

288 Edward Street • Brisbane, Queensland • PO Box 2771 Brisbane QLD 4001 • AUSTRALIA
Telephone (07) 3227 7370 • Facsimile (07) 32473278 • www.epa.qld.gov.au

Enquirer: Annemarie Lewis
Telephone:
Your reference:
Our reference: 2/RP866235

10th November 2004

Brisbane City Council
GPO box 1434
Brisbane Q 4001

Dear Sir/Madam,

re: Lot 2/RP866235 – Free Street, Newmarket

I wish to advise that the above lot was deleted from the Environmental Management Register (EMR) on the 10th November 2004. Any future searches of the Environmental Management Register for this lot will yield a negative result.

Please retain this letter for your records as confirmation of this lot having been deleted from the Environmental Management Register.

If you have any queries regarding this matter, please do not hesitate to contact me on the above telephone number.

Yours sincerely,

[Redacted Signature]
sch4p4(6) Personal information

Annemarie Lewis
Registry Officer
Contaminated Land Unit



CHEM UNIT

CHEMICAL HAZARDS AND EMERGENCY MANAGEMENT UNIT
A Division of the Bureau of Emergency Services

Telephone: (07) 224 4422
Facsimile: (07) 224 4471

P.O. BOX 13,
NORTH QUAY, QLD 4002

AB:KW

19 March, 1991

Mr. E. Berzins,
Koukourou & Partners,
P.O. Box 116,
EAST BRISBANE QLD 4169

Dear Sir,

RE: Free Street, Newmarket

I refer to your advice on the 4th March, 1991 that Stages 2 & 3 of the above site had been remediated, and major earthmoving activities on site were complete.

On the basis of your validation study and CHEM Unit site inspections, a Site Contamination Report has been issued and is attached for your use.

The report concludes that the site has been remediated to a standard acceptable for your proposed use.

Yours faithfully,

sch4p4(6) Personal information

MICHAEL KINNANE
Acting Director



CHEM UNIT

CHEMICAL HAZARDS AND EMERGENCY MANAGEMENT UNIT
A Division of the Bureau of Emergency Services

Telephone: (07) 224 4422
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P.O. BOX 13,
NORTH QUAY, QLD 4002

March, 1991

SITE CONTAMINATION REPORT

1.0 APPLICANT

1.1 Name: Pioneer Homes
1.2 Address: 2954 Logan Road
UNDERWOOD QLD 4119

2.0 SUBJECT PROPERTY IDENTIFICATION

2.1 Address: Free Street
NEWMARKET QLD 4051
2.2 Real Property Description: Lots 1 and 3, RP 209539 on original portion 281, Parish of Enoggera, County of Stanley.
2.3 Current Zoning: Particular Development (Retirement Village)

3.0 LOCAL AUTHORITY AREA

3.1 Name: Brisbane City Council
3.2 Address: c/-Town Clerk
G.P.O. Box 1434
BRISBANE QLD 4001

4.0 DATE INITIAL SUBMISSION RECEIVED BY CHEM UNIT

29th October, 1991

5.0 STATUS ON REGISTER OF CONTAMINATED SITES

Restricted contaminated site, file reference number S1/10.

6.0

SUMMARY OF STUDIES UNDERTAKEN BY APPLICANT OR REQUESTED BY DIRECTOR

The following four reports of studies which were undertaken by the applicants consultant; Koukourou & Partners were provided to the CHEM Unit:

- o Site Investigation/Chemical Screening
22 December, 1989
- o Validation Report - Stage 1
29 October, 1990
- o Validation Report - Stages 2 and 3
23 January, 1991
- o Notification of Completion
4 March, 1991

7.0

STATEMENT OF SUITABILITY

On the basis of information supplied to the CHEM Unit the subject property is suitable for Particular Development (Retirement Village) Zoning.

sch4p4(6) Personal information

MICHAEL KINNANE
Acting Director

RTI DL RELEASE EHP



CHEM UNIT

CHEMICAL HAZARDS AND EMERGENCY MANAGEMENT UNIT

A Division of the Bureau of Emergency Services

Telephone: (07) 224 4422

Facsimile: (07) 224 4471

P.O. BOX 13,

NORTH QUAY, QLD 4002

FACSIMILE TRANSMISSION

DATE: 19.3.91 FAX NO: 891 5460

TO: E BERZIN

KOU KOU ROU + PTRS

FROM: A. BRUNNER

TOTAL PAGES SENT (INCLUDING THIS PAGE) 3

COMMENTS: Site Contamination Report.

- Free St

seh4p4(6) Personal information

OFFICE ADDRESS: 8th Floor, Executive Building, 100 George Street, BRISBANE 4000

Fax



Queensland Government

Environmental Protection Agency

Incorporating the
Queensland Parks and Wildlife Service

To: Imogen Kearton **Fax:** 3403 0633

From: Kim Barry

Telephone: 3225 1045 **Fax:** 3247 3278

E-mail: kim.barry@epa.qld.gov.au

Date: 10 November 2004 **Pages:** 1 (including this page)

Subject: Free Street, Newmarket – deletion of Lot 2 RP866235 from the EMR

☐ URGENT

☐ CONFIDENTIAL

Privacy and confidentiality notice

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Dear Imogen,

We confirm that the parkland at Free Street, Newmarket, and described as Lot 2 on RP866235
has been deleted from the EMR.

Regards,

Kim Barry
Principal Scientific Officer

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DESCRIPTIONS AS INDICATED HEREON HAVE BEEN
 CONVERTED TO LOTIS ON PLAN 51518.50
 Authorised J. Watson Senior Draftsman
 Date 20/11/50

J.C. Ramsley I.S.

The Newmarket
 Ply Wood
 Company Ltd

H.B. Southerton
 DIAGRAM A
 Scale 1/4 inch to 1 foot
 CLOSED ROAD (R.C. 11200)

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DIAGRAM

For 10 ex-bis red. Vide Reg. 25.54 (R.C. 11200)
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RP 20072

Vol. 53 1st 240

20072

20072

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8	235	25

For Additional Plan &
Document Settings
Refer to CISP

*Having decided of the survey in the field
to be made as shown on the plan
to be made.*

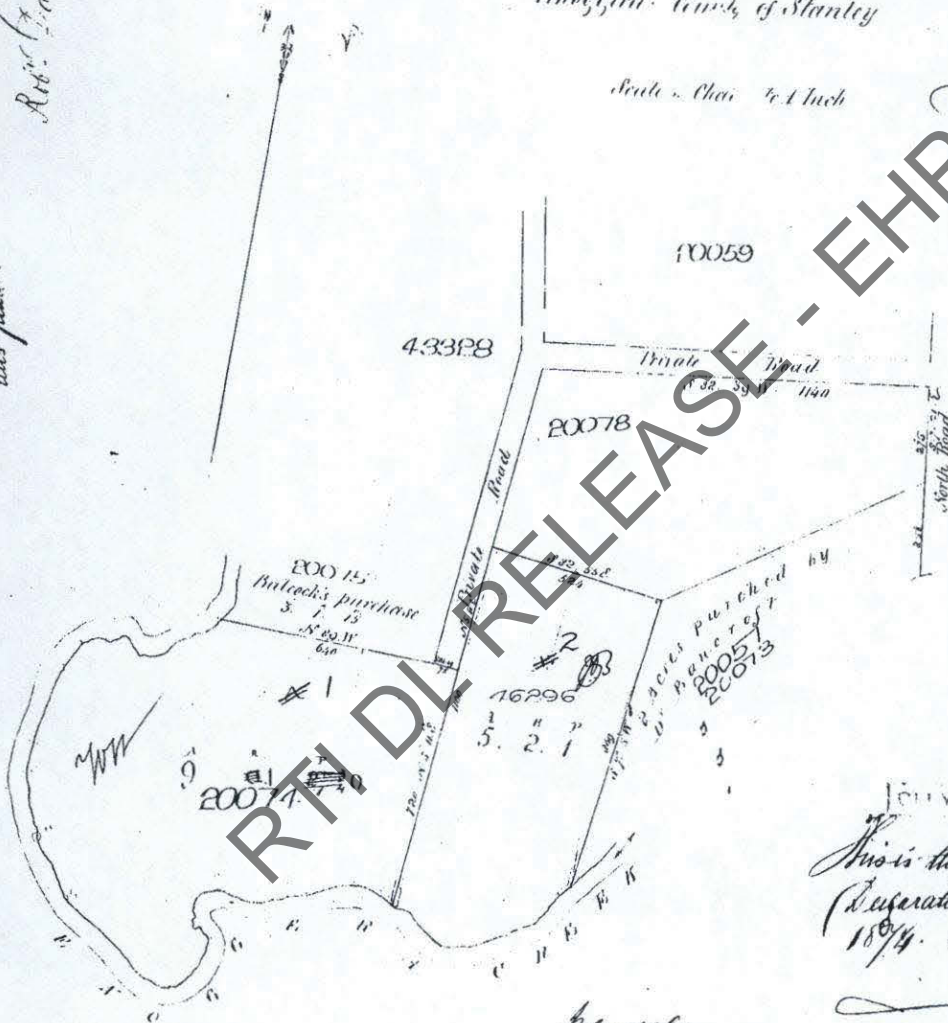
Ref. to plan

7/1/53

Plan of part of Section 280 in the Parish of
Kingsgrove, County of Stanley

Scale 1 inch = 40 feet

*J. L. King
Richard Sumner*



20072

*This is the plan referred to in my
deposition dated 26th October
1894. Made 7/1/53.*

*Richard Sumner
this 26th day of October
1894. Richard Sumner, J.*

E5.123

AMENDED DESCRIPTION
Survey of Lot (c) 142
on R.P. 20072

20072

CISP

Copyright protects this plan. Unauthorised reproduction or amendment is not permitted. Contact the surveyor or Consulting Surveyors Queensland for information.

281
Enoggera

Lois 1&2 See DPB 14476

1 R P 20074

PLAN
OF RESUBDIVISIONS 1 & 2
OF SUBDIVISION A
OF PORTION 281
PARISH OF ENOGGERA

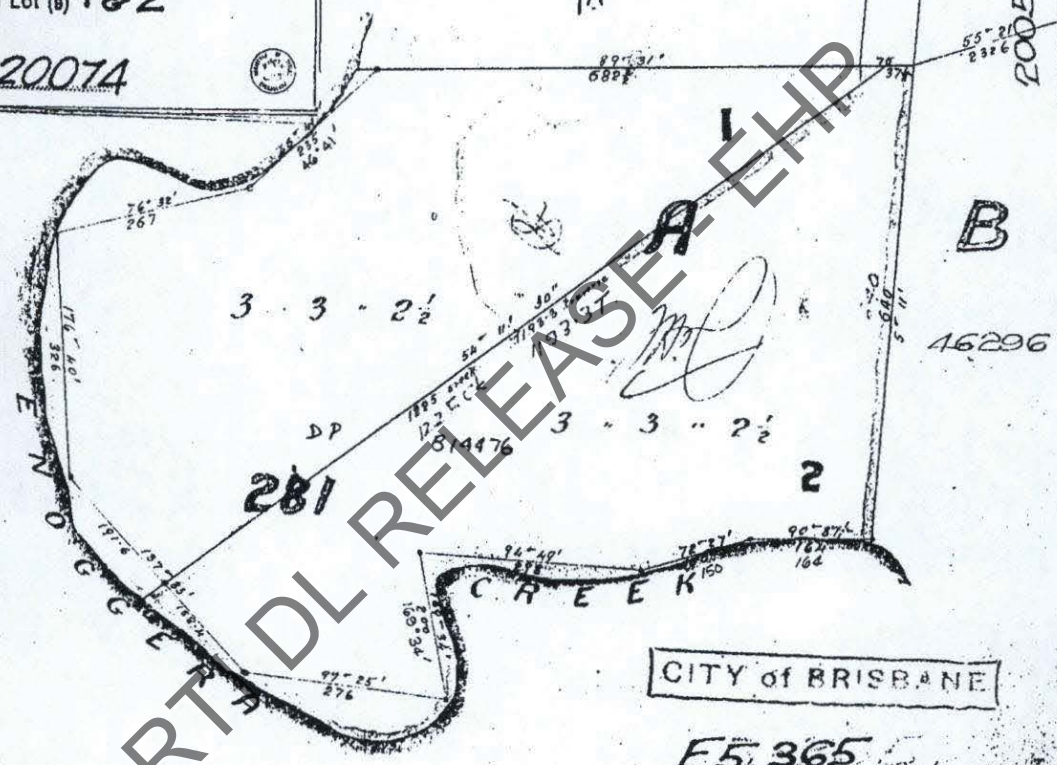
AMENDED DESCRIPTION
Note: This description takes effect upon amendment of the current Title Deed which will be evidenced by a further notation
Survey of Lot (s) **1 & 2**
on R.P. **20074**

Scale - 2 chains to 1 inch
= 1 : 1584

20075
1A

86564
20057

For Additional Plan &
Document Notings
Refer to CISP



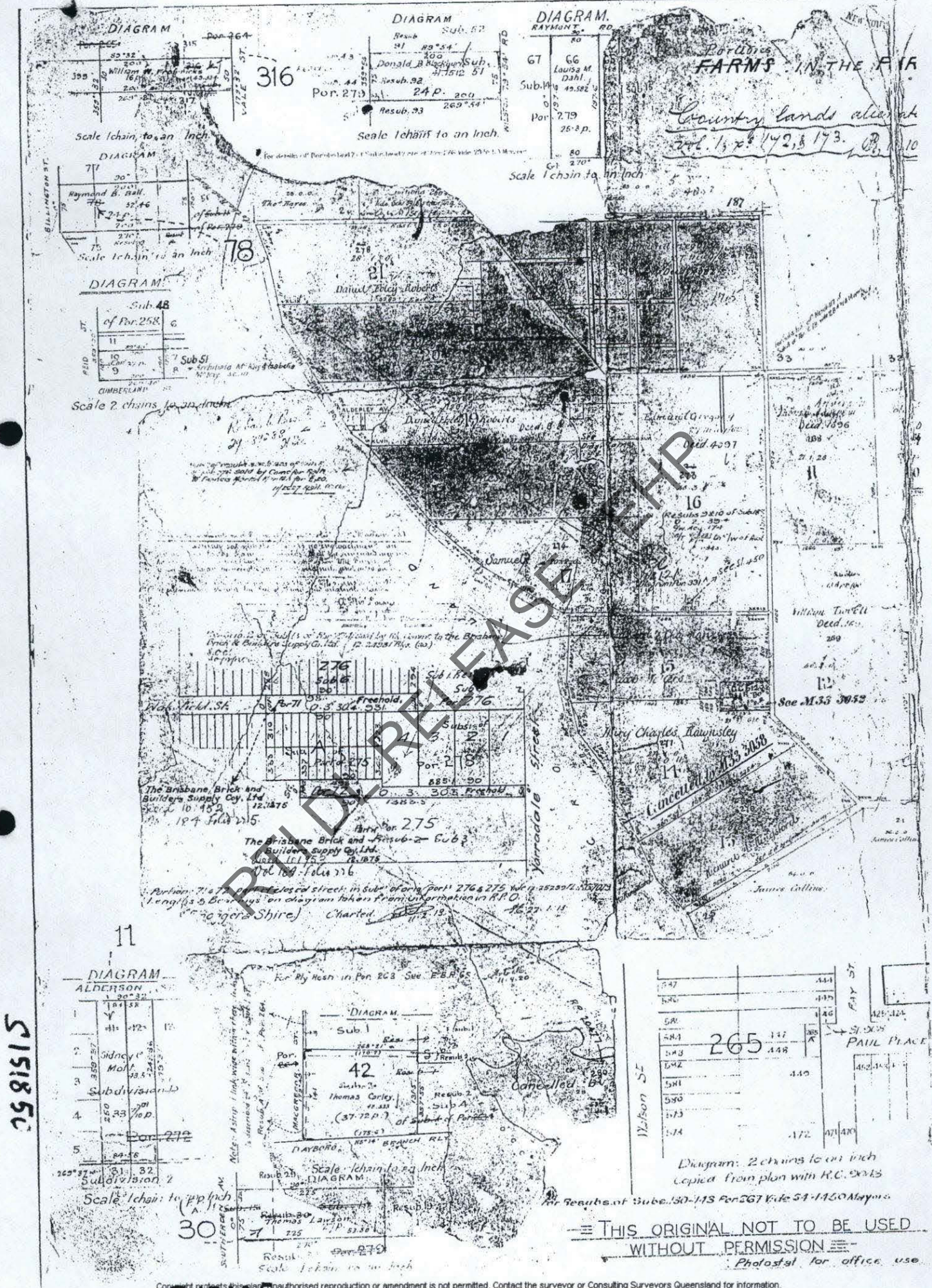
Being seized of the land herein delineated I consent to and approve this plan of Subdivision (signed) *Joseph Theodore* Proprietor

This is the plan referred to in the declaration of Richard Gailley, Licensed Surveyor marked B147 and signed by *Richard Gailley* this 8th day of November 1876

Richard Gailley
20074

20074

2815151850



RP866235

REFERENCE MARKS

STN	TO	ORIGIN	BEARING	DIST
1	O Screw in Kerb	RCB14476	281°27'	2.286
2	OIP	RPB11602	5°47'	1.029
3	Screw in Kerb		99°18'30"	1.315
3	O Bolt Gone	RCB14476	8°40'	1.695
5	O Spike	RCB14476	73°14'	1.383
6	Pin		261°32'	52.275
6	O Spike Gone	RCB14476	53°27'	2.83

Original information compiled from
RP20074, RP20075, RP20076 and
RCB14476 in the Dept of Lands.

Enoggera

Public Use Land
(Park)

2.049 ha Bal

Creek

RTIDL RELEASE - END

ACN 054 026 685
HEILBRONN & PARTNERS PTY LTD
hereby certify that the company has surveyed the
land comprised in this plan by
Ewan James SNEDDON (Licensed Surveyor)
for whose work the Company accepts responsibility, that
the plan is accurate, that the said survey was
performed in accordance with the Surveyors Act 1977
and the Surveyors Regulation, 1992, and that the said
survey was completed on 17/11/94

Licensed Surveyor/
Director
L. J. Sneddon
L. J. Sneddon
Date 21/1/94

PLAN OF LOTS 1 - 3

Cancelling Lot 1 on RP20075, Lot 2 on RP20076
and Lots 1 & 2 on RP20074

ORIGINAL PORTION 281

AMERICAN
Add 0°00'45"
for
RPB11602

MAP REF
CC78

SCALE
1:1250

FILE REF
P.C.

NO SURVEY RECORDS DEPOSITED

ENDORSED
17-11-1994

REGISTERING DIST
BRISBANE

PARISH **ENOGERA**
COUNTY **Stanley**

LOCAL AUTHORITY **NEWMARKET**
BRISBANE C. C.
LAND AGENTS/MINING
DISTRICT

REGISTERED PLAN 866235

0 1 2 3 4 5 6 7 8 9 10 cm CROWN COPYRIGHT RESERVED THE INSTITUTION OF SURVEYORS AUSTRALIA (QUEENSLAND DIVISION) Copyright protects this plan. Unauthorised reproduction or amendment is not permitted. Contact the surveyor or Consulting Surveyors Queensland for Licence NUMBER 67

866235

PLAN MUST BE DRAWN WITHIN BLACK LINES

866235

866235

PLAN MUST BE DRAWN WITHIN BLACK LINES

866235

46/89/13

Fax

To:	Imogen Kearton	Fax:	(07) 3403 0633
From:	Kim Barry Southern		
Telephone:	(07) 3225 1045	Fax:	(07) 3247 3278
E-mail:	kim.barry@epa.qld.gov.au		
Date:	25 October 2004	Pages:	4 (including this page)
Subject:	Free Street Newmarket		

Dear Imogen,

Attached as requested is the Site Contamination Report (SCR) for the site at Newmarket. The lot on plan (lots 1 & 3 on RP209539) referred to on the SCR is the same area that is located on Free Street, Newmarket described as lot 1 on RP866235 (see attached shaded area). By default lot 2 on RP866235 has also been restricted for use as Retirement Village. Because lot 2 on RP866235 is restricted for retirement village use, you may wish to have a Site Management Plan for parklands prepared for this lot.

If you have any queries regarding this matter, please do not hesitate to contact me on the above telephone number.

Regards,

sch4p4(6) Personal information

Kim Barry
Principal Scientific Officer

Privacy and confidentiality notice

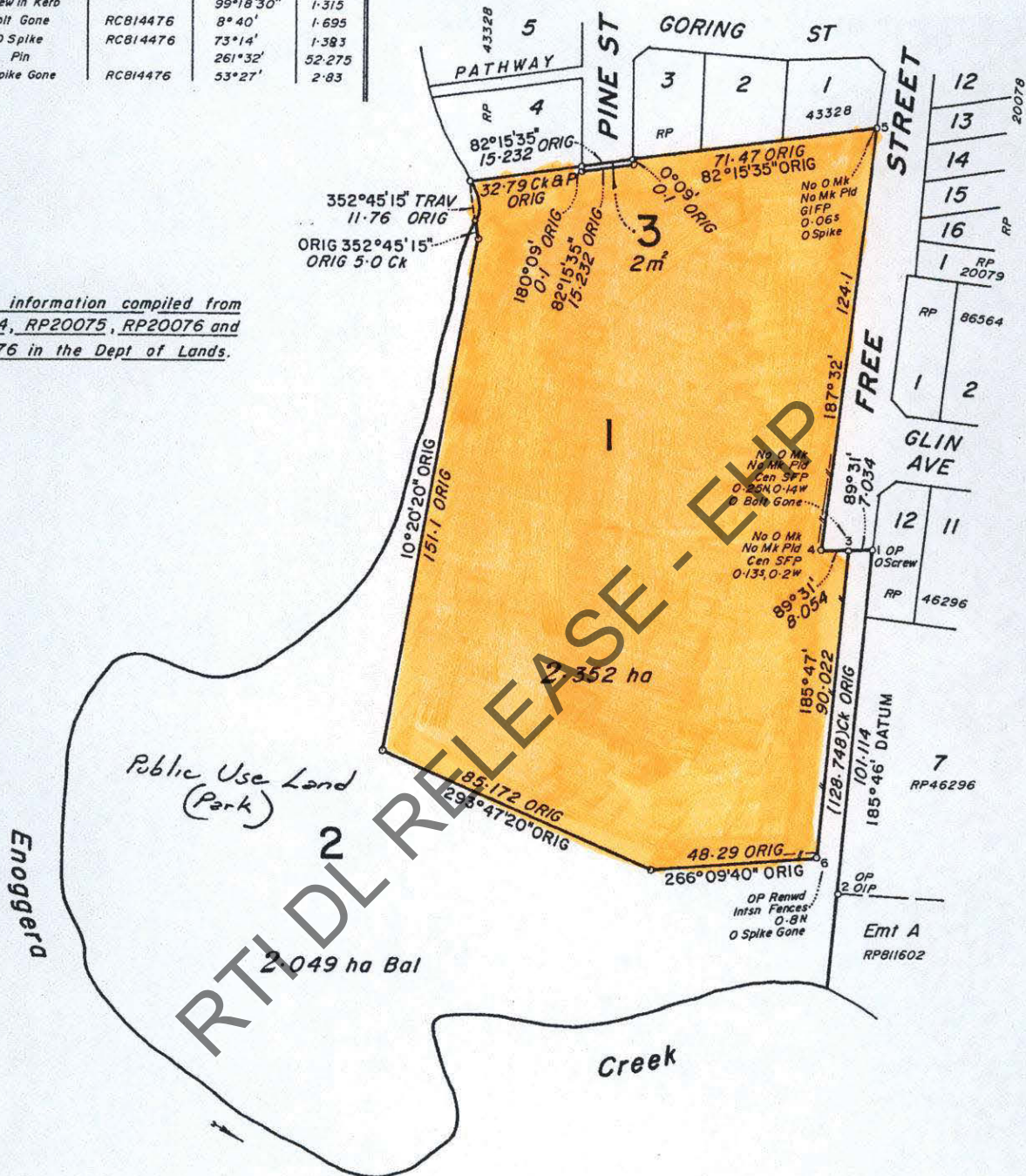
The information contained in this facsimile is intended for the named recipient/s only. It may contain privileged and confidential information and if you are not an intended recipient, you must not copy, distribute or take any action in reliance on it. If you have received this facsimile in error, please notify the sender.

GPO BOX 2771 , Brisbane , Queensland 4002 Australia

REFERENCE MARKS

STN	TO	ORIGIN	BEARING	DIST
1	O Screw In Kerb	RCB14476	281°27'	2.286
2	OIP	RP811602	5°47'	1.029
3	Screw In Kerb		99°18'30"	1.315
3	O Bolt Gone	RCB14476	8°40'	1.695
5	O Spike	RCB14476	73°14'	1.383
6	Pin		261°32'	52.275
6	O Spike Gone	RCB14476	53°27'	2.83

Original information compiled from
RP20074, RP20075, RP20076 and
RCB14476 in the Dept of Lands.



ACN 054 028 685
HEILBRONN & PARTNERS PTY LTD
hereby certify that the company has surveyed the
land comprised in this plan by
Ewan James SNEDDON (Licensed Surveyor)
for whose work the company accepts responsibility, that
the plan is correct, that the said survey was
performed in accordance with the Surveyors Act 1977
and the Surveyors Regulation 1992, and that the said
survey was completed on 21/1/94

Licensed Surveyor/
Director
Licensed Surveyor/
Director
Date 21/1/94

PLAN OF LOTS 1 - 3

Cancelling Lot 1 on RP20075, Lot 2 on RP20076
and Lots 1 & 2 on RP20074

ORIGINAL	MAP REF	SCALE	FILE REF	NO SURVEY RECORDS DEPOSITED
MEPHIAN Add 0°00'45" for RP811602	CC 78	1:1250		ENDORSED P.C. 17-11-1994

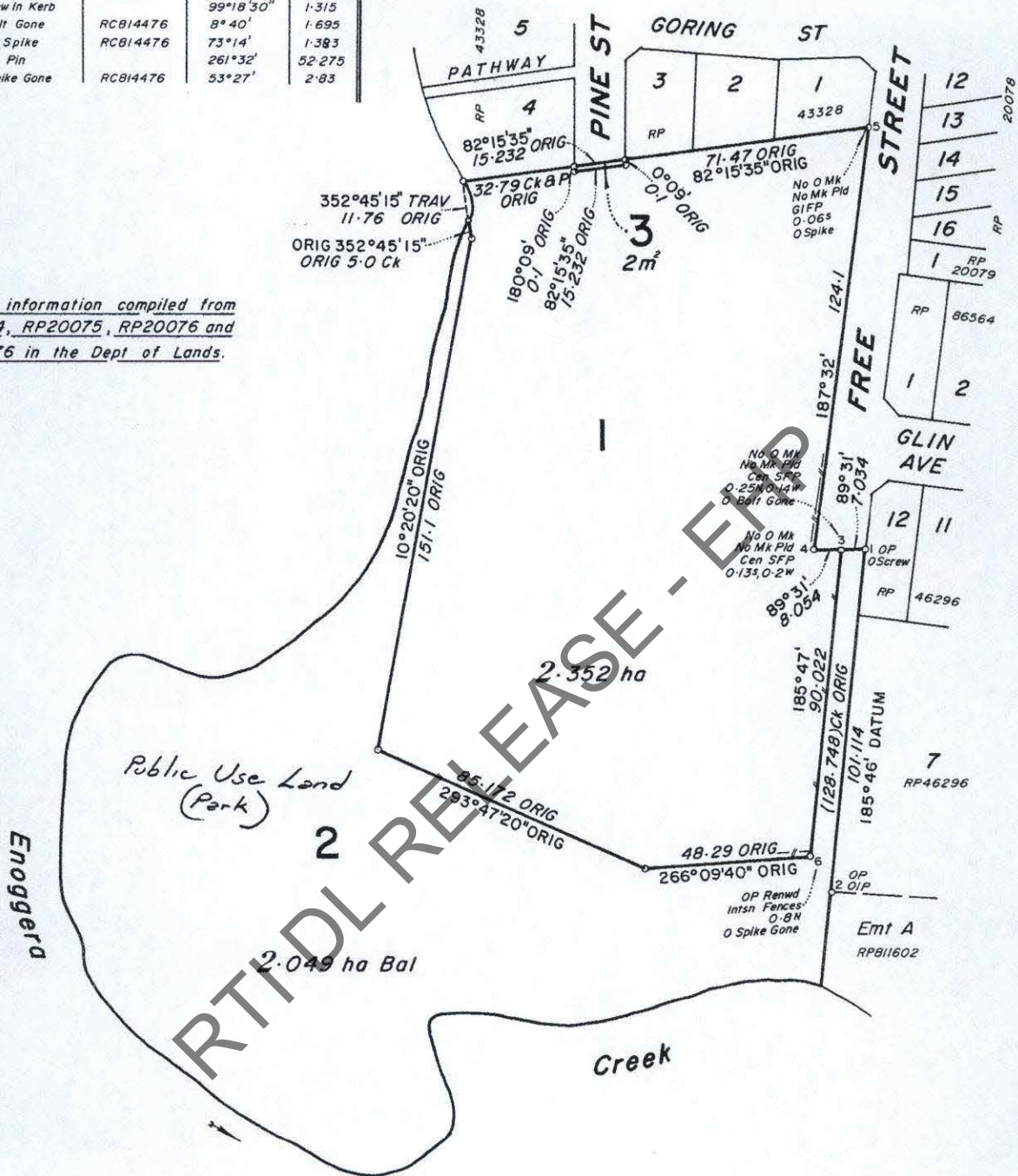
PARISH **ENOGERA**
COUNTY **Stanley**
TOWN/LOCALITY **NEWMARKET**
LOCAL AUTHORITY **BRISBANE C. C.**
LAND AGENTS/MINING
DISTRICT
MINING FIELD

REGISTERED PLAN 866235

REFERENCE MARKS

STN	TO	ORIGIN	BEARING	DIST
1	O Screw in Kerb	RCB14476	281°27'	2.286
2	OIP	RPB11602	5°47'	1.029
3	Screw in Kerb		99°18'30"	1.315
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6	Pin		261°32'	52.275
6	O Spike Gone	RCB14476	53°27'	2.83

Original information compiled from
RP20074, RP20075, RP20076 and
RCB14476 in the Dept of Lands.



ACN 054 026 685
HEILBRONN & PARTNERS PTY LTD
hereby certify that the company has surveyed the
land comprised in this plan by
Ewen James SNEDDON (Licensed Surveyor)
for whose work the company accepts responsibility, that
the plan is a copy of the original survey and that the
survey was performed in accordance with the Surveyors Act 1977
and the Surveyors Regulation 1992, and that the said
survey was completed on 17/1/1994

Licensed Surveyor/
Director
Date 21/1/94

PLAN OF LOTS 1 - 3

Cancelling Lot 1 on RP20075, Lot 2 on RP20076
and Lots 1 & 2 on RP20074

ORIGINAL PORTION 281

MAP REF
CC78

SCALE
1:1250

FILE REF
17-11-1994

NO SURVEY RECORDS DEPOSITED
REGISTERING DIST
BRISBANE

PARISH **ENOGGERA**
COUNTY **Stanley**

TOWN/LOCALITY **NEWMARKET**
LOCAL AUTHORITY **BRISBANE C. C.**

LAND AGENTS/MINING
DISTRICT
MINING FIELD

REGISTERED PLAN 866235

the transfer of lot 2 to the Crown for dedication
as a reserve. Dated this 15th day of November 1992
for park & recreation purposes. sch4n4/ (6) Personal information
Mayor or

~~Town or
Shire Clerk~~

A.C.N 061 603 718
I/We ~~NEWMARKET RETIREMENT VILLAGE PTY LTD~~
~~A.C.N. 010 917 290~~

agree to this plan and dedicate the new road as shown hereon to public use.

Newmarket Retirement Village Pty Ltd
A.C.N. 010 917 230 by its duly
constituted Attorney, James Francis
Lambert, under design number K963264 J

- Rule out which is inapplicable: sch4p4 (6) Personal information...

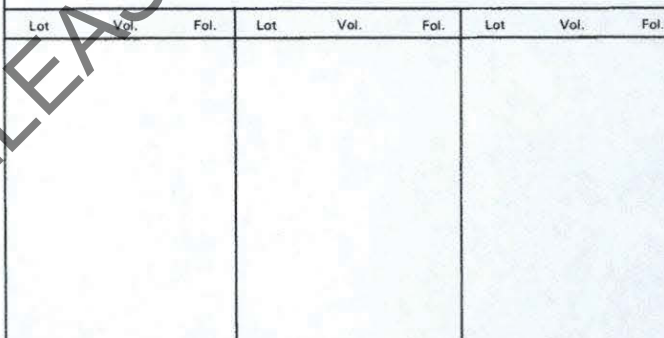
VOL 2974 FOL 212

Lot 2 on RP 20074

TITLE ALLOCATION	
CT	LOTS
1965 - 9	1,283
6502-112	182
2974-212	182

C/I	New Lot	Previous Lot
11965009, 16502112 12974212	1	1on RP 20075, 2on RP 20076 1on RP 20074, 2on RP 20074
11965009, 12974212 16502112	2	1on RP 20075, 2on RP 20076 1on RP 20076, 2on RP 20074
11965009	3	2on RP 20076

**For Additional Plan &
Document Notings
Refer to CISP**

Lot	Vol.	Fol.	Lot	Vol.	Fol.	Lot	Vol.	Fol.
								

ELLISON

821

Registrar of Titles

Postal fee and postage

Logt. Exam. & Ass.

2 New Title

Entd. on Deeds

Photo Fee

Total

Short Fees Paid

Rec No. Q15297

Received \$ 136.00

Date 25.1.1994.

19615080 (POR 281)

at

sch4p4(6) Personal information

REGISTRAR OF TITLES

700433263
\$181.00
05/01/1998
10:14
BE 400 NT PLAN OF SURV ORIG

REGISTERED PLAN 866235

281
Enoggerra

lots 1 & 2 See DPB 14476

PLAN

OF RESUBDIVISIONS 1 & 2

OF SUBDIVISION A

OF PORTION 281

PARISH OF ENOGGERA

B147

AMENDED DESCRIPTION

Note: This description takes effect upon amendment of the present Title Deed which will be evidenced by a further notation

Survey of Lot (a) 1 & 2

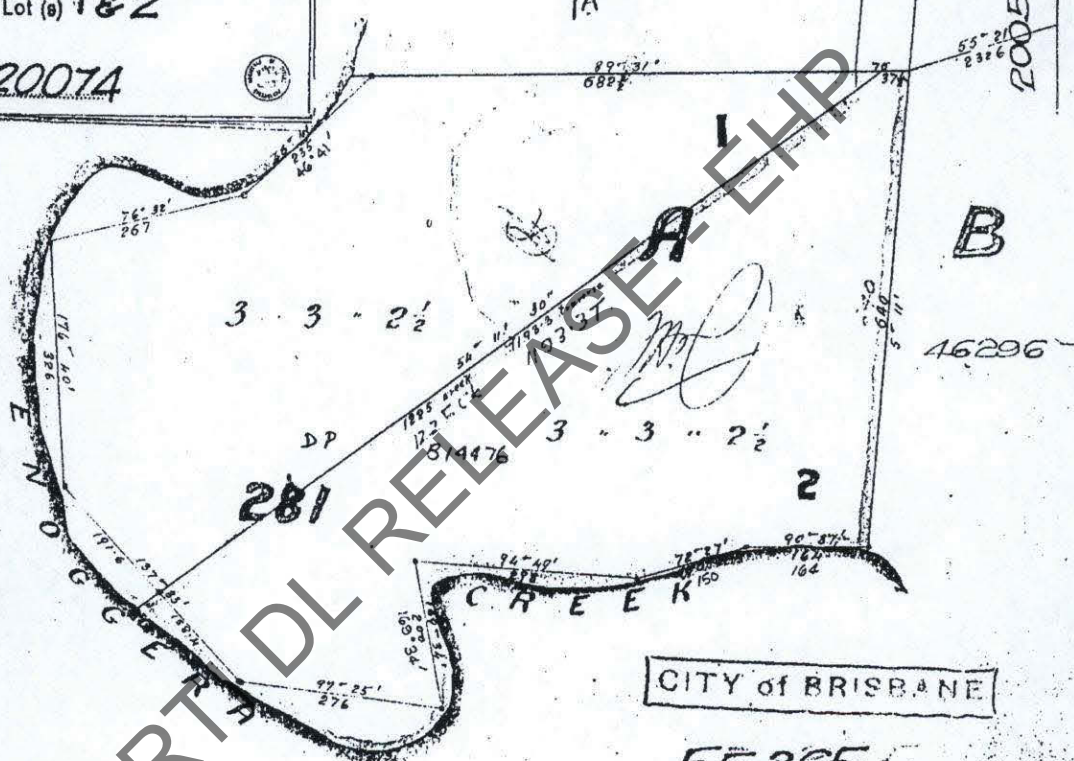
on R.P. 20074

Scale - 2 chains to 1 inch
= 1 : 1584

20075
1A

86564
20057

For Additional Plan &
Document Notings
Refer to CISP



Being seized of the land herein delineated, I consent to and approve this plan of Subdivision.

(Signed)

Joseph Frederick this 5th day of November 1876

Proprietor

This is the plan referred to in the declaration of Richard Gailley, Licensed Surveyor marked B147 and signed by

[Signature]

20074

20074

Civil Structural, Soil Testing.

Postal Address:
PO Box 116
East Brisbane Qld 4169



Level 1
922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169

Telephone (07) 891 1911
Facsimile (07) 891 5460

15 March 1991

Chem Unit
PO Box 13
NORTH QUAY QLD 4002

① Man
for attention please

sch4p4(6) Personal information

Attention: Mr A Brunner

Dear Sir

Re: Free Street Retirement Village
Stages 2 & 3

Further to our letter dated 4 March 1991 and our subsequent discussion regarding the imported fill material; test reports and location plan are attached.

The imported fill was obtained from a stormwater retention basin being constructed as part of a residential subdivision known as Forest View Estate, Middle Road, Greenbank.

We look forward to your Site Contamination Report as soon as possible.

Yours faithfully

sch4p4(6) Personal information

ED BERZINS
KOUKOUROU & PARTNERS

C/C Bill Jones
Neil Ballment
Ken Giess
Russell Holland



Adelaide
(08) 363 0222

Melbourne
(03) 853 7922

Sydney
(02) 621 1401

Branch at Gawler
(085) 22 6802

②

CONSULTING ANALYTICAL CHEMISTS

LABORATORY REPORT

Brisbane Head Office and Laboratory
32 Shand Street, Stafford, Q. 4053
P.O. Box 66, Everton Park, Q. 4053.
Phone: (07) 352 5577.
Fax: (07) 352 5109.

Perth Laboratory
Lot 197 Victoria Road, Malaga, W.A. 6062.
Phone: (09) 249 2988. Fax: (09) 249 2942.

Townsville Laboratory
21 Bombala Street, Garbutt, Q. 4814.
Phone: (077) 79 9155. Fax: (077) 799 729.

Charlert Towers Laboratory
18 Drew Street, Charlert Towers, Q. 4820
Phone: (077) 87 4155. Fax (077) 87 4220.

Bendigo Laboratory
127A Victoria Street, Eaglehawk, Vic. 3556.
Phone: (054) 46 1390. Fax: (054) 46 1389.

Orange Laboratory
10 Leewood Drive, Orange, N.S.W. 2800.
Phone: (063) 631 722. Fax: (063) 631 189.

A.C.N. 009 936 029

Page 1 of 1

Client: KOUKOUROU & PARTNERS
Address: P O BOX 116
EAST BRISBANE
QLD

4169

ontact: MR G LAWRENCE

Order No. LETTER

Sample Type: SOIL

STAFFORD

Batch Number: 1245

Sub-batch: 0

No. of Samples: 3

Date Received: 12/03/91

Date Completed: 13/03/91

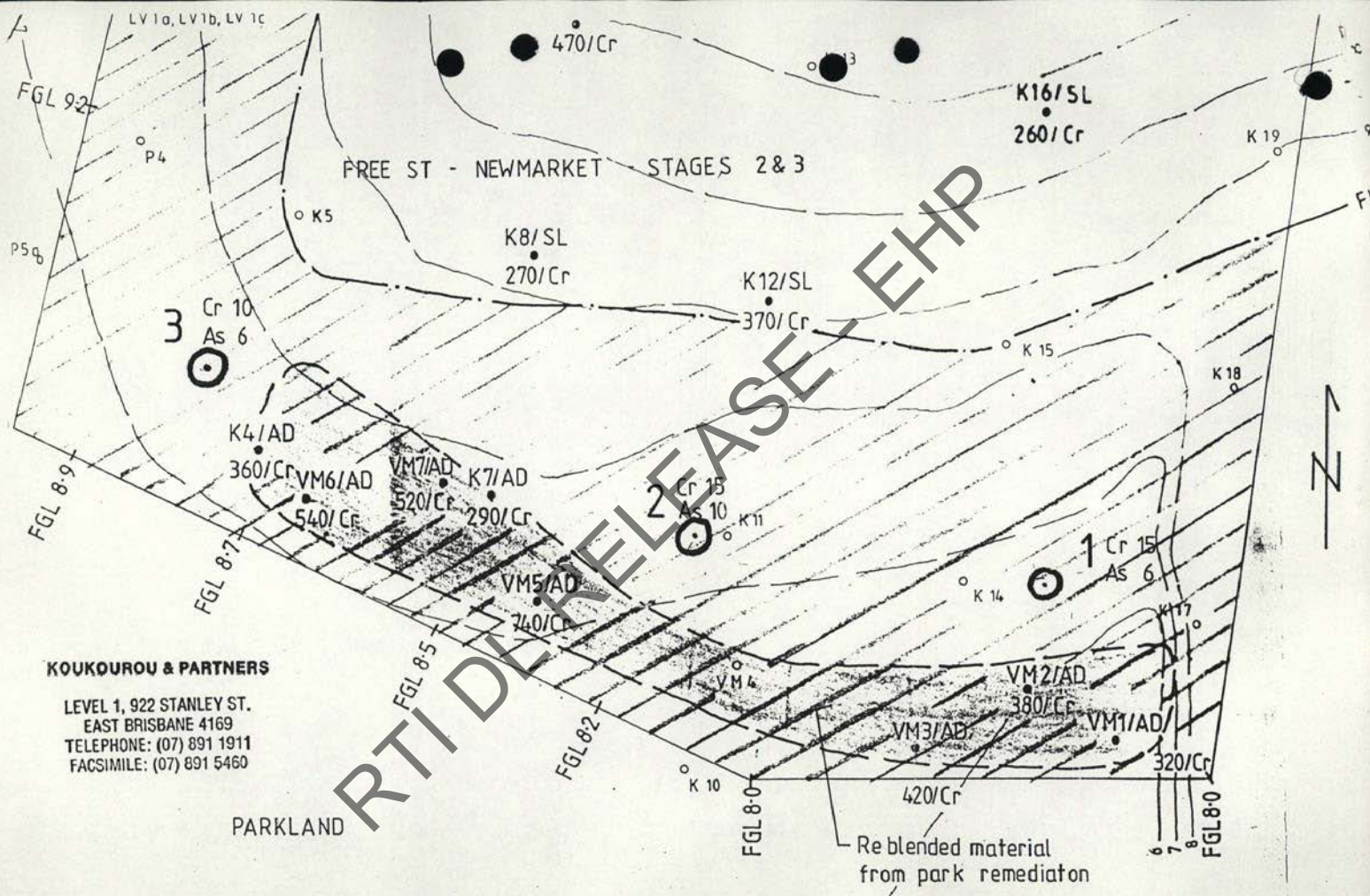
[illegible]

Comments:

All pages of this report have been checked
and approved for release. Signed:

Signed:

sch4p4(6) Personal information



KOUKOUROU & PARTNERS

LEVEL 1, 922 STANLEY ST.
EAST BRISBANE 4169
TELEPHONE: (07) 891 1911
FACSIMILE: (07) 891 5460

PARKLAND

Test Results-Imported fill

Part Drg N° M901101-2

Release

Koukourou & Partners

Consulting Engineers

Civil Structural, Soil Testing.

Postal Address:
PO Box 116
East Brisbane Qld 4169Level 1
922 Stanley Street
(Chr Lisburn Street)
East Brisbane Qld 4169Telephone (07) 891 1911
Facsimile (07) 891 5460

Facsimile transmission

To	CHEN UNIT	Attention	ALAN BRUNNER	Fax. No.	221 0071
Date	10.3.91	No. of Pages	3	From	ED BELZHS
RE:	FREEST - STAGE 2 + 3 VALIDATION				

AS REQUESTED WE HAVE
TESTED THE IMPACTED FILL
AND RESULTS ARE ATTACHED

THE RESULTS ARE WELL
BELOW TRIGGER LEVELS

PLEASE ISSUE YOUR FINAL
CERTIFICATION FOR STAGE 2+3
AS A MATTER OF URGENCY

sch4p4(6) Personal information

Yr Bill takes - Pioneer
N. BAUMERT

Adelaide
(08) 3630222Melbourne
(03) 8537922Sydney
(02) 621 1401Branch at Gawler
(085) 22 6802



Australian Laboratory Services PTY. LTD.

CONSULTING ANALYTICAL CHEMISTS

KOUKOUROU & PARTNERS

Attention: MR G LAWRENCE
Your Order: LETTER
Sample Type: SOIL

Page-no: 1
STAFFORD
Batch-no: 1245
Sub-batch: 0
No-samples: 3
Received: 12/03/91
Checked:

Element
Unit
Method

As
ppm
G033

Cr
ppm
G033

6
10
6

15
16
10

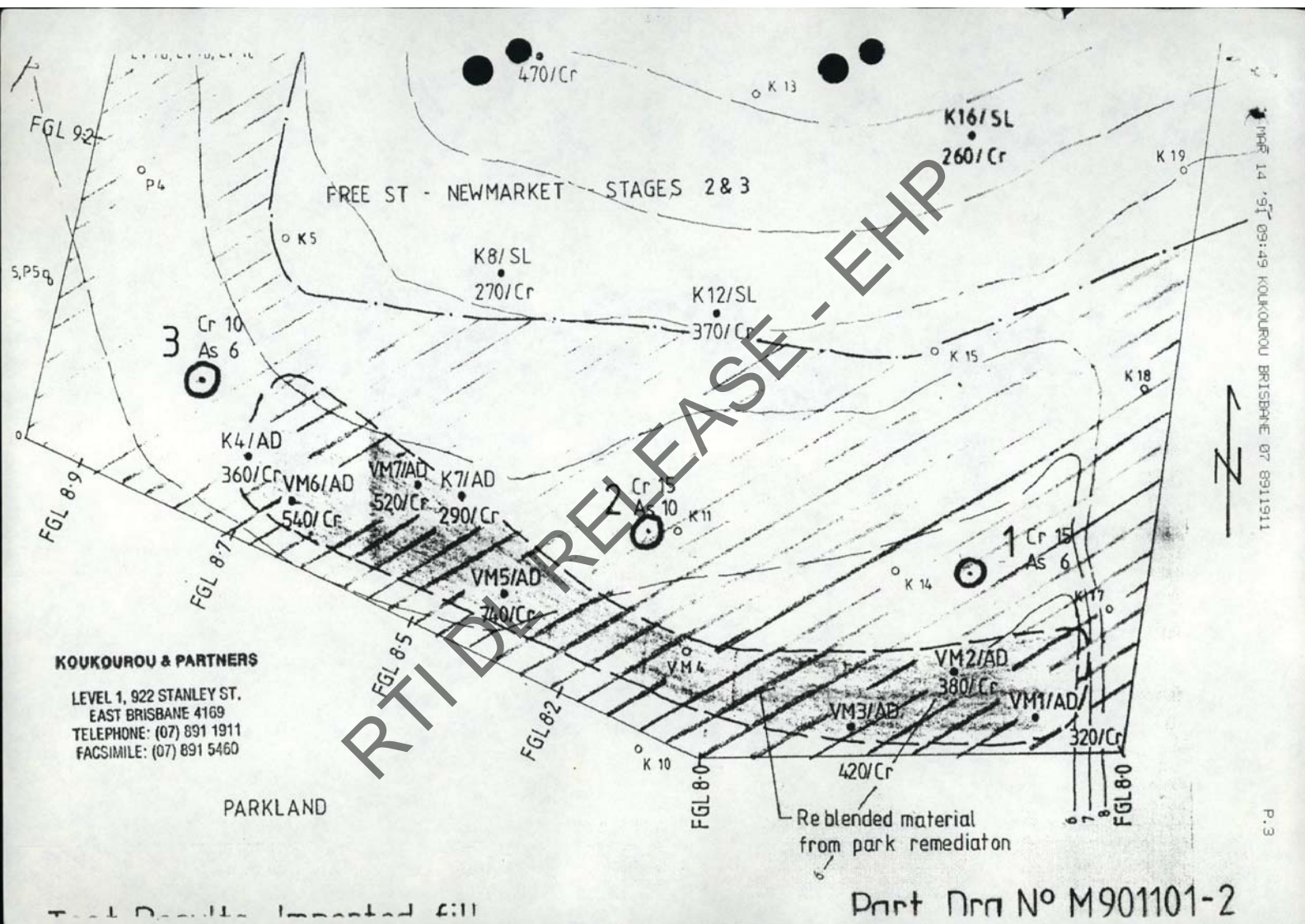
1
2
3

Detection limit

1

1

Report complete, 1 pages sent.



Koukourou & Partners

Consulting Engineers

Civil Structural, Soil Testing.

Postal Address:
PO Box 116
East Brisbane Qld 4169

Level 1
922 Stanley Street
(Chr Lisburn Street)
East Brisbane Qld 4169

Telephone (07) 891 1911
Facsimile (07) 891 5460

Facsimile transmission

To <i>Chere Units</i>	Attention <i>Mr Allan Brunner</i>	Fax No. <i>(07) 224 4471</i>
Date <i>4/3/1991</i>	No. of Pages <i>Two</i>	From <i>Ruth Hennigan</i>
RE <i>Free Street Retirement Village - Stages 2 & 3</i>		

Mr Brunner,

*Please find following the above mentioned letter
for your information. Originals by mail. Regards,*

sch4p4(6) Personal information



Melbourne
(03) 553 7922

Melbourne
(03) 553 7922

Sydney
(02) 551 1401

Branch at Gawler
(08) 22 9902

RTI DL RELEASE - LRP

Civil Structural, Soil Testing.

Postal Address:
PO Box 116
East Brisbane Qld 4169

Level 1
922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169

Telephone (07) 891 1911
Facsimile (07) 891 5460

4 March 1991

Chem Unit
PO Box 13
NORTH QUAY QLD 4002

Attention: Mr A Brunner

Dear Sir

Re: Free Street Retirement Village
Stages 2 & 3

We wish to advise that bulk filling and earthworks to Stages 2 & 3 are now complete except for minor final trimming operations.

All matters relevant to our Valadition Report dated 23 January 1991 have now been satisfied and we now request the Chem Unit Site Contamination Report; as a matter of urgency.

Yours faithfully

sch4p4(6) Personal information

Ed Berzins
KOUKOUROU & PARTNERS

C/C Bill Jones
Neil Ballment
Ken Giess
Russell Holland



Adelaide
(08) 363 0222

Melbourne
(03) 853 7922

Sydney
(02) 621 1401

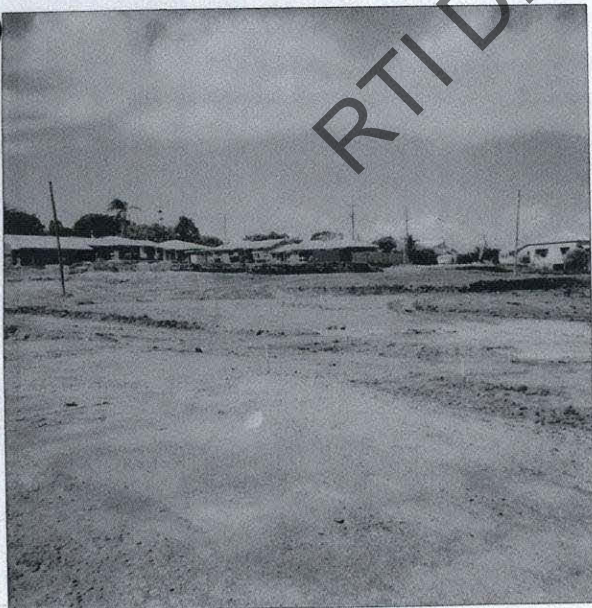
Branch at Gawler
(085) 22 6802



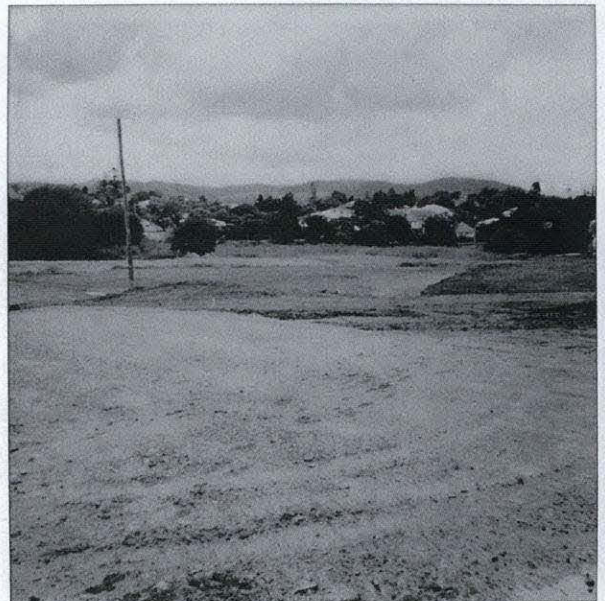
FRONT



TYPICAL LAYOUT.



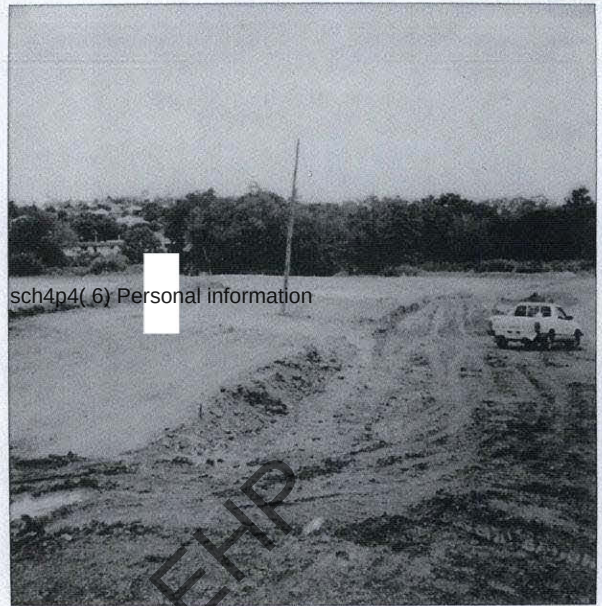
BACK UP SITE.



DOWN SITE



TOWARDS CREEK



sch4p4(6) Personal information

Across Site
towards Free St.

RTI DL RELEASE - EHP



CHEM UNIT

CHEMICAL HAZARDS AND EMERGENCY MANAGEMENT UNIT
A Division of the Bureau of Emergency Services

Telephone: (07) 224 4422
Facsimile: (07) 224 4471

P.O. BOX 13,
NORTH QUAY, QLD 4002

FACSIMILE TRANSMISSION

DATE: 21 JANUARY 1991

FAX NO: 891 5460

TO: G LAWRENCE

KOUKOUROU & PARTNERS

FROM: A BRUNNER

TOTAL PAGES SENT (INCLUDING THIS PAGE) 1

COMMENTS: FREE STREET - NEWMARKET STAGE 2 & 3

AFTER CONSIDERATION BY THE UNIT TOXICOLIGIST, IT IS AGREED THAT FURTHER
BLENDING OF SOIL ON THE SOUTHERN END OF STAGE 2 & 3 IS NOT NECESSARY.
COULD YOU PLEASE ADVISE THE DEPTH OF FILL WHICH IS TO BE ADDED TO THIS
SECTION OF THE SITE.

sch4p4(6) Personal information

A BRUNNER

Koukourou & Partners

Consulting Engineers

CONTAMINATED SITE
FREESTREET

Civil Structural, Soil Testing.

Postal Address:
PO Box 116
East Brisbane Qld 4169Level 1
922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169Telephone (07) 891 1911
Facsimile (07) 891 5460

Facsimile transmission

To	CAEM UNIT	Attention	ALAN BRUNNER	Fax. No.	220 4471
Date	21.1.1991	No. of Pages	2	From	EDBERTINS
RE:	FREESTREET - STAGES 2 & 3.				

DEPTHS OF FILLING.

BOREHOLE NoFILL DEPTH (METRES)

VM 1

0.5

2

1.9

3

1.75

4

1.3

5

1.1

6

1.2

7

0.7

sch4p4(6) Personal information

Adelaide
(08) 363 0222Melbourne
(03) 853 7922Sydney
(02) 621 1401Branch at Gawler
(085) 22 6802

Koukourou & Partners

Consulting Engineers

Civil Structural, Soil Testing.

Postal Address:
PO Box 116
East Brisbane Qld 4169

Level 1
922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169

Telephone (07) 891 1911
Facsimile (07) 891 5460

Facsimile transmission

To	CHEM UNIT	Attention	Allen Brunner	Fax. No.	
Date	20.12.90	No. of Pages	2	From	ED BERZINS
RE:	FREE STREET RETIREMENT VILLAGE				

STAGE 2 & 3 VALIDATION

ATTACHED SKETCH SHOWS
CUTLINE LEVELS PRIOR TO
SPREADING BLENDED MATERIAL AT
THE SOUTHERN END STAGE 2 & 3.

THE FIGURES IN BRACKETS
WERE LEVELS EXISTING PRIOR TO
SCRAPEING AND REMOVAL OF
LEATHER SHAVINGS & DEBRIS

WE FEEL IT WOULD NOT
BE NECESSARY TO TRY AND DILUTE
THE MATERIAL ALREADY BLENDED AS
THERE IS NO REAL GUARANTEE OF
ACHIEVABLE LEVELS & THE AREA WILL
BE COVERED BY IMPORTED COMPACTED
SELECTED FILL ANYWAY

sch4p4(6) Personal information



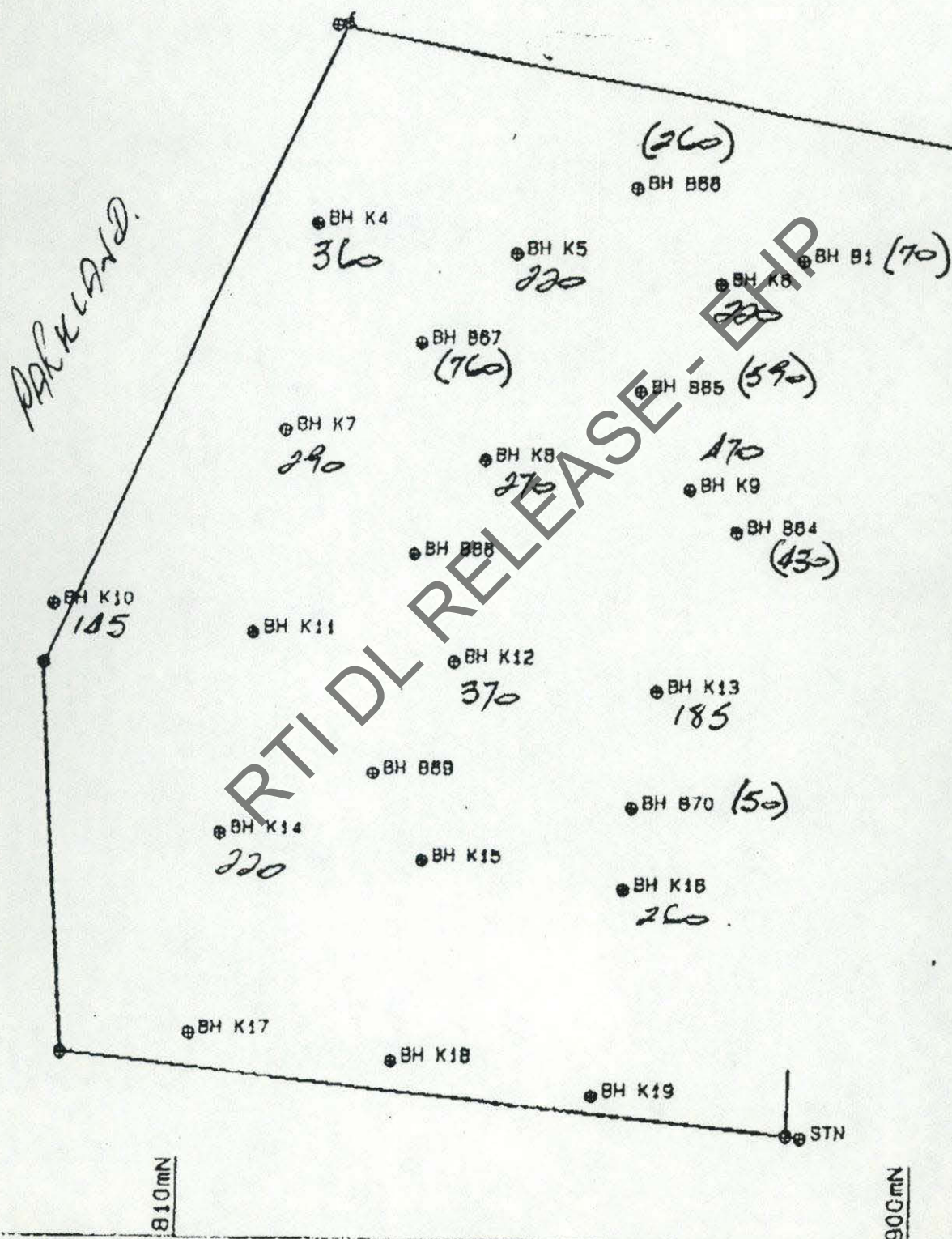
Adelaide
(08) 363 0222

Melbourne
(03) 853 7922

Sydney
(02) 621 1401

Branch at Gawler
(085) 22 6802

Koukourou & Partners Pty Ltd (inc. in S.A.) as trustee for Koukourou & Partners Unit Trust trading as Koukourou & Partners



PAKLAND.

