BOWLER GEOTECHNICAL PTY LTD
Geotechnical Engineering Consultants
Soils Laboratory Services
(Incorp in Qld A C N 050 401 771)

Address		Telephone	Facsimile
7/3359 Mt. Lindesay Highway	Office/Eng	(07) 3800 6446	3800 0816
Browns Plains Qld 4118	Laboratory	(07) 3800 3832	3800 7928

Also at:
Gold Coast Geebung Sunshine Coast Gladstone Mackay Townsville Cairns Mt. Isa Overseas Offices in Vietnam and Papua New Guinea

2514-4:GS

10 March, 1998

Texking Pty Ltd
454 Old Cleveland Road
BIRKDALE QLD 4159

ATTENTION: MR PAUL WRUCK

Dear Sir,

RE: SITE CONTAMINATION ASSESSMENT (STAGE 3) AND REMEDIAL WORKS, 1 TRUNDLE RD, THORNLANDS

1. INTRODUCTION

This report presents results of a Stage 3 investigation and remedial works carried out at the above site as a result of the existence of several high levels of lead and pesticides that were encountered during the Stage 1 and 2 contamination screen assessments carried out on 4 September and 1 October, 1997, respectively.

This report must be read in conjunction with our previous contamination assessment reports, ref 2514:GS dated 30 September and 14 November 1997.

As a result of the Stage 1 investigation, which indicated high levels of zinc, lead and endosulphan sulphate (organochlorine pesticide) in the vicinity of pit 2 (old storage shed) and endosulphan sulphate near pit 3, further works were carried out in order to assess and isolate the area of contamination.

The Stage 2 investigation consisted of the retrieval of a further three disturbed soil samples from the site, delivered to Sinmonds and Bristow and the following testing was carried out;

- Sample 4 and 5 (near old shed)
  - Lead
  - Herbicides
  - OC's/OP's
- Sample 6
  - Herbicides
  - OC's/OP's

Results of the Stage 2 investigation revealed that at Pit 2 (old shed) this area is considered a "hot spot" due to high concentrations of endosuphan sulphate and lead levels encountered. The Stage 2 investigation concluded that this contamination was isolated to the area of the old storage shed, most likely due to spillage.

In consultation with the Department of Environment (DOE), Ms Karen Hopper, based on fieldwork results from the Stage 2 investigation it was deduced that the area of the contamination was known, but its depth of contamination was not conclusive and would require further investigation.

2. INVESTIGATION WORK

2.1 Fieldwork

In order to assess the depth of contamination of lead and endosulphan sulphate, an additional sample at a depth of 0.4m was retrieved at the Pit 2 location for the Stage 3 analysis.

Fieldwork for the investigation was carried out on 23 January, 1998. The recovered sample was placed in an air tight jar and packed in ice for delivery to Simmonds and Bristow. The location of the sample recovered is shown as Pit 2 on Figure 1 attached.

2.2 Laboratory Testing

The additional disturbed soil sample recovered from the Stage 3 investigation was delivered to Simmonds and Bristow and the following testing was carried out;

- Lead
- OC's/OP's

3. CONCLUSIONS AND RECOMMENDATIONS

Results from the testing indicated that all materials encountered in the soils were below environmental and health threshold levels as given by ANZECC guidelines for the contamination assessment of contaminated sites.

Based on the above and previous test results it was concluded that the maximum extent of the contamination was isolated to the footprint of the old shed to a maximum depth of 0.4m.

On the 9 March, 1998 an engineering geologist from this office attended the remedial excavation works in order to clarify that the contaminated soil was removed from site.

A pit of dimensions 4.0m x 4.0m x 0.4m was excavated and the soil removed. This parcel of excavated material, in our opinion, was deemed adequate, in that all contaminated soils material at this location was removed from site.

Should you have any queries please do not hesitate to contact the undersigned.

Yours faithfully,
BOWLER GEOTECHNICAL

DAVID BOWLER
MANAGING DIRECTOR

GARY SAMUELS
SENIOR ENGINEERING GEOLOGIST

BOWLER GEOTECHNICAL PTY LTD
Geotechnical Engineering Consultants
Soils Laboratory Services
(Incorp in Qld A C N 050 401 771)

Address:
7/3359 Mt Lindesay Highway
Browns Plains Qld 4118

Telephone
Office/Eng (07) 3800 6446
Laboratory (07) 3800 3832

Facsimile
3800 0816
3800 7928

Also at:
Gold Coast Geebung Sunshine Coast Gladstone Mackay Townsville Cairns
Mt Isa Darwin Overseas Offices in Vietnam and Papua New Guinea

2514_3:GS

14 November, 1997

TEXKING Pty Ltd
454 Old Cleveland Road
BIRKDALE QLD 4159

ATTENTION: MR PAUL WRUCK

Dear Sir,

RE: SITE CONTAMINATION ASSESSMENT (STAGE 2)
1 TRUNDLE ROAD, THORNLANDS

1. INTRODUCTION

This reports presents results of a Stage 2 investigation carried out as a result of the existence of several high levels of zinc, lead and pesticides that were encountered during the initial Stage 1 contamination assessment carried out on 4 September, 1997.

This report must be read in conjunction with our initial site contamination assessment report ref 2514:GS dated 30 September, 1997.

For the Stage 1 investigation, the three disturbed soil samples recovered from the site were delivered to Simmonds and Bristow and the following testing was carried out to provide an initial screen to assess if any contaminants were likely to exist on site.

