GROUNDWATER TECHNOLOGY
A.C.N. 003 931 057

Groundwater Technology Australia Pty Limited
Unit 5/31 Thompson Street, Bowen Hills QLD 4006 Australia
Telephone: (07) 252 5711 Fax: (07) 252 5712

# ENVIRONMENTAL SITE ASSESSMENT
# BP GYMPIE
# TOZER STREET
# GYMPIE, QUEENSLAND

March 1993.

Presented to:
BP Australia Ltd.
BP House
193 North Quay
Brisbane, Queensland 4000

Published on DES Disclosure Log
RTI Act 2009

Prepared by:

sch4p4(6) Personal information
Environmental Scientist

sch4p4(6) Personal inform
Project Manager

Our Ref: R314/B7162

April 1993

*Dedicated to Environmental Solutions*

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## PROPERTY DESCRIPTION

**Local authority:** Gympie City Council

**Information Provided by:**

KAMS Management Service,
P.O. 296,
EVERTON PARK. QLD. 4053.

Telephone:(07) 355 3134

**Site:**

BP Gympie,
Tozer Street,
Gympie, Queensland. 4570.

**Lot - on - Plan Description:**
Lot(s) L2/MCH5328, L1.3/MPH14207, L1/MPH23976, L3/MPH24262
Miners Homestead No. 144, Gympie Mining District, Parish of Gympie.

**Name and Postal Address of Owner:** Queensco Foods Co-operative Association Ltd.,
P.O. Box 2,
GYMPIE, QLD. 4570

**Prescribed Purpose:** Petroleum Depot/Service Station
**Current Zoning:** 20 Industry/service station
**Proposed Zoning:** No Proposed Change

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## EXECUTIVE SUMMARY

BP Australia Ltd. contracted Groundwater Technology Australia Pty. Ltd. to complete an environmental site assessment at the BP Depot/Service Station, Tozer Street, Gympie, Queensland. BP Australia is undertaking this work as part of an ongoing assessment of petroleum facilities in Queensland.

Historical details of the site were not available at the time of site assessment. The site is located on an old gold mining lease.

The site is located on a shale ridge with siltstone and slate components. Soils are very shallow overlying a weathered bedrock profile. Groundwater was not encountered during assessment. QWRC Bundaberg office indicated that bore usage in close proximity to the site is unlikely.

Hydrocarbon concentrations above CHEM Unit investigation thresholds were only present in one soil sampled on site (SB2 1.0m). This sample was analysed by non-NATA registered laboratory. Soil samples from above and below this depth contained hydrocarbon concentrations below CHEM Unit investigation thresholds. SB2 was drilled at the point where the spoon drain meets the site boundary.

Results of the site assessment do not indicate that major hydrocarbon impact of the subsurface has occurred on site.

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GROUNDWATER TECHNOLOGY

# 1. INTRODUCTION

BP Australia Ltd. contracted Groundwater Technology Australia Pty. Ltd. to complete an environmental site assessment at the BP Depot/Service Station, Tozer Street, Gympie, Queensland (Figure 1). Land title documents are presented in Appendix A. BP Australia is undertaking this work as part of an ongoing assessment of petroleum facilities in Queensland.

## 1.1 Objectives

The objectives of this work were to:

- provide an initial estimate of the extent and distribution of hydrocarbons and lead (if any) at the site,
- identify potential sources and receptors of hydrocarbons or lead.

## 1.2 Scope of Work

The scope of work included:

- collection of background data,
- completion of a soil gas survey,
- drilling of soil borings with hollow stem auger equipped drill rig,
- collection of selected soil samples and field screening,
- laboratory analyses of selected soil samples,
- preparation of report.

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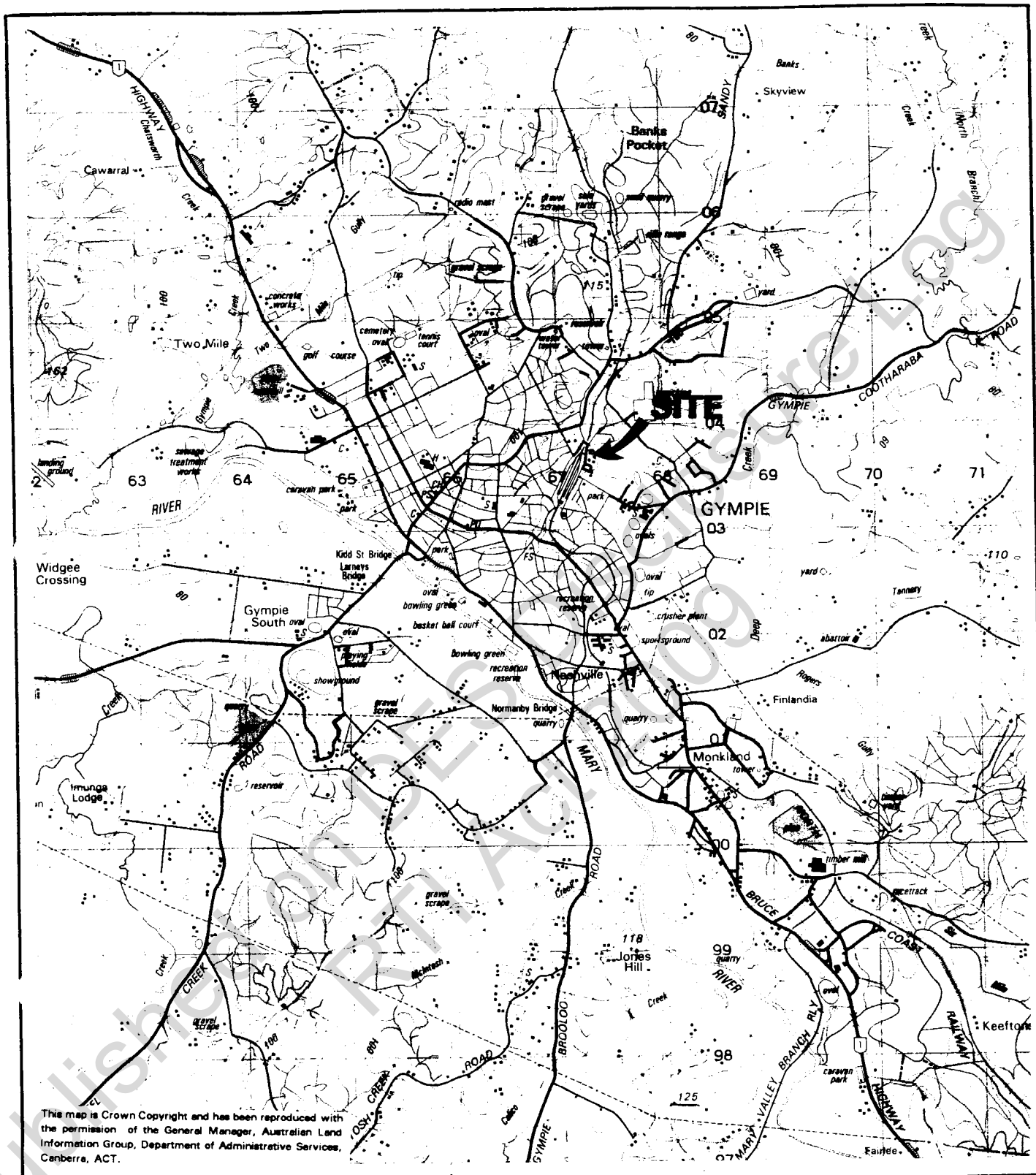
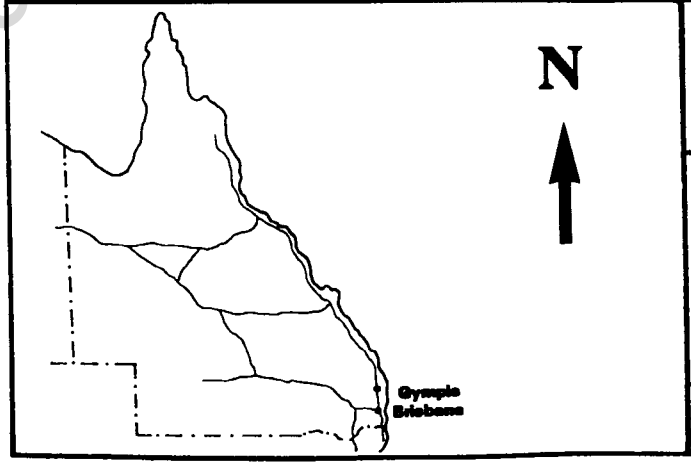



This map is Crown Copyright and has been reproduced with the permission of the General Manager, Australian Land Information Group, Department of Administrative Services, Canberra, ACT.