1000.000 E 760.000 N
1:750 Rotation 90°

PINE AND FREE ST NEWMARKET PIONEER



ANALABS

A Division of Inspeco Inspection and
Testing Services Pty. Ltd.

CAIRNS
16 Federation Street
Cairns, Queensland 4870
Telephone (070) 31 3618, 51 5518
Fax (070) 51 7923

TOWNSVILLE
Unit 1, 42 Keane Street
Currajong, Queensland 4812
Telephone (077) 75 1521
Fax (077) 79 7947

BRISBANE
53 Buscatland Street
Rocklea, Queensland 4106
Telephone (07) 277 106
Fax (07) 277 8147

ANALYTICAL DATA

SAMPLE PREFIX		REPORT NUMBER				REPORT DATE		CLIENT ORDER No		PAGE
										OF
	SAMPLE No.	CP	AS	AP (L)	AP (H)					
1	A	1000	1000	1000	1000					
2	B	450	450							
3	C	450	450							
4	D	450	450							
5	E	1000	1000							
6	F	175	1000							
7	G	120	1000							
8	H	100	1000							
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	100	1000	1000					
24	UNIT	ppm	ppm	%	%					
25	MULTIPLY	101	100	100	100					

Results in ppm unless otherwise specified

< = element concentration is below detection limit

— = element not determined

SNR = sample not received

IS = insufficient sample

sch4p4(6) Personal information

Koukourou & Partners

Consulting Engineers

Civil Structural, Soil Testing.

Postal Address:
PO Box 116
East Brisbane Qld 4169

Level 1
922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169

Telephone (07) 891 1911
Facsimile (07) 891 5460

Facsimile transmission

To	CHEN UNIT	Attention	ALLEN BRUNER	Fax. No.	
Date	20.12.90	No. of Pages	2	From	ED BERZINS
RE:	FREE STREET RETIREMENT VILLAGE				

STAGE 2 & 3 VALIDATION

ATTACHED SKETCH SHOWS
CHROME LEVELS PRIOR TO
SPREADING BLENDED MATERIAL AT
THE SOUTHERN END STAGE 2 & 3.

THE FIGURES IN BRACKETS
WERE LEVELS EXISTING PRIOR TO
SCRAPEING AND REMOVAL OF
LEATHER SHAVINGS & DEBRIS

WE FEEL IT WOULD NOT
BE NECESSARY TO TRY AND DILUTE
THE MATERIAL ALREADY BLENDED AS
THERE IS NO REAL GUARANTEE OF
ACHIEVABLE LEVELS & THE AREA WILL
BE COVERED BY IMPORTED COMPACTED
SELECTED FILL ANYWAY

sch4p4(6) Personal information



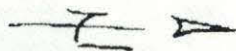
Adelaide
(08) 363 0222

Melbourne
(03) 853 7922

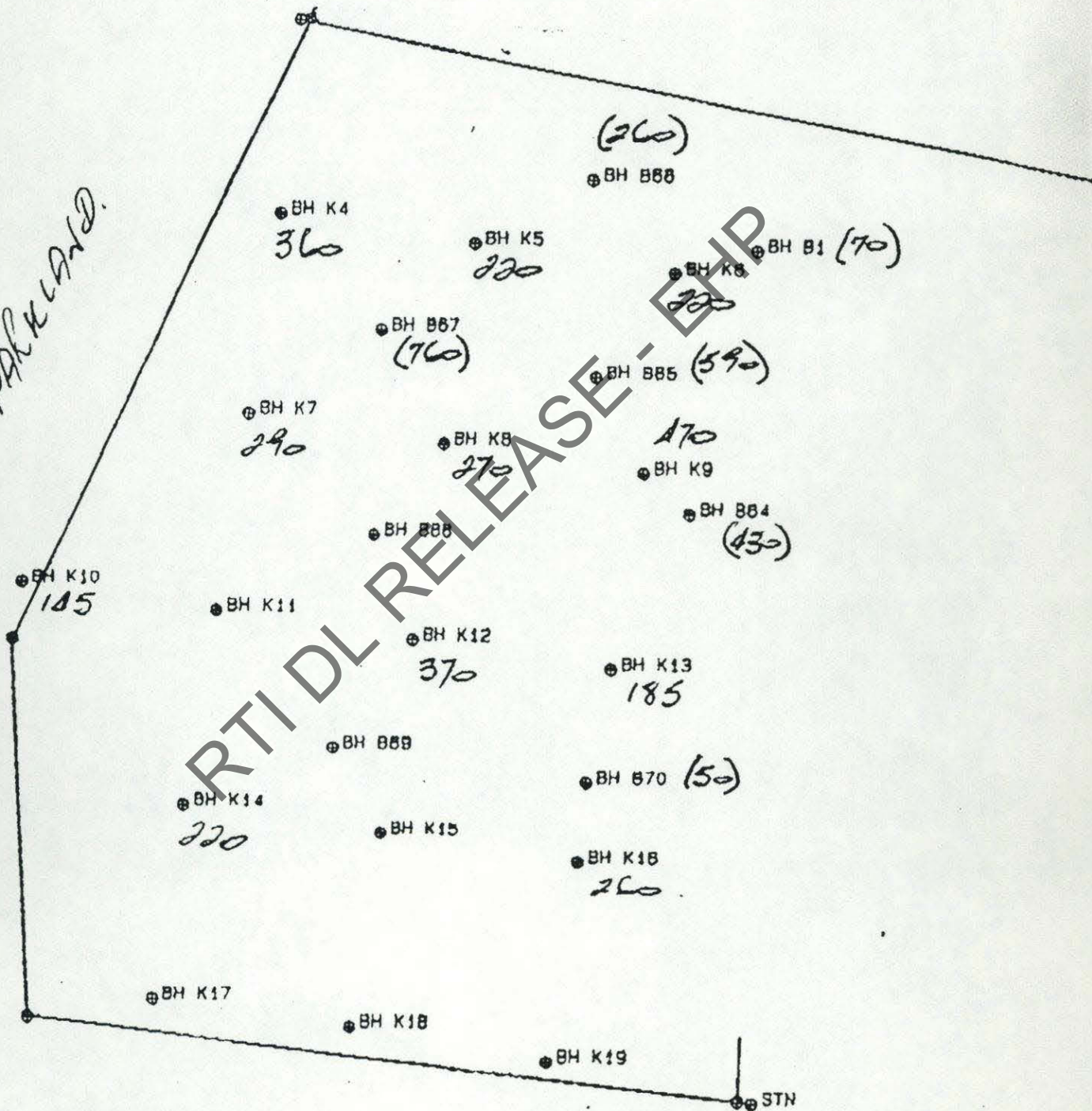
Sydney
(02) 621 1401

Branch at Gawler
(085) 22 6802

Koukourou & Partners Pty Ltd (inc. in S.A.) as trustee for Koukourou & Partners Unit Trust trading as Koukourou & Partners



PAK K 12



810mN

900mN

1000.000 E 760.000 N
1:750 Rotation 90°

PINE AND FREE ST NEWMARKET PIONEER



ANALABS

A Division of Inspecade Inspection and
Testing Services Pty. Ltd.

CAIRNS
16 Federation Street
Cairns, Queensland 4870
Telephone: (070) 31 3618, 51 5518
Fax: (070) 51 7923

TOWNSVILLE
Unit 1, 42 Keane Street
Carrington, Queensland 4812
Telephone: (077) 75 1521
Fax: (077) 79 7947

BRISBANE
53 Buschland Street
Rookley, Queensland 4
Telephone: (07) 277 1111
Fax: (07) 277 8147

ANALYTICAL DATA

SAMPLE PREFIX		REPORT NUMBER		REPORT DATE		CLIENT ORDER No		PAGE	
								1 OF	
	SAMPLE NO.	CP	AS	AL	SI				
1									
2									
3									
4									
5									
6									
7									
8	Hi	100							
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23	DEFLECTION								
24	PERCENT	PPM	PPM						
25	PERCENT	101	10						

RTI DL RELEASE - EHP

10,000 ppm
11
18

Results in ppm unless otherwise specified
< = element concentration is below detection limit
- = element not determined
SNR = sample not received
IS = insufficient sample

sch4p4(6) Personal information

Koukourou & Partners

Consulting Engineers

Civil Structural, Soil Testing.

Postal Address:
PO Box 116
East Brisbane Qld 4169

Level 1
922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169

Telephone (07) 891 1911
Facsimile (07) 891 5460

Facsimile transmission

To	CHEM UNIT	Attention	ALAN BRUNNER	Fax. No.	22A 4471
Date	18.12.90	No. of Pages		From	ED BERZINS
				Fax. No.	(07) 891 5460
RE:	FREE STREET RETIREMENT VILLAGE				

STAGE 2 & 3 VALIDATION

PLEASE FIND ATTACHED TEST RESULTS
SHOWING BLENDING. WHILE A LITTLE
HIGHER THAN EXPECTED, THE AREA IS
STILL TO BE EXTENSIVELY FILLED.

VM1	0.5M FILL	VM5	1.1M FILL
VM2	1.9M FILL	VM6	1.2M FILL
VM3	1.75M FILL	VM7	0.7M FILL
VM4	1.3M FILL		

PRIOR TO SUBMISSION OF A
FORMAL REPORT WOULD YOU ADVISE
THAT THESE LEVELS ARE ACCEPTABLE
; IN THIS CASE; GIVEN THE DEPTH OF
FILL YET TO GO OVER THE TOP OF
THIS AREA

sch4p4(6) Personal information



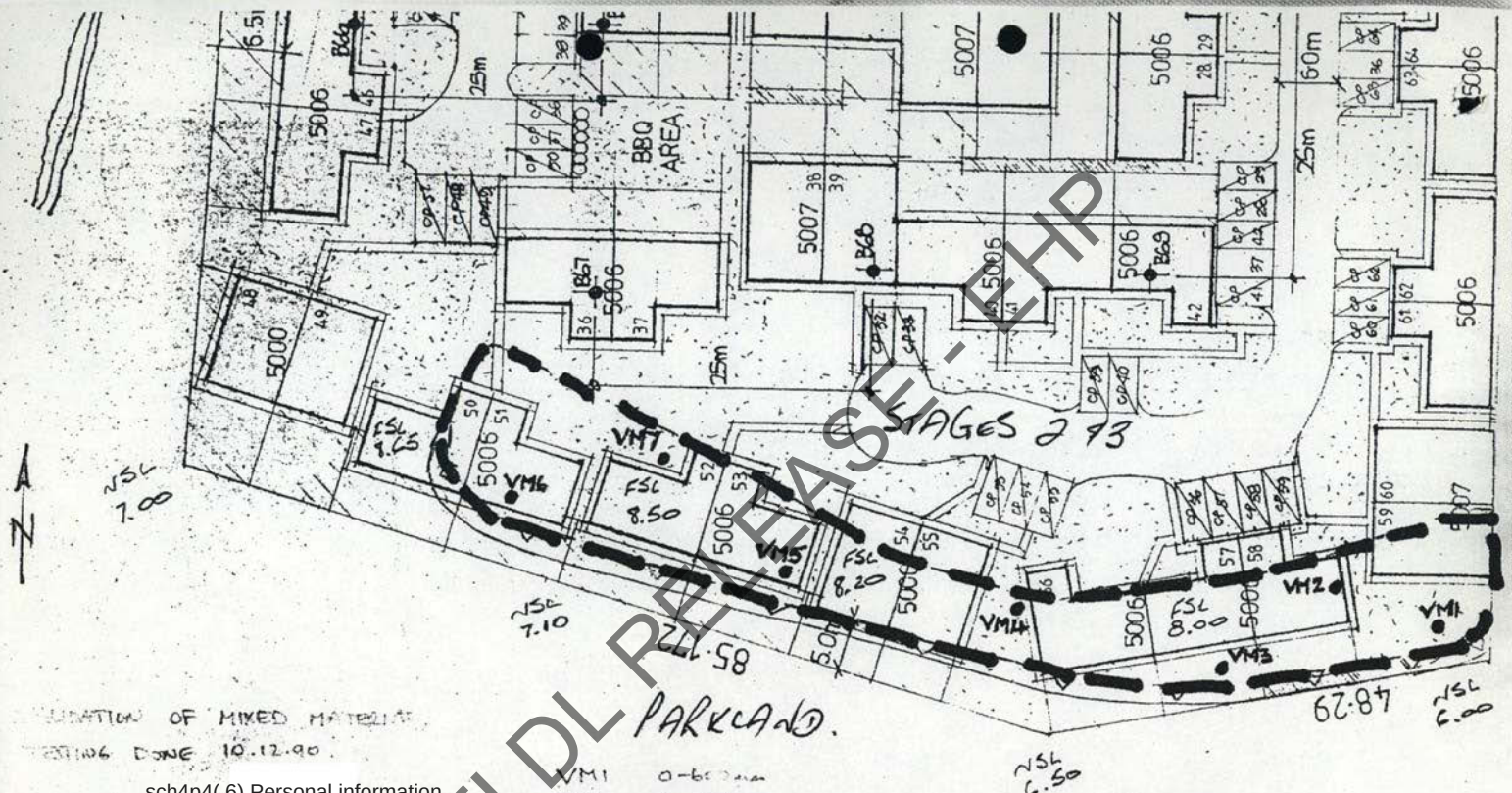
Adelaide
(08) 363 0222

Melbourne
(03) 853 7922

Sydney
(02) 621 1401

Branch at Gawler
(085) 22 6802

Koukourou & Partners Pty Ltd (Inc. in S.A.) as trustee for Koukourou & Partners Unit Trust trading as Koukourou & Partners



IDENTIFICATION OF MIXED MATERIAL
TESTING DONE 10.12.90

sch4p4(6) Personal information

- VM1 0-600mm
- VM2 0-200mm
- VM3 0-500mm
- VM4 0-500mm
- VM5 0-500mm
- VM6 0-500mm
- VM7 0-500mm

PARKLAND.



Australian Laboratory Services PTY. LTD.

CONSULTING ANALYTICAL CHEMISTS

KOUKOUROU & PARTNERS

Attention: MR G LAWRENCE
YourOrder: VERBAL
SampleType: SOILPage-no: 1
STAFFORD
Batch-no: 833
Sub-batch: 0
No-samples: 7
Received: 10/12/90
Checked:

Element Unit Method	Cr ppm G033
VM1 0-600	320
VM2 0-200	380
VM3 0-500	420
VM4 0-500	210
VM5 0-700	740
VM6 0-600	540
VM7 0-400	520

RTI DL RELEASE - EHP

Detection limit 1

port complete, 1 pages sent.

Koukourou & Partners

Consulting Engineers

Civil Structural, Soil Testing.

Postal Address:
PO Box 116
East Brisbane Qld 4169

Level 1
922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169

Telephone (07) 891 1911
Facsimile (07) 891 5460

Facsimile transmission

To	CHEM UNIT	Attention	ALAN BRUNNER	Fax. No.	20A 4471
Date	18.12.90	No. of Pages		From	ED BERZINS
RE:	FREE STREET RETIREMENT VILLAGE				

STAGE 2 & 3 VALIDATION

PLEASE FIND ATTACHED TEST RESULTS
SHOWING BLENDING. WHILE A LITTLE
HIGHER THAN EXPECTED, THE AREA IS
STILL TO BE EXTENSIVELY FILLED.

VM1	0.5M FILL	VM5	1.1M FILL
VM2	1.9M FILL	VM6	1.2M FILL
VM3	1.75M FILL	VM7	0.7M FILL
VM4	1.3M FILL		

PRIOR TO SUBMISSION OF A
FORMAL REPORT WOULD YOU ADVISE
THAT THESE LEVELS ARE ACCEPTABLE
; IN THIS CASE; GIVEN THE DEPTH OF
FILL YET TO GO OVER THE TOP OF
THIS AREA

sch4p4(6) Personal information



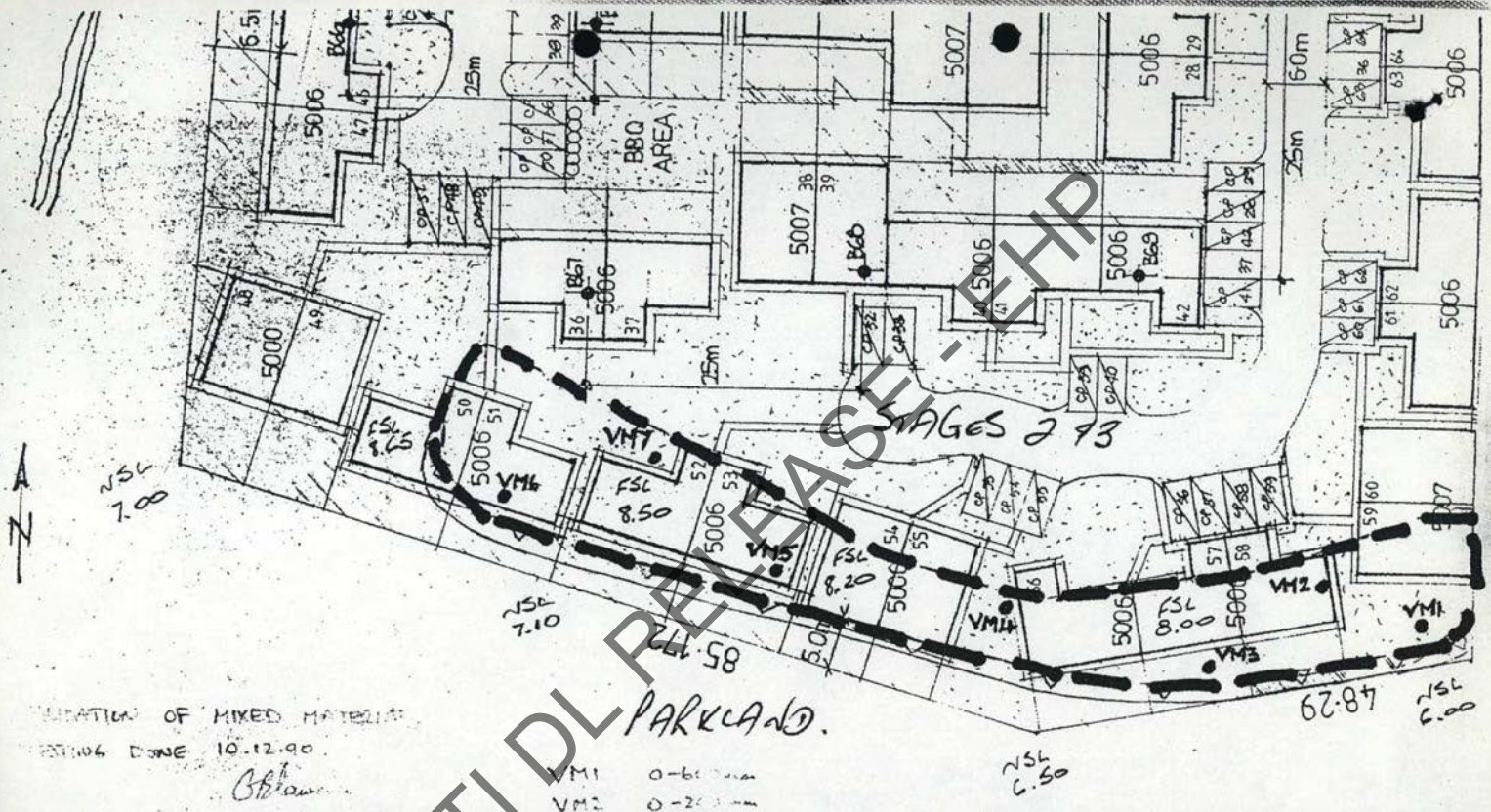
Adelaide
(08) 363 0222

Melbourne
(03) 853 7922

Sydney
(02) 621 1401

Branch at Gawler
(085) 22 6802

Koukourou & Partners Pty Ltd (Inc. in S.A.) as trustee for Koukourou & Partners Unit Trust trading as Koukourou & Partners



LOCATION OF MIXED MATERIAL
ESTIMATED DONE 10.12.90
Obtained

- VM1 0-60 mm
- VM2 0-20 mm
- VM3 0-50 mm
- VM4 0-50 mm
- VM5 0-50 mm
- VM6 0-50 mm
- VM7 0-100 mm



Australian Laboratory Services PTY. LTD.

CONSULTING ANALYTICAL CHEMISTS

KOUKOUROU & PARTNERS

Attention: MR G LAWRENCE
YourOrder: VERBAL
SampleType: SOIL

Page-no: 1
STAFFORD
Batch-no: 833
Sub-batch: 0
No-samples: 7
Received: 10/12/90
Checked:

Element Unit Method	Cr ppm G033
VM1 0-600	
VM2 0-200	320
VM3 0-500	380
VM4 0-500	420
VM5 0-700	210
VM6 0-600	740
VM7 0-400	540
	520

RTI DL RELEASE - EHP

Detection limit

1



CHEM UNIT

CHEMICAL HAZARDS AND EMERGENCY MANAGEMENT UNIT

A Division of the Bureau of Emergency Services

Telephone: (07) 224 4422

Facsimile: (07) 224 4471

P.O. BOX 13,

NORTH QUAY, QLD 4002

AB:CKC

11 December 1990

Mr. Ed Berzins,
Koukourou & Partners,
P.O. Box 116,
EAST BRISBANE QLD 4169

Dear Mr. Berzins,

RE: NEWMARKET (FREE STREET) RETIREMENT VILLAGE - PARKLAND

I refer to your letters of 5th December, 1990 to Mr. A. Brunner of this Unit which was accompanied by a validation report for the Parkland area.

The matter has been reviewed with officers of the Department of Health, Department of Environment and Heritage and the Brisbane City Council in respect to the remediation undertaken on site and the proposed future use of the site.

On the basis of the information provided, the parkland associated with this project is acceptable for its proposed use ie, public recreation area.

A Site Contamination Report is attached for use by your client in discussions with the Brisbane City Council.

Yours faithfully,

sch4p4(6) Personal information

MICHAEL KINNANE
Acting Director

FACSIMILE TRANSMISSION

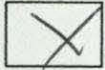
CHEM UNIT

FAX NO. : (07) 224 4471
TELEPHONE NO. : (07) 224 4422

P.O. BOX 13
NORTH QUAY
4000

TO : MR. E. BERZINS FAX NO : 891 5460 ..
KOUKOUROU + PARTNERS DATE : 12-12-90 ..

This sheet and the following pages total 5 pages.



URGENT



IN CONFIDENCE

COMMENTS : RE: FREE ST, NEW MARKET
PARKLAND
.....
.....

Original will follow by mail

sch4p4(6) Personal information

FAVED 12/12



CHEM UNIT

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MICHAEL KINNANE
Acting Director



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A Division of the Bureau of Emergency Services

Telephone: (07) 224 4422

Facsimile: (07) 224 4471

P.O. BOX 13,

NORTH QUAY, QLD 4002

SITE CONTAMINATION REPORT

NEWMARKET RETIREMENT VILLAGE PARKLAND

Applicant:

Pioneer Homes,
2954 Logan Road,
UNDERWOOD QLD 4119

Property:

Address:

Free Street,
NEWMARKET QLD 4051

Description:

Lot 1 on R.P. 209539
Parish of Enoggera

Proposed Zoning:

PARKLAND

Current Zoning:

Particular Development (Retirement Village)

Date of Submission: 29th October, 1990

(Full detail was not available until 5th December 1990)

Is property or part of it on Register of Contaminated Sites:

Yes, as a "Former" Contaminated Site

Statement of Suitability:

On the basis of the information provided in the above documents;
the subject property would be acceptable to this Unit for its
proposed use as parkland or public recreation area.

ATTACHMENT: Summary of Studies and Remediation.

Yours faithfully,

sch4p4(6) Personal information

MICHAEL KINNANE
Acting Director

SUMMARY OF STUDIES AND REMEDIATION

1. SITE INVESTIGATION/CHEMICAL SCREENING - KOUKOUROU & PARTNERS 30.6.90.

- o **Brief History** - Site is adjacent to an area formerly occupied by a tannery
 - Site buildings, working areas and pits on the adjacent property were identified from aerial photographs
- o **Objective** - Identify level and extent of residual contamination
- o **Scope** - The site was cleared of scrubby vegetation and any contaminated material was removed to Willawong
 - A 50m x 50m drilling pattern was undertaken
 - Samples were analysed for pH, total dissolved salts and the following heavy metals, Cu, Fe, Zn, Cd, Cr, Co, Ni, Pb, As and Hg
- o **Results** - The initial series of tests indicated chromium content (550 ppm) in a small area adjacent to Stage 2 & 3 of the Retirement Village.

2. CONFIRMATION OF CHROMIUM CONTAMINATION

On 20 September 1990, a further 4 bore holes were drilled and analysis confirmed surface contamination up to 2050 ppm in the 0-200 mm layer in this one area.

3. REMOVAL OF CONTAMINATION.

This layer of contamination (down to 500mm) was removed to Stage 2 & 3

4. INDEPENDENT SUPERVISION.

Officers of the Brisbane City Council provided advice and audited testing procedures and analysis.

5. VALIDATION OF STAGE 1 - 20 OCTOBER 1990.

A further 6 test bores in the area of contamination were drilled to confirm the remediation program.

Analytical results revealed one high result (700 ppm Cr) in the surface layer.

6. FURTHER REMOVAL OF CONTAMINATION

Further soil was removed after discussion with the CHEM Unit to ensure there would be no areas of unacceptable contamination on 28 November 1990.

7. FINAL VALIDATION REPORT - 5 DECEMBER 1990

Five further samples were taken for analysis in the suspect area. No result exceeded 90 ppm Cr.

OTHER INVESTIGATIONS

Officers of the CHEM Unit and the Brisbane City Council have visited the site on several occasions between September and December, 1990.

This report has been discussed with representatives of the Department of Health and Environment and Heritage.

SUMMARY

The site has been remediated to a level which is considered to be acceptable for its proposed use.



CHEM UNIT

CHEMICAL HAZARDS AND EMERGENCY MANAGEMENT UNIT

A Division of the Bureau of Emergency Services

Telephone: (07) 224 4422

Facsimile: (07) 224 4471

P.O. BOX 13,
NORTH QUAY, QLD 4002

AB:CKC

11 December 1990

Mr. Ed Berzins,
Koukourou & Partners,
P.O. Box 116,
EAST BRISBANE QLD 4169

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sch4p4(6) Personal information

MICHAEL KINNANE
Acting Director



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A Division of the Bureau of Emergency Services

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PARKLAND

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sch4p4(6) Personal information

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Acting Director

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Koukourou & Partners

Consulting Engineers

Civil Structural, Soil Testing.

Postal Address:
PO Box 116
East Brisbane Qld 4169

Level 1
922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169

Telephone (07) 891 1911
Facsimile (07) 891 5460

Facsimile transmission

To	CHEM UNIT	Attention	ALAN BRUNNER	Fax. No.	
Date	6.12.90	No. of Pages	2	From	ED BERZILS
RE:	FREE STREET RETIREMENT VILLAGE				

PARKLAND VALIDATION

I HAVE CHANGED THE
NUMBERING SLIGHTLY AS THE
"B" SERIES HAD ALREADY BEEN
USED IN PREVIOUS VALIDATION TESTING

sch4p4(6) Personal information



Adelaide
(08) 363 0222

Melbourne
(03) 853 7922

Sydney
(02) 621 1401

Branch at Gawler
(085) 22 6802

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Koukourou & Partners

Consulting Engineers

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East Brisbane Qld 4169

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922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169

Telephone (07) 891 1911
Facsimile (07) 891 5460

Facsimile transmission

To	MEM UNIT	Attention	ALAN BRUNNER	Fax. No.	224 4471
Date	5.12.90	No. of Pages	1	From	ED BELZIS
RE:	FREE STREET RETIREMENT VILLAGE PARKLAND VALIDATION				

THE SUSPECT AREA OF PARK
WAS SCRAPED (APPROX 20 mm) AND
STOCKPILED WITH OTHER MATERIAL
FOR BLENDING

TEST RESULTS ARE

LVI B	60 ppm	CR
LVI B	40 ppm	CR
KV 3 B	70 ppm	CR
KV 3 B	85 ppm	CR (RETEST)
PS B	75 ppm	CR

AMENDED RESIDUALS PLAN WILL FOLLOW

PLEASE EXPEDITE THE SITE CONTAMINATION
REPORT AS SOON AS POSSIBLE

REGARDS

c/c Bill Jones

sch4p4(6) Personal information



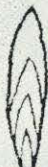
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Australian Laboratory Services

CONSULTING ANALYTICAL CHEMISTS

LABORATORY REPORT

INCORPORATED
IN QUEENSLAND

Rheba Head Office and Laboratory
32 Second Street, Stamford, CT 06903
P.O. Box 88, Evanston Park, CT 06424
Phone: (071) 362 6577
Fax: (071) 392 5109

North Laboratory
Lot 197 Victoria Road, Malaga, WA, 6150
Phone: (081) 249 2088 Fax: (081) 249 2100

Townsville Laboratory
21 Bomboola Street, Garbutt, CT 4814
Phone: (077) 29 0155 Fax: (077) 709 0155

Charters Towers Laboratory
18 Drew Street, Charters Towers, Q. 482
Phone: (077) 87 4188 Fax: (077) 87 422

Bendigo Laboratory
127A Victoria Street, Eppingham, Vic. 35
Phone: (054) 48 1900 Fax: (054) 48 136

Orange Laboratory
10 Leonard Drive, Orange, N.S.W. 280
Phone: (083) 631 722 Fax: (083) 631 16

Page 1 of 1

Client: KOUKOUROU & PARTNERS
Address: P O BOX 116
EAST BRISBANE
QLD

4169

STAFFORD
Batch Number: 789

Sub-batch: 0
No. of Samples: 5
Date Received: 30/11/9
Date Completed: 05/12/9

Contact: MR G LAWRENCE

Order No. ALS 20052

Sample Type: SOIL

SAMPLE NUMBER	Element Unit Method	Cr ppm G033
KV3C	KV3B	70
LV1C	LV1B	60
LV2C	LV2B	40
PV13C	PV13B	90
P5A	P5B	75

▲
 SAMPLE NUMBERS
 SUPPLEMENTARY REPORT 5/12/1990

Detection Limit: 1

Comments

All pages of this report have been checked
and approved for release. Signed: _____

sch4p4(6) Personal information

FORM ALSO OF

Koukourou & Partners

Consulting Engineers

Civil Structural, Soil Testing.

5 December 1990

Postal Address:
PO Box 116
East Brisbane Qld 4169Level 1
922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169Telephone (07) 891 1911
Facsimile (07) 891 5460Chem Unit
Executive Building
100 George Street
BRISBANE QLD 4001

Attention: Mr A Brunner



Dear Sir

Re: Pioneer Homes
Free Street Retirement Village
Newmarket
Parkland Validation
Supplementary Report

The area of concern at the north western corner of the Parkland was remediated by scraping approximately 200mm from the surface and removal of this material; out of the Parkland area.

This operation; and further testing; was carried out on the 27 November 1990.

The following information is for inclusion in our validation report of the Parkland area.

- 1) Drawing No. M901101 - P (Revision A).
Residuals - November 1990.
- 2) Remediation Summary

We would be pleased to receive the CHEM Unit; Site Contamination Report as a matter of urgency.

Yours faithfully

sch4p4(6) Personal information

Ed Bezins
KOUKOUROU & PARTNERS

C/C Pioneer Homes
Ballment & Parker
Russell Holland & Associates

Adelaide
(08) 363 0222Melbourne
(03) 853 7922Sydney
(02) 621 1401Branch at Gawler
(085) 22 6802

(1)

PIONEER HOMES
FREE STREET RETIREMENT VILLAGE
NEWMARKET
PARKLAND VALIDATION - SUPPLEMENTARY REPORT

REMEDIATION SUMMARY
CHROME (PARTS PER MILLION)

0-200

FIRST REMEDIATION

KV2a - Brisbane City Council 122] 11 October 1990
KV2b - Koukourou & Partners 125]

FIRST REMEDIATION

KV3a - Brisbane City Council 681] 11 October 1990
KV3b - Koukourou & Partners 700]

SECOND REMEDIATION

KV3c - 70] 27 November 1990
KV3d - 85]

FIRST REMEDIATION

LV1a - Brisbane City Council 823] 11 October 1990
LV1b - Koukourou & Partners 1300]

SECOND REMEDIATION

LV1c - 60 27 November 1990

FIRST REMEDIATION

LV2a - Brisbane City Council 140] 11 October 1990
LV2b - Koukouru & Partners 320]

SECOND REMEDIATION

LV2c - 40 27 November 1990

(2)

FIRST REMEDIATION

PV13a - Brisbane City Council	193	] 11 October 1990
PV13b - Koukourou & Partners	330	

SECOND REMEDIATION

PV13c -	90	27 November 1990
---------	----	------------------

NO PRIOR REMEDIATION

P5	516
----	-----

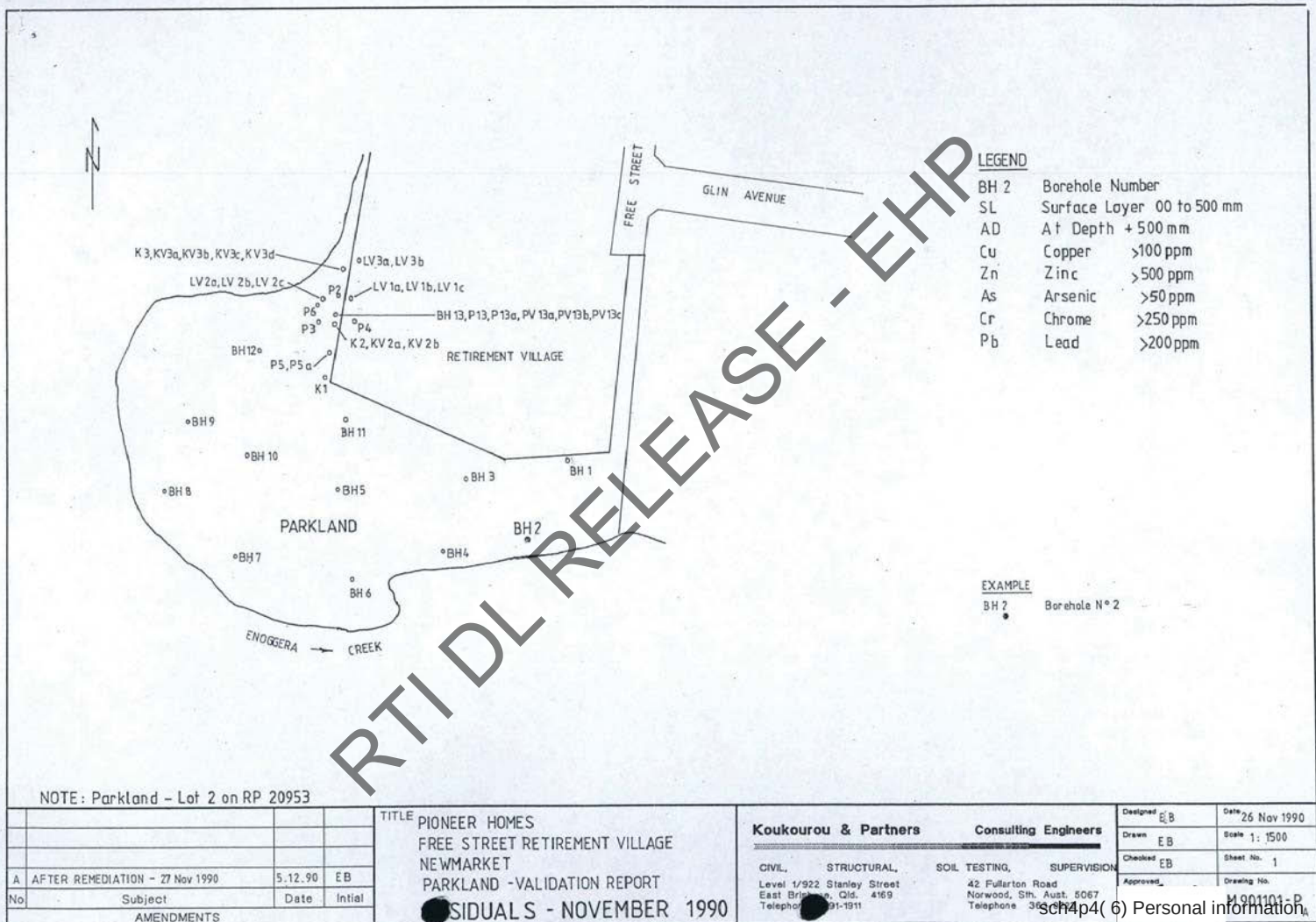
FIRST REMEDIATION

P5A	75	27 November 1990
-----	----	------------------

sch4p4(6) Personal information

ED BERZINS
KOUKOUROU & PARTNERS
5 December 1990

RTI DL RELEASE - EHP



Koukourou & Partners

Consulting Engineers

Civil Structural, Soil Testing

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East Brisbane Qld 4169

Telephone (07) 891 1911
Facsimile (07) 891 5460

Facsimile transmission

To	CHEN UNIT	Attention	ALAN BRUNER	Fax. No.	224 4471
Date	28.11.90	No. of Pages	1	From	EDBERTZIS.
RE:	FREE STREET RETIREMENT VILLAGE PARKLAND VALIDATION				

WE CONFIRM OUR DISCUSSION
THAT VALIDATION RESULTS LVIA,
KV3A, P5 ARE NOT ACCEPTABLE
IN THAT

- 1) CHROME LEVELS ARE TOO HIGH
- 2) THERE IS SOME DOUBT IN TEST
PROCEDURE/RESULTS BETWEEN
BCC & ALS.

WE WILL SCRAPE THE AREAS
INVOLVED AND RETEST

sch4p4(6) Personal information

c/c BILL LINES.

COULD YOU EXPEDITE MATTER ASAP



Adelaide
(08) 363 0222

Melbourne
(03) 853 7922

Sydney
(02) 621 1401

Branch at Gawler
(085) 22 6802

Koukourou & Partners Pty Ltd (Inc. in SA) as trustee for Koukourou & Partners Unit Trust trading as Koukourou & Partners

FREE STREET, NEWMARKET

SUBJECT : ACCEPTABILITY OF ELEVATED Cr LEVELS IN STAGES 2 & 3

The FAX dated 18.12.90 gives Cr results from 7 samples ranging from 210 to 740ppm (average 447ppm).

The Draft Guidelines for Assessment of Contaminated Land in Queensland have 250ppm Cr (Total) as the investigation threshold.

Assuming 1) that the Cr on this site is not hexavalent form;

2) the sampling is adequate to describe the site; and

3) taking into account the proposed land use (i.e. public recreation area)

These levels of Cr would be acceptable from the point of view of human health.

sch4p4(6) Personal information

PAULA IMRAY
Scientific Advisor

10.1.91



CHEM UNIT

CHEMICAL HAZARDS AND EMERGENCY MANAGEMENT UNIT
A Division of the Bureau of Emergency Services

Telephone: (07) 224 4422

Facsimile: (07) 224 4471

P.O. BOX 13,

NORTH QUAY, QLD 4002

AAB:CKC

28 November 1990

Mr E Berzins
Koukourou & Partners
PO Box 116
EAST BRISBANE Q 4169

Dear Mr Berzins

RE: NEWMARKET (FREE STREET) RETIREMENT VILLAGE - PARKLAND

I refer to your letters of 29, 30 October and 23 November 1990 in which you supplied information which would allow a site contamination report to be issued for the parkland area associated with the above development.

The matter has been reviewed with officers of the Department of Health, Department of Environment and Heritage and the Brisbane City Council in respect to the remediation undertaken and the proposed future use of the site.

On the basis of the information provided, the Parkland will be acceptable for its proposed use if the remaining contamination located by test bore holes KV 3a, P5, P13 is removed.

Once the removal of this contamination is confirmed by validation sampling, a Site Contamination Report will be issued by the Director of the CHEM Unit for use by your client in discussions with the Brisbane City Council.

Yours faithfully,

sch4p4(6) Personal information

ALAN A BRUNNER
Scientific Adviser
Industrial Processes

Koukourou & Partners

Consulting Engineers

Civil Structural, Soil Testing

Postal Address:
PO Box 116
East Brisbane Qld 4169

Level 1
922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169

Telephone (07) 891 1911
Facsimile (07) 891 5460

Facsimile transmission

To	CHEM UNIT	Attention	ALAN BRUNLER	Fax. No.	224 4471
Date	28.11.90	No. of Pages	1	From	EDBERTHS.
RE:	FREE STREET RETIREMENT VILLAGE PARKLAND VALIDATION				

WE CONFIRM OUR DISCUSSION
THAT VALIDATION RESULTS LVIA,
KV3A, P5 ARE NOT ACCEPTABLE
IN THAT

- 1) CRACK LEVELS ARE TOO HIGH
- 2) THERE IS SOME DOUBT IN TEST
PROCEDURE/RESULTS BETWEEN
BCC & ALS.

WE WILL SCRAPE THE AREAS
INVOLVED AND RETEST

sch4p4(6) Personal information

c/c BILL LONES.

COULD YOU EXPEDITE MATTER ASAP



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Sydney
(02) 621 1401

Branch at Gawler
(085) 226802

Koukourou & Partners Pty Ltd (Inc. in SA) as trustee for Koukourou & Partners Unit Trust trading as Koukourou & Partners

FACSIMILE TRANSMISSION

CHEM UNIT

FAX NO. : (07) 224 4471
TELEPHONE NO. : (07) 224 4422

P.O. BOX 13
NORTH QUAY
4000

TO : MR E. BERZINS
KOU KOUROU + PARTNERS
FAX NO : 891 5460
DATE : 27.11.90

This sheet and the following pages total pages.



URGENT



IN CONFIDENCE

COMMENTS

① SITE ASSESSMENT REPORT

② RESPONSE ON BLENDING. IN STAGE 2+3

W.R.T. FREE ST

are attached.

③ Originals will follow by mail.

sch4p4(6) Personal information

Memo to

PI

Subject

Acceptability of elevated Cr levels
in Stage 2 & 3

As per fax dated 18.12.90, I would appreciate

your comment on the acceptability of Cr levels of 200 - ⁷⁶⁰~~600~~ mg/kg
in stages II and III of the retirement village.

RTI DL RELEASE - EEP



CHEM UNIT

CHEMICAL HAZARDS AND EMERGENCY MANAGEMENT UNIT

A Division of the Bureau of Emergency Services

Telephone: (07) 224 4422

Facsimile: (07) 224 4471

P.O. BOX 13,

NORTH QUAY, QLD 4002

AB:KW

27 November 1990

Mr. Ed Berzins,
Koukourou & Partners,
P.O. Box 116,
EAST BRISBANE QLD 4169

Dear Mr. Berzins,

RE: NEWMARKET RETIREMENT VILLAGE - STAGE 1

I refer to your letters of 29 October and 30 October, 1990 to Mr. A. Brunner of this Unit which were accompanied by a validation report for Stage 1.

The matter has been reviewed with officers of the Department of Health, Department of Environment and Heritage and the Brisbane City Council in respect to the remediation undertaken on site and the proposed future use of the site.

On the basis of the information provided, Stage 1 subject property would be acceptable for its proposed use as a Retirement Village.

A Site Contamination Report is attached for use by your client in discussions with the Brisbane City Council.

Yours faithfully,

sch4p4(6) Personal information

MICHAEL KINNANE
Acting Director



CHEM UNIT

CHEMICAL HAZARDS AND EMERGENCY MANAGEMENT UNIT
A Division of the Bureau of Emergency Services

Telephone: (07) 224 4422
Facsimile: (07) 224 4471

P.O. BOX 13,
NORTH QUAY, QLD 4002

SITE CONTAMINATION REPORT

NEWMARKET RETIREMENT VILLAGE STAGE 1

Applicant:

Pioneer Homes,
2954 Logan Road,
UNDERWOOD QLD 4119

Property:

Address:

Free Street,
NEWMARKET QLD 4051

Description:

Lot 1 on R.P. 209539
Parish of Enoggera

Current Zoning:

PARTICULAR DEVELOPMENT
(RETIREMENT VILLAGE) ZONE.

previous:

Residential A

Date of Submission: 29th October, 1990

Is property or part of it on Register of Contaminated Sites:

Yes

Statement of Suitability:

On the basis of the information provided in the above documents;
the subject property would be acceptable to this Unit for its
proposed use as a Retirement Village:

ATTACHMENT: Summary of Studies and Remediation.

Yours faithfully,

MICHAEL KINNANE
Acting Director

SUMMARY OF STUDIES AND REMEDIATION

1. SITE INVESTIGATION/CHEMICAL SCREENING - KOUKOUROU & PARTNERS 22.12.90.

- o **Brief History** - Site was occupied by a tannery
 - Site buildings, working areas and pits were identified from aerial photographs
- o **Objective** - Identify level and extent of residual contamination
- o **Scope** - 5 m x 5 m drilling pattern in the known working areas and a 25 m x 25 m drilling pattern over the remainder of the property
 - Samples were analysed for pH, total dissolved salts and the following heavy metals, Cu, Fe, Zn, Cd, Cr, Co, Ni, Pb, As and Hg
- o **Results** - The initial series of tests indicated high levels of chromium (470 ppm) in the southern end of Stage 1.

2. REMOVAL OF CONTAMINATION.

A substantial volume (300-400 m³) of contaminated soil (from Stages 1, 2 and 3) and other materials e.g. leather shavings, timbers etc was then removed from the site and taken to Willawong.

3. INDEPENDENT SUPERVISION.

Officers of the Brisbane City Council provided advice and audited testing procedures and analysis.

4. VALIDATION OF STAGE 1 - 19TH JUNE, 1990.

A further 13 test bores on using a 20 x 20 m grid pattern were drilled (to a depth of 0.5 m) to confirm the remediation program.

Analytical results from 6 of the test bores indicated one hole (BH4) with an As level of 66 ppm at a depth of 200-500 mm. Other results were quite satisfactory.

5. **VALIDATION TESTING - STAGE 1 - 28TH JUNE, 1990.**

- (a) Two further results indicated higher results. As levels in BH5 of 99 ppm (0-200 m) and 124 ppm (200-500 mm). A retest was organised.
- (b) BH13 recorded a 1850 ppm Cr result. A retest was organised.

6. **SUPPLEMENTARY REPORT - 4TH JULY, 1990.**

7. **MEMORANDUM TO DIRECTOR OF SCIENTIFIC SERVICES, BRISBANE CITY COUNCIL FROM THE ACTING SENIOR CHEMIST, BRISBANE CITY COUNCIL.**

The memorandum confirmed higher results of As in BH5.

The retest of BH5 revealed a 77 ppm As level compared to 99 ppm earlier at 0-200 mm and 16 ppm As compared to 124 ppm in the 200-500 ppm range.

8. **FILE NOTE - 29TH AUGUST, 1990**

Further testing undertaken in vicinity of BH13 confirmed that this high result is confined to area under the road/parking area which has been filled to 400 mm of gravel and 25 mm of asphalt.

9. **LETTER - 17TH OCTOBER, 1990 - LEACHATE TESTS.**

Tests confirmed that chromium and arsenic near the bank of the creek were sufficiently complexed and bound up so that they would not pollute the nearby creek. In addition, this area is located under an asphalted road and car parking area, which would restrict contact with surface water.

OTHER INVESTIGATIONS

Officers of the CHEM Unit and the Brisbane City Council have visited the site on several occasions between September and November, 1990.

Extra sampling and tests were requested to delineate the extent of the remaining contamination and its propensity to migrate.

This report has been discussed with representatives of the Department of Health and Environment and Heritage.

SUMMARY

The site has been remediated to a level which is considered to be acceptable for its proposed use.

Koukourou & Partners

Consulting Engineers

Civil Structural, Soil Testing.

Postal Address:
PO Box 116
East Brisbane Qld 4169

Level 1
922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169

Telephone (07) 891 1911
Facsimile (07) 891 5460

26 November 1990



Chem Unit
Executive Building
100 George Street
BRISBANE QLD 4001

Attention: Mr A. Brunner

Dear Sir

Re: Pioneer Homes
Free Street Retirement Village
Newmarket
Parkland Validation Report

Please find attached hereto the following information as requested:

- 1) Drawing No. M901101-P
Residuals - October 1990
- 2) Supplementary Test Results
Brisbane City Council

You will note that we have adopted the Council validation results as we believe; after discussions with Ken Giese; that Council test methods are more appropriate to this application.

Yours faithfully

sch4p4(6) Personal information

Ed Berzins
KOUKOUROU & PARTNERS

C/C Bill Jones
Neil Ballment
Russell Holland

27.11.90

- Spoke to E. Berzins

① Remove lat spots KV3A
PS
LVIA.

② Council Figs inappropriate

sch4p4(6) Personal information



Adelaide
(08) 363 0222

Melbourne
(03) 853 7922

Sydney
(02) 621 1401

Branch at Gawler
(085) 22 6802

Pioneer Homes
Free Street Retirement Village
Newmarket
Parkland - Validation Report

Supplementary Testing Results
Brisbane City Council
Department of Water Supply & Sewerage
Scientific Services Branch

INVESTIGATION TESTING

BOREHOLE NO.

CHROME PPM

P2	1265
P3	73
P4	198
P5	516
P6	311
P13	1850
P13A	2142

*Prior to
Remediation*

VALIDATION TESTING

(after Remediation)

LV 1A
LV 2A
LV 3A
KV 2A
KV 3A
PV 13A

832
140
101
122
681
193

GCL ALS
1240 - 1300
70 - 170
860 - 700

KOUKOUROU & PARTNERS

LEVEL 1, 922 STANLEY ST.
EAST BRISBANE 4109
TELEPHONE: (07) 891 1911
FACSIMILE: (07) 891 5469

Civil Structural, Soil Testing.

Postal Address:
PO Box 116
East Brisbane Qld 4169

Level 1
922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169

Telephone (07) 891 1911
Facsimile (07) 891 5460

23 November 1990

Chem Unit
Executive Building
100 George Street
BRISBANE QLD 4001

Attention: Mr A. Brunner

Dear Sir

Re: Pioneer Homes
Free Street Retirement Village - Stage 1
Newmarket
Validation Report

As advised on Thursday 22 November 1990, we submit the following information as requested.

- 1) Drawing No. M901101-1
Residuals - October 1990
- 2) Brisbane City Council
Town Planning Certificate No. 0013642
- 3) Real Property Plan
RP Plan No. 209539

Yours faithfully

sch4p4(6) Personal information

Ed Berzins
KOUKOUROU & PARTNERS

C/C B. Jones - Pioneer Homes
N. Ballment - Ballment & Parker
R. Holland - Russell Holland & Associates

em

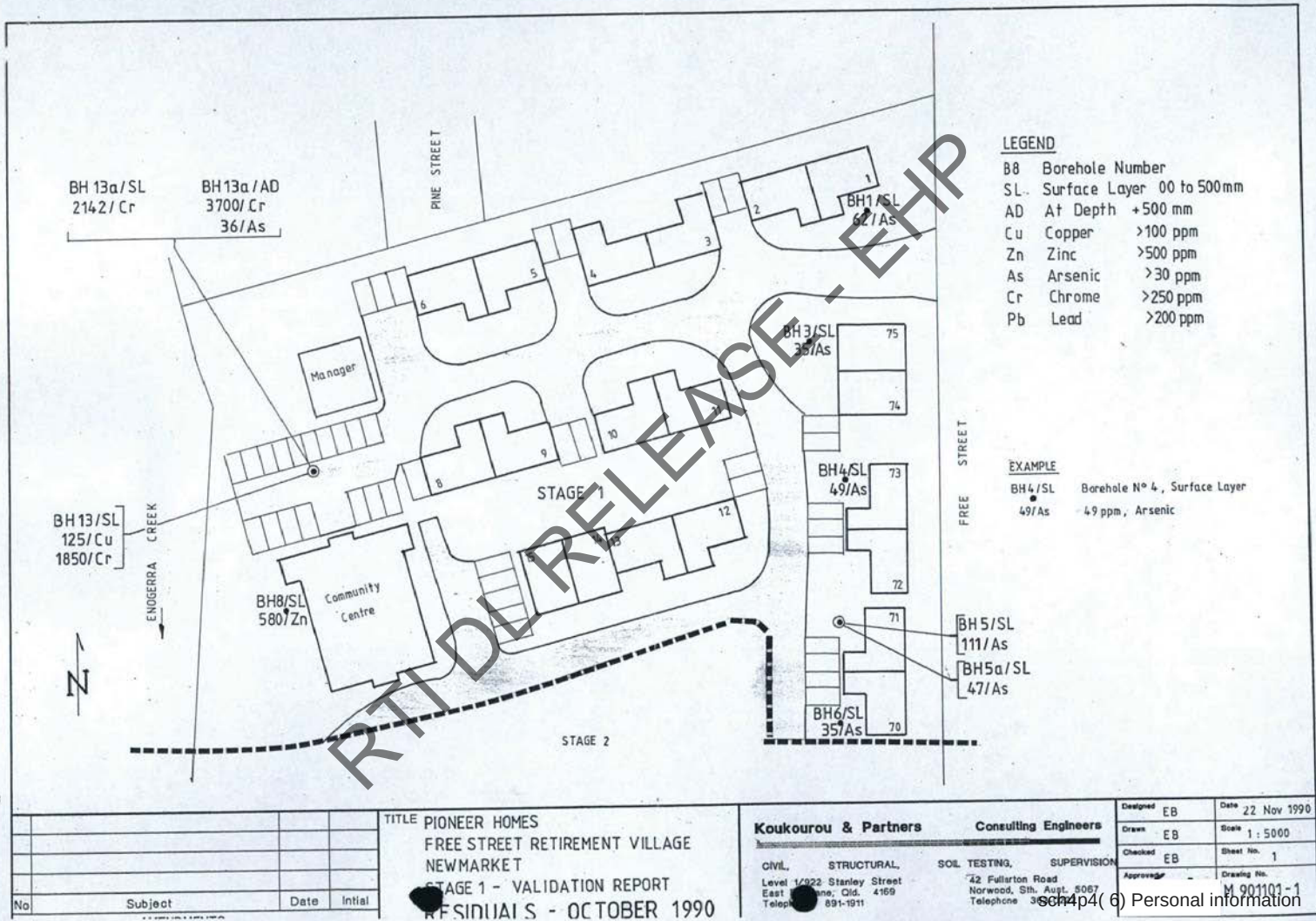


Adelaide
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Melbourne
(03) 853 7922

Sydney
(02) 621 1401

Branch at Gawler
(085) 22 6802





BRISBANE CITY COUNCIL
TOWN PLANNING CERTIFICATE



Council's Reference

Date

0013642

17 OCT 1990

RUSSELL HOLLAND & ASSOCIATES
PO BOX 14
ASHMORE Q 4214

223 40 67 57 SD171090 029263 16/10/90 70.00

Applicant's Ref

90/020

Telephone No.

075-97 3280

Location and Real Property Description of Property for which certificate is required

Street

FREE STREET

Suburb

NEWMARKET

Postcode

4051

Real Property Description: N.B. if existing building units plan or lot in group titles plan please give previous real property description of parcel comprising that plan.

LOT 2 R.P. 20076, LOT 1 R.P. 20075,
LOTS 1 & 2 R.P. 20074.

Original Portion No. 281

Parish

ENOGGERA

In response thereto I certify that the information requested is as under

Limited Certificate

(a) The zone or zones in which such land is situated

PARTICULAR DEVELOPMENT

[RETIREMENT VILLAGE] ZONE

Discretions available within the zone relevant
to the use and development of the land are
subject to the provisions of the Statement of
Intent forming part of the Town Plan.

OPEN SPACE ZONE

(b) The provisions, if any, of the plan relating to proposed road widenings which affect such land or any building or structure thereon.