- Arsenic
- Cadmium
- Chromium
- Lead
- Copper
- Nickel
- Zinc
- Pesticides (OP's and OC's)

Results from the above analyses indicated that, with reference to the relevant Australian and New Zealand Standards for the assessment of contaminated sites, most levels were within guideline limits. At pit 2 (old storage shed location) zinc was encountered at a

level of 540mg/kg and lead of a level of 710mg/kg. The health environment based threshold for zinc and lead, given by ANZECC guidelines is 200mg/kg and 300mg/kg respectively.

OC's/OP's pesticide testing indicated that at pit 2 a level of 0.4mg/kg, 0.4mg/kg and 8.9mg/kg of alpha-endosulphan, beta-endosulphan and endosulphan sulphate was encountered respectively. In conference with Simmonds and Bristow it appears that there is some obscurity as to whether these pesticides results are safe or unsafe in relation to health and environment. However, it is considered by Simmonds and Bristow that a typical threshold for a compound of this type, that being similar to Dieldrin, would be in the order of 0.2mg/kg for alpha-endosulphan, beta-endosulphan and endosulphan sulphate.

At pit 3 Endosulfan sulphate at a level of 0.2mg/kg was recorded, the threshold for this compound is as above.

2. INVESTIGATION WORK

2.1 Fieldwork

In order to further assess the degree of contamination of zinc, lead, alpha-endosulphan, beta-endosulph and endosulphan sulphate encountered in the areas of pits 2 and 3 during our Stage 1 investigation, an additional three (3) pits were excavated and samples recovered for the Stage 2 analyses.

Fieldwork for the investigation was carried out on the 1 October, 1997. Recovered samples were placed in air tight glass jars and packed in ice for delivery to Simmonds and Bristow (chemical testing laboratories, Brisbane) for immediate testing. The location of the samples recovered is shown on Figure 1 with the proposed subdivision layout shown on Figure 2.

2.2 Laboratory Testing

The additional three disturbed soil samples recovered from the Stage 2 site investigation were delivered to Simmonds and Bristow and the following testing was carried out to determine the extent of the contamination.

- Sample 4 and 5
  - Lead
  - Zinc
  - Herbicides
  - OC's/OP's
- Sample 6
  - Herbicides
  - OC's/OP's

Results from the above analyses are attached and indicate that, with reference to the ANZECC Guidelines, for the assessment of contaminated sites, that at Pit 4, zinc was encountered at a level of 270 mg/kg. During the Stage 1 investigation both lead and zinc were noted to have high concentrations, above threshold levels at Pit 2. The environmental based threshold for zinc is 200mg/kg. In consultation with Simmonds and Bristow it was determined that the concentration levels for zinc can be quite variable, depending on local geology, and results as high as 1000mg/kg can be found in some areas. The Department of Environment draft action limit for Zinc is 1000 mg/kg and as such this result does not indicate that further action is required.

The environmental and health based levels for lead are 300mg/kg. At pit 2 this level was exceeded as the level of lead recorded was 740mg/kg.

All other heavy metal results, were below the environmental investigation limits.

In relation to the Pesticides, the Department of Environment considers that soils with total pesticide results below 5 mg/kg do not require intervention or management.

With the exception of sample 2, all pesticide levels were below the level of reporting and as such were below the investigation limits for the assessment and management of contaminated sites.

All herbicide results were below the level of reporting (10µg/kg) and as such were below the investigation limits for the assessment and management of contaminated sites.

