REXAM BOWATER INDUSTRIES AUSTRALIA LIMITED

SITE REPORT

HYDROCARBON CONTAMINATED SOIL

LOT 11, RP728865
2 ELVIN STREET

PAGET INDUSTRIAL ESTATE
MACKAY

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PTI Act 2009

Prepared By: Simmonds and Bristow Pty Ltd
Date: 28 November 1997

BOWATER INDUSTRIES AUSTRALIA LIMITED

SITE REPORT

HYDROCARBON CONTAMINATED SOIL

LOT 11, RP728865
2 ELVIN STREET
PAGET INDUSTRIAL ESTATE
MACKAY

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HAZARDOUS WASTES AND CONTAMINATED SITES SECTION
16 DEC 1997

BOWATER INDUSTRIES AUSTRALIA PTY LTD

SITE REPORT
HYDROCARBON CONTAMINATED SOIL

LOT 11, RP728865, 2 ELVIN STREET
PAGET INDUSTRIAL ESTATE
MACKAY

VOLUME 2

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BOWATER INDUSTRIES AUSTRALIA PTY LTD

SITE REPORT

HYDROCARBON CONTAMINATED SOIL

LOT 11, RP728865
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VOLUME 2

APPENDIX E

AS CONSTRUCTED DRAWINGS
CERTIFICATES OF COMPLIANCE

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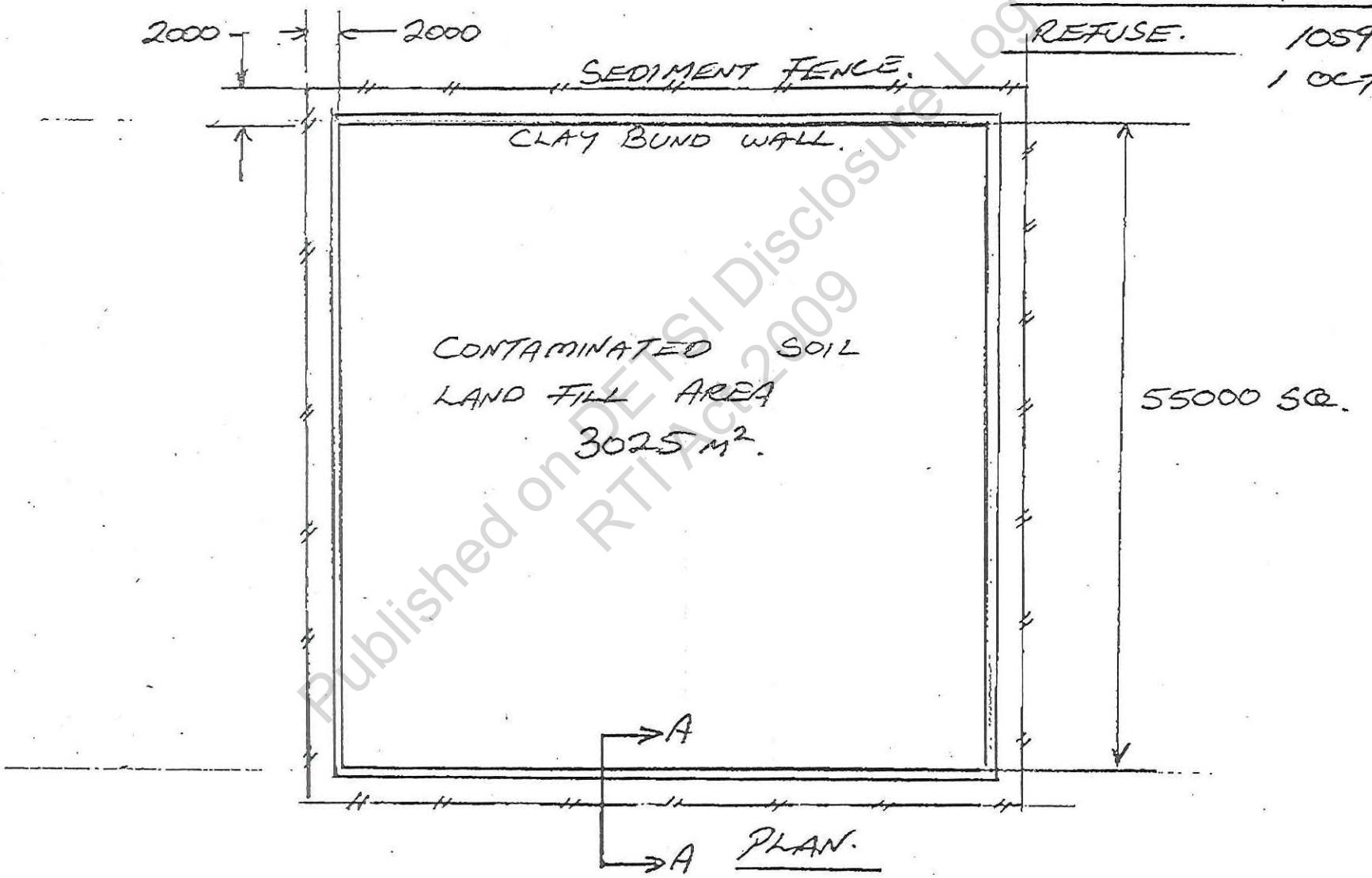
RTI Act 2009

FRASER ENGINEERS
MACKAY
PH: (079) 53 4440
FAX: (079) 53 4435

REMEDIAL WORKS FOR
CONTAMINATED SITE LOT 11
RP 728865
BIOREMEDIATION LAND FILL
SITE - MACKAY BAYERSVILLE
REFUSE.

1059/SK1.
1 OCT '97



PLAN.

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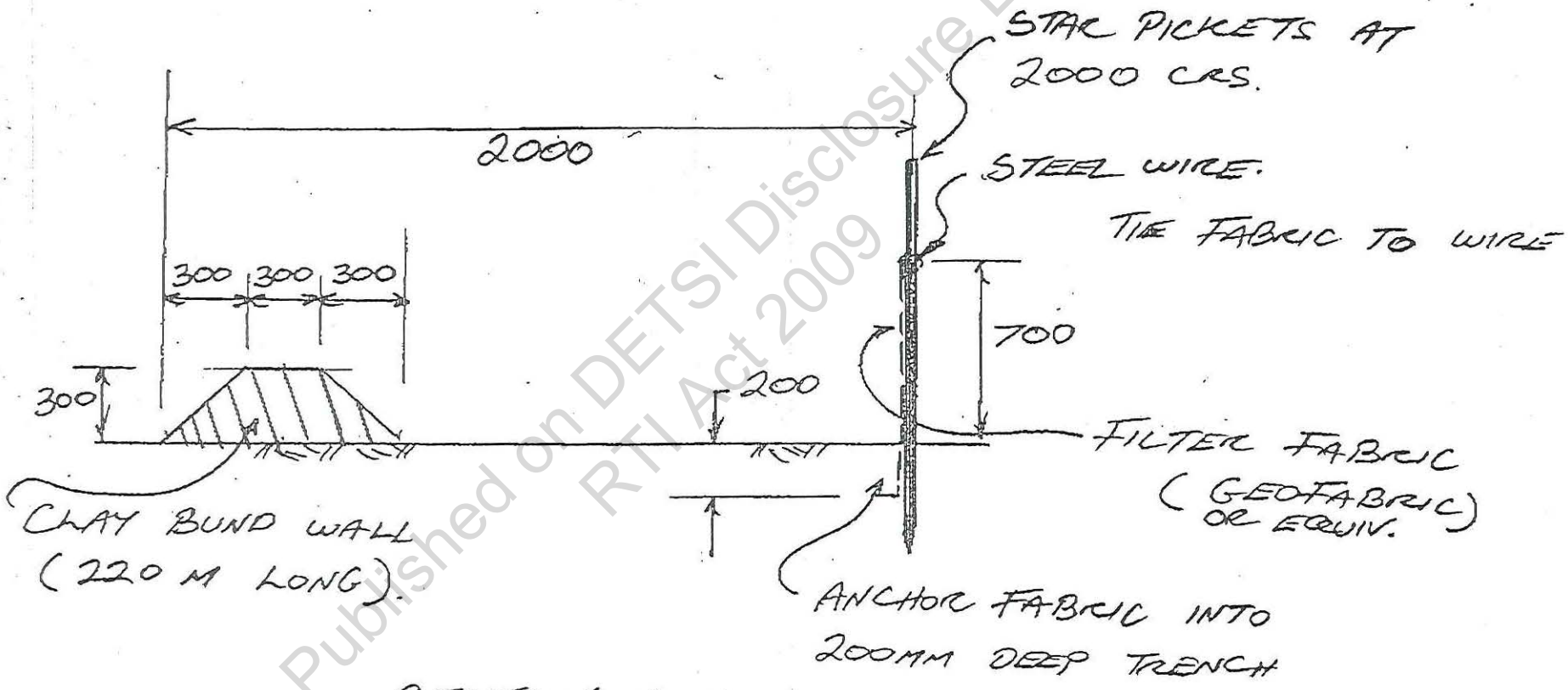
06-OCT-97 MON 11:06 FRASER ENGINEERS 61 07953443 P.02

FRASER ENGINEERS
MACKAY
PH: (079) 53 4440
FAX: (079) 53 4435

1059./SK2
1 OCT '97.



SECTION A-A

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FRASER & ASSOCIATES PTY. LTD. T/A
FRASER ENGINEERS
ACN 010 210 410

38 WELLINGTON ST. PO BOX 1515
MACKAY QLD. AUSTRALIA 4740
TELEPHONE: 079-534 440
FACSIMILE: 079-534 435

19 November 1997

Simmonds & Bristow Pty Ltd
30 Shottery Street
YERONGA QLD 4104

ATT: Sch 4 - personal information

Dear Sir,

RE: 11 Elvin Street
MACKAY QLD 4740

We certify that the backfilling, and the construction of the clay wall barrier and the reinforced concrete slab were carried out in accordance with the engineering drawings and specification.

The drawings and specification have been updated to as constructed.

Yours faithfully

Sch 4 - personal information

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FRASER & ASSOCIATES PTY. LTD. T/A
FRASER ENGINEERS
ACN 010 210 410

38 WELLINGTON ST. PO BOX 1515
MACKAY QLD. AUSTRALIA 4740
TELEPHONE: 079-534 440
FACSIMILE: 079-534 435

REXAM
REMEDIATION WORK FOR
CONTAMINATED SITE
LOT 11 ELVIN STREET
MACKAY QLD
IMPORTED FILL SPECIFICATION

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A1

A1.1 MATERIAL

Imported fill shall be Decomposed Granite and Bakers Creek Sand which shall be free of stones greater than 100mm and shall not contain clay lumps, organic matter, contaminated matter or other deleterious material.

The material shall be a certified product.

It shall contain adequate fines to fill voids in the places material.

A1.2 CONSTRUCTION

Imported fill shall be used in the reistatemint of ground so indicated on the drawings, and for the completion of the reinstatement of the R.C. Slab and to finished ground level elsewhere, as indicated of the drawings.

Import fill shall be spread in uniform horizontal layers of 200mm maximum compacted thickness, measured loose before compaction, and compacted to a dry density ratio of not less than 95% standard compaction, -1 to +2 optimum moisture content.

A1.3. DRAWINGS

1059 - 02

A1.4 STANDARDS

All materials supplied work performed and procedures followed in fullfilling the requirements of this specification shall be in accordance with the current issue for the codes and standards.

BOWLER
GEOTECHNICAL
(WHITSUNDAY) PTY LTD
Geotechnical Engineering Consultants
Soils Laboratory Services
(Incorp. in Qld ACN 061 566 729)

Mackay Office:
Unit 12 Woodman Parade
Mackay
Telephone: (07) 4952 4750
Facsimile: (07) 4952 4173

Gladstone Office:
5/13 Drewe Street
Gladstone
Telephone: (07) 4972 6620
Facsimile: (07) 4972 6495

All correspondence to:
P.O. Box 6735, Mackay M.C., QLD. 4741

Offices also located at:
Brisbane, Gold Coast, Sunshine Coast, Townsville, Cairns, Darwin, Papua New Guinea & Vietnam

12 November 1997

Our Ref: BW/0124_63

Attention: h 4 - personal informat

Fraser Engineers
P.O. Box 1515
Mackay Mail Centre QLD 4740

RE: BACKFILL PLACEMENT AT REAR OF SHED (LOT 11 ELVIN STREET)

4 - personal informa

The fill material used for the backfill at the above location was a clean sand supplied from Bakers Creek. The material complies with AS3798-1996 "Guidelines on Earthworks for Residential and Commercial Developments" section 4.3 "Suitable Materials".
Compaction testing was carried out during placement and these results are attached as well as a site sketch showing test locations.