NONE APPLICABLE

sch4p4(6) Personal information

TOWN PLANNING CERTIFICATE CLERK
DEPARTMENT OF DEVELOPMENT & PLANNING

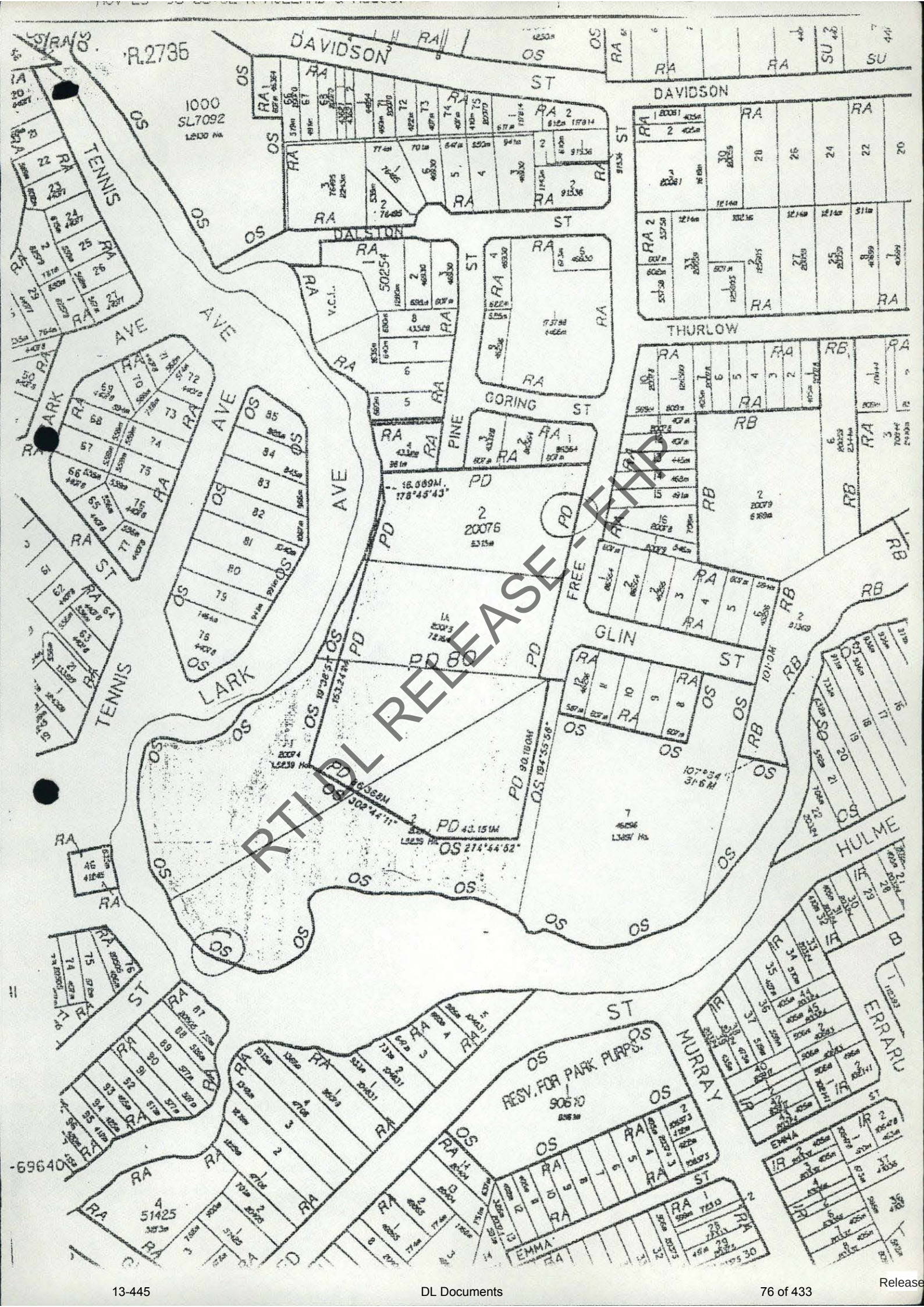
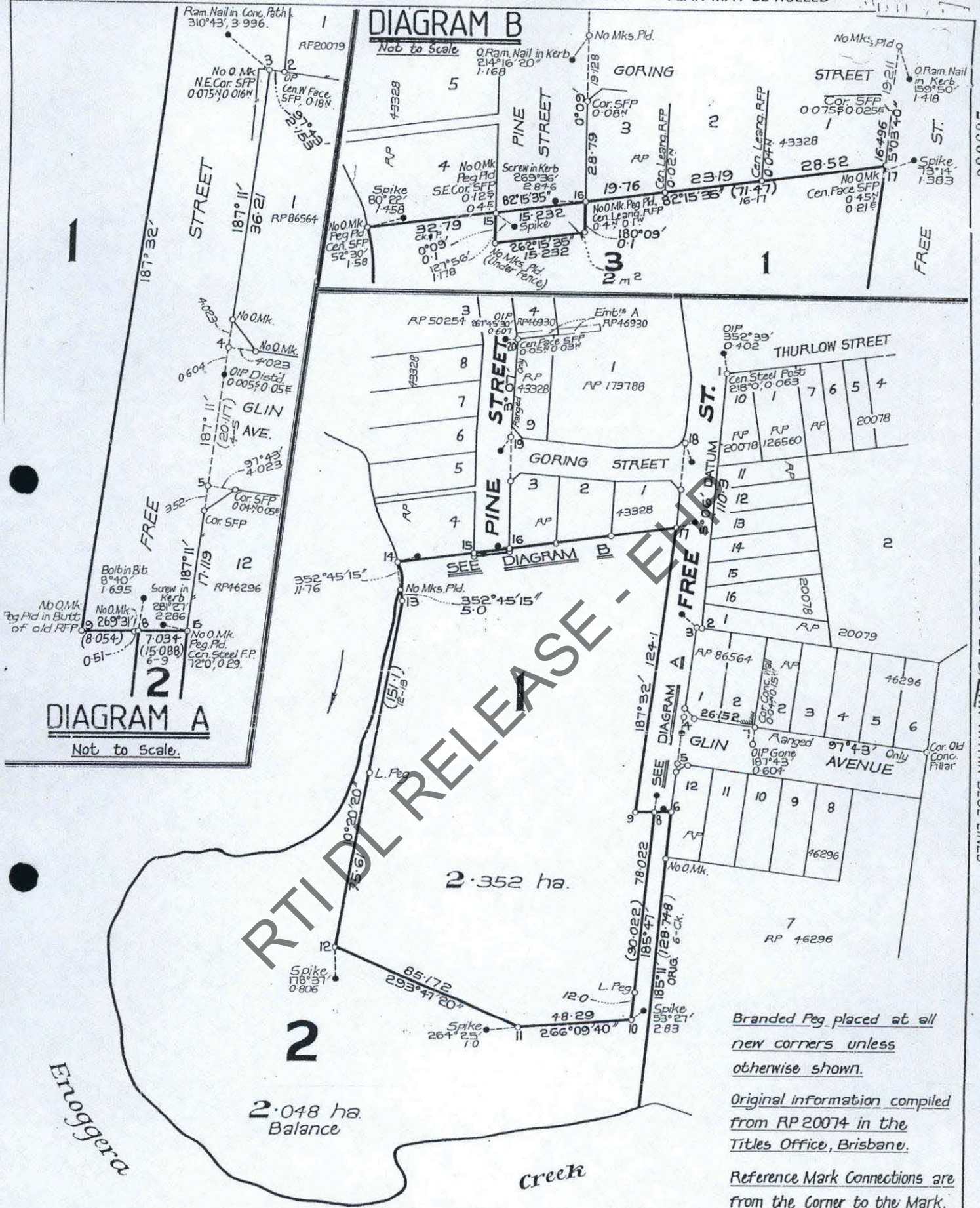


DIAGRAM B

Not to Scale



Branded Peg placed at all new corners unless otherwise shown.

Original information compiled from RP 20074 in the Titles Office, Brisbane.

Reference Mark Connections are from the Corner to the Mark.

No FIELD NOTES LODGED	PLAN OF Lots 1-3		ORIG. PORTION...281	
ORIGINAL GRANT	Cancelling Sub 1A on RP20075, Sub 2 on RP20076, and Resubs. 1 & 2 on RP 20074.		TOWN PARISH...ENOGGERA COUNTY...Stanley	
MAP REF.	PROCLAIMED SURVEY AREA	SURVEYED BY G.J. Downes 26.1.7. 1982	MERIDIAN	SCALE 1:1500 PLAN - 209539



CHEM UNIT

CHEMICAL HAZARDS AND EMERGENCY MANAGEMENT UNIT

A Division of the Bureau of Emergency Services

Telephone: (07) 224 4422

Facsimile: (07) 224 4471

P.O. BOX 13,

NORTH QUAY, QLD 4002

AAB:CKC

22 November 1990

Mr G B Lawrence
Kou Kourou & Partners
PO Box 116
EAST BRISBANE QLD 4169

Dear Sir,

TREATMENT OF STOCKPILED MATERIAL FREE STREET

I refer to your proposal dated 30 October 1990 for blending and handling of stockpiled material which has been removed from the proposed parkland.

The method as proposed is acceptable. However, I suggest that you aim to reduce the final level of contamination obtained from the blending process to a level which is equal to but not higher than that already existing in Stages 2 and 3.

For your information, 250 mg/kg of Cr is the level which is likely to be used as an investigative threshold in future.

Yours faithfully

sch4p4(6) Personal information

ALAN A BRUNNER
Scientific Adviser
Industrial Processes

Civil Structural, Soil Testing.

30th October, 1990

Postal Address:
PO Box 116
East Brisbane Qld 4169Level 1
922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169CHEM UNIT
Executive Building
100 George Street
BRISBANE
QLD. 4001Telephone (07) 891 1911
Facsimile (07) 891 5460

Attention: Mr. A. Brunner

Dear Sir,

Re: Treatment of Stockpiled Material,
Retirement Village,
Free Street, Newmarket.

We would like to submit the following proposal for blending and handling of the stockpiled material, removed from the parkland and Stage 3 of the above project.

In order to remove the "hot spot" which was found, the entire area was stripped down to the clay base, and stockpiled. This would have resulted in the contaminated material being diluted substantially with the large amount of natural material excavated and mixed in the process.

We now propose to blend this material as follows, to further dilute any possible concentrations of material, and place it in the deepest area of filling, where it can be validated if necessary prior to being finally covered.

Step 1 - the stockpile of material to be treated consists of approximately 140m³. A 200mm deep layer is to be spread over a 25m square area, and then overlain with a 200mm layer of clean imported select fill. The process is to be repeated, which will give an 800mm pile of thinly layered material.

Step 2 - the material can then be blended by machinery working the full depth of the pile. This will ensure that the layers are mixed fully as each bucket load is taken.

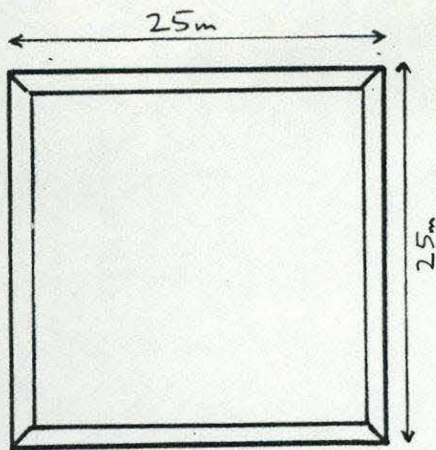
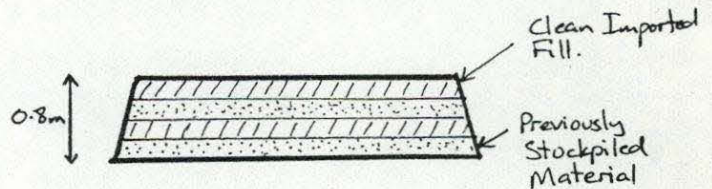
Step 3 - the blended material is to be placed in the deepest area of the site which requires filling and spread in a 200mm deep layer. We propose the area marked on the attached plan, which will mean the layer is to be covered by a further 1-1.5m of clean imported filling.

We would appreciate your comments and approval on this procedure as soon as possible, as our client is extremely anxious to resolve the matter.

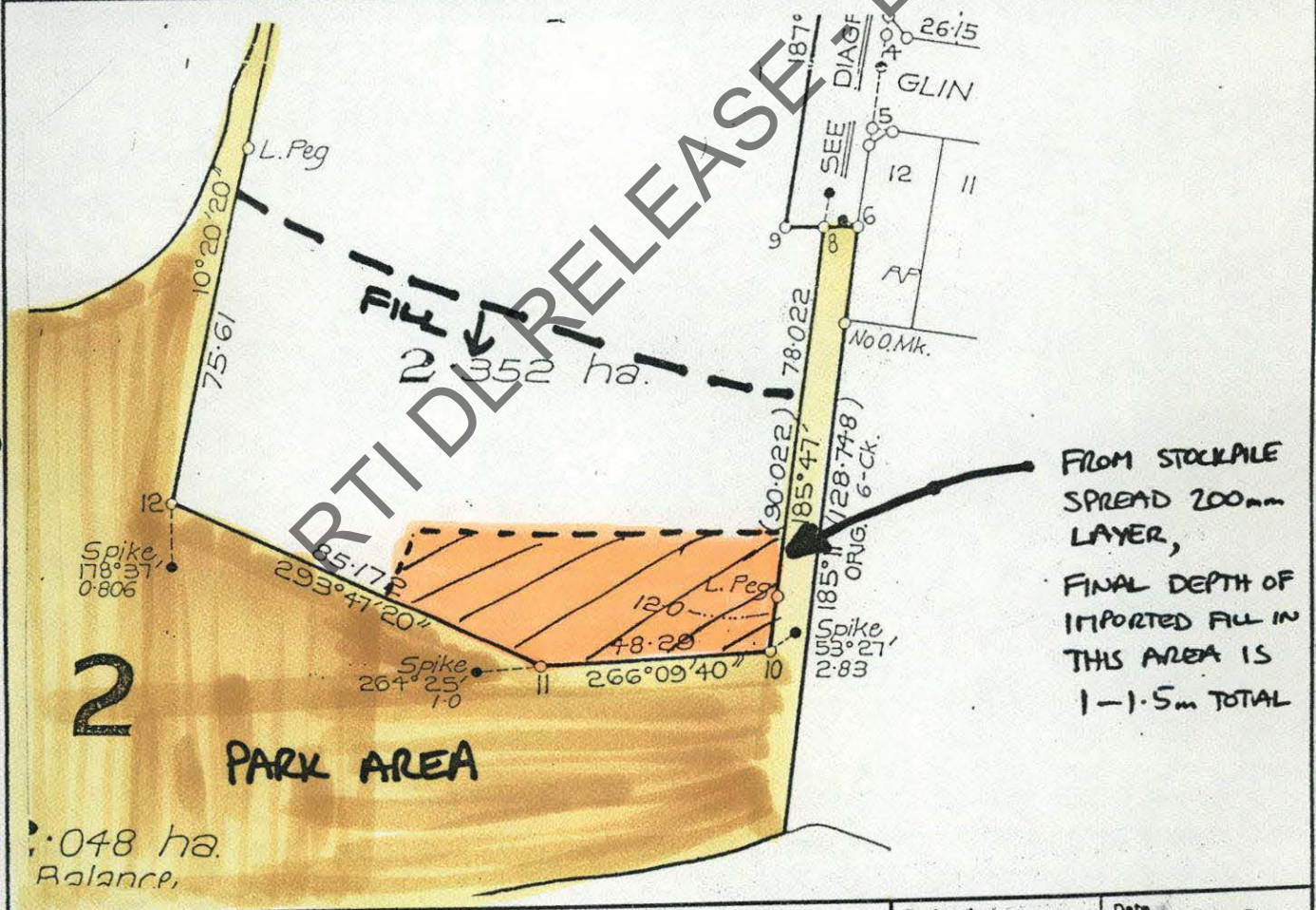
Yours faithfully,

sch4p4(6) Personal information

G.B. LAWRENCE
KOUKOUROU & PARTNERSAdelaide
(08) 363 0222Melbourne
(03) 853 7922Sydney
(02) 621 1401Branch at Gawler
(085) 22 6802



STEP 1 - CREATE LAYERED STOCKPILE



Koukourou & Partners

Consulting Engineers

CIVIL, STRUCTURAL,
Level 1/922 Stanley Street
East Brisbane, Qld. 4169
Telephone 891-1911

SOIL TESTING, SUPERVISION
42 Fullarton Road
Norwood, Sth. Aust. 5067
Telephone 363-0222

Designed	Date 30.10.90
Drawn	Scale NTS
Checked	Sheet No.
Approved	Drawing No. M900502

Civil Structural, Soil Testing.

Postal Address:
PO Box 116
East Brisbane Qld 4169

Level 1
922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169

Telephone (07) 891 1911
Facsimile (07) 891 5460

20 September 1990

The Town Clerk
Brisbane City Council
GPO Box 1434
BRISBANE QLD 4001

Attention: Mr Ken Geise

Dear Sir

Re: Newmarket Retirement Village

Following your recent meeting with Ed Berzins of Koukourou & Partners and Alan Brunner of the State Government Chemical Unit, a sampling and testing programme was carried out in accordance with the recommendations that were advised.

Attached are the following:

Borehole No.s and descriptions of layers
Site Plans showing locations
Survey information for location of test bores
Analytical test results of samples

The Arsenic levels from all samples tested are below the acceptable as per the previous testing.

The levels of total chromium are generally below the "threshold" levels of 600 ppm as per the earlier reports.

Exceptions were found in Borehole 13A in a layer of ash fill with showings. This 250 mm layer was at 0.75 m depth and is in the road pavement area to be constructed.

Two other high levels were found in the surface soils at Boreholes K2 and K3. This appears to be confined to the surface loamy mix in the small area near the embankment adjacent to a previous Borehole and outside the building site units. The adjacent test bores showed typical low levels.



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Sydney
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Branch at Gawler
(085) 22 6802

Koukourou & Partners Pty Ltd (Inc. in S.A.) as trustee for Koukourou & Partners Unit Trust trading as Koukourou & Partners

It is our understanding that these results will be forwarded to the Chemical Hazards and Emergency Management Unit for final construction.

We await your advice as soon as possible.

Yours faithfully

sch4p4(6) Personal information

Geoff Lawrence
KOUKOUROU & PARTNERS

cc Bill Jones - Pioneer Homes
Alan Brunner - State Government Chemical Unit

RTI DL RELEASE - EHP

FREE STREET RETIREMENT VILLAGE, NEWMARKET

MANAGERS RESIDENCE

VALIDATION TEST BORE DESCRIPTIONS

For locations, refer to attached site plans.

BH No.	DEPTH (mm)	DESCRIPTION
13(a)	0-400	GRITTY CLAY FILL, mottled brown
	400-750	ASH FILL, grey
	750-1000	ASH FILL & SHAVINGS MIX, red brown
	1000-1800	DISCOLOURED SOIL, brown
	1800-3000	NATURAL WEATHERED SHALE, grey brown
M1	0-1000	GRITTY CLAY FILL, mottled brown
	1000-1100	ASH FILL, grey
	1100-1300	DISCOLOURED SOIL, red brown
	1300-1900	DISCOLOURED SOIL, brown
	1900-2200	" " , red brown
	2200-2800	NATURAL SOIL, brown
M2	0-850	GRITTY CLAY FILL, mottled brown wood from 500-750
	850-1200	SOIL, BITUMEN FILL, black
	1200-1600	CONCRETE FILL, unable to penetrate
M3	0-400	GRITTY CLAY FILL, black, discoloured
	400-2600	SHALEY CLAY, natural

FREE STREET RETIREMENT VILLAGE, NEWMARKET

STAGES 2 & 3

VALIDATION TEST BORE DESCRIPTIONS

For locations, refer to attached site plans.

BH No.	DEPTH (mm)	DESCRIPTION
K1	0-200 200-1300	TOPSOIL,dark brown SILTY SAND,orange brown
K2	0-500 500-1800	LOAMY TOPSOIL/FILL,discoloured SILT,brown
K3	0-500 500-1300	LOAMY TOPSOIL/FILL,brown and black SILT,brown black,moist to wet
K4	0-300 300-750 750-1300	TOPSOIL,brown,black CLAYEY SAND,orange brown CLAY,mottled,red brown
K5	0-400 400-1000 1000-1300	CLAY,mottled brown CLAY,mottled orange VERY WEATHERED SHALE,brown
K6	0-300 300-1300	CLAY FILL,dark brown WEATHERED SHALE,light orange
K7	0-300 300-1300	TOPSOIL,brown black SANDY CLAY,red brown,moist
K8	0-200 200-800 800-1300	GRAVELLY SOIL,grey CLAY,mottled red brown SHALEY CLAY,mottled orange
K9	0-300 300-800 800-1300	TOPSOIL,dark grey brown CLAY,grey brown WEATHERED SHALE
K10	0-150 150-950 950-1200	LOAMY TOPSOIL,light brown SILTY SAND,dark brown SANDY CLAY,yellow brown
K11	0-500 500-800 800-1300	CLAYEY FILL NATURAL SOIL,dark brown GRAVELLY CLAY,red brown

FREE STREET RETIREMENT VILLAGE, NEWMARKET

MANAGERS RESIDENCE

VALIDATION TEST BORE DESCRIPTIONS

For locations, refer to attached site plans.

BH No.	DEPTH (mm)	DESCRIPTION
13(a)	0-400	GRITTY CLAY FILL,mottled brown
	400-750	ASH FILL,gre
	750-1000	ASH FILL & SHAVINGS MIX,red brown
	1000-1800	DISCOLOURED SOIL,brown
	1800-3000	NATURAL WEATHERED SHALE,gre
M1	0-1000	GRITTY CLAY FILL,mottled brown
	1000-1100	ASH FILL,gre
	1100-1300	DISCOLOURED SOIL,red brown
	1300-1900	DISCOLOURED SOIL,brown
	1900-2200	" " ,red brown
	2200-2800	NATURAL SOIL,brown
M2	0-850	GRITTY CLAY FILL,mottled brown
		wood from 500-750
	850-1200	SOIL/BITUMEN FILL,black
	1200-1600	CONCRETE FILL,unable to penetrate
M3	0-400	GRITTY CLAY FILL,black,discoloured
	400-2600	SHALEY CLAY,natural

FREE STREET RETIREMENT VILLAGE, NEWMARKET

STAGES 2 & 3

VALIDATION TEST BORE DESCRIPTIONS

For locations, refer to attached site plans.

BH No.	DEPTH (mm)	DESCRIPTION
K1	0-200 200-1300	TOPSOIL, dark brown SILTY SAND, orange brown
K2	0-500 500-1800	LOAMY TOPSOIL/FILL, discoloured SILT, brown
K3	0-500 500-1300	LOAMY TOPSOIL/FILL, brown and black SILT, brown black, moist to wet
K4	0-300 300-750 750-1300	TOPSOIL, brown, black CLAYEY SAND, orange brown CLAY, mottled, red brown
K5	0-400 400-1000 1000-1300	CLAY, mottled brown CLAY, mottled orange VERY WEATHERED SHALE, brown
K6	0-300 300-1300	CLAY FILL, dark brown WEATHERED SHALE, light orange
K7	0-300 300-1300	TOPSOIL, brown black SANDY CLAY, red brown, moist
K8	0-200 200-800 800-1300	GRAVELLY SOIL, grey CLAY, mottled red brown SHALEY CLAY, mottled orange
K9	0-300 300-800 800-1300	TOPSOIL, dark grey brown CLAY, grey brown WEATHERED SHALE
K10	0-150 150-950 950-1200	LOAMY TOPSOIL, light brown SILTY SAND, dark brown SANDY CLAY, yellow brown
K11	0-500 500-800 800-1300	CLAYEY FILL NATURAL SOIL, dark brown GRAVELLY CLAY, red brown

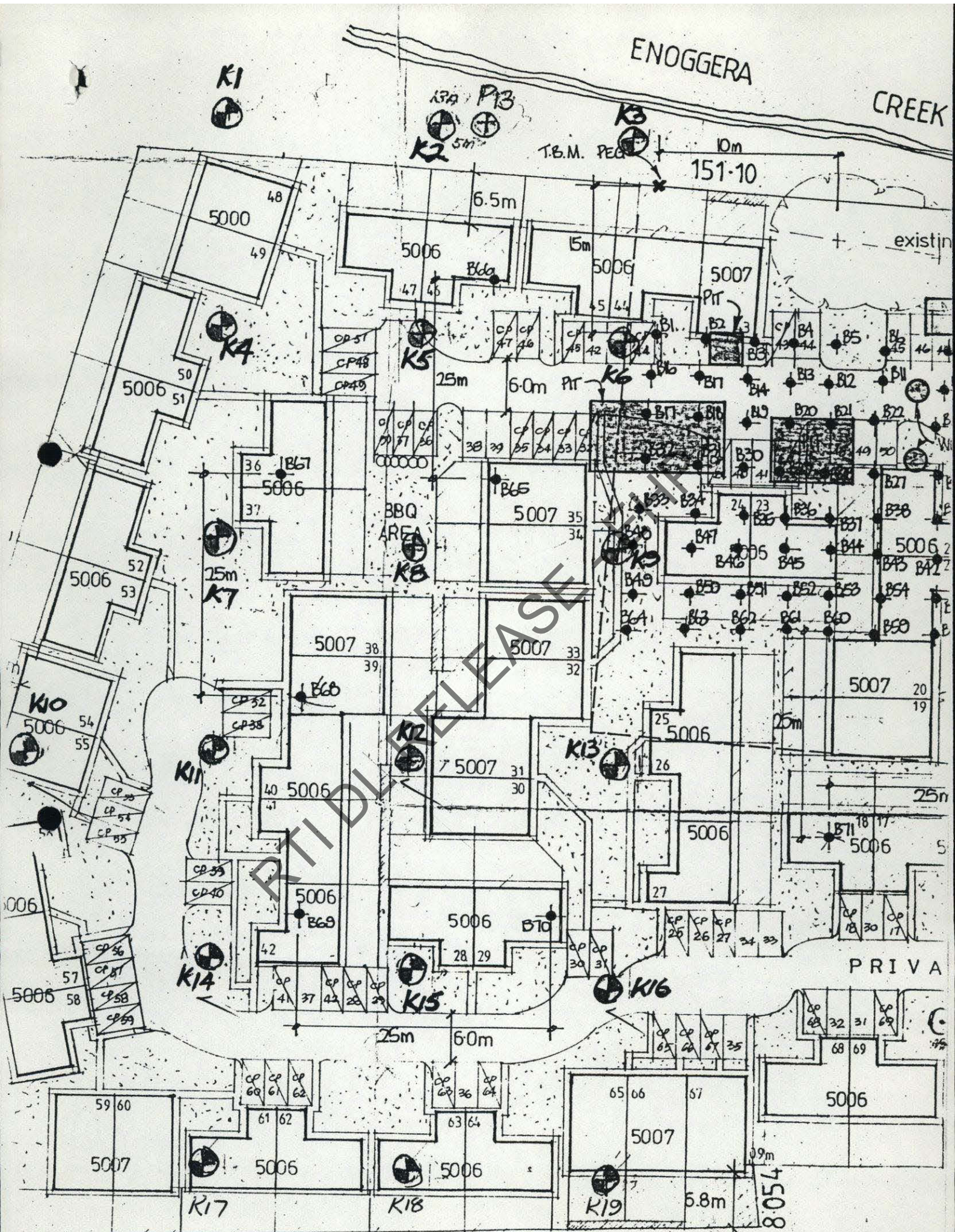
FREE STREET RETIREMENT VILLAGE, NEWMARKET

STAGES 2 & 3

VALIDATION TEST BORE DESCRIPTIONS

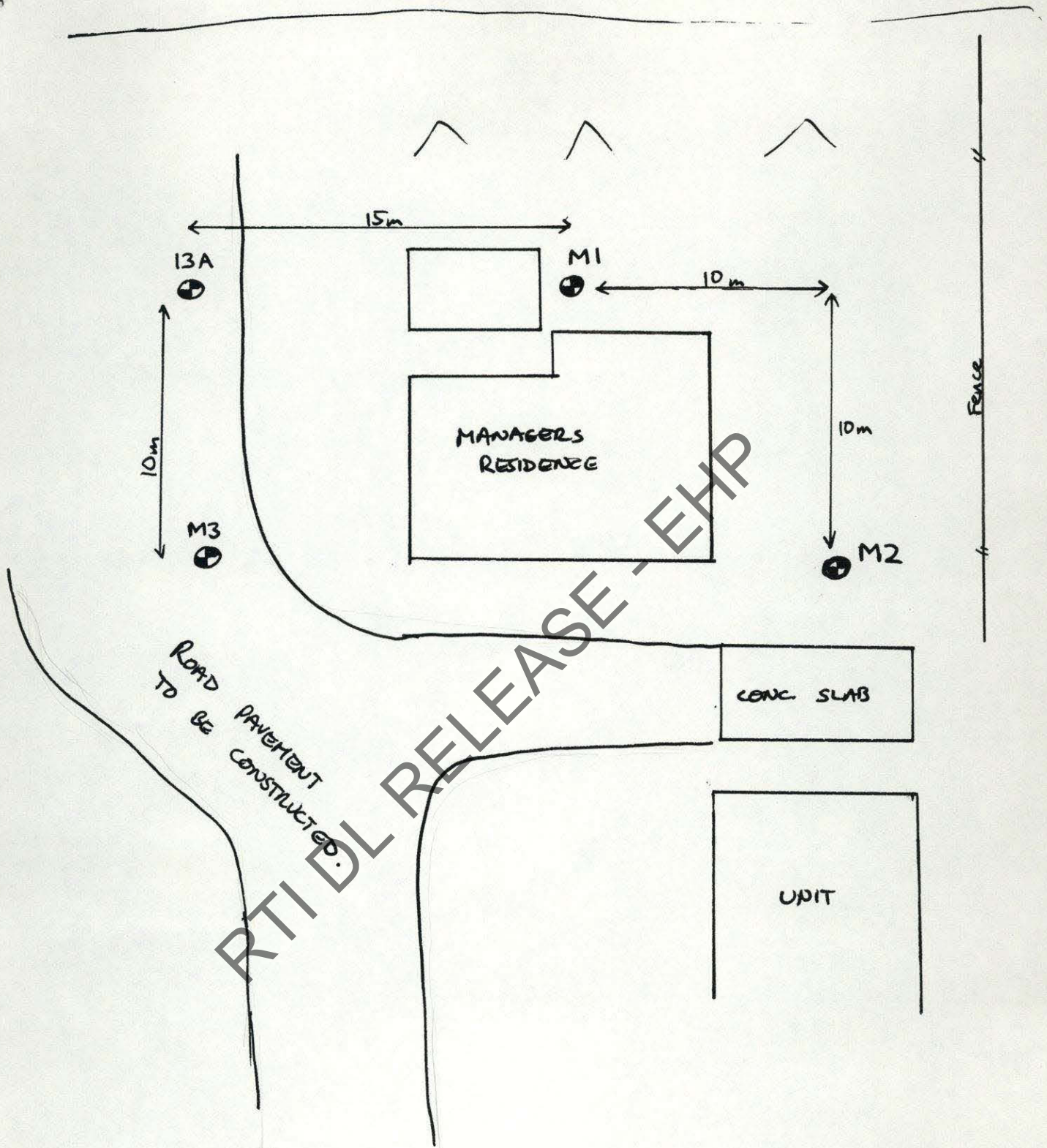
For locations, refer to attached site plans.

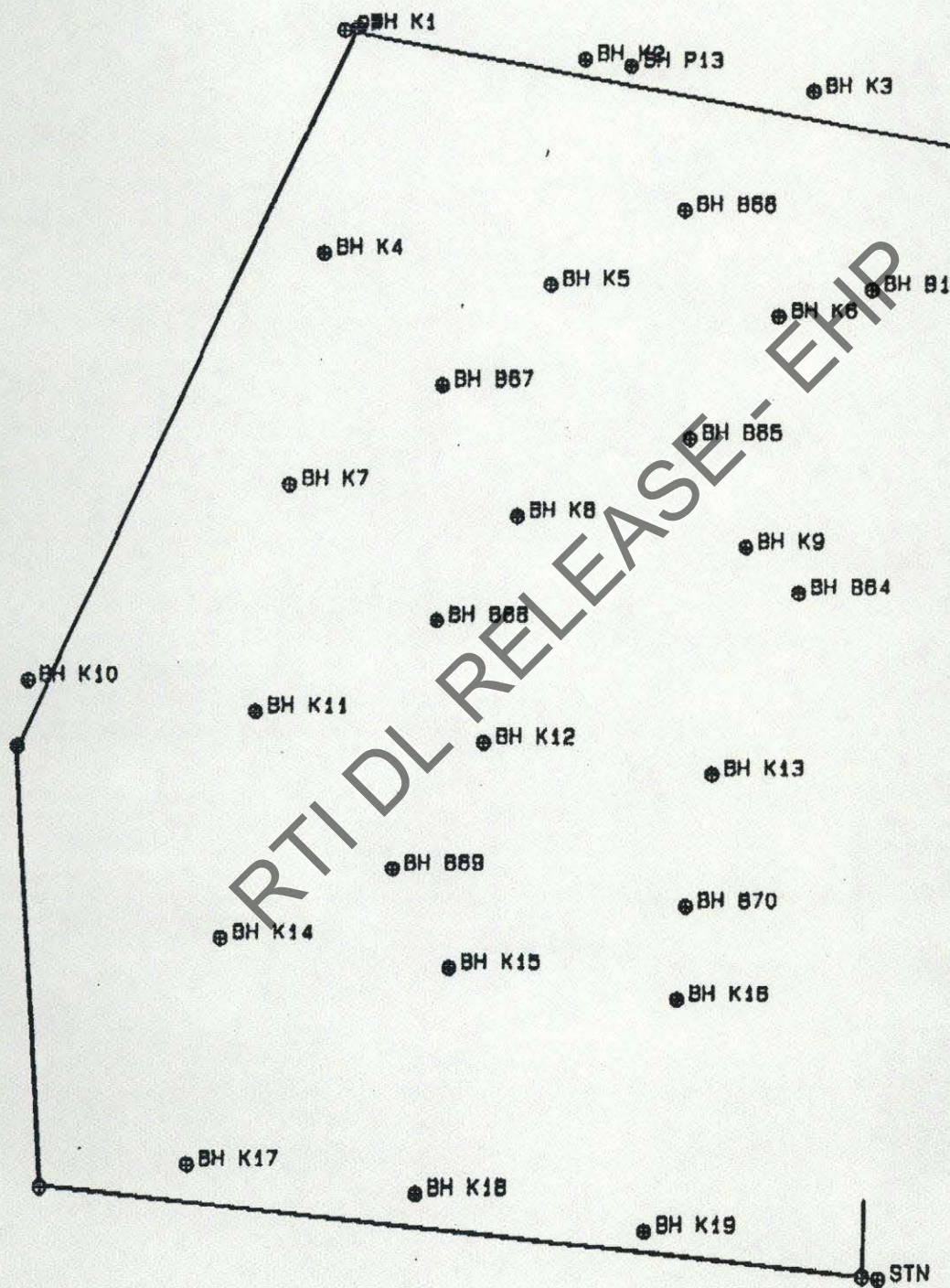
BH No.	DEPTH (mm)	DESCRIPTION
K12	0-450 450-700 700-1150 1150-1300	GRAVELLY SANDY SOIL GRITTY CLAY, red CLAY, red brown and clay WEATHERED SHALE AND CLAY
K13	0-200 200-850 850-1300	GRAVELLY SOIL, discoloured GRAVELLY CLAY, mottled brown WEATHERED SHALE
K14	0-600 600-1200	LOAMY GRITTY TOPSOIL, dark brown CLAY, mottled red
K15	0-300 300-1200	LOAM, dark brown black GRITTY CLAY, orange brown
K16	0-400 400-1200	LOAM, dark brown black GRITTY CLAY, orange



90-222

CREEK





1000.000 E 760.000 N
1:750 Rotation 90°

PINE AND FREE ST NEWMARKET PIONEER

Pt No.	Easting	Northing	Height	Code	Description
1185	855.562	857.403	<null>	BH P13	P13
1186	851.630	827.659	<null>	BH K1	K1
1187	854.907	852.456	<null>	BH K2	K2
1188	858.174	877.243	<null>	BH K3	K3
1189	876.360	824.388	<null>	BH K4	K4
1190	879.652	849.143	<null>	BH K5	K5
1191	871.496	863.492	<null>	BH B66	B66
1192	882.942	873.915	<null>	BH K6	K6
1193	879.982	883.963	<null>	BH B1	B1
1194	901.161	821.107	<null>	BH K7	K7
1195	890.452	837.486	<null>	BH B67	B67
1196	904.470	845.896	<null>	BH K8	K8
1197	896.003	864.495	<null>	BH B65	B65
1198	907.737	870.709	<null>	BH K9	K9
1199	912.818	876.511	<null>	BH B64	B64
1200	932.561	867.434	<null>	BH K13	K13
1201	929.239	842.614	<null>	BH K12	K12
1202	916.005	837.294	<null>	BH B68	B68
1203	925.951	817.826	<null>	BH K11	K11
1204	922.704	793.049	<null>	BH K10	K10
1205	950.740	814.572	<null>	BH K14	K14
1206	942.992	833.011	<null>	BH B69	B69
1207	954.011	839.340	<null>	BH K15	K15
1208	946.976	864.980	<null>	BH B70	B70
1209	957.360	864.140	<null>	BH K16	K16
1210	982.428	860.923	<null>	BH K19	K19
1211	978.566	836.030	<null>	BH K18	K18
1212	975.522	811.259	<null>	BH K17	K17

RTI DL RELEASE - CHP



Australian Laboratory Services PTY. LTD.

CONSULTING ANALYTICAL CHEMISTS

KOUKOUROU & PARTNERS

Attention: MR E BERZINS
 YourOrder: LETTER
 SampleType: SOIL

Page-no: 1
 STAFFORD
 Batch-no: 323
 Sub-batch: 0
 No-samples: 29
 Received: 07/09/90
 Checked:

Element
 Unit
 Method

As
 ppm
 G033

Cr
 ppm
 G033

13A 750-1000	36	3700
13A 1000-1800	19	200
M1 750-1000	22	170
M1 1000-1500	8	220
M2 500-750	12	125
M2 WOOD	4	170
M3 00-500	26	170
K1 00-200	28	230
K1 200-500	16	160
K2 00-200	9	2050
K2 200-500	16	220
K3 00-500	20	1850
K3 500-1000	14	135
K4 00-200	10	360
K5 200-500	1	360
K5 00-250	1	220
K5 250-500	7	155
K6 00-200	2	180
K6 200-500	3	220
K7 00-250	9	290
K7 250-500	1	195
K8 00-250	7	270
K9 00-250	12	470
K10 250-500	4	125
K10 500-750	3	145
K12 250-500	5	370
K13 00-250	5	185
K14 250-500	3	220
K16 250-500	8	260

Detection limit

1

1

Cont Site *

Koukourou & Partners

Consulting Engineers

Civil Structural, Soil Testing.

Postal Address:
PO Box 116
East Brisbane Qld 4169

Level 1
922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169

Telephone (07) 891 1911
Facsimile (07) 891 5460

17 October 1990



The Town Clerk
Brisbane City Council
GPO Box 1434
BRISBANE QLD 4001

Attention: Mr Ken Giess

Dear Sir

Re: Newmarket Retirement Village

Please find enclosed the official laboratory report for
leaching test (confirming my fax 5/10/1990).

Yours faithfully

sch4p4(6) Personal information

Ed Berzins
KOUKOUROU & PARTNERS

C/C A. Brunner - State Government
Chemical Unit



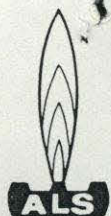
Adelaide
(08) 363 0222

Melbourne
(03) 853 7922

Sydney
(02) 621 1401

Branch at Gawler
(085) 22 6802

COPY



Australian Laboratory Services

INCORPORATED
IN QUEENSLAND

CONSULTING ANALYTICAL CHEMISTS

LABORATORY REPORT

Brisbane Head Office and Laboratory
32 Shand Street, Stafford, Q. 4053
P.O. Box 66, Everton Park, Q. 4053.
Phone: (07) 352 5577.
Fax: (07) 352 5109.
Perth Laboratory
Lot 197 Victoria Road, Malaga, W.A. 6062.
Phone: (09) 249 2988. Fax: (09) 249 2942.
Townsville Laboratory
21 Bombala Street, Garbutt, Q. 4814.
Phone: (077) 79 9155. Fax: (077) 799 729.

Charters Towers Laboratory
18 Drew Street, Charters Towers, Q. 482
Phone: (077) 87 4155. Fax: (077) 87 422
Bendigo Laboratory
127A Victoria Street, Eaglehawk, Vic. 35
Phone: (054) 46 1390. Fax: (054) 46 138
Orange Laboratory
10 Leewood Drive, Orange, N.S.W. 2800
Phone: (063) 631 722. Fax: (063) 631 18

Client: **KOUKOUROU & PARTNERS**
Address: **P O BOX 116**
EAST BRISBANE
QLD

4169

Contact: **MR G LAWRENCE**

Order No. **13A 750-1000**

Sample Type: **SOIL**

Page **1** of **1**

STAFFORD
Batch Number: 457

Sub-batch: 0

No. of Samples: 2

Date Received: 02/10/9

Date Completed: 15/10/9

Method	Analysis description	Units	TCLP LEACHATE	WATER LEACHATE
EG-025F	Chromium - Filtered	ng/L	0.36	0.18
EG-030F	Arsenic - Filtered	ng/L	<0.01	<0.01

RTI DL RELEASE - EHP

COPY

SAMPLES AS RECEIVED

Comments:

Results reported as mg/L in leachate.
Confirmation of results faxed 5/10/90.



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

Signatory:

sch4p4(6) Personal information

FILE NOTE

SUBJECT : FREE STREET - NEWMARKET

DATE : 15 OCTOBER 1990

A retirement village is being constructed on a former tannery site. Stage 1 (which is substantially complete) was found to have high Cr levels in up to four locations.

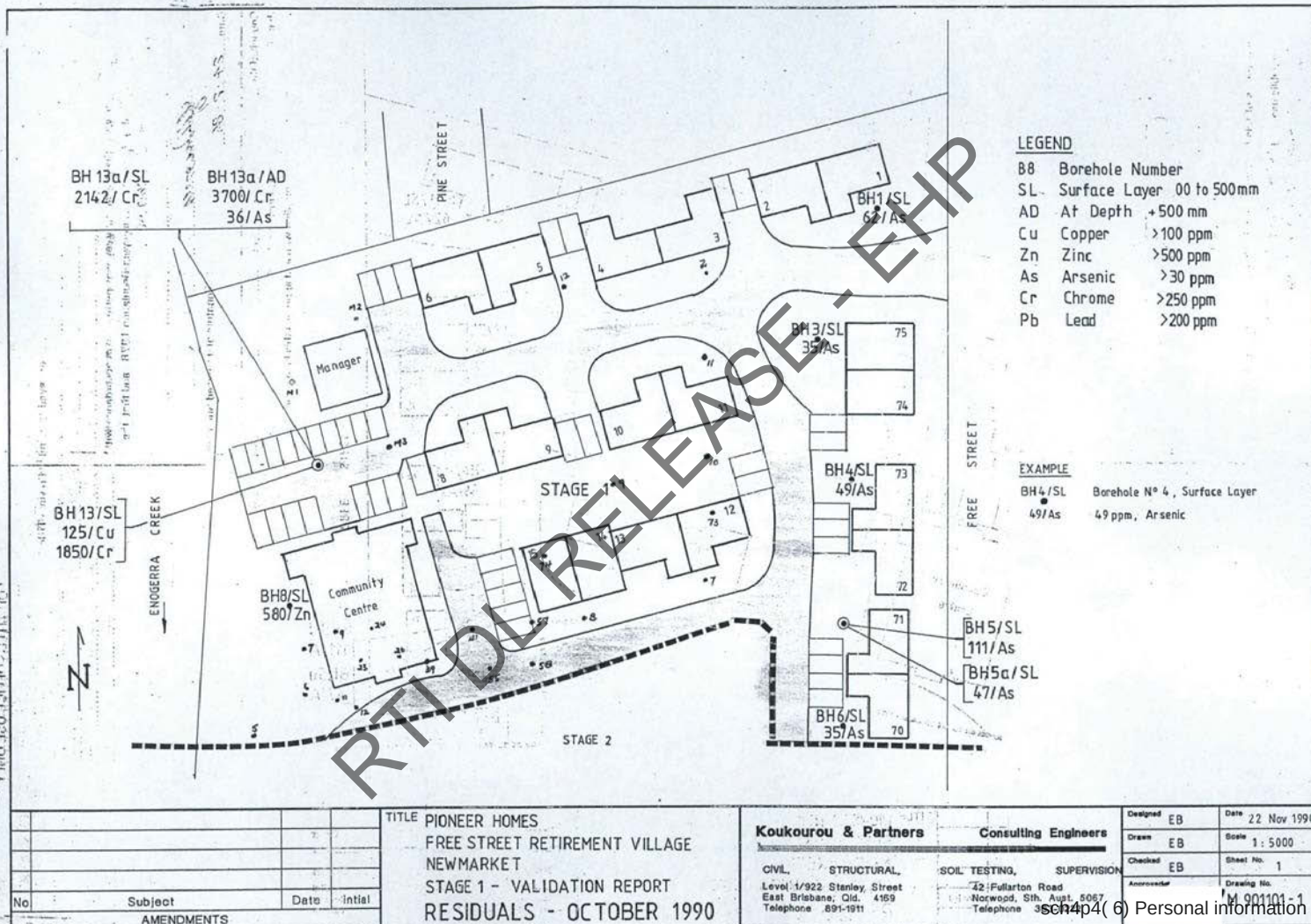
Two of these locations will be removed, but a further two (one under a road) were not considered to constitute a health risk. Leaching tests on the contaminated soil in these locations have confirmed that they do not constitute either a health or environmental hazard.

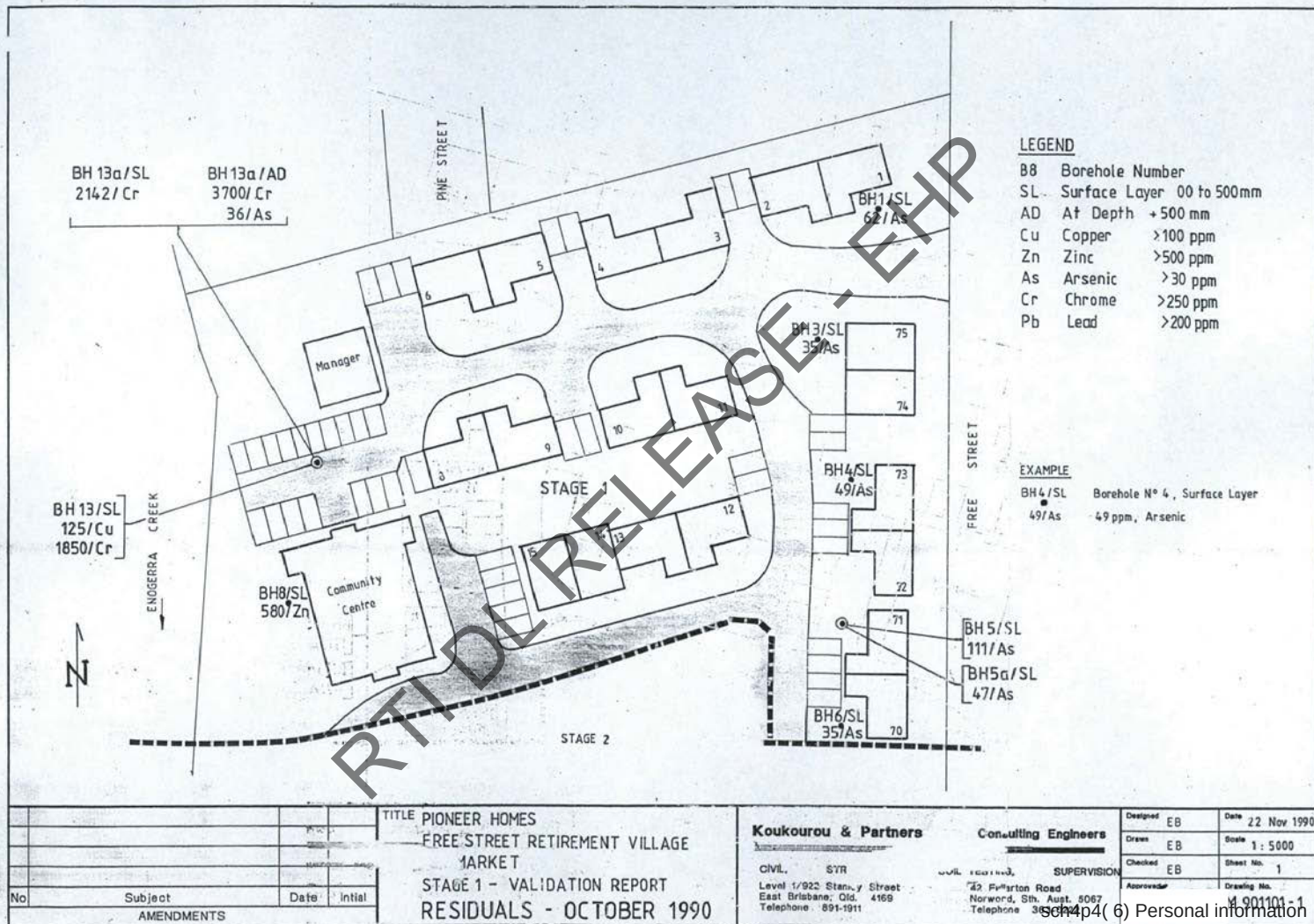
In Stages 2 and 3 of the development, a further area containing 150 cubic metres has been found with elevated chromium levels. This soil, together with 650 cu metres of lime rich soil will be blended with new fill to reduce the hazard to an acceptable level.

sch4p4(6) Personal information

ALAN BRUNNER
Scientific Advisor

RTI DL RELEASE





CHEM UNIT

CHEMICAL HAZARDS AND EMERGENCY MANAGEMENT UNIT

Telephone (07) 224 4422
Facsimile (07) 224 4471

Executive Building,
100 George Street,
BRISBANE Q. 4000

P.O. Box 13,
North Quay. Qld 4002

MEMORANDUM

TO : DIRECTOR, SCIENTIFIC AND TECHNICAL SERVICES,
CHEM UNIT

FROM : ALAN BRUNNER, SCIENTIFIC ADVISOR, CHEM UNIT

SUBJECT : CONTAMINATED SITE - FREE STREET, NEWMARKET

DATE : 8 OCTOBER 1990

Ken Giess provided leachate results from the area of the site with high Cr levels.

	<u>TCLP</u> 1:20	<u>WATER</u> 1:5	<u>DRINKING</u> Water:Std
i.e. As	<0.01 mg/l	<0.01 mg/l	.05 mg/l
Cr	0.36 mg/l	0.18 mg/l	.05 mg/l

This layer of contamination is found between 750 & 1000mm in one small part of the site.

Note: The site will be registered as a contaminated site but suitable for its proposed use as a retirement village.
(No food will be grown on site).

sch4p4(6) Personal information

ALAN BRUNNER
Scientific Advisor

— NH & MRC STD for DRINKING Water is 0.05 mg/l Cr
0.05 mg/l As

— Groundwater Standards for leachate
is < 100 Dr. Water Std.

CHEM UNIT

CHEMICAL HAZARDS AND EMERGENCY MANAGEMENT UNIT

Telephone: (07) 224 4422
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Executive Building,
100 George Street,
BRISBANE, Q. 4000

P.O. Box 13,
North Quay, Qld. 4002

FILE COPY

MEMORANDUM

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CHEM UNIT

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SUBJECT : CONTAMINATED SITE - FREE STREET, NEWMARKET

DATE : 8 OCTOBER 1990

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	Cr	0.36 mg/l	0.18 mg/l	.05 mg/l

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Note: The site will be registered as a contaminated site but suitable for its proposed use as a retirement village.
(No food will be grown on site).

sch4p4(6) Personal information

ALAN BRUNNER
Scientific Advisor

noted
sch4p4(6) Personal information
9/10

Cont Site - Free Street

CHEM UNIT

CHEMICAL HAZARDS AND EMERGENCY MANAGEMENT UNIT

Telephone: (07) 224 4422
Facsimile: (07) 224 4471

Executive Building,
100 George Street,
BRISBANE, Q. 4000

P.O. Box 13,
North Quay, Qld. 4002

29 August 1990

The Town Clerk,
Brisbane City Council,
G.P.O Box 1434,
BRISBANE QLD 4001

ATTENTION : MR. K. GIESE : SCIENTIFIC SERVICES DIVISION

Dear Sir,

RE: ASSESSMENT OF 24 FREE STREET, NEWMARKET

I refer to your request for the assistance of the CHEM Unit in the assessment and clearance of the above site for its intended use as a retirement village.

After a review of the document provided, discussion with you and my site inspection, I can formally confirm the details of further investigative work which will be needed before this Unit can decide whether the site is appropriate for its intended use.

It is suggested that the following further test drilling and analysis be undertaken:

1. Area beside and behind the Manager's residence
 - a series of five cores be tested for chromium and arsenic content;
 - each core should penetrate 500mm into the original bank. Each identifiable layer down to the original bank, 0 - 250mm and 250 - 500mm of the original bank should be analysed.
2. Areas of Stage two and three and the area in the vicinity of BH13.
 - A series of cores (on a 25 x 25m grid) be tested for both chromium and arsenic content.
 - For continuity, the cores should be tested as per the initial tests at 0 - 200mm and 200 - 500mm.

- 2 -

When these results are available, the Director of the CHEM Unit will convene a meeting of the relevant State Government Departments to consider the appropriate steps that need to be taken before a clearance can be issued.

Yours faithfully,

sch4p4(6) Personal information

ALAN BRUNNER
Scientific Advisor

RTI DL RELEASE - EHP

BRISBANE CITY COUNCIL
MEMORANDUM

To <i>Director Chem Unit</i>	Ref. No.
From <i>Senior Chemist</i>	Date <i>7-8-90</i>
Subject <i>Parklands Retirement Village, Newmarket.</i>	

As discussed, please find attached a copy of a letter and assessment reports regarding a former tannery site at Free Street, Newmarket, which is presently being redeveloped as a retirement village.

When you have had a chance to study the reports, I would appreciate the opportunity to discuss the background of the redevelopment and the issues raised in the letter to the State Health Department dated 26 July 1990.

*Spoke to Kim
21/8*

sch4p4(6) Personal information

CC132S (m) (J1 4/86)

Telephone
875 8618

When calling or phoning please ask for
Mr. K. Giess

Your reference

Our reference

DB:TG



Brisbane City

Brisbane City Council
69 Ann Street
Brisbane
Queensland
GPO Box 1434
Brisbane
Australia 4001
Telex CIVICS AA41910
Facsimile 229 1168

26th July, 1990

Dr. R.A. Ramm,
Director of Environmental and Occupational Health,
State Health Building,
147-163 Charlotte Street,
BRISBANE. QLD. 4000

MAILED
26/7

ATTENTION: G. HAPGOOD, SENIOR INSPECTOR - ENVIRONMENTAL SANITATION SECTION

Dear Dr. Ramm,

In response to a recent telephone conversation with an officer of your division, Mr. G. Hapgood, Senior Inspector Environmental Sanitation Section, we are providing the following information pertaining to the assessment of chemical contamination at the site of a former tannery at Free Street, Newmarket which is presently being redeveloped as a retirement village:

- Memo of 12th July, 1990 from Acting Senior Chemist
- Laboratory Reports from the Australian Laboratory Services
- Letter from Koukourou and Partners, Consulting Engineers dated 28th June, 1990
- Report by Koukourou and Partners on Site Investigation/Chemical Screening dated 22nd December, 1989.

We have endeavoured to assist the developer to provide sufficient information to allow an evaluation of the condition of the land.

As indicated in previous correspondence on the subject the Brisbane City Council in turn requests assistance from your department with the assessment of the contamination found at this site in order to ensure that the redevelopment of this land is accomplished without unacceptable risk to the Community or the environment.

.../2

Please address all correspondence to the
Town Clerk

The following aspects need to be addressed with respect to the rehabilitation of this site:

- . Need for further assessment of the site to identify the contaminants present.
- . Assessment of the health risks which the identified contaminants pose in relation to the proposed land use (a medium density multiple dwelling development).
- . Assessment of the risks which the identified contaminants pose in relation to the surrounding environment.
- . Need for further remediation of the site.
- . Validation requirements for the remediated areas.
- . Issue of a "Certificate of Clearance" with respect to the contaminant levels remaining on the rehabilitated site in relation to public health and the environment.

Please contact Mr. K. Giess on 875 8618 to arrange for any further information or discussion on the above matters.

Yours sincerely,

sch4p4(6) Personal information

(N. Macpherson)
ACTING TOWN CLERK

taken from file 202230 and
added to file 900010 27/7/95 *Smith* ~~202230~~



Department of Environment and Heritage

160 Ann Street • Brisbane Queensland • PO Box 155 • North Quay Qld 4002 • Telephone (07) 227 7111 • Facsimile (07) 227 6534

Enquiries to

Telephone

Your reference

Our reference

6

8 June 1990

MEMORANDUM:

Mr H Bonney
Acting Director-General

SUBJECT:

Arsenic Contaminated Site - Free Street, Newmarket

Attached is a copy of a letter from the Town Clerk, Brisbane City Council regarding the redevelopment for the purposes of a Retirement Village of land previously occupied by a tannery.

Stage 1 of the project has been completed and incorporates a high ratio of land coverage by buildings. This stage is also understood to be away from the areas suspected of being the most contaminated. Never-the-less no certificate of occupancy has been issued for this stage. Progress to stages 2 and 3 has been held up pending additional site testing to determine contamination levels. It is understood that an area of land to be handed to the Council for park purposes and referred to on the second page of Council's letter to the consulting engineers is likely to be amongst the most contaminated.

A joint inspection by Mr R. Craswell of this Division and an officer from BCC has been arranged and a response to the Council will be formulated following this visit. The Division's statutory responsibility is related to any water pollution which might result from any seepage through or runoff from the site.

sch4p4(6) Personal information

D Kemp
Acting Director
Division of Environment

Telephone

875 8618

When calling or phoning please ask for

Mr. K. Giess

Your reference

Our reference

(5)420/11-LO230/24



Brisbane City Council
69 Ann Street
Brisbane
Queensland
GPO Box 1434
Brisbane
Australia 4001
Telex CIVICS AA41910
Facsimile 229 1168

Brisbane City
Department of Environment
and Heritage

29 MAY 1990

QUEENSLAND

25 May 1990

Mr H Bonney
Director-General
Department of Environment and Heritage
19th Floor
160 Ann Street
BRISBANE 4000

Attn: Director, Division of Environment

Dear Mr Bonney,

It has come to the attention of Brisbane City Council that land at 24 Free Street, Newmarket, which is being developed as a retirement village, is contaminated with materials above the accepted threshold levels resulting from its previous use as a tannery.

For your information, I enclose a copy of the letter forwarded to the owner's consultant engineers advising of the need to remove this material and carry out a validation programme immediately.

I would welcome your comments and assistance on this matter and suggest that Mr Ken Giess, Council's Senior Chemist, be contacted for further details on 875 8618.

Yours sincerely,

sch4p4(6) Personal information

P W Berthold
TOWN CLERK

Dir. Environment

For reply please

AD(0) F.Y.I.



Please address all correspondence to the
Town Clerk

Telephone

875 8618

When calling or phoning please ask for

Mr. K. Giess

Your reference

Our reference

(5)420/11-LO230/24



Brisbane City

Brisbane City Council
69 Ann Street
Brisbane
Queensland
GPO Box 1434
Brisbane
Australia 4001
Telex CIVICS AA41910
Facsimile 229 1168

25 May 1990

Koukourou and Partners
Consulting Engineers
P O Box 116
EAST BRISBANE 4169

Attn: Mr E Berzins

Dear Mr Berzins,

Free Street Retirement Village, at Free Street, Newmarket

As a result of your recent discussions with officers of the Scientific Services Branch regarding the proposed site preparation for Stages 2 and 3 of the Free Street Retirement Village, the Brisbane City Council is seeking an assurance from your company, Pioneer Homes, that no construction or site preparation work will commence on Stages 2 and 3 of the development until these areas have been thoroughly assessed for the presence of chemical contamination, to the satisfaction of Brisbane City Council.

The preliminary site assessment carried out by your company last year indicated that elevated levels of heavy metals (Zn, Cu, Cr, Pb) are present above normal threshold values in the areas. The presence of these contaminants above accepted threshold levels should necessitate further in-depth investigation of these areas. In addition, soil screening for possible organic contaminants such as soluble oils, phenols and polyaromatic hydrocarbons should be carried out; these substances were all commonly used in significant quantities in the tanning processes.

Subsequent investigations and enquiries by Council officers in relation to the operational history at this site have indicated that waste materials from the tannery had been buried in the areas proposed for development and the proposed parkland. One cannot escape the conclusion that a thorough investigation is warranted, immediately.

Council would propose that the site (eg Stages 2 and 3 including proposed parkland areas) be carefully cleared of vegetation prior to the commencement of any site investigation. After clearing, an inspection of the area should be made by officers of the Scientific Services Branch and personnel from your company in order to assist you with the planning of a suitable site investigation programme for the assessment of chemical contamination in the area.

../2

Please address all correspondence to the
Town Clerk

It is also suggested that due to the limited nature of the initial soil testing in Stage 1 of the development which is presently under construction, a validation programme should be carried out to ensure this area is not contaminated, and that appropriate analytical data is made available to us to support this conclusion.

Council is very concerned that contaminated material exists on the land proposed as public parkland, and it is considered that the contaminants must be removed prior to the transfer of that land to the Crown, (with Council as trustee).

The plan of survey providing for the transfer of this land will not be sealed until Council is satisfied that it is contaminant free.

With increasing public awareness of potential health and environmental risks associated with the redevelopment of former industrial sites such as tanneries etc., it is considered that the above investigations are warranted in order to protect your client against any future questions and possible liability that may arise with respect to public health and environmental requirements associated with this site.