3. CONCLUSION & RECOMMENDATIONS

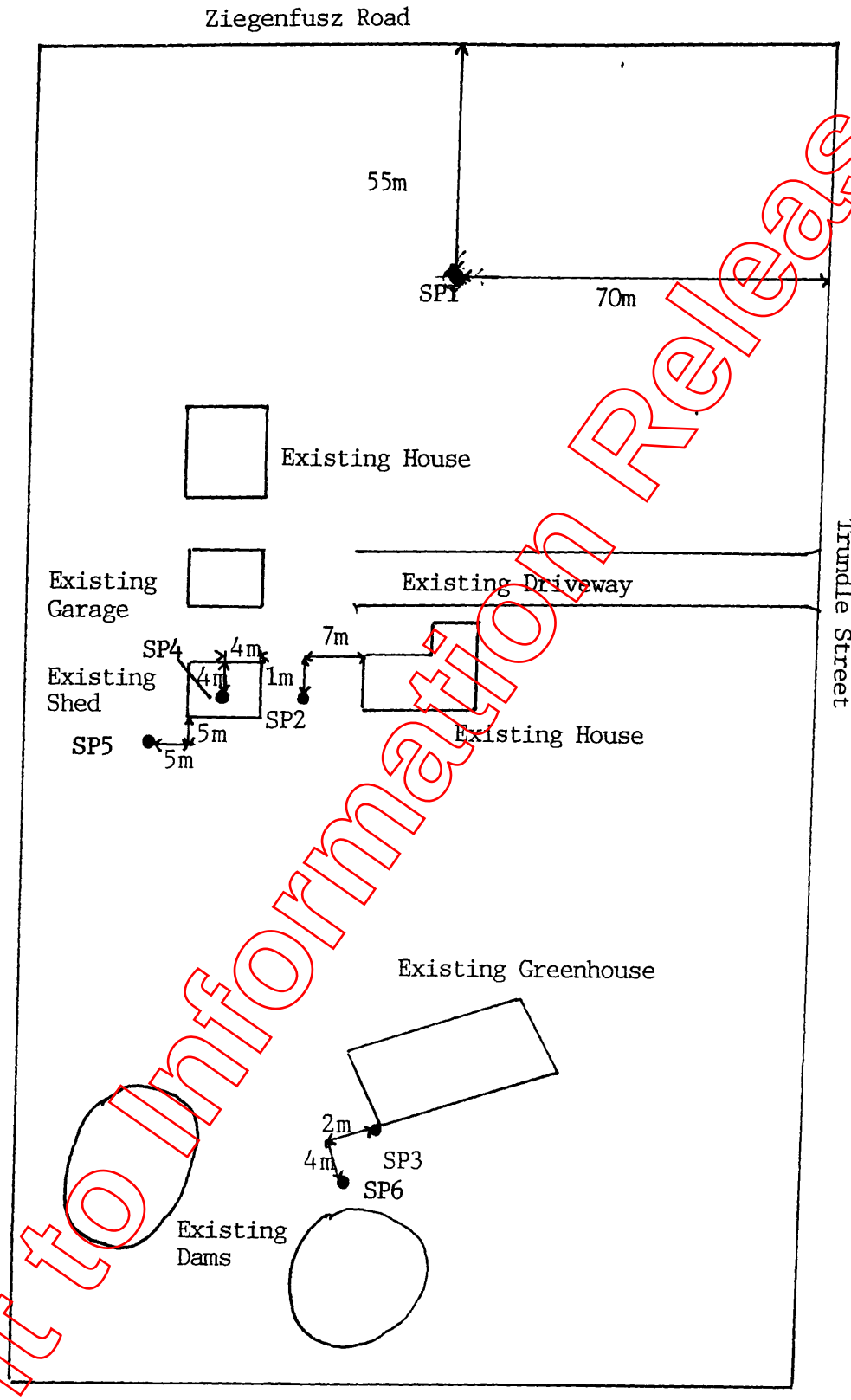
The majority of the sampled locations indicate that the site is void of any significant contamination. However, at Pit 2 (old storage shed), this area is considered a "hot-spot" due to the high concentrations of endosulphate and lead levels encountered. As a result of the Stage 2 investigation, it can be concluded that the extent of this contamination is isolated. In consultation with Ms Karen Hopper representing the Department of Environment (DOE) it was concluded that, based on the fieldwork carried out to date, that this "hot spot" area should be removed and placed at the nearest appropriate land fill. The DOE stated that the site will not be required to be placed on the contaminated resister based on the proposed remedial works. The extent of the material to be removed will be clarified on site prior to excavation, but it is estimated that the area to be removed will be in the order of 5m x 5m x 0.5m. This material will be placed at the Birkdale dump. A further check test is recommended within the underlying impermeable strata (approx. 0.5m deep) to ensure any potential contamination infiltration has not migrated to this depth. All excavation works will be fully supervised by a duly qualified geotechncal engineer.

Should you have any queries in relation to this report please do not hesitate to contact Gary Samuels at our Browns Plains office.

