6.57	147.7
9 22	3.17	1.7	3.65	23.1	1.8	24708	6.56	147.6
Started sampling @ 9.22am								

Containers Used/Comments 2 glass 500, 1 PVC, 1 metals + 40 ml VOA

Silty at the start then went clear.

No odours, no sheen, no free phase detected with PID

Tested By:	AP
Date Tested:	12/4/2017
Checked By	CR
Date:	10/5/17

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 Monitoring Well Development Report

Client:	CIR Construction Pty Ltd	**Job No.:**	E29523A
Project:	Proposed New Warehouse	**Well No.:**	301
Location:	58 - 62 Redfern St, Wetherill Park	**Depth (m):**	6m

WELL FINISH DETAILS

X	Gatic Cover		Standpipe		PVC Pipe

WELL DEVELOPMENT DETAILS

Method:	Purge	**SWL – Before: (m)**	2.22
Date:	7/6/2017	**Time – Before:**	7.30
Undertaken By:	JDC	**SWL – After: (m)**	5.69
Total Vol. Removed:	15	**Time – After:**	7.40
PID Reading (ppm):	–		
Comments:			

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/m)	pH	Eh (mV)
0.2	23.3	0.1	1890	6.58	10.8
5	24.6	0.3	1824	7.96	-45.0
10	25.1	0.6	1913	7.30	-54.0
15	24.1	0.5	23.0	7.07	-25.0

Comments: Very silty, no odours, no sheen, no free product detected with pump

Tested By:	JDC	**Remarks:**
Date Tested:	7/6/2017	- All measurements are corrected to ground level
Checked By:	EF	- All stated Volumes are in Litres
Date	10/5/17	- 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:	CH Construction Pty Ltd	**Job No.:**	E29423K
Project:	Proposed New warehouse	**Well No.:**	302
Location:	58-62 Redfern St, Wetherill Park	**Depth (m):**	6m

WELL FINISH DETAILS

✓	Gatic Cover		Standpipe		PVC Pipe

WELL DEVELOPMENT DETAILS

Method:	Purge	**SWL – Before: (m)**	4.01
Date:	7/4/2017	**Time – Before:**	8:05
Undertaken By:	JDC	**SWL – After: (m)**	5.50
Total Vol. Removed:	6 L	**Time – After:**	8:12
PID Reading (ppm):	-		
Comments:			

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/m)	pH	Eh (mV)
2	21.0	2.1	11933	6.48	72.9
4	21.8	1.3	20745	6.45	80.3
6	23.0	2.8	20052	5.44	89.8

Comments: Very Silty, Same as (301).

Tested By:	JDC
Date Tested:	7/4/2017
Checked By:	CH
Date:	10/5/17

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:	CIR Construction Pty Ltd	Job No.:	E29973K
Project:	Proposed Steel warehouse	Well No.:	303
Location:	58-62 Redfern St, Wetherill Park	Depth (m):	6 m

WELL FINISH DETAILS

X	Gatic Cover		Standpipe		PVC Pipe

WELL DEVELOPMENT DETAILS

Method:	Purge	SWL – Before: (m)	3.24
Date:	7/4/2017	Time – Before:	8:28
Undertaken By:	JDC	SWL – After: (m)	5.42
Total Vol. Removed:	7L	Time – After:	8:38
PID Reading (ppm):	-		
Comments:			

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/m)	pH	Eh (mV)
2	25.9	6.3	18736	6.71	125.4
5	24.9	6.1	23310	6.65	120.4
7	24.6	5.0	24979	6.57	118.1

Comments: Slightly silty some As (301)

Tested By:	JDC	**Remarks:**
Date Tested:	7/4/2017	- All measurements are corrected to ground level
Checked By:	CAF	- All stated Volumes are in Litres
Date:	10/5/17	- 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