GROUNDWATER TECHNOLOGY

# BP AUSTRALIA LTD
# BP GYMPIE DEPOT

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## SITE LOCATION MAP

| | | | |
|---|---|---|---|
| Data by : CD | Date : February 1993 | Job No : B7162 |
| Drawn by : | Scale : 1:50 000 | Figure No : 1 |

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# 2. BACKGROUND INFORMATION

## 2.1 Site Description

The petroleum storage and retail facility is part of a dairy goods processing factory. The site is located on a shale ridge. Surrounding land is undulating and gently undulating. The site slopes from the south west down to the north east in terraces. Land drops away rapidly along the north east edge of the forecourt. Grazing land is located down slope. Details of tank locations are shown on Figure 2 (Site Map).

## 2.2 Site History

Title search details indicate that the site is owned by Queensco Food Co-operative Association Limited. The operational history of the site is not known. The land was previously a gold mining lease.

Approximately 400 litres of motor spirit was spilled in the vicinity of the tanks/pumps, approximately one month before assessment. Motor spirit flowed along a shallow drain at the edge of the forecourt and then off-site. Hydrocarbon odours were noted at the time of spillage up to 400 metres away in Tozer Lane.

## 2.3 Site Inspection

Site inspection was completed on 1 February, 1993. The site is mainly surfaced with asphalt. No major hydrocarbon staining was observed. Photographs taken at the time of site inspection and assessment are presented in Appendix B.

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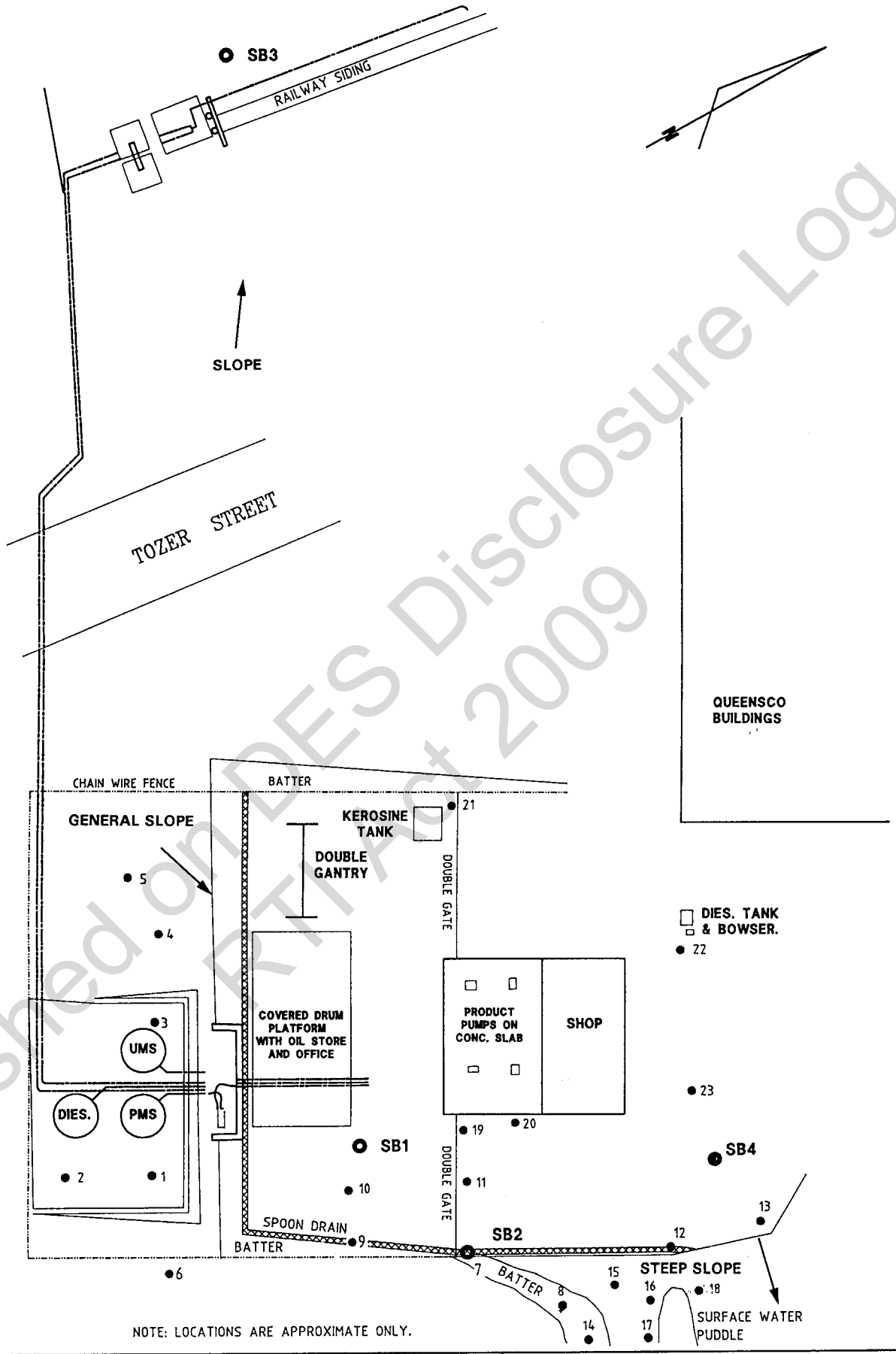


NOTE: LOCATIONS ARE APPROXIMATE ONLY.

**LEGEND**

- ● 10 VAPOUR POINTS
- ◎ SB1 SOIL BORING

**SITE PLAN**
**BP SERVICE STATION**
**TOZER STREET**
**GYMPIE QUEENSLAND**

2.5 0 2.5 5.0 7.5 10 12.5 metres
APPROX. SCALE ONLY

GROUNDWATER TECHNOLOGY

| | | | |
|---|---|---|---|
| Data by: | C.D./I.B.F. | Figure No: | 2 |
| Date: | FEBRUARY 1993 | Job No: | B7162 |

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### 2.4 Regional Geology and Hydrogeology

Interpretation of the 1:250 000 Gympie Geology Sheet SG5610 indicates that the site overlies Gympie Group rocks of Permian Age. The Gympie Group is composed of andesite, agglomerate, rhyolite, shale, siltstone, conglomerate, limestone and greywacke. The Gympie area is characterised by common faulting and associated mineralisation. Underground gold mining has occurred in close proximity to the site .

Queensland Water Resources Commission (QWRC) Bundaberg office indicated that bore usage within close proximity to the site is unlikely. Gympie town water supply is drawn from the Mary River.