Should you have any queries regarding the above proposals please contact Mr. K Giess, 875 8618 for clarification of these matters.

A copy of this letter has been forwarded to the State Director-General of Health (for the attention of the Director of Environmental Occupation) and to the Director-General, Department of Environment and Heritage (for the attention Director, Division of Environment). Officers of these State Departments may also wish to be involved in inspections and other action concerning the site.

I look forward to your co-operation in this matter.

Yours sincerely,

sch4p4(6) Personal information

P W Berthold
TOWN CLERK

FILE
Facsimile transmission from
BRISBANE CITY COUNCIL



Brisbane City

BRISBANE CITY COUNCIL
69 Ann Street
Brisbane
Queensland
GPO Box 1434
Brisbane
Australia 4001
Telex CIVICS AA41910

FACSIMILE: 229 42

202230

To DIRECTOR, DIVISION OF ENVIRONMENT		Attention ENVIRONMENT	Fax. No. 227 7677
Date 25/5/90	No. of Pages 4	From R.N. METCALFE EXECUTIVE ASSISTANT	Fax. No. 229 4276
RE: AND DIRECTOR, TOWN CLERK'S BRANCH.			

DIVISION OF ENVIRONMENT

25 MAY 1990

Noted 9/2
DAMIAN

MR. GERRARD PHONED TO-DAY.

075-39 9946

I DON'T KNOW WHAT IS IN THIS REPORT, BUT HE SAYS THAT THERE ARE NO TESTS BEING DONE BY THE LABORATORIES AT COOMERA (?) BECAUSE THEIR EQUIPMENT IS OUT OF ORDER - SORRY TESTS IN RELATION TO THE LEVELS OF HERBICIDES IN THE CATCHMENT AREA OF THE HINZE DAM.

HE AND A DR. WYLDE HAVE DONE EXTENSIVE TESTS AND INVESTIGATIONS IN THIS AREA - THUS THE REPORT.

THERE SEEMS TO BE A PROBLEM WITH ALBERT SHIRE COUNCIL AND RURAL LANDS PROTECTION BOARD TRYING TO SWAY THE GOLD COAST CITY COUNCIL THAT THERE IS NO PROBLEM.

L.

BCC sent 2 copies.
One is with AD/O.

sch4p4(6) Personal information

25/5/90

P. There are 2 copies attached. (?)

CC7427 (M4 3/88)

25 MAY '90 17:23

Telephone

875 8618

When calling or phoning please ask for

Mr. K. Giess

Your reference

Our reference
(5)420/11-LO230/24

90/16392



Brisbane City

Brisbane
Queensland
GPO Box 1434
Brisbane
Australia 4001
Telex CIVICS AA41910
Facsimile 229 1168



25 May 1990

Mr H Bonney
Director-General
Department of Environment and Heritage
19th Floor
160 Ann Street
BRISBANE 4000

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Yours sincerely,

sch4p4(6) Personal information

P W Berthold
TOWN CLERK

Please address all correspondence to the
Town Clerk

25 MAY '90 17:24

61 7 2294276 PAGE.002

Telephone

875 8618

When calling or phoning please ask for

Mr. K. Giess

Your reference

Our reference

(5)420/11-LO230/24



Brisbane City

Brisbane City Council
69 Ann Street
Brisbane
Queensland
GPO Box 1434
Brisbane
Australia 4001
Telex CIVICS AA41910
Facsimile 229 1158

25 May 1990

Koukourou and Partners
Consulting Engineers
P O Box 116
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The preliminary site assessment carried out by your company last year indicated that elevated levels of heavy metals (Zn, Cu, Cr, Pb) are present above normal threshold values in the areas. The presence of these contaminants above accepted threshold levels should necessitate further in-depth investigation of these areas. In addition, soil screening for possible organic contaminants such as soluble oils, phenols and polyaromatic hydrocarbons should be carried out; these substances were all commonly used in significant quantities in the tanning processes.

Subsequent investigations and enquiries by Council officers in relation to the operational history at this site have indicated that waste materials from the tannery had been buried in the areas proposed for development and the proposed parkland. One cannot escape the conclusion that a thorough investigation is warranted, immediately.

Council would propose that the site (eg Stages 2 and 3 including proposed parkland areas) be carefully cleared of vegetation prior to the commencement of any site investigation. After clearing, an inspection of the area should be made by officers of the Scientific Services Branch and personnel from your company in order to assist you with the planning of a suitable site investigation programme for the assessment of chemical contamination in the area.

..../2

Please address all correspondence to the
Town Clerk

25 MAY '90 17:24

DL Documents

61 7 2294276 PAGE.002

111 of 433

Release

It is also suggested that due to the limited nature of the initial soil testing in Stage 1 of the development which is presently under construction, a validation programme should be carried out to ensure this area is not contaminated, and that appropriate analytical data is made available to us to support this conclusion.

Council is very concerned that contaminated material exists on the land proposed as public parkland, and it is considered that the contaminants must be removed prior to the transfer of that land to the Crown, (with Council as trustee).

The plan of survey providing for the transfer of this land will not be sealed until Council is satisfied that it is contaminant free.

With increasing public awareness of potential health and environmental risks associated with the redevelopment of former industrial sites such as tanneries etc., it is considered that the above investigations are warranted in order to protect your client against any future questions and possible liability that may arise with respect to public health and environmental requirements associated with this site.

Should you have any queries regarding the above proposals please contact Mr. K Giess, 875 8618 for clarification of these matters.

A copy of this letter has been forwarded to the State Director-General of Health (for the attention of the Director of Environmental Occupation) and to the Director-General, Department of Environment and Heritage (for the attention Director, Division of Environment). Officers of these State Departments may also wish to be involved in inspections and other action concerning the site.

I look forward to your co-operation in this matter.

Yours sincerely,

sch4p4(6) Personal information

P W Berthold
TOWN CLERK

25 MAY '90 17:25

61 7 2294276 PAGE.004



CHEM UNIT

CHEMICAL HAZARDS AND EMERGENCY MANAGEMENT UNIT
A Division of the Bureau of Emergency Services

Telephone: (07) 224 4422
Facsimile: (07) 224 4471

P.O. BOX 13,
NORTH QUAY, QLD 4002

SITE CONTAMINATION REPORT

NEWMARKET RETIREMENT VILLAGE PARKLAND

Applicant:

Pioneer Homes,
2954 Logan Road,
UNDERWOOD QLD 4119

Property:

Address:

Free Street,
NEWMARKET QLD 4051

Description:

Lot 1 on R.P. 209539
Parish of Enoggera

Proposed Zoning:

PARKLAND

Current Zoning:

Particular Development (Retirement Village)

Date of Submission: 29th October, 1990

(Full detail was not available until 5th December 1990)

Is property or part of it on Register of Contaminated Sites:

Yes, as a "Former" Contaminated Site

Statement of Suitability:

On the basis of the information provided in the above documents;
the subject property would be acceptable to this Unit for its
proposed use as parkland or public recreation area.

ATTACHMENT: Summary of Studies and Remediation.

Yours faithfully,

sch4p4(6) Personal information

MICHAEL KINNANE
Acting Director

SUMMARY OF STUDIES AND REMEDIATION

1. SITE INVESTIGATION/CHEMICAL SCREENING - KOUKOUROU & PARTNERS 30.6.90.

- o **Brief History** - Site is adjacent to an area formerly occupied by a tannery
 - Site buildings, working areas and pits on the adjacent property were identified from aerial photographs
- o **Objective** - Identify level and extent of residual contamination
- o **Scope** - The site was cleared of scrubby vegetation and any contaminated material was removed to Willawong
 - A 50m x 50m drilling pattern was undertaken
 - Samples were analysed for pH, total dissolved salts and the following heavy metals, Cu, Fe, Zn, Cd, Cr, Co, Ni, Pb, As and Hg
- o **Results** - The initial series of tests indicated chromium content (550 ppm) in a small area adjacent to Stage 2 & 3 of the Retirement Village.

2. CONFIRMATION OF CHROMIUM CONTAMINATION

On 20 September 1990, a further 4 bore holes were drilled and analysis confirmed surface contamination up to 2050 ppm in the 0-200 mm layer in this one area.

3. REMOVAL OF CONTAMINATION.

This layer of contamination (down to 500mm) was removed to Stage 2 & 3

4. INDEPENDENT SUPERVISION.

Officers of the Brisbane City Council provided advice and audited testing procedures and analysis.

5. VALIDATION OF STAGE 1 - 20 OCTOBER 1990.

A further 6 test bores in the area of contamination were drilled to confirm the remediation program.

Analytical results revealed one high result (700 ppm Cr) in the surface layer.

6. **FURTHER REMOVAL OF CONTAMINATION**

Further soil was removed after discussion with the CHEM Unit to ensure there would be no areas of unacceptable contamination on 28 November 1990.

7. **FINAL VALIDATION REPORT - 5 DECEMBER 1990**

Five further samples were taken for analysis in the suspect area. No result exceeded 90 ppm Cr.

OTHER INVESTIGATIONS

Officers of the CHEM Unit and the Brisbane City Council have visited the site on several occasions between September and December, 1990.

This report has been discussed with representatives of the Department of Health and Environment and Heritage.

SUMMARY

The site has been remediated to a level which is considered to be acceptable for its proposed use.

DEPARTMENT OF WATER SUPPLY AND SEWERAGE

Scientific Services Branch

GO'C:

MEMORANDUM TO: DIRECTOR

FILE NO: (5)420/11-L0230/24
(2)439/26(6462)

FROM: ACTING SENIOR CHEMIST

DATE: 12 July 1990

SUBJECT: RETIREMENT VILLAGE AT 24 FREE STREET NEWMARKET

Background:

The Department of Development and Planning requested assistance from Scientific Services Branch in the assessment of the proposed development of a retirement village on land at 24 Free Street Newmarket.

The site was formerly occupied by a tannery which operated on the site for many years, ceasing operations in the early seventies.

The developers, Pioneer Homes, engaged Koukourou and Partners (K&P) as consultants who have undertaken a site assessment program. Further requirements were placed upon K&P by Scientific Services Branch officers to enable an adequate assessment of the site. These requirements are detailed in folios 64 and 65 of (5)420/11-L0230/24 and are summarised as follows:

Requirement (1):

Stages 2 and 3 and the proposed parkland be carefully cleared of vegetation prior to commencing any investigation. After clearing, the area be inspected by the consultants and Scientific Services personnel and an investigation of the area be programmed.

Requirement (2):

A validation programme be carried out on Stage 1 of the development to confirm that the area has been remediated satisfactorily.

Requirement (3):

A remediation programme followed by a validation programme be carried out on the proposed parkland.

The following is a summary of the actions taken to date on these requirements and a proposed course of action for the assessment of the development. Attached also is the report by K&P in regard to these requirements.

Requirement (1):

Pioneer Homes cleared the vegetation from Stages 2 and 3. This clearing exposed areas where leather scraps had been disposed in mounds on the surface of the ground. Pioneer Homes arranged for the collection and removal of this material to the Willawong Refuse Tip. The removal operation was completed on 30 June 1990. A site inspection by myself on 4 July 1990 confirmed that the surface material had been removed to a satisfactory standard in Stages 2 and 3.

A similar clearing operation was conducted on the proposed parkland area. Site inspections of this area did not show any surface indications of waste disposal. Various grab samples of soil from the area showed background levels of metals in the area.

Requirement (2):

A validation programme was planned for Stage 1 of the development. Core soil samples were taken from open space areas in this part of the development. Cores were taken to a depth of one metre except for borehole thirteen where a depth of two metres was drilled due to the depth of fill in this area. Once again the soil samples were split between BCC and K&P. The analysis results are presented in Table 1; the sample locations are shown in the K&P report.

Borehole 5 showed a significant level of arsenic and consequently another core sample was taken and analysed. The results of this retest are attached, the retest core being designated borehole 5A. The retest again shows a significant level of arsenic. It is proposed that State Health opinion be sought on the hazard associated with such a level of arsenic in an isolated pocket.

Borehole 13 showed a significant level of chromium but as is pointed out in the K&P report, the immediate area surrounding this borehole will be covered by a road and the general surrounds is covered by imported fill necessary for the construction of the Retirement Village Manager's unit and the Village Centre.

Requirement (3):

Due to the lack of any surface evidence of waste disposal and the fact that soil surface grab samples failed to show any levels of contamination, it was agreed with Pioneer Homes and K&P that the best course of action was for a validation core sampling programme to be run in the proposed parkland area.

A core drilling programme was run on 7 June 1990 with core samples again being split between BCC and K&P. The results of these analyses are presented in Table 2 along with the original analysis reports. Sample locations are shown in the K&P report attached.

Comments:

Pioneer Homes and Koukourou and Partners have cooperated fully with Council officers in meeting the specified requirements. They have removed all identified or suspected areas of contamination and disposed of the material at the Willawong Refuse Tip.

While it is not possible for the developer, his consultant or Scientific Services personnel to guarantee that all contaminated material has been removed from the site, every effort has been made to identify and remove contaminated materials so that the site is suitable for use as a retirement village.

In regard to Stages 2 and 3 of the development, all contaminated material on the surface has been removed. Where suspicious ground formations were found an excavator was used to explore the sub-surface to determine if any potentially contaminated material was lying below the ground. Any potentially contaminated materials were removed and disposed of at the Willawong Refuse Tip.

Stages 2 and 3 are yet to be built and it is possible that during constructions some potentially contaminated material may be found. It is important that conditions be placed upon the developer to ensure that these materials are correctly dealt with. It is also recommended that a validation core sampling and analysis programme be conducted on the open space areas as was performed on Stage 1. The developers to date have cooperated with these requirements and I would expect that they would find such conditions fair and reasonable.

The assessment of the Free Street development has progressed to the stage where the opinion of State Health Department should be sought. The data available is encouraging as to the progress of the site remediation. However I am of the opinion that specialist advice be sought and that the appropriate source of this advice is the Environmental Sanitation Section in the State Health Department.

sch4p4(6) Personal information

/G.O'Connor
ACTING SENIOR CHEMIST

(4)

TABLE 1

STAGES 1 & 2 VALIDATION SOIL ANALYSIS

	Cu ppm	Pb ppm	Zn ppm	As ppm	Cr ppm
Borehole 1 0-200mm	10	15	55	34	100
200-500mm	5	10	15	90	20
Borehole 2 0-200mm	25	10	30	20	90
200-500mm	20	5	35	34	25
Borehole 3 0-200mm	10	<5	35	28	15
200-500mm	5	<5	50	42	5
Borehole 4 0-200mm	20	5	45	32	10
200-500mm	25	5	50	66	10
Borehole 5 0-200mm	10	20	60	99	15
200-500mm	15	25	65	124	15
Borehole 5A 0-200mm				77	
200-500mm				16	
Borehole 6 0-200mm	15	25	55	42	25
200-500mm	15	15	30	28	25
Borehole 7 0-200mm	20	10	50	22	35
200-500mm	30	15	45	24	70
Borehole 8 0-200mm	20	30	55	6	10
200-500mm	phenols	<1ppm	Total Oil & Grease	0.2%	
Borehole 9 0-200mm	25	15	55	21	15
200-500mm	35	25	55	17	10
Borehole 10 0-200mm	30	<5	65	22	15
200-500mm	25	10	60	19	10
Borehole 11 0-200mm	20	15	80	28	<5
200-500mm	20	5	45	24	10
Borehole 12 0-200mm	25	<5	60	19	25
200-500mm	35	<5	70	27	25
Borehole 13 0-200mm	125	50	500	14	1850
200-500mm	phenols	<1ppm	Total Oil & Grease	<0.1%	
500-1000mm	PAHs	5.10ppm	(3394/15 attached sheet for details)		
1000-2000mm	35	30	410	19	30

(5)

TABLE 2

Investigation of preliminary assessment
PARKLAND-VALIDATION-SOIL ANALYSIS

		Cu ppm	Pb ppm	Zn ppm	As ppm	Cr ppm
Borehole 1	0-200mm	45	45	95	26	25
	200-500mm	40	20	55	13	10
Borehole 2	0-200mm	45	55	100	51	45
	200-500mm	40	35	80	26	25
Borehole 3	0-200mm	35	25	70	15	10
	200-500mm	30	20	55	10	10
Borehole 4	0-200mm	30	45	85	28	50
	200-500mm	25	20	40	11	25
Borehole 5	0-200mm	45	40	95	24	15
	200-500mm	30	25	55	10	10
Borehole 6	0-200mm	40	45	95	17	35
	200-500mm	10	15	25	7	55
Borehole 7	0-200mm	40	15	55	14	10
	200-500mm	35	10	45	12	10
Borehole 8	0-200mm	35	45	90	12	50
	200-500mm	20	30	70	4	65
Borehole 9	0-200mm	Phenols <1ppm		Total Oil & Grease <0.1%		
	200-500mm	30	20	50	14	10
Borehole 10	0-200mm	25	25	45	12	20
	200-500mm	25	20	40	11	20
Borehole 11	0-200mm	40	35	80	22	10
	200-500mm	30	20	55	21	15
Borehole 12	0-200mm	55	35	75	25	35
	200-500mm	30	20	40	18	25
Borehole 13	0-200mm	PAHs 1.67ppm (#4187/13 attached sheet for details)				
	200-500mm	35	175	300	13	550

Civil Structural, Soil Testing.

Postal Address:
PO Box 116
East Brisbane Qld 4169

Level 1
922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169

Telephone (07) 891 1911
Facsimile (07) 891 5460

SITE INVESTIGATION AND VALIDATION TESTING REPORT
SUPPLEMENTARY DETAILS

SITE: FREE SREET RETIREMENT VILLAGE
NEWMARKET

DATE: 4th July, 1990

JOB NUMBER: M900502

CLIENT: PIONEER HOMES
2954 Pacific Highway
Underwood
QLD 4119

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KOUKOUROU & PARTNERS

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(08) 363 0222

Melbourne
(03) 853 7922

Sydney
(02) 621 1401

Branch at Gawler
(085) 22 6802

Civil Structural, Soil Testing.

Postal Address:
PO Box 116
East Brisbane Qld 4169

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922 Stanley Street
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VALIDATION TESTING - FREE STREET RETIREMENT VILLAGE
NEWMARKET

VALIDATION OF STAGE 1

Subsequent to our original findings, two items have warranted further verification after the results of the B.C.C. samples became available.

Item 1. - In BH5 of the validation of Stage 1 soils, an anomaly was found with the Arsenic levels showing higher than expected. As the area is far removed from the tannery site, has no filling in the area, and test bores adjacent to the bore show only background levels, it was decided that the test results must be rechecked. The location was resampled on 29.6.90 to enable a second validation test to be carried out.

The test bore location was chosen by G.O'Connor of the B.C.C. Scientific Services Branch and is in the same measured position as the previous test bore.

Results of this test should be available by the end of the week (8.7.90).

Item 2 - The B.C.C. test results also showed reasonably high levels of chromium in BH13 which was in the area between the community centre and the managers residence. At the time of sampling the soil showed signs of some existing ash fill with traces of leather shavings. Most of this material has since been removed and the area covered with imported fill. When construction is completed this local area will be covered with 0.5-1.0m of fill, and will be underneath sealed road and carparking pavements. It was thought that any possible contact with this isolated area would be removed by the proposed finished levels and construction

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PO Box 116
East Brisbane Qld 4169

Level 1
922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169

Telephone (07) 891 1911
Facsimile (07) 891 5460

28 June 1990

The Town Clerk
Brisbane City Council
GPO Box 1434
BRISBANE QLD 4001

Attention: Mr Ken Giese
Scientific Services Branch

Dear Sir

Re: Newmarket retirement Village
Validation Testing

Please find enclosed herewith a concise report and our test results of the above program.

Results of our testing program show that all test samples show concentrations of Cu, Pb and Zn of well below the level of contamination which is generally considered acceptable (Refs. 1, 2, 3, 4 & 5).

The levels of As in table 2 are generally well below the "threshold" concentration of 40 mg/kg given for parks, playing fields and open space in reference 2 except for borehole 2 (0-200 mm) which at 51 mg/kg is considered acceptable in view of the "moderate contamination" classification of 30 to 500 mg/kg given in reference 5.

The levels of As in Table 1 are all around or below the 'acceptable' level of reference 5. The 66 mg/kg result in borehole 4 is from the 200 mm to 500 mm depth interval and still well down around acceptable level as having a 200 mm covering of clean soil.

The levels of total chromium are well below the 'threshold' levels of reference 2 and the acceptable levels of reference 5 (600 mg/kg).

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Koukourou & Partners Pty Ltd (Inc. in S.A.) as trustee for Koukourou & Partners Unit Trust trading as Koukourou & Partners

Verbal information received from Gary O'Connor on 27 June 1990 indicate a high Arsenic levels in BH 5 (0-200 99ppm, 200-500 124ppm); these are inconsistent with our test results and will be retested. BH 13 indicates a chrome level of 550ppm, the area of test is in the car park area which has a 400 mm deep compacted gravel road pavement and a 25 mm deep asphaltic concrete surface course.

It is our understanding that the results of testing in both areas will be reviewed by the Department of health and the Department of Environment with a view of final acceptance of proposed usage.

We await your advice as soon as possible.

Yours faithfully

sch4p4(6) Personal information

Ed Berzins
KOUKOUROU & PARTNERS

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References

1. Wilson, D C and Stevens, C, "Problems Arising from the Redevelopment of Gas Works and Similar Sites", United Kingdom Atomic Energy Authority, Harwell, November 1981
2. UK Department of Environment, "Guidance on the Assessment and Redevelopment of Contaminated Land", Inter-Departmental Committee for the Redevelopment of Contaminated Land, ICRCL 59/83, 1983.
3. Finnecy, E E and Wicklund, J. "Consultants" Report, Union Carbide Site, Rhodes, NSW, Australia", NSW State Pollution Control Commission, June 1987.
4. "Soil Clean-up Guidelines", Department of Housing, Netherlands, 1983.
5. Koo, Federick, "Potential for Biological Clean Up of Chemistry Contaminated Sites", Eighth Australian Biotechnology Conference, February 1989.

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SITE INVESTIGATION AND VALIDATION TESTING REPORT

SITE: FREE SREET RETIREMENT VILLAGE
NEWMARKET

DATE: 19th June, 1990

JOB NUMBER: M900502

CLIENT: PIONEER HOMES
2954 Pacific Highway
Underwood
QLD. 4119

KOUKOUROU & PARTNERS

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VALIDATION TESTING - FREE STREET RETIREMENT VILLAGE
NEWMARKET

STAGE 1 , STAGES 2 & 3, & PROPOSED PARKLAND (LOT 2)

GENERAL

Following a site meeting on the 25.5.90 with officers of the Brisbane City Council; Scientific Services Branch; where an outline for further assessment of the above areas was requested, a series of inspections and test bores have been carried out in conjunction with officers of the above branch and Koukourou & Partners.

Details of the work carried out and results of testing are attached, along with plans showing the locations of test bores and pits.

The validation testing program was carried out as requested by the Scientific Services Branch, and laboratory testing of the samples taken was done by Australian Laboratory Services, an independent N.A.T.A. registered laboratory.

VALIDATION OF STAGE 1

As requested, a series of test bores were placed around the Stage 1 area of the site, in which construction has been started. The purpose of this investigation was to confirm that no contamination was present in the area after earthworks and construction had been carried out.

Test bore locations were chosen by G.O'Connor of the Scientific Services Branch and the locations are shown on an attached plan of the area.

Thirteen boreholes were drilled on 1/6/90 to sample the top 1m of surface soils, except for BH13 which was taken to 2m depth. The cores were visually inspected, then divided between B.C.C. and K & P for independent testing to be carried out.

It was agreed that K & P carry out testing for Zinc, Lead, Copper, Arsenic and Chromium on their samples, and B.C.C. to do the same plus any testing for phenols etc. as thought necessary.

Test results on our samples are attached.

COPY

INSPECTION OF STAGES 2 & 3

Subsequent to the site meeting, it was agreed that further inspection of the lower areas of Lot 1, which would comprise Stages 2 & 3 of the developement, would be carried out after stripping and clearing of the area had been done.

On 4.6.90 an inspection of the area was carried out by G.O'Connor (B.C.C.) and G.Lawrence (K & P). The area had been stripped of vegetation and any surface material containing leather shavings or rubbish removed from the site to a Council approved dump site. The area was inspected for signs of pits or buried rubbish but there were no obvious signs of anything remaining. In the lower area, an old manhole was uncovered which appeared to have been a line from the old tannery site. There was a soft area adjacent to the old manhole. Three pits were excavated, but no evidence was found of filling or visible contamination. Samples of the silt in this area were taken by B.C.C. chemist for testing.

As no obvious signs of filling or pits remained after removal of the surface material, and the fact that the area had previously been tested for chemical contamination, no further investigation was proposed for this area.

VALIDATION TESTING OF PARKLAND (LOT 2)

As with the lower area of Lot 1, the surface vegetation was removed from the entire proposed parkland area to enable a visual inspection to be carried out. This was done on 4.6.90 by the above mentioned officers to look for filling, contamination, or any unusual features. The inspection showed no visible signs of tannery waste and soils were natural clays with a layer of sandy loam at the surface.

One ponded area existed after recent heavy rains, which was sampled by the B.C.C. chemist for analysis. A pit dug adjacent to it showed only natural soils.

It was proposed to carry out a series of test bores over the area to sample the soils and carry out chemical testing as per the validation testing of Stage 1.

The agreed testing program was carried out on 7.6.90. Another 13 boreholes were placed across the area and the positions accurately recorded by the site surveyor for future reference if needed. See attached site plan. The core samples were examined and divided between B.C.C. and K & P on the following morning for laboratory testing.

Test results obtained from these samples are shown in the attached Table.

COPY

VALIDATION OF SOIL - STAGE 1 RETIREMENT VILLAGE
UNDER CONSTRUCTION -/6/1990

TABLE 1

LOCATION		Cu ppm.	Pb ppm.	Zn ppm.	As ppm.	Cr ppm.
Stage 1 Validation						
BH2	0-200mm	25	10	30	20	90
BH2	200-500mm	20	5	35	34	25
BH4	0-200mm	20	5	45	32	10
BH4	200-500mm	25	5	50	66	10
BH6	0-200mm	15	25	55	42	25
BH6	200-500mm	15	15	30	28	25
BH7	0-200mm	20	10	50	22	35
BH7	200-500mm	30	15	45	24	70
BH9	0-200mm	25	15	55	21	15
BH9	200-500mm	35	25	55	17	10
BH11	0-200mm	20	15	80	28	<5
BH11	200-500mm	20	5	45	24	10

COPY

VALIDATION OF SOIL - PARKLAND TO BE TRANSFERED TO
BRISBANE CITY COUNCIL

TABLE 2

LOCATION		Cu ppm.	Pb ppm.	Zn ppm.	As ppm.	Cr ppm.
Parkland Validation						
BH2	0-200mm	45	55	100	51	45
BH2	200-500mm	40	35	80	26	25
BH4	0-200mm	30	45	85	28	50
BH4	200-500mm	25	20	40	11	25
BH6	0-200mm	40	45	95	17	35
BH6	200-500mm	10	15	25	7	55
BH8	0-200mm	35	45	90	12	50
BH8	200-500mm	20	30	70	4	65
BH10	0-200mm	25	25	45	12	20
BH10	200-500mm	25	20	40	11	20
BH12	0-200mm	55	35	75	25	35
BH12	200-500mm	30	20	40	18	25

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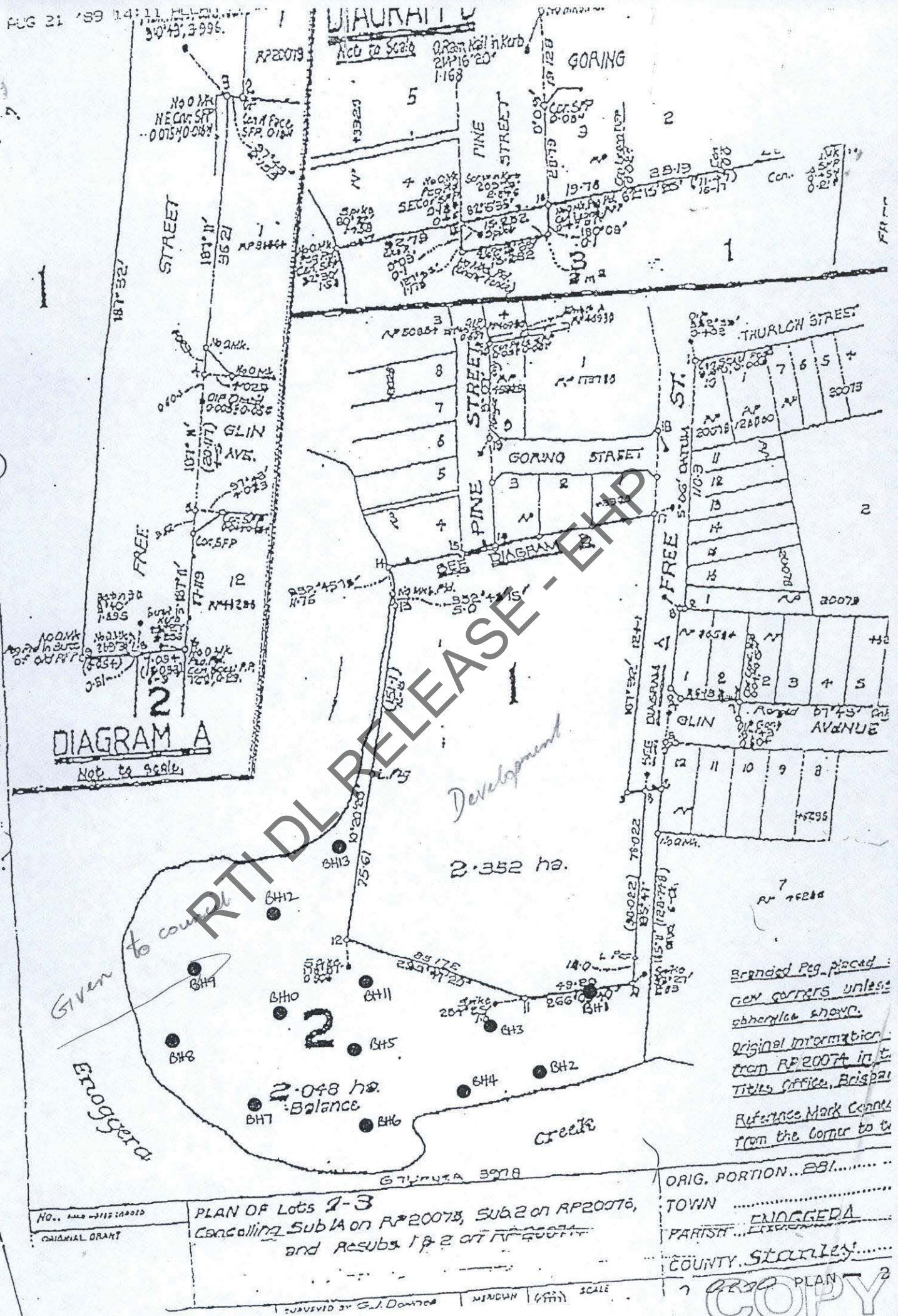
VALIDATION TEST
BORES - STAGE 1.

for direction of sewer
refer to Drg. R-572-P0 7

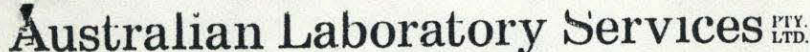
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RTI DL RELEASE, EHP





VALIDATION OF PARKLAND - TEST BORES.



Perth Laboratory
Lot 197 Victoria Road, Malaga, W.A. 6
Phone: (09) 249 2988. Fax: (09) 249 2

Townsville Laboratory
21 Bombala Street, Garbutt, Q. 4814.
Phone: (077) 79 9155. Fax: (077) 799

18 Drew Street, Charlers Towers, Q. 4820.
Phone: (077) 87 4155. Fax (077) 87 4220

Bendigo Laboratory
127A Victoria Street, Eaglehawk, Vic. 3550
Phone: (054) 46 1390. Fax: (054) 46 1389.

Orange Laboratory
10 Leewood Drive, Orange, N.S.W. 2800.
Phone: (063) 631 722. Fax: (063) 631 189.

INCORPORATED
IN QUEENSLAND

CONSULTING ANALYTICAL CHEMISTS

LABORATORY REPORT

Page 1 of 2

Batch Number: F021

Contact: MR A KLEINSCHMIDT

No. of Samples: 18
Date Received: 05/06/90
Date Completed: 15/06/90

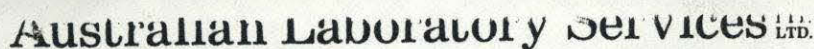
Order No. **160408 N** Sample Type: **SOIL**

SAMPLE NUMBER	Element Unit Method	Cu ppm G33-1	Pb ppm G33-1	Zn ppm G33-1	As ppm G33-1	Cr ppm G33-1
#3394/1		10	15	55	34	100
#3394/2		5	10	15	90	20
#3394/3		10	<5	35	28	15
#3394/4		5	<5	50	42	5
#3394/5		10	20	60	99	15
#3394/6		15	25	65	124	15
#3394/7		20	30	55	6	10
#3394/9		30	<5	65	22	15
#3394/10		25	10	60	19	10
#3394/11		25	<5	60	19	25
#3394/12		35	<5	70	27	25
#3394/13		125	50	500	14	1850
#3394/16		35	30	410	19	30
#4040/1		30	65	170	19	130
#4040/2		10	<5	20	7	20
#4040/3		15	10	25	7	10
#3394/8		<2	<5	<2	---	<5
#3394/14		<2	<5	<2	---	<5
Detection Limit:		2	5	2	1	5

Comments:

Signed sch4p4(6) Personal information

FORM ALS 01(A)



18 Drew Street, Chatters Towers, Q. 4059
Phone: (077) 87 4155. Fax (077) 87 4220.

CONSULTING ANALYTICAL CHEMISTS

Orange Laboratory
10 Leewood Drive, Orange, N.S.W. 2800.
Phone: (063) 631 722. Fax: (063) 631 189.

Phone: (063) 631 722. Fax: (063) 631 189

INCORPORATED
IN QUEENSLAND

LABORATORY REPORT

Client: BRISBANE CITY COUNCIL SCIENTIFIC SER
Address: SCIENTIFIC SERVICES BRANCH
DONALDSON ROAD
ROCKLEA QLD 4106

Page 2 of 2

Batch Number: F093

Contact: MR A KLEINSCHMIDT

No. of Samples: 13
Date Received: 13/06/90
Date Completed: 22/06/90

Order No. **LETTER** Sample Type: **SOIL**

SAMPLE NUMBER	Element Unit Method	PHENO mg/kg S408	O & G % S404
#4187/1		---	----
#4187/2		---	----
#4187/3		---	----
#4187/4		---	----
#4187/5		---	----
#4187/6		---	----
#4187/7		---	----
#4187/8		---	----
#4187/10		---	----
#4187/11		---	----
#4187/12		---	----
#4187/14		---	----
#4187/9		<1	<0.1
Detection Limit:			

Comments:

Signed:

sch4p4(6) Personal information

FORM ALS O1(A)

Australian Analytical Laboratories

POLYNUCLEAR AROMATIC HYDROCARBON ANALYSIS

=====

CLIENT: Brisbane C.C.

JOB NUMBER: 902412

DATE ANALYSED: 12/7/90

METHOD : EPA 3550 -GC/MS

SAMPLE LAB No:	524
SAMPLE I.D. No:	3394/15
1. NAPHTHALENE	0.15
2. ACENAPHTHYLENE	0.04
3. ACENAPHTHENE	0.05
4. FLUORENE	N.D.
5. PHENANTHRENE	0.75
6. ANTHRACENE	0.14
7. FLUORANTHENE	0.90
8. PYRENE	0.73
9. BENZ[a]ANTHRACENE	0.40
10. CHRYSENE	0.50
11. BENZO[b]FLUORANTHENE	0.48
12. BENZO[k]FLUORANTHENE	0.42
13. BENZO[a]PYRENE	N.D.
14. INDENO[1,2,3-cd]PYRENE	0.19
15. DI[BENZ[ah]ANTHRACENE	N.D.
16. BENZO[ghi]PERYLENE	0.35
17. TOTAL P.A.H.'s	5.10

N.D. = NOT DETECTED (less than 0.01ppm)

All results in ug/g (ppm) - (solids)
or mg/l - liquids

Signed:

sch4p4(6) Personal information



Registered No. 1464

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The Test(s) reported herein have been performed in accordance with
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Australian Analytical Laboratories

POLYNUCLEAR AROMATIC HYDROCARBON ANALYSIS

=====

CLIENT: Brisbane City Council

JOB NUMBER: 902550

DATE ANALYSED: 8/7/90

METHOD : EPA 3550 -GC/MS

SAMPLE LAB No:	524
SAMPLE I.D. No:	4187/13
1. NAPHTHALENE	N.D.
2. ACENAPHTHYLENE	0.04
3. ACENAPHTHENE	0.01
4. FLUORENE	N.D.
5. PHENANTHRENE	0.16
6. ANTHRACENE	N.D.
7. FLUORANTHENE	0.26
8. PYRENE	0.30
9. BENZ[a]ANTHRACENE	0.11
10. CHRYSENE	0.14
11. BENZO[b]FLUORANTHENE	0.14
12. BENZO[k]FLUORANTHENE	0.16
13. BENZO[a]PYRENE	0.14
14. INDENO[1,2,3-cd]PYRENE	0.09
15. DIBENZ[ah]ANTHRACENE	0.03
16. BENZO[ghi]PERYLENE	0.10
17. TOTAL P.A.H.'s	1.67

N.D. = NOT DETECTED (less than 0.01ppm)

All results in ug/g (ppm) - solids
or mg/l - liquids

Signed:

sch4p4(6) Personal information



13-445

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Civil, Structural, Soil & Material Testing.

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Brisbane Qld 4000
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Telephone (07) 368 2264

42 Fullarton Road
Norwood Sth Aust 5067
Facsimile (08) 363 1555
Telephone (08) 363 0222

Postal Address:
P.O. Box 707
Norwood Sth Aust 5067

Site Investigation/Chemical Screening

Date: 22 December 1989

Job No.: M891001

Site: Free Street Retirement Village
Free Street
NEWMARKET

Client: Pioneer Homes
2954 Logan Road
UNDERWOOD QLD 4119

Table of Contents

- 1.0 Introduction/Objectives of Investigation
- 2.0 Scope of Work
- 3.0 Report

List of Appendices

- A Borehole Logs
- B Summary of Standard Analytical Methods
- C Sample Locations
- D Chemical Test Results
- E Site Plan

1.0 Introduction/Objectives of Investigation

- 1.1 The Free Street Retirement Village Development Site consists of vacant land with a general crossfall to the west and the Enoggera Creek. The south eastern quarter of the site has a fall to the south east corner of the block.

The proposed development consists of 75 medium density attached residential units with communal facilities and open space.

- 1.2 Aerial photographs were used to identify the extent of the tannery works previously located on the site. The tannery occupied an area of approximately 60 metres by 50 metres opposite Glin Avenue and located on the low side of the site immediately adjacent the Enoggera Creek. Various filled in pits and wells were identified on the tannery site. The boundaries of the former tannery are shown on the site plan contained in Appendix E.

- 1.3 The purpose of the investigation was to determine what level of residual chemical contamination from the former land use was contained in the soil and whether the potential exposure levels in humans and plants would create a health or environmental hazard relative to the proposed use.

2.0 Scope of Work

The former land use was reviewed and the extent of the tannery works determined from aerial photographs.

- 2.1 The field investigation consisted of drilling seventy four 50 mm diameter boreholes over the site to a minimum depth of 750 mm unless stopped by weathered rock or a concrete pit base. Boreholes were extended in fill areas to penetrate to the base of any fill encountered. A continuous core was recovered for logging and assessment.

The boreholes were located on a 5 m x 5 m grid within the identified tannery boundaries and were extended to a 25 m grid around the tannery perimeter.

Where possible the extent of filled pits and wells was identified.

The locations of all boreholes and identified filled pits and wells are shown on the site plan in Appendix E.

- 2.2 The soil cores were logged and 116 samples were identified and registered for further laboratory assessment, the borehole logs are contained in Appendix A.

After further laboratory examination 69 samples were selected to be analysed for a range of chemicals. The selected samples were split into duplicates and sent to AMDEL for chemical testing. The selected range of elements tested for was limited in knowledge of the former tannery use.

2.2 Cont.

The samples were analysed for pH, total dissolved salts and selected heavy metals (Cu, Fe, Zn, Cd, Cr, Co, Ni, Pb, As and Hg).

A summary of the sample numbers tested and their locations is contained in Appendix C. The laboratory analytical procedures used are summarised in Appendix B.

3.0 Report

The AMDEL chemical test results are tabulated in Appendix D.

In general the level of chemical contamination is quite low with only the odd sample showing a result at the low end of the moderate contamination level and does not present a hazard to the proposed human occupation.

The pH of all samples was greater than 5 and quite satisfactory.

Arsenic levels are less than 50 ppm except for sample number 9/2493 (borehole 49, depth 0-250 mm) where it was found to be 78 ppm. This is located under a proposed open space lawn area and is considered acceptable, this level being on the borderline between low and moderate contamination.

Chromium levels are less than 600 ppm except for sample number 9/2477 (borehole 33, depth 0-250 mm) where it was found to be 680 ppm. This is again located under proposed grassed open space and is on the borderline between moderate and low contamination for Cr3. Significant levels of Cr6 have not been found associated with former tannery sites. Only one high reading of lead levels was encountered, this was sample number 9/2511 (borehole 67, depth 0-250 mm) and this was 450 ppm. This was still at the very low end of the moderate contamination range. This borehole was located under units 36 and 37 and was well away from the former plant area, it is not considered to pose a risk to human occupancy.

In summary no special precautions are considered necessary for the development of this site for the proposed use.

sch4p4(6) Personal information

P M Bayetto FIE Aust., CP Eng.
KOUKOUROU & PARTNERS

References

1. Wilson D C and Stevens C, "Problems Arising from the Redevelopment of Gas Works and Similar Sites", United Kingdom Atomic Energy Authority, Harwell, November 1981.
2. UK Department of Environment, "Guidance on the Assessment and Redevelopment of Contaminated Land", Inter-Departmental Committee for the Redevelopment of Contaminated Land, ICRCL 59/83, 1983.
3. Finnecy E E and Wicklund J, "Consultants' Report, Union Carbide Site, Rhodes, NSW, Australia", NSW State Pollution Control Commission, June 1987.
4. Department of Housing, Netherlands, "Soil Clean up Guidelines", 1983.
5. Koo F, "Potential for Biological Clean Up of Chemically Contaminated Sites", Eighth Australian Biotechnology Conference, Sydney, February 1989.
6. Public and Environmental Health Division, South Australian Health Commission, "A Guide on the Assessment and Management of Contaminated Land in South Australia", October 1989.

Appendix A - Borehole Logs

RTI DL RELEASE - EHP

[illegible][illegible]

SURFACE SOIL BORE LOG

[illegible]

SURFACE SOIL BORE LOG

[illegible]

SURFACE SOIL BORE LOG

[illegible]

SURFACE SOIL BORE LOG

	Sampling Date	Sampling Method
FREE STREET NEW MARKET	20/11/89	Percussion Tube

to the associated report and / or recommendation

	U/Symb	Moist.	Strength	Hole 16	Hole
L - BROWN, MIXTURE OF CREAM AND BLACK.	-	DAMP	LOW	0	-
				800	
NH.	ML	DRY	LOW-MEDIUM	--	--
ELED BROWN ORANGE-BROWN.	SH	DRY-DAMP	MEDIUM	--	- 1
AND COMPLETELY WEATHERED - CREAM-ORANGE.	-	-	-	800	--
				1700	

Y - Centre 0
 Y - Edge 0

SURFACE SOIL BORE LOG

[illegible]

SURFACE SOIL BORE LOG

[illegible]

SURFACE SOIL BORE LOG

[illegible]

SURFACE SOIL BORE LOG

[illegible]

SURFACE SOIL BORE LOG

[illegible]

SURFACE SOIL BORE LOG

FREE STREET	NEW MARKET	Sampling Date 12/01/69	Sampling Method Percussion Tube
to the associated report and / or recommendation			
Y - BROWN, MIXTURE OF CREAM AND BLACK.		U/Symb	Moist.
			Strength
			Hole #4
			Hole #5
			Hole #6
			Hole #7
			Hole #8
			Hole #9
			Hole #10
			Hole #11
			Hole #12
			Hole #13
			Hole #14
			Hole #15
			Hole #16
			Hole #17
			Hole #18
			Hole #19
			Hole #20
			Hole #21
			Hole #22
			Hole #23
			Hole #24
			Hole #25
			Hole #26
			Hole #27
			Hole #28
			Hole #29
			Hole #30
			Hole #31
			Hole #32
			Hole #33
			Hole #34
			Hole #35
			Hole #36
			Hole #37
			Hole #38
			Hole #39
			Hole #40
			Hole #41
			Hole #42
			Hole #43
			Hole #44
			Hole #45
			Hole #46
			Hole #47
			Hole #48
			Hole #49
			Hole #50
			Hole #51
			Hole #52
			Hole #53
			Hole #54
			Hole #55
			Hole #56
			Hole #57
			Hole #58
			Hole #59
			Hole #60
			Hole #61
			Hole #62
			Hole #63
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			Hole #85
			Hole #86
			Hole #87
			Hole #88
			Hole #89
			Hole #90
			Hole #91
			Hole #92
			Hole #93
			Hole #94
			Hole #95
			Hole #96
			Hole #97
			Hole #98
			Hole #99
			Hole #100

S U R F A C E S O I L B O R E L O G

[illegible]

SURFACE SOIL BORE LOG

[illegible]

SURFACE SOIL BORE LOG

the associated report and / or recommendation	U/Symb	Moist.	Strength	Moist. %
BROWN, MIXTURE OF CREAM AND BLACK.	-	DAMP	LOW	-
	ML	DRY	LOW-MEDIUM	0 100
BROWN ORANGE-BROWN.	-	DRY-DAMP	MEDIUM	100 200
D COMPLETELY WEATHERED - CREAM-ORANGE.	-	-	-	200 750
			Y - Centre Y - Edge	4 4

SURFACE SOIL BORE LOG

FREE STREET	NEW MARKET	Sampling Date 20/11/89	Sampling Method Percussion Tube		
to the associated report and / or recommendation					
Y - BROWN, MIXTURE OF CREAM AND BLACK.	U/Symb -	Moist. DAMP	Strength LOW	Hole #6 - 150	Hole #7 -
N.	ML	DRY	LOW-MEDIUM	- 150 - 250	-
D BROWN ORANGE-BROWN.	SH	DRY-DAMP	MEDIUM	- 250 - 450	-
AND COMPLETELY WEATHERED - CREAM-ORANGE.	-	-	-	- 450 - 750	50 70
				Y - Centre Y - Edge	8 8

SURFACE SOIL BORE LOG

[illegible]

SURFACE SOIL BORE LOG

[illegible]

SURFACE SOIL BORE LOG

FREE STREET	NEW MARKET	Sampling Date 20/11/89	Sampling Method Percussion Tube
to the associated report and / or recommendation			
Y - BROWN, MIXTURE OF CREAM AND BLACK.	U/Symb	Moist.	Strength
	-	DAMP	LOW
N.	ML	DRY	LOW-MEDIUM
ED BROWN ORANGE-BROWN.	CH	DRY-DAMP	MEDIUM
AND COMPLETELY WEATHERED - CREAM-ORANGE.	-	-	-
			0 750
			0 0

SURFACE SOIL BORE LOG

[illegible]

SURFACE SOIL BORE LOG

the associated report and / or recommendation	U/Symb	Moist.	Strength	Moist. Bl
- BROWN, MIXTURE OF CREAM AND BLACK.	-	DAMP	LOW	0 300
	HL	DRY	LOW-MEDIUM	---
BROWN ORANGE-BROWN.	-	DRY-DAMP	MEDIUM	300 600
AND COMPLETELY WEATHERED - CREAM-ORANGE.	-	-	-	600 750
			Y - Centre Y - Edge	11 11

S U R F A C E S O I L B O R E L O G

[illegible]

SURFACE SOIL BORE LOG

[illegible]

SURFACE SOIL BORE LOG

[illegible]

GENERAL DESCRIPTION

Y-VALUE CALCULATION USING

<u>Centre</u>	Edge
---------------	------

Surface Suction Change	:	1.2	1.2
Depth Of Suction Change	:	4.0	4.0
Critical Hole Center Is No. 10	Ys=	0	
Critical Hole Edge Is No. 10	Ys=		0

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Appendix B - Summary of Standard Analytical Methods

RTI DL RELEASE - EHP

Analytical Methods for Chemical Test Procedures

Metal Analyses

Cu, Fe, Zn, Pb, As, Cd, Cr, Co, Ni.

Digestion of sample in perchloric, hydrochloric and hydrofluoric acid and analysis of digest by ICP or AAS (not As, Pb).

Alternatively As, Pb by XRF of ground pressed powdered sample.

Hg Aqua regia acid digestion and cold vapour AAS.

Cr₆ Acid dissolution and colorimetric determination with diphenylcarbazide.

Others

S (total) Leco combustion and measurement by titration.

Total CN Distillation by APHA method 16th Ed pp 327-352. Colorimetric determination.

Water Extract Analyses

pH 1:5 extract with water shaken for 2 hours and solution measured using a combination pH electrode.

Total soluble salts (calculation). Extract from pH taken and electrical conductivity measured.

SO₄, S, Phenolics As for pH with solution filtered and measured using an Ion Chromatography analyser.

Toluene Extractables

200-300 grams of soil were extracted with re-distilled AR-Grade toluene for 24 hours (or until clear) in pre-extracted thimbles, using a soxholet apparatus. The toluene extractable organic matter (TEOM) was then yielded by careful rotary evaporation. The weight of (TEOM) was calculated after the sample was carefully transferred to a small vial to minimise the errors involved.

Polycyclic Aromatic Hydrocarbons (PAH)

Soils were extracted as for (TEOM) using re-distilled AR-Grade dichloromethane. The hydrocarbon components of the extracted organic matter were isolated by liquid chromatography and analysed by GC-MS. PAH concentrations were calculated by comparison with PAH standards.

Appendix C - Sample Locations

RTI DL RELEASE - EHP

TABLE 1: SAMPLE LOCATIONS

Sample No.	Bore No.	Depth mm
9/2403	1	0-500
9/2404	1	500-1000
9/2407	2	0-500
9/2409	3	0-500
9/2412	4	0-500
9/2413	4	500-1000
9/2416	5	0-500
9/2418	5	1000-1500
9/2419	6	0-500
9/2420	6	500-750
9/2421	7	0-500
9/2423	8	0-500
9/2425	9	0-500
9/2426	9	500-800
9/2428	11	0-500
9/2429	11	500-1000
9/2430	11	1000-1250
9/2431	12	0-500
9/2433	13	0-500
9/2434	13	500-1000
9/2435	13	1000-1300
9/2436	14	0-500
9/2437	14	500-1000
9/2441	16	0-500
9/2444	18	0-500
9/2446	18	1000-1500
9/2447	19	0-500
9/2448	19	500-1000
9/2449	19	1000-1300
9/2450	20	0-500
9/2452	21	0-500
9/2453	21	500-1000
9/2454	21	1000-1500
9/2455	21	1500-2000
9/2457	22	0-2500
9/2458	23	0-500
9/2460	24	0-500
9/2462	24	1000-1500
9/2464	24	2000-2500
9/2467	26	0-250
9/2470	29	0-250
9/2471	30	0-500
9/2472	31	0-500

Continued

TABLE 1: (Continued)

Sample No.	Bore No.	Depth mm
9/2474	32	0-500
9/2475	32	500-1000
9/2477	33	0-250
9/2479	35	0-250
9/2480	36	0-250
9/2483	39	0-250
9/2485	41	0-250
9/2487	43	0-250
9/2489	45	0-250
9/2491	47	0-250
9/2493	49	0-250
9/2495	51	0-250
9/2497	53	0-250
9/2499	55	0-250
9/2501	57	0-250
9/2502	58	0-250
9/2504	60	0-250
9/2506	62	0-250
9/2508	64	0-250
9/2509	65	0-250
9/2510	66	0-250
9/2511	67	0-250
9/2513	69	NA*
9/2514	70	NA*
9/2517	73	NA*
9/2518	74	NA*

* NA not available

Appendix D - Chemical Test Results

RTI DL RELEASE - EHP



amdel

technology and enterprise

Amdel Limited
(Incorporated in S.A.)
31 Flemington Street,
Frewville, S.A. 5063

Telephone: (08) 372 2700

P.O. Box 114,
Eastwood, S.A. 5063

Telex: AA82520
Facsimile: (08) 79 6623

30 November 1989

Koukourou & Partners
PO Box 707
NORWOOD SA 5067

Attention Mr Peter Bayetto

REPORT M693/90

YOUR REFERENCE

KP 2244.

TITLE

Pioneer Homes Site

LOCATION

Queensland.

DATE EXAMINED

November 1989.

WORK REQUESTED

Chemical analyses of soil samples.

Investigation and Report by:

John A Lackey.

sch4p4(6) Personal information

William V Yeo
Manager
Materials Services

1. INTRODUCTION

Mr Peter Bayetto of Koukourou & Partners requested that Amdel Limited analyse 69 samples for a range of elements. The samples were from Pioneer Homes, Queensland.

2. PROCEDURE & RESULTS

Sixty nine samples were analysed for pH, total dissolved salts and selected heavy metals (Cu, Fe, Zn, Cd, Cr, Co, Ni, Pb, As, Hg).

Sample locations are presented in Table 1.

Analyses are given in Tables 2 to 4.

dt.

RTI DL RELEASE - EHP

TABLE 1: SAMPLE LOCATIONS

Sample No.	Bore No.	Depth mm
9/2403	1	0-500
9/2404	1	500-1000
9/2407	2	0-500
9/2409	3	0-500
9/2412	4	0-500
9/2413	4	500-1000
9/2416	5	0-500
9/2418	5	1000-1500
9/2419	6	0-500
9/2420	6	500-750
9/2421	7	0-500
9/2423	8	0-500
9/2425	9	0-500
9/2426	9	500-800
9/2428	11	0-500
9/2429	11	500-1000
9/2430	11	1000-1250
9/2431	12	0-500
9/2433	13	0-500
9/2434	13	500-1000
9/2435	13	1000-1300
9/2436	14	0-500
9/2437	14	500-1000
9/2441	16	0-500
9/2444	18	0-500
9/2446	18	1000-1500
9/2447	19	0-500
9/2448	19	500-1000
9/2449	19	1000-1300
9/2450	20	0-500
9/2452	21	0-500
9/2453	21	500-1000
9/2454	21	1000-1500
9/2455	21	1500-2000
9/2457	22	0-2500
9/2458	23	0-500
9/2460	24	0-500
9/2462	24	1000-1500
9/2464	24	2000-2500
9/2467	26	0-250
9/2470	29	0-250
9/2471	30	0-500
9/2472	31	0-500

Continued

TABLE 1: (Continued)

Sample No.	Bore No.	Depth mm
9/2474	32	0-500
9/2475	32	500-1000
9/2477	33	0-250
9/2479	35	0-250
9/2480	36	0-250
9/2483	39	0-250
9/2485	41	0-250
9/2487	43	0-250
9/2489	45	0-250
9/2491	47	0-250
9/2493	49	0-250
9/2495	51	0-250
9/2497	53	0-250
9/2499	55	0-250
9/2501	57	0-250
9/2502	58	0-250
9/2504	60	0-250
9/2506	62	0-250
9/2508	64	0-250
9/2509	65	0-250
9/2510	66	0-250
9/2511	67	0-250
9/2513	69	NA*
9/2514	70	NA*
9/2517	73	NA*
9/2518	74	NA*

* NA not available

CLASSIC COMLABS LTD

Analytical Laboratories (INC. IN WA.)

TABLE 2: METAL ANALYSES
ANALYTICAL REPORT

Job: 9AD3182
O/N: M8914

Sample	Cu	Fe	Zn	Cd	Cr	Co	Ni
9/2403	17	6800	320	5	70	25	10
9/2404	28	2.05%	260	4	14	32	20
9/2407	380	5.30%	1050	4	270 ⁵	24	26
9/2409	360	4.40%	440	3	76	26	36
9/2412	22	1.71%	290	2	26	14	12
9/2413	44	4.40%	470	3	310 ^D	30	25
9/2416	60	2.70%	350	3	62	18	14
9/2418	30	3.65%	105	3	20	28	15
9/2419	44	3.05%	250	4	60	22	16
9/2420	22	3.60%	64	2	16	24	18
9/2421	56	2.05%	185	3	6	18	12
9/2423	110	1.24%	580	2	88	12	14
9/2425	25	6800	480	3	58	20	16
9/2426	17	4750	360	3	24	16	10
9/2428	72	1.20%	500	3	105	15	24
9/2429	80	1.70%	730	3	66	18	24
9/2430	32	2.75%	220	4	26	24	14
9/2431	40	2.75%	410	4	12	18	12
9/2433	22	1.85%	320	3	8	15	12
9/2434	42	1.03%	450	3	195	12	12
9/2435	36	1.98%	3550	5	38	20	18
9/2436	16	1.01%	190	2	45	22	10
9/2437	50	1.27%	175	3	32	20	18
9/2441	60	2.25%	650	3	510 ⁵	20	20
9/2444	34	2.85%	350	3	105	26	16
9/2446	250	3.05%	620	4	58	32	32
9/2447	30	2.10%	220	3	72	20	15
9/2448	52	2.00%	500	2	22	18	18
9/2449	30	1.81%	260	3	40	18	15
9/2450	34	8800	210	2	24	12	16
9/2452	50	8600	450	2	25	15	18
9/2453	13	7400	310	2	12	14	10
9/2454	28	3.10%	24	2	40	20	22
9/2455	17	3.60%	17	2	38	25	26
9/2457	105	3.40%	1000	4	175	22	18
9/2458	430	2.35%	590	2	470 ⁵	16	25
9/2460	52	1.93%	150	2	210	20	15
9/2462	30	2.65%	48	3	74	22	22
9/2464	24	2.65%	36	2	48	18	18
9/2467	60	1.99%	290	2	90	16	15
9/2470	30	2.15%	86	3	36	14	12
9/2471	35	2.65%	105	2	22	16	15
9/2472	70	2.45%	360	4	82	20	16
9/2474	58	2.75%	260	3	130	20	20
9/2475	94	3.05%	165	2	68	22	16
9/2477	125	3.00%	600	3	680 ⁵	18	15
9/2479	30	2.40%	58	2	24	15	14
9/2480	19	2.60%	22	2	28	18	12
9/2483	24	2.85%	55	2	32	20	20
9/2485	120	3.20%	320	3	120	20	20

Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detn Limit	2	4	2	1	4	4	4
Scheme	AAS1	AAS1	AAS1	AAS1	AAS1	AAS1	AAS1
Upper Scheme		AAS1C					

TABLE 2 (Continued)

ANALYTICAL REPORT

Job: 9AD3182

O/N: M8914

Sample	Cu	Fe	Zn	Cd	Cr	Co	Ni
9/2487	30	2.70%	74	3	42	22	20
9/2489	15	2.90%	14	2	28	16	14
9/2491	28	2.55%	52	3	35	18	18
9/2493	25	1.94%	400	5	<4	25	18
9/2495	32	2.45%	340	3	22	16	15
9/2497	14	3.00%	32	2	36	20	16
9/2499	36	3.45%	36	2	24	16	18
9/2501	44	2.75%	280	3	145	32	28
9/2502	48	2.20%	210	1	135	14	15
9/2504	28	3.50%	75	2	30	22	22
9/2506	80	2.00%	1840	4	330 ⁻⁵	20	25
9/2508	115	2.25%	970	3	430 ⁻⁵	18	18
9/2509	190	4.25%	430	3	590 ⁻⁵	22	20
9/2510	55	3.45%	260	3	260 ⁻⁵	22	18
9/2511	72	2.50%	430	2	760 ⁻⁵	20	15
9/2513	17	2.25%	28	1	44	25	12
9/2514	22	1.91%	62	<1	50	16	14
9/2517	36	2.65%	110	2	34	22	22
9/2518	48	3.30%	210	2	26	28	30
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detn Limit	2	4	2	1	4	4	4
Scheme	AAS1	AAS1	AAS1	AAS1	AAS1	AAS1	AAS1
Upper Scheme		AAS1C					

RTI DL RELEASE UNDER E.O. 14176

ANALYTICAL REPORT

Sample	Pb	As
9/2403	54	17
9/2404	56	16
9/2407	125	17
9/2409	210	26
9/2412	155	16
9/2413	92	19
9/2416	120	15
9/2418	170	16
9/2419	24	13
9/2420	20	24
9/2421	155	17
9/2423	160	15
9/2425	75	12
9/2426	32	13
9/2428	140	24
9/2429	350	38
9/2430	60	12
9/2431	340	24
9/2433	250	17
9/2434	125	17
9/2435	210	26
9/2436	125	13
9/2437	165	16
9/2441	260	28
9/2444	95	19
9/2446	170	17
9/2447	92	14
9/2448	95	17
9/2449	56	13
9/2450	155	22
9/2452	250	18
9/2453	98	16
9/2454	11	13
9/2455	3	15
9/2457	230	22
9/2458	290	15
9/2460	62	14
9/2462	22	14
9/2464	25	15
9/2467	110	15
9/2470	60	13
9/2471	38	15
9/2472	155	15
9/2474	80	22
9/2475	42	17
9/2477	100	20
9/2479	34	12
9/2480	19	12
9/2483	38	15
9/2485	170	30
Units	ppm	ppm
Detn Limit	2	2
Scheme	XRF1	XRF1



CLASSIC COMLABS LTD

Analytical Laboratories (INC. IN WA.)