Yours faithfully,
BOWLER GEOTECHNICAL

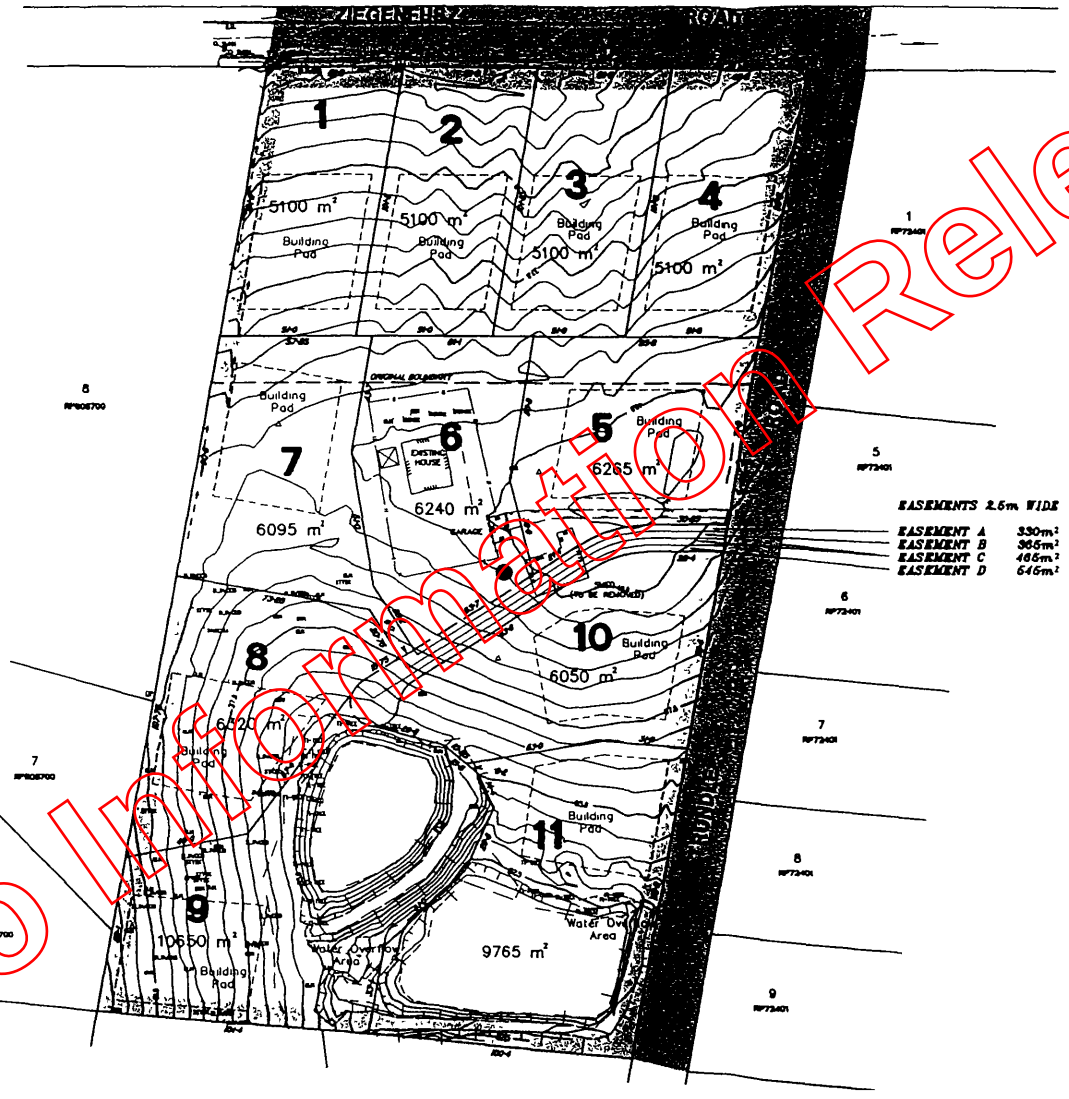
DAVID BOWLER
DIRECTOR

GARY SAMUELS
SENIOR ENGINEERING GEOLOGIST



NOT TO SCALE

BOWLER GEOTECHNICAL PTY LTD 7-3359 Mt. Lindesay Highway Browns Plains, Qld. 4118 Office-Ph. 3800 6446 Fax: 3800 0816 Lab- Ph. 3800 3832 Fax 3800 7928 Also at Gold Coast, Geebung, Sunshine Coast, Gladstone, Mackay, Townsville, Cairns and Darwin Overseas in Papua New Guinea and Vietnam.	SITE INVESTIGATION LOCATION PLAN 1 TRUNDLE RD THORNLANDS	Job No.: 2514 FIGURE 1



- Approximate "Hot Spot" location

BOWLER GEOTECHNICAL PTY LTD
Address:
7/3359 Mt Lindesay Highway
Browns Plains Qld 4118
Telephone (07) 3800 6446
Facsimile 3800 0816

PROPOSED SUBDIVISIONAL LAYOUT

1 TRUNDLE RD, THORNLANDS

Job No: 2514

Dwg No: FIGURE 2

SIMMONDS & BRISTOW PTY LTD
ACN 010 252 418
WATER & ENVIRONMENTAL ANALYSTS & CONSULTANTS SINCE 1965

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

Central Queensland
Ph 1800 620 690

Bowler Geotechnical Pty Ltd
Client Ref : JOB No. 97/2514

Ref. No: 37078
Page No: 1 of 1

SOIL ANALYSIS

Sampled By: Client

Regd No	Sample Description	Collected	Received	Tested
136289	SAMPLE 4 (0.3m) 97/2514	1/10/97	3/10/97	3/10-21/10
136290	SAMPLE 5 (0.3m) 97/2514	1/10/97	3/10/97	3/10-21/10
136291	SAMPLE 6 (0.3m) 97/2514	1/10/97	3/10/97	3/10-21/10
S&B Method	**Chemical Analysis**	**136289**	**136290**	**136291**
	Analysis Description			
WC050.14	Lead as Pb mg/kg	54.	30.	27.
WC105.14	Zinc as Zn mg/kg	270.	180.	150.
S&B Method	**External Laboratories**	**136289**	**136290**	**136291**
*OS025	Herbicides	ATTACHED	ATTACHED	ATTACHED

* NATA Registration does not cover the performance of this service.
** Enclosed are external lab results from GCL.
*** Samples were tested as received and reported on a dry weight based on the moisture content from air drying (40 deg C).
**** Sludge and soil samples prepared as per EPA 3050 digest prior to metals' analysis.

Client Manager

David Gleeson BSc

SIMMONDS & BRISTOW PTY LTD

PER

October 24, 1997

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

Central Queensland
Ph 1800 620 690

Bowler Geotechnical Pty Ltd
Client Ref : JOB No. 97/2514

Ref. No: 37078
Page No: 1 of 1

SOIL ANALYSIS

Sampled By: Client

Regd No	Sample Description	Collected	Received	Tested
'136289	SAMPLE 4 (0.3m) 97/2514	1/10/97	3/10/97	3/10-21/10
136290	SAMPLE 5 (0.3m) 97/2514	1/10/97	3/10/97	3/10-21/10
136291	SAMPLE 6 (0.3m) 97/2514	1/10/97	3/10/97	3/10-21/10