## 3. ENVIRONMENTAL INVESTIGATION

### 3.1 Soil Gas Survey

A soil gas survey comprising 23 vapour points was completed on 1 February, 1993 Vapour points were located to evaluate areas of potential hydrocarbon impact and migration (tanks, drum store, gantry and site boundaries). The location of vapour points are shown on Figure 2. Soil gas survey results are presented in Appendix C. Soil gas survey methodology is detailed in Appendix D.

### 3.2 Drilling Programme

Four soil borings (SB1 to SB4) were drilled on 2 & 3 February, 1993 using a drill rig equipped with hollow stem augers. Soil samples collected during drilling were field screened for volatile organic compound (VOC) concentrations and selected samples were sent for laboratory analysis. Sampling protocols are detailed in Appendix D. Locations of monitoring wells are shown on Figure 2 (Site Plan). Details of the soil profile encountered and VOC recordings are shown on drill logs (Appendix E).



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### 3.3 Laboratory Analysis

Selected soil samples were sent to a National Association of Testing Authorities (NATA) registered laboratory for analysis for total petroleum hydrocarbons (TPH), constituent hydrocarbon chain length groups, benzene, toluene, xylene, ethyl benzene (BTXE) and total lead. Sampling and analysis protocols are presented in Appendix D.

Additional samples were sent to Groundwater Technology Australia's laboratory. The laboratory is not currently NATA registered. Sample results are included to provide extra data.

## 4. RESULTS

### 4.1 Site Geology and Hydrogeology

The soil profile within four soil borings was composed broadly of roadbase and/or silty clay overlying weathered siltstone. Within SB1, SB2 and SB4 the weathered siltstone displayed a slaty cleavage dipping to the north east at approximately 45°. Permeability along the cleavage/fractures is likely to be relatively high. Weathered siltstone overlies bedrock (probably firm siltstone) which was indicated by auger refusal at 4.0 metres in SB1 and SB2 and >5.8 metres in SB4. Groundwater was not encountered within the completed scope of work. Given the site location on a rise and the permeability of site geology, it is not expected that shallow groundwater is present. Full details of strata encountered on site are shown on drill logs Appendix E).

### 4.2 Extent and Distribution of Hydrocarbons

Subsurface hydrocarbons occur primarily in the following four phases.

1. Vapour phase hydrocarbons in the soil pore space.
2. Adsorbed phase hydrocarbons in the soil matrix.
3. Separate phase hydrocarbons on the groundwater table.
4. Dissolved phase hydrocarbons in the groundwater.



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### 4.2.1 Vapour Phase Hydrocarbons

Soil gas survey indicated that elevated VOC concentrations were present in the vicinity of the:

- bunded tank area;
- shallow drain below bunded area leading off site;
- area down gradient of product pumps;

The scope of the soil gas survey was limited due to shallow rocky strata.

### 4.2.2 Adsorbed Phase Hydrocarbons

Laboratory analysis results are summarised below in Table 1. Laboratory reports are presented in Appendix F.

**TABLE 1:**
**Soil Sample Laboratory Results**
**Samples Collected on 2 & 3 February, 1993**
**Results in parts per million (ppm)**

| Sample | MW | Depth | TPH | $C_6$-$C_9$ | $C_{10}$-$C_{14}$ | $C_{15}$-$C_{28}$ | $C_{29}$-$C_{36}$ | B | T | X | E | Pb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IF013 | SB1 | 0.5m | 8.6 | ND | ND | ND | ND | ND | ND | 0.8 | ND | 14 |
| IF015 | SB1 | 3.0m | ND | ND | ND | ND | ND | ND | ND | ND | ND | 17 |
| IF017 | SB2 | 0.5m | 46.9 | ND | 13.2 | 33.6 | ND | ND | ND | ND | ND | 14 |
| IF019 | SB2 | 3.5m | ND | ND | ND | ND | ND | ND | ND | ND | ND | 16 |
| IF021 | SB3 | 2.0m | ND | ND | ND | ND | ND | ND | ND | ND | ND | 16 |
| IF024 | SB4 | 2.5m | ND | ND | ND | ND | ND | ND | ND | ND | ND | 150 |
| IF025 | SB4 | 4.0m | ND | ND | ND | ND | ND | ND | ND | ND | ND | 15 |
| IF016* | SB1 | 4.0m | 0.1 | ND | ND | ND | ND | ND | ND | ND | 0.1 | 21 |
| IF018* | SB2 | 1.0m | 1837 | ND | 465 | 1372 | ND | ND | ND | ND | ND | 53 |
| IF020* | SB3 | 0.5m | 56 | ND | 33 | 23 | ND | ND | ND | ND | ND | 79 |
| Method Detection Limits | | | 5 | 5 | 5 | 5 | 5 | 0.5 | 0.5 | 0.5 | 0.5 | 4 |
| Regulatory Thresholds - CHEM Unit | | | | $C_6$-$C_{10}$ | $C_{10}$-$C_{16}$ | $C_{17}$-$C_{36}$ | | MAH's | | | | |
| Draft March 1991 | | | | 100 | 100 | 1000 | | 7 | | | | 200 |
| January 1992 | | | | | | | | 1 | | | | 300 |

TPH = total petroleum hydrocarbons; B = benzene; T = toluene; X = xylene; E = ethyl benzene; MAH = monocyclic aromatic hydrocarbons(BTXE); ND = below method detection limits. Concentrations above regulatory thresholds are highlighted. *Results from non-NATA registered Groundwater Technology Australia laboratory.



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Hydrocarbon concentrations were below CHEM Unit (Draft 1991 & 1992) investigation thresholds in all soil samples analysed by a NATA registered laboratory. A VOC concentration of 500 ppm was recorded at 0.5 metres in SB1. Laboratory analysis of this sample returned a TPH concentration of 8.6 ppm. VOC concentration decreased in SB1 with depth below 0.5 metres. VOC concentrations in other soil borings were all < 50 ppm.

One soil sample collected from SB2 1.0m (analysed by non NATA registered laboratory) contained hydrocarbon concentrations above CHEM Unit investigation thresholds. Soil samples collected from above and below one metre depth in SB2 contained hydrocarbon concentrations below analysis method detection limits/CHEM Unit investigation thresholds.

### 4.2.3 Separate and Dissolved Phase Hydrocarbons

No groundwater was encountered in boreholes drilled on site. No sampling of groundwater was carried out within the scope of assessment. Separate phase hydrocarbons were not observed at anytime during assessment.

## 4.3 Extent and Distribution of Lead

Total lead concentrations in all soil samples analysed were below 150 ppm. CHEM Unit (1992) investigation thresholds were not exceeded.

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## 5. CONCLUSIONS

Based on the results of investigations completed at the site Groundwater Technology Australia conclude the following;

- BP Australia Ltd operate petroleum storage and distribution facilities on the site which is owned by Queensco Foods Cooperative. The land was previously a gold mining lease.

- The site is located on a ridge with very shallow soils and roadbase overlying weathered siltstone and bedrock. Groundwater was not encountered during assessment. QWRC Bundaberg office indicated that bore usage in close proximity to the site is unlikely.

- Hydrocarbon compound concentrations in the $C_{10}$ - $C_{28}$ carbon chain length range were above CHEM Unit investigation thresholds in one soil sample collected at 1.0m in SB2. Soil samples from above and below this depth contained hydrocarbon concentrations below CHEM Unit investigation thresholds.
- SB2 was located at the point where the spoon drain meets the site boundary. Soil gas survey results down slope indicate decreasing VOC concentrations in the shallow subsurface with distance away from SB2.