TABLE 2 (Continued) ANALYTICAL REPORT

Job: 9AD3182

O/N: M8914

Sample	Pb	As
9/2487	70	12
9/2489	17	13
9/2491	26	14
9/2493	72	78
9/2495	52	13
9/2497	19	15
9/2499	42	18
9/2501	185	30
9/2502	130	15
9/2504	56	22
9/2506	260	48
9/2508	160	24
9/2509	105	22
9/2510	155	22
9/2511	450	35
9/2513	34	15
9/2514	65	10
9/2517	42	13
9/2518	76	24
Units	ppm	ppm
Detn Limit	2	2
Scheme	XRF1	XRF1

RTI DL RELEASE - EHP



TABLE 3: MERCURY

Page G1

Report 9AD3182

Sample ID Code: Results in	Hg AAS 5 ppm
9/2403	<0.05
9/2404	<0.05
9/2407	0.10
9/2409	0.05
9/2412	<0.05
9/2413	<0.05
9/2416	0.30
9/2418	<0.05
9/2419	<0.05
9/2420	<0.05
9/2421	<0.05
9/2423	0.05
9/2425	<0.05
9/2426	<0.05
9/2428	0.10
9/2429	0.05
9/2430	<0.05
9/2431	<0.05
9/2433	<0.05
9/2434	<0.05
9/2435	<0.05
9/2436	<0.05
9/2437	<0.05
9/2441	0.10
9/2444	<0.05
9/2446	<0.05
9/2447	<0.05
9/2448	<0.05
9/2449	0.05
9/2450	<0.05
9/2452	0.05
9/2453	<0.05
9/2454	<0.05
9/2455	<0.05
9/2457	0.05
9/2458	0.95
9/2460	<0.05
9/2462	<0.05
9/2464	<0.05
9/2467	<0.05
9/2470	0.05
9/2471	0.10
9/2472	<0.05
9/2474	0.05
9/2475	<0.05
9/2477	0.05
9/2479	<0.05
9/2480	<0.05
9/2483	<0.05
9/2485	0.10



TABLE 3 (Continued)

Report 9AD3182

Sample ID Code: Results in	Hg AAS 5 ppm
9/2487	0.05
9/2489	<0.05
9/2491	<0.05
9/2493	<0.05
9/2495	<0.05
9/2497	<0.05
9/2499	<0.05
9/2501	<0.05
9/2502	0.65
9/2504	<0.05
9/2506	<0.05
9/2508	0.05
9/2509	0.05
9/2510	0.35
9/2511	0.10
9/2513	0.05
9/2514	<0.05
9/2517	<0.05
9/2518	0.05

RTI DL RELEASE - EHP

TABLE 4: TOTAL SOLUBLE SALTS & pH

Results in ppm (except pH)

REPORT AC 9AD3182
PAGE: W1

SAMPLE ID	pH	TOTAL SOLUBLE SALTS (CALC)	*	SAMPLE ID	pH	TOTAL SOLUBLE SALTS (CALC)
9/2403	8.0	1126	*	9/2458	9.3	1469
9/2404	8.0	768	*	9/2460	10.8	3238
9/2407	7.6	1955	*	9/2462	6.5	1565
9/2409	7.5	1222	*	9/2464	6.4	1715
9/2412	7.6	941	*	9/2467	8.1	1222
9/2413	10.6	2550	*	9/2470	7.2	1411
9/2416	7.9	1050	*	9/2471	6.3	598
9/2418	9.0	2694	*	9/2472	8.2	1034
9/2419	8.9	2150	*	9/2474	8.0	1408
9/2420	6.6	909	*	9/2475	7.5	1472
9/2421	7.6	934	*	9/2477	6.6	688
9/2423	7.4	1459	*	9/2479	6.2	490
9/2425	7.9	1197	*	9/2480	5.7	464
9/2426	7.9	1254	*	9/2483	7.8	1072
9/2428	7.4	656	*	9/2485	9.3	1366
9/2429	7.9	1344	*	9/2487	7.3	1389
9/2430	8.7	1360	*	9/2489	5.8	292
9/2431	7.8	1010	*	9/2491	5.9	407
9/2433	7.7	858	*	9/2493	8.0	774
9/2434	7.6	1725	*	9/2495	6.0	326
9/2435	7.8	270	*	9/2497	5.5	264
9/2436	8.2	1565	*	9/2499	5.7	566
9/2437	9.1	1744	*	9/2501	6.8	374
9/2441	7.5	2042	*	9/2502	7.3	659
9/2444	9.6	1747	*	9/2504	5.6	409
9/2446	10.7	3722	*	9/2506	9.5	2077
9/2447	7.8	989	*	9/2508	6.5	736
9/2448	8.1	1507	*	9/2509	5.5	662
9/2449	7.3	2704	*	9/2510	6.9	707
9/2450	11.0	2180	*	9/2511	7.2	1660
9/2452	8.0	1027	*	9/2513	5.4	194
9/2453	7.6	2048	*	9/2514	5.6	544
9/2454	6.6	2483	*	9/2517	7.3	672
9/2455	6.3	1965	*	9/2518	6.0	196
9/2457	7.6	2061	*			
			*			
METHOD:	WAT 2F	WAT 2G	*			
				WAT 2F	WAT 2G	

Appendix E - Site Plan

RTI DL RELEASE - EHP

Job Number P 1548	Site Address Lot 210 Road B (off Homestead Drive)	ABERFOYLE PARK	Date 17/11/87	Sampling Method RIG MOUNTED PUSH TUBE	Int S/Class 2600
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Site Observations : Refer to the associated report and / or recommendation

Horizon	Soil Description	U/Symb	Moist.	Strength	Hole 1	Hole 2	Hole 3	Est Ipt	Av Ipt
A	SILTY SAND-SANDY SILT - GREY BROWN. LOW PLASTICITY. SAND IS FINE.	SM-ML	DAMP	MEDIUM	0 200	0 200	0 150	0.000	0.000
B	CLAY - YELLOW BROWN. HIGH PLASTICITY.	CH	DAMP- MOIST.	HIGH	200 550	200 600	150 900	0.035	0.035
B1	SILTY SANDY CLAY - MOTTLED YELLOW AND RED BROWN. MEDIUM PLASTICITY.	CH	MOIST	MEDIUM	550 750	600 1200	900 1300	0.020	0.020
B2	SILTY GRAVELLY CLAY - MOTTLED GREY YELLOW AND BROWN. MEDIUM PLASTICITY. SILTSTONE GRAVELS.	CL	DAMP	MEDIUM	750 2950	1200 2800	1300 2950	0.010	0.010
B3	CLAY, SILTY - MOTTLED BROWN AND GREY. VERY HIGH PLASTICITY.	CH	DAMP	MED-HIGH	2950 3000	2800 3000	2950 3000	0.040	0.040
					Y - Centre Y - Edge	38 36	45 42	50 50	

GENERAL DESCRIPTION

THESE SOILS HAVE A MODERATE POTENTIAL FOR REACTIVITY WITH CHANGES IN MOISTURE CONTENT AND A MODERATE TO HIGH BEARING CAPACITY.

GROUND WATER / SALINITY Groundwater not encountered
(C) 1985, Leader Computer Systems

Y-VALUE CALCULATION USING

	Centre	Edge
Surface Suction Change :	1.2	1.6
Depth Of Suction Change :	4.0	3.0
Critical Hole Center Is No. 3 Ys=	50	
Critical Hole Edge Is No. 3 Ys=		50

Site Description and Site Classification Details

Soils on this site are classified as 'H' in accordance with AS2870-1986. The soil classifier was J F Mikucki, M.I.E. Aust.

This site is beyond the limits of the existing soil maps.

In classifying this site the broad experience of the classifier has been relied upon. Specific soil reports on adjacent sites were not referred to.

FOOTING DETAILS

Footing details were selected from AS2870.1.

A waffle pod footing system, Type 2 (385 mm overall depth), is considered suitable for a single storey, brick veneer dwelling on this site.

For structural details of footings refer to detail sheets SF 12J and 12PJ.

Cover to Reinforcement For Slab: Between the rebate and the bottom of the slab the cover to the slab fabric is to be 20 mm top and bottom, tolerance plus or minus 10 mm.

ARTICULATION OF BRICKWORK

(Refer to detail Sheet SF9)

1. Construct all windows and external doors with no brickwork over.
2. Construct control joints in the following locations:-
 - a. Under Bedroom 1 side of WC window.
 - b. Under Bedroom 2 side of Bathroom window.
 - c. Under Lounge Room side of Kitchen window.

SITE PREPARATION

1. Scrape vegetation and roots off building area.
2. Cut and fill site to form a level bench as shown on cut/fill, site drainage plan.
3. Excavate piers to B horizon clay on fill side. On cut side, if surface is wet, loose and difficult to roll to form a firm bench, piers will be also be required to B horizon clay.
4. Place quarry sand or quarry rubble over building area, up to 50 mm nominal depth, as required to achieve level platform. Filling deeper than 50 mm will require additional compaction as specified in general notes. The construction process may be made easier if this material extends 1.0 m outside the building line.
5. Set up string lines and formwork edge boards.
6. Plumber to lay waste pipes below ground surface at minimum grades. Risers to be staked firmly.
7. Prepare waffle raft within formwork boards in accordance with footing plan and detail sheets. Use minimum of 0.2 mm branded plastic membrane under waffle boxes and footings. Formwork boxes to be cut and taped around plumbing pipes.

SITE DRAINAGE: Refer to general notes.

Refer to site drainage plan.

MATERIALS:

Concrete shall be 20 MPa grade, with 20 mm nominal maximum aggregate size and 80 mm slump.

The second paragraph of Section 5.7 on page B.6 of Appendix B to this Report has been deleted so as to comply with the requirements of AS2870.1-1988.

FOOTING PLAN:

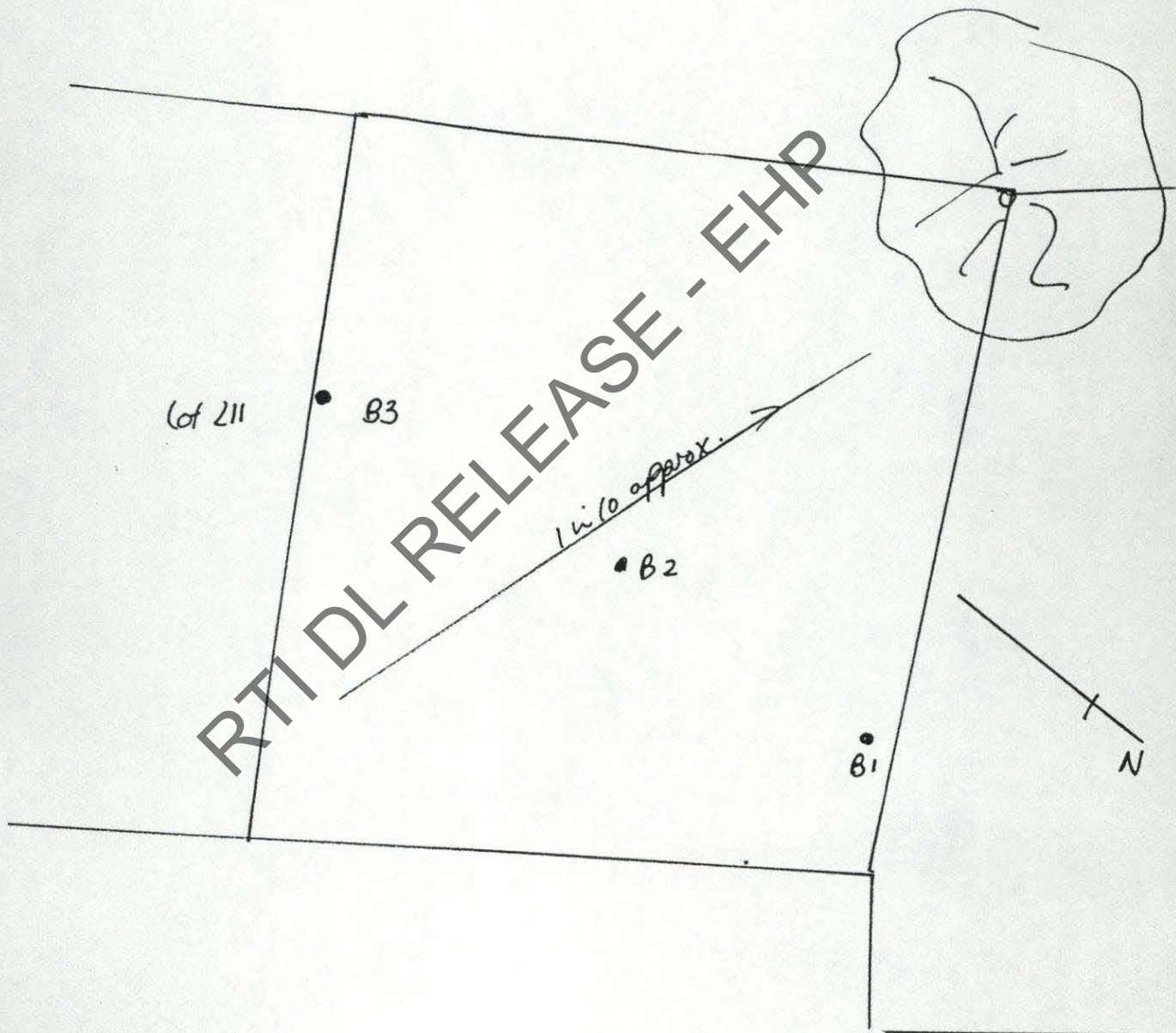
Attached and to be read in conjunction with detail sheets.

SITE INSPECTION:

Prior to concrete pour and as outlined under Appendix A of this Report. Each inspection will incur an additional charge of \$80, with travel

RTI DL RELEASE - EHP

Reserve.



Lot 210 Road B Aberfoyle Park.

Design	TITLE <u>SITE PLAN ONLY.</u>	SCALE N.T.S.
Drawn		DRAWING No. P1548
Date		

JOB NO: C10336

DESIGN: T.X.

DATE: 1-8-90

STRUCTURAL CALCULATIONS FOR PROPOSED Railway Sleeper Ret Wall.

FOR: MALEN

SITE: Lot 210 The Glade, ABERFOYLE RK.

PAGE

INDEX

1. Note regarding design
 2. Railway Sleeper Ret. Wall Design.
 4. Calculations for increased depth of Ret. Wall piers
 5. Ret. Wall Detail Sheet.
- General & Ret. Wall notes.

Koukourou & Partners

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IMPORTANT NOTE REGARDING RETAINING WALL DESIGN

To the builder/owner,

1. Field survey data and/or site measurements for this site were provided by *Koukourou & Ptns* on *July '90*..
2. The retaining wall(s) designed for this site has/have been based upon this information on the date shown above.
3. IF FOR ANY REASON THE SITE CONDITIONS ARE ALTERED FROM THOSE CONDITIONS WHICH EXISTED AT THE TIME RECORDED IN ITEM 1. ABOVE. THEN THIS OFFICE MUST BE NOTIFIED IMMEDIATELY FOR A REVIEW OF THE DESIGN(S) PROVIDED. THIS NOTE APPLIES PARTICULARLY TO SITE BOUNDARIES WHERE ADJOINING OWNERS MAY ALTER THE EXISTING SITE CONDITIONS AT ANY TIME.
4. If the home owner desires an alternative form of construction for the wall(s) provided, then this office should be contacted such that further advice can be given in relation to same. A fee may be charged where any change to the design(s) provided is made.
5. Important note for sleeper retaining walls:-
 - (a) The sleepers shall be good quality, brand new, and without knots, shakes, gum veins etc, deleterious to the strength of the member.

Subject to this, permitted timber types are Jarrah, Karri, Queensland Red Gum, Queensland Spotted Gum and Iron Bark. (West Australian Stringy Bark and Red Gum may not be acceptable.

Lesser quality sleepers can be used in the top 3 rows but not below this level. Care during unloading the sleepers from the transport shall be taken to prevent any damage.

The sleepers shall be slotted in behind the steel post flanges such that at least 20 mm uniform bearing width is achieved.

Sleepers with badly split ends, chipped or poorly aligned shall be replaced.
 - (b) Water shall not be allowed to pond near a post/pier both during construction and after completion.

RAILWAY SLEEPER RETAINING WALL DESIGN

Page 2

MAXIMUM HEIGHT = 1.4 m
SURCHARGE LOADING = 5 kpa
SLOPE OF BACKFILL = 0 Degrees

Horizontal Sleepers

Assumed Soil Properties : Unit Weight = 18 kpa
Angle of Repose = 25
Wall Friction Angle (Delta) = 0
Ka Factor = 0.41

Try 200 x 100 (F11) - 2.4 m Long, Sleepers

Active Pressure (at base)

$$P_a = K_a \times \text{Gamma} \times H / \cos(\text{Delta})$$

$$P_a = 10.2 \text{ kpa}$$

Surcharge Pressure

$$P_q = K_a \times Q$$

$$P_q = 2.0 \text{ kpa}$$

$$BM = 0.20 \times (P_a + P_q) \times 2.4 \times 2.4 / 8$$

$$BM = 1.8 \text{ kNm}$$

$$Z \text{ (Sleepers)} = 200 \times 100 \times 100 / 6$$

$$Z = 333 \times 10^3 \text{ mm}^3$$

$$f_b = M/Z$$

$$f_b = 5.29 \text{ MPa}$$

$$F_b = 11 \times 1.0 \text{ (K1)}$$

$$F_b = 11 \text{ MPa} > f_b \Rightarrow \text{OK}$$

>>>> USE 200 x 100 x 2.4 m (F11) HORIZONTAL SLEEPERS <<<<

Vertical Post

Post Spacing (L) = 2.4 m c/c

Lateral Active Earth Thrust Acting at H/3 m Above Base,

$$P_a = 0.5 \times K_a \times \text{Gamma} \times H \times H \times \sec(\text{Delta}) \times L$$

$$= 17.2 \text{ kN}$$

Surcharge force acts at H/3 m Above Base (If Applicable)

$$P_q = P_a \times Q \times P \times L$$

$$= 0.0 \text{ kN}$$

$$\text{Cantilever Bending Moment} = P_a \times H/3 + P_q \times H/2$$

$$M = 12.8 \text{ kNm}$$

Steel Upright Post (Restrained by Sleepers)

$$Z (\text{min.}) = M/F_b, \quad F_b = 150 \text{ MPa}$$

$$Z = 85 \times 10^3 \text{ mm}^3$$

>>>> USE 150 UB 14 UPRIGHT POSTS at 2.4 m c/c <<<<

Embedment Of Upright Post

Reference : 'Foundations of Structures' - Dunham, Mc Graw-Hill

From Above Text The Following Was Obtained :

$$P/(b \times S) = (D \times D) / (2.37 \times D + 2.64 \times h)$$

Rearranging and Solving For The Unknown D (Depth of Embedment)

$$D = [2.37 \times P + [(2.37 \times P)^2 + 10.6 \times b \times S \times P \times h]^{0.5}] / (2 \times b \times S)$$

Where -

S = Allowable Soil Bearing Pressure (kPa)
P = Horizontal Load on Wall (=Pa + Pq kN)
h = Lever Arm (=M/P m)
b = Width of Concrete Pier (m)
D = Depth of Embedment (m)

In This Case -

S = 80 kpa
P = 24.0 kN
h = 0.53 m
b = 0.600 m

$$\Rightarrow D = 1.62 \text{ m (minimum)}$$

USE 1625 DEEP x 600 mm WIDTH CONCRETE PIER FOR UPRIGHT POST FOOTING <<<

Date: 1/8/90

Job No.: C10336

Calculations for increased depth of Retaining wall piers due to undermining by the adjacent sewer trench.

Depth of sewer trench = 0.5m
Height of Ret. wall = 0.8m

$$\begin{aligned} M &= P_a \left(0.5 + \frac{0.8}{3} \right) + P_q \left(0.5 + \frac{0.8}{2} \right) \\ &= 5.6 (0.76) + 3.9 (0.9) \\ &= 7.8 \text{ kN/m} \end{aligned}$$

$$D = 2.37 P + \left[(2.37 P)^2 + (10.6 \times b \times S \times m) \right]^{1/2}$$

2.b.s.

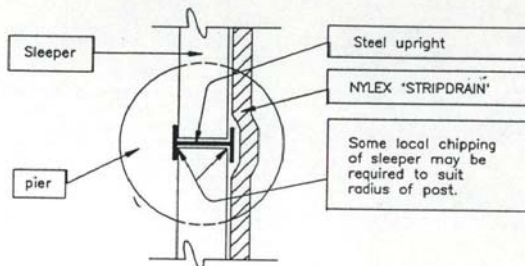
where $P = 9.5 \text{ kN}$
 $b = 0.6 \text{ m}$
 $S = 80 \text{ kPa}$
 $m = 7.8 \text{ kN/m}$

$$\therefore D = 0.93$$

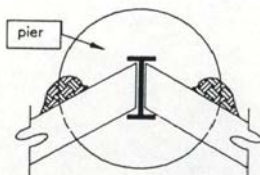
say 0.95m

$$\therefore \text{total depth of pier} = 0.5 + 0.95 = \underline{1.45 \text{ m.}}$$

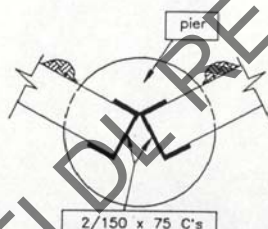
NOTE : The depth of pier may be reduced in proportion to the decrease in the height of soil retained with an absolute limit of 600mm pier depth. Minimum embedment of post is 500mm at this depth. Disregard this note when sewer trench runs adjacent to Ret. wall.



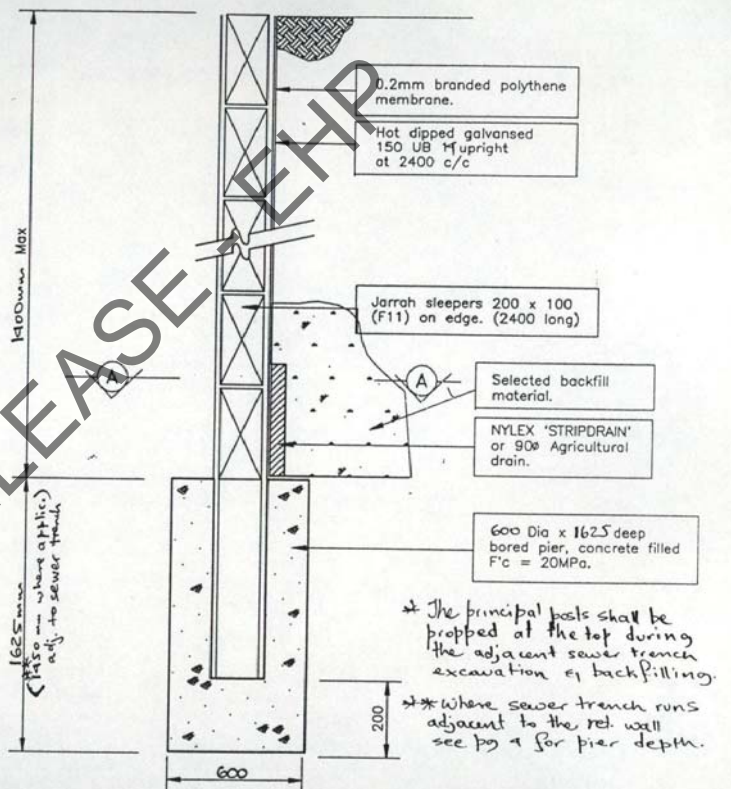
SECTION A-A



CORNER DETAIL



ALTERNATIVE CORNER DETAIL



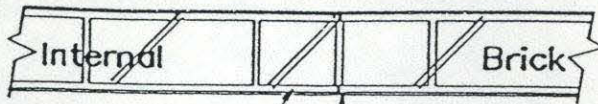
Koukourou & Partners
Consulting Engineers
Civil, Structural, Soil Testing, Supervision
42 Fullarton Road,
Norwood Sth Aust 5067
Telephone 3630222

TITLE

SLEEPER RETAINING WALL DETAIL

HEIGHT 1.4M. Max..

Design	Date 1-8-90
Drawn W.Taylor.	Scale NOT TO SCALE.
Checked	Sheet No 5
Approved	Drawing No E10336 1D7203



10mm Render coat &
Plaster set coat.

2No. Rendered plaster
stopping beads.
(Exangle R11 by "Rondo")

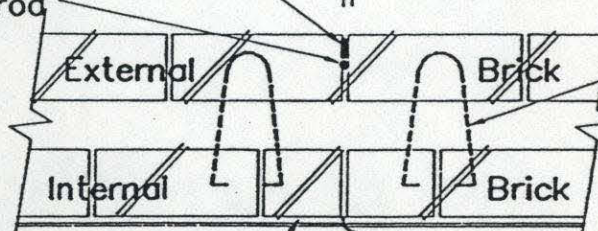
NOTE:
Where a control joint is required in a
single leaf masonry wall, construct CJ
with $\phi 2.6\text{mm}$ X 150 long galvanised
pins placed centrally across joint every
third brick course or use MFA3 anchor
(TJ Industries) across every sixth course..

INTERNAL WALL

Mastic sealant

$\phi 12\text{mm}$ foam
backing rod

Joint to be 10mm max
wide, 8mm min wide



Line of brick ties
each side of joint
every 3rd course height.

10mm Render coat &
Plaster set coat.

2No. Rendered plaster
stopping beads.
(Exangle R11 by "Rondo")

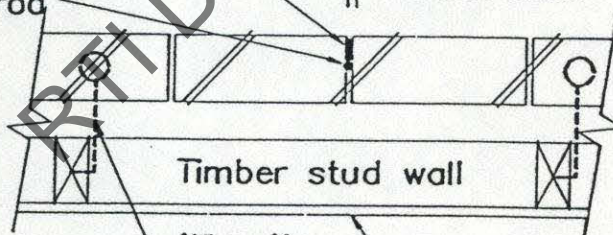
EXTERNAL WALL

SOLID BRICK CAVITY CONSTRUCTION

Mastic sealant

$\phi 12\text{mm}$ foam
backing rod

Joint to be 10mm max
8mm min.



Wire tie

Plasterboard

BRICK VENEER WALL ARTICULATION JOINT DETAIL

Koukourou & Partners Consulting Engineers

CIVIL, STRUCTURAL, SOIL TESTING, SUPERVISION

42 Fullarton Road
Norwood, Sth. Aust. 5067
Telephone 363 0222

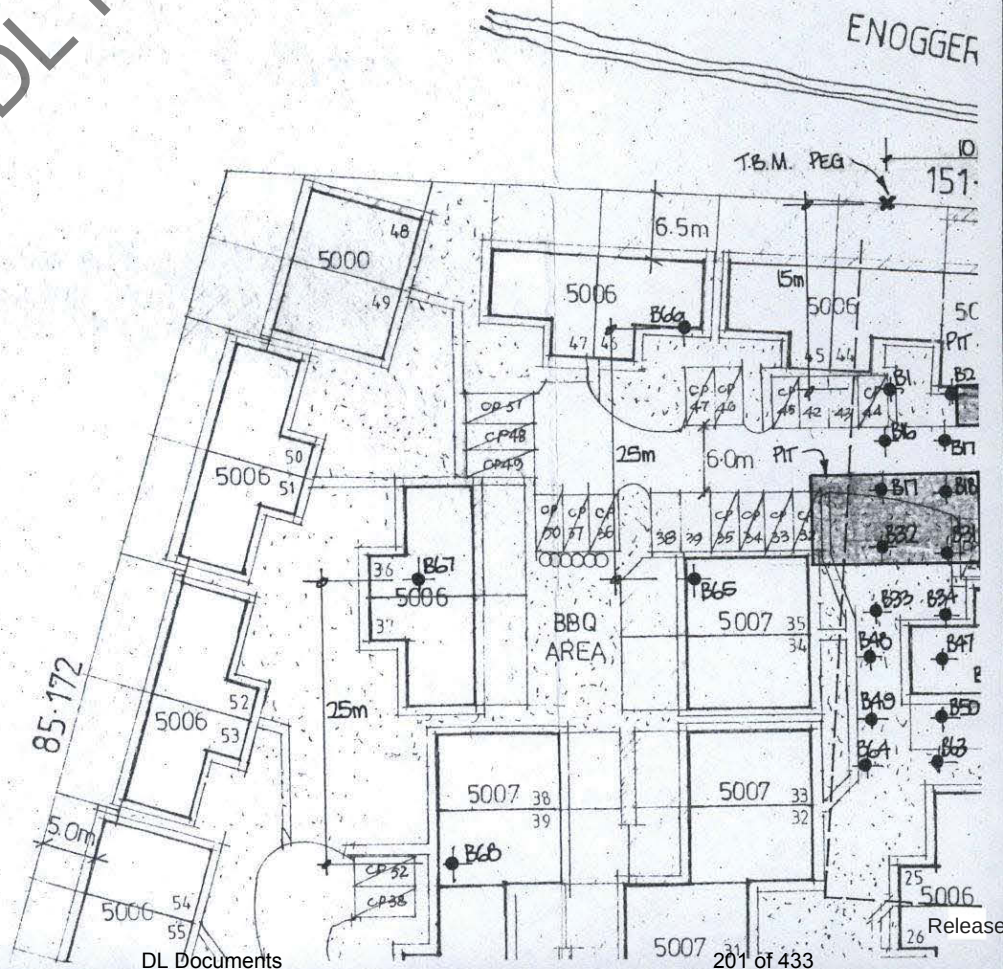
ARTICULATION JOINT DETAILS

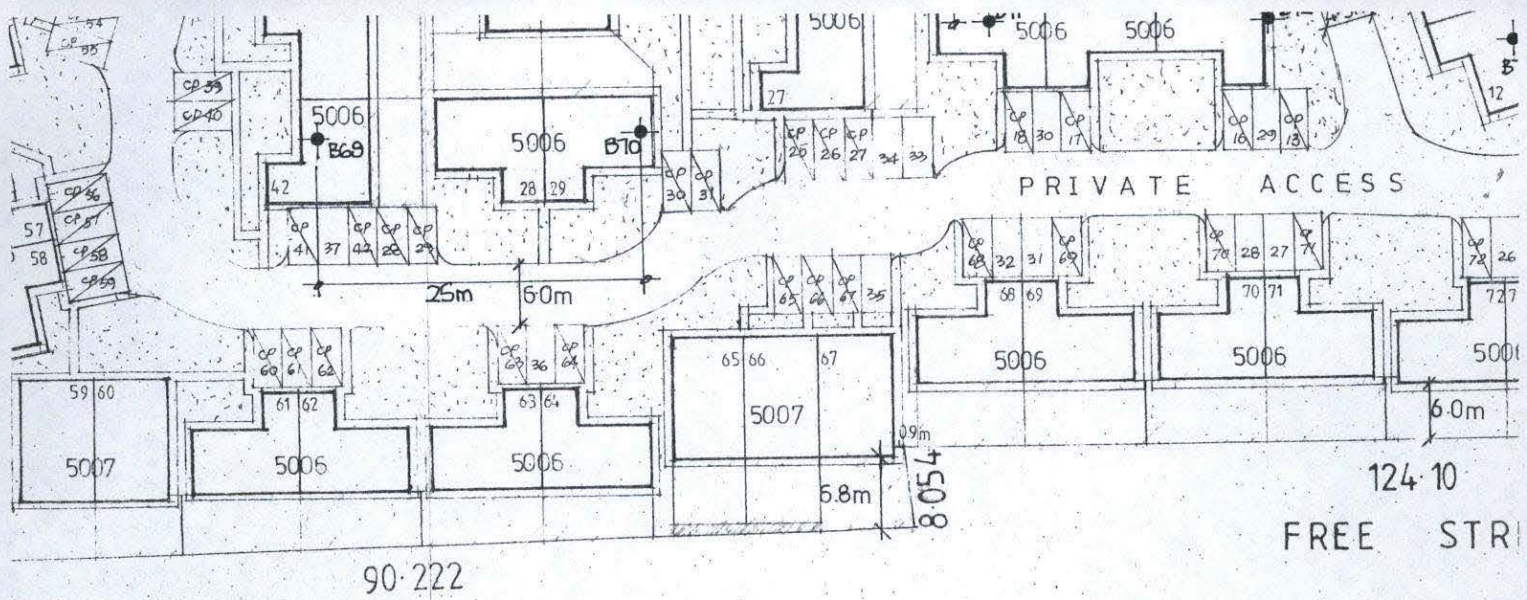
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SCALE: N.T.S.

SF9

RTI DL RELEASE - EHP

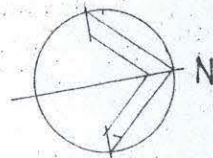




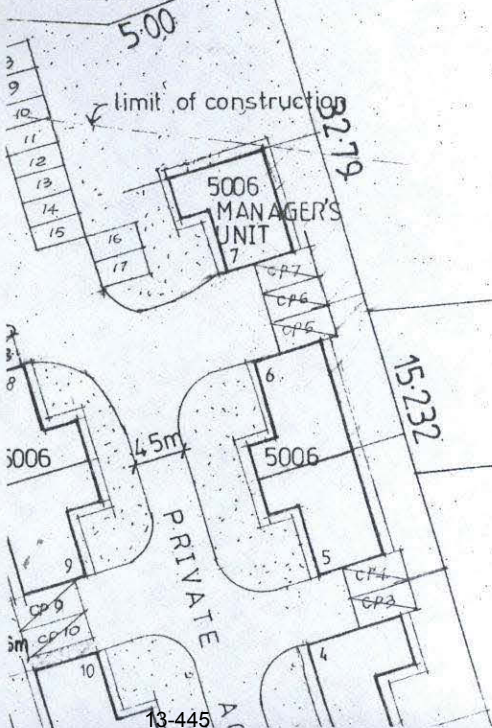
5000, 5004, 5006, 5007
 UNITS
 CARPARKS

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RTI DL RELEASE - EHP



KS



PINE STREET

PROJECT:
FREE ST.
RETIREMENT VILLAGE

FOR:
PIONEER HOMES QLD

AT:
FREE ST
NEWMARKET QLD.



sheet content:
SITE PLAN

**FRED PHILLIS and
ASSOCIATES PTY. LTD.
ARCHITECTS**

20 Greenhill Road
Wayville 5034
Phone 272 5677

Koukourou & Partners Consulting Engineers CIVIL, STRUCTURAL, SOIL TESTING, SUPERVISION 42 Fullarton Road Norwood, Sth. Aust. 5067 Telephone 363 0222 Level 1, 30 Petrie Terrace, BRISBANE QLD. 4000 Telephone (07) 368 2264 Fax: (07) 368 2521	Design	Date 22.12.89	date: 23 5 89	drawn: CCL	chkd:
	Drawn TW	Scale 1:500	Scales: 1 500		
	Checked	Sheet No. 1 of 1	Note: Contractor shall verify all dimensions on site.		
	Approved	Drawing No. MB91001	Drawing No. 890409-DA SK2 A		

Koukourou & Partners

Consulting Engineers

Civil Structural, Soil Testing.

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PO Box 116
East Brisbane Qld 4169

Level 1
922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169

Telephone (07) 891 1911
Facsimile (07) 891 5460

30th October 1990



Mr A Brunner
Chem Unit
PO Box 13
NORTH QUAY QLD 4002

Dear Sir

Re: Validation Report
Newmarket Retirement Village
Parkland

Please find attached hereto the Validation Report to cover the Parkland area of this development.

We formally request your written approval and clearance of the Parkland Stage of the Newmarket Retirement Village.

sch4p4(6) Personal information

Yours faithfully
Ed Berzins

C/C Ken Giess - Brisbane City Council
Bill Jones - Pioneer Homes
Neil Ballment - Ballment & Parker



Adelaide
(08) 363 0222

Melbourne
(03) 853 7922

Sydney
(02) 621 1401

Branch at Gawler
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VALIDATION REPORT

Free Street Retirement Village
Free Street
Newmarket

PARKLAND AREA

RTI DL RELEASE - EHP

Koukourou & Partners
Consulting Engineers
29 October 1990



Adelaide
(08) 363 0222

Melbourne
(03) 853 7922

Sydney
(02) 621 1401

Branch at Gawler
(085) 22 6802

CONTENTS

- 1) Preamble -
- 2) Annexure A - Site
- 3) Annexure B - Previous Land Use
- 4) Annexure C - Site Investigations,
Correspondence & Minutes

RTI DL RELEASE - EHP

Preamble

Site

Land bounded by Free Street and Enoggera Creek, Newmarket.
Refer to Annexure A for parkland boundaries

Developer

Pioneer Homes
2954 Logan Road
Underwood Qld 4119

Consulting Engineers

Koukourou & Partners
Level 1, 922 Stanley Street
East Brisbane Qld 4169

Previous Land Use

Vacant Land with possible refuse from adjacent tannery site.
Refer to Annexure B

Current Proposed Usage

Parkland adjacent to Retirement Village.

Report

In conjunction with proposals for contamination investigation of the adjacent retirement village project, it was agreed to strip the entire proposed parkland area and investigate for possible contamination under the guidelines layed down by the B.C.C. chemists.

The initial inspections carried out after the clearing of vegetation showed no visible evidence of buried material or contamination.

A series of test bores was then proposed to obtain surface soil samples which could be tested. The testing and sampling programme was agreed between Koukourou & Partners and B.C.C., and the work was subsequently carried out. Samples were divided between the two parties, for independent testing to be carried out.

This testing showed the entire lower area to be free of contamination, with one small pocket near the creek embankment showing higher chromium levels.

In conjunction with further testing in Stages 2 and 3 of the Retirement Village site, this area was included in the grid of test bores, to ascertain the limits of the contaminated material. The test results obtained did reveal further high chromium levels in the surface layer only, but in a fairly confined pocket.

The contaminated area was excavated down to the natural clay base under the supervision of both K & P, and B.C.C. officers. Validation testing of the area has been carried out, which verifies the area to be free of the contaminated material. All the material removed has been stockpiled away from the parkland on Stage 3 of the construction site.

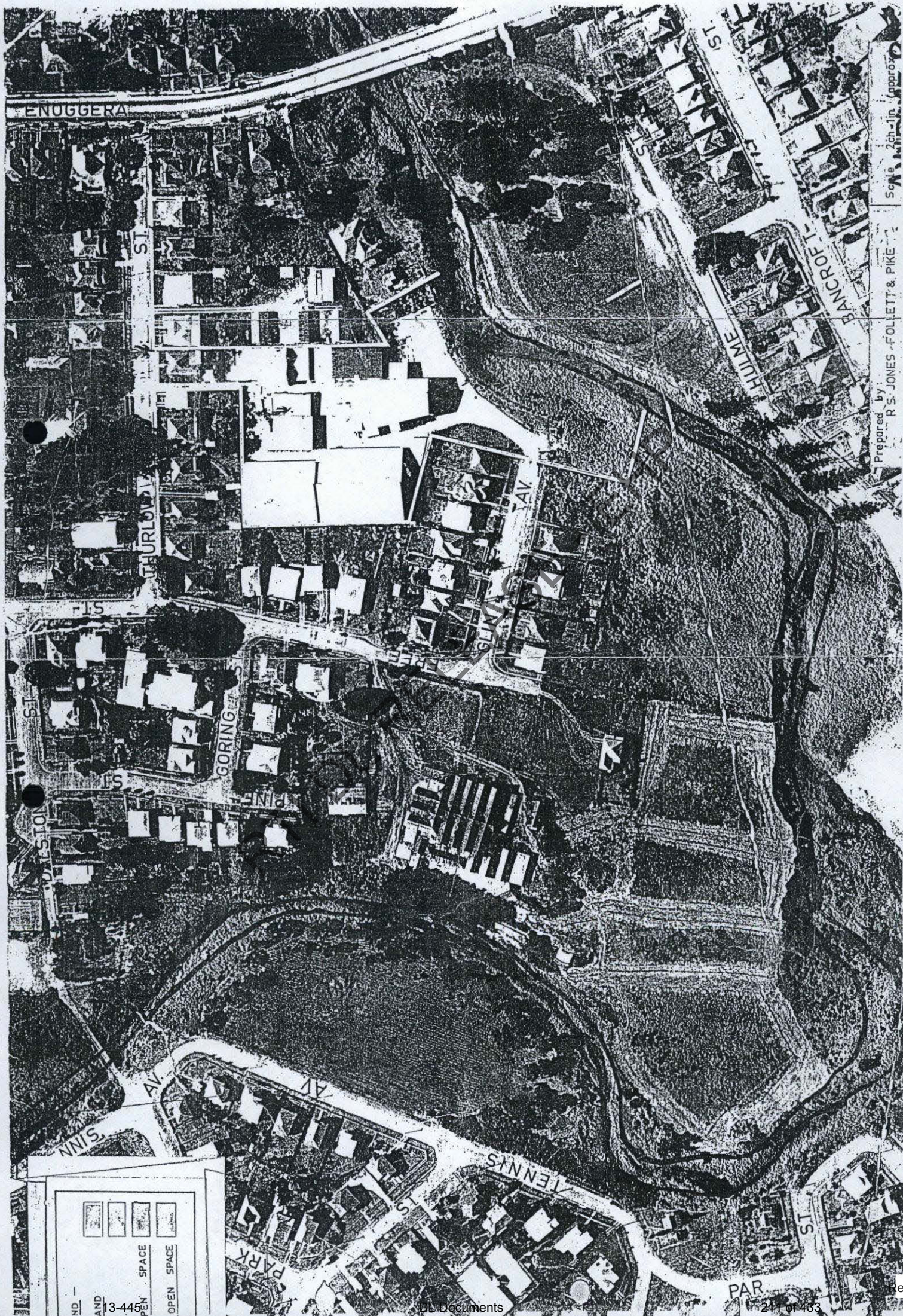
The following information details the sequence of meetings, testing programs carried out, and the test results obtained.

As the majority of testing showed no indication of contaminated material, and the one small area of high chromium material has been removed and checked, it is considered that the parkland area has been satisfactorily remediated.

RTI DL RELEASE

- 4





Prepared by R. S. JONES-FOLLETT & PIKE
Scale 2 1/2 in. approx

ND -

LAND

13-445

OPEN SPACE

OPEN SPACE

Annexure C

Site Investigations & Reports

1)	Site Meeting	23/5/1990
2)	Site Meeting & Inspection	4/6/1990
3)	Sampling and File Note	7/6/1990
4)	K & P test results	19/6/1990
5)	B.C.C. test results & report	12/7/1990
6)	Site Meeting	29/8/1990
7)	Report on further testing	20/9/1990
8)	Site Meeting	4/10/1990
9)	Remedial work and validation notes	11/10/1990
10)	Report on Validation Tests	19/10/1990

RTI DL RELEASE - EHP

1/1

FILE NOTE
NEWMARKET RETIREMENT VILLAGE
SITE MEETING

Ken Giese - Brisbane City Chemist
Kev O'Connor - Brisbane City Chemist Assistant
Peter Dusher - Brisbane Chief Health Surveyor
- Assistant
Bob Carr - Retired Health Inspector with
Brisbane City Council who had
knowledge of tannery operation

REASON FOR MEETING: Review result of vegetation clearing at southern end of site (balance area) with a view to formulating an action plan to allay any doubts in respect of possible contamination due to previous tannery operations

- 1) Bob Carr's recollection of the previous operations was inconclusive.
- 2) Agreed action plan:
 - a) Remove vegetation and heaps of heavily contaminated material (leather shaving etc) to a controlled Brisbane City Council dump as agreed with John Martinkovic of Brisbane City Council.
 - b) Check any heaps or odd land forms for leather and scrap contamination and remove if required as in item (a).
 - c) Once items (a) and (b) have been completed, have surveyors lay out, 50 metre square grid to facilitate referencing.
 - d) Dig a series of test pits as determined by visual examination and record results.
 - e) Take undisturbed samples for chemical testing; if required.

- 3) Ken Giese requested that validation testing be carried out on Stage 1 construction. Koukourou & Partners will have rig available early next week to sample and test in open spaces.
- 4) Ken Giese raised the matter of the developer clearing and testing the area to be gifted over to Council. The matter of denudation of flood plain area and costs was discussed but no resolution reached.

Ed Berzins
KOUKOUROU & PARTNERS
23/5/1990

c/c P Bayetto - Koukourou & Partners - Adelaide
B Jones - Pioneer Homes

sch4p4(6) Personal information

sch4p4(6) Personal information

24
5

FILE NOTE

4th June, 1990

FREE STREET RETIREMENT VILLAGE

Site Meeting 9:00 a.m. - Gary O'Conner B.C.C.
Geoff Lawrence K & P

After stripping of vegetation, an inspection was carried out of the ground surface to look for signs of filling, contamination, and any other unusual features.

Lot 1 - The development site itself had been stripped of the surface material containing any leather shavings and rubbish. There was no obvious sign of any pits. In the lower area an old manhole chamber was uncovered and removed, which appeared to have been an old sewer line. Three pits were dug in a soft area adjacent, but these showed no visible signs of waste or filling. The soils were natural sandy loam over clay. Samples were taken by B.C.C. of silt from these soft areas for analysis.

Lot 2 - An inspection of the stripped parkland area showed no signs at all of tannery waste refuse, and was basically covered in a deep layer of sandy loam. One ponded area existing after recent heavy rains, was sampled by B.C.C. A pit dug next to the area showed the soils once again to be natural loam over clay.

It was proposed to cover the parkland area with test bores @ approximately 50m spacing, and carry out validation testing on the samples. We have requested B.C.C. to confirm with the Development and Planning Section that the proposed work will satisfy their requirements, to enable the rezoning to be completed. We await this confirmation before carrying out the testing.

G.B.LAWRENCE
4.6.90

FILE NOTE

7/6/1990

Free Street Retirement Village

After confirmation of our proposed validation testing program of the proposed parkland area, a site investigation was carried out on Thursday 7th June.

This involved the placement of a series of 13 test bores over the area to sample the top metre of surface soils and have them analysed.

Due to the extreme wet weather and the site being totally inaccessible by vehicle, the necessary drilling equipment was carried in by hand and the field work carried out in wet weather. The borehole locations were pegged and the locations were to be recorded by the site surveyor for future reference if needed.

The core samples were logged and divided between Koukourou's and the B.C.C. Chemist representative on the Friday morning and delivered to the testing laboratory for analysis. It is expected that this will take about a week before the results are available due to the involved testing procedures required.

sch4p4(6) Personal information

Geoff Lawrence
KOUKOUROU & PARTNERS

RTI DL RELEASE - EXP

4/1

SITE INVESTIGATION AND VALIDATION TESTING REPORT

SITE: FREE SREET RETIREMENT VILLAGE
NEWMARKET

DATE: 19th June, 1990

JOB NUMBER: M900502

CLIENT: PIONEER HOMES
2954 Pacific Highway
Underwood
QLD.4119

RTI DL RELEASE - EHP

KOUKOUROU & PARTNERS

VALIDATION TESTING - FREE STREET RETIREMENT VILLAGE
NEWMARKET

STAGE 1 , STAGES 2 & 3, & PROPOSED PARKLAND (LOT 2)

GENERAL

Following a site meeting on the 25.5.90 with officers of the Brisbane City Council; Scientific Services Branch; where an outline for further assessment of the above areas was requested, a series of inspections and test bores have been carried out in conjunction with officers of the above branch and Koukourou & Partners.

Details of the work carried out and results of testing are attached, along with plans showing the locations of test bores and pits.

The validation testing program was carried out as requested by the Scientific Services Branch, and laboratory testing of the samples taken was done by Australian Laboratory Services, an independent N.A.T.A. registered laboratory.

VALIDATION OF STAGE 1

As requested, a series of test bores were placed around the Stage 1 area of the site, in which construction has been started. The purpose of this investigation was to confirm that no contamination was present in the area after earthworks and construction had been carried out.

Test bore locations were chosen by G.O'Connor of the Scientific Services Branch and the locations are shown on an attached plan of the area.

Thirteen boreholes were drilled on 1/6/90 to sample the top 1m of surface soils, except for BH13 which was taken to 2m depth. The cores were visually inspected, then divided between B.C.C. and K & P for independent testing to be carried out.

It was agreed that K & P carry out testing for Zinc, Lead, Copper, Arsenic and Chromium on their samples, and B.C.C. to do the same plus any testing for phenols etc. as thought necessary.

Test results on our samples are attached.

INSPECTION OF STAGES 2 & 3

Subsequent to the site meeting, it was agreed that further inspection of the lower areas of Lot 1, which would comprise Stages 2 & 3 of the development, would be carried out after stripping and clearing of the area had been done.

On 4.6.90 an inspection of the area was carried out by G.O'Connor (B.C.C.) and G.Lawrence (K & P). The area had been stripped of vegetation and any surface material containing leather shavings or rubbish removed from the site to a Council approved dump site. The area was inspected for signs of pits or buried rubbish but there were no obvious signs of anything remaining. In the lower area, an old manhole was uncovered which appeared to have been a line from the old tannery site. There was a soft area adjacent to the old manhole. Three pits were excavated, but no evidence was found of filling or visible contamination. Samples of the silt in this area were taken by B.C.C. chemist for testing.

As no obvious signs of filling or pits remained after removal of the surface material, and the fact that the area had previously been tested for chemical contamination, no further investigation was proposed for this area.

VALIDATION TESTING OF PARKLAND (LOT 2)

As with the lower area of Lot 1, the surface vegetation was removed from the entire proposed parkland area to enable a visual inspection to be carried out. This was done on 4.6.90 by the above mentioned officers to look for filling, contamination, or any unusual features. The inspection showed no visible signs of tannery waste and soils were natural clays with a layer of sandy loam at the surface.

One ponded area existed after recent heavy rains, which was sampled by the B.C.C. chemist for analysis. A pit dug adjacent to it showed only natural soils.

It was proposed to carry out a series of test bores over the area to sample the soils and carry out chemical testing as per the validation testing of Stage 1.

The agreed testing program was carried out on 7.6.90. Another 13 boreholes were placed across the area and the positions accurately recorded by the site surveyor for future reference if needed. See attached site plan. The core samples were examined and divided between B.C.C. and K & P on the following morning for laboratory testing.

Test results obtained from these samples are shown in the attached Table.

VALIDATION OF SOIL - PARKLAND TO BE TRANSFERED TO
BRISBANE CITY COUNCIL

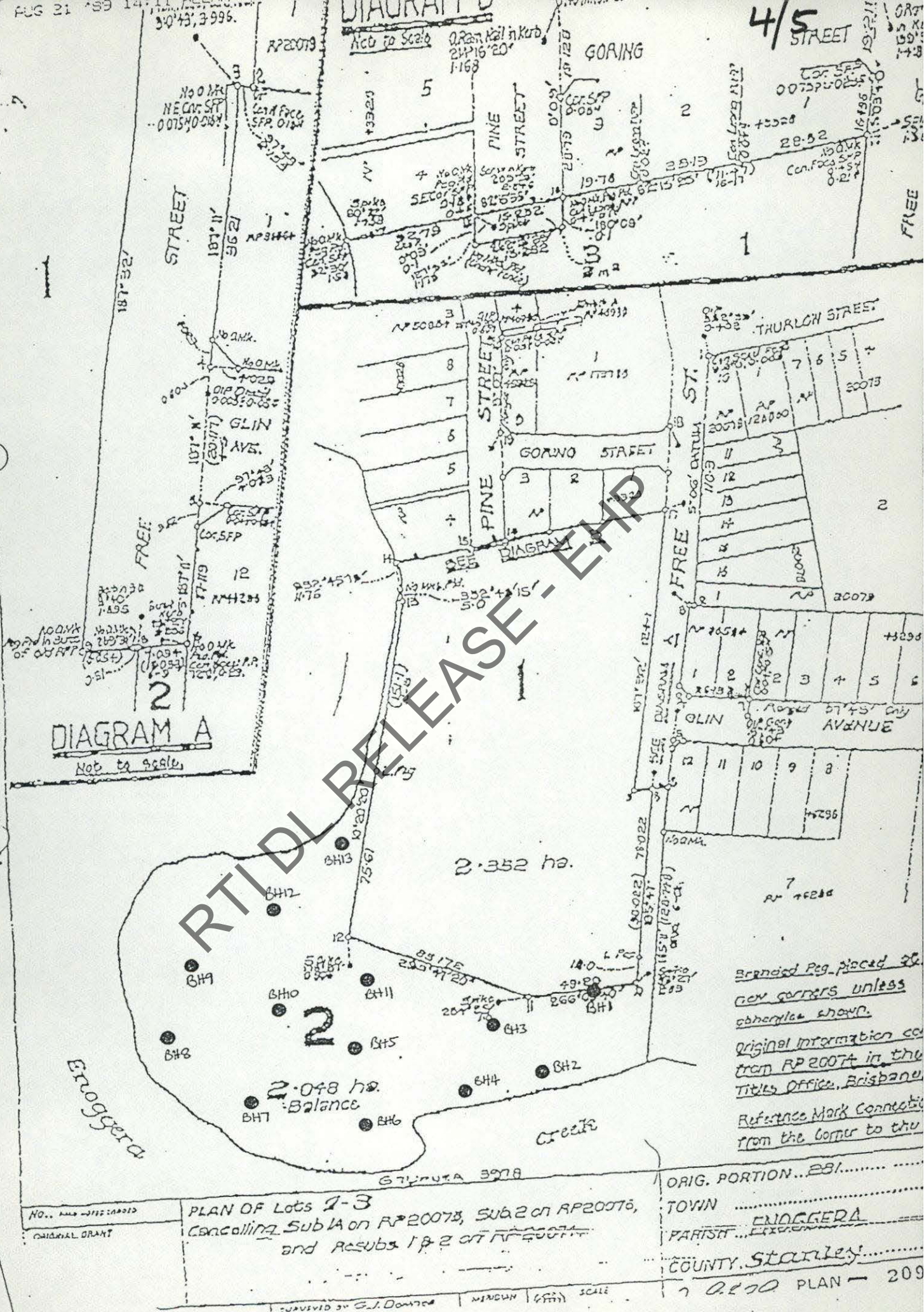
TABLE 2

LOCATION		Cu ppm.	Pb ppm.	Zn ppm.	As ppm.	Cr ppm.
Parkland Validation						
BH2	0-200mm	45	55	100	51	45
BH2	200-500mm	40	35	80	26	25
BH4	0-200mm	30	45	85	28	50
BH4	200-500mm	25	20	40	11	25
BH6	0-200mm	40	45	95	17	35
BH6	200-500mm	10	15	25	7	55
BH8	0-200mm	35	45	90	12	50
BH8	200-500mm	20	30	70	4	65
BH10	0-200mm	25	25	45	12	20
BH10	200-500mm	25	20	40	11	20
BH12	0-200mm	55	35	75	25	35
BH12	200-500mm	30	20	40	18	25

9:0'43", 3996.

DIARY

4/5 STREET



VALIDATION OF PARKLAND - TEST BORES.

5/1
DEPARTMENT OF WATER SUPPLY AND SEWERAGE

Scientific Services Branch

- 5 SEP 1990

ANS / /

GO'C:

MEMORANDUM TO: DIRECTOR

FILE NO: (5)420/11-L0230/24
(2)439/26(6462)

FROM:

ACTING SENIOR CHEMIST

DATE: 12 July 1990

SUBJECT: RETIREMENT VILLAGE AT 24 FREE STREET NEWMARKET

Background:

The Department of Development and Planning requested assistance from Scientific Services Branch in the assessment of the proposed development of a retirement village on land at 24 Free Street Newmarket.

The site was formerly occupied by a tannery which operated on the site for many years, ceasing operations in the early seventies.

The developers, Pioneer Homes, engaged Koukourou and Partners (K&P) as consultants who have undertaken a site assessment program. Further requirements were placed upon K&P by Scientific Services Branch officers to enable an adequate assessment of the site. These requirements are detailed in folios 64 and 65 of (5)420/11-L0230/24 and are summarised as follows:

Requirement (1):

Stages 2 and 3 and the proposed parkland be carefully cleared of vegetation prior to commencing any investigation. After clearing, the area be inspected by the consultants and Scientific Services personnel and an investigation of the area be programmed.

Requirement (2):

A validation programme be carried out on Stage 1 of the development to confirm that the area has been remediated satisfactorily.

Requirement (3):

A remediation programme followed by a validation programme be carried out on the proposed parkland.

The following is a summary of the actions taken to date on these requirements and a proposed course of action for the assessment of the development. Attached also is the report by K&P in regard to these requirements.

(2)

Requirement (1):

Pioneer Homes cleared the vegetation from Stages 2 and 3. This clearing exposed areas where leather scraps had been disposed in mounds on the surface of the ground. Pioneer Homes arranged for the collection and removal of this material to the Willawong Refuse Tip. The removal operation was completed on 30 June 1990. A site inspection by myself on 4 July 1990 confirmed that the surface material had been removed to a satisfactory standard in Stages 2 and 3.

A similar clearing operation was conducted on the proposed parkland area. Site inspections of this area did not show any surface indications of waste disposal. Various grab samples of soil from the area showed background levels of metals in the area.

Requirement (2):

A validation programme was planned for Stage 1 of the development. Core soil samples were taken from open space areas in this part of the development. Cores were taken to a depth of one metre except for borehole thirteen where a depth of two metres was drilled due to the depth of fill in this area. Once again the soil samples were split between BCC and K&P. The analysis results are presented in Table 1; the sample locations are shown in the K&P report.

Borehole 5 showed a significant level of arsenic and consequently another core sample was taken and analysed. The results of this retest are attached, the retest core being designated borehole 5A. The retest again shows a significant level of arsenic. It is proposed that State Health opinion be sought on the hazard associated with such a level of arsenic in an isolated pocket.

Borehole 13 showed a significant level of chromium but as is pointed out in the K&P report, the immediate area surrounding this borehole will be covered by a road and the general surrounds is covered by imported fill necessary for the construction of the Retirement Village Manager's unit and the Village Centre.

Requirement (3):

Due to the lack of any surface evidence of waste disposal and the fact that soil surface grab samples failed to show any levels of contamination, it was agreed with Pioneer Homes and K&P that the best course of action was for a validation core sampling programme to be run in the proposed parkland area.

A core drilling programme was run on 7 June 1990 with core samples again being split between BCC and K&P. The results of these analyses are presented in Table 2 along with the original analysis reports. Sample locations are shown in the K&P report attached.