S&B Method	ORGANOCHLORINE PESTICIDES		136289	136290	136291
GC02.03	LOR (Soil)	mg/kg	0.1	0.1	0.1
GC021.01	HCB	mg/kg	<0.1	<0.1	<0.1
GC021.02	alpha-BHC	mg/kg	<0.1	<0.1	<0.1
GC021.03	beta-BHC	mg/kg	<0.1	<0.1	<0.1
GC021.04	gamma-BHC (Lindane)	mg/kg	<0.1	<0.1	<0.1
GC021.05	delta-BHC	mg/kg	<0.1	<0.1	<0.1
GC021.06	Heptachlor	mg/kg	<0.1	<0.1	<0.1
GC021.07	Aldrin	mg/kg	<0.1	<0.1	<0.1
GC021.08	Oxychlordane	mg/kg	<0.1	<0.1	<0.1
GC021.09	Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1
GC021.10	P,P-DDE	mg/kg	<0.1	<0.1	<0.1
GC021.11	P,P-DDD	mg/kg	<0.1	<0.1	<0.1
GC021.12	P,P-DDT	mg/kg	<0.1	<0.1	<0.1
GC021.13	P,P-DDE	mg/kg	<0.1	<0.1	<0.1
GC021.14	P,P-DDD	mg/kg	<0.1	<0.1	<0.1
GC021.15	P,P-DDT	mg/kg	<0.1	<0.1	<0.1
GC021.16	Dieldrin	mg/kg	<0.1	<0.1	<0.1
GC021.17	Endrin	mg/kg	<0.1	<0.1	<0.1
GC021.18	alpha-Endosulfan	mg/kg	<0.1	<0.1	<0.1
GC021.19	beta-Endosulfan	mg/kg	<0.1	<0.1	<0.1
GC021.20	Endosulfan Sulfate	mg/kg	<0.1	<0.1	<0.1
GC021.21	Methyoxychlor	mg/kg	<0.1	<0.1	<0.1
GC021.22	CIS Chlordane	mg/kg	<0.1	<0.1	<0.1
'GC021.23	Trans-Chlordane	mg/kg	<0.1	<0.1	<0.1
GC021.24	Dicofol	mg/kg	<0.1	<0.1	<0.1

S&B Method	ORGANOPHOSPHATE PESTICIDES		136289	136290	136291
GC02.04	LOR (Soil)	mg/kg	0.2	0.2	0.2
GC021.25	Diazinon	mg/kg	<0.2	<0.2	<0.2
GC021.26	Dichlorfenthion	mg/kg	<0.2	<0.2	<0.2
GC021.27	Chlorpyrifos-Methyl	mg/kg	<0.2	<0.2	<0.2
GC021.28	Ethion	mg/kg	<0.2	<0.2	<0.2
GC021.29	Carbophenothion (Trithion)	mg/kg	<0.2	<0.2	<0.2
GC021.30	(Dursban) Chloropyrifos	mg/kg	<0.2	<0.2	<0.2
GC021.31	Fenitrothion	mg/kg	<0.2	<0.2	<0.2
GC021.32	Parathion-Ethyl (Parathion)	mg/kg	<0.2	<0.2	<0.2
GC021.33	Bromophos-Ethyl	mg/kg	<0.2	<0.2	<0.2
GC021.34	Ronel (Fenchlorphos)	mg/kg	<0.2	<0.2	<0.2
GC021.35	Prothiophos	mg/kg	<0.2	<0.2	<0.2

* Enclosed are external lab results from GCL.
** Samples were tested as received and reported on a dry weight basis on the moisture content from air drying (40 deg C).
*** Sludge and soil samples prepared as per EPA 3050 digest prior to metals' analysis.

Client Manager

David Gleeson BSc

SIMMONDS & BRISTOW PTY LTD

PER

October 24, 1997

QUEENSLAND GOVERNMENT

RECEIVED
2 OCT 1997

QUEENSLAND HEALTH

SCIENTIFIC SERVICES

Enquiries : Nigel Dennison
Telephone : 07-32749088
Report Id : 97EP785/787:SOB:mdf
Your Ref. : 136289 - 136291

To **Simmonds & Bristow Pty Ltd**
30 Shottery Street
YERONGA Q 4104

Date Received : 06/10/97
Number of Samples : 3
Sample Type : SOIL
From : JULIE IVISON
Reason for Submission : MUD/SOIL HERBICIDES
Client Ref. Number : PURCHASE ORDER P02320
Ref. 136289 : SOIL
Ref. 136290 : SOIL
Ref. 136291 : SOIL

Client Reference Lab. Ref. No.	136289 EP 785	136290 EP 786	136291 EP 787	Method
2,4-DB (ug/kg)	< 10	< 10	< 10	QPM-022
2,4-D (ug/kg)	< 10	< 10	< 10	QPM-022
2,4-DP(DICHLORPROP) (ug/kg)	< 10	< 10	< 10	QPM-022
2,4,5-T (ug/kg)	< 10	< 10	< 10	QPM-022
PICLORAM (ug/kg)	< 10	< 10	< 10	QPM-022
TRICLOPYR (ug/kg)	< 10	< 10	< 10	QPM-022

Results are expressed on a dry weight basis.

Method: Solvent extraction, then QSE-QPM-022.

The results relate to the samples as received. The responsibility for sampling rests with the client.