Regards.
Bowler Geotechnical (Whitsunday) Pty Ltd

ch 4 - personal informatio

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BOWLER GEOTECHNICAL PTY LTD
Geotechnical Engineering Consultants
Soils Laboratory Services
Incorp. in Qld ACN 050 301 771

Unit 12 Woodman Parade
MACKAY 4740
Telephone: (079) 524 750
Facisimile: (079) 524 173

Offices also at
Geebung, Sunshine Coast, Gladstone, Browns Plains, Townsville, Cairns, Darwin, Vietnam, PNG

REPORT OF FIELD DENSITY

CLIENT:	CAMILLERI	*JOB NO:*	BW/0124
PROJECT:	REMEDIATION WORK	*REPORT No:*	63

FIELD TEST NO.		1	2	3	4	-
LABORATORY REF. NO. FD...	97/---	3006	3007	3016	3017	-
MATERIAL		Sand	Sand	Sand	Sand	-
PROJECT LOT No.		-	-	-	-	-
ROAD		Back of shed	Back of shed	N/E corner	Centre	-
LOT NO. / CHAINAGE (m)		A	B	C	D	-
OFFSET OF CENTERLINE (m)		-	-	-	-	-
LEVEL OF TEST (m)		Backfill	Backfill	Backfill	Backfill	-
TEST DEPTH (mm)		150	150	150	150	-
FIELD MOISTURE CONTENT (%)		14.2	12.6	22.5	18.3	-
FIELD DRY DENSITY (t/m3)		1.43	1.46	1.46	1.48	-
MAX/MIN DENSITY REF NO.	97/---	3006	3006	3006	3006	-
MAXIMUM DRY DENSITY (t/m3)		1.50	1.50	1.50	1.50	-
MINIMUM DRY DENSITY (t/m3)		1.26	1.26	1.26	1.26	-
DENSITY INDEX (%)		76	87	85	95	-

TESTED BY: M.D *DATE:* 04/11/97
REPORTED BY: L.C *DATE:* 10/11/97
TEST PROCEDURES: AS 1289 E5.1-1977, E6.1-1981 5.3.1
VIBRATING TABLE: SYNTRON V80R

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CERTIFIED BY: - personal infor .....

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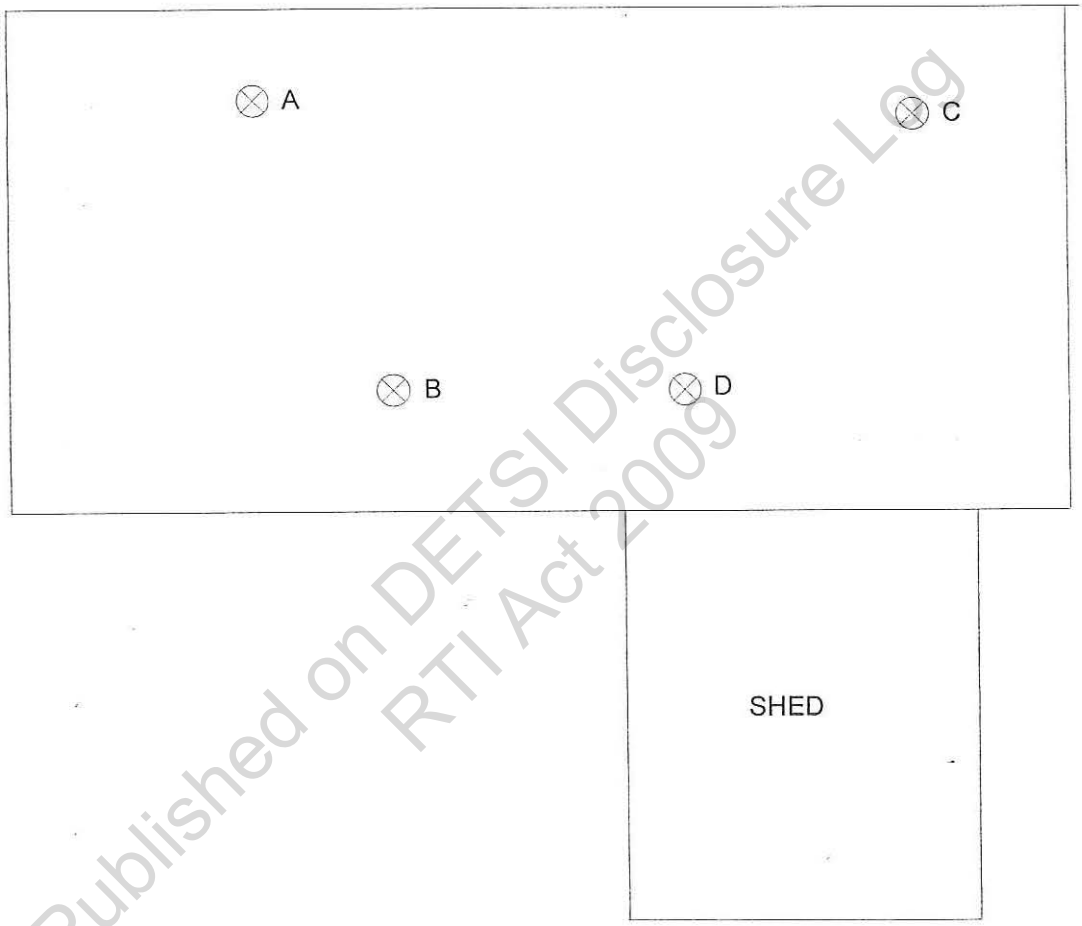
LOT 11 ELVIN STREET

BACKFILL PLACEMENT LOCATIONS



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Borehole location map only

Not to scale

Figure 1.

REPORT OF SAMPLING AND ANALYSIS OF FILL MATERIALS AT 11 ELVIN STREET PAGET. A STUDY FOR FRASER ENGINEERS

1.0 Introduction

HLA-Envirosciences was commissioned by Fraser Engineers to sample and analyse materials used to backfill an excavation at Lot 11 Elvin Street. Paget. The excavation resulted from the removal of hydrocarbon contaminated soils in the course of conducting a Stage II Contaminated Site Investigation. Fill materials comprised an approximate depth of 800mm of "Bakers Creek sand" and a topping of 200mm of "decomposed granite". Sample site selection was restricted by the presence of recently-poured concrete slab over the bulk of area containing the emplaced fill. Samples were selected from each of the two types of fill material from the vicinity of each of the corner of the rectangular slab as indicated in the **Figure 1** attached.

2.0 Sampling and Analytical Procedures

All samples were collected, processed and analysed in accordance with the protocols set out in the Queensland and ANZECC contaminated site guidelines. A soil augur was used for sample collection, and sample site were selected from about a metre of the edge of concrete slab, and well within the limit of the emplaced fill materials. The samples were sent in 2 batches, with each batch accompanied by the processed "Chain of Study" included as **Attachment A.**

The first batch comprised samples collected from the north east and south west corners (based on the alignment of Elvin Street being east-west), and were analysed for the list of metals presented for contamination screening purposes in the guidelines. Those metals are cadmium, cobalt, total chromium, copper, lead, nickel and zinc.

The second batch of samples from the south east and north west corners were analysed for the metals and petroleum hydrocarbons. Petroleum hydrocarbons were included to confirm that fill was free hydrocarbon contamination.

Presentation and Discussion of Results

All results are presented in the formal "Certificate of Analysis" forms included as **Attachment B.**

Soil labels identify the site of the sample and the depth of profile from which the sample was collected. Hence, NE, 0-200 refers the sample collected from the north east corner in the upper most 200mm, that is the decomposed granite capping layer. SW, 300-600 refers to the sample collected from the south west corner from the depth profile 300-600mm, which is of course the Bakers Creek sand.

No petroleum hydrocarbons (TPH) were detected and all metal levels were far below the Environmental Investigation Threshold (EIT) levels presented in the Queensland Contaminated Land Guideline. The metal levels and the respective guideline levels are presented below in **Table 1.**

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Table 1
Metal Analyses Results (all levels in mg/kg)

Sample Label	Cd	Co	Tot Cr	Cu	Pb	Ni	Zn
NE, 0-200	<1	5	12	16	11	5	24
NE, 300-600	<1	2	8	2	<5	2	10
NW, 0-200	<1	3	4	12	5	3	17
NW, 300-600	<1	2	2	2	<5	2	5
SE, 0-200	<1	4	3	12	7	3	17
SE, 300-600	<1	1	3	2	<5	1	8
SW, 0-200	<1	5	10	13	8	3	19
SW, 300-600	<1	3	10	7	5	3	1
EIT Level*	3	-	50	60	300	60	200

* EIT - Environmental Investigation Level. (***Guidelines for the Assessment of Contaminated Land***, 1982; Bureau of Emergency Services).

4.0 Conclusions

The analysis results indicate that both types of imported fill material are free of metal and petroleum hydrocarbon contamination.

5.0 References

Chemical Hazards and Emergency Management Unit, 1982; *Guidelines for the Assessment of Contaminated Land*. Bureau of Emergency Services.

ANZECC/NHMRC, 1982; *Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites.*

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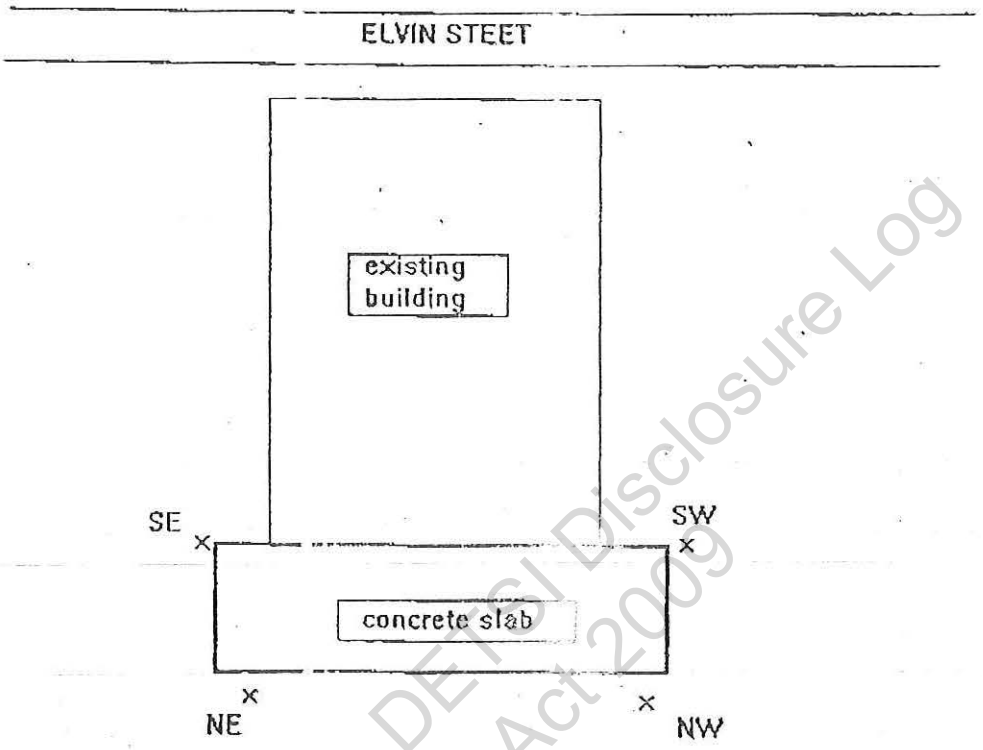
Figure 1
Schematic Layout of Soil Sampling Points at 11 Elvin Street, Paget.



x - sampling location

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ATTACHMENT A
CHAIN OF CUSTODY DOCUMENTATION

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RTI Act 2009

FAXED 3/12/97

HLA-Environmental Pty Limited

ANALYSIS REQUEST FORM

CLIENT INFORMATION

Job no: Q423 Purchase order no: 2579

Company name: Fraser Engineering

Contact: Sch 4 - personal information

Address:

Ph: Fax:

Results to be sent to: HLA, MKY Request written by: 4 - personal informa

Analysis due date:

SAMPLE INFORMATION

Date sampled: 21-11-97

Date despatched: 24-11-97

Sampled by: ☑ HLA-Enviro ☐ Client

Special storage requirements: ☐ Y ☐ N
Details: Hold for possible further analysis.

Samples forwarded to: HLA - Newcastle

NATA endorsed report required: ☑ Y ☐ N

CHAIN OF CUSTODY

Relinquished: Date: 24-11-97

Received by: h 4 - personal informat Date: 25/11/97

Relinquished: Date:

Received by: Date:

Relinquished by: Date:

Client Sample ID	Matrix water, soil, etc.	Preservation Used (Y/N)	List Required Test eg. pH	Cadmium	Cobalt	Total chromium	Copper	Lead	Nickel	Zinc					Total Cost	Lab Accepted	Lab ID (Lab use only)
1. NE - 0 - 200mm	Soil	✓	✓	✓	✓	✓	✓	✓	✓	✓					[redacted]	Y	30939/17/1
2. NE - 200 - 600mm	Soil	"		✓	✓	✓	✓	✓	✓	✓					[redacted]	"	2
3. SW 0 - 200mm	Soil	"		✓	✓	✓	✓	✓	✓	✓					[redacted]	"	3
4. SW 300-600mm	Soil	"		✓	✓	✓	✓	✓	✓	✓					[redacted]	"	4
5.																	
6.																	
7.																	
8.																	
9.																	
10.																	
11.														TOT	[redacted]		
12.																	

ADDITIONAL INFORMATION:

Requested by:

LAB USE ONLY - Request Form faxed back to: Fax number: Date:

QA FORM 10 - 710.4B

Page ..... of .....