Comments:

Pioneer Homes and Koukourou and Partners have cooperated fully with Council officers in meeting the specified requirements. They have removed all identified or suspected areas of contamination and disposed of the material at the Willawong Refuse Tip.

While it is not possible for the developer, his consultant or Scientific Services personnel to guarantee that all contaminated material has been removed from the site, every effort has been made to identify and remove contaminated materials so that the site is suitable for use as a retirement village.

In regard to Stages 2 and 3 of the development, all contaminated material on the surface has been removed. Where suspicious ground formations were found an excavator was used to explore the sub-surface to determine if any potentially contaminated material was lying below the ground. Any potentially contaminated materials were removed and disposed of at the Willawong Refuse Tip.

Stages 2 and 3 are yet to be built and it is possible that during constructions some potentially contaminated material may be found. It is important that conditions be placed upon the developer to ensure that these materials are correctly dealt with. It is also recommended that a validation core sampling and analysis programme be conducted on the open space areas as was performed on Stage 1. The developers to date have cooperated with these requirements and I would expect that they would find such conditions fair and reasonable.

The assessment of the Free Street development has progressed to the stage where the opinion of State Health Department should be sought. The data available is encouraging as to the progress of the site remediation. However I am of the opinion that specialist advice be sought and that the appropriate source of this advice is the Environmental Sanitation Section in the State Health Department.

sch4p4(6) Personal information

/G.O'Connor
ACTING SENIOR CHEMIST

TABLE 2
Investigation of preliminary assessment
PARKLAND-VALIDATION-SOIL ANALYSIS

		Cu ppm	Pb ppm	Zn ppm	As ppm	Cr ppm
Borehole 1	0-200mm	45	45	95	26	25
	200-500mm	40	20	55	13	10
Borehole 2	0-200mm	45	55	100	51	45
	200-500mm	40	35	80	26	25
Borehole 3	0-200mm	35	25	70	15	10
	200-500mm	30	20	55	10	10
Borehole 4	0-200mm	30	45	85	28	50
	200-500mm	25	20	40	11	25
Borehole 5	0-200mm	45	40	95	24	15
	200-500mm	30	25	55	10	10
Borehole 6	0-200mm	40	45	95	17	35
	200-500mm	10	15	25	7	55
Borehole 7	0-200mm	40	15	55	14	10
	200-500mm	35	10	45	12	10
Borehole 8	0-200mm	35	45	90	12	50
	200-500mm	20	30	70	4	65
Borehole 9	0-200mm	Phenols <1ppm		Total Oil & Grease <0.1%		
	200-500mm	30	20	50	14	10
Borehole 10	0-200mm	25	25	45	12	20
	200-500mm	25	20	40	11	20
Borehole 11	0-200mm	40	35	80	22	10
	200-500mm	30	20	55	21	15
Borehole 12	0-200mm	55	35	75	25	35
	200-500mm	30	20	40	18	25
Borehole 13	0-200mm	PAHs 1.67ppm (#4187/13 attached sheet for details)				
	200-500mm	35	175	300	13	550

6/1

FILE NOTE

Newmarket Retirement Village

Contamination

10.00 am 29.8.1990

Present: Ed Berzins - Koukourou & Partners
Ken Giese - Brisbane City Council
Alan Brunner - Scientific Adviser
State Government
Chemical Hazards and
Emergency Management Unit

Reason for Meeting:

Finalisation of validation testing for Village Site and
Parkland.

Minutes:

Ed Berzins confirmed that usage is for Retirement Village
not group title; there will not be permanent children
resident; landscaping will be extensive thus precluding
individual "Vegie Gardens."

Ken Giese confirmed that road construction for stage 1 may
proceed, followed by landscaping.

A further test hole will be sunk between the manager's
residence and Community Centre to determine soil profile.

A further three holes will be land augured on the western
and northern side of the manager's residence. The holes to
extend through fill and 500 mm into natural surface.
Testing to determine levels of lead, chrome and arsenic.

The park area is generally free of contamination except in
the area of bore hole 13, where chrome levels are higher
than normal. Further testing will be carried out in
conjunction with stage 2 & 3 validation.

Stage 2 & 3 will be validated by sampling on a 25 m grid
with emphasis on chrome levels.

Ed Berzins and Ken Giese to meet at 10 O'clock, Thursday. 30th. 1

Civil Structural, Soil Testing.

Postal Address:
PO Box 116
East Brisbane Qld 4169Level 1
922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169Telephone (07) 891 1911
Facsimile (07) 891 5460

20 September 1990

The Town Clerk
Brisbane City Council
GPO Box 1434
BRISBANE QLD 4001

Attention: Mr Ken Geise

Dear Sir

Re: Newmarket Retirement Village

Following your recent meeting with Ed Berzins of Koukourou & Partners and Alan Brunner of the State Government Chemical Unit, a sampling and testing programme was carried out in accordance with the recommendations that were advised.

Attached are the following:

Borehole No.s and descriptions of layers
Site Plans showing locations
Survey information for location of test bores
Analytical test results of samples

The Arsenic levels from all samples tested are below the acceptable as per the previous testing.

The levels of total chromium are generally below the "threshold" levels of 600 ppm as per the earlier reports.

Exceptions were found in Borehole 13A in a layer of ash fill with showings. This 250 mm layer was at 0.75 m depth and is in the road pavement area to be constructed.

Two other high levels were found in the surface soils at Boreholes K2 and K3. This appears to be confined to the surface loamy mix in the small area near the embankment adjacent to a previous Borehole and outside the building site units. The adjacent test bores showed typical low levels.

COPY

Adelaide
(08) 363 0222Melbourne
(03) 853 7922Sydney
(02) 621 1401Branch at Gawler
(085) 22 6802

Koukourou & Partners Pty Ltd (Inc. in S.A.) as trustee for Koukourou & Partners Unit Trust trading as Koukourou & Partners

It is our understanding that these results will be forwarded to the Chemical Hazards and Emergency Management Unit for final construction.

We await your advice as soon as possible.

Yours faithfully

sch4p4(6) Personal information

Geoff Lawrence
KOUKOUROU & PARTNERS

cc Bill Jones - Pioneer Homes
Alan Brunner - State Government Chemical Unit

RTI DL RELEASE - EHP

FREE STREET RETIREMENT VILLAGE, NEWMARKET

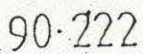
STAGES 2 & 3

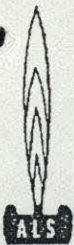
VALIDATION TEST BORE DESCRIPTIONS

For locations, refer to attached site plans.

BH No.	DEPTH (mm)	DESCRIPTION
K1	0-200	TOPSOIL,dark brown
	200-1300	SILTY SAND,orange brown
K2	0-500	LOAMY TOPSOIL/FILL,discoloured
	500-1800	SILT,brown
K3	0-500	LOAMY TOPSOIL/FILL,brown and black
	500-1300	SILT,brown black,moist to wet
K4	0-300	TOPSOIL,brown,black
	300-750	CLAYEY SAND,orange brown
	750-1300	CLAY,mottled,red brown
K5	0-400	CLAY,mottled brown
	400-1000	CLAY,mottled orange
	1000-1300	VERY WEATHERED SHALE,brown
K6	0-300	CLAY FILL,dark brown
	300-1300	WEATHERED SHALE,light orange
K7	0-300	TOPSOIL,brown black
	300-1300	SANDY CLAY,red brown,moist
K8	0-200	GRAVELLY SOIL,grey
	200-800	CLAY,mottled red brown
	800-1300	SHALEY CLAY,mottled orange
K9	0-300	TOPSOIL,dark grey brown
	300-800	CLAY,grey brown
	800-1300	WEATHERED SHALE
K10	0-150	LOAMY TOPSOIL,light brown
	150-950	SILTY SAND,dark brown
	950-1200	SANDY CLAY,yellow brown
K11	0-500	CLAYEY FILL
	500-800	NATURAL SOIL,dark brown
	800-1300	GRAVELLY CLAY,red brown

CREEK





Australian Laboratory Services PTY. LTD.

CONSULTING ANALYTICAL CHEMISTS

KOUKOUROU & PARTNERS

Attention: MR E BERZINS
 Your Order: LETTER
 Sample Type: SOIL

Page-no: 1
 STAFFORD
 Batch-no: 323
 Sub-batch: 0
 No-samples: 29
 Received: 07/09/90
 Checked:

Element Unit Method	As ppm G033	Cr ppm G033
13A 750-1000	36	3700
13A 1000-1800	19	200
M1 750-1000	22	170
M1 1000-1500	8	220
M2 500-750	12	125
M2 WOOD	4	470
M3 00-500	26	170
K1 00-200	28	230
K1 200-500	16	160
K2 00-200	9	2050
K2 200-500	18	220
K3 00-500	20	1850
K3 500-1000	14	135
K4 00-200	10	360
K5 200-500	1	360
K6 00-250	1	220
K7 250-500	7	155
K8 00-200	2	180
K6 200-500	3	220
K7 00-250	9	290
K7 250-500	1	195
K8 00-250	7	270
K9 00-250	12	470
K10 250-500	4	125
K10 500-750	3	145
K12 250-500	5	370
K13 00-250	5	185
K14 250-500	3	220
K16 250-500	8	260

Detection limit

1

1

Report complete, 1 pages sent.

Release

8/1

FILE NOTE
NEWMARKET RETIREMENT VILLAGE
CONTAMINATION

MEETING 10.00 am, 4.10, 1990

PRESENT: K Giess - Brisbane City Council
G O'Connor - Brisbane City Council
E Berzins - Koukourou & Partners

Reason: Action plan to remediate area near south western corner of site/park area.

It was agreed that materials within the theoretical line delineating chrome levels greater than 500 p.p.m be scraped of to a depth of approximately 300 to 500 mm.

This material is to be stockpiled on the site for later controlled re-blending with the imported fill material around the southern end of the site.

Ken Giess would like to be present on site during excavation and a couple of further validation tests will be taken when excavation is completed.

This action will then finalise validation of the parkland and stages 2 & 3.

Ed Berzins
KOUKOUROU & PARTNERS

sch4p4(6) Personal information

9/1

FILE NOTE
NEWMARKET RETIREMENT VILLAGE
REMOVAL OF CONTAMINATED MATERIAL

Ken Glese - Brisbane City Chemist
Geoff Lawrence - Koukourou & Partners

REASON FOR WORK: High chromium and calcium levels in testing carried out on 31.8.90 required the removal and stockpiling of material from a fairly concentrated area as per the attached plan. An approximate boundary of the area was interpolated from the grid of test results available. The actual limits were verified on site by visual inspection. As the contamination appeared to be confined to the light fluffy loamy material, the entire layer was stripped and stockpiled to one side by a bulldozer on 9.10.90. The depth of the material and the boundaries to which it extended was determined and supervised by G. Lawrence.

On 11.10.90 a further 6 locations were sampled by the above officers for validation testing of the area. The purpose of this was to ensure the area is now clean of any undesirable substances. The test samples were submitted on 11.10.90 to A.L.S. for testing. Test bore locations are recorded on the attached plans as well as the actual limits of material removed. In all a quantity of approximately 170m³ was stockpiled for possible blending with clean imported fill in proportions that will ensure acceptable levels are maintained.

Geoff Lawrence
KOUKOUROU & PARTNERS
11/10/90

10/11

19th October, 1990

Civil Structural, Soil Testing.

Postal Address:
PO Box 116
East Brisbane Qld 4169Level 1
922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169Telephone (07) 891 1911
Facsimile (07) 891 5460The Town Clerk
Brisbane City Council
GPO Box 1434
BRISBANE
QLD. 4001

Attention: Mr. K. Giess

Dear Sir,

Re: Validation Testing, Free Street, Newmarket.

Please find attached the investigation results of the validation tests taken on 11th October, 1990. As mentioned in our fax of 19.10.90, a high chrome reading was still obtained in the surface material at test location LV1. The surface soils may be affected by the spillage of the machinery transporting the material to the adjacent stockpile, which was being track rolled throughout the removal process. This would have to be a very isolated patch of material, as the other test results would indicate that the removal of the loose fill material down to the natural clay has effectively cleaned up the area. We would appreciate your comments as soon as possible, as our client is extremely anxious to resolve the matter.

Attached are the following:

- a) File Note of 11.10.90 on work carried out.
- b) Site Plan of area stripped on 9.10.90.
- c) Site Plan of test locations on 11.10.90.
- d) Test Results recieved from A.L.S.

Yours faithfully,

sch4p4(6) Personal information

G.B. LAWRENCE
KOUKOUROU & PARTNERSAdelaide
(08) 353 0222Melbourne
(03) 853 7922Sydney
(02) 621 1401Branch at Gawler
(085) 22 6802

2/10

● Validation tests on stripped area, taken 11.10.90.

RTI DL RELEASE - EHP

KOUKOUROU & PARTNERS
LEVEL 1, 922 STANLEY ST.
EAST BRISBANE 4169
TELEPHONE: (07) 891 1911
FACSIMILE: (07) 891 5460

sch4p4(6) Personal information

1/10/90

550 EAST

WR REG.
151.937 E
286.380 N

700 North

SCALE 1:250
BEFORE REDUCTION



Area of loose loamy
fill containing chromium
removed and stockpiled
on 9/10/90.

RTI DL RELEASE EHP

KOUKOUROU & PARTNERS
LEVEL 1, 922 STANLEY ST.,
EAST BRISBANE 4169
TELEPHONE: (07) 891 1911
FACSIMILE: (07) 891 5460.

sch4p4(6) Personal information

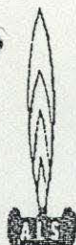
4/10/90

850 E40

WR REG.
E51.937 E
E86.320 N

800 North

SCALE 1:250
BEFORE REDUCTION



Australian Laboratory Services PTY. LTD.

CONSULTING ANALYTICAL CHEMISTS

KOUKOUROU & PARTNERS

Attention: MR G LAWRENCE
 Your Order: LETTER
 Sample Type: SOIL

Page-no: 1
 STAFFORD
 Batch-no: 535
 Sub-batch: 0
 No-samples: 5
 Received: 12/10/90
 Checked:

Element Unit Method	Ca / IC586M	Cr ppm G033
KV2B 0-100	1.70	125
KV3B 0-100	4.31	700
PV13B 0-100	4.41	330
LV1B 0-100	10.8	1300
LV2B 0-100	3.38	320
LV3B 0-100	10.5	170

Detection limit

0.01

1

0-300mm
 RTI DL RELEASE - EHP

Report complete, 1 pages sent.

Civil Structural, Soil Testing.

Postal Address:
PO Box 116
East Brisbane Qld 4169

Level 1
922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169

Telephone (07) 891 1911
Facsimile (07) 891 5460

29 October 1990

Mr A Brunner
Chem Unit
PO Box 13
NORTH QUAY QLD 4002

Dear Sir

Re: Validation Report
Newmarket Retirement Village
Stage 1

Further to our meeting on the 23 October 1990, please find attached hereto the Validation Report to cover Stage 1 of this development.

We formally request your written approval and clearance of Stage 1 of the Newmarket Retirement Village for the Retirement Village.

sch4p4(6) Personal information

Yours faithfully
Ed Berzins

C/C Ken Giess - Brisbane City Council
Bill Jones - Pioneer Homes
Neil Ballment - Ballment & Parker

Civil Structural, Soil Testing.

Postal Address:
PO Box 116
East Brisbane Qld 4169

Level 1
922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169

Telephone (07) 891 1911
Facsimile (07) 891 5460

VALIDATION REPORT

Free Street Retirement Village
Free Street
Newmarket

STAGE 1

RTI DL RELEASE - EHP

Koukourou & Partners
Consulting Engineers
29 October 1990



Adelaide
(08) 363 0222

Melbourne
(03) 853 7922

Sydney
(02) 621 1401

Branch at Gawler
(085) 22 6802

CONTENTS

- 1) Preamble -
- 2) Annexure A - Site
- 3) Annexure B - Previous Land Use
- 4) Annexure C - Site Investigation
- 5) Annexure D - Validation Report
- 6) Annexure E - Correspondence & Minutes

RTI DL RELEASE EHP

Preamble

Site

Land bounded by Free Street and Enoggera Creek, Newmarket.
Refer to Annexure A.

Developer

Pioneer Homes
2954 Logan Road
Underwood Qld 4119

Consulting Engineers

Koukourou & Partners
Level 1, 922 Stanley Street
East Brisbane Qld 4169

Previous Land Use

Tannery.
Refer to Annexure B

Current Usage

Retirement Village.

Report

A Site investigation/chemical screening report was prepared on the 22nd December, 1989 and submitted to the Brisbane City Council. Refer to Annexure C.

During construction, timber and concrete tank structures and any materials which were not indigenous to the site were removed from the site and dumped, as directed by the Brisbane City Council, to an approved Council controlled waste dump, in this case Willawong.

Stage 1 was then subjected to a validation certification program with the emphasis on chrome and arsenic levels and a test on the leaching characteristics to satisfy environmental considerations.

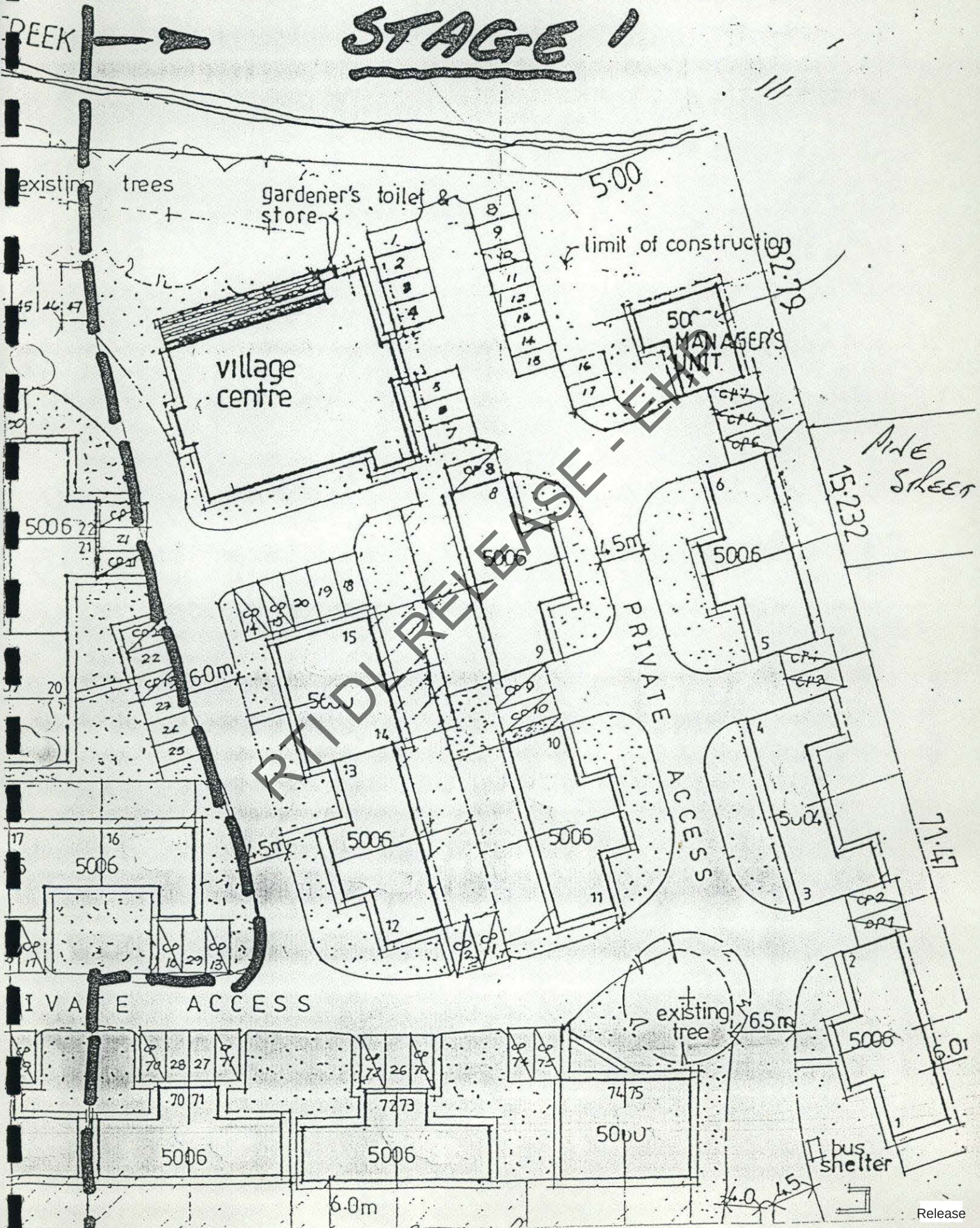
The summary of these results is set down in annexure D.

-4

ANNEXURE A1' Release

Release

STAGE 1





Scale 2ch-1in (approx.)

Prepared by R S JONES FOLLETT & PIKE in association with

release

Annexure C

Site Investigation

Report

22/12/1989

RTI DL RELEASE - EHP

Civil, Structural, Soil & Material Testing.

Level 1, 130 Petrie Terrace
Brisbane Qld 4000
Facsimile (07) 368 2521
Telephone (07) 368 2264

42 Fullarton Road
Norwood Sth Aust 5067
Facsimile (08) 363 1555
Telephone (08) 363 0222

Postal Address:
P.O. Box 707
Norwood Sth Aust 5067

Site Investigation/Chemical Screening

Date: 22 December 1989

Job No.: M891001

Site: Free Street Retirement Village
Free Street
NEWMARKET

Client: Pioneer Homes
C/- Fontaine & Jones Pty Ltd
2954 Logan Road
UNDERWOOD QLD 4119

Table of Contents

- 1.0 Introduction/Objectives of Investigation
- 2.0 Scope of Work
- 3.0 Report

List of Appendices

- A Borehole Logs
- B Summary of Standard Analytical Methods
- C Sample Locations
- D Chemical Test Results
- E Site Plan

1.0 Introduction/Objectives of Investigation

- 1.1 The Free Street Retirement Village Development Site consists of vacant land with a general crossfall to the west and the Enoggera Creek. The south eastern quarter of the site has a fall to the south east corner of the block.

The proposed development consists of 75 medium density attached residential units with communal facilities and open space.

- 1.2 Aerial photographs were used to identify the extent of the tannery works previously located on the site. The tannery occupied an area of approximately 60 metres by 50 metres opposite Glin Avenue and located on the low side of the site immediately adjacent the Enoggera Creek. Various filled in pits and wells were identified on the tannery site. The boundaries of the former tannery are shown on the site plan contained in Appendix E.
- 1.3 The purpose of the investigation was to determine what level of residual chemical contamination from the former land use was contained in the soil and whether the potential exposure levels in humans and plants would create a health or environmental hazard relative to the proposed use.

2.0 Scope of Work

The former land use was reviewed and the extent of the tannery works determined from aerial photographs.

- 2.1 The field investigation consisted of drilling seventy four 50 mm diameter boreholes over the site to a minimum depth of 750 mm unless stopped by weathered rock or a concrete pit base. Boreholes were extended in fill areas to penetrate to the base of any fill encountered. A continuous core was recovered for logging and assessment.

The boreholes were located on a 5 m x 5 m grid within the identified tannery boundaries and were extended to a 25 m grid around the tannery perimeter.

Where possible the extent of filled pits and wells was identified.

The locations of all boreholes and identified filled pits and wells are shown on the site plan in Appendix E.

- 2.2 The soil cores were logged and 116 samples were identified and registered for further laboratory assessment, the borehole logs are contained in Appendix A.

After further laboratory examination 69 samples were selected to be analysed for a range of chemicals. The selected samples were split into duplicates and sent to AMDEL for chemical testing. The selected range of elements tested for was limited in knowledge of the former tannery use.

2.2 Cont.

The samples were analysed for pH, total dissolved salts and selected heavy metals (Cu, Fe, Zn, Cd, Cr, Co, Ni, Pb, As and Hg).

A summary of the sample numbers tested and their locations is contained in Appendix C. The laboratory analytical procedures used are summarised in Appendix B.

3.0 Report

The AMDEL chemical test results are tabulated in Appendix D.

In general the level of chemical contamination is quite low with only the odd sample showing a result at the low end of the moderate contamination level and does not present a hazard to the proposed human occupation.

The pH of all samples was greater than 5 and quite satisfactory.

Arsenic levels are less than 50 ppm except for sample number 9/2493 (borehole 49, depth 0-250 mm) where it was found to be 78 ppm. This is located under a proposed open space lawn area and is considered acceptable, this level being on the borderline between low and moderate contamination.

Chromium levels are less than 600 ppm except for sample number 9/2477 (borehole 33, depth 0-250 mm) where it was found to be 680 ppm. This is again located under proposed grassed open space and is on the borderline between moderate and low contamination for Cr3. Significant levels of Cr6 have not been found associated with former tannery sites. Only one high reading of lead levels was encountered, this was sample number 9/2511 (borehole 67, depth 0-250 mm) and this was 450 ppm. This was still at the very low end of the moderate contamination range. This borehole was located under units 36 and 37 and was well away from the former plant area, it is not considered to pose a risk to human occupancy.

In summary no special precautions are considered necessary for the development of this site for the proposed use.

sch4p4(6) Personal information

U M Bayetto FIE Aust., CP Eng.
KOUKOUROU & PARTNERS

References

1. Wilson D C and Stevens C, "Problems Arising from the Redevelopment of Gas Works and Similar Sites", United Kingdom Atomic Energy Authority, Harwell, November 1981.
2. UK Department of Environment, "Guidance on the Assessment and Redevelopment of Contaminated Land", Inter-Departmental Committee for the Redevelopment of Contaminated Land, ICRCL 59/83, 1983.
3. Finnecy E E and Wicklund J, "Consultants' Report, Union Carbide Site, Rhodes, NSW, Australia", NSW State Pollution Control Commission, June 1987.
4. Department of Housing, Netherlands, "Soil Clean-up Guidelines", 1983.
5. Koo F, "Potential for Biological Clean Up of Chemically Contaminated Sites", Eighth Australian Biotechnology Conference, Sydney, February 1989.
6. Public and Environmental Health Division, South Australian Health Commission, "A Guide on the Assessment and Management of Contaminated Land in South Australia", October 1989.

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Appendix A - Borehole Logs

RTI DL RELEASE - EHP

SURFACE SOIL BORE LOG

Contractors Consulting Engineers		SURFACE SOIL BORE LOG			
Address	Sampling Date	Sampling Method			
FREE STREET NEW MARKET	20/11/89	Percussion Tube			
Reference to the associated report and / or recommendation					
Soil Description	U/Symb	Moist.	Strength	Hole 1	Hole 2
LY - BROWN, MIXTURE OF CREAM AND BLACK.	-	DAMP	LOW	0 - 200	-
LN.	HL	DRY	LOW-MEDIUM	200 - 2000	-
LEAD BROWN ORANGE-BROWN.	CH	DRY-DAMP	MEDIUM	—	-
LY AND COMPLETELY WEATHERED - CREAM-ORANGE.	-	-	-	2000 - 3000	-
			Y - Centre	0	
			Y - Edge	0	

[illegible][illegible]

SURFACE SOIL BORE LOG

[illegible]

Job Number	Site Address		Sampling Date	Sampling Method		Int S/Class			
	FREE STREET	NEW MARKET	20/11/89	Percussion Tube		0			
Site Observations : Refer to the associated report and / or recommendation									
Horizon	Soil Description	U/Symb	Moist.	Strength	Hole 10	Hole 11	Hole 12	Est Ipt	Av Ipt
FILL	SILT-SANDY-GRAVELLY - BROWN, MIXTURE OF CREAM AND BLACK.	-	DAMP	LOW	0 - 500	0 - 1250	0 - 700	0.000	0.000
A	SILT-CLAYEY - BROWN.	ML	DRY	LOW-MEDIUM	---	---	---	0.000	0.000
B	CLAY-SILTY - MOTTLED BROWN ORANGE-BROWN.	CL	DRY-DAMP	MEDIUM	---	---	---	0.035	0.035
C	WEATHERED - HIGHLY AND COMPLETELY WEATHERED - CREAM-ORANGE	-	-	-	---	---	---	0.000	0.000

Y - Centre 0 0 0

Y - Edge 0 0 0

SURFACE SOIL BORE LOG

[illegible]

SURFACE SOIL BORE LOG

Address	Location	Sampling Date	Sampling Method
FREE STREET	NEW MARKET	20/11/69	Percussion Tube
to the associated report and / or recommendation			
U/Symb	Moist.	Strength	Hole 16
-	DAMP	LOW	0 800
ML	DRY	LOW-MEDIUM	-
DRY-DAMP	MEDIUM	-	-
-	-	-	800 1700
Y - Centre Y - Edge			

Soil Section Log - Footing design

Soil Suction
Coef. — Footing design

[illegible]

[illegible]

S U R F A C E S O I L B O R E L O G

[illegible]

SURFACE SOIL BORE LOG

[illegible]

SURFACE SOIL BORE LOG

FREE STREET		NEW MARKET	Sampling Date 20/11/89	Sampling Method Percussion Tube
to the associated report and / or recommendation				
U/Symb	Moist.	Strength	Moistal	Hol
-	DAMP	LOW	0 - 1000	-
ML	DRY	LOW-MEDIUM		
ML	DRY-DAMP	MEDIUM	1000 - 1800	1 - 2
-	-	-	1800 - 2000	-
			Y - Centre Y - Edge	22 22

SURFACE SOIL BORE LOG

[illegible]

SURFACE SOIL BORE LOG

[illegible]

SURFACE SOIL BORE LOG

Job		Sampling Date	Sampling Method	Remarks	
100	NEW MARKET	20/11/89	Percussion Tube		
to the associated report and / or recommendation					
101	LY - BROWN, MIXTURE OF CREAM AND BLACK.				
102	OWN.				
103	TLED BROWN ORANGE-BROWN.				
104	LY AND COMPLETELY WEATHERED - CREAM-ORANGE.				
				Y - Centre	16
				Y - Edge	16

SURFACE SOIL BORE LOG

[illegible]

SURFACE SOIL BORE LOG

[illegible]

SURFACE SOIL BORE LOG

[illegible]

[illegible]

[illegible][illegible]

SURFACE SOIL BORE LOG

[illegible]

SURFACE SOIL BORE LOG

Y - Centre	11	64	10
Y - Edge	11	59	10

[illegible]

[illegible]

SURFACE SOIL BORE LOG

[illegible]

SURFACE SOIL BORE LOG

[illegible]

GENERAL DESCRIPTION

Y-VALUE CALCULATION USING

GROUND WATER / SALINITY GROUNDWATER NOT ENCOUNTERED
(C) 1985, Leader Computer Systems

Appendix B - Summary of Standard Analytical Methods

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Analytical Methods for Chemical Test Procedures

Metal Analyses

Cu, Fe, Zn, Pb, As, Cd, Cr, Co, Ni.

Digestion of sample in perchloric, hydrochloric and hydrofluoric acid and analysis of digest by ICP or AAS (not As, Pb).

Alternatively As, Pb by XRF of ground pressed powdered sample.

Hg Aqua regia acid digestion and cold vapour AAS.

Cr₆ Acid dissolution and colorimetric determination with diphenylcarbazide.

Others

S (total) Leco combustion and measurement by titration.

Total CN Distillation by APHA method 16th Ed pp 327-352. Colorimetric determination.

Water Extract Analyses

pH 1:5 extract with water shaken for 2 hours and solution measured using a combination pH electrode.

Total soluble salts (calculation). Extract from pH taken and electrical conductivity measured.

SO₄, S, Phenolics As for pH with solution filtered and measured using an Ion Chromatography analyser.

Toluene Extractables

200-300 grams of soil were extracted with re-distilled AR-Grade toluene for 24 hours (or until clear) in pre-extracted thimbles, using a soxhlet apparatus. The toluene extractable organic matter (TEOM) was then yielded by careful rotary evaporation. The weight of (TEOM) was calculated after the sample was carefully transferred to a small vial to minimise the errors involved.

Polycyclic Aromatic Hydrocarbons (PAH)

Soils were extracted as for (TEOM) using re-distilled AR-Grade dichloromethane. The hydrocarbon components of the extracted organic matter were isolated by liquid chromatography and analysed by GC-MS. PAH concentrations were calculated by comparison with PAH standards.

Appendix C - Sample Locations

RTI DL RELEASE - EHP

TABLE 1: SAMPLE LOCATIONS

Sample No.	Bore No.	Depth mm
9/2403	1	0-500
9/2404	1	500-1000
9/2407	2	0-500
9/2409	3	0-500
9/2412	4	0-500
9/2413	4	500-1000
9/2416	5	0-500
9/2418	5	1000-1500
9/2419	6	0-500
9/2420	6	500-750
9/2421	7	0-500
9/2423	8	0-500
9/2425	9	0-500
9/2426	9	500-800
9/2428	11	0-500
9/2429	11	500-1000
9/2430	11	1000-1250
9/2431	12	0-500
9/2433	13	0-500
9/2434	13	500-1000
9/2435	13	1000-1300
9/2436	14	0-500
9/2437	14	500-1000
9/2441	16	0-500
9/2444	18	0-500
9/2446	18	1000-1500
9/2447	19	0-500
9/2448	19	500-1000
9/2449	19	1000-1300
9/2450	20	0-500
9/2452	21	0-500
9/2453	21	500-1000
9/2454	21	1000-1500
9/2455	21	1500-2000
9/2457	22	0-2500
9/2458	23	0-500
9/2460	24	0-500
9/2462	24	1000-1500
9/2464	24	2000-2500
9/2467	26	0-250
9/2470	29	0-250
9/2471	30	0-500
9/2472	31	0-500

Continued

TABLE 1: (Continued)

Sample No.	Bore No.	Depth mm
9/2474	32	0-500
9/2475	32	500-1000
9/2477	33	0-250
9/2479	35	0-250
9/2480	36	0-250
9/2483	39	0-250
9/2485	41	0-250
9/2487	43	0-250
9/2489	45	0-250
9/2491	47	0-250
9/2493	49	0-250
9/2495	51	0-250
9/2497	53	0-250
9/2499	55	0-250
9/2501	57	0-250
9/2502	58	0-250
9/2504	60	0-250
9/2506	62	0-250
9/2508	64	0-250
9/2509	65	0-250
9/2510	66	0-250
9/2511	67	0-250
9/2513	69	NA*
9/2514	70	NA*
9/2517	73	NA*
9/2518	74	NA*

* NA not available

Appendix D - Chemical Test Results

RTI DL RELEASE - EHP



amdel

technology and enterprise

Amdel Limited

(Incorporated in S.A.)

31 Flemington Street,
Frewville, S.A. 5063

Telephone: (08) 372 2700

P.O. Box 114,
Eastwood, S.A. 5063

Telex: AA82520
Facsimile: (08) 79 6623

30 November 1989

Koukourou & Partners
PO Box 707
NORWOOD SA 5067

Attention Mr Peter Bayetto

REPORT M693/90

YOUR REFERENCE

KP 2244.

TITLE

Pioneer Homes Site.

LOCATION

Queensland.

DATE EXAMINED

November 1989.

WORK REQUESTED

Chemical analyses of soil samples.

Investigation and Report by:

John A Lackey.

sch4p4(6) Personal information

William V Yeo
Manager
Materials Services

1. INTRODUCTION

Mr Peter Bayetto of Koukourou & Partners requested that Amdel Limited analyse 69 samples for a range of elements. The samples were from Pioneer Homes, Queensland.

2. PROCEDURE & RESULTS

Sixty nine samples were analysed for pH, total dissolved salts and selected heavy metals (Cu, Fe, Zn, Cd, Cr, Co, Ni, Pb, As, Hg).

Sample locations are presented in Table 1.

Analyses are given in Tables 2 to 4.

dt.

RTI DL RELEASE - EHP

TABLE 1: SAMPLE LOCATIONS

Sample No.	Bore No.	Depth mm
9/2403	1	0-500
9/2404	1	500-1000
9/2407	2	0-500
9/2409	3	0-500
9/2412	4	0-500
9/2413	4	500-1000
9/2416	5	0-500
9/2418	5	1000-1500
9/2419	6	0-500
9/2420	6	500-750
9/2421	7	0-500
9/2423	8	0-500
9/2425	9	0-500
9/2426	9	500-800
9/2428	11	0-500
9/2429	11	500-1000
9/2430	11	1000-1250
9/2431	12	0-500
9/2433	13	0-500
9/2434	13	500-1000
9/2435	13	1000-1300
9/2436	14	0-500
9/2437	14	500-1000
9/2441	16	0-500
9/2444	18	0-500
9/2446	18	1000-1500
9/2447	19	0-500
9/2448	19	500-1000
9/2449	19	1000-1300
9/2450	20	0-500
9/2452	21	0-500
9/2453	21	500-1000
9/2454	21	1000-1500
9/2455	21	1500-2000
9/2457	22	0-2500
9/2458	23	0-500
9/2460	24	0-500
9/2462	24	1000-1500
9/2464	24	2000-2500
9/2467	26	0-250
9/2470	29	0-250
9/2471	30	0-500
9/2472	31	0-500

Continued

TABLE 1: (Continued)

Sample No.	Bore No.	Depth mm
9/2474	32	0-500
9/2475	32	500-1000
9/2477	33	0-250
9/2479	35	0-250
9/2480	36	0-250
9/2483	39	0-250
9/2485	41	0-250
9/2487	43	0-250
9/2489	45	0-250
9/2491	47	0-250
9/2493	49	0-250
9/2495	51	0-250
9/2497	53	0-250
9/2499	55	0-250
9/2501	57	0-250
9/2502	58	0-250
9/2504	60	0-250
9/2506	62	0-250
9/2508	64	0-250
9/2509	65	0-250
9/2510	66	0-250
9/2511	67	0-250
9/2513	69	NA*
9/2514	70	NA*
9/2517	73	NA*
9/2518	74	NA*

* NA not available



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TABLE 2: METAL ANALYSES
ANALYTICAL REPORT

Job: 9AD3182

O/N: M8914

Sample	Cu	Fe	Zn	Cd	Cr	Co	Ni
9/2403	17	6800	320	5	70	25	10
9/2404	28	2.05%	260	4	14	32	20
9/2407	380	5.30%	1050	4	270	24	26
9/2409	360	4.40%	440	3	76	26	36
9/2412	22	1.71%	290	2	26	14	12
9/2413	44	4.40%	470	3	310	30	25
9/2416	60	2.70%	350	3	62	18	14
9/2418	30	3.65%	105	3	20	28	15
9/2419	44	3.05%	250	4	60	22	16
9/2420	22	3.60%	64	2	16	24	18
9/2421	56	2.05%	185	3	6	18	12
9/2423	110	1.24%	580	2	88	12	14
9/2425	25	6800	480	3	58	20	16
9/2426	17	4750	360	3	24	16	10
9/2428	72	1.20%	500	3	105	15	24
9/2429	80	1.70%	730	3	66	18	24
9/2430	32	2.75%	220	4	26	24	14
9/2431	40	2.75%	410	4	12	18	12
9/2433	22	1.85%	320	3	8	15	12
9/2434	42	1.03%	450	3	195	12	12
9/2435	36	1.98%	3550	5	38	20	18
9/2436	16	1.01%	190	2	45	22	10
9/2437	50	1.27%	175	3	32	20	18
9/2441	60	2.25%	850	3	510	20	20
9/2444	34	2.85%	350	3	105	26	16
9/2446	250	3.05%	620	4	58	32	32
9/2447	30	2.10%	220	3	72	20	15
9/2448	52	2.00%	500	2	22	18	18
9/2449	30	1.81%	260	3	40	18	15
9/2450	34	8800	210	2	24	12	16
9/2452	50	9600	450	2	25	15	18
9/2453	13	7400	310	2	12	14	10
9/2454	26	3.10%	24	2	40	20	22
9/2455	17	3.60%	17	2	38	25	26
9/2457	105	3.40%	1000	4	175	22	18
9/2458	430	2.35%	590	2	470	16	25
9/2460	52	1.93%	150	2	210	20	15
9/2462	30	2.65%	48	3	74	22	22
9/2464	24	2.65%	36	2	48	18	18
9/2467	60	1.99%	290	2	90	16	15
9/2470	30	2.15%	86	3	36	14	12
9/2471	35	2.65%	105	2	22	16	15
9/2472	70	2.45%	360	4	82	20	16
9/2474	58	2.75%	260	3	130	20	20
9/2475	94	3.05%	165	2	68	22	16
9/2477	125	3.00%	600	3	680	18	15
9/2479	30	2.40%	58	2	24	15	14
9/2480	19	2.60%	22	2	28	18	12
9/2483	24	2.85%	55	2	32	20	20
9/2485	120	3.20%	320	3	120	20	20
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detn Limit	2	4	2	1	4	4	4
Scheme	AAS1	AAS1	AAS1	AAS1	AAS1	AAS1	AAS1
Upper Scheme		AAS1C					



CLASSIC COMLABS LTD

Analytical Laboratories (INC. IN WA.)

TABLE 2 (Continued)

ANALYTICAL REPORT

Job: 9AD3182

O/N: M8914

Sample	Cu	Fe	Zn	Cd	Cr	Co	Ni
9/2487	30	2.70%	74	3	42	22	20
9/2489	15	2.90%	14	2	28	16	14
9/2491	28	2.55%	52	3	35	18	18
9/2493	25	1.94%	400	5	<4	25	18
9/2495	32	2.45%	340	3	22	16	15
9/2497	14	3.00%	32	2	36	20	16
9/2499	36	3.45%	36	2	24	16	18
9/2501	44	2.75%	280	3	145	32	28
9/2502	48	2.20%	210	1	135	14	15
9/2504	28	3.50%	75	2	30	22	22
9/2506	80	2.00%	1840	4	330	20	25
9/2508	115	2.25%	970	3	430	18	18
9/2509	190	4.25%	430	3	590	22	20
9/2510	55	3.45%	260	3	260	22	18
9/2511	72	2.50%	430	2	760	20	15
9/2513	17	2.25%	28	1	44	25	12
9/2514	22	1.91%	62	<1	50	16	14
9/2517	36	2.65%	110	2	34	22	22
9/2518	48	3.30%	210	2	26	28	30
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detn Limit	2	4	2	1	4	4	4
Scheme	AAS1	AAS1	AAS1	AAS1	AAS1	AAS1	AAS1
Upper Scheme		AAS1C					



CLASSIC COMLABS LTD

Analytical Laboratories (INC. IN WA.)

TABLE 2 (Continued)

ANALYTICAL REPORT

Job: 9AD3182

O/N: M8914

Sample	Pb	As
9/2403	54	17
9/2404	56	16
9/2407	125	17
9/2409	210	26
9/2412	155	16
9/2413	92	19
9/2416	120	15
9/2418	170	16
9/2419	24	13
9/2420	20	24
9/2421	155	17
9/2423	160	15
9/2425	75	12
9/2426	32	13
9/2428	140	24
9/2429	350	38
9/2430	60	12
9/2431	340	24
9/2433	250	17
9/2434	125	17
9/2435	210	28
9/2436	125	18
9/2437	165	16
9/2441	260	28
9/2444	95	19
9/2446	170	17
9/2447	92	14
9/2448	95	17
9/2449	56	13
9/2450	155	22
9/2452	250	18
9/2453	98	16
9/2454	11	13
9/2455	3	15
9/2457	230	22
9/2458	290	15
9/2460	62	14
9/2462	22	14
9/2464	25	15
9/2467	110	15
9/2470	60	13
9/2471	38	15
9/2472	155	15
9/2474	80	22
9/2475	42	17
9/2477	100	20
9/2479	34	12
9/2480	19	12
9/2483	38	15
9/2485	170	30
Units	ppm	ppm
Detn Limit	2	2
Scheme	XRF1	XRF1



CLASSIC COMLABS LTD

Analytical Laboratories (INC. IN WA.)

TABLE 2 (Continued) ANALYTICAL REPORT

Job: 9AD3182

O/N: M8914

Sample	Pb	As
9/2487	70	12
9/2489	17	13
9/2491	26	14
9/2493	72	78
9/2495	52	13
9/2497	19	15
9/2499	42	18
9/2501	185	30
9/2502	130	15
9/2504	56	22
9/2506	260	48
9/2508	160	24
9/2509	105	22
9/2510	155	22
9/2511	450	35
9/2513	34	15
9/2514	65	10
9/2517	42	13
9/2518	76	24
Units	ppm	ppm
Detn Limit	2	2
Scheme	XRF1	XRF1

RTI DL RELEASE - EHP



TABLE 3: MERCURY

Report 9AD3182

Sample ID Code: Results in	Hg AAS 5 ppm
9/2403	<0.05
9/2404	<0.05
9/2407	0.10
9/2409	0.05
9/2412	<0.05
9/2413	<0.05
9/2416	0.30
9/2418	<0.05
9/2419	<0.05
9/2420	<0.05
9/2421	<0.05
9/2423	0.05
9/2425	<0.05
9/2426	<0.05
9/2428	0.10
9/2429	0.05
9/2430	<0.05
9/2431	<0.05
9/2433	<0.05
9/2434	<0.05
9/2435	<0.05
9/2436	<0.05
9/2437	<0.05
9/2441	0.10
9/2444	<0.05
9/2446	<0.05
9/2447	<0.05
9/2448	<0.05
9/2449	0.05
9/2450	<0.05
9/2452	0.05
9/2453	<0.05
9/2454	<0.05
9/2455	<0.05
9/2457	0.05
9/2458	0.95
9/2460	<0.05
9/2462	<0.05
9/2464	<0.05
9/2467	<0.05
9/2470	0.05
9/2471	0.10
9/2472	<0.05
9/2474	0.05
9/2475	<0.05
9/2477	0.05
9/2479	<0.05
9/2480	<0.05
9/2483	<0.05
9/2485	0.10



TABLE 3 (Continued)

Report 9AD3182

Sample ID Code: Results in	Hg AAS 5 ppm
9/2487	0.05
9/2489	<0.05
9/2491	<0.05
9/2493	<0.05
9/2495	<0.05
9/2497	<0.05
9/2499	<0.05
9/2501	<0.05
9/2502	0.65
9/2504	<0.05
9/2506	<0.05
9/2508	0.05
9/2509	0.05
9/2510	0.35
9/2511	0.10
9/2513	0.05
9/2514	<0.05
9/2517	<0.05
9/2518	0.05

RTI DL RELEASE - EHP



TABLE 4: TOTAL SOLUBLE SALTS & pH

Results in ppm (except pH)

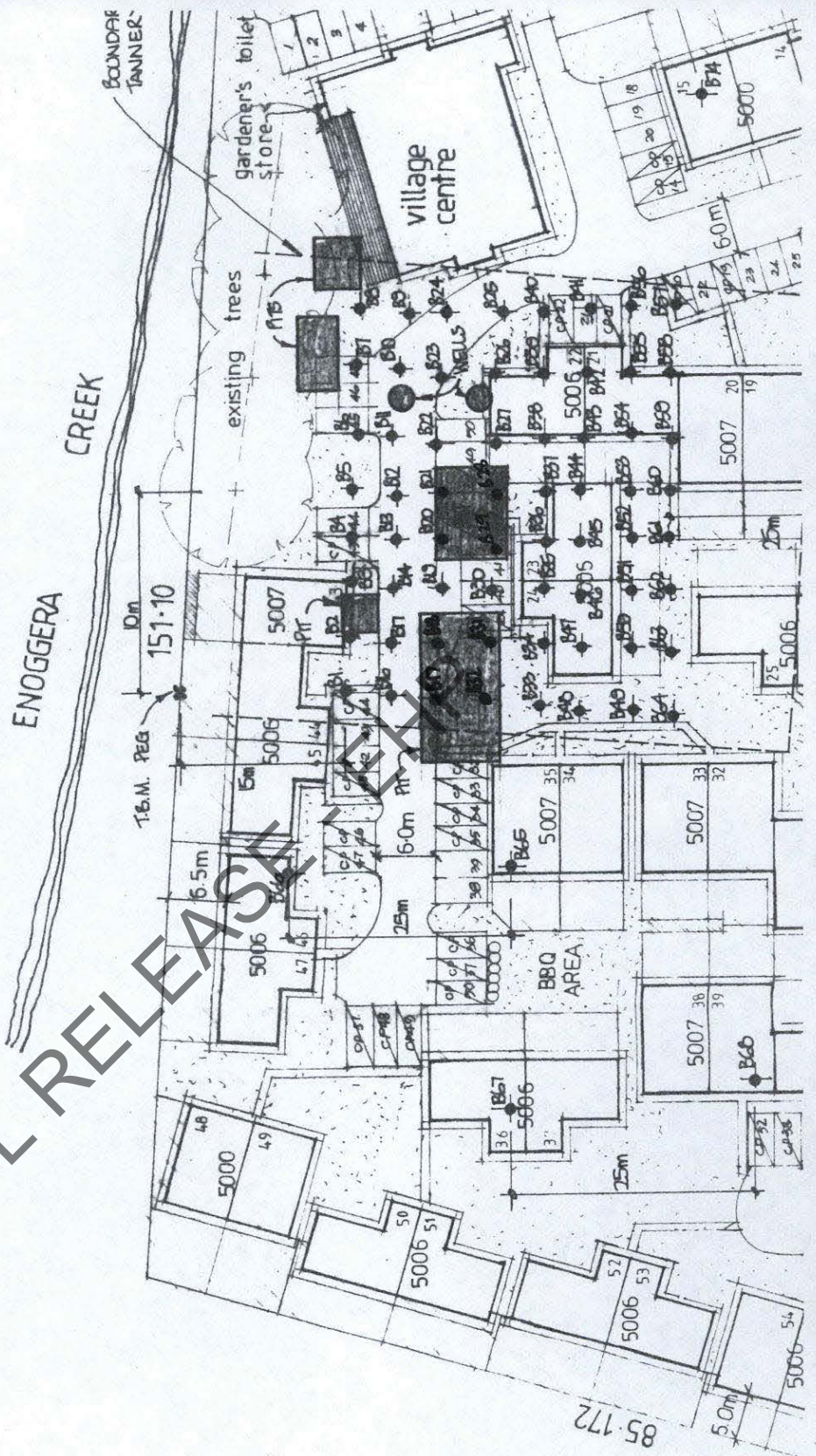
REPORT AC 9AD3182
PAGE: W1

SAMPLE ID	pH	TOTAL SOLUBLE SALTS (CALC)	*	SAMPLE ID	pH	TOTAL SOLUBLE SALTS (CALC)
9/2403	8.0	1126	*	9/2458	9.3	1469
9/2404	8.0	768	*	9/2460	10.8	3238
9/2407	7.6	1955	*	9/2462	6.5	1565
9/2409	7.5	1222	*	9/2464	6.4	1715
9/2412	7.6	941	*	9/2467	8.1	1222
9/2413	10.6	2550	*	9/2470	7.2	1411
9/2416	7.9	1050	*	9/2471	6.3	598
9/2418	9.0	2694	*	9/2472	8.2	1034
9/2419	8.9	2150	*	9/2474	8.0	1408
9/2420	6.6	909	*	9/2475	7.5	1472
9/2421	7.6	934	*	9/2477	6.6	688
9/2423	7.4	1459	*	9/2479	6.2	490
9/2425	7.9	1197	*	9/2480	5.7	464
9/2426	7.9	1254	*	9/2483	7.8	1072
9/2428	7.4	656	*	9/2485	9.3	1366
9/2429	7.9	1344	*	9/2487	7.3	1389
9/2430	8.7	1360	*	9/2489	5.8	292
9/2431	7.8	1010	*	9/2491	5.9	407
9/2433	7.7	858	*	9/2493	8.0	774
9/2434	7.6	1725	*	9/2495	6.0	326
9/2435	7.8	270	*	9/2497	5.5	264
9/2436	8.2	1565	*	9/2499	5.7	566
9/2437	9.1	1744	*	9/2501	6.8	374
9/2441	7.5	2042	*	9/2502	7.3	659
9/2444	9.6	1747	*	9/2504	5.6	409
9/2446	10.7	3722	*	9/2506	9.5	2077
9/2447	7.8	989	*	9/2508	6.5	736
9/2448	8.1	1507	*	9/2509	5.5	662
9/2449	7.3	2704	*	9/2510	6.9	707
9/2450	11.0	2180	*	9/2511	7.2	1660
9/2452	8.0	1027	*	9/2513	5.4	194
9/2453	7.6	2048	*	9/2514	5.6	544
9/2454	6.6	2483	*	9/2517	7.3	672
9/2455	6.3	1965	*	9/2518	6.0	196
9/2457	7.6	2061	*			
			*			
METHOD:	WAT 2F	WAT 2G	*	WAT 2F	WAT 2G	

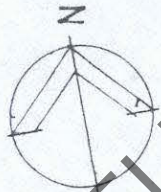
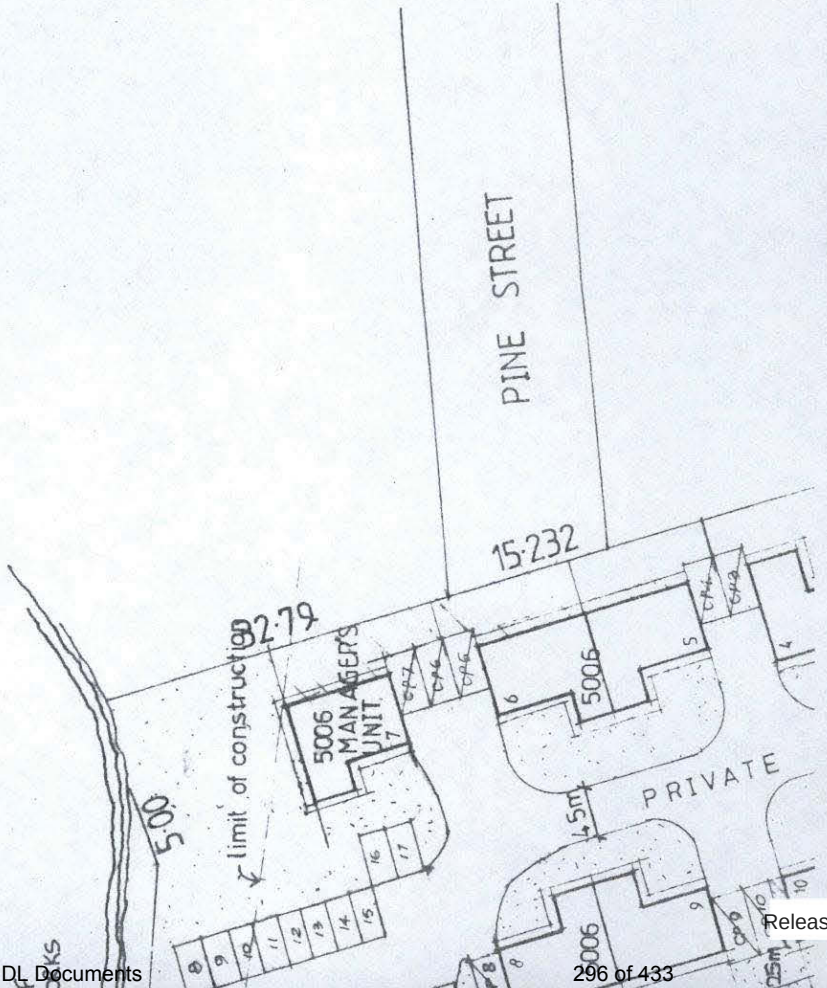
Appendix E - Site Plan

RTI DL RELEASE - EHP

RTI DL RELEASE

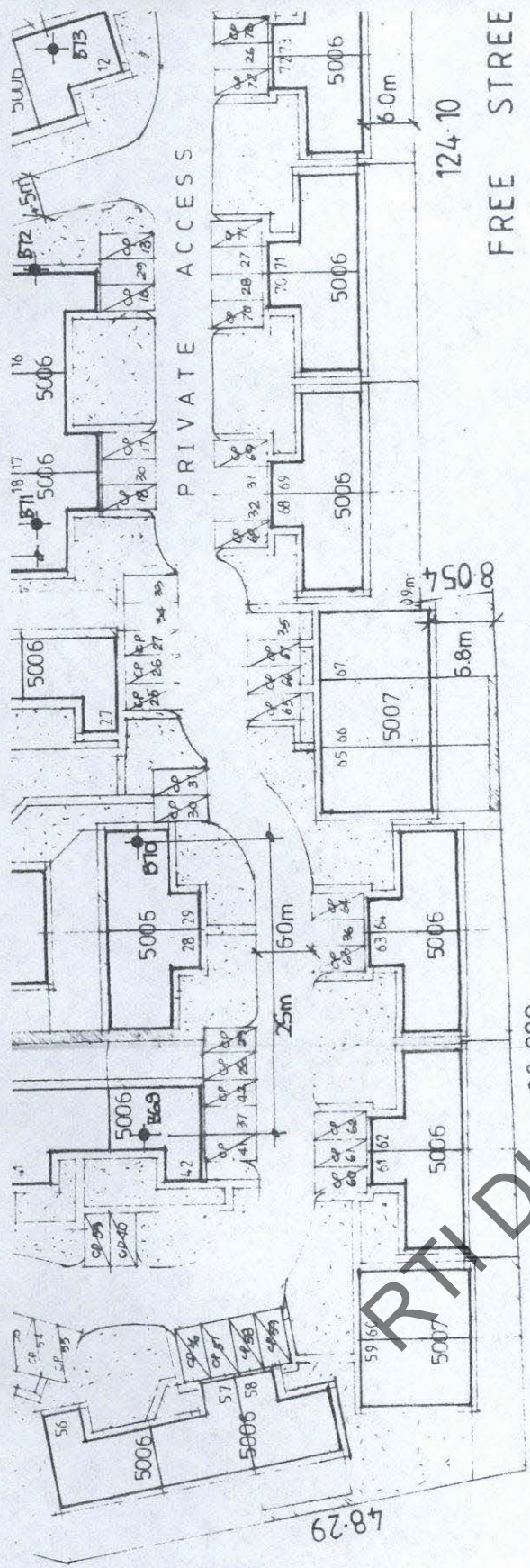


RTI DL RELEASE - EHP



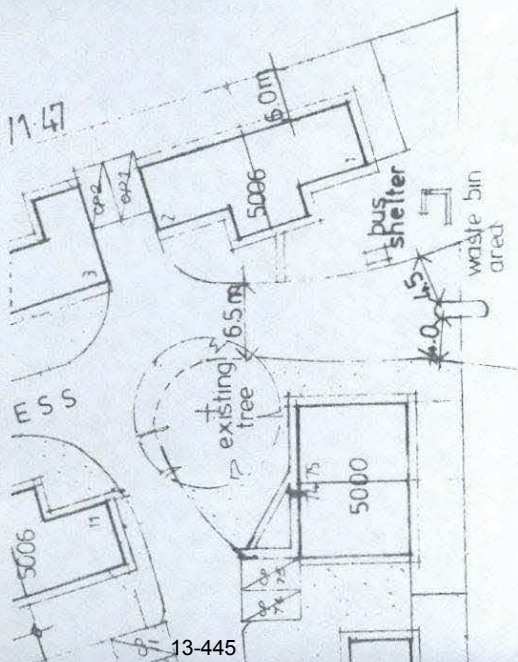
general notes

A PROVIDED TYPE A LEAD OVER		14-780
- GENERAL EXAMINATION OF FOOTPRINTS		-
- 10 UNITS		-
- DELETED DISTRICT ZONING 51-2-56		-
FOR UNIT 17		-
no.	description	date
amendments:		
associated documents:		



RTI DL RELEASE - EHP

UNIT 5000, 5004, 5006, 5007
 75 UNITS
 131 CARPARKS



13-445

RTI DL RELEASE - EHP

PROJECT:
FREE ST.
RETIREMENT VILLAGE

FOR:
PIONEER HOMES QLD

AT:
FREE ST
NEWMARKET QLD.

sheet content:
SITE PLAN



**FRED PHILLIS and
ASSOCIATES PTY. LTD.
ARCHITECTS**

20 Greenhill Road
Wayville 5034
Phone 272 5677

date 23 5 89 | drawn CCL | chd:

Scales: 1 500

Note: Contractor shall verify
all dimensions on site.