.S.B O'B..... 20/10/97
Steve O'Brien, Analyst

Queensland Health Scientific Services
39 Kessels Road
Coopers Plains Qld 4108

PO Box 594
Archerfield
Qld 4108

Phone (07) 32749111
International Code 61

Fax (07) 32749119

BOWLER GEOTECHNICAL PTY LTD
Geotechnical Engineering Consultants
Soils Laboratory Services
(Incorp in Qld A C N 050 401 771)

Address: 7/3359 Mt Lindesay Highway, Browns Plains Qld 4118
Telephone: Office/Eng. (07) 3800 6446, Laboratory: (07) 3800 3832
Facsimile: 3800 0816, 3800 7928
Also at: Gold Coast Geebung Sunshine Coast Gladstone Mackay Townsville Cairns Mt Isa Darwin. Overseas Offices in Vietnam and Papua New Guinea

2514:GS

30 September, 1997

TEXKING Pty Ltd
454 Old Cleveland Road
BIRKDALE QLD 4159

ATTENTION: MR PAUL WRUCK

Dear Sir,

RE: SITE CONTAMINATION ASSESSMENT
1 TRUNDLE ROAD, THORNLANDS

1. Introduction

This reports presents results of an investigation carried out to assess the extent of any possible contamination due to previous land use at the captioned site. It is understood that the site is proposed to be rezoned as Park Residential.

Authorisation to proceed with the investigation was verbally received from Mr Paul Wruck on 25 August, 1997.

This report should be read in conjunction with our attached "General Notes".

2. Site Description

The site, at the time of the investigation, was basically a cleared site of approximately 7.7ha. Several existing buildings are on site, some being currently occupied for residential use (property care taking). The site was well drained, sloping in both a northerly direction, towards the boundary with Ziegenfusz Road and at the area of the existing dwellings, in a southerly direction towards two existing dams. The site is bounded by Ziegenfusz Road to the north, Dicameron Court to the west, Trundle Road to the east and two dams to the south.

3 Site Use History

As per the Citec search, the site is not listed in the contaminated sites register and is therefore not known to be contaminated.

In discussion with the owner of the block, he indicated that the site was, up until 6 months prior to the investigation, a flower farm. He also stated that it had been a flower farm for the past 10 years.

Further discussion with [redacted] a former employee on the flower farm, stated that prior to the site being developed as a flower farm, for a period of approximately 5 years it was a strawberry farm. To the best of his knowledge, prior to it being a strawberry farm, it was scrub land.

Aerial photographic interpretation from a low level run made on 29 April, 1974 shows the existence of buildings on site but whether they are residential dwellings or farming structures it is not possible to say.

It was further noted that the following pesticides were used on site, during the life of the area as a flower farm; roveral, mancozeb, pirenica, ambush, nitisol, methoyl bromide, endosulphan, lanate and Brabo. The chemicals were used over the centre site from 1987-1997.

4. Investigation Work

4.1 Fieldwork

Observations made on site, showed by way of disused drums, that Fungicides (Chlorothalonil) and Insecticides (Carbaryl Anticholinesterease) have previously been used on site. Other compounds than those already mentioned or discussed may have previously been used which were not discovered during the field operation or discussed during the above conferences.

Fieldwork for the investigation was carried out on the 4 September, 1997 and included the recovery of three disturbed samples at depths of 0.3m below existing surface level for screen testing for possible contaminants. Recovered samples were placed in air tight glass jars and packed in ice for delivery to Simmonds and Bristow (chemical testing laboratories, Brisbane) for immediate testing. The location of the samples recovered is shown on Figure 1.

4.2 Laboratory Testing

The three disturbed soil samples recovered from the site was delivered to Simmonds and Bristow and the following testing were carried out to provide an initial screen to assess if any contaminants are likely on the site.

- Arsenic
- Cadmium
- Chromium
- Lead
- Copper

- Nickel
- Zinc
- Pesticides (OP and OC)

Results from the above analyses are attached and indicate that, with reference to the relevant Australian and New Zealand for the assessment of contaminated sites, most levels were within guideline limits. At pit 2 (at old storage shed location) zinc was encountered at a level of 540mg/kg and lead of a level of 710mg/kg. The health environment based threshold for zinc and lead, given by ANZECC guidelines is 200mg/kg and 300mg/kg respectively.

OC/OP pesticide testing indicated that at pit 2 a level of 0.4mg/kg, 0.4mg/lg and 8.9mg/kg of alpha-endosulphan, beta-endosulphan and endosulphan sulphate was encountered respectively. In conference with Simmonds and Bristow it appears that there is some obscurity as to whether these pesticides results are safe or unsafe in relation to health and environment. However, it is considered by Simmonds and Bristow that a typical threshold for a compound of this type, that being similar to Dieldrin, would be in the order of 0.2mg/kg for alpha-endosulphan, beta-endosulphan and endosulphan sulphate.

At pit 3 Endosulfan sulphate at level of 0.2mg/kg was recorded, the threshold for this compound is as above.