Released on DES ST Disclosure Log RTI Act 2009

FAXED
3-12-97

HLA Environmental Pty Limited

ANALYSIS REQUEST FORM

CLIENT INFORMATION

Job no: Q423 Purchase order no: 2579

Company name: Fraser Engineers

Contact: Sch 4 - personal information

Address:

Ph: Fax:

Results to be sent to: Mackay Request written by: Sch 4 - personal information

Analysis due date:

SAMPLE INFORMATION

Date sampled: 21/11/97

Date dispatched: 26/11/97

Sampled by: ☒ HLA-Envlro ☐ Client

Special storage requirements: ☐ Y ☐ N

Details: Hold possible further analysis

Samples forwarded to: HLA-Mayfield

NATA endorsed report required: ☒ Y ☐ N

CHAIN OF CUSTODY

Relinquished by: Date: 26/11/97

Received by: Sch 4 - personal informati Date:

Relinquished by: Date:

Received by: Date: 27/11/97

Relinquished by: Date:

Client Sample ID	Matrix water, soil, etc.	Preservation Used (Y/N)	List Required Test eg. oil?	Cd	Co	Total Cr	Cu	Pb	Ni	Zn	TPH/ BTEX				Total Cost	Lab Accepted	Lab ID (Lab use only)
1. NW 0-200	Soil			✓	✓	✓	✓	✓	✓	✓	✓					Y	D9729/1
2. NW 300-600	Soil			✓	✓	✓	✓	✓	✓	✓	✓						2
3. SE 0-200	Soil			✓	✓	✓	✓	✓	✓	✓	✓						3
4. SE 300-600	Soil			✓	✓	✓	✓	✓	✓	✓	✓						4
5.																	
6.																	
7.																	
8.																	
9.																	
10.																	
11.																	
12.													Total				

ADDITIONAL INFORMATION:

Requested by: Urgent

LAB USE ONLY - Request Form faxed back to: Fax number: Date:

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ATTACHMENT B
CERTIFICATES OF ANALYSIS

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HLA-Enviroscie nces Pty Limited
ACN 000 204 702
A subsidiary of Harding Lawson Australia Pty Limited
ACN 003 634 606

Environmental and Analytical La oratory

RECEIVED
09 DEC 1997
DISCLOSURE

17 October 1997

CERTIFICATE OF ANALYSIS

LABORATORY REPORT NO.:	D0862/107/A
CLIENT REFERENCE:	Q398
CLIENT:	HLA-Enviroscie nces Pty Limited PO Box 3263 NORTH MACKAY QLD 4740
ATTENTION:	Sch 4 - personal information
DATE RECEIVED:	2 October 1997
TITLE:	Soil Analysis
SAMPLES:	1 x soil

Published on DETSI Disclosure Log
RTI Act 2009

Please find results for the above samples.

This report replaces report D086 /107 dated 15 Octo er 1997.

Please do not hesitate to contact us if we can be of further assistance.

Yours faithfully

HLA-ENVIROSCIENCES PTY LIMITED

Authorising Chemist

National Association of Testing Authorities, Australia
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Newcastle Analytical Laboratory: 5 Re segum Close Warabrook NSW 2304 Australia Ph: (049) 68 9433 Fax: (049) 68 0349

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• MINE PLANNING AND REHABILITATION • CONTAMINATED SITE ASSESS ENT AND REMEDIATION • ASBESTOS MONITORING • ENVIRONMENTAL MANAGEMENT • ARCHAEOLOGICAL AND HERITAGE STUDIES
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TITLE: Soil Analysis SAMPLES: 1 x soil

CLIENT: HLA-Enviroscienc es - Mackay REPORT NO: D0862/107/A

Sample	D086 /107/1	Duplica e D0862/107/1	Blank	% Recovery	Reporting Limit (PQL)
Client ID	Soil St ckpile	Soil Stock ile			
Date Sampled	01/1 0/97	01/10/9 7			
Date Received	02/1 0/97	02/10/9 7			
Naphthalene	<0.1	<0.1	<0.1	79	0.1
Acenaphthylene	<0.1	<0.1	<0.1	73	0.1
Acenaphthene	<0.1	<0.1	<0.1	74	0.1
Fluorene	<0.1	<0.1	<0.1	74	0.1
Phenanthrene	<0.1	<0.1	<0.1	71	0.1
Anthracene	<0.1	<0.1	<0.1	74	0.1
Fluoranthene	<0.1	<0.1	<0.1	79	0.1
Pyrene	<0.1	<0.1	<0.1	81	0.1
Benz(a)anthracene	<0.1	<0.1	<0.1	75	0.1
Chrysene	<0.1	<0.1	<0.1	72	0.1
Benzo(b)fluoranthene	<0.1	<0.1	<0.1	75	0.1
Benzo(k)fluoranthene	<0.1	<0.1	<0.1	77	0.1
Benzo(a)pyrene	<0.1	<0.1	<0.1	74	0.1
Indeno(123:cd)pyrene	<0.1	<0.1	<0.1	74	0.1
Dibenzo(ah)anthracene	<0.1	<0.1	<0.1	81	0.1
Benzo(ghi)perylene	<0.1	<0.1	<0.1	78	0.1
Total PAH	<0.1	<0.1	<0.1	76	0.1
Moisture (%)	10.1	10.1	-	-	-
Date Extracted	10/ 0/97	10/10/97	-	-	-
Date Analysed	13/ 0/97	13/10/97	-	-	-

Analysed by in-house method AN105.

Results expressed as mg/kg dry weight.

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Sch 4 - personal information

Authorising Chemist

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HLA-Envirosciences Pty Limited
ACN 030 204 702
A subsidiary of Harding Lawson Australia Pty Limited
ACN 033 854 808

Environmental and Analytical Laboratory

RECEIVED
09 DEC 1997
DISCOUNTED

4 December 1997

CERTIFICATE OF ANALYSIS

LABORATORY REPORT NO.:	D0929/117
CLIENT CODE:	Q423
CLIENT:	HLA-Envirosciences Pty Limited PO Box 3263 NORTH MACKAY QLD 4740
ATTENTION:	Sch 4 - personal information
DATE RECEIVED:	As indicated
TITLE:	Soil Analysis
SAMPLES:	8 x soil

Published on DETSI Disclosure Log
RTI Act 2009

Please find results for the above samples.

This report replaces preliminary report faxed to your office on 1 and 3 December 1997.

Please do not hesitate to contact us if we can be of further assistance.

Yours faithfully

HLA-ENVIROSCIENCES PTY LIMITED

Sch 4 - personal information

Authorising Chemist

National Association of Testing Authorities, Australia
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• MINE PLANNING AND REHABILITATION • CONTAMINATED SITE ASSESSMENT AND REMEDIATION • ASBESTOS MONITORING • ENVIRONMENTAL MANAGEMENT • ARCHAEOLOGICAL AND HERITAGE STUDIES
Paper 100% Recycled

TITLE: Soil Analysis SAMPLES: 8 x soil

CLIENT: HLA-Enviroscier ces - Mackay REPORT NO: D0929/117

Sample	D0929/117/1	D0929/117/2	D0929/117/3	D0929/117/4	Reporting Limit (PQL)	Method
Client ID	NE 0-300mm	NE 300-600mm	SW 0-200mm	SW 300-600mm		
Date Sampled	21/11/97	21/11/97	21/11/97	21/11/97		
Date Received	25/11/97	25/11/97	25/11/97	25/11/97		
Cadmium	<1	<1	<1	<1	1	AN071
Chromium	12	8	10	10	1	AN071
Cobalt	5	2	5	3	1	AN071
Copper	16	2	13	7	1	AN071
Lead	11	<5	8	5	5	AN071
Nickel	5	2	3	3	1	AN071
Zinc	24	10	19	12	1	AN071

Analysed by in-house methods as specified.

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Sch 4 - personal information

Authorising Chemist

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RTI Act 2009

TITLE: Soil Analysis SAMPLES: 8 x soil

CLIENT: HLA-Enviroscier ces - Mackay REPORT NO: D0929/117

Sample Client ID	D0929/11 /5 NW 0-200mm	D0929/117/6 NW 300-600mm	D0929/117/7 SE 0-200mm	D0929/117/8 SE 300-600mm	Blank	Reporting Limit (PQL)
Date Sampled	21/11/9	21/11/97	21/11/97	21/11/97		
Date Received	27/11/9	27/11/97	27/11/97	27/11/97		
C_6 - C_9	<20	<20	<20	<20	<20	20
C_{10} - C_{14}	<50	<50	<50	<50	<50	50
C_{15} - C_{28}	<100	<100	<100	<100	<100	100
C_{29} - C_{36}	<100	<100	<100	<100	<100	100
Total Petroleum Hydrocarbons	-	-	-	-	-	-
Benzene	<1	<1	<1	<1	<1	1
Toluene	<1	<1	<1	<1	<1	1
Ethyl Benzene	<1	<1	<1	<1	<1	1
Total Xylene	<1	<1	<1	<1	<1	1
Date Extracted	02/12/97	02/12/97	02/12/97	02/12/97	-	-
Date Analysed	03/12/97	03/12/97	03/12/97	03/12/97	-	-

Analysed by in-house method AM120.

Results expressed as mg/kg dry v eight.

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Sch 4 - personal information

Authorising Chemist

Published on DETSI Disclosure Log
RTI Act 2009

TITLE: Soil Analysis SAMPLES: 8 x soil

CLIENT: HLA-Enviroscien ces - Mackay REPORT NO: D0929/117

Sample	D0929/11 /5	D0929/117/6	D0929/117/7	D0929/117/8	Reporting Limit (PQL)	Method
Client ID	NW 0-200mm	NW 300-600mm	SE 0-200mm	SE 300-600mm		
Date Sampled	21/11/97	21/11/97	21/11/97	21/11/97		
Date Received	27/11/97	27/11/97	27/11/97	27/11/97		
Cadmium	<1	<1	<1	<1	1	AN071
Chromium	4	2	3	3	1	AN071
Cobalt	3	2	4	1	1	AN071
Copper	12	2	12	2	1	AN071
Lead	5	<5	7	<5	5	AN071
Nickel	3	2	3	1	1	AN071
Zinc	17	5	17	8	1	AN071

Analysed by in-house methods as specified.

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Authorising Chemist

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VOLUME 2

APPENDIX F

PHOTOGRAPHS

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Photo 1A- Lubrication bay adjacent to BH-6

Photo 2A- Hydrocarbon contamination adjacent to rat wall BH-6

Photo 3A- Hydrocarbon contamination flowing from beneath rat wall BH-6

Photo 4A- Pit 1 excavation looking east

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Photo 1B- Construction of clay barrier western side of shed.

Photo 2B- Clay barrier compaction.

Photo 3B- Construction of clay barrier northern side of shed.

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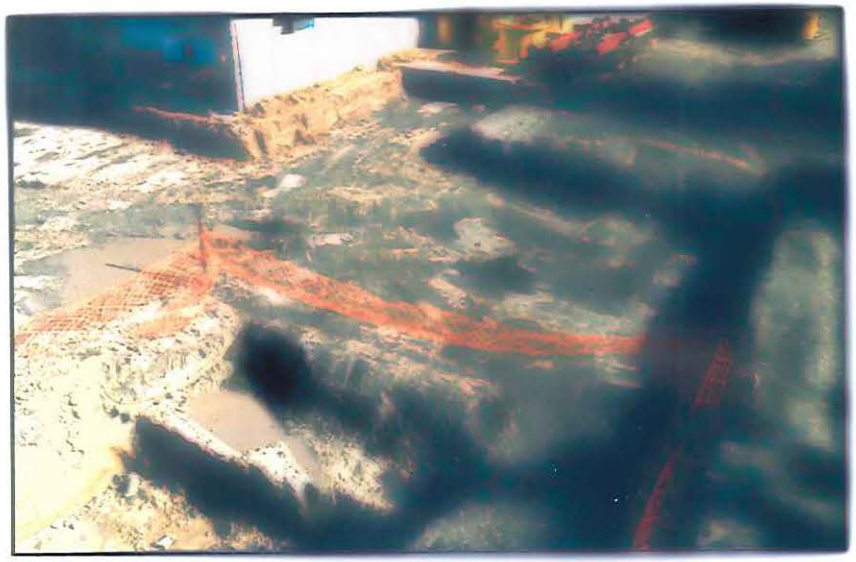