Drawing No 890409-DA SK2 A

Date 22.12.89	
Scale 1:500	Sheet No 1 of 1
Design	Drawn
Checked	Approved
Drawing No. M891001	

Koukourou & Partners	Consulting Engineers
CIVIL, STRUCTURAL	SOIL TESTING, SUPERVISION
42 Fullarton Road,	Level 1, 130 Petrie Terrace,
Norwood, Sth. Aust. 5087	BRISBANE, QLD. 4000
Telephone 363 0222	Telephone: (07) 368 2264
	Fax: (07) 368 2321

sch4p4(6) Personal information

Annexure D

- 1) Test Results - chrome
- 2) Test Results - Arsenic
- 3) Leachate Results
- 4) Borehole Plan

RTI DL RELEASE - EHP

RTI DL RELEASE - EHP

Area under tannery
removed 2-3 m deep.

road way
hot spot



Date: 28.10.1990

Job No: _____

TEST RESULT SUMMARY

ARSENIC P.P.M

Bore Hole

DEPTH MM

INVESTIGATION

B 1

5

6

7

8

9

11

12

21

22

23

24

26

39

41

43

55

57

58

73

74

17

15

13

17

15

12

24

24

18

15

14

15

15

30

18

18

30

15

16

241

131

38

16

16

121

13

22

14

15

15

13 DEPTH NOT RECORDED
24 DEPTH NOT RECORDED

VALIDATION

BH 1

2

3

4

5

5A

6

7

8

9

10

11

12

13

13A

M

2

34

20

28

32

99

77

40

22

6

21

22

28

19

14

6

90

34

42

66

104

16

28

24

17

19

24

27

Resample

36

22

19

19

8

10

Date: 28.10.1990

Job No.: _____

TEST RESULT SUMMARY

CHROME P.P.M.

Bore Hole

DEPTH mm

INVESTIGATION

BA O/S.

5
6
7
8
9
11
12
21
22
23
24
26
39
41
43
55
57
58
73
74

26

310

62

16 ⁷⁵⁰

20

60

5

88

20

58

66

105

12

25

12

10

39

25

170

210

74

90

32

120

120

20

45

135

34 DEPTH NOT RECORDED
26 DEPTH NOT RECORDED

VALIDATION

BH 1

2

3

4

5

6

7

8

9

10

11

12

13

13A

M 1

2

3

100

20

20

25

15

5

10

10

15

15

25

25

35

70

10

15

10

45

10

25

25

1850

2142

30

3700

170

220

125

170



Australian Laboratory Services PTY. LTD.

INCORPORATED
IN QUEENSLAND

CONSULTING ANALYTICAL CHEMISTS

LABORATORY REPORT

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Phone: (054) 46 1390. Fax: (054) 46 13
Orange Laboratory
10 Leewood Drive, Orange, N.S.W. 280
Phone: (063) 631 722. Fax: (063) 631 11

Client: KOUKOUROU & PARTNERS
Address: P O BOX 116
EAST BRISBANE
QLD

Contact: MR G LAWRENCE

Order No. 13A 750-1000

4169

Sample Type: SOIL

FILE NEW MARKET
CONTAMINATION

Page 1 of

STAFFORD
Batch Number: 457
Sub-batch: 0
No. of Samples: 2
Date Received: 02/10/9
Date Completed: 15/10/9

Method	Analysis description	Units	TCLP LEACHATE	WATER LEACHATE
EG-025F	Chromium - Filtered	ng/L	0.36	0.18
EG-030F	Arsenic - Filtered	ng/L	<0.01	<0.01

RTI DL RELEASE - EHP

SAMPLES AS RECEIVED

Comments:

Results reported as mg/L in leachate.
Confirmation of results faxed 5/10/90.



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Testing Authorities, Australia. The tests reported herein have
been performed in accordance with its terms of registration.
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Signatory:

sch4p4(6) Personal information

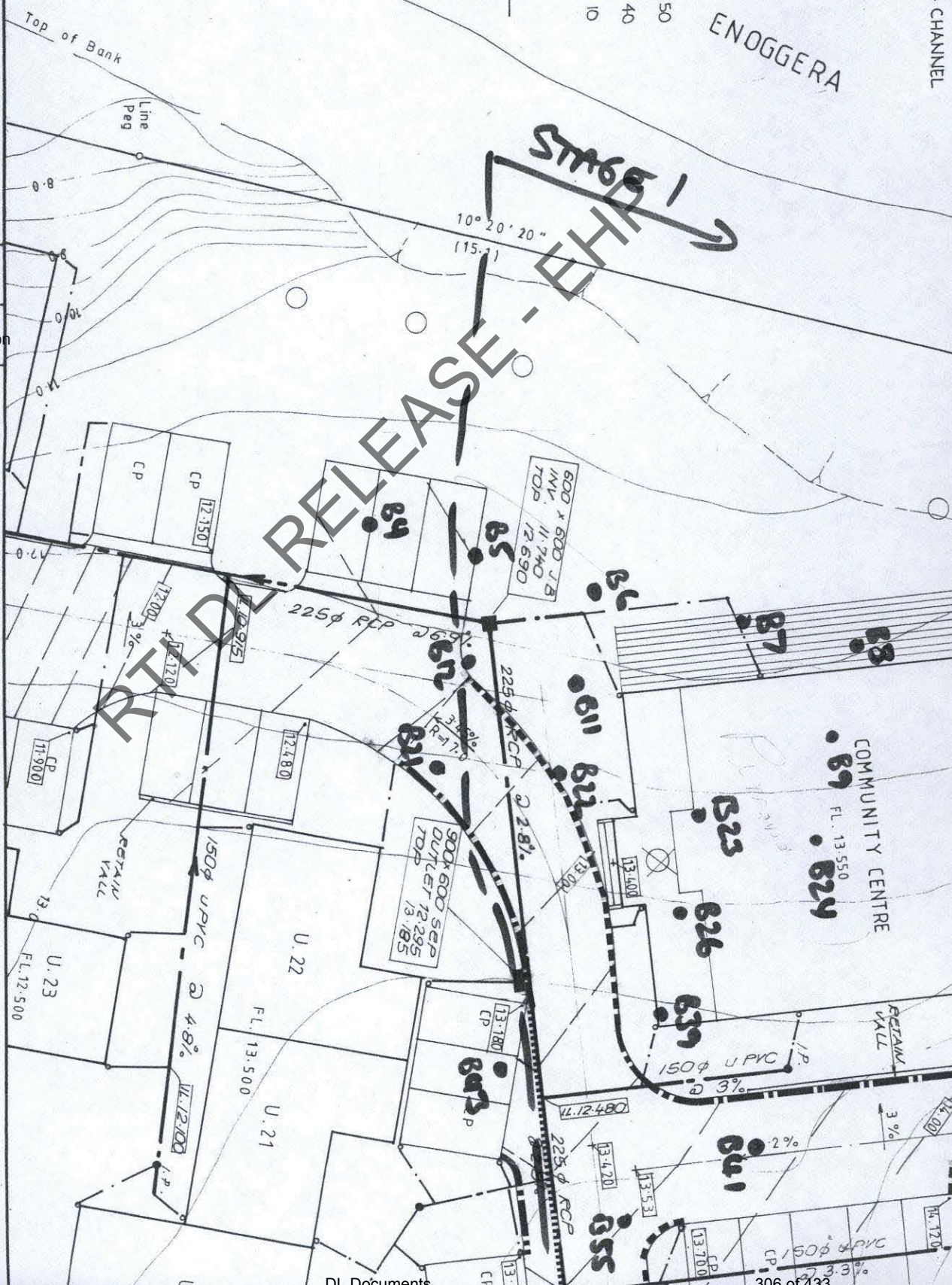
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[illegible]

ENOGGERA

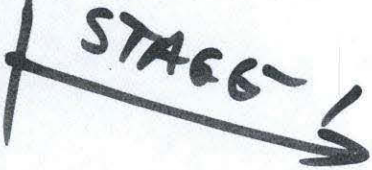
PAVEMENT DETAILS



B	STAGE 1 - PAVEMENT DETAILS ADDED	05-06	Personal
A.	STORMWATER DRAINAGE ATTENDED	11/2/89	
Row	Subject	Date	Initial

AMENDMENTS

sch4p4(6) Personal information



OLD R572

Annexure E

1)	Site Meeting	18/5/1990
2)	Site Meeting	23/5/1990
3)	Validation Test Report	19/6/1990
4)	Letter To Brisbane City Council	28/6/1990
5)	Supplementary Details	4/7/1990
6)	Brisbane City Council letter	12/7/1990
7)	Site Meeting	29/8/1990
8)	Letter to Brisbane City Council	20/9/1990

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Civil Structural, Soil Testing.

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FILE NOTENEWMARKET RETIREMENT VILLAGESITE MEETING: 10 AM 8/5/1990

: KEN GIESE
BRISBANE CITY COUNCIL

: ED BERZINS
KOUKOUROU & PARTNERS

-
- 1) Ken Giese expressed concern about possible contamination in the area of the managers residence. Area was going to be substantially filled, revised design is for highest building over natural surface.
 - 2) The Department of Environment has bought into the act. Not only does the site have to be OK for its proposed use (Retirement Village), must meet environmental criteria.
 - 3) Ken Giese requested that vegetation be removed from southern end of development (future stages) to allow further examination & testing. This matter has been previously discussed and agreed to by Pioneer Homes.
 - 4) The council will require testing and validation of open areas within stage 1.
 - 5) John Martinkovic from Brisbane City Council 225 6785 is to be notified prior to removal of further materials from site to Council waste dumps.
 - 6) Ken Giese requested copies of roadworks and drainage drawings.

Ed Berzins
Koukourou & Partners
8/5/1990

sch4p4(6) Personal information

C/C Bill Jones - Pioneer Homes
Peter Bayetto - Koukourou & Partners



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FILE NOTE
NEWMARKET RETIREMENT VILLAGE
SITE MEETING

Ken Giese - Brisbane City Chemist
Kev O'Connor - Brisbane City Chemist Assistant
Peter Dusher - Brisbane Chief Health Surveyor
- Assistant
Bob Carr - Retired Health Inspector with
Brisbane City Council who had
knowledge of tannery operation

REASON FOR MEETING: Review result of vegetation clearing at southern end of site (balance area) with a view to formulating an action plan to allay any doubts in respect of possible contamination due to previous tannery operations

- 1) Bob Carr's recollection of the previous operations was inconclusive.
- 2) Agreed action plan:
 - a) Remove vegetation and heaps of heavily contaminated material (leather shaving etc) to a controlled Brisbane City Council dump as agreed with John Martinkovic of Brisbane City Council.
 - b) Check any heaps or odd land forms for leather and scrap contamination and remove if required as in item (a).
 - c) Once items (a) and (b) have been completed, have surveyors lay out, 50 metre square grid to facilitate referencing.
 - d) Dig a series of test pits as determined by visual examination and record results.
 - e) Take undisturbed samples for chemical testing; if required.

- 3) Ken Giese requested that validation testing be carried out on Stage 1 construction. Koukourou & Partners will have rig available early next week to sample and test in open spaces.
- 4) Ken Giese raised the matter of the developer clearing and testing the area to be gifted over to Council. The matter of denudation of flood plain area and costs was discussed but no resolution reached.

Ed Berzins
KOUKOUROU & PARTNERS
23/5/1990

c/c P Bayetto - Koukourou & Partners - Adelaide
B Jones - Pioneer Homes

sch4p4(6) Personal information

SITE INVESTIGATION AND VALIDATION TESTING REPORT

SITE: FREE SREET RETIREMENT VILLAGE
NEWMARKET

DATE: 19th June, 1990

JOB NUMBER: M900502

CLIENT: PIONEER HOMES
2954 Pacific Highway
Underwood
QLD. 4119

KOUKOUROU & PARTNERS

VALIDATION TESTING - FREE STREET RETIREMENT VILLAGE
NEWMARKET

STAGE 1 , STAGES 2 & 3, & PROPOSED PARKLAND (LOT 2)

GENERAL

Following a site meeting on the 25.5.90 with officers of the Brisbane City Council; Scientific Services Branch; where an outline for further assessment of the above areas was requested, a series of inspections and test bores have been carried out in conjunction with officers of the above branch and Koukourou & Partners.

Details of the work carried out and results of testing are attached, along with plans showing the locations of test bores and pits.

The validation testing program was carried out as requested by the Scientific Services Branch, and laboratory testing of the samples taken was done by Australian Laboratory Services, an independent N.A.T.A. registered laboratory.

VALIDATION OF STAGE 1

As requested, a series of test bores were places around the Stage 1 area of the site, in which construction has been started. The purpose of this investigation was to confirm that no contamination was present in the area after earthworks and construction had been carried out.

Test bore locations were chosen by G.O'Connor of the Scientific Services Branch and the locations are shown on an attached plan of the area.

Thirteen boreholes were drilled on 1/6/90 to sample the top 1m of surface soils, except for BH13 which was taken to 2m depth. The cores were visually inspected, then divided between B.C.C. and K & P for independent testing to be carried out.

It was agreed that K & P carry out testing for Zinc, Lead, Copper, Arsenic and Chromium on their samples, and B.C.C. to do the same plus any testing for phenols etc. as thought necessary.

Test results on our samples are attached.

INSPECTION OF STAGES 2 & 3

Subsequent to the site meeting, it was agreed that further inspection of the lower areas of Lot 1, which would comprise Stages 2 & 3 of the development, would be carried out after stripping and clearing of the area had been done.

On 4.6.90 an inspection of the area was carried out by G.O'Connor (B.C.C.) and G.Lawrence (K & P). The area had been stripped of vegetation and any surface material containing leather shavings or rubbish removed from the site to a Council approved dump site. The area was inspected for signs of pits or buried rubbish but there were no obvious signs of anything remaining. In the lower area, an old manhole was uncovered which appeared to have been a line from the old tannery site. There was a soft area adjacent to the old manhole. Three pits were excavated, but no evidence was found of filling or visible contamination. Samples of the silt in this area were taken by B.C.C. chemist for testing.

As no obvious signs of filling or pits remained after removal of the surface material, and the fact that the area had previously been tested for chemical contamination, no further investigation was proposed for this area.

VALIDATION TESTING OF PARKLAND (LOT 2)

As with the lower area of Lot 1, the surface vegetation was removed from the entire proposed parkland area to enable a visual inspection to be carried out. This was done on 4.6.90 by the above mentioned officers to look for filling, contamination, or any unusual features. The inspection showed no visible signs of tannery waste and soils were natural clays with a layer of sandy loam at the surface.

One ponded area existed after recent heavy rains, which was sampled by the B.C.C. chemist for analysis. A pit dug adjacent to it showed only natural soils.

It was proposed to carry out a series of test bores over the area to sample the soils and carry out chemical testing as per the validation testing of Stage 1.

The agreed testing program was carried out on 7.6.90. Another 13 boreholes were placed across the area and the positions accurately recorded by the site surveyor for future reference if needed. See attached site plan. The core samples were examined and divided between B.C.C. and K & P on the following morning for laboratory testing.

Test results obtained from these samples are shown in the attached Table.

VALIDATION OF SOIL - STAGE 1 RETIREMENT VILLAGE
UNDER CONSTRUCTION -/6/1990

TABLE 1

LOCATION		Cu ppm.	Pb ppm.	Zn ppm.	As ppm.	Cr ppm.
Stage 1 Validation						
BH2	0-200mm	25	10	30	20	90
BH2	200-500mm	20	5	35	34	25
BH4	0-200mm	20	5	45	32	10
BH4	200-500mm	25	5	50	66	10
BH6	0-200mm	15	25	55	42	25
BH6	200-500mm	15	15	30	28	25
BH7	0-200mm	20	10	50	22	35
BH7	200-500mm	30	15	45	24	70
BH9	0-200mm	25	15	55	21	15
BH9	200-500mm	35	25	55	17	10
BH11	0-200mm	20	15	80	28	<5
BH11	200-500mm	20	5	45	24	10

VALIDATION OF SOIL - PARKLAND TO BE TRANSFERED TO
BRISBANE CITY COUNCIL

TABLE 2

LOCATION		Cu ppm.	Pb ppm.	Zn ppm.	As ppm.	Cr ppm.
Parkland Validation						
BH2	0-200mm	45	55	100	51	45
BH2	200-500mm	40	35	80	26	25
BH4	0-200mm	30	45	85	28	50
BH4	200-500mm	25	20	40	11	25
BH6	0-200mm	40	45	95	17	35
BH6	200-500mm	10	15	25	7	55
BH8	0-200mm	35	45	90	12	50
BH8	200-500mm	20	30	70	4	65
BH10	0-200mm	25	25	45	12	20
BH10	200-500mm	25	20	40	11	20
BH12	0-200mm	55	35	75	25	35
BH12	200-500mm	30	20	40	18	25

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28 June 1990

The Town Clerk
Brisbane City Council
GPO Box 1434
BRISBANE QLD 4001

Attention: Mr Ken Giese
Scientific Services Branch

Dear Sir

Re: Newmarket retirement Village
Validation Testing

Please find enclosed herewith a concise report and our test results of the above program.

Results of our testing program show that all test samples show concentrations of Cu, Pb and Zn of well below the level of contamination which is generally considered acceptable (Refs. 1, 2, 3, 4 & 5).

The levels of As in table 2 are generally well below the "threshold" concentration of 40 mg/kg given for parks, playing fields and open space in reference 2 except for borehole 2 (0-200 mm) which at 51 mg/kg is considered acceptable in view of the "moderate contamination" classification of 30 to 500 mg/kg given in reference 5.

The levels of As in Table 1 are all around or below the 'acceptable' level of reference 5. The 66 mg/kg result in borehole 4 is from the 200 mm to 500 mm depth interval and still well down around acceptable level as having a 200 mm covering of clean soil.

The levels of total chromium are well below the 'threshold' levels of reference 2 and the acceptable levels of reference 5 (600 mg/kg).



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Verbal information received from Gary O'Connor on 27 June 1990 indicate a high Arsenic levels in BH 5 (0-200 99ppm, 200-500 124ppm); these are inconsistent with our test results and will be retested. BH 13 indicates a chrome level of 550ppm, the area of test is in the car park area which has a 400 mm deep compacted gravel road pavement and a 25 mm deep asphaltic concrete surface course.

It is our understanding that the results of testing in both areas will be reviewed by the Department of health and the Department of Environment with a view of final acceptance of proposed usage.

We await your advice as soon as possible.

Yours faithfully

sch4p4(6) Personal information

Ed Berzins
KOUKOUROU & PARTNERS

RTI DL RELEASE - EHP

References

1. Wilson, D C and Stevens, C, "Problems Arising from the Redevelopment of Gas Works and Similar Sites", United Kingdom Atomic Energy Authority, Harwell, November 1981
2. UK Department of Environment, "Guidance on the Assessment and Redevelopment of Contaminated Land", Inter-Departmental Committee for the Redevelopment of Contaminated Land, ICRCL 59/83, 1983.
3. Finnecy, E E and Wicklund, J. "Consultants" Report, Union Carbide Site, Rhodes, NSW, Australia", NSW State Pollution Control Commission, June 1987.
4. "Soil Clean-up Guidelines", Department of Housing, Netherlands, 1983.
5. Koo, Federick, "Potential for Biological Clean Up of Chemistry Contaminated Sites", Eighth Australian Biotechnology Conference, February 1989.

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Civil Structural, Soil Testing.

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SITE INVESTIGATION AND VALIDATION TESTING REPORT
SUPPLEMENTARY DETAILS

SITE: FREE SREET RETIREMENT VILLAGE
NEWMARKET

DATE: 4th July, 1990

JOB NUMBER: M900502

CLIENT: PIONEER HOMES
2954 Pacific Highway
Underwood
QLD 4119

KOUKOUROU & PARTNERS



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VALIDATION TESTING - FREE STREET RETIREMENT VILLAGE
NEWMARKET

VALIDATION OF STAGE 1

Subsequent to our original findings, two items have warranted further verification after the results of the B.C.C. samples became available.

Item 1. - In BH5 of the validation of Stage 1 soils, an anomaly was found with the Arsenic levels showing higher than expected. As the area is far removed from the tannery site, has no filling in the area, and test bores adjacent to the bore show only background levels, it was decided that the test results must be rechecked. The location was resampled on 29.6.90 to enable a second validation test to be carried out.

The test bore location was chosen by G.O'Connor of the B.C.C. Scientific Services Branch and is in the same measured position as the previous test bore.

Results of this test should be available by the end of the week (8.7.90).

Item 2 - The B.C.C. test results also showed reasonably high levels of Chromium in BH13 which was in the area between the community centre and the managers residence. At the time of sampling the soil showed signs of some existing ash fill with traces of leather shavings. Most of this material has since been removed and the area covered with imported fill. When construction is completed this local area will be covered with 0.5-1.0m of fill, and will be underneath sealed road and carparking pavements. It was thought that any possible contact with this isolated area would be removed by the proposed finished levels and construction



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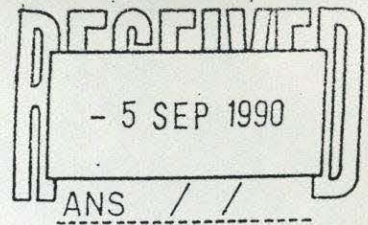
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DEPARTMENT OF WATER SUPPLY AND SEWERAGE

Scientific Services Branch



GO'C:

MEMORANDUM TO: DIRECTOR

FILE NO: (5)420/11-L0230/24
(2)439/26(6462)

FROM:

ACTING SENIOR CHEMIST

DATE: 12 July 1990

SUBJECT: RETIREMENT VILLAGE AT 24 FREE STREET NEWMARKET

Background:

The Department of Development and Planning requested assistance from Scientific Services Branch in the assessment of the proposed development of a retirement village on land at 24 Free Street Newmarket.

The site was formerly occupied by a tannery which operated on the site for many years, ceasing operations in the early seventies.

The developers, Pioneer Homes, engaged Koukourou and Partners (K&P) as consultants who have undertaken a site assessment program. Further requirements were placed upon K&P by Scientific Services Branch officers to enable an adequate assessment of the site. These requirements are detailed in folios 64 and 65 of (5)420/11-L0230/24 and are summarised as follows:

Requirement (1):

Stages 2 and 3 and the proposed parkland be carefully cleared of vegetation prior to commencing any investigation. After clearing, the area be inspected by the consultants and Scientific Services personnel and an investigation of the area be programmed.

Requirement (2):

A validation programme be carried out on Stage 1 of the development to confirm that the area has been remediated satisfactorily.

Requirement (3):

A remediation programme followed by a validation programme be carried out on the proposed parkland.

The following is a summary of the actions taken to date on these requirements and a proposed course of action for the assessment of the development. Attached also is the report by K&P in regard to these requirements.

Requirement (1):

Pioneer Homes cleared the vegetation from Stages 2 and 3. This clearing exposed areas where leather scraps had been disposed in mounds on the surface of the ground. Pioneer Homes arranged for the collection and removal of this material to the Willawong Refuse Tip. The removal operation was completed on 30 June 1990. A site inspection by myself on 4 July 1990 confirmed that the surface material had been removed to a satisfactory standard in Stages 2 and 3.

A similar clearing operation was conducted on the proposed parkland area. Site inspections of this area did not show any surface indications of waste disposal. Various grab samples of soil from the area showed background levels of metals in the area.

Requirement (2):

A validation programme was planned for Stage 1 of the development. Core soil samples were taken from open space areas in this part of the development. Cores were taken to a depth of one metre except for borehole thirteen where a depth of two metres was drilled due to the depth of fill in this area. Once again the soil samples were split between BCC and K&P. The analysis results are presented in Table 1; the sample locations are shown in the K&P report.

Borehole 5 showed a significant level of arsenic and consequently another core sample was taken and analysed. The results of this retest are attached, the retest core being designated borehole 5A. The retest again shows a significant level of arsenic. It is proposed that State Health opinion be sought on the hazard associated with such a level of arsenic in an isolated pocket.

Borehole 13 showed a significant level of chromium but as is pointed out in the K&P report, the immediate area surrounding this borehole will be covered by a road and the general surrounds is covered by imported fill necessary for the construction of the Retirement Village Manager's unit and the Village Centre.

Requirement (3):

Due to the lack of any surface evidence of waste disposal and the fact that soil surface grab samples failed to show any levels of contamination, it was agreed with Pioneer Homes and K&P that the best course of action was for a validation core sampling programme to be run in the proposed parkland area.

A core drilling programme was run on 7 June 1990 with core samples again being split between BCC and K&P. The results of these analyses are presented in Table 2 along with the original analysis reports. Sample locations are shown in the K&P report attached.

Comments:

Pioneer Homes and Koukourou and Partners have cooperated fully with Council officers in meeting the specified requirements. They have removed all identified or suspected areas of contamination and disposed of the material at the Willawong Refuse Tip.

While it is not possible for the developer, his consultant or Scientific Services personnel to guarantee that all contaminated material has been removed from the site, every effort has been made to identify and remove contaminated materials so that the site is suitable for use as a retirement village.

In regard to Stages 2 and 3 of the development, all contaminated material on the surface has been removed. Where suspicious ground formations were found an excavator was used to explore the sub-surface to determine if any potentially contaminated material was lying below the ground. Any potentially contaminated materials were removed and disposed of at the Willawong Refuse Tip.

Stages 2 and 3 are yet to be built and it is possible that during constructions some potentially contaminated material may be found. It is important that conditions be placed upon the developer to ensure that these materials are correctly dealt with. It is also recommended that a validation core sampling and analysis programme be conducted on the open space areas as was performed on Stage 1. The developers to date have cooperated with these requirements and I would expect that they would find such conditions fair and reasonable.

The assessment of the Free Street development has progressed to the stage where the opinion of State Health Department should be sought. The data available is encouraging as to the progress of the site remediation. However I am of the opinion that specialist advice be sought and that the appropriate source of this advice is the Environmental Sanitation Section in the State Health Department.

sch4p4(6) Personal information

/G.O'Connor
ACTING SENIOR CHEMIST

(4)

TABLE 1

STAGES 1 & 2 VALIDATION SOIL ANALYSIS

	Cu ppm	Pb ppm	Zn ppm	As ppm	Cr ppm
Borehole 1 0-200mm	10	15	55	34	100
200-500mm	5	10	15	90	20
Borehole 2 0-200mm	25	10	30	20	90
200-500mm	20	5	35	34	25
Borehole 3 0-200mm	10	<5	35	28	15
200-500mm	5	<5	50	42	5
Borehole 4 0-200mm	20	5	45	32	10
200-500mm	25	5	50	66	10
Borehole 5 0-200mm	10	20	60	99	15
200-500mm	15	25	65	124	15
Borehole 5A 0-200mm				77	
200-500mm				16	
Borehole 6 0-200mm	15	25	55	42	25
200-500mm	15	15	30	28	25
Borehole 7 0-200mm	20	10	50	22	35
200-500mm	30	15	45	24	70
Borehole 8 0-200mm	20	30	55	6	10
200-500mm	phenols <1ppm		Total Oil & Grease 0.2%		
Borehole 9 0-200mm	25	15	55	21	15
200-500mm	35	25	55	17	10
Borehole 10 0-200mm	30	<5	65	22	15
200-500mm	25	10	60	19	10
Borehole 11 0-200mm	20	15	80	28	<5
200-500mm	20	5	45	24	10
Borehole 12 0-200mm	25	<5	60	19	25
200-500mm	35	<5	70	27	25
Borehole 13 0-200mm	125	50	500	14	1850
200-500mm	phenols <1ppm		Total Oil & Grease <0.1%		
500-1000mm	PAHs 5.10ppm (3394/15 attached sheet for details)				
1000-2000mm	35	30	410	19	30

Retest.

(5)

TABLE 2

*Investigation & preliminary assessment*PARKLAND-VALIDATION-SOIL ANALYSIS

		Cu ppm	Pb ppm	Zn ppm	As ppm	Cr ppm
Borehole 1	0-200mm	45	45	95	26	25
	200-500mm	40	20	55	13	10
Borehole 2	0-200mm	45	55	100	51	45
	200-500mm	40	35	80	26	25
Borehole 3	0-200mm	35	25	70	15	10
	200-500mm	30	20	55	10	10
Borehole 4	0-200mm	30	45	85	28	50
	200-500mm	25	20	40	11	25
Borehole 5	0-200mm	45	40	95	24	15
	200-500mm	30	25	55	10	10
Borehole 6	0-200mm	40	45	95	17	35
	200-500mm	10	15	25	7	55
Borehole 7	0-200mm	40	15	55	14	10
	200-500mm	35	10	45	12	10
Borehole 8	0-200mm	35	45	90	12	50
	200-500mm	20	30	70	4	65
Borehole 9	0-200mm	Phenols <1ppm		Total Oil & Grease	<0.1%	
	200-500mm	30	20	50	14	10
Borehole 10	0-200mm	25	25	45	12	20
	200-500mm	25	20	40	11	20
Borehole 11	0-200mm	40	35	80	22	10
	200-500mm	30	20	55	21	15
Borehole 12	0-200mm	55	35	75	25	35
	200-500mm	30	20	40	18	25
Borehole 13	0-200mm	PAHs 1.67ppm (#4187/13 attached sheet for details)				
	200-500mm	35	175	300	13	550

FILE NOTE

Newmarket Retirement Village

Contamination

10.00 am 29.8.1990

Present: Ed Berzins - Koukourou & Partners
Ken Giese - Brisbane City Council
Alan Brunner - Scientific Adviser
State Government
Chemical Hazards and
Emergency Management Unit

Reason for Meeting:

Finalisation of validation testing for Village Site and Parkland.

Minutes:

Ed Berzins confirmed that usage is for Retirement Village not group title; there will not be permanent children resident; landscaping will be extensive thus precluding individual "Vegie Gardens."

Ken Giese confirmed that road construction for stage 1 may proceed, followed by landscaping.

A further test hole will be sunk between the manager's residence and Community Centre to determine soil profile.

A further three holes will be land augured on the western and northern side of the manager's residence. The holes to extend through fill and 500 mm into natural surface. Testing to determine levels of lead, chrome and arsenic.

The park area is generally free of contamination except in the area of bore hole 13, where chrome levels are higher than normal. Further testing will be carried out in conjunction with stage 2 & 3 validation.

Stage 2 & 3 will be validated by sampling on a 25 m grid with emphasis on chrome levels.

Ed Berzins and Ken Giese to meet at 10 O'clock, Thursday, 30th. A

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20 September 1990

The Town Clerk
Brisbane City Council
GPO Box 1434
BRISBANE QLD 4001

Attention: Mr Ken Geise

Dear Sir

Re: Newmarket Retirement Village

Following your recent meeting with Ed Berzins of Koukourou & Partners and Alan Brunner of the State Government Chemical Unit, a sampling and testing programme was carried out in accordance with the recommendations that were advised.

Attached are the following:

Borehole Nos and descriptions of layers
Site Plans showing locations
Survey information for location of test bores
Analytical test results of samples

The Arsenic levels from all samples tested are below the acceptable as per the previous testing.

The levels of total chromium are generally below the "threshold" levels of 600 ppm as per the earlier reports.

Exceptions were found in Borehole 13A in a layer of ash fill with showings. This 250 mm layer was at 0.75 m depth and is in the road pavement area to be constructed.

Two other high levels were found in the surface soils at Boreholes K2 and K3. This appears to be confined to the surface loamy mix in the small area near the embankment adjacent to a previous Borehole and outside the building site units. The adjacent test bores showed typical low levels.

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It is our understanding that these results will be forwarded to the Chemical Hazards and Emergency Management Unit for final construction.

We await your advice as soon as possible.

Yours faithfully

sch4p4(6) Personal information

Geoff Lawrence
KOUKOUROU & PARTNERS

cc Bill Jones - Pioneer Homes
Alan Brunner - State Government Chemical Unit

RTI DL RELEASE - EHP

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FREE STREET RETIREMENT VILLAGE, NEWMARKET

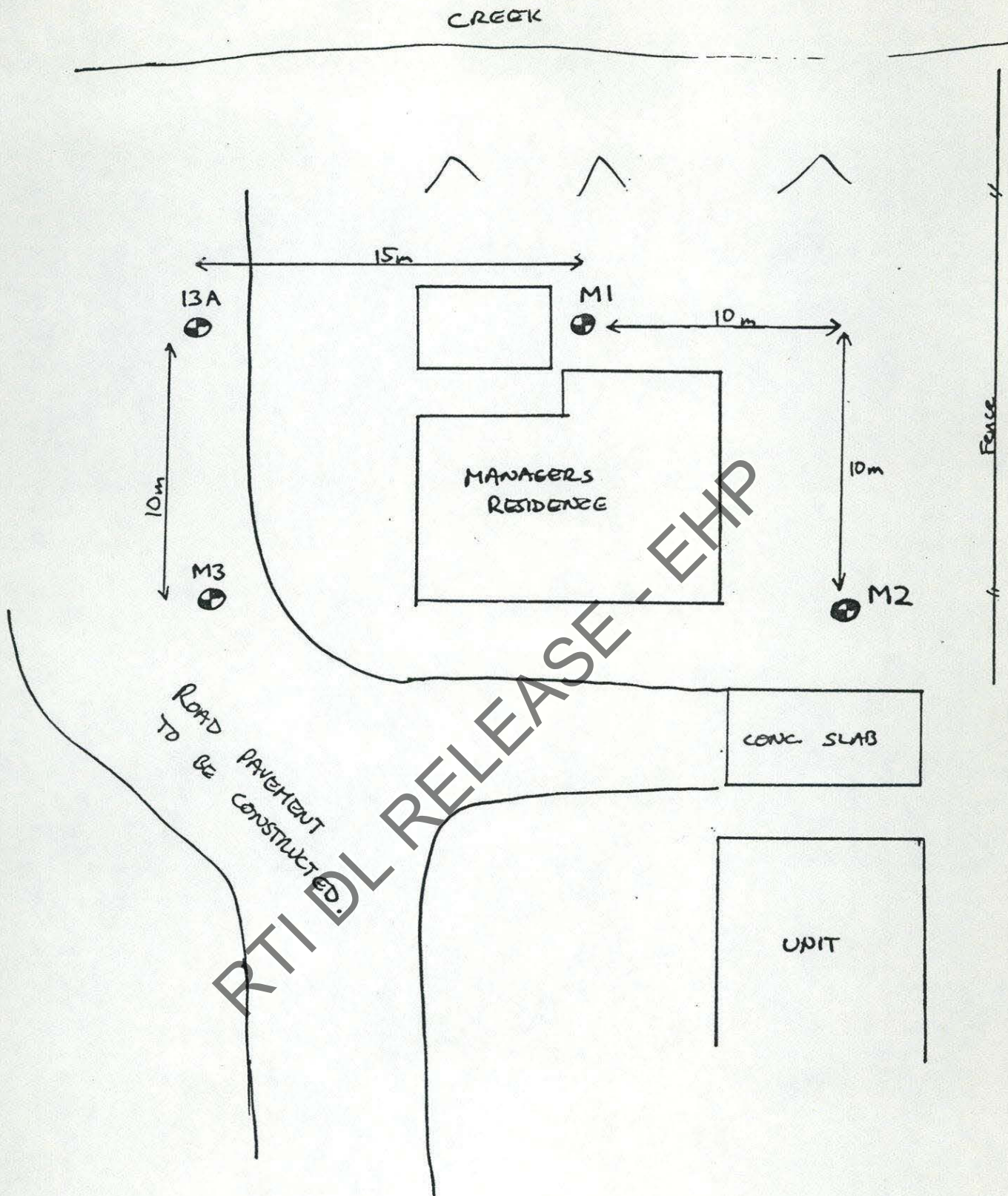
MANAGERS RESIDENCE

VALIDATION TEST BORE DESCRIPTIONS

For locations, refer to attached site plans.

BH No.	DEPTH (mm)	DESCRIPTION
13(a)	0-400	GRITTY CLAY FILL,mottled brown
	400-750	ASH FILL,grey
	750-1000	ASH FILL & SHAVINGS MIX,red brown
	1000-1800	DISCOLOURED SOIL,brown
	1800-3000	NATURAL WEATHERED SHALE,grey brown
M1	0-1000	GRITTY CLAY FILL,mottled brown
	1000-1100	ASH FILL,grey
	1100-1300	DISCOLOURED SOIL,red brown
	1300-1900	DISCOLOURED SOIL,brown
	1900-2200	" " ,red brown
	2200-2800	NATURAL SOIL,brown
M2	0-850	GRITTY CLAY FILL,mottled brown
		wood from 500-750
	850-1200	SOIL/BITUMEN FILL,black
	1200-1600	CONCRETE FILL,unable to penetrate
M3	0-400	GRITTY CLAY FILL,black,discoloured
	400-2600	SHALEY CLAY,natural

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CONSULTING ANALYTICAL CHEMISTS

LABORATORY REPORT

INCORPORATED
IN QUEENSLAND

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P.O. Box 66, Everton Park, Q. 4053.
Phone: (07) 352 5577.
Fax: (07) 352 5109.
Perth Laboratory
Lot 197 Victoria Road, Malaga, W.A. 6062.
Phone: (09) 249 2988. Fax: (09) 249 2942.
Townsville Laboratory
21 Bombala Street, Garbutt, Q. 4814.
Phone: (077) 79 9155. Fax: (077) 799 729.

Charters Towers Laboratory
18 Drew Street, Charters Towers, Q. 48
Phone: (077) 87 4155. Fax: (077) 87 42
Bendigo Laboratory
127A Victoria Street, Eaglehawk, Vic. 3
Phone: (054) 46 1390. Fax: (054) 46 13
Orange Laboratory
10 Leewood Drive, Orange, N.S.W. 280
Phone: (063) 631 722. Fax: (063) 631 1

Client: **KOUKOUROU & PARTNERS**
Address: **P O BOX 116**
EAST BRISBANE
QLD

Contact: **MR E BERZINS**

Order No. **LETTER**

Sample Type: **SOIL**

Page 1 of

STAFFORD
Batch Number: 323
Sub-batch: 0
No. of Samples: 29
Date Received: 07/09/
Date Completed: 20/09/

SAMPLE NUMBER	Element Unit Method	As ppm G033	Cr ppm G033		
13A 750-1000		36	3700		
13A 1000-1800		19	200		
M1 750-1000		22	170		
M1 1000-1500		8	220		
M 500-750		12	125		
M2 WOOD		4	470		
M3 00-500		26	170		
K1 00-200		28	230		
K1 200-500		16	160		
K2 00-200		9	2050		
K2 200-500		16	220		
K3 00-500		20	1850		
K3 500-1000		14	135		
K4 00-200		10	360		
K4 200-500		1	360		
K5 00-250		1	220		
K5 250-500		7	155		
K6 00-200		2	180		
K6 200-500		3	220		
K7 00-250		9	290		
K7 250-500		1	195		
K8 00-250		7	270		
K 00-250		12	470		
R 250-500		4	125		
K10 500-750		3	145		
K12 250-500		5	370		
K13 00-250		5	185		
K14 250-500		3	220		
K16 250-500		8	260		
Detection Limit:		1	1		

Comments:

Signed:

sch4p4(6) Personal information

Koukourou & Partners

Consulting Engineers

CONTAMINATED SITE

FREE STREET

Civil Structural, Soil Testing.

Postal Address:
PO Box 116
East Brisbane Qld 4169

Level 1
922 Stanley Street
(Chr Lisburn Street)
East Brisbane Qld 4169

Telephone (07) 891 1911
Facsimile (07) 891 5460

23 Janaury 1991

Chem Unit
Executive Building
100 George Street
BRISBANE QLD 4001

Attention: Mr Alan Brunner

Dear Sir

Re: Pioneer Homes
Parkland Retirement Village
Stage 2 & 3
Free Street, Newmarket
Validation Report

Please find enclosed the Validation Report to cover
stages 2 & 3 of the development.

We would be pleased to receive the Chem Unit;
Site Contamination Report; as a matter of urgency.

Yours faithfully

sch4p4(6) Personal information

Ed Berzins
KOUKOUROU & PARTNERS



Adelaide
(08) 363 0222

Melbourne
(03) 853 7922

Sydney
(02) 621 1401

Branch at Gawler
(085) 22 6802

Koukourou & Partners Pty Ltd (Inc. in S.A.) as trustee for Koukourou & Partners Unit Trust trading as Koukourou & Partners

PIONEER HOMES
PO BOX 821
SPRINGWOOD QLD 4127

VALIDATION REPORT

PARKLAND RETIREMENT VILLAGE - STAGES 2 & 3
FREE STREET
NEWMARKET

LOT 1 ON RP 209539

PARTICULAR DEVELOPMENT ZONE
(RETIREMENT VILLAGE)

KOUKOUROU & PARTNERS
CONSULTING ENGINEERS
23 JANUARY 1991

CONTENTS

- 1) Preamble
- 2) Annexure A - Site
- 3) Annexure B - Previous Land Use
- 4) Annexure C - Site Investigation
- 5) Annexure D - Residuals
- 6) Annexure E - Correspondence Minutes & Test Results

PREAMBLE

A site investigation and screening report was prepared on the 22 December 1989. This Report was submitted to the Brisbane City Council - Refer to Annexure C.

The area to the north west of stages 2 & 3; which contained the tannery proper was extensively excavated and timber, concrete tank structures and any materials not indigenous to the site were removed from the site and dumped; as directed by the Brisbane City Council to an approval Council Controlled dump, in this case Willawong. In all some 400 cubic metres of material was removed from the area and replaced with imported quarry overburden.

The balance of the site was stripped and all new indigenous materials (ash, leather shavings etc) scraped away and dumped at Willawong.

The area along the southern boundary was then used to spread a quantity re-blended material which arose as a result of remedial work in the north western corner of the parkland. This area will be covered by an average of one metre depth of imported filling which will be compacted and form the building platform for further stages of the Retirement Village.

The results of validation testing are notorisd in Annexure E and presented in plan form in Annexure E - Residuals - December 1990.

ANNEXURE A

SITE

- 1) RP Plan 209539
- 2) Town Planning Certificate

DIAGRAM B

Not to Scale



Branded Peg placed at all
new corners unless
otherwise shown.

Original information compiled
from RP 20074 in the
Titles Office, Brisbane.

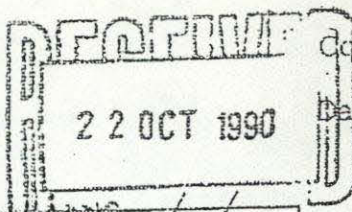
Reference Mark Connections are
from the Corner to the Mark.

NO FIELD NOTES LOGGED	PLAN OF Lots 1-3		ORIG. PORTION 281	
ORIGINAL GRANT	Cancelling Sub 1A on RP20075, Sub 2 on RP20076,		TOWN	
	and Resubs. 1 & 2 on RP 20074.		PARISH ENOGGERA	
			COUNTY Stanley	
MAP REF.	PROCLAIMED SURVEY AREA	SURVEYED BY G.J. Downes	MERIDIAN	SCALE
		26.1.7. 1982	M	1:1500

CROWN COPY, RIGHT RESERVED, REGISTRAR OF TITLES, QUEENSLAND



BRISBANE CITY COUNCIL
TOWN PLANNING CERTIFICATE



Council's Reference

0013642

Date

17 OCT 1990

RUSSELL HOLLAND & ASSOCIATES
PO BOX 14
ASHMORE Q 4214

223 CHD
40 67 57 SD171090
029263 16/10/90

05

70.00

Applicant's Ref

90/020

Telephone No.

075-97 3280

Location and Real Property Description of Property for which certificate is required

Street

FREE STREET

Suburb

NEWMARKET

Postcode

4051

Property Description: N.B. if existing building units plan or lot in group titles plan please give previous real property description of parcel comprising that plan.

LOT 2 R.P. 20076, LOT 1 R.P. 20075,
LOTS 1 & 2 R.P. 20074.

Original Portion No. 281

Parish

ENOGGERA

In response thereto I certify that the information requested is as under

Limited Certificate

(a) The zones or zones in which such land is situated

PARTICULAR DEVELOPMENT

[RETIREMENT VILLAGE] ZONE

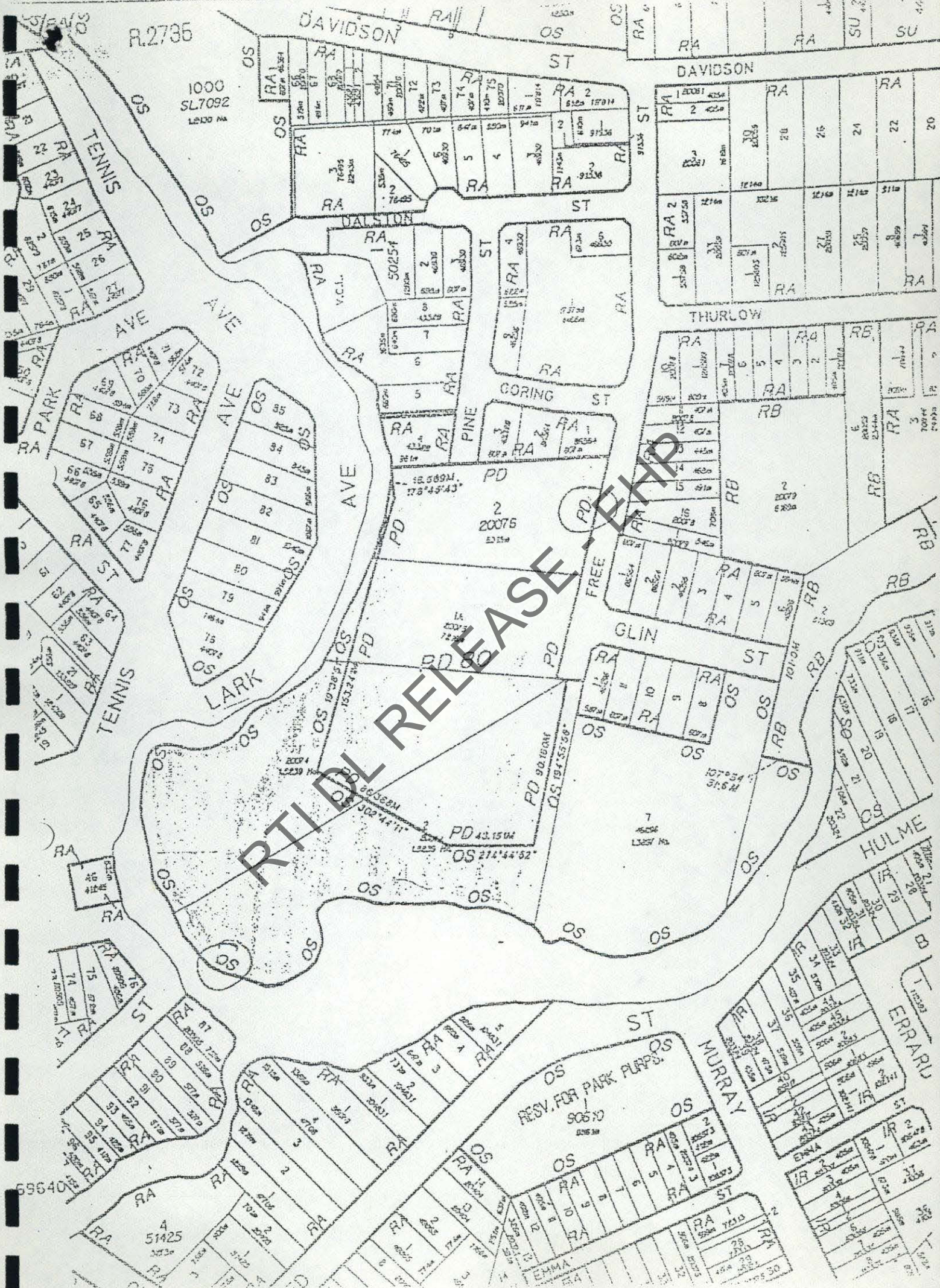
Discretions available within the zone relevant
to the use and development of the land are
subject to the provisions of the Statement of
Intent forming part of the Town Plan.

OPEN SPACE ZONE

NONE APPLICABLE

sch4p4(6) Personal information

TOWN PLANNING CERTIFICATE CLERK
DEPARTMENT OF DEVELOPMENT & PLANNING

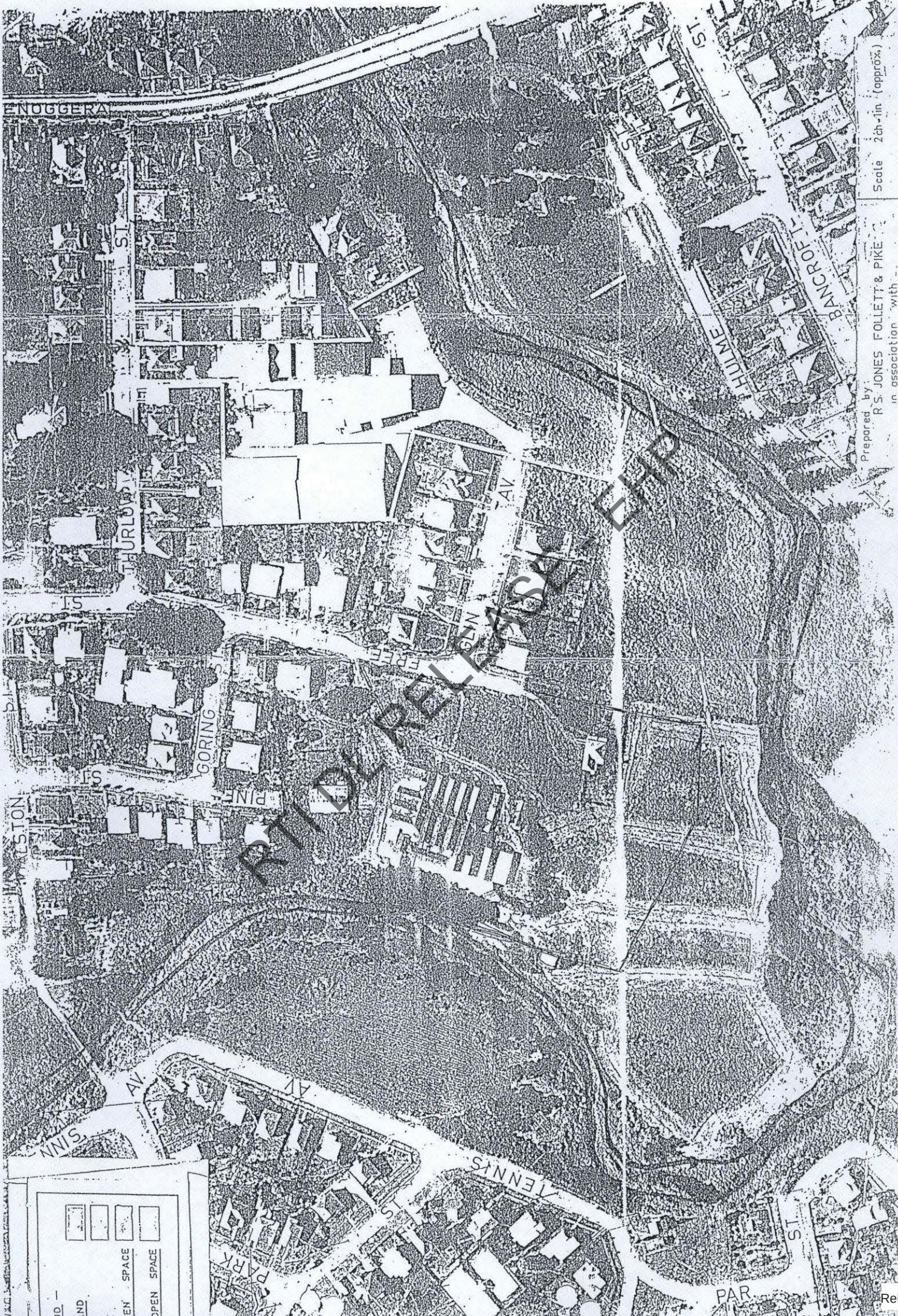


ANNEXURE B

Previous Land Use

- 1) Map showing old tannery building

RTI DL RELEASE - EHP



Scale 2 1/2 in (approx.)

Prepared by
R. S. JONES FOLLETT & PIKE
in association with

IND - AND

13-445

OPEN SPACE

SPACE

ANNEXURE C

Site Investigation Report

RTI DL RELEASE - EHP

Civil, Structural, Soil & Material Testing.

Level 1, 130 Petrie Terrace
Brisbane Qld 4000
Facsimile (07) 368 2521
Telephone (07) 368 2264

42 Fullarton Road
Norwood Sth Aust 5067
Facsimile (08) 363 1555
Telephone (08) 363 0222

Postal Address:
P.O. Box 707
Norwood Sth Aust 5067

Site Investigation/Chemical Screening

Date: 22 December 1989

Job No.: M891001

Site: Free Street Retirement Village
Free Street
NEWMARKET

Client: Pioneer Homes
C/- Fontaine & Jones Pty Ltd
2954 Logan Road
UNDERWOOD QLD 4119

Table of Contents

- 1.0 Introduction/Objectives of Investigation
- 2.0 Scope of Work
- 3.0 Report

List of Appendices

- A Borehole Logs
- B Summary of Standard Analytical Methods
- C Sample Locations
- D Chemical Test Results
- E Site Plan

1.0 Introduction/Objectives of Investigation

- 1.1 The Free Street Retirement Village Development Site consists of vacant land with a general crossfall to the west and the Enoggera Creek. The south eastern quarter of the site has a fall to the south east corner of the block.

The proposed development consists of 75 medium density attached residential units with communal facilities and open space.

- 1.2 Aerial photographs were used to identify the extent of the tannery works previously located on the site. The tannery occupied an area of approximately 60 metres by 50 metres opposite Glin Avenue and located on the low side of the site immediately adjacent the Enoggera Creek. Various filled in pits and wells were identified on the tannery site. The boundaries of the former tannery are shown on the site plan contained in Appendix E.
- 1.3 The purpose of the investigation was to determine what level of residual chemical contamination from the former land use was contained in the soil and whether the potential exposure levels in humans and plants would create a health or environmental hazard relative to the proposed use.

2.0 Scope of Work

The former land use was reviewed and the extent of the tannery works determined from aerial photographs.

- 2.1 The field investigation consisted of drilling seventy four 50 mm diameter boreholes over the site to a minimum depth of 750 mm unless stopped by weathered rock or a concrete pit base. Boreholes were extended in fill areas to penetrate to the base of any fill encountered. A continuous core was recovered for logging and assessment.

The boreholes were located on a 5 m x 5 m grid within the identified tannery boundaries and were extended to a 25 m grid around the tannery perimeter.

Where possible the extent of filled pits and wells was identified.

The locations of all boreholes and identified filled pits and wells are shown on the site plan in Appendix E.

- 2.2 The soil cores were logged and 116 samples were identified and registered for further laboratory assessment, the borehole logs are contained in Appendix A.

After further laboratory examination 69 samples were selected to be analysed for a range of chemicals. The selected samples were split into duplicates and sent to AMDEL for chemical testing. The selected range of elements tested for was limited in knowledge of the former tannery use.

2.2 Cont.

The samples were analysed for pH, total dissolved salts and selected heavy metals (Cu, Fe, Zn, Cd, Cr, Co, Ni, Pb, As and Hg).

A summary of the sample numbers tested and their locations is contained in Appendix C. The laboratory analytical procedures used are summarised in Appendix B.

3.0 Report

The AMDEL chemical test results are tabulated in Appendix D.

In general the level of chemical contamination is quite low with only the odd sample showing a result at the low end of the moderate contamination level and does not present a hazard to the proposed human occupation.

The pH of all samples was greater than 5 and quite satisfactory.

Arsenic levels are less than 50 ppm except for sample number 9/2493 (borehole 49, depth 0-250 mm) where it was found to be 78 ppm. This is located under a proposed open space lawn area and is considered acceptable, this level being on the borderline between low and moderate contamination.

Chromium levels are less than 600 ppm except for sample number 9/2477 (borehole 33, depth 0-250 mm) where it was found to be 680 ppm. This is again located under proposed grassed open space and is on the borderline between moderate and low contamination for Cr3. Significant levels of Cr6 have not been found associated with former tannery sites. Only one high reading of lead levels was encountered, this was sample number 9/2511 (borehole 67, depth 0-250 mm) and this was 450 ppm. This was still at the very low end of the moderate contamination range. This borehole was located under units 36 and 37 and was well away from the former plant area, it is not considered to pose a risk to human occupancy.

In summary no special precautions are considered necessary for the development of this site for the proposed use.

sch4p4(6) Personal information

P M Bayetto FIE Aust., CP Eng.
KOUKOUROU & PARTNERS

References

1. Wilson D C and Stevens C, "Problems Arising from the Redevelopment of Gas Works and Similar Sites", United Kingdom Atomic Energy Authority, Harwell, November 1981.
2. UK Department of Environment, "Guidance on the Assessment and Redevelopment of Contaminated Land", Inter-Departmental Committee for the Redevelopment of Contaminated Land, ICRCL 59/83, 1983.
3. Finnecy E E and Wicklund J, "Consultants' Report, Union Carbide Site, Rhodes, NSW, Australia", NSW State Pollution Control Commission, June 1987.
4. Department of Housing, Netherlands, "Soil Clean-up Guidelines", 1983.
5. Koo F, "Potential for Biological Clean Up of Chemically Contaminated Sites", Eighth Australian Biotechnology Conference, Sydney, February 1989.
6. Public and Environmental Health Division, South Australian Health Commission, "A Guide on the Assessment and Management of Contaminated Land in South Australia", October 1989.