5. Conclusion

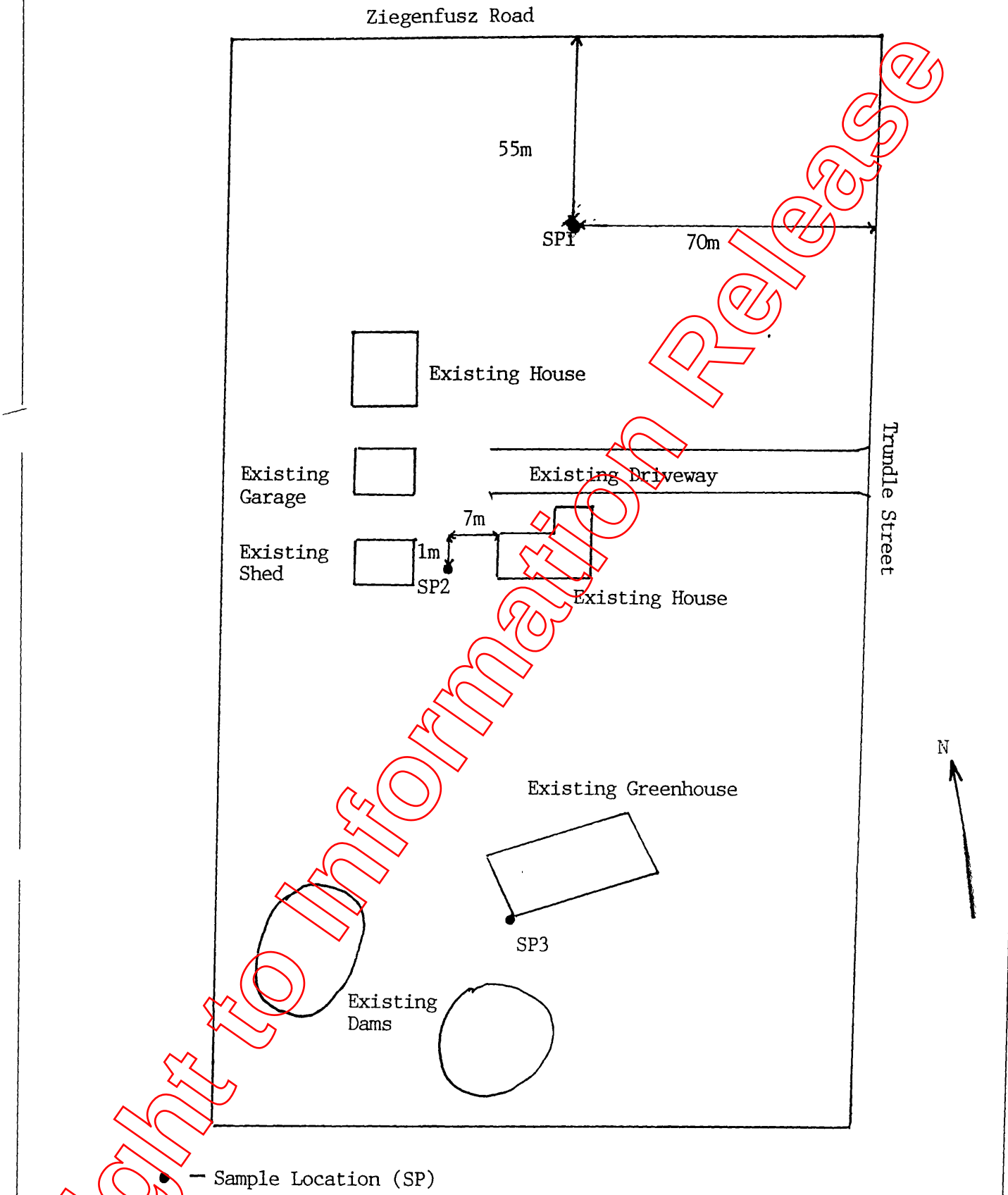
Based on information gathered regarding the site history, inspection of the site and soil testing results, further investigation in the vicinity of pits 2 and 3 is recommended in order to determine the extent of the pesticide and heavy metal contamination and therefore comment on remedial action as /if required.

It was also noted that the existing dams are down slope of the above pit locations; it is further recommended that water analyses be undertaken to assess for possible migration of chemicals.

Should you have any queries in relation to this report please do not hesitate to contact the undersigned.

Yours faithfully,
BOWLER GEOTECHNICAL

p.p. **DAVID BOWLER BE, MIE Aust, RPEQ No. 1803**
DIRECTOR



BOWLER GEOTECHNICAL PTY LTD
7-3359 Mt. Lindesay Highway
Browns Plains, Qld. 4118
Office-Ph: 3800 6446 Fax: 3800 0816
Lab- Ph: 3800 3632 Fax 3800 7928
Also at Gold Coast, Geebung, Sunshine Coast, Gladstone, Mackay, Townsville, Cairns and Darwin. Overseas in Papua New Guinea and Vietnam.

SITE INVESTIGATION LOCATION PLAN	Job No.: 2514
1 TRUNDLE RD THORNLANDS	FIGURE 1

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

Central Queensland
Ph 1800 620 690

Bowler Geotechnical Pty Ltd
Client Ref : JOB No: 97/2514

Ref. No: 36828
Page No: 1 of 1

SOIL ANALYSIS

Sampled By: Client

Regd No	Sample Description	Collected	Received	Tested
135217	SAMPLE 1, (0.2m)	4/09/97	9/09/97	9/09-22/09
135218	SAMPLE 2 (0.2m)	4/09/97	9/09/97	9/09-23/09
135219	SAMPLE 3 (0.2m)	4/09/97	9/09/97	9/09-22/09