Photo 8B- Western side of excavation looking south-east

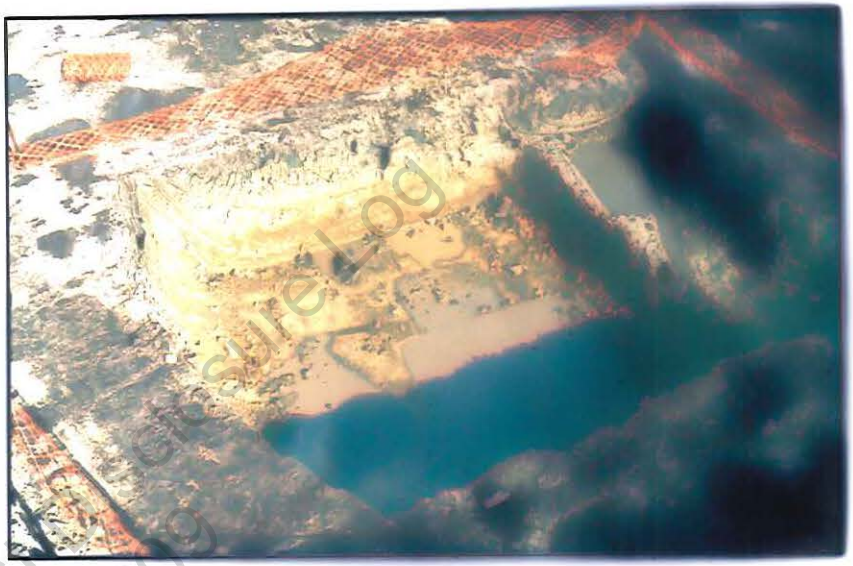

Photo 9B- Pit 1 excavation looking east

Photo 10B- Pit 1 excavation looking west

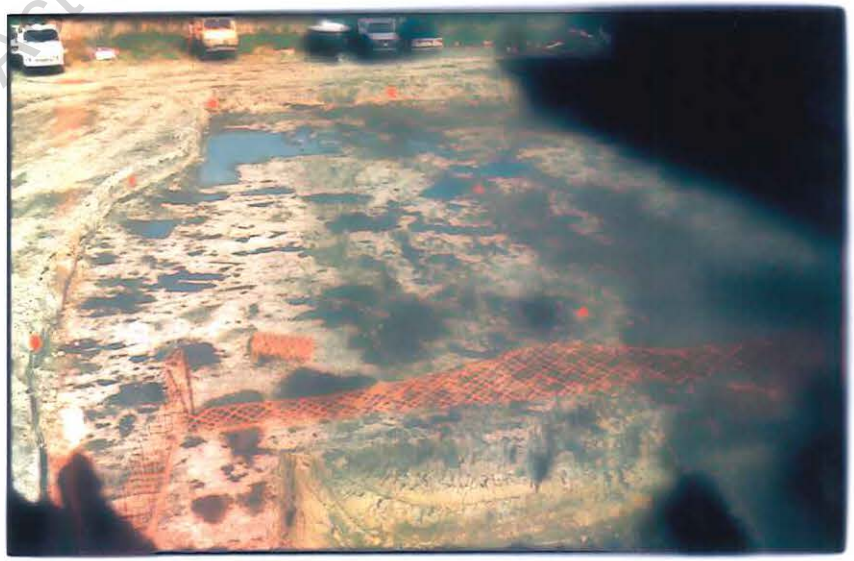

Photo 11B- Excavation looking east

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VOLUME 2

APPENDIX G

PRELIMINARY SITE INVESTIGATION

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SIMMONDS & BRISTOW PTY LTD
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WATER & ENVIRONMENTAL ANALYSTS & CONSULTANTS SINCE 1965

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Central Queensland
Ph: 1800 620 690

Ref. No.31860 SAS

11 June 1996

The Manager
DETCO
PO Box 5505
MACKAY QLD 4740

Attention: Sch 4 - personal information

Dear Sir

PRELIMINARY CONTAMINATION ASSESSMENT
LOT 2, RP730118 AND LOT 11, RP728865
ELVIN ST PAGET QLD 4740

On 5 April 1996, nine (9) soil samples were collected from Lot 2 and Lot 11 at 1 Elvin Street Paget by our Scientific Consultant Sch 4 - personal information The samples were collected from seven (7) sites and at various depths from within these allotments.

The analysis of these soil samples have been compiled and with data obtained from the site visit to form the basis of the attached report.

Please advise if you have any queries.

Yours faithfully
SIMMONDS & BRISTOW PTY LTD

Sch 4 - personal information

Manager (Central Queensland)
Scientific Services

attch

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DETCO PTY LTD

PRELIMINARY CONTAMINATION ASSESSMENT

LOT 2, RP730118 AND LOT 11 RP728865 ELVIN ST PAGET QLD 4740

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PRELIMINARY CONTAMINATION ASSESSMENT
LOT 2, RP730118 AND LOT 11, RP728865 ELVIN ST PAGET QLD 4740

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2. PAST SITE USE 3
3. SITE LOCATION AND DESCRIPTION 3
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9. CONCLUSION 11

APPENDIX A - SITE LOCATION

APPENDIX B - ANALYTICAL RESULTS

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DETCO PTY LTD

PRELIMINARY CONTAMINATION ASSESSMENT
LOT 2, RP730118 AND LOT 11 RP728865 ELVIN ST PAGET QLD 4740

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1. PRESENT SITE ACTIVITY

DETCO PTY LTD operate a mechanical workshop dealing with diesel engine restorations on Lot 11 which is 4062 sq m with shed area including offices covering 630 sq m. Lot 2 is a neighbouring vacant allotment which has been used for staff car parking and the off loading of equipment.

2. PAST SITE USE

The preparation of a full site history does not fall within the scope of works of this assessment. Present activities as described have been carried out on the site for the past seventeen (17) years.

3. SITE LOCATION AND DESCRIPTION

The site described is located at 1 **Elvin Street Paget Queensland** 4740. The sites are described as Lot 2 - Plan RP730118, 1859 sq m in area and Lot 11 -Plan RP728865 which is 4062 sq m in area.

This site is currently not listed on the contaminated sites register however land is classified as a "Probable Site" if a current or past use of, or activity on, the land is a Prescribed Use or the sort of use or activity that may have caused land to become contaminated land. The activities carried out on this site are classified as a Prescribed Use.

4. INITIAL SITE INSPECTION

Lot 2 is an unfenced vacant allotment. The land is overlain to a depth of 300 to 400mm depth by light brown, silty loam. At approximately 300 to 400mm depth, tan clay is encountered. In the region allocated for car parking located at the front right corner, gravel has been introduced and exists in the surface 100mm to increase soil stability during wet weather. No unusual odours or discolouration were noticed. On the vacant allotment there is also the presence of an earthen ramp used for unloading vehicles.

The work area is restricted to the rear of allotment 11 of which is fenced. The work shed is surrounded by a concrete apron. The majority of work is conducted in the shed or on the concrete apron where by runoff in most cases is collected by open concrete drains. The concrete apron is surrounded by an area of fine gravel (crusher dust) that is overlain to a depth of 400 to 500mm. At approximately 400 to 500mm natural existing clay is encountered. The outer 1 to 2 metres inside the parameter fence is grassed. This area is used to store items such as used transmission boxes and engine blocks. The soil profile of this area is similar to Lot 2. On site an oil water separator was observed and one above ground diesel tank.

No unusual odours were noticed however ground discolouration was seen close to the concrete apron where there were an absence of collection drains. This was located in the region of rear wash down stations and the oil water separator.

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5. SURVEY AND SAMPLING

The site was sampled on 5 April 1996. After consideration of the site use and the location, a sampling plan was devised which targeted the areas where contamination would be likely to have occurred. The sampling locations are shown on the site plan (**Appendix A**). The sample locations included:

- Background samples collected from the vacant allotment Lot 2 (sample locations 1 and 2).

- In the region of the underground tank and an oil water separator (sample location 3).

- The edge of the concrete apron where no drains are present to collect runoff from nearby wash down stations and where surface discolouration is present (sample locations 4 and 6).

- The surrounding grass area where used engine blocks etc are stored (sample locations 5 and 7).

There was very little risk of cross-contamination as the material did not cling to the auger bit and the auger bit was brushed after each sample was taken. There was no evidence of ground water and care was also taken to prevent cuttings from falling back into the hole during cleaning. A total of 9 samples were collected for analysis.

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6. LABORATORY ANALYSIS

Samples were selected for initial analysis from the locations were contamination would be expected most likely to occur. These included runoff collection points and specific depths were visual inspection indicated that the soil was significantly different from the natural soil and/or appeared to contain organic components. A total of nine (9) samples were taken from the site. The preliminary screening was restricted to the analysis of these nine (9) samples.

Samples were analysed for the following.

1. pH
2. Conductivity (Salts)
3. Mercury, Arsenic, Chromium, Lead, Copper, Zinc, Molybdenum, Aluminium
4. Petroleum Hydrocarbons

The analysis results are presented in the attached tables **(Appendix B)**.

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7. RESULTS

Location 1 (S&B Sample No 114926)

With regard to the analysis performed, no significant contamination was found at Location 1. Low level concentrations of arsenic and zinc were detected, however, these results were below environmental investigation thresholds. The aluminium result 15400 mg/kg is within normal background levels and levels as high as 150000mg/kg may be found associated with clays.

All results were well within expected normal background concentrations.

Location 2 (S&B Sample No 114927)

With regard to the analysis performed, no significant contamination was found at Location 2. Low level concentrations of arsenic, copper and zinc were detected, however, all results were below environmental investigation thresholds. The aluminium result of 24200 mg/kg is higher than at location 1 however the concentration remains within expected background levels.

All results were well within expected normal background concentrations.

Location 3 (S&B Sample No's 114928,114929)

With regard to the analysis performed, significant contamination was found at Location 3. Low level concentrations of arsenic, copper, chromium, lead and zinc were detected, however, all these results were below environmental investigation thresholds at both the 0.1 - 0.2 metre and the 0.4 - 0.5 metre depths. The pH of the soil in this location was significantly higher at 8.3 and 8.4 and this is probably due to the presence of surfactants and/or degreasers. Hydrocarbon contamination was detected at the 0.1 - 0.2 metre depth (S&B Sample No 114928) in the C10 to C36 bands. The level of contamination is below the environmental investigation thresholds for this sample. Hydrocarbon contamination was also detected at the 0.4 - 0.5 metre depth (S&B Sample No 114929) in the C15 to C36 bands. The level of contamination is at or above the environmental investigation threshold of 1000 mg/kg for this sample.

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Location 4 (S&B Sample No's 114930,114931)

With regard to the analysis performed, significant contamination was found at Location 4. Low level concentrations of arsenic and mercury were detected, however, these results were below environmental investigation thresholds at both the 0.0 - 0.1 metre and the 0.4 - 0.5 metre depths. Elevated concentrations of lead (210 mg/kg), copper (181 mg/kg), chromium (67 mg/kg) and zinc (650 mg/kg) were detected at the 0.0 - 0.1 metre depth and all with the exception of lead were above environmental investigation thresholds. Elevated concentrations of copper (124 mg/kg),were detected at the 0.4 - 0.5 metre depth and this is above the environmental investigation threshold of 60 mg/kg. The results indicate that the mobility of metals into the lower clay layers is restricted.

The pH of the soil in this location was significantly higher at 8.8 at the 0.4 - 0.5 metre depth and this is probably due to the presence of surfactants and/or degreasers which tend to infiltrate more readily into the clays. Hydrocarbon contamination was detected at the 0.0 - 0.1 metre depth (S&B Sample No 114931) in the C6 to C36 bands. The level of contamination is above the environmental investigation threshold for the C10 - C14 band (100 mg/kg) and well above the environmental investigation threshold for the C15 - C36 bands (1000 mg/kg) . Hydrocarbon contamination was also detected at the 0.4 - 0.5 metre depth (S&B Sample No 114930) in the C10 to C14 band. The level of contamination is above the environmental investigation threshold of 100 mg/kg for this sample.

Location 5 (S&B Sample No 114932)

With regard to the analysis performed, no significant contamination was found at Location 5. Low level concentrations of arsenic, copper, chromium and zinc were detected, however, these results were below environmental investigation thresholds. The aluminium result of 28600 mg/kg is within normal background levels and similar to the concentrations found at other locations. No petroleum hydrocarbons were detected at this location.

All results were well within expected normal background concentrations

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Location 6 (S&B Sample No 114933)

With regard to the analysis performed, significant contamination was found at Location 6. Low level concentrations of arsenic copper, chromium and zinc were detected, however, these results were below environmental investigation thresholds. The mercury result of 2.2 mg/kg is above the environmental investigation threshold of 1 mg/kg .

Low level hydrocarbon contamination in the C15 - C36 bands was also detected however this is well below the concentration of concern for these hydrocarbon bands which the Department of Environment has set at 1000 mg/kg.

Location 7 (S&B Sample No 114934)

With regard to the analysis performed, no significant contamination was found at Location 7. Low level concentrations of arsenic, lead, copper, chromium, zinc and mercury were detected, however, these results were below environmental investigation thresholds. The aluminium result of 41600 mg/kg is within normal background levels however is well above the concentrations found at other locations. No hydrocarbon contamination was detected at this location.

All results were well within expected normal background concentrations

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8. CONTAMINATION ASSESSMENT

On the basis of the preliminary sampling and analysis results, Lot 2 is considered to be free of contamination while Lot 11 is considered to be contaminated at Locations 3,4 and 6. These locations were all located within the area overlayed with fine gravel surrounding the concrete apron of the building.

Hydrocarbon concentrations which were above the threshold requiring an environmental investigation were found at Location 3 and 4. The results for these locations were well outside the environmental investigation thresholds and as such are considered to be contaminated.

Chromium, copper and zinc concentrations which were above the threshold requiring an environmental investigation (50 mg/kg, 60 mg/kg and 200 mg/kg respectively) were found at Location 4. The results indicate that the mobility of these metals are restricted by the clay component of the soils.

Mercury contamination above the environmental investigation threshold was detected at Location 6. The concentration (2.2 mg/kg) is slightly higher than the environmental investigation threshold of 1.0 mg/kg. The presence of elevated mercury at this location cannot be readily explained as all other locations recorded very low concentrations for this element. Further sampling and analysis may be required to confirm this result. Alternatively a TCLP test for mercury could be undertaken to determine the its mobility. (Expected to be low due to the high clay component of the soil)

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9. CONCLUSION

Based on the results of the preliminary investigation of **LOT 2, RP730118** AND **LOT 11 RP728865 ELVIN ST PAGET QLD** it is our assessment that remediation will be required at Locations 3,4 and 6 in the event of the following.

(1) Where change of land use is proposed (eg) rezoning, subdivision, change of consent use; or

(2) When land on the contaminated sites register is to be sold. This is not a legal requirement but often a potential purchaser requires an accurate appraisal of a site they are considering buying.

The preliminary results indicate that the mobility of the metals and hydrocarbons in these soils are restricted by the clay components of the soil. The area most likely requiring remediation due to hydrocarbon contamination is the fenced area overladen by fine gravel surrounding the rear of the building, to a depth of 0.8m. This assessment is based on the limited sampling and analysis.

To effectively minimise costs one requires the following with regard to site remediation.