- Results of the site assessment indicate that no major hydrocarbon impact of the subsurface has occurred on site.

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## 6. REFERENCES

Chemical Hazards and Emergency Management (CHEM) Unit (1992). Guidelines for the Assessment of Contaminated Land in Queensland. Bureau of Emergency Services. Government Printer Queensland.

Chemical Hazards and Emergency Management (CHEM) Unit (1991). Draft Guidelines for Assessment of Contaminated Land in Queensland. Bureau of Emergency Services. Government Printer Queensland.

Geological Survey of Queensland (1981). Gympie 1:250,000 Geological series, Sheet SG56-10.

Queensland Topographic Survey (1980). Gympie 1:50,000 Topographic series, R733 Sheet 9445V.

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# APPENDIX A
# LAND TITLE DOCUMENTS

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PAGE 1 DEPARTMENT OF LANDS, QUEENSLAND - ENQUIRY VGTVAL-384

Valn-No: 502 3669/00000 Ref No : 3313 Fee : LB Trans No: 02
L/Auth : GYMPIE Map Ref : 9445-42422-3 Flood : N Water : Y
Address: Land Use: 3500 Zoning: 20 Sewerage: Y
of Prop TOZER ST S.11(1)7: N Division: 04
GYMPIE 4570

Owner : QUEENSCO FOODS CO-OPERATIVE Sale: D/G
O/C 01 ASSOCIATION LTD Date: 25/06/92
PO BOX 2 Amt :
GYMPIE 4570

Desc : L2/MCH5328 & L1,3/MPH14207 & L1/MPH23976 & L3/ Area: 9.11 HA
MPH24262:PAR GYMPIE

| Effect | Valn | Unimproved | Former U/V | Freehold | Issued | Auth |
|---|---|---|---|---|---|---|
| 30/06/91 | 31/03/90 | $ 100000 | $ 100000 | $ 0 | 24/09/90 | 02 |
| 30/06/93 | 31/03/92 | $ 180000 | $ 100000 | $ 0 | 28/09/92 | |

f1=exit f3=menu f5=next valn f7=page trans f9 =page CONT f11=page return
f2=refresh f4=list f6=prev valn f8=page hist f10=page one f12=help 50

B. P. Gympie

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Under 1-16-Pt 1

# MINER'S HOMESTEAD No. 144

GYMPIE MINING DISTRICT

Gympie FIELD.

sch4p4(6) Personal information

Applicant:

Date of Application: 12 - 7 - 1873

Lease Issued: 26 - 2 - 1874 Dup. Reg. -

Area: 25 ac. 2 rd. 33 16/160 per.

Locality: 20

Survey Fee ...

Mileage ...

Traverse ...

CANCELLED ON 19.1.89

PURSUANT TO SECT. 28(6)(b) OF MINER'S HOMESTEAD LEASES ACT.

NOW SEE M.H.(P.)L. NOS. 4193, 4194, 4195

| SUBDIV. | DATE. | AREA. | TO WHOM TRANSFERRED. |
|---|---|---|---|
| 1 | 9.5.98 | 1 2 38½ | The Gympie Central Dairying Co Ltd 11187 |
| 2 | 15.7.99 | 3 37½ | Peter Green |
| 3 | 18.6.07 | 1 33 | Wide Bay Co-op. Dairy Co Ltd 23/1/08 |

TRANSFERS.

| DATE. | TRANSFEREES. |
|---|---|
| 23.8.95 | The Licensed Victuallers Brewery Co of Gympie Ltd |
| 14.8.06 | Thomas Bennett Archer |
| 13.5.7 | James Bryne Hall, Official Trustee in Lunacy |
| 27.10.11 | The Wide Bay Co-operative Dairy [illegible] |
| 16.12.35 | The Wide Bay Co-operative Dairy Association Limited |
| 11.7.88 | The Queensland Farmers Co-operative Association Limited (Vested) |
| | Queensland Foods Co-operative Association Limited (Vested) |

For Subleases, Easements, etc. see attached Card.

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9v

SUBLEASES & EASEMENTS ER. M.I.L. 144 GYMPIE

1 Sublease of part (No. 218/65) to The Southern Electric Authority of Queensland for 21 years from 1-1-1965 - folio (16) of lease file.

2 Easement No. 202/71 in favour of sublessee under sublease No 201/71 registered at Warden's Office, ~~Maryborough~~ Gympie, on 26-10-71 - see (33) of file H 1/2/66.

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FEB 05 '93 14:03 KMTS 156 P03

A3

Registered Fo 147 GYMPIE

MINER'S HOMESTEAD No. 1214 MINING DISTRICT Gympie FIELD.

| RENTS. | | | | | | | | FORFEITURE N.P. RENT. | |
|---|---|---|---|---|---|---|---|---|---|
| Year. | Amount. | Year. | Amount. | Year | Amount. | Year. | Amount. | Year. | Reinstated. |
| 30 years Mining | Rent paid and to Aug 1898 | | | Lease endorsed under Sec | | | | 85-9 | the |

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156 P04 KAM'S FEB 05 '93 14:03

Releas

MINER'S HOMESTEAD }
~~PERPETUAL~~ LEASE } No. 9192

Cygnet MINING DISTRICT FIELD

Locality: Lot No. 1 on Plan Cat. No. MCH 3398 (Subdivision of M.H. L. 144)

Date for Determ. C/V

Date of Request to Subdivide 4.2.88.

Date of Approval 13.12.88

Lease Issued 19.1.89.

Duplicate Lease
Vol. 448
Fol. 10

Lessee Riverside Fruit Co-operative Association Limited

| Area of Lease | Adjust. to Area | Miscellaneous Dealings |
|---|---|---|
| 4275m² | | |

Transfers

| Date | Transferees |
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| 13-3-89 | sch4p4(6) Personal information |
| | By Order of Joint Tenants |

M 131

Govt Printer, Brisbane 1PA1 11-76

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B 2

MINER'S HOMESTEAD LEASE } No. 9192

MINING DISTRICT
Campie FIELD

Annual Rent, $ ..... from 10 & 1 demanded being ..... % of $ .....
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MINER'S HOMESTEAD ~~PERPETUAL~~ LEASE No. 9193

Gympie MINING DISTRICT
Gympie FIELD

Locality: Lot No. 2 on Plan Cat. No. MCH 5308 (Subdivision of M.H. L. 144 1)

Date for Determ. C/V

Date of Request to Subdivide 4.2.88

Date of Approval 13.12.88

Lease Issued 19.1.89

Duplicate Lease
Vol. 1445
Fol. 11

Lessee Queensland Feeds Co-operative Association Limited

| Area of Lease | Adjust. to Area | Miscellaneous Dealings |
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| 7.952ha | | |

Transfers

| Date | Transferees |
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CANCELLED ON 25/6/92
PURSUANT TO SECTION 8(3) OF
MINING TITLES RATIONALISING ACT 1980-1989

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156 P07
KAM'S
FEB 05 '93 14:04

MINER'S HOMESTEAD ~~PERPETUAL~~ LEASE } No. 9193

MINING DISTRICT Gympie FIELD

Annual Rent, $ ..... from 10.4.1 demanded ..... being ..... % of $ .....
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156 P08 KAM'S FEB 05 '93 14:05

Releas

D 1

# GYMPIE MINING DISTRICT

## ...NER'S HOMESTEAD.

SUBDIVISION NO. 1 OF NO. Sub. Division 2 of Lot 66 Gympie FIELD.