RTI DL RELEASE EHP

Appendix A - Borehole Logs

RTI DL RELEASE - EHP

[illegible][illegible]

SURFACE SOIL BORE LOG

[illegible]

SURFACE SOIL BORE LOG

[illegible]

SURFACE SOIL BORE LOG

[illegible]

[illegible]

SURFACE SOIL BORE LOG

[illegible]

[illegible]

[illegible]

SURFACE SOIL BORE LOG

FREE STREET	NEW MARKET	Sampling Date	Sampling Method		
		20/11/69	Percussion Tube		
to the associated report and / or recommendation					
	U/Symb	Moist.	Strength	Moisture %	Hole No.
Y - BROWN, MIXTURE OF CREAM AND BLACK.	-	DAMP	LOW	0 300	-
Y - BROWN.	ML	DRY	LOW-MEDIUM	-	-
Y - BROWN ORANGE-BROWN.	CH	DRY-DAMP	MEDIUM	-	-
Y - BROWN AND COMPLETELY WEATHERED - CREAM-ORANGE.	-	-	-	300 - 1000	3 - 5

[illegible]

[illegible][illegible]

Job Number	Site Address		Sampling Date	Sampling Method		Int S/Class			
	Lot FREE STREET	NEW MARKET	20/11/89	Percussion Tube		0			
Site Observations : Refer to the associated report and / or recommendation									
Horizon	Soil Description	U/Symb	Moist.	Strength	Hole 34	Hole 35	Hole 36	Est Ipt	Av Ipt
FILL	SILT-SANDY-GRAVELLY - BROWN, MIXTURE OF CREAM AND BLACK.	-	DAMP	LOW	0 - 1200	0 - 700	0 - 400	0.000	0.000
A	SILT-CLAYEY - BROWN.	ML	DRY	LOW-MEDIUM	---	---	400 - 500	0.000	0.000
B	CLAY-SILTY - MOTTLED BROWN ORANGE-BROWN.	CH	DRY-DAMP	MEDIUM	---	700 - 800	500 - 1000	0.035	0.035
C	WEATHERED - HIGHLY AND COMPLETELY WEATHERED - CREAM-ORANGE	-	-	-	---	---	---	0.000	0.000
					Y - Centre	0	57	64	
					Y - Edge	0	52	59	

SURFACE SOIL BORE LOG

[illegible]

[illegible][illegible]

	[Sampling Date]	[Sampling Method]			
REE STREET NEW MARKET	20/11/89	Percussion Tube			
the associated report and / or recommendation					
	IU/Symb	Moist.	Strength	Hole #	Hole
- BROWN, MIXTURE OF CREAM AND BLACK.	-	DAMP	LOW	-	-
.	ML	DRY	LOW-MEDIUM	0 - 100	10
D BROWN ORANGE-BROWN.	ML	DRY-DAMP	MEDIUM	100 - 200	10 - 50
AND COMPLETELY WEATHERED - CREAM-ORANGE.	-	-	-	200 - 750	50 - 75
			Y - Centre Y - Edge	4 4	1 1

[illegible]

SURFACE SOIL BORE LOG

[illegible]

[illegible]

Job Number	Site Address	Sampling Date	Sampling Method	Int S/Class					
Lot	FREE STREET	20/11/89	Percussion Tube	0					
NEW MARKET									
Site Observations : Refer to the associated report and / or recommendation									
Horizon	Soil Description	U/Symb	Moist.	Strength	Hole 52	Hole 53	Hole 54	Est Ipt	Av Ipt
FILL	SILT-SANDY-GRAVELLY - BROWN, MIXTURE OF CREAM AND BLACK.	-	DAMP	LOW	0	---	---	0.000	0.000
					100				
A	SILT-CLAYEY - BROWN.	HL	DRY	LOW-MEDIUM	100	0	---	0.000	0.000
					300	100			
B	CLAY-SILTY - MOTTLED BROWN ORANGE-BROWN.	CH	DRY-DAMP	MEDIUM	300	100	0	0.035	0.035
					750	700	500		
C	WEATHERED - HIGHLY AND COMPLETELY WEATHERED - CREAM-ORANGE.	-	-	-	---	700	500	0.000	0.000
						750	750		
					Y - Centre	72	23	20	
					Y - Edge	67	23	20	

SURFACE SOIL BORE LOG

[illegible]

[illegible][illegible]

SURFACE SOIL BORE LOG

[illegible]

Job Number	Site Address	Sampling Date	Sampling Method	Int S/Class					
Lot	FREE STREET	20/11/89	Percussion Tube	0					
Site Observations : Refer to the associated report and / or recommendation									
Horizon	Soil Description	U/Symb	Moist.	Strength	Hole 64	Hole 65	Hole 66	Est Ipt	Av Ipt
FILL	SILT-SANDY-GRAVELLY - BROWN, MIXTURE OF CREAM AND BLACK.	-	DAMP	LOW	0 600	0 7501	0 200	0.000	0.000
A	SILT-CLAYEY - BROWN.	ML	DAMP	LOW-MEDIUM	—	7501 750	—	0.000	0.000
B	CLAY-SILTY - MOTTLED BROWN ORANGE-BROWN.	CL	DRY- DAMP	MEDIUM	600 750	—	200 500	0.035	0.035
C	WEATHERED - HIGHLY AND COMPLETELY WEATHERED - CREAM-ORANGE.	-	-	-	—	750 1000	500 750	0.000	0.000
					Y - Centre	61	0	11	
					Y - Edge	55	0	11	

[illegible]

E STREET	NEW MARKET	[Sampling Date] [20/11/89]	Sampling Method Percussion Tube		
the associated report and / or recommendation					
- BROWN, MIXTURE OF CREAM AND BLACK.	U/Symb -	Moist. DAMP	Strength LOW	Rols 70 - 500	Hole 7 0 - 100
BROWN ORANGE-BROWN.	M.L.	Dry	LOW-MEDIUM	---	--
ND COMPLETELY WEATHERED - CREAM-ORANGE.	C-	DRY-DAMP	MEDIUM	500 750	100 500
	-	-	-	---	500 750
			X - Centre Y - Edge	64 59	16 16

E STREET	NEW MARKET	[Sampling Date] [20/11/89]	[Sampling Method] Percussion Tube		
the associated report and / or recommendation					
- BROWN, MIXTURE OF CREAM AND BLACK.	-	DAMP	LOW	0 500	0 100
	ML	DRY	LOW-MEDIUM	---	---
BROWN ORANGE-BROWN.	-	DRY-DAMP	MEDIUM	500 750	100 500
ND COMPLETELY WEATHERED - CREAM-ORANGE.	-	-	-	---	500 750

GENERAL DESCRIPTION

Y-VALUE CALCULATION USING

GROUND WATER / SALINITY GROUNDWATER NOT ENCOUNTERED
(C) 1985, Leader Computer Systems

Appendix B - Summary of Standard Analytical Methods

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Analytical Methods for Chemical Test Procedures

Metal Analyses

Cu, Fe, Zn, Pb, As, Cd, Cr, Co, Ni.

Digestion of sample in perchloric, hydrochloric and hydrofluoric acid and analysis of digest by ICP or AAS (not As, Pb).

Alternatively As, Pb by XRF of ground pressed powdered sample.

Hg Aqua regia acid digestion and cold vapour AAS.

Cr₆ Acid dissolution and colorimetric determination with diphenylcarbazide.

Others

S (total) Leco combustion and measurement by titration.

Total CN Distillation by APHA method 16th Ed pp 327-352. Colorimetric determination.

Water Extract Analyses

pH 1:5 extract with water shaken for 2 hours and solution measured using a combination pH electrode.

Total soluble salts (calculation). Extract from pH taken and electrical conductivity measured.

SO₄, S, Phenolics As for pH with solution filtered and measured using an Ion Chromatography analyser.

Toluene Extractables

200-300 grams of soil were extracted with re-distilled AR-Grade toluene for 24 hours (or until clear) in pre-extracted thimbles, using a soxhlet apparatus. The toluene extractable organic matter (TEOM) was then yielded by careful rotary evaporation. The weight of (TEOM) was calculated after the sample was carefully transferred to a small vial to minimise the errors involved.

Polycyclic Aromatic Hydrocarbons (PAH)

Soils were extracted as for (TEOM) using re-distilled AR-Grade dichloromethane. The hydrocarbon components of the extracted organic matter were isolated by liquid chromatography and analysed by GC-MS. PAH concentrations were calculated by comparison with PAH standards.

Appendix C - Sample Locations

RTI DL RELEASE - EHP

TABLE 1: SAMPLE LOCATIONS

Sample No.	Bore No.	Depth mm
9/2403	1	0-500
9/2404	1	500-1000
9/2407	2	0-500
9/2409	3	0-500
9/2412	4	0-500
9/2413	4	500-1000
9/2416	5	0-500
9/2418	5	1000-1500
9/2419	6	0-500
9/2420	6	500-750
9/2421	7	0-500
9/2423	8	0-500
9/2425	9	0-500
9/2426	9	500-800
9/2428	11	0-500
9/2429	11	500-1000
9/2430	11	1000-1250
9/2431	12	0-500
9/2433	13	0-500
9/2434	13	500-1000
9/2435	13	1000-1300
9/2436	14	0-500
9/2437	14	500-1000
9/2441	16	0-500
9/2444	18	0-500
9/2446	18	1000-1500
9/2447	19	0-500
9/2448	19	500-1000
9/2449	19	1000-1300
9/2450	20	0-500
9/2452	21	0-500
9/2453	21	500-1000
9/2454	21	1000-1500
9/2455	21	1500-2000
9/2457	22	0-2500
9/2458	23	0-500
9/2460	24	0-500
9/2462	24	1000-1500
9/2464	24	2000-2500
9/2467	26	0-250
9/2470	29	0-250
9/2471	30	0-500
9/2472	31	0-500

Continued

TABLE 1: (Continued)

Sample No.	Bore No.	Depth mm
9/2474	32	0-500
9/2475	32	500-1000
9/2477	33	0-250
9/2479	35	0-250
9/2480	36	0-250
9/2483	39	0-250
9/2485	41	0-250
9/2487	43	0-250
9/2489	45	0-250
9/2491	47	0-250
9/2493	49	0-250
9/2495	51	0-250
9/2497	53	0-250
9/2499	55	0-250
9/2501	57	0-250
9/2502	58	0-250
9/2504	60	0-250
9/2506	62	0-250
9/2508	64	0-250
9/2509	65	0-250
9/2510	66	0-250
9/2511	67	0-250
9/2513	69	NA*
9/2514	70	NA*
9/2517	73	NA*
9/2518	74	NA*

* NA not available

Appendix D - Chemical Test Results

RTI DL RELEASE - EHP

30 November 1989

Koukourou & Partners
PO Box 707
NORWOOD SA 5067

Attention Mr Peter Bayetto

REPORT M693/90

YOUR REFERENCE

KP 2244.

TITLE

Pioneer Homes Site.

LOCATION

Queensland.

DATE EXAMINED

November 1989.

WORK REQUESTED

Chemical analyses of soil samples.

Investigation and Report by:

John A Lackey.

sch4p4(6) Personal information

William V Yeo
Manager
Materials Services

1. INTRODUCTION

Mr Peter Bayetto of Koukourou & Partners requested that Amdel Limited analyse 69 samples for a range of elements. The samples were from Pioneer Homes, Queensland.

2. PROCEDURE & RESULTS

Sixty nine samples were analysed for pH, total dissolved salts and selected heavy metals (Cu, Fe, Zn, Cd, Cr, Co, Ni, Pb, As, Hg).

Sample locations are presented in Table 1.

Analyses are given in Tables 2 to 4.

dt.

RTI DL RELEASE - EHP

TABLE 1: SAMPLE LOCATIONS

Sample No.	Bore No.	Depth mm
9/2403	1	0-500
9/2404	1	500-1000
9/2407	2	0-500
9/2409	3	0-500
9/2412	4	0-500
9/2413	4	500-1000
9/2416	5	0-500
9/2418	5	1000-1500
9/2419	6	0-500
9/2420	6	500-750
9/2421	7	0-500
9/2423	8	0-500
9/2425	9	0-500
9/2426	9	500-800
9/2428	11	0-500
9/2429	11	500-1000
9/2430	11	1000-1250
9/2431	12	0-500
9/2433	13	0-500
9/2434	13	500-1000
9/2435	13	1000-1300
9/2436	14	0-500
9/2437	14	500-1000
9/2441	16	0-500
9/2444	18	0-500
9/2446	18	1000-1500
9/2447	19	0-500
9/2448	19	500-1000
9/2449	19	1000-1300
9/2450	20	0-500
9/2452	21	0-500
9/2453	21	500-1000
9/2454	21	1000-1500
9/2455	21	1500-2000
9/2457	22	0-2500
9/2458	23	0-500
9/2460	24	0-500
9/2462	24	1000-1500
9/2464	24	2000-2500
9/2467	26	0-250
9/2470	29	0-250
9/2471	30	0-500
9/2472	31	0-500

Continued

TABLE 1: (Continued)

Sample No.	Bore No.	Depth mm
9/2474	32	0-500
9/2475	32	500-1000
9/2477	33	0-250
9/2479	35	0-250
9/2480	36	0-250
9/2483	39	0-250
9/2485	41	0-250
9/2487	43	0-250
9/2489	45	0-250
9/2491	47	0-250
9/2493	49	0-250
9/2495	51	0-250
9/2497	53	0-250
9/2499	55	0-250
9/2501	57	0-250
9/2502	58	0-250
9/2504	60	0-250
9/2506	62	0-250
9/2508	64	0-250
9/2509	65	0-250
9/2510	66	0-250
9/2511	67	0-250
9/2513	69	NA*
9/2514	70	NA*
9/2517	73	NA*
9/2518	74	NA*

* NA not available



CLASSIC COMLABS LTD

Analytical Laboratories (INC. IN WA.)

TABLE 2: METAL ANALYSES
ANALYTICAL REPORT

Job: 9AD3182
O/N: M8914

Sample	Cu	Fe	Zn	Cd	Cr	Co	Ni
9/2403	17	6800	320	5	70	25	10
9/2404	28	2.05%	260	4	14	32	20
9/2407	380	5.30%	1050	4	270	24	26
9/2409	360	4.40%	440	3	76	26	36
9/2412	22	1.71%	290	2	26	14	12
9/2413	44	4.40%	470	3	310	30	25
9/2416	60	2.70%	350	3	62	18	14
9/2418	30	3.65%	105	3	20	28	15
9/2419	44	3.05%	250	4	60	22	16
9/2420	22	3.60%	64	2	16	24	18
9/2421	56	2.05%	185	3	6	18	12
9/2423	110	1.24%	580	2	88	12	14
9/2425	25	6800	480	3	58	20	16
9/2426	17	4750	360	3	24	16	10
9/2428	72	1.20%	500	3	105	15	24
9/2429	80	1.70%	730	3	66	18	24
9/2430	32	2.75%	220	4	28	24	14
9/2431	40	2.75%	410	4	12	18	12
9/2433	22	1.85%	320	3	8	15	12
9/2434	42	1.03%	450	3	195	12	12
9/2435	36	1.98%	3550	5	38	20	18
9/2436	16	1.01%	190	2	45	22	10
9/2437	50	1.27%	175	3	32	20	18
9/2441	60	2.25%	850	3	510	20	20
9/2444	34	2.85%	350	3	105	26	16
9/2446	250	3.05%	620	4	58	32	32
9/2447	30	2.10%	220	3	72	20	15
9/2448	52	2.00%	500	2	22	18	18
9/2449	30	1.81%	260	3	40	18	15
9/2450	34	8800	210	2	24	12	16
9/2452	50	9600	450	2	25	15	18
9/2453	13	7400	310	2	12	14	10
9/2454	26	3.10%	24	2	40	20	22
9/2455	17	3.60%	17	2	38	25	26
9/2457	105	3.40%	1000	4	175	22	18
9/2458	430	2.35%	590	2	470	16	25
9/2460	52	1.93%	150	2	210	20	15
9/2462	30	2.65%	48	3	74	22	22
9/2464	24	2.65%	36	2	48	18	18
9/2467	60	1.99%	290	2	90	16	15
9/2470	30	2.15%	86	3	36	14	12
9/2471	35	2.65%	105	2	22	16	15
9/2472	70	2.45%	360	4	82	20	16
9/2474	58	2.75%	260	3	130	20	20
9/2475	94	3.05%	165	2	68	22	16
9/2477	125	3.00%	600	3	680	18	15
9/2479	30	2.40%	58	2	24	15	14
9/2480	19	2.60%	22	2	28	18	12
9/2483	24	2.85%	55	2	32	20	20
9/2485	120	3.20%	320	3	120	20	20
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detn Limit	2	4	2	1	4	4	4
Scheme	AAS1	AAS1	AAS1	AAS1	AAS1	AAS1	AAS1
Upper Scheme		AAS1C					



CLASSIC COMLABS LTD

Analytical Laboratories (INC. IN WA.)

TABLE 2 (Continued) ANALYTICAL REPORT

Job: 9AD3182

O/N: M8914

Sample	Cu	Fe	Zn	Cd	Cr	Co	Ni
9/2487	30	2.70%	74	3	42	22	20
9/2489	15	2.90%	14	2	28	16	14
9/2491	28	2.55%	52	3	35	18	18
9/2493	25	1.94%	400	5	<4	25	18
9/2495	32	2.45%	340	3	22	16	15
9/2497	14	3.00%	32	2	36	20	16
9/2499	36	3.45%	36	2	24	16	18
9/2501	44	2.75%	280	3	145	32	28
9/2502	48	2.20%	210	1	135	14	15
9/2504	28	3.50%	75	2	30	22	22
9/2506	80	2.00%	1840	4	330	20	25
9/2508	115	2.25%	970	3	430	18	18
9/2509	190	4.25%	430	3	590	22	20
9/2510	55	3.45%	260	3	260	22	18
9/2511	72	2.50%	430	2	760	20	15
9/2513	17	2.25%	28	1	44	25	12
9/2514	22	1.91%	62	<1	50	16	14
9/2517	36	2.65%	110	2	34	22	22
9/2518	48	3.30%	210	2	26	28	30
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detn Limit	2	4	2	2	4	4	4
Scheme	AAS1	AAS1	AAS1	AAS1	AAS1	AAS1	AAS1
Upper Scheme		AAS1C					



CLASSIC COMLABS LTD

Analytical Laboratories (INC. IN WA.)

TABLE 2 (Continued)

ANALYTICAL REPORT

Job: 9AD3182

O/N: M8914

Sample	Pb	As
9/2403	54	17
9/2404	56	16
9/2407	125	17
9/2409	210	26
9/2412	155	16
9/2413	92	19
9/2416	120	15
9/2418	170	16
9/2419	24	13
9/2420	20	24
9/2421	155	17
9/2423	160	15
9/2425	75	12
9/2426	32	13
9/2428	140	24
9/2429	350	38
9/2430	60	12
9/2431	340	24
9/2433	250	17
9/2434	125	17
9/2435	210	26
9/2436	125	13
9/2437	165	16
9/2441	260	28
9/2444	95	19
9/2446	170	17
9/2447	92	14
9/2448	95	17
9/2449	56	13
9/2450	155	22
9/2452	250	18
9/2453	98	16
9/2454	11	13
9/2455	3	15
9/2457	230	22
9/2458	290	15
9/2460	62	14
9/2462	22	14
9/2464	25	15
9/2467	110	15
9/2470	60	13
9/2471	38	15
9/2472	155	15
9/2474	80	22
9/2475	42	17
9/2477	100	20
9/2479	34	12
9/2480	19	12
9/2483	38	15
9/2485	170	30
Units	ppm	ppm
Detn Limit	2	2
Scheme	XRF1	XRF1



CLASSIC COMLABS LTD

Analytical Laboratories (INC. IN WA.)

TABLE 2 (Continued) ANALYTICAL REPORT

Job: 9AD3182

O/N: M8914

Sample	Pb	As
9/2487	70	12
9/2489	17	13
9/2491	26	14
9/2493	72	78
9/2495	52	13
9/2497	19	15
9/2499	42	18
9/2501	185	30
9/2502	130	15
9/2504	56	22
9/2506	260	48
9/2508	160	24
9/2509	105	22
9/2510	155	22
9/2511	450	35
9/2513	34	15
9/2514	65	10
9/2517	42	13
9/2518	76	24
Units	ppm	ppm
Detn Limit	2	2
Scheme	XRF1	XRF1

RTI DL RELEASE - EHP



TABLE 3: MERCURY

Report 9AD3182

Sample ID Code: Results in	Hg AAS 5 ppm
9/2403	<0.05
9/2404	<0.05
9/2407	0.10
9/2409	0.05
9/2412	<0.05
9/2413	<0.05
9/2416	0.30
9/2418	<0.05
9/2419	<0.05
9/2420	<0.05
9/2421	<0.05
9/2423	0.05
9/2425	<0.05
9/2426	<0.05
9/2428	0.10
9/2429	0.05
9/2430	<0.05
9/2431	<0.05
9/2433	<0.05
9/2434	<0.05
9/2435	<0.05
9/2436	<0.05
9/2437	<0.05
9/2441	0.10
9/2444	<0.05
9/2446	<0.05
9/2447	<0.05
9/2448	<0.05
9/2449	0.05
9/2450	<0.05
9/2452	0.05
9/2453	<0.05
9/2454	<0.05
9/2455	<0.05
9/2457	0.05
9/2458	0.95
9/2460	<0.05
9/2462	<0.05
9/2464	<0.05
9/2467	<0.05
9/2470	0.05
9/2471	0.10
9/2472	<0.05
9/2474	0.05
9/2475	<0.05
9/2477	0.05
9/2479	<0.05
9/2480	<0.05
9/2483	<0.05
9/2485	0.10



TABLE 3 (Continued)

Page G2

Report 9AD3182

Sample ID Code: Results in	Hg AAS 5 ppm
9/2487	0.05
9/2489	<0.05
9/2491	<0.05
9/2493	<0.05
9/2495	<0.05
9/2497	<0.05
9/2499	<0.05
9/2501	<0.05
9/2502	0.65
9/2504	<0.05
9/2506	<0.05
9/2508	0.05
9/2509	0.05
9/2510	0.35
9/2511	0.10
9/2513	0.05
9/2514	<0.05
9/2517	<0.05
9/2518	0.05

RTI DL RELEASE - EHP



TABLE 4: TOTAL SOLUBLE SALTS & pH

Results in ppm (except pH)

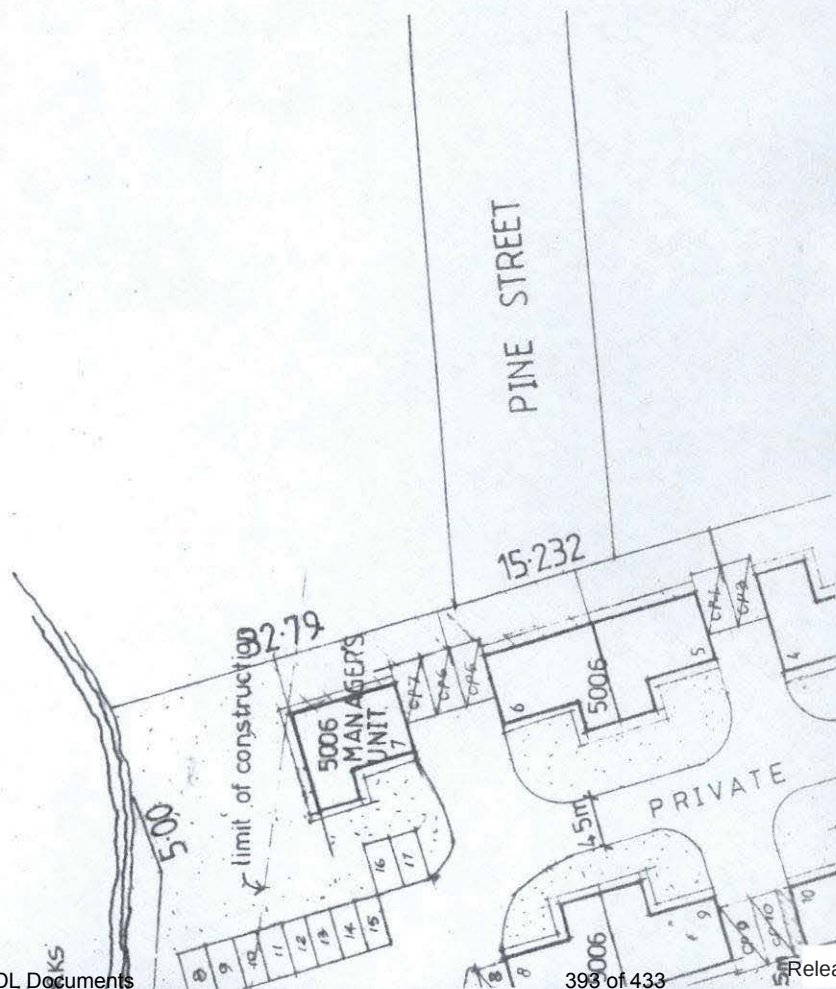
REPORT AC 9AD3182

PAGE: W1

SAMPLE ID	pH	TOTAL SOLUBLE SALTS (CALC)	*	SAMPLE ID	pH	TOTAL SOLUBLE SALTS (CALC)
9/2403	8.0	1126	*	9/2458	9.3	1469
9/2404	8.0	768	*	9/2460	10.8	3238
9/2407	7.6	1955	*	9/2462	6.5	1565
9/2409	7.5	1222	*	9/2464	6.4	1715
9/2412	7.6	941	*	9/2467	8.1	1222
9/2413	10.6	2550	*	9/2470	7.2	1411
9/2416	7.9	1050	*	9/2471	6.3	598
9/2418	9.0	2694	*	9/2472	8.2	1034
9/2419	8.9	2150	*	9/2474	8.0	1408
9/2420	6.6	909	*	9/2475	7.5	1472
9/2421	7.6	934	*	9/2477	6.6	688
9/2423	7.4	1459	*	9/2479	6.2	490
9/2425	7.9	1197	*	9/2480	5.7	464
9/2426	7.9	1254	*	9/2483	7.8	1072
9/2428	7.4	656	*	9/2485	9.3	1366
9/2429	7.9	1344	*	9/2487	7.3	1389
9/2430	8.7	1360	*	9/2489	5.8	292
9/2431	7.8	1010	*	9/2491	5.9	407
9/2433	7.7	858	*	9/2493	8.0	774
9/2434	7.6	1725	*	9/2495	6.0	326
9/2435	7.8	270	*	9/2497	5.5	264
9/2436	8.2	1565	*	9/2499	5.7	566
9/2437	9.1	1744	*	9/2501	6.8	374
9/2441	7.5	2042	*	9/2502	7.3	659
9/2444	9.6	1747	*	9/2504	5.6	409
9/2446	10.7	3722	*	9/2506	9.5	2077
9/2447	7.8	989	*	9/2508	6.5	736
9/2448	8.1	1507	*	9/2509	5.5	662
9/2449	7.3	2704	*	9/2510	6.9	707
9/2450	11.0	2180	*	9/2511	7.2	1660
9/2452	8.0	1027	*	9/2513	5.4	194
9/2453	7.6	2048	*	9/2514	5.6	544
9/2454	6.6	2483	*	9/2517	7.3	672
9/2455	6.3	1965	*	9/2518	6.0	196
9/2457	7.6	2061	*			
			*			
METHOD:	WAT 2F	WAT 2G	*			
				WAT 2F	WAT 2G	

Appendix E - Site Plan

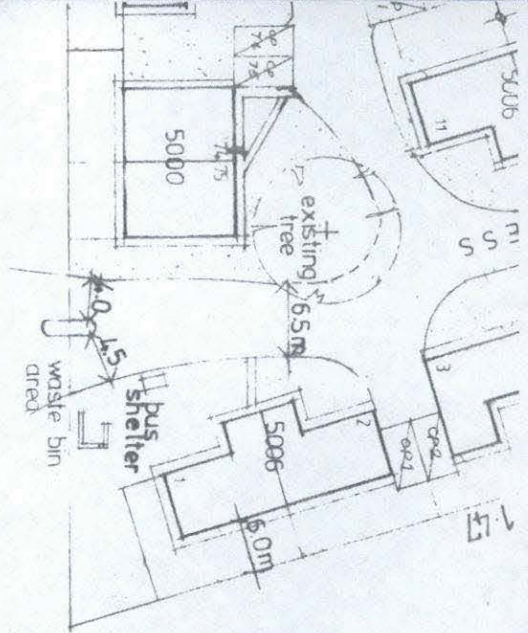
RTI DL RELEASE - EHP



no.	description	date
1	PROVIDED THE A COPY OF THE	14-11-19
2	GENERAL REPORT OF FACTS	
3	TO THE	
4	DELETED VICTIM NAME 51-11-19	
5	FOR UNIT 1-1	

amendments:

associated documents:



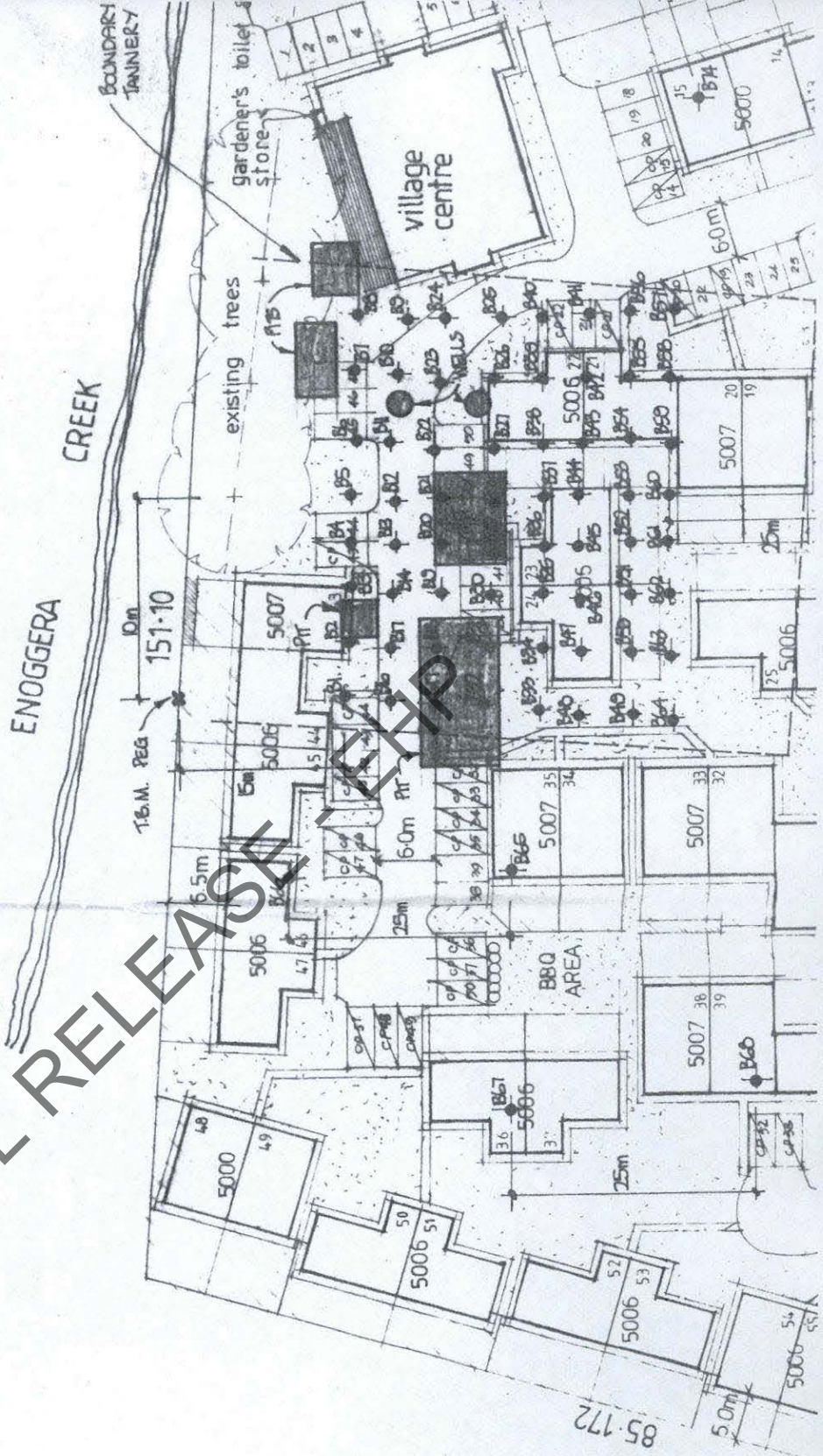
RTI DL RELEASE - EHP

Koukourou & Partners		Consulting Engineers	
CIVIL	STRUCTURAL	SOIL TESTING	SUPERVISION
42, Pullarton Road, Northwood, Sth. Aust. 5067 Telephone 363 0222		Level 1, 130 Parrie Terrace, BRISBANE, QLD. 4000 Telephone: (07) 368 2264 Fax: (07) 368 2521	
Design	Drawn	Date	22.12.89
Checked	Scale	Sheet No	1 of 1
Approved	Drawing No		MD91001

sch4p4(6) Personal information

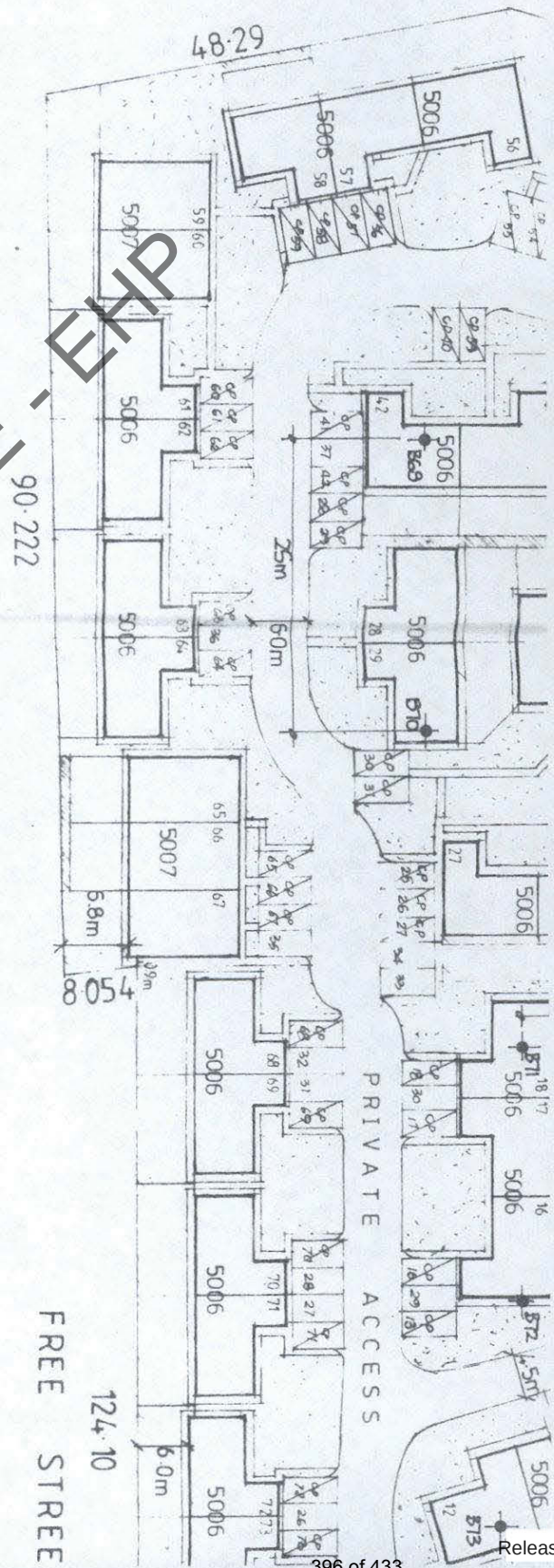
PROJECT: FREE ST. RETIREMENT VILLAGE			
FOR: PIONEER HOMES QLD			
AT: FREE ST NEWMARKET QLD.			
		sheet content: SITE PLAN	
FRED PHILLIS and ASSOCIATES PTY. LTD. ARCHITECTS			
20 Greenhill Road Wayville 5034 Phone 272 5677			
date	23 5 89	drawn	CCL
		chkd:	
Scales: 1 500			
Note: Contractor shall verify all dimensions on site.			
Drawing No	890409-DA	SK2	A

RTI DL RELEASE



RTI DL RELEASE - EHP

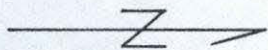
UNIT 5000, 5004, 5006, 5007
75 UNITS
131 CARPARKS



ANNEXURE D

RESIDUALS

- 1) Drawing No. M901101 - 2



REEK

FGL 10.3

8
9
10
11

12

STAGES 2 & 3

13

RTI DL RELEASE - EHP

STAGE 1

FREE STREET

13-445

RTI DL RELEASE EHP

LEGEND

B8	Borehole Number
SL	Surface Cover 00 to 500mm
AD	At Depth > 500 mm
Cu	Copper > 100ppm
Zn	Zinc > 500ppm
As	Arsenic > 30ppm
Cr	Chrome > 250ppm
Pb	Lead > 200ppm
FGL	Finished Ground Level

BH 4 / SL BOREHOLE No 4, Surface Layer
49 / As 49ppm, Arsenic

RTI DL RELEASE - EHP

Client PIONEER HOMES		Date 23 Jan 1991
PARKLANDS RETIREMENT VILLAGE		Scale 1 : 500
FREE STREET, NEWMARKET		Sheet No. 1
STAGE 2 & 3 - VALIDATION REPORT		Rev.
RFSINIIAI S - NF CFMRFR 1990		Drawing No. M 901101 - 2
Design E3		
Drawn E3		
Checked E3		
Sch 404 (6) Personal information		
Koukourou & Partners Consulting Engineers Civil, Structural, Soil Testing, Supervision 42 Fullarton Road Norwood 5th Aust 5067 Facsimile (08) 363 1555 Telephone (08) 363 0222		
Level 1, 922 Stanley Street East Brisbane 4169 Facsimile (07) 891 5460 Telephone (07) 891 1911		

ANNEXURE E

1)	Site Meeting	8/5/90
2)	Site Meeting	24/5/90
3)	Site Meeting	4/6/90
4)	Validation Testing Report	19/6/90
5)	Site Meeting	29/8/90
6)	BCC Report	12/6/90
7)	Validation Tests	7/9/90
8)	Site Meeting	4/10/90
9)	Re-blending Proposal	30/10/90
10)	Chem Unit acceptance of blending	22/11/90
11)	Parkland Residuals	5/12/90
12)	Blending Results	10/12/90
13)	Chem Unit blending acceptance	21/1/90
14)	Fax regards fill depths	21/1/90

Civil Structural, Soil Testing.

Postal Address:
PO Box 116
East Brisbane Qld 4169

Level 1
922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169

Telephone (07) 891 1911
Facsimile (07) 891 5460

FILE NOTE

NEWMARKET RETIREMENT VILLAGE

SITE MEETING: 10 AM 8/5/1990

: KEN GIESE
BRISBANE CITY COUNCIL

: ED BERZINS
KOUKOUROU & PARTNERS

- 1) Ken Giese expressed concern about possible contamination in the area of the managers residence. Area was going to be substantially filled, revised design is for highest building over natural surface.
- 2) The Department of Environment has bought into the act. Not only does the site have to be OK for its proposed use (Retirement Village), must meet environmental criteria.
- 3) Ken Giese requested that vegetation be removed from southern end of development (future stages) to allow further examination & testing. This matter has been previously discussed and agreed to by Pioneer Homes.
- 4) The council will require testing and validation of open areas within stage 1.
- 5) John Marinkovic from Brisbane City Council 225 6785 is to be notified prior to removal of further materials from site to Council waste dumps.
- 6) Ken Giese requested copies of roadworks and drainage drawings.

2&3

Ed Berzins
Koukourou & Partners
8/5/1990

sch4p4(6) Personal information

C/C Bill Jones - Pioneer Homes
Peter Bayetto - Koukourou & Partners



Adelaide
(08) 363 0222

Melbourne
(03) 853 7922

Sydney
(02) 621 1401

Branch at Gawler
(085) 22 6802

FILE NOTE
NEWMARKET RETIREMENT VILLAGE
SITE MEETING

Ken Giese - Brisbane City Chemist
Kev O'Connor - Brisbane City Chemist Assistant
Peter Dusher - Brisbane Chief Health Surveyor
- Assistant
Bob Carr - Retired Health Inspector with
Brisbane City Council who had
knowledge of tannery operation

REASON FOR MEETING: Review result of vegetation clearing at southern end of site (balance area) with a view to formulating an action plan to allay any doubts in respect of possible contamination due to previous tannery operations

- 1) Bob Carr's recollection of the previous operations was inconclusive.
- 2) Agreed action plan:
 - a) Remove vegetation and heaps of heavily contaminated material (leather shaving etc) to a controlled Brisbane City Council dump as agreed with John Martinkovic of Brisbane City Council.
 - b) Check any heaps or odd land forms for leather and scrap contamination and remove if required as in item (a).
 - c) Once items (a) and (b) have been completed, have surveyors lay out, 50 metre square grid to facilitate referencing.
 - d) Dig a series of test pits as determined by visual examination and record results.
 - e) Take undisturbed samples for chemical testing; if required.

STAGES 2 & 3

- 3) Ken Giese requested that validation testing be carried out on Stage 1 construction. Koukourou & Partners will have rig available early next week to sample and test in open spaces.
- 4) Ken Giese raised the matter of the developer clearing and testing the area to be gifted over to Council. The matter of denudation of flood plain area and costs was discussed but no resolution reached.

Ed Berzins
KOUKOUROU & PARTNERS
23/5/1990

c/c P Bayetto - Koukourou & Partners - Adelaide
B Jones - Pioneer Homes

sch4p4(6) Personal information

FILE NOTE

4th June, 1990

FREE STREET RETIREMENT VILLAGE

Site Meeting 9:00 a.m. - Gary O'Conner B.C.C.
Geoff Lawrence K & P

After stripping of vegetation, an inspection was carried out of the ground surface to look for signs of filling, contamination, and any other unusual features.

Lot 1 - The development site itself had been stripped of the surface material containing any leather shavings and rubbish. There was no obvious sign of any pits. In the lower area an old manhole chamber was uncovered and removed, which appeared to have been an old sewer line. Three pits were dug in a soft area adjacent, but these showed no visible signs of waste or filling. The soils were natural sandy loam over clay. Samples were taken by B.C.C. of silt from these soft areas for analysis.

Lot 2 - An inspection of the stripped parkland area showed no signs at all of tannery waste refuse, and was basically covered in a deep layer of sandy loam. One ponded area existing after recent heavy rains, was sampled by B.C.C. A pit dug next to the area showed the soils once again to be natural loam over clay.

It was proposed to cover the parkland area with test bores @ approximately 50m spacing, and carry out validation testing on the samples. We have requested B.C.C. to confirm with the Development and Planning Section that the proposed work will satisfy their requirements, to enable the rezoning to be completed. We await this confirmation before carrying out the testing.

G.B.LAWRENCE
4.6.90

STAGES 2&3

DIAGRAM D

Not to Scale

Q.Ram. Rail in Kub.
214°16' 20"
1168

GORING

STREET

12°21' 11"

ORIGIN
in Kub
159°50'
148

No. 0 Mx
NE Cor. SFP
007540-0084

RP20073

4 No. 0 Mx
SFP
007540-0084

SECTOR
0148
048

Cor. SFP
0084-0094

Cor. SFP
007540-0084

28-52
Cor. F.O.A.S.P.
0084-0094

STREET

187°32'

187°11'

362'

171°

171°

171°

171°

171°

171°

171°

171°

171°

171°

171°

171°

171°

171°

171°

171°

171°

171°

171°

171°

DIAGRAM A

Not to Scale

2

3

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3

3

3

3

3

3

3

8

7

6

5

4

3

2

1

1

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1

1

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SITE INVESTIGATION AND VALIDATION TESTING REPORT

SITE: FREE SREET RETIREMENT VILLAGE
NEWMARKET

DATE: 19th June, 1990

JOB NUMBER: M900502

CLIENT: PIONEER HOMES
2954 Pacific Highway
Underwood
QLD.4119

KOUKOUROU & PARTNERS

VALIDATION TESTING - FREE STREET RETIREMENT VILLAGE
NEWMARKET

STAGE 1 , STAGES 2 & 3, & PROPOSED PARKLAND (LOT 2)

GENERAL

Following a site meeting on the 25.5.90 with officers of the Brisbane City Council; Scientific Services Branch; where an outline for further assessment of the above areas was requested, a series of inspections and test bores have been carried out in conjunction with officers of the above branch and Koukourou & Partners.

Details of the work carried out and results of testing are attached, along with plans showing the locations of test bores and pits.

The validation testing program was carried out as requested by the Scientific Services Branch, and laboratory testing of the samples taken was done by Australian Laboratory Services, an independent N.A.T.A. registered laboratory.

VALIDATION OF STAGE 1

As requested, a series of test bores were placed around the Stage 1 area of the site, in which construction has been started. The purpose of this investigation was to confirm that no contamination was present in the area after earthworks and construction had been carried out.

Test bore locations were chosen by G.O'Connor of the Scientific Services Branch and the locations are shown on an attached plan of the area.

Thirteen boreholes were drilled on 1/6/90 to sample the top 1m of surface soils, except for BH13 which was taken to 2m depth. The cores were visually inspected, then divided between B.C.C. and K & P for independent testing to be carried out.

It was agreed that K & P carry out testing for Zinc, Lead, Copper, Arsenic and Chromium on their samples, and B.C.C. to do the same plus any testing for phenols etc. as thought necessary.

Test results on our samples are attached.

INSPECTION OF STAGES 2 & 3

Subsequent to the site meeting, it was agreed that further inspection of the lower areas of Lot 1, which would comprise Stages 2 & 3 of the development, would be carried out after stripping and clearing of the area had been done.

On 4.6.90 an inspection of the area was carried out by G.O'Connor (B.C.C.) and G.Lawrence (K & P). The area had been stripped of vegetation and any surface material containing leather shavings or rubbish removed from the site to a Council approved dump site. The area was inspected for signs of pits or buried rubbish but there were no obvious signs of anything remaining. In the lower area, an old manhole was uncovered which appeared to have been a line from the old tannery site. There was a soft area adjacent to the old manhole. Three pits were excavated, but no evidence was found of filling or visible contamination. Samples of the silt in this area were taken by B.C.C. chemist for testing.

As no obvious signs of filling or pits remained after removal of the surface material, and the fact that the area had previously been tested for chemical contamination, no further investigation was proposed for this area.

VALIDATION TESTING OF PARKLAND (LOT 2)

As with the lower area of Lot 1, the surface vegetation was removed from the entire proposed parkland area to enable a visual inspection to be carried out. This was done on 4.6.90 by the above mentioned officers to look for filling, contamination, or any unusual features.

The inspection showed no visible signs of tannery waste and soils were natural clays with a layer of sandy loam at the surface.

One ponded area existed after recent heavy rains, which was sampled by the B.C.C. chemist for analysis. A pit dug adjacent to it showed only natural soils.

It was proposed to carry out a series of test bores over the area to sample the soils and carry out chemical testing as per the validation testing of Stage 1.

The agreed testing program was carried out on 7.6.90. Another 13 boreholes were placed across the area and the positions accurately recorded by the site surveyor for future reference if needed. See attached site plan. The core samples were examined and divided between B.C.C. and K & P on the following morning for laboratory testing.

Test results obtained from these samples are shown in the attached Table.

STAGES 2 & 3

FILE NOTE

Newmarket Retirement Village

Contamination

10.00 am 29.8.1990

Present: Ed Berzins - Koukourou & Partners
Ken Giese - Brisbane City Council
Alan Brunner - Scientific Adviser
State Government
Chemical Hazards and
Emergency Management Unit

Reason for Meeting:

Finalisation of validation testing for Village Site and Parkland.

Minutes:

Ed Berzins confirmed that usage is for Retirement Village not group title; there will not be permanent children resident; landscaping will be extensive thus precluding individual "Vegie Gardens."

Ken Giese confirmed that road construction for stage 1 may proceed, followed by landscaping.

A further test hole will be sunk between the manager's residence and Community Centre to determine soil profile.

A further three holes will be land augured on the western and northern side of the manager's residence. The holes to extend through fill and 500 mm into natural surface. Testing to determine levels of lead, chrome and arsenic.

The park area is generally free of contamination except in the area of bore hole 13, where chrome levels are higher than normal. Further testing will be carried out in conjunction with stage 2 & 3 validation.

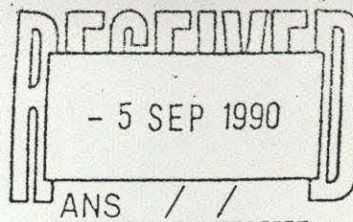
Stage 2 & 3 will be validated by sampling on a 25 m grid with emphasis on chrome levels.

Ed Berzins and Ken Giese to meet at 10 O'clock, Thursday. 30th. 1

sch4p4(6) Personal information

DEPARTMENT OF WATER SUPPLY AND SEWERAGE

Scientific Services Branch



GO'C:

MEMORANDUM TO: DIRECTOR

FILE NO: (5)420/11-L0230/24
(2)439/26(6462)

FROM:

ACTING SENIOR CHEMIST

DATE: 12 July 1990

SUBJECT: RETIREMENT VILLAGE AT 24 FREE STREET NEWMARKET

Background:

The Department of Development and Planning requested assistance from Scientific Services Branch in the assessment of the proposed development of a retirement village on land at 24 Free Street Newmarket.

The site was formerly occupied by a tannery which operated on the site for many years, ceasing operations in the early seventies.

The developers, Pioneer Homes, engaged Koukourou and Partners (K&P) as consultants who have undertaken a site assessment program. Further requirements were placed upon K&P by Scientific Services Branch officers to enable an adequate assessment of the site. These requirements are detailed in folios 64 and 65 of (5)420/11-L0230/24 and are summarised as follows:

Requirement (1):

Stages 2 and 3 and the proposed parkland be carefully cleared of vegetation prior to commencing any investigation. After clearing, the area be inspected by the consultants and Scientific Services personnel and an investigation of the area be programmed.

Requirement (2):

A validation programme be carried out on Stage 1 of the development to confirm that the area has been remediated satisfactorily.

Requirement (3):

A remediation programme followed by a validation programme be carried out on the proposed parkland.

The following is a summary of the actions taken to date on these requirements and a proposed course of action for the assessment of the development. Attached also is the report by K&P in regard to these requirements.

283

Requirement (1):

Pioneer Homes cleared the vegetation from Stages 2 and 3. This clearing exposed areas where leather scraps had been disposed in mounds on the surface of the ground. Pioneer Homes arranged for the collection and removal of this material to the Willawong Refuse Tip. The removal operation was completed on 30 June 1990. A site inspection by myself on 4 July 1990 confirmed that the surface material had been removed to a satisfactory standard in Stages 2 and 3.

A similar clearing operation was conducted on the proposed parkland area. Site inspections of this area did not show any surface indications of waste disposal. Various grab samples of soil from the area showed background levels of metals in the area.

Requirement (2):

A validation programme was planned for Stage 1 of the development. Core soil samples were taken from open space areas in this part of the development. Cores were taken to a depth of one metre except for borehole thirteen where a depth of two metres was drilled due to the depth of fill in this area. Once again the soil samples were split between BCC and K&P. The analysis results are presented in Table 1; the sample locations are shown in the K&P report.

Borehole 5 showed a significant level of arsenic and consequently another core sample was taken and analysed. The results of this retest are attached, the retest core being designated borehole 5A. The retest again shows a significant level of arsenic. It is proposed that State Health opinion be sought on the hazard associated with such a level of arsenic in an isolated pocket.

Borehole 13 showed a significant level of chromium but as is pointed out in the K&P report, the immediate area surrounding this borehole will be covered by a road and the general surrounds is covered by imported fill necessary for the construction of the Retirement Village Manager's unit and the Village Centre.

Requirement (3):

Due to the lack of any surface evidence of waste disposal and the fact that soil surface grab samples failed to show any levels of contamination, it was agreed with Pioneer Homes and K&P that the best course of action was for a validation core sampling programme to be run in the proposed parkland area.

A core drilling programme was run on 7 June 1990 with core samples again being split between BCC and K&P. The results of these analyses are presented in Table 2 along with the original analysis reports. Sample locations are shown in the K&P report attached.

Comments:

Pioneer Homes and Koukourou and Partners have cooperated fully with Council officers in meeting the specified requirements. They have removed all identified or suspected areas of contamination and disposed of the material at the Willawong Refuse Tip.

While it is not possible for the developer, his consultant or Scientific Services personnel to guarantee that all contaminated material has been removed from the site, every effort has been made to identify and remove contaminated materials so that the site is suitable for use as a retirement village.

In regard to Stages 2 and 3 of the development, all contaminated material on the surface has been removed. Where suspicious ground formations were found an excavator was used to explore the sub-surface to determine if any potentially contaminated material was lying below the ground. Any potentially contaminated materials were removed and disposed of at the Willawong Refuse Tip.

Stages 2 and 3 are yet to be built and it is possible that during constructions some potentially contaminated material may be found. It is important that conditions be placed upon the developer to ensure that these materials are correctly dealt with. It is also recommended that a validation core sampling and analysis programme be conducted on the open space areas as was performed on Stage 1. The developers to date have cooperated with these requirements and I would expect that they would find such conditions fair and reasonable.

The assessment of the Free Street development has progressed to the stage where the opinion of State Health Department should be sought. The data available is encouraging as to the progress of the site remediation. However I am of the opinion that specialist advice be sought and that the appropriate source of this advice is the Environmental Sanitation Section in the State Health Department.

sch4p4(6) Personal information

/G.O'Connor
ACTING SENIOR CHEMIST

STAGES 2 & 3

FREE STREET RETIREMENT VILLAGE, NEWMARKET

STAGES 2 & 3

VALIDATION TEST BORE DESCRIPTIONS

For locations, refer to attached site plans.

BH No.	DEPTH (mm)	DESCRIPTION
K1	0-200 200-1300	TOPSOIL, dark brown SILTY SAND, orange brown
K2	0-500 500-1800	LOAMY TOPSOIL/FILL, discoloured SILT, brown
K3	0-500 500-1300	LOAMY TOPSOIL/FILL, brown and black SILT, brown black, moist to wet
K4	0-300 300-750 750-1300	TOPSOIL, brown, black CLAYEY SAND, orange brown CLAY, mottled, red brown
K5	0-400 400-1000 1000-1300	CLAY, mottled brown CLAY, mottled orange VERY WEATHERED SHALE, brown
K6	0-300 300-1300	CLAY FILL, dark brown WEATHERED SHALE, light orange
K7	0-300 300-1300	TOPSOIL, brown black SANDY CLAY, red. brown, moist
K8	0-200 200-800 800-1300	GRAVELLY SOIL, grey CLAY, mottled red brown SHALEY CLAY, mottled orange
K9	0-300 300-800 800-1300	TOPSOIL, dark grey brown CLAY, grey brown WEATHERED SHALE
K10	0-150 150-950 950-1200	LOAMY TOPSOIL, light brown SILTY SAND, dark brown SANDY CLAY, yellow brown
K11	0-500 500-800 800-1300	CLAYEY FILL NATURAL SOIL, dark brown GRAVELLY CLAY, red brown

COPY

FREE STREET RETIREMENT VILLAGE, NEWMARKET

STAGES 2 & 3

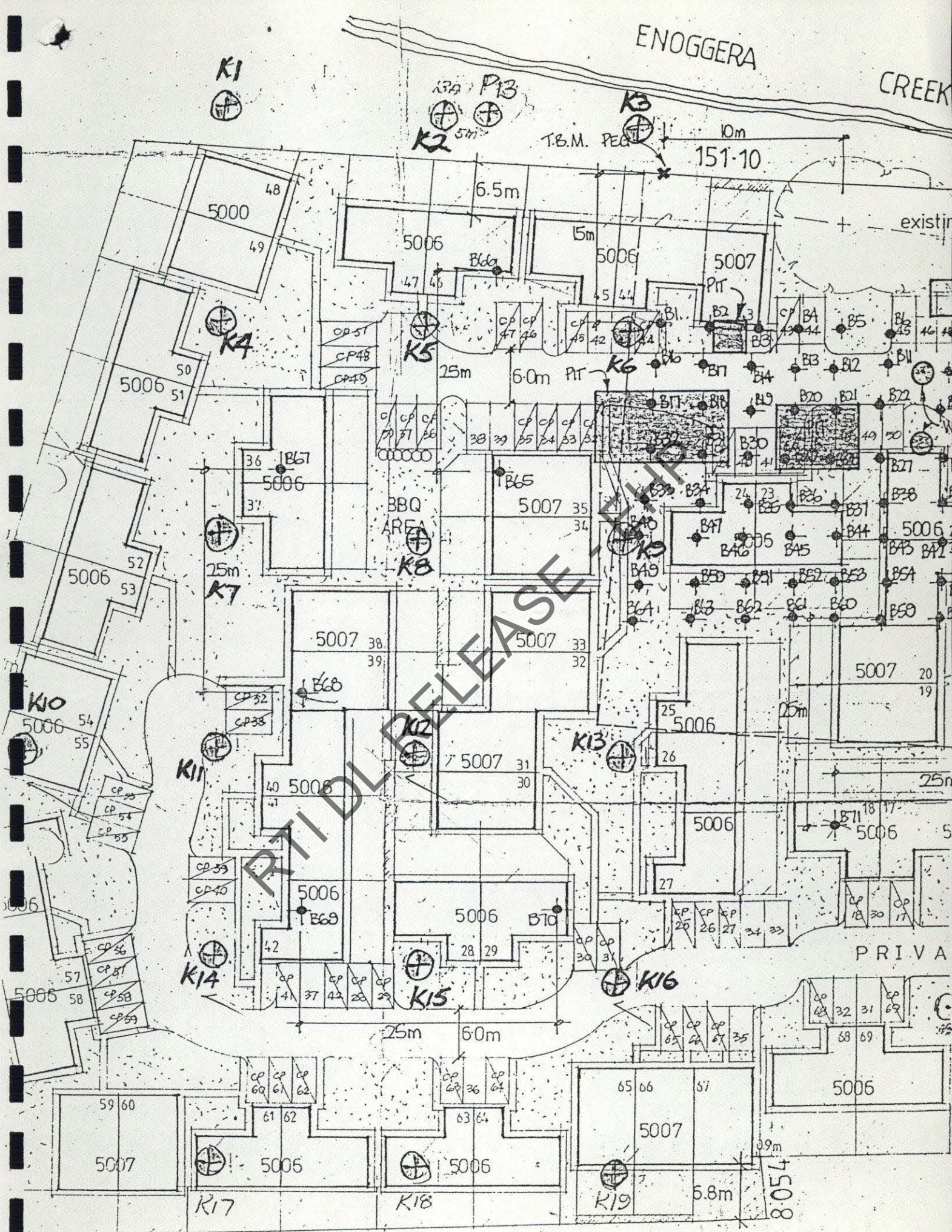
VALIDATION TEST BORE DESCRIPTIONS

For locations, refer to attached site plans.

BH No.	DEPTH (mm)	DESCRIPTION
K12	0-450 450-700 700-1150 1150-1300	GRAVELLY SANDY SOIL GRITTY CLAY, red CLAY, red brown and clay WEATHERED SHALE AND CLAY
K13	0-200 200-850 850-1300	GRAVELLY SOIL, discoloured GRAVELLY CLAY, mottled brown WEATHERED SHALE
K14	0-600 600-1200	LOAMY GRITTY TOPSOIL, dark brown CLAY, mottled red
K15	0-300 300-1200	LOAM, dark brown black GRITTY CLAY, orange brown
K16	0-400 400-1200	LOAM, dark brown black GRITTY CLAY, orange

COPY

ENOGGERA CREEK



90-222



Australian Laboratory Services PTY. LTD.

CONSULTING ANALYTICAL CHEMISTS

KOUKOUROU & PARTNERS

Attention: MR E BERZINS
Your Order: LETTER
Sample Type: SOIL

Page-no: 1
STAFFORD
Batch-no: 323
Sub-batch: 0
No-samples: 29
Received: 07/09/90
Checked:

Element	As	Cr
Unit	ppm	ppm
Method	G033	G033
13A 750-1000	36	3700
13A 1000-1800	19	200
M1 750-1000	22	170
M1 1000-1500	8	220
2 500-750	12	125
2 WOOD	4	170
M3 00-500	26	170
K1 00-200	28	230
1 200-500	16	160
K2 00-200	9	2050
K2 200-500	10	220
3 00-500	20	1850
3 500-1000	14	135
K4 00-200	10	360
4 200-500	1	360
5 00-250	1	220
5 250-500	7	155
Kb 00-200	2	180
6 200-500	3	220
7 00-250	9	290
K7 250-500	1	195
8 00-250	7	270
9 00-250	12	470
K10 250-500	4	125
K10 500-750	3	145
12 250-500	5	370
K13 00-250	5	185
K14 250-500	3	220
16 250-500	8	260

Detection limit

1

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Report complete, 1 pages sent.

FILE NOTE

NEWMARKET RETIREMENT VILLAGE

CONTAMINATION

MEETING 10.00 am, 4.10, 1990

PRESENT: K Giess - Brisbane City Council
G O'Connor - Brisbane City Council
E Berzins - Koukourou & Partners

Reason: Action plan to remediate area near south
western corner of site/park area.

It was agreed that materials within the theoretical line
delineating chrome levels greater than 500 p.p.m be
scraped of to a depth of approximately 300 to 500 mm.

This material is to be stockpiled on the site for later
controlled re-blending with the imported fill material
around the southern end of the site.

Ken Giess would like to be present on site during
excavation and a couple of further validation tests will
be taken when excavation is completed.

This action will then finalise validation of the parkland
and stages 2 & 3.

Ed Berzins
KOUKOUROU & PARTNERS

sch4p4(6) Personal information

Pioneer Homes
Free Street Retirement Village
Newmarket
Parkland - Validation Report

Supplementary Testing Results
Brisbane City Council
Department of Water Supply & Sewerage
Scientific Services Branch

INVESTIGATION TESTING

BOREHOLE NO.

CHROME PPM

P2	1265
P3	73
P4	198
P5	516
P6	311
P13	1850
P13A	2142

VALIDATION TESTING

(after Remediation)

LV 1A	832
LV 2A	140
LV 3A	101
KV 2A	122
KV 3A	681
PV 13A	193

KOUKOUROU & PARTNERS
LEVEL 1, 922 STANLEY ST.
EAST BRISBANE 4169
TELEPHONE: (07) 891 1911
FACSIMILE: (07) 891 5469

Civil Structural, Soil Testing.

5 December 1990

Postal Address:
PO Box 116
East Brisbane Qld 4169Level 1
922 Stanley Street
(