The first requirement is to determine the full extent of the contamination. This must include not only the area affected but also the depth to which the contamination extends.

Once the areas have been isolated the contaminated soil can be removed subject to meeting the requirements of the regulatory authorities.

Once remediation has been completed than additional testing will be required to confirm that the remediation has been successful.

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Discussion with the local council and DOE will be required with regard to the hydrocarbon contaminated soil to determine if disposal at a secure landfill is required. Different local authorities sometimes have different requirements in this regard.

Provided the above works are carried out and all contamination removed the site could then be classified as a "Former Site".

Sch 4 - personal information

Manager (Central Queensland)
Scientific Services

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APPENDIX A

SITE LOCATION

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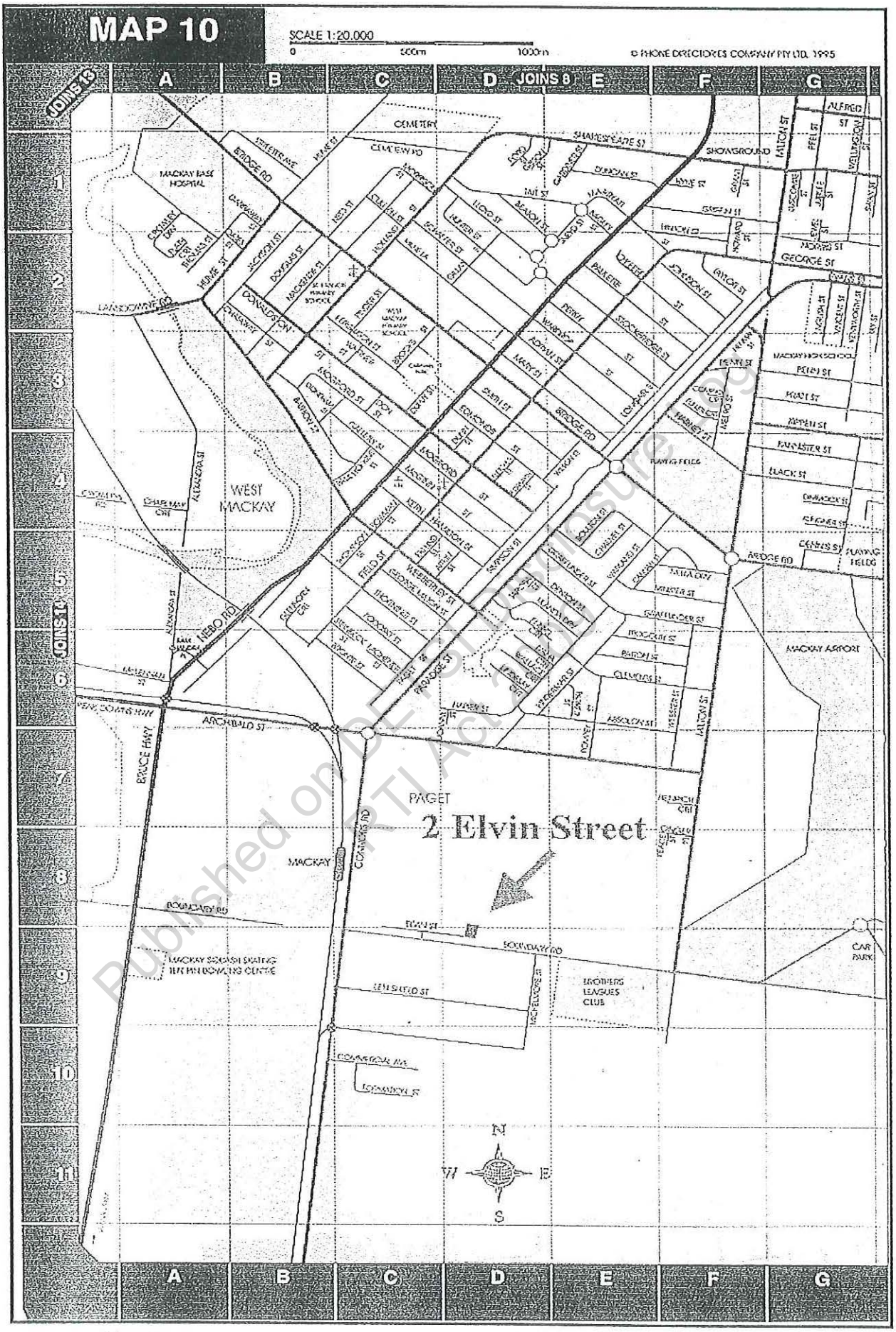

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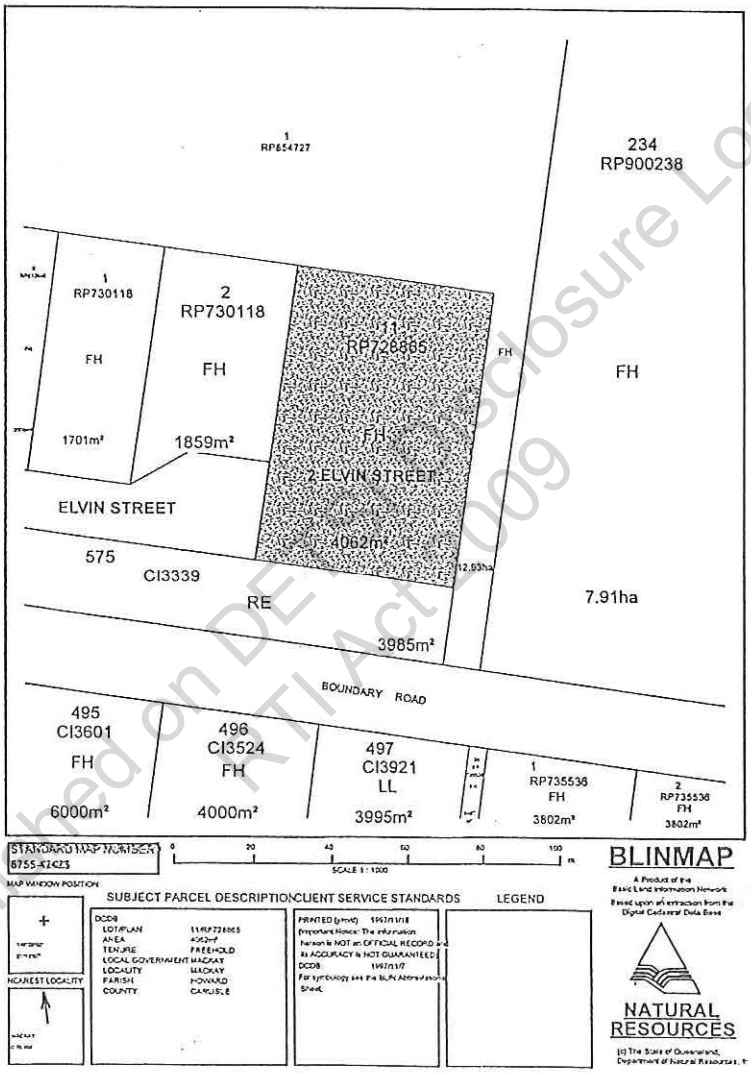

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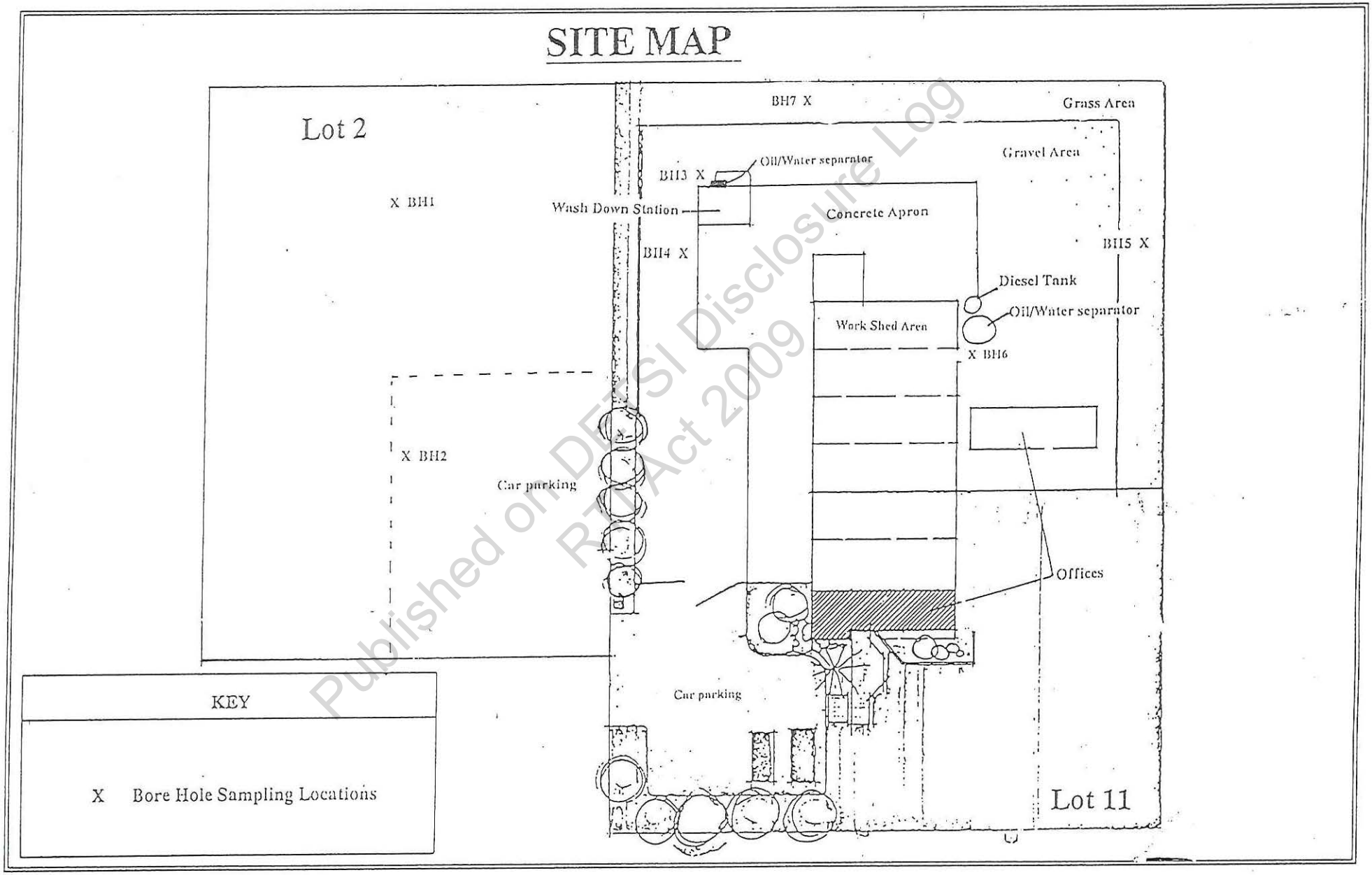
SITE MAP



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APPENDIX B

ANALYTICAL RESULTS

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SIMMONDS & BRISTOW PTY. LTD.
A.C.N. 010 252 418
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Rockhampton Q 4701
Ph: (079) 361 744
Fax: (079) 361 788

Detco

Ref. No: 31860

SOIL ANALYSIS

Sampled By: Client

Regd No	Sample Description	Collected	Received	Tested
114926	HOLE 1 (0.1-0.2/0.4-0.5)	3/04/96	9/04/96	9/04-24/04
114927	HOLE 2 (0.1-0.2/0.4-0.5)	3/04/96	9/04/96	9/04-23/04
114928	HOLE 3 (0.1-0.2)	3/04/96	9/04/96	9/04-23/04
S&B Method	Chemical Analysis	114926	114927	114928
	Analysis Description			
WC005.14	Aluminium as Al mg/kg	15400.	24200.	25700.
WC010.14	Arsenic as As mg/Kg	3.3	2.1	12.
WC030.14	Chromium as Cr mg/kg	<20.	<20.	<20.
WC040.14	Copper as Cu mg/kg	<10.	14.	58.
WC050.14	Lead as Pb mg/kg	<20.	<20.	<20.
WC067.14	Molybdenum as Mo mg/kg	<50.	<50.	<50.
WC105.14	Zinc as Zn mg/kg	102.	106.	116.
*WC065.14	Mercury as Hg mg/kg	<0.05	<0.05	<0.05
S&B Method	External Laboratories	114926	114927	114928
*OS065.01	Petroleum Hydrocarbons C6-C9 mg/kg	<2.	<2.	<2.
*OS065.02	Petroleum Hydrocarbons C10-C14mg/kg	<50.	<50.	52.
*OS065.03	Petroleum Hydrocarbons C15-C28mg/kg	<100.	<100.	179.
*OS065.04	Petroleum Hydrocarbons C29-C36mg/kg	<100.	<100.	229.
S&B Method	Analysis Description	114926	114927	114928
G040.	Conductivity @ 25°C uS/cm (1:5 Soil/Water Extract)	41.	104.	67.
G090.	pH Value @ 25°C (1:5 Soil/Water Extract)	6.6	7.1	8.3

* NATA Registration does not cover the performance of this service.