Transferee The Wide Bay Co-operative Dairy Association Ltd

Date Transferred: 28. 6. 1939

" approved 6. 10. 1939

Transferor: sch4p4(6) Personal information

Area: ~ ac. 2 rd. ~ per. Pol, 278

Lease Issued: 1. 12. 1939 Dup. Reg. Vol. 35

Description:

| Re-sub. | Date. | Area. | To whom Transferred. |
|---|---|---|---|
| | | | |

CANCELLED ON 25/6/92
PURSUANT TO SECTION 8(3) OF
MINING TITLES FREEHOLDING ACT 1980-1989

| TRANSFERS. | |
|---|---|
| DATE. | TRANSFEREES. |
| 9/11/87 | The Queensland Farmers Co-operative Association Limited. |
| 11-7-88 | Queensco Foods Co-operative Association Limited (Dorted. |

To Subleases, Easements, etc see attached card

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D2

SUBLEASES & EASEMENTS ETC. MHN 1/2/66 GYMPIE

Sublease of part containing 39.2 perc (No. 201/71) to Amoco Australia Pty. Limited for
10 years from 16.6.1970 - folio (22) I title
Easement no 202/71 in favour of sublessee under sublease no. 201/71 registered at
Warden's Office Gympie on 26-10-71 - see also (23) I base title
Easement no 204/71 in favour of sublessee under sublease no 201/71 registered at
Warden's Office Gympie on 26-10-71 - see folio (23) I base title
Sub-sublease (No. 221/71) over part containing 39.2 perc from Amoco Australia
Pty. Limited to The Wide Bay Co-operative Dairy Associations Limited for 10 years less
one day from 16.6.1970 - folio (55).

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93

**MINER'S HOMESTEAD.** **MINING DISTRICT**

Q SUBDIVISION NO. 1 OF NO. Sub. division 2 of Mtk 66 Gympie FIELD.

RENTS 1/- p.a. on 1st Annual.

| Year. | Amount. | Year. | Amount | Year | Amount. | Year. | Amount. |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

FORFEITURE N.P RENT.

| Year. | Reinstated. |
|---|---|
| | |

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156 P12
KAM'S
FEB 05 '93 14:07

MINER'S HOMESTEAD. GYMPIE MINING DISTRICT

SUBDIVISION No. 1 OF No. 144 Gympie FIELD.

Transferee: The Gympie Central Dairying Company Limited

Date Transferred: 9. 5. 1898

Transferror: sch4p4(6) Personal information

Area: 1 ac. 2 rd. 38½ per. Vol. 84

Lease Issued: 12 4 1901 Dup. Reg.: Vol. 43

Lease " 8. 9. 1929 " " Vol. 2[illegible]

Description:

| Re-sub. | Date. | Area. | To whom Transferred. |
|---|---|---|---|
| | | | |

TRANSFERS.

| DATE. | TRANSFEREES. |
|---|---|
| 19. 10. 00 | D. J. Dehaan 3/6 John Reid 3/6 William Hutton 3/6 and D. A. Hutton 3/6 - Tenants in Common |
| 19. 10. 00 | The Silverwood Dairy Factory Company Limited |
| 25. 4. 07 | Wide Bay Co-operative Dairy Company Limited |
| 20. 11. 24 | The Wide Bay Co-operative Dairy Association Limited (under Primary Producers Co-operative Associations Act of 1923) |
| 9-11-87 | The Queensland Farmers Co-operative Association Limited (Vested) |
| 11-7-88 | Cuevo Co-Food Co-operative Association Limited (Vested |

For Subleases, Easements, etc. see attached card

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EASEMENTS, ETC. MHL 1/1/64, Gyms.

1. Easement no. 202/71 in favour of Sublessee under Sublease no. 201/71 registered at Warden's Office, Gympie on 26-10-71 - see (23) of File H.1/2/66

2. Easement no. 203/71 in favour of Sublessee under Sublease no. 201/71 registered at Warden's Office Gympie on 26-10-71 - see (23) of File H.1/2/66

3. Easement no. 204/71 in favour of Sublessee under Sublease no 201/71 registered at Warden's Office, Gympie on 26-10-71 - see (23) of File H.1/2/66

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156 P13
FEB 05 '93 14:07 KAM'S

**MINER'S HOMESTEAD.** MINING DISTRICT Yuruè

SUBDIVISION No. 1 OF No. 144 FIELD.

RENTS 5/- per an.

| Year. | Amount. | Year. | Amount | Year | Amount. | Year. | Amount. |
|---|---|---|---|---|---|---|---|
| 1899 | 5 - | | | | | | |
| Rent Laid to 31.12.26 | | | | | | | |
| 1899 (25 Dec) to 26 | 15 - | | | | | | |
| 1926 (Jan 1st) | 5 - | | | | | | |
| 1927 | 5 - | | | | | | |

Lease surrendered.

The Annual Rent on the within Lease having been paid for thirty years, the Annual Rent thereafter shall be one shilling, if demanded.

sch4p4(6) Personal information

sch4p4(6)

Under Secretary for Mines.

| FORFEITURE N.P RENT. | |
|---|---|
| Year. | Reinstated. |

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# APPENDIX B
# SITE PHOTOGRAPHS

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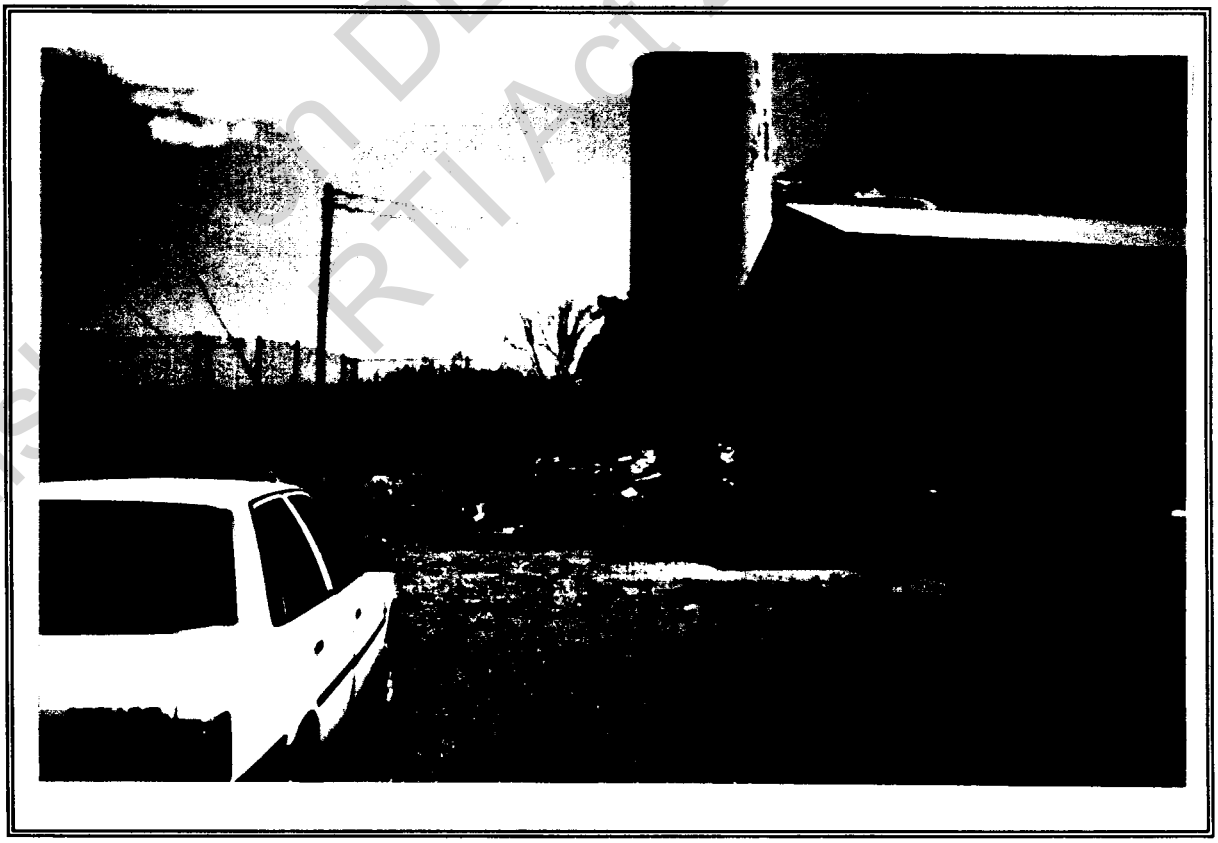
1. BP Gympie service station, shop and pumps.