S&B Method	ORGANOCHLORINE PESTICIDES		135217	135218	135219
*GC02.03	LOR (Soil)	mg/kg	0.1	0.1	0.1
*GC021.01	HCB	mg/kg	<0.1	<0.1	<0.1
*GC021.02	alpha-BHC	mg/kg	<0.1	<0.1	<0.1
*GC021.03	beta-BHC	mg/kg	<0.1	<0.1	<0.1
GC021.04	gamma-BHC (Lindane)	mg/kg	<0.1	<0.1	<0.1
GC021.05	delta-BHC	mg/kg	<0.1	<0.1	<0.1
*GC021.06	Heptachlor	mg/kg	<0.1	<0.1	<0.1
*GC021.07	Aldrin	mg/kg	<0.1	<0.1	<0.1
*GC021.08	Oxychlordane	mg/kg	<0.1	<0.1	<0.1
*GC021.09	Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1
*GC021.10	P,P-DDE	mg/kg	<0.1	<0.1	<0.1
*GC021.11	P,P-DDD	mg/kg	<0.1	<0.1	<0.1
*GC021.12	P,P-DDT	mg/kg	<0.1	<0.1	<0.1
*GC021.13	P,P-DDE	mg/kg	<0.1	<0.1	<0.1
*GC021.14	P,P-DDD	mg/kg	<0.1	<0.1	<0.1
*GC021.15	P,P-DDT	mg/kg	<0.1	<0.1	<0.1
*GC021.16	Dieldrin	mg/kg	<0.1	<0.1	<0.1
*GC021.17	Endrin	mg/kg	<0.1	<0.1	<0.1
*GC021.18	alpha-Endosulfan	mg/kg	<0.1	0.4	<0.1
*GC021.19	beta-Endosulfan	mg/kg	<0.1	0.4	<0.1
*GC021.20	Endosulfan Sulfate	mg/kg	<0.1	8.9	0.2
*GC021.21	Methyoxychlor	mg/kg	<0.1	<0.1	<0.1
*GC021.22	CIS Chlordane	mg/kg	<0.1	<0.1	<0.1
*GC021.23	Trans-Chlordane	mg/kg	<0.1	<0.1	<0.1
*GC021.24	Dicofol	mg/kg	<0.1	<0.1	<0.1

S&B Method	ORGANOPHOSPHATE PESTICIDES		135217	135218	135219
GC02.04	LOR (Soil)	mg/kg	0.2	0.2	0.2
*GC021.25	Diazinon	mg/kg	<0.2	<0.2	<0.2
*GC021.26	Dichlorfenthion	mg/kg	<0.2	<0.2	<0.2
*GC021.27	Chlorpyrifos-Methyl	mg/kg	<0.2	<0.2	<0.2
*GC021.28	Ethion	mg/kg	<0.2	<0.2	<0.2
*GC021.29	Carbophenothion (Trithion)	mg/kg	<0.2	<0.2	<0.2
*GC021.30	(Dursban) Chloropyrifos	mg/kg	<0.2	<0.2	<0.2
*GC021.31	Fenitrothion	mg/kg	<0.2	<0.2	<0.2
*GC021.32	Parathion-Ethyl (Parathion)	mg/kg	<0.2	<0.2	<0.2
*GC021.33	Bromophos-Ethyl	mg/kg	<0.2	<0.2	<0.2
*GC021.34	Ronel (Fenchlorphos)	mg/kg	<0.2	<0.2	<0.2
*GC021.35	Prothiophos	mg/kg	<0.2	<0.2	<0.2

* NATA Registration does not cover the performance of this service.
** Samples were tested as received and reported on a dry weight based on the moisture content from air drying (40 deg C).
*** Sludge and soil samples prepared as per EPA 3050 digest prior to metals' analysis.
**** Mercury determined as per EPA method 245 and EPA 600/4-79-020.
*****Arsenic and/or selenium determined as per EPA method 206.3, EPA method 270.3 and EPA 600/4-79-020.

Client Manager

SIMMONDS & BRISTOW PTY LTD

PER

benchmark CERTIFICATION AS NZS ISO 9001 JAS-ANZ

"PROTECTING YOUR PEOPLE, YOUR PROFITS AND THE ENVIRONMENT"

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

Central Queensland
Ph 1800 620 690

Bowler Geotechnical Pty Ltd
Client Ref : JOB No: 97/2514

Ref. No: 36828
Page No: 1 of 1

PESTICIDES IN SOIL

Sampled By: Client

Regd No	Sample Description	Collected	Received	Tested
135217	SAMPLE 1, (0.2m)	4/09/97	9/09/97	9/09-22/09
135218	SAMPLE 2 (0.2m)	4/09/97	9/09/97	9/09-23/09
135219	SAMPLE 3 (0.2m)	4/09/97	9/09/97	9/09-22/09

S&B Method	Chemical Analysis			135217	135218	135219
	Analysis Description					
WC010.14	Arsenic	as As	mg/kg	2.8	1.9	5.9
WC020.14	Cadmium	as Cd	mg/kg	<5.	<5.	<5.
WC030.14	Chromium	as Cr	mg/kg	<20.	32.	27.
WC040.14	Copper	as Cu	mg/kg	<10.	56.	12.
WC050.14	Lead	as Pb	mg/kg	<20.	710.	30.
WC070.14	Nickel	as Ni	mg/kg	<20.	<20.	23.
WC105.14	Zinc	as Zn	mg/kg	170.	540.	170.
*WC065.14	Mercury	as Hg	mg/kg	<0.05	0.06	<0.05

S&B Method	Analysis Description		135217	135218	135219
G030.1	Moisture Content @ 40°C	%	5.2	12.	11.

* NATA Registration does not cover the performance of this service.
** Samples were tested as received and reported on a dry weight based on the moisture content from air drying (40 deg C).
*** Sludge and soil samples prepared as per EPA 3050 digest prior to metals' analysis.
**** Mercury determined as per EPA method 245 and EPA 600/4-79-020.
*****Arsenic and/or selenium determined as per EPA method 206.3, EPA method 270.3 and EPA 600/4-79-020.

Client Maaager

id Gleeson BSc

SIMMONDS & BRISTOW PTY LTD

PER

September 25, 1997