** Samples tested and reported on a "air dried weight" basis.

*** Samples prepared as per EPA 3050 digest prior to metals' analysis.

**** Mercury determined as per EPA method 245 and EPA 600/4-79-020.

SIMMONDS & BRISTOW PTY LTD

PER Sch 4 - personal information

April 30, 1996

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Detco

SOIL ANALYSIS

Sampled By: Client

Regd No	Sample Description	Collected	Received	Tested
114929	HOLE 3 (0.4-0.5)	3/04/96	9/04/96	9/04-23/04
114930	HOLE 4 (0.4-0.5)	3/04/96	9/04/96	9/04-23/04
114931	HOLE 4 (0.0-0.1)	3/04/96	9/04/96	9/04-23/04

S&B Method	Chemical Analysis	114929	114930	114931
	Analysis Description			
WC005.14	Aluminium as Al mg/kg	28200.	33000.	22800.
WC010.14	Arsenic as As mg/Kg	13.	11.	13.
WC030.14	Chromium as Cr mg/kg	28.	<20.	67.
WC040.14	Copper as Cu mg/kg	34.	124.	181.
WC050.14	Lead as Pb mg/kg	20.	<20.	210.
WC067.14	Molybdenum as Mo mg/kg	<50.	<50.	<50.
WC105.14	Zinc as Zn mg/kg	161.	146.	650.
*WC065.14	Mercury as Hg mg/kg	<0.05	<0.05	0.07

S&B Method	External Laboratories	114929	114930	114931
*OS065.01	Petroleum Hydrocarbons C6-C9 mg/kg	<2.	2.	3.
*OS065.02	Petroleum Hydrocarbons C10-C14mg/kg	<50.	236.	143.
*OS065.03	Petroleum Hydrocarbons C15-C28mg/kg	1210.	540.	15200.
*OS065.04	Petroleum Hydrocarbons C29-C36mg/kg	1000.	136.	17500.

S&B Method	Analysis Description	114929	114930	114931
G040.	Conductivity @ 25°C uS/cm (1:5 Soil/Water Extract)	132.	89.	126.
G090.	pH Value @ 25°C (1:5 Soil/Water Extract)	8.4	8.8	7.7

* NATA Registration does not cover the performance of this service.
** Samples tested and reported on a "air dried weight" basis.
*** Samples prepared as per EPA digest prior to metals' analysis.
**** Mercury determined as per EPA method 245 and EPA 600/4-79-020.

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Rockhampton Q 4701
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Fax: (079) 361 788

Detco

SOIL ANALYSIS

Sampled By: Client

Regd No	Sample Description	Collected	Received	Tested
114932	HOLE 5 (0.1-0.2)	3/04/96	9/04/96	9/04-23/04
114933	HOLE 6 (0.1-0.2)	3/04/96	9/04/96	9/04-23/04
114934	HOLE 7 (0.1-0.2)	3/04/96	9/04/96	9/04-23/04
S&B Method	Chemical Analysis	114932	114933	114934
	Analysis Description			
WC005.14	Aluminium as Al mg/kg	28600.	45200.	41600.
WC010.14	Arsenic as As mg/Kg	6.1	12.	10.
WC030.14	Chromium as Cr mg/kg	28.	30.	23.
WC040.14	Copper as Cu mg/kg	21.	28.	28.
WC050.14	Lead as Pb mg/kg	<20.	<20.	29.
WC067.14	Molybdenum as Mo mg/kg	<50.	<50.	<50.
WC105.14	Zinc as Zn mg/kg	166.	203.	170.
*WC065.14	Mercury as Hg mg/kg	<0.05	2.2	0.05
S&B Method	External Laboratories	114932	114933	114934
*OS065.01	Petroleum Hydrocarbons C6-C9 mg/kg	<2.	<2.	<2.
*OS065.02	Petroleum Hydrocarbons C10-C14mg/kg	<50.	<50.	<50.
*OS065.03	Petroleum Hydrocarbons C15-C28mg/kg	<100.	302.	<100.
*OS065.04	Petroleum Hydrocarbons C29-C36mg/kg	<100.	150.	<100.
S&B Method	Analysis Description	114932	114933	114934
G040.	Conductivity @ 25°C uS/cm (1:5 Soil/Water Extract)	44.	145.	70.
G090.	pH Value @ 25°C (1:5 Soil/Water Extract)	7.3	8.7	7.7

* NATA Registration does not cover the performance of this service.
** Samples tested and reported on a "air dried weight" basis.
*** Samples prepared as per EPA 3050 digest prior to metals' analysis.
**** Mercury determined as per EPA method 245 and EPA 600/4-79-020.

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SRAEB04273

TO SL
31860

ENVIRONMENTAL
GUARANTEED TESTING

SAMPLE RECEIPT ADVICE

COMPANY: SIMMONDS & BRISTOW PTY LTD
ATTENTION: sch 4 - personal informatio
DATE: Apr. 12, 1996
FROM: h 4 - personal informati ENV BRISBANE

ALS has received samples pertaining to your reference: 31860

For future reference the batch number on this order is: EB04273

All samples and paper work were received in good order.
Samples at ambient temperature when received.
Samples received in appropriately pretreated and preserved containers.
Please direct any turnaround/technical queries to h 4 - personal informati
Any queries relating to sample condition/numbering/breakages should be directed to ch 4 - personal informatio

You can expect results to be reported as detailed below:

All Environmental Results Apr. 20, 1996

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Fax (02) 899 3200

Melbourne
Phone (03) 853 5299
Fax (03) 853 0730

Perth Laboratory
Phone (09) 249 2988
Fax (09) 249 2942

23 APR 1996

ANALYTICAL REPORT

Sch 4 - personal information

CONTACT:
CLIENT: SIMMONDS & BRISTOW PTY LTD
ADDRESS: 30 SHOTTERY STREET
YERONGA QLD 4104

LABORATORY: ENV BRISBANE
BATCH NUMBER: EB4273
SUB BATCH: 0
No. OF SAMPLES: 9
DATE RECEIVED: 12/04/96
DATE COMPLETED: 22/04/96

ORDER No.: PO 1468
SAMPLE TYPE: SOIL
PROJECT: 31860

Method	Analysis description	Units	LOR	114926	114927	114928	114929
EP-071-SS	TOTAL PETROLEUM HYDROCARBONS						
	C6 - C9 Fraction	mg/kg	2	<2	<2	<2	<2
	C10 - C14 Fraction	mg/kg	50	<50	<50	52	<50
	C15 - C28 Fraction	mg/kg	100	<100	<100	179	1210
	C29 - C36 Fraction	mg/kg	100	<100	<100	229	1000

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Sch 4 - personal information

COMMENTS:

Samples analysed on an as received basis. Results reported on an as received basis. Sample preparation techniques: Semivolatile - Separatory Funnel and Tumbler, Volatile - Purge & Trap. Sample analysis techniques: Semivolatile components - GC/MS; TPH - GC/FID; Volatile components - GC/MS; Pesticides - GC/ECD, GC/MS.

• This is the Final Report which supersedes any preliminary reports with this batch number.
• Results apply to sample(s) as submitted by clier

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ANALYTICAL REPORT

Sch 4 - personal information

CONTACT:
CLIENT: SIMMONDS & BRISTOW PTY LTD
ADDRESS: 30 SHOTTERY STREET
YERONGA QLD 4104

LABORATORY: ENV BRISBANE
BATCH NUMBER: EB4273
SUB BATCH: 0
No. OF SAMPLES: 9
DATE RECEIVED: 12/04/96
DATE COMPLETED: 22/04/96

ORDER No.: PO 1468
SAMPLE TYPE: SOIL
PROJECT: 31860

Method	Analysis description	Units	LOR	114930	114931	114932	114933
EP-071-SS	TOTAL PETROLEUM HYDROCARBONS						
	C6 - C9 Fraction	mg/kg	2	2	3	<2	<2
	C10 - C14 Fraction	mg/kg	50	236	143	<50	<50
	C15 - C28 Fraction	mg/kg	100	540	15.2 g/kg	<100	302
	C29 - C36 Fraction	mg/kg	100	136	17.5 g/kg	<100	150

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COMMENTS:

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ANALYTICAL REPORT

Sch 4 - personal information

CONTACT:
CLIENT: SIMMONDS & BRISTOW PTY LTD
ADDRESS: 30 SHOTTERY STREET
YERONGA QLD 4104

LABORATORY: ENV BRISBANE
BATCH NUMBER: EB4273
SUB BATCH: 0
No. OF SAMPLES: 9
DATE RECEIVED: 12/04/96
DATE COMPLETED: 22/04/96

ORDER No.: PO 1468
SAMPLE TYPE: SOIL
PROJECT: 31860

Method	Analysis description	Units	LOR	114934
EP-071-SS	TOTAL PETROLEUM HYDROCARBONS			
	C6 - C9 Fraction	mg/kg	2	<2
	C10 - C14 Fraction	mg/kg	50	<50
	C15 - C28 Fraction	mg/kg	100	<100
	C29 - C36 Fraction	mg/kg	100	<100

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COMMENTS:

Sch 4 - personal information

• This is the Final Report which supersedes any preliminary reports with this batch number.
• Results apply to sample(s) as submitted by clien

ORGANICS QUALITY CONTROL REPORT

BATCH No. : EB4273 **DATE BATCH RECEIVED : 12/04/96**

CLIENT: Simmonds & Bristow **DATE BATCH COMPLETED :19/04/96**

Method Code	Test	Matrix	QC Lot Number	Date Samples Extracted	Date Samples Analysed
EP-071	TPH-Volatile	Soil	VOCS1018	14/04/96	17/04/96
	-Semivolatile	Soil	TPHT967	15/04/96	17/04/96

ORGFORM(60/0)

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BATCH QUALITY CONTROL

ALS EP-071 : Total Petroleum Hydrocarbons by Fractions

QC Lot No. : VOCS1018
MATRIX: Soil

ANALYST: Sch 4 - personal information

Volatile Components

COMPOUND	Level Of Reporting (LOR)	Blank Conc	Spike Conc	SPIKE RESULTS				Control Limits		
				SCS Conc	DCS Conc	Av. Rec.	RPD	Recovery (%)		RPD
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	%	Low	High	%
C6-C9	2.0	<LOR	50	48	47	96	2	88	108	20
C10	2.0	<LOR	5.8	6.2	6.3	108	1	76	115	20

COMMENTS :
1) The control limits are based on ALS laboratory statistical data. (Method QWI-ORG/06)
2) * : Recovery or RPD falls outside of the recommended control limits.

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BATCH QUALITY CONTROL

ALS EP-071 : Total Petroleum Hydrocarbons by Fractions

MATRIX: Soil

ANALYST: h 4 - personal informati

QC LOT No.: TPHT967

Semivolatile Components

COMPOUND	Level Of Reporting (LOR)	Blank Conc.	Spike Conc.	Spike Results				Control Limits		
				SCS Conc.	DCS Conc.	Av. Rec.	RPD	Recovery %		RPD
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	%	Low	High	%
C11-C14	50	<LOR	375	349	340	92	2	67	103	20
C15-C28	100	<LOR	195	191	187	97	2	67	105	20
C29-C36	100	<LOR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20

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REV: 1
DATE: 19.03.96

Benchmark

24-059

CLIENT	D.E.T.L.O.
ADDRESS	P.O. Box 5505 Mackay.
ADDRESS FOR REPORT	As Above.
CONTACT	Sonal
PHONE	(079) 522122
FAX	(079) 521314
PAGE	1 OF 1
POSTCODE	4740
POSTCODE	4740

PROJECT	Site Contamination Investigation
Ref No	
Project Leader	Sonal
Client Manager	
Report Due Date	

SPECIAL REQUIREMENTS/NOTES
Quote Q7468
Order No: 4215941

- ☐ Results Only (Covering Letter)
- ☐ Short Interpretation (One Page Only)
- ☐ Other .....
- ☐ Sample Bottles As Per DOE Requirements ☐ Yes ☐ No
- ☐ Routine Report (Monthly/Quarterly Contract)
- ☑ Detailed Interpretation (Hourly Charge)

Sampler's Name: Signed:

SAMPLE DESCRIPTION	DATE COLLECTED	TIME TAKEN (24:00)	No of Bottles	Analyses Required: 8/4												COMMENTS
				Cu Ni Pb Zn	Cu Ni Pb Zn	050865.	WC050.	WC040.	WC067.	WC010.	WC030.	WC105.	WC065.	WC205.	WC-14	
Hole 1 (0.1-0.2 / 0.4-0.5m)	3-4-96	10.15		/	/	/	/	/	/	/	/	/	/	/	/	1 Jar + Bag M.
Hole 2 (0.1-0.2 / 0.4-0.5m)	"			/	/	/	/	/	/	/	/	/	/	/	/	"
Hole 3 (0.1-0.2m)	"			/	/	/	/	/	/	/	/	/	/	/	/	"
Hole 3 (0.4-0.5m)	"			/	/	/	/	/	/	/	/	/	/	/	/	"
Hole 4 (0.4-0.5.m)	"			/	/	/	/	/	/	/	/	/	/	/	/	"
Hole 4 (0.0-0.1m)	"			/	/	/	/	/	/	/	/	/	/	/	/	"
Hole 5 (0.1-0.2m)	"			/	/	/	/	/	/	/	/	/	/	/	/	
Hole 6 (0.1-0.2m)	"			/	/	/	/	/	/	/	/	/	/	/	/	
Hole 7 (0.1-0.2m)	"			/	/	/	/	/	/	/	/	/	/	/	/	

RELINQUISHED BY: Sonal	DATE 3-4-96 TIME 13.45	RECEIVED BY	RELINQUISHED BY	DATE 9/4/96 TIME 6.10	RECEIVED BY
RELINQUISHED BY	DATE TIME	RECEIVED BY	RELINQUISHED BY	DATE TIME	RECEIVED BY
RELINQUISHED BY	DATE TIME	RECEIVED BY	RELINQUISHED BY	DATE TIME	RECEIVED BY

Published REPORT Disclosure Log 2009

SIMMONDS & BRISTOW PTY LTD
A.C.N. 010 252 418
WATER & ENVIRONMENTAL ANALYSTS & CONSULTANTS SINCE 1965

30 Shottery Street
Yeronga Q 4104
Ph: (07) 3848 7699
Fax: (07) 3892 3345

PO Box 2
Central Qld University
Rockhampton Q 4701
Ph: (079) 361 744
Fax: (079) 361 788

Ref. No.34177 DJB/RFW/ko

20 January 1997

The Manager
Detco
PO Box 5505
Mackay Mail Centre
MACKAY QLD 4700

Attention: Sch 4 - personal information

Dear Sir

ANALYSIS OF SOIL SAMPLES FOR LEACHATE TESTING

Two soil samples were received for testing on 17 December 1996 for TCLP testing. This test is done to assess the potential for the contaminants of interest to leach from the soil and hence become mobile whithin the environment.