2. Bulk tanks, drum dock, spoon drain in left of photo, behind car.

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# APPENDIX C
# SOIL GAS SURVEY DATA

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## TABLE C1:

## SOIL GAS SURVEY DATA
**1 February, 1993**
**Volatile Organic Compounds - parts per million**

| Vapour Point | VOC's - ppm | Vapour Point | VOC's - ppm |
|---|---|---|---|
| 1 | 583 | 13 | 20.1 |
| 2 | 301 | 14 | 8.5 |
| 3 | 229 | 15 | 11.7 |
| 4 | 64.1 | 16 | 12.4 |
| 5 | 14.2 | 17 | 10.4 |
| 6 | 13.8 | 18 | 39.1 |
| 7 | 78.2 | 19 | 17.2 |
| 8 | 21.3 | 20 | 87.8 |
| 9 | 465 | 21 | 74.9 |
| 10 | 706 | 22 | 45.0 |
| 11 | 22 | 23 | 22.5 |
| 12 | 22.1 | | |

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# APPENDIX D
# METHODOLOGY

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## D1 SOIL GAS SURVEY

The soil gas survey was conducted to estimate volatile organic compound (V)C) concentrations present in the shallow subsurface at the site.

The soil gas survey utilised a 12mm diameter hand held percussion drill ("slambar") to penetrate the subsurface to depth of one metre. A 1.0 metre stainless steel probe was inserted into the holes. Soil vapours were then drawn through the probe and analysed for VOC concentrations with a hand held air monitor/photoionisation detector (PID)(Photovac MP100, Microtip).

Average VOC concentrations for each survey point were recorded after monitoring for a twenty second interval. The PID was calibrated at the commencement and regularly during the field investigation with a known concentration of iso-butylene span gas.

It should be noted that PID screening of soil vapour provides only a relative indicator of VOC concentrations and does not necessarily represent actual concentrations. The principle compounds of petroleum are detected by this method. Other compounds including some inorganic compounds may also be detected. For the purpose of this report concentrations are attributed solely to hydrocarbon vapour.

## D2. BOREHOLE DRILLING, SOIL SAMPLING AND FIELD ANALYSIS.

Soil borings were installed using an Hydrapower 500 drilling rig. A 200mm diameter continuous hollow stem flight auger was used. The drilling was conducted under the direct supervision of a Groundwater Technology Australia geologist who recorded a geological log for each borehole.

Soil borings are used to determine the subsurface conditions and to provide a quantitative assessment of the lateral and vertical extent of any separate, adsorbed or dissolved-phase hydrocarbons.



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Soil borings are located to address areas of potential hydrocarbon impact. Potential sources and receptors of hydrocarbon are targeted. Soil gas survey data is used to assist with borehole location. Potential product sources include the tank pit areas, tank fill points, pump islands and product piping. Potential receptors of any contamination include areas downgradient from source areas, areas of increased permeability such as underground utilities, areas upgradient of aquicludes (areas of lower permeability) and areas where there exists a depression in the water table.

Obstructions to drilling such as storage tanks, subsurface piping, overhead power lines, canopies and impenetrable zones also influence the location of soil borings. The locations of soil borings are shown in Figure 2 (Site Plan).

Soil samples were collected at 1.0 metre intervals or at change of strata. To prevent cross contamination from borehole to borehole, augers were cleaned with high pressure water between borings. To prevent cross contamination from sample to sample, the split spoon sampler was cleaned in "Decon 90" solution.

Soil samples were collected directly from the split spoon sampler within the hollow augers. An open ended syringe was used to collect a small "core" of sample weighing approximately five grams. This was immediately transferred to a 25mm x 150mm glass vial with a screw top lid with teflon liner. The glass vial sample is used for analysis of total petroleum hydrocarbons (TPH) and benzene, toluene, ethyl benzene and xylene (BTEX) compounds.

A 100 ml glass jar was filled, sealed and used for total lead analysis. Both vials and jars were stored on ice awaiting laboratory analysis. This reduces volatile loss and bacterial degradation in the samples.

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At each sample location a third sample was sealed in a plastic bag and used for texture and mineralogy description. The headspace created was screened on site for VOC's using a PID. The values obtained during the headspace analysis are used as a relative indicator of the adsorbed phase concentrations of volatile organics and do not necessarily represent actual concentrations.

Two samples from SB1, SB2 and Sb4 and one from SB3 were selected and despatched for laboratory analysis.

## D5 LABORATORY ANALYSIS

Selected soil samples were submitted to a NATA registered laboratory for analyses. The samples were selected on the basis of the VOC concentrations, evidence of hydrocarbon staining and odour and depth. Where no hydrocarbon staining or odour was apparent, samples collected above and below the water table were selected for laboratory analysis.

Soil samples were analysed for the following:

- Benzene, toluene, ethyl benzene and xylene (BTEX) compounds.
- Total petroleum hydrocarbons (TPH), constituent hydrocarbon chain length groups ($C_6$-$C_9$, $C_{10}$-$C_{14}$, $C_{15}$-$C_{28}$ and $C_{29}$-$C_{36}$) by modified method 418.1 Storet No.45501, infra red replaced by capillary gas chromatograph.
- Total lead by APHA 17th Edition 3030C.

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# APPENDIX E
# DRILL LOGS

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Our Ref: R314/B7162

April 1993

Release



GROUNDWATER TECHNOLOGY

GROUNDWATER TECHNOLOGY

# Drilling Log

## Soil Boring SB1

Project BP GYMPIE — Owner QUEENSCO
Location Tozer Street — Project No. B7162 — Date drilled 02/02/1993
Surface Elev. ____ — Total Hole Depth 4.0 m. — Diameter 0.20 m.
Top of Casing ____ — Water Level Initial ____ — Static ____
Screen: Dia ____ — Length ____ — Type/Size ____
Casing: Dia ____ — Length ____ — Type ____
Filter Pack Material ____ — Rig/Core Type Hydrapower 500
Drilling Company Geoprobe — Method Hollow Stem Auger — Permit # ____
Driller sch4p4(6) Pe — Log By sch4p4(6) Perso
Checked By sch4p4(6) — License No. ____

See Site Map For Boring Location

COMMENTS:

* Samples submitted for laboratory analysis

| Depth (m.) | PID (ppm) | Sample ID Blow Count/ % Recovery | Graphic Log | USCS Class. | Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50% |
|---|---|---|---|---|---|
| 0 | | | | Asph | ASPHALT; |
| | | | | Rbase | ROADBASE; gravel, grey, high porosity. |
| 1 | 500 | 0.5 * IF013 | | | SILTSTONE; yellow grey, slaty cleavage at approximately 45 degrees to north east. Increased permability along cleavage/fractures likely. |
| | 200 | 1.5 IF014 | | BRock | |
| 2 | | | | | |
| 3 | 40 | 3.0 * IF015 | | | |
| 4 | 50 | 4.0 * IF016 | | | HOLE TERMINATED AT 4.0 M. (Auger Refusal). |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |

04/01/1993 lithlog-mar92

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GROUNDWATER TECHNOLOGY

# Drilling Log

## Soil Boring SB2

Project *BP GYMPIE* Owner *QUEENSCO*

Location *Tozer Street* Project No. *B7162* Date drilled *02/02/1993*

Surface Elev. _____ Total Hole Depth *4.0 m.* Diameter *0.20 m.*

Top of Casing _____ Water Level Initial _____ Static _____

Screen: Dia _____ Length _____ Type/Size _____

Casing: Dia _____ Length _____ Type _____

Filter Pack Material _____ Rig/Core Type *Hydrapower 500*

Drilling Company *Geoprobe* Method *Hollow Stem Auger* Permit # _____

Driller sch4p4(6) Per _____ Log By sch4p4(6) Persc _____

Checked By sch4p4(6) _____ License No. _____

*See Site Map For Boring Location*

*COMMENTS:*

** Samples submitted for laboratory analysis.*

| Depth (m.) | PID (ppm) | Sample ID Blow Count/ % Recovery | Graphic Log | USCS Class. | Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50% |
|---|---|---|---|---|---|
| 0 | 50 | 0.05 | | CL | SILTY CLAY; fill, brown, damp, plastic, |
| 1 | 10 | 0.5 * IF017 | | | |
| | 20 | 1.0 * IF018 | | | |
| | 5 | 1.5 | | Brock | SILTSTONE; yellow grey, slaty cleavage at approximately 45 degrees to north east. Increased permeability along cleavage/fractures likely. |
| 2 | | | | | |
| | 3 | 2.5 | | | |
| 3 | | | | | |
| | 3 | 3.5 * IF019 | | | |
| 4 | 2 | 4.0 | | | HOLE TERMINATED AT 4.0 M. (Auger Refusal). |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |

04/01/1993 lithlog-mar92

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GROUNDWATER TECHNOLOGY

# Drilling Log

## Soil Boring SB3

Project BP GYMPIE Owner QUEENSCO

Location Tozer Street Project No. B7162 Date drilled 03/02/1993

Surface Elev. _____ Total Hole Depth 3.0 m. Diameter 0.20 m.

Top of Casing _____ Water Level Initial _____ Static _____

Screen: Dia _____ Length _____ Type/Size _____

Casing: Dia _____ Length _____ Type _____

Filter Pack Material _____ Rig/Core Type Hydrapower 500

Drilling Company Geoprobe Method Hollow Stem Auger Permit # _____

Driller sch4p4(6) Per Log By sch4p4(6) Persor

Checked By sch4p4(6) F License No. _____

See Site Map For Boring Location

COMMENTS:

* Samples submitted for laboratory analysis.

| Depth (m.) | PID (ppm) | Sample ID Blow Count/ % Recovery | Graphic Log | USCS Class. | Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50% |
|---|---|---|---|---|---|
| 0 | 1 | 0.05 | | Char | CHARCOAL & SAND; black, loose, slightly damp, soft, angular, |
| | 1 | 0.5 * IF020 | | | |
| 1 | | | | | NO CORE RETRIEVED; |
| 2 | 0 | 2.0 * IF021 | | CL | SANDY SILTY CLAY; orange brown, damp, plastic, low permeability. |
| 3 | 0 | 3.0 | | | HOLE TERMINATED AT 3.0 M. (Target depth) |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |

04/01/1993 lithlog-mar92

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# Drilling Log

GROUNDWATER TECHNOLOGY

Soil Boring **SB4**

Project *BP GYMPIE* Owner *QUEENSCO*

Location *Tozer Street* Project No. *B7162* Date drilled *03/02/1993*

Surface Elev. _____ Total Hole Depth *5.8 m.* Diameter *0.20 m.*

Top of Casing _____ Water Level Initial _____ Static _____

Screen: Dia _____ Length _____ Type/Size _____

Casing: Dia _____ Length _____ Type _____

Filter Pack Material _____ Rig/Core Type *Hydrapower 500*

Drilling Company *Geoprobe* Method *Hollow Stem Auger* Permit # _____

Driller sch4p4(6) Per _____ Log By sch4p4(6) Perso _____

Checked By sch4p4(6) _____ License No. _____

*See Site Map For Boring Location*

*COMMENTS:*

*Groundwater not encountered*

** Samples submitted for laboratory analysis.*

| Depth (m.) | PID (ppm) | Sample ID Blow Count/ % Recovery | Graphic Log | USCS Class. | Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50% |
|---|---|---|---|---|---|
| 0 | 0 | 0.5 IF023 | | Asph Rbase Fill | ASPHALT; ROADBASE; blue metal gravel. FILL; silty sandy clay, with bricks, rocks, charcoal, loose and plastic, porous. |
| 2 | 0 | 2.5 * IF024 | | | |
| 4 | 0 | 4.0 * IF025 | | Brock | SILTSTONE; yellow grey, slaty cleavage at approximately 45 degrees to north east. Increased permeability along cleavage/fractures likely. |
| 6 | | | | | HOLE TERMINATED AT 5.8 M. (Below traget depth; approximately 2 metres below base of fill). |

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# APPENDIX F
# LABORATORY ANALYSIS REPORTS

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Central Science Laboratory University of Tasmania
PO Box 252C GPO Hobart 7001 Tasmania
Telephone (002) 20 2155 Fax (002) 20 2494

NATA Registered No: 3239

Report Number: GWT0152
CSL Job No: 93/0011

Date Received: 8/2/93
Date Tested: 8/2/93
Date Reported: 10/2/93
Client:

## Certificate of Analysis

### Soils

Test Method: Modified Method 418.1 Storet No. 45501
Quantitation by Infra Red replaced by Capillary Gas Chromatography

| ID | PROJECT | MOISTURE | DEPTH | TPH GC | C6-C9 | C10-C14 | C15-C28 | C29-C36 | BENZ | TOL | XYL | ETH BENZ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IF013 | B7162 | 4.6 | SB1-0.5m | 8.6 | ND | ND | ND | ND | ND | ND | 0.8 | ND |
| IF015 | B7162 | 4.1 | SB1-3.0m | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| IF017 | B7162 | 15.1 | SB2-0.5m | 46.9 | ND | 13.2 | 33.6 | ND | ND | ND | ND | ND |
| IF019 | B7162 | 4.9 | SB2-3.5m | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| IF021 | B7162 | 17.1 | SB3-2.0m | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| IF024 | B7162 | 25.1 | SB4-2.5m | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| IF025 | B7162 | 5.0 | SB4-4.0m | ND | ND | ND | ND | ND | ND | ND | ND | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | |

Central Science Laboratory University of Tasmania
PO Box 252C GPO Hobart 7001 Tasmania
Telephone (002) 20 2155 Fax (002) 20 2494

NATA Registered No 3239

| | |
|---|---|
| Date Received: | 8/2/93 |
| Date Tested: | 10/2/93 |
| Date Reported: | 11/2/93 |
| Client: | |
| Test Method: | APHA 17th Edition 3030 C |

Certificate of Analysis
Soils (Acid extractable lead)

Report Number GWT0152
CSL Job No 93/0011

| ID | PROJECT | DEPTH | Pb |
|---|---|---|---|
| IF013 | B7162 | SB1-0.5m | 14 |
| IF015 | B7162 | SB1-3.0m | 17 |
| IF017 | B7162 | SB2-0.5m | 14 |
| IF019 | B7162 | SB2-3.5m | 16 |
| IF021 | B7162 | SB3-2.0m | 16 |
| IF024 | B7162 | SB4-2.5m | 150 |
| IF025 | B7162 | SB4-4.0m | 15 |
| Detection limits | | | 4ppm |
| Accuracy: | 3.00% | | |

Units: ppm

ND = Not Detected

This laboratory is registered by the National Association of Testing Authorities Australia.
The Test(s) reported herein have been performed in accordance with its terms of registration.
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sch4p4(6) Personal information

Authorising Chemist.