The results of analysis are presented in the tables attached.

COMMENT

Site 4 - Sample Number 123543 and Leachate 123544

The sample of Site 4 underwent acid leachate followed by analysis for hydrocarbons. Significant levels of hydrocarbons were detected grouped mainly at the C15-C28 fraction at 1860 ug/L. The results indicate that the hydrocarbon contamination in this soil sample has a low to moderate leachate potential. The results further indicate that the soil is suitable for removal to an approved municipal landfill (unlined) if on site remediation is not appropiate or cost effective.

Site 6 - Sample Number 123545 and Leachate 123546

The sample of Site 6 underwent acid leachate followed by analysis for Mercury. No detectable levels of mercury were found with a result at < 0.01 mg/L being recorded in the leachate.The result indicates that the leachate potential and hence the mobility of mercury in this soil is very low.

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Please advise if you have any queries.

Yours faithfully
SIMMONDS & BRISTOW PTY LTD

Sch 4 - personal information

Senior Scientific Consultant

Encl.

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SIMMONDS & BRISTOW PTY LTD
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Rockhampton Q 4701
Ph: (079) 361 744
Fax: (079) 361 788

Detco

Ref. No: 34177

SOIL ANALYSIS

Sampled By: S&B S

Regd No	Sample Description	Collected	Received	Tested
123543	SITE 4 (0.0-0.1m)	16/12/96	17/12/96	17/12-14/01
123544	SITE 4 (0.0-0.1m)LEACHATE	16/12/96	17/12/96	17/12-14/01
123545	SITE 6 (0.1-0.2m)	16/12/96	17/12/96	17/12- 7/01
S&B Method	Chemical Analysis	123543	123544	123545
	Analysis Description			
WC065.12	Mercury as Hg			
S&B Method	External Laboratories	123543	123544	123545
*OS015	TCLP Analysis	DONE		
*OS065.01	Petroleum Hydrocarbons C6-C9 ug/L		<20.	
*OS065.02	Petroleum Hydrocarbons C10-C14 ug/L		297.	
*OS065.03	Petroleum Hydrocarbons C15-C28 ug/L		1860.	
*OS065.04	Petroleum Hydrocarbons C29-C36 ug/L		324.	
S&B Method	Analysis Description	123543	123544	123545
*SP015.	Toxicity Char. Leaching Procedure			DONE
SP015.1	Initial pH	6.6		6.6
SP015.2	pH After HCl	1.8		1.9
*SP015.3	Extraction Fluid Number	1		1
SP015.4	pH After Extract	5.0		5.0

* NATA Registration does not cover the performance of this service.
** All of these analyses were performed by ALS Ref No 7361.

SIMMONDS & BRISTOW PTY LTD

PER Sch 4 - personal information

January 15, 1997

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Central Qld University
Rockhampton Q 4701
Ph: (079) 361 744
Fax: (079) 361 788

Detco

Ref. No: 34177

SOIL ANALYSIS

Sampled By: S&B S

Regd No	Sample Description	Collected	Received	Tested
123546	SITE 6 (0.1-0.2m) LEACHATE	16/12/96	17/12/96	17/12- 7/01
S&B Method	Chemical Analysis	123546		
	Analysis Description			
WC065.12	Mercury as Hg mg/L	<0.01		
S&B Method	External Laboratories	123546		
*OS015	TCLP Analysis			
*OS065.01	Petroleum Hydrocarbons C6-C9 ug/L			
*OS065.02	Petroleum Hydrocarbons C10-C14 ug/L			
*OS065.03	Petroleum Hydrocarbons C15-C28 ug/L			
*OS065.04	Petroleum Hydrocarbons C29-C36 ug/L			
S&B Method	Analysis Description	123546		
*SP015.	Toxicity Char. Leaching Procedure			
SP015.1	Initial pH			
SP015.2	pH After HCl			
*SP015.3	Extraction Fluid Number			
SP015.4	pH After Extract			

* NATA Registration does not cover the performance of this service.
** All of these analyses were performed by ALS Ref No 7361.

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NATA

REV: 1
DATE: 19.03.96

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CLIENT DETCO.

PAGE 1 OF 1

ADDRESS P.O. Box 5505 MKY QLD

POSTCODE 4740

ADDRESS FOR REPORT P.O. Box 5505 MKY QLD

POSTCODE 4740

CONTACT Sch 4 - personal information

PHONE 52[illegible]23

FAX 521314

PROJECT Contaminated Site

Ref No

Project Leader S4 S

Client Manager S4 S

Report Due Date

☐ Results Only (Covering Letter) ☐ Routine Report (Monthly/Quarterly Contract)
☑ Short Interpretation (One Page Only) ☐ Detailed Interpretation (Hourly Charge)
☐ Other .....
☐ Sample Bottles As Per DOE Requirements ☐ Yes ☐ No

Sampler's Name: Sch 4 - personal information

SPECIAL REQUIREMENTS/NOTES
Refer to Sch 4 - personal inform to confirm analysis. etc.

SAMPLE DESCRIPTION	DATE COLLECTED	TIME TAKEN (24:00)	No of Bottles	Analytes Required: TCLP	MERCURY	TPH	ORDER REVIEWED Signed ..... Date	COMMENTS
Site 4 (0.0-0.1m)	16-12-96	9.25am		✓				Toxic Concentration
Site 6 (0.1-0.2m)	16-12-96	9.30am		✓	✓			leachate Potential
SITE 4 LEACHATE						~~17~~ 17/12		(TCLP).
SITE 6 LEACHATE					✓	~~17~~ 17/12		Concerns with:
								Site 4: Petroleum Hydrocarbon
								Site 6: Mercury

RELINQUISHED BY	DATE / TIME	RECEIVED BY	RELINQUISHED BY	DATE / TIME	RECEIVED BY
Sch 4 - personal information	16-12-96	Sch 4 - personal information		17/12 15:25	

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ENVIRONMENTAL GUARANTEED TESTING

SAMPLE RECEIPT ADVICE

COMPANY: SIMMONDS & BRISTOW PTY LTD
ATTENTION: h 4 - personal informat
DATE: Dec. 20, 1996
FROM: ch 4 - personal informatic ENV BRISBANE

ALS has received samples pertaining to your reference: 34177

For future reference the batch number on this order is: EB07361

All samples and paper work were received in good order.
Samples chilled when received.
Please direct any turnaround/technical queries to 4 - personal inform
Any queries relating to sample condition/numbering/breakages should be directed to ch 4 - personal informatio

You can expect results to be reported as detailed below:

All Environmental Results Jan. 09, 1997

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AUSTRALIAN LABORATORY SERVICES P/L
A.C.N. 009 936 029

Brisbane
Phone (07) 3243 7222
Fax (07) 3243 7218

Sydney
Phone (02) 9841 9500
Fax (02) 9841 9530

Melbourne
Phone (03) 9853 5299
Fax (03) 9853 0730

AUSTRALIAN LABORATORY SERVICES P/L
A.C.N. 009 936 029

ANALYTICAL REPORT

CONTACT:	Sch 4 - personal information
CLIENT:	SIMMONDS & BRISTOW PTY LTD
ADDRESS:	30 SHOTTERY STREET YERONGA QLD 4104

LABORATORY:	ENV BRISBANE
BATCH NUMBER:	EB7361
SUB BATCH:	0
No. OF SAMPLES:	1
DATE RECEIVED:	20/12/96
DATE COMPLETED:	14/01/97

ORDER No.: 34177 SAMPLE TYPE: TCLP LEACHATE PROJECT:

Method	Analysis description		Units	LOR	123545
ALS1	Initial pH			0.1	6.6
ALS2	After HCl pH			0.1	1.9
ALS3	Extraction Fluid Number			1	1
ALS4	pH After Extract			0.1	5.0
EG-020C	Mercury	- TCLP	mg/L	0.01	<0.01

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COMMENTS:

The concentrations reported are those determined on the TCLP leachate.
Extraction fluid #1 pH 4.88-4.98. Extraction fluid #2 pH 2.83-2.93.

Sch 4 - personal information

• This is the Final Report which supersedes any preliminary reports with this batch number.

• Results apply to sample(s) as submitted by clie

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Laboratories also in:
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Malaysia
Thailand
Hong Kong
New Zealand

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ANALYTICAL REPORT

Sch 4 - personal information

CONTACT:
CLIENT: SIMMONDS & BRISTOW PTY LTD
ADDRESS: 30 SHOTTERY STREET
YERONGA QLD 4104

LABORATORY: ENV BRISBANE
BATCH NUMBER: EB7361
SUB BATCH: 0
No. OF SAMPLES: 1
DATE RECEIVED: 20/12/96
DATE COMPLETED: 14/01/97

ORDER No.: 34177
SAMPLE TYPE: QUALITY CONTROL
PROJECT:

Method	Analysis description		Units	LOR	BLANK	123545 %SPK REC		123545 CHK
ALS1	Initial pH			0.1	----	----		----
ALS2	After HCl pH			0.1	----	----		----
ALS3	Extraction Fluid Number			1	1	----		----
ALS4	pH After Extract			0.1	4.9	----		----
EG-020C	Mercury	- TCLP	mg/L	0.01	<0.01	93.0	%	<0.01

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COMMENTS:

Results which appear on this report are for laboratory QUALITY CONTROL purposes.

Sch 4 - personal information

• This is the Final Report which supersedes any preliminary reports with this batch number.
• Results apply to sample(s) as submitted by clie

Brisbane
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AUSTRALIAN LABORATORY SERVICES P/L
A.C.N. 009 936 029

ANALYTICAL REPORT

Sch 4 - personal information

CONTACT:
CLIENT: SIMMONDS & BRISTOW PTY LTD
ADDRESS: 30 SHOTTERY STREET
YERONGA QLD 4104

LABORATORY: ENV BRISBANE
BATCH NUMBER: EB7361
SUB BATCH: 1
No. OF SAMPLES: 1
DATE RECEIVED: 20/12/96
DATE COMPLETED: 14/01/97

ORDER No.: 34177
SAMPLE TYPE: TCLP LEACHATE
PROJECT:

Method	Analysis description	Units	LOR	123543
ALS1	Initial pH		0.1	6.6
ALS2	After HCl pH		0.1	1.8
ALS3	Extraction Fluid Number		1	1
ALS4	pH After Extract		0.1	5.0
EP-071-WS	TOTAL PETROLEUM HYDROCARBONS			
	C6 - C9 Fraction	ug/L	20	<20
	C10 - C14 Fraction	ug/L	25	297
	C15 - C28 Fraction	ug/L	25	1860
	C29 - C36 Fraction	ug/L	25	324

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Sch 4 - personal information

COMMENTS:

The concentrations reported are those determined on the TCLP leachate.
Extraction fluid #1 pH 4.88-4.98. Extraction fluid #2 pH 2.83-2.93.

• This is the Final Report which supersedes any preliminary reports with this batch number.
• Results apply to sample(s) as submitted by clie

Brisbane
Phone: (07) 3243 7222 Fax: (07) 3243 7218
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VOLUME 2

APPENDIX H

BOREHOLE LOG REPORT SHEETS

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BOREHOLE LOG REPORT SHEET

Client: DETCO — Borehole No. 4
Project : Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.100	GW		ROADBASE
	CH		CLAY – Black clay, stiff, high plasticity
1.100			
	CL\CH		CLAY – Brown clay, moist, stiff, medium plasticity
2.000			
			B.H.T.

BOWLER GEOTECHNICAL (WHITSUNDAY) Pty Ltd
Unit 12 Woodman Parade
Mackay Qld 4740
Ph 524750 Fax 524173

PAGE 1 OF 1

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BOREHOLE LOG REPORT SHEET

Client: DETCO — Borehole No. 8
Project: Site Investigation
Location: AS PER LOCATION MAP, DETROIT DEISEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
	GW		ROAD BASE–Well–graded gravel, blue metal *SAMPLE
0.900			
	CH		CLAY– Grey/brown clay, moist, stiff, medium/high plasticity *SAMPLE
1.500			
	CL/CH		CLAY– Brown clay, moist, stiff, medium plasticity *SAMPLE
2.000			
			B.H.T.

BOWLER GEOTECHNICAL (WHITSUNDAY) Pty Ltd
Unit 12 Woodman Parade
Mackay Qld 4740
Ph 524750 Fax 524173

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BOREHOLE LOG REPORT SHEET

Client: DETCO — Borehole No. 9
Project: Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.700	GW		ROAD BASE–Well–graded gravel *SAMPLE
1.100	CH		CLAY– Black clay, moist, stiff, high plasticity *SAMPLE
2.000	CL/CH		CLAY– Brown clay, moist, stiff, medium plasticty *SAMPLE
			B.H.T.