This Laboratory is registered by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its terms of registration. This document shall not be reproduced except in full.

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GROUNDWATER TECHNOLOGY

Groundwater Technology Australia Pty Limited
A.C.N. 003 931 057
17 Forrester Street, Kingsgrove NSW 2208 Australia
Telephone: (02) 502 4844 Fax: (02) 502 2105

# LABORATORY REPORT

| | | | |
|---|---|---|---|
| CLIENT: | BP Gympie | SAMPLE TYPE: | Soil |
| JOB NO: | B7162 | ANALYTES REQUIRED: | Pb |
| SUBMITTED BY: | sch4p4(6) Personal | DATE RECEIVED: | 10.2.93 |
| TELEPHONE: | (07) 252 5711 | DATE ANALYSED: | 10.2.93 |
| FAX: | (07) 252 5712 | DATE REPORTED: | 11.2.93 |

| | | ANALYTE | %Solids | Pb | %RSD | | | |
|---|---|---|---|---|---|---|---|---|
| | | METHOD | GTEL | GTEL | | | | |
| | | MDL/PQL | | | | | | |
| SAMPLE ID | LAB # | %SOLIDS | | 0.5 | | | | |
| IF·6 | 083 | | 96.6 | 21 | 3 | | | |
| IF018 | 084 | | 94.2 | 53 | 1 | | | |
| IF020 | 085 | | 89.1 | 79 | 5 | | | |

| | | ANALYTE | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | METHOD | | | | | | |
| | | MDL/PQL | | | | | | |
| SAMPLE ID | LAB # | %SOLIDS | | | | | | |

| | | | |
|---|---|---|---|
| ANALYST: | sch4p4(6) Personal information | UNITS: | Soil (mg/kg) ppm |
| SIGNATURE: | | | |
| CHECKED BY | | COMMENTS: | |
| SIGNATURE: | | | |

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Oct 2009

GROUNDWATER TECHNOLOGY

Groundwater Technology Australia Pty Limited
A.C.N. 003 931 057
17 Forrester Street, Kingsgrove NSW 2208 Australia
Telephone: (02) 502 4844 Fax: (02) 502 2105

# LABORATORY REPORT

CLIENT:

JOB NO: B7162

SUBMITTED BY: sch4p4(6) Personal in

TELEPHONE: (07) 252 5711

FAX: (07) 252 5712

SAMPLE TYPE: Soil

ANALYTES REQUIRED: BTEX/TPH

DATE RECEIVED: 10.2.93

DATE ANALYSED: BTEX 16/17.2.93 TPH 12.2.93

DATE REPORTED: 18.2.93

| | | ANALYTE | Benzene USEPA | Toluene | Ethyl Benzene | Xylenes (Total) | Total BTEX | %RSD | % RECOVERY |
|---|---|---|---|---|---|---|---|---|---|
| | | METHOD | USEPA 602, 5030/8020 | | | | | | |
| | | PQL (PPM) | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | | |
| SAMPLE ID | LAB # | MDL (PPM) | | | | | | | |
| IF 6 | 083 | | ND | ND | ND | 0.1 | | 3 | 86 |
| IF018 | 084 | | ND | ND | ND | ND | | | |
| IF020 | 085 | | ND | ND | ND | ND | | | |

| | | ANALYTE | $C_6$ - $C_9$ | $C_{10}$-$C_{14}$ | $C_{15}$-$C_{28}$ | $C_{29}$-$C_{35}$ | | %RSD | % RECOVERY |
|---|---|---|---|---|---|---|---|---|---|
| | | METHOD | Modified USEPA 3510/GTEL | | | | | | |
| | | PQL (PPM) | 10 | 10 | 10 | 10 | | | |
| SAMPLE ID | LAB # | MDL (PPM) | | | | | | | |
| IF016 | 083 | | ND | ND | ND | ND | | 1 | 103 |
| IF018 | 084 | | ND | 465 | 1372 | ND | | | |
| IF020 | 085 | | ND | 33 | 23 | ND | | | |

ANALYST: sch4p4(6) Personal informatic

SIGNATURE:

CHECKED BY:

SIGNATURE:

UNITS: BTEX - PPB (Waters) PPM (Soil)

TPH - PPM

COMMENTS:

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# GROUNDWATER TECHNOLOGY AUSTRALIA

Unit 5/31 Thompson Street, Bowen Hills,
Qld, Australia 4006
Telephone: (07) 252 5711 Fax: (07) 252 5712

## CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: sch4p4(6) Personal information Phone #: (07) 252 5711

Address: Unit 5/31 Thompson St Bowen Hills Qld 4006 FAX #: (07) 252 5712.

Project Number: 5716.2 Project Name:

Project Location: Sampler Signature:

| Sample ID | Sample Location Depth | Lab # (Lab use only) | # CONTAINERS | Volume/Amount | Matrix: WATER | SOIL | AIR | SLUDGE | OTHER | Method Preserved: HCl | $HNO_3$ | ICE | NONE | OTHER | Sampling: DATE | TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TP 013 | | | 2 | | | ✓ | ✓ | | | | | ✓ | | | | |
| TP 015 | | | 2 | | | ✓ | ✓ | | | | | ✓ | | | | |
| TP 021 | | | 2 | | | ✓ | ✓ | | | | | ✓ | | | | |
| TP 019 | | | 2 | | | ✓ | ✓ | | | | | ✓ | | | | |
| TP 021 | | | 2 | | | ✓ | ✓ | | | | | ✓ | | | | |
| TP 024 | | | 2 | | | ✓ | | | | | | ✓ | | | | |
| TP 025. | | | 2 | | | ✓ | ✓ | | | | | ✓ | | | | |
| | | | | | | Dup Sample - TP 015 | | | | | | | | | | |
| | | | | | | | | | | | | Trip C | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

| ANALYSIS REQUEST | | | | | | | | | | | | | | | | | | | | | | | | | | | OTHER | | | | | SPECIAL HANDLING | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BTEX (602/8020) | BTEX/TPH as Gasoline (602/8020/8015) | TPH as Diesel (8015 or 8270) | TPH as Jetfuel (8015 or 8270) | Total Oil & Grease (413.1) | Total Oil & Grease (413.2) | Total Petroleum Hydrocarbons (418.1) | CAM - 17 Metals | EPTOX - 8 Metals | EPA - Priority Pollutant Metals | LEAD (7420/7421/239.2) | ORGANIC LEAD | | | | | | | | | | | | | | | | | | | | PRIORITY ONE SERVICE (24 hr) | EXPEDITED SERVICE (2-4 days) | VERBALS/FAX | SPECIAL DETECTION LIMITS (SPECIFY) | SPECIAL REPORTING REQUIREMENTS |
| ✓ | | | | | | ✓ | | | | ✓ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ✓ | | | | | | ✓ | | | | ✓ | | | | | | | | | | | | | | | | | | | | | | | | | | |
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