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BOREHOLE LOG REPORT SHEET

Client: DETCO — Borehole No. 10
Project: Site Investigation
Location: AS PER LOCATION MAP, DETROIT DEISEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.400	GW		GRAVEL– Brown ridge gravel, well graded, dense, low plasticity *SAMPLE
1.100	CH		CLAY– Black clay, moist, stiff, medium–high plasticity *SAMPLE
2.000	CL/CH		CLAY– Brown clay, moist, stiff, medium plasticity *SAMPLE
			B.H.T.

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BOREHOLE LOG REPORT SHEET

Client: DETCO
Borehole No. 11
Project: Site Investigation
Location: AS LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation :
Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
	GW		GRAVEL– Road Base
0.400			
	CH		CLAY– Black clay, moist, stiff, medium–high plasticity *SAMPLE
1.100			B.H.T.

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BOREHOLE LOG REPORT SHEET

Client: DETCO
Borehole No. 12
Project : Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation :
Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
	GW		GRAVEL– Road Base
0.300			
	CH		CLAY– Black clay, moist, stiff, high plasticity
			*SAMPLE
1.100			
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BOREHOLE LOG REPORT SHEET

Client: DETCO — Borehole No. 13
Project: Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
	GW		GRAVEL– Road base, dense, well graded low plasticity *SAMPLE
0.600			
	CH		CLAY– Black clay, moist, stiff, high plasticity
1.200			
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Client: DETCO — Borehole No. 14
Project: Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
	GW		GRAVEL– Well graded, dense, moist, low plasticity *SAMPLE
0.400			
0.500	SP		BEDDING SAND– Orange/brown, moist, medium grained, non plastic
	CH		CLAY– Black clay, moist, stiff, high plasticity *SAMPLE
1.000			
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BOREHOLE LOG REPORT SHEET

Client: DETCO — Borehole No. 15
Project: Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
	GW		GRAVEL– Roadbase *SAMPLE
0.600			
	CH		CLAY– Black clay, moist, stiff, medium plasticity *SAMPLE
1.000			
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BOREHOLE LOG REPORT SHEET

Client: DETCO — Borehole No. 16
Project: Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
	GW		GRAVEL– Roadbase *SAMPLE
0.400			
0.500	SP		BEDDING SAND – Orange/brown, moist, medium grained, non–plastic
	CH		CLAY– Black clay, moist, gravelly, stiff, high plasticity
0.800			
	CH		CLAY– Black clay, moist, stiff, high plasticity *SAMPLE
1.100			B.H.T.

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BOREHOLE LOG REPORT SHEET

Client: DETCO — Borehole No. 17
Project: Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.100			CONCRETE
0.400	SP		BEDDING SAND – Orange/brown, moist, medium grained, non–plastic
0.800	CL/CH		CLAY – Sandy clay, black, wet, medium plasticity, sand is fine, trace of fine silt *SAMPLE
1.300	CH		CLAY – Black clay, moist, stiff, high plasticity
2.000	CL/CH		CLAY – Brown clay, moist, stiff, medium plasticity
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BOREHOLE LOG REPORT SHEET

Client: DETCO — Borehole No. 18

Project : Site Investigation

Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.

Position: REFER SITE SKETCH, FIGURE 1.

Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.100			CONCRETE SLAB
0.300	SP		BEDDING SAND – Orange/brown, moist, medium grained, non–plastic
0.500	CL/CH		CLAY – Sandy black clay, medium plasticity, sand is fine
1.000	CH		CLAY – Black clay, moist, high plasticity
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Client: DETCO — Borehole No. 19
Project: Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.100			CONCRETE SLAB
0.400	SP		BEDDING SAND – Orange/brown, moist, medium grained, non–plastic
1.000	CH		CLAY – Black clay, moist, sandy, stiff, medium–high plasticity, sand is fine
2.000	CH		CLAY – Green clay, moist, stiff, high plasticity
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Client: DETCO — Borehole No. 20
Project: Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.100			CONCRETE SLAB
	SP		BEDDING SAND– Orange/brown, moist, medium grained, non–plastic
0.400			
0.500	CL/CH		CLAY– Black clay, sandy, wet
	CH		CLAY– Black clay, moist, stiff, high plasticity
1.000			B.H.T.

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Client: DETCO — Borehole No. 21
Project: Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.100			CONCRETE
	SP		BEDDING SAND – Orange/brown, moist, medium grained, non–plastic
0.400			
	CL/CH		CLAY – Black clay, moist, silty, medium plasticity
0.600			
	CH		CLAY – Black clay, moist, stiff, high plasticity
1.000			B.H.T.

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Client: DETCO — Borehole No. 24
Project : Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.100			CONCRETE
0.300	SP		BEDDING SAND – Orange/brown, moist, medium grained, non–plastic
0.800	GW		GRAVEL – Rocky, aggregate
1.000	CH		CLAY – Black clay, moist, high plasticity
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Client: DETCO — Borehole No. 25

Project: Site Investigation

Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.

Position: REFER SITE SKETCH, FIGURE 1.

Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.100			CONCRETE
0.250	SP		BEDDING SAND – Orange/brown, moist, medium grained, non–plastic
0.450	GW		GRAVEL – Fine grey gravel, trace of clay, moist, sandy
0.650	CH		CLAY – Sandy black clay, moist, soft, high plasticity
1.000	CH		CLAY – Black clay, stiff, moist, high plasticity
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Client: DETCO — Borehole No.26

Project: Site Investigation

Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.

Position: REFER SITE SKETCH, FIGURE 1.

Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.100			CONCRETE
	SP		BEDDING SAND – Orange/brown, moist, medium grained, non–plastic
4.000			
0.500	SC		SAND– Grey sand, moist, clayey, low plasticity, sand is fine , soft
	CH		CLAY– Black clay, moist, stiff, high plasticity
1.000			
	CH		CLAY– Green clay, moist, stiff, high plasticity
1.500			
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Client: DETCO — Borehole No. 27
Project: Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.150			CONCRETE
	SP		BEDDING SAND – Orange/brown, moist, medium grained, non–plastic
4.000	CL/CH		CLAY – Brown clay, wet, sandy, soft, medium plasticity
0.500			
	CH		CLAY – Black clay, moist, stiff, high plasticity
1.000			
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BOREHOLE LOG REPORT SHEET

Client: DETCO — Borehole No. 28
Project: Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
	GW		ROADBASE – Gravel
0.300			
4.000	SC		SAND – Grey sand, moist, clayey, low plasticity, sand is fine
	CH		CLAY – Black clay, moist, stiff, high plasticity
1.000			B.H.T.

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BOREHOLE LOG REPORT SHEET

Client: DETCO — Borehole No. 29
Project: Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.450	GW		ROAD BASE–Fine grained gravel, with some stone up to 19.0mm
1.000	CH		CLAY– Black clay, stiff high plasticity
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BOREHOLE LOG REPORT SHEET

Client: DETCO — Borehole No. 30
Project : Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
	GW		ROAD BASE–Gravel, clayey, well–graded gravel, medium plasticity
0.400			
	CH		CLAY– Black clay, stiff, high plasticity
1.000			B.H.T.

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BOREHOLE LOG REPORT SHEET

Client: DETCO — Borehole No. 31
Project : Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.500	CL/CH		GRAVEL– Brown clay, moist, fine grained, clayey, stiff, medium plasticity
0.700	CH		CLAY– Black clay, stiff moist, high plasticity
1.100	CH		CLAY– Green clay, moist, stiff, high plasticity
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BOREHOLE LOG REPORT SHEET

Client: DETCO — Borehole No. 32
Project: Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.500			ROCK–FILL
0.600			BLACK SLUDGE
1.000	CH		CLAY– Black clay, stiff, high plasticity
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Client: DETCO — Borehole No. 33

Project : Site Investigation

Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.

Position: REFER SITE SKETCH, FIGURE 1.

Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
1.000			ROCK–FILL
1.100			WATER SLUDGE
1.400			CLAY– Black clay, moist, stiff, high plasticity
2.000			CLAY– Green clay, stiff, moist, high plasticity
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Client: DETCO — Borehole No. 34
Project : Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: - REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.600			ROCK–FILL–Coarse gravel, little to no fines, up to 75.0mm low plasticity, dense
0.700	SC		CLAY– Sandy clay, yellow/brown, soft, moist, medium plasticity
0.800	CH		CLAY– Black clay, stiff, moist, high plasticity
1.500	CH		CLAY– Green clay, moist, stiff, high plasticity
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Client: DETCO — Borehole No. 35
Project: Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
	GW		GRAVEL– Roadbase
0.500			
	CH		CLAY– Black clay, moist, stiff, high plasticity
0.700	CH		CLAY– Green/black clay, moist, stiff, high plasticity
2.000			
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Client: DETCO — Borehole No. 36
Project: Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
	GW		GRAVEL– Rocky gravel, low plasticity, little fines
0.200			up to 300mm
0.300	CH		CLAY– Black clay, stiff, high plasticity
	SP		BEDDING SAND– Orange/brown, moist, medium grained, non–plastic
0.600			
	CH		CLAY– Black clay, stiff, high plasticity
0.800			
	CH		CLAY– Green clay, moist, stiff, high plasticty
1.100			
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Client: DETCO — Borehole No. 37
Project: Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.600	GW		GRAVEL– Well–graded gravel, roadbase, moist, low plasticity
0.800	CH		CLAY– Black clay, stiff, high plasticity
2.000	CH		CLAY– Green clay, moist, stiff, high plasticity
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BOREHOLE LOG REPORT SHEET

Client: DETCO — Borehole No. 38
Project : Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.300	GW		GRAVEL– Brown gravel, rocky, clagey, moist, m.p.s. up to 300mm
0.600	SP		BEDDING SAND – Orange/brwon, moist, medium grained, non–plastic
0.900	CH		CLAY– Black clay, stiff, high plasticity
1.500	CH		CLAY– Green clay, moist, stiff, high plasticity
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Client: DETCO — Borehole No. 39
Project : Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.300	SP		BEDDING SAND – Orange/brown, moist, medium grained, non–plastic
0.500	GW		GRAVEL – Fine gravel, clayey, moist, medium plasticity
0.800	CL/CH		CLAY – Brown clay, stiff, medium plasticity
1.300	CH		CLAY – Black clay, stiff, high plastcity
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Client: DETCO — Borehole No. 40
Project : Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.200			TRAIN SLEEPERS
0.500	CL/CH		CLAY – Grey/green clay, sandy, medium plasticity, sand is fine, moist, soft
1.400	CH		CLAY – Black clay, stiff, high plasticity
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BOREHOLE LOG REPORT SHEET

Client: DETCO — Borehole No.41

Project: Site Investigation

Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.

Position: REFER SITE SKETCH, FIGURE 1.

Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.100			CONCRETE
	SP		BEDDING SAND– Orange/brown, moist, medium grained, non–plastic
0.500			
	CH		CLAY– Black clay, stiff, high plasticity
1.000			
			B.H.T.

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BOREHOLE LOG REPORT SHEET

Client: DETCO — Borehole No. 42
Project: Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.100			CONCRETE
0.400	SP		BEDDING SAND – Orange/brown, moist, medium grained, non–plastic
0.500	SC		CLAY – Sandy clay, yellow/brown, soft, moist, medium plasticity
0.800	CH		CLAY – Black clay, stiff, high plasticity
2.000	CH		CLAY – Green clay, stiff, moist, high plasticity
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BOREHOLE LOG REPORT SHEET

Client: DETCO — Borehole No. 43
Project: Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.100			CONCRETE
	SP		BEDDING SAND – Orange/brown, moist, medium grained, non–plastic
0.600			
	CH		CLAY – Black clay, stiff, high plasticity
1.000			
			B.H.T.
2.000			
			B.H.T.

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BOREHOLE LOG REPORT SHEET

Client: DETCO — Borehole No. 44
Project : Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.100			CONCRETE
	SP		BEDDING SAND – Orange/brown, moist, medium grained, non–plastic
0.400			
	CH		CLAY – Black clay, stiff, high plasticity
1.000			
			B.H.T.

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BOREHOLE LOG REPORT SHEET

Client: DETCO — Borehole No. 45
Project: Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.100			CONCRETE
0.200	SP		CLEAN BEDDING SAND – Yellow, moist, medium grained
0.400	SP		BEDDING SAND – Grey coarse sand, moist, non–plastic
1.000	CH		CLAY – Black clay, stiff, high plasticity
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BOREHOLE LOG REPORT SHEET

Client: DETCO — Borehole No. 46
Project: Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.100			CONCRETE
	SP		BEDDING SAND – Orange/brown, moist, medium grained, non–plastic
0.400			
	CH		CLAY – Black clay, stiff, high plasticity
1.000			B.H.T.

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BOREHOLE LOG REPORT SHEET

Client: DETCO — Borehole No.47
Project : Site Investigation
Location: AS PER LOCATION MAP, DETROIT DIESEL DEPOT, EVLIN STREET PAGET.
Position: REFER SITE SKETCH, FIGURE 1.
Surface Evaluation : — Date: 30–31/1/97

Depth (m)	GROUP SYMBOL	D.C.P BLOWS	Visual Soil Description (moisture, colour, structure, soil type etc.)
0.100			CONCRETE
	SP		BEDDING SAND – Orange/brown, moist, medium grained, non–plastic
0.500			
	CH		CLAY – Black clay, stiff, high plasticity
1.000			
			B.H.T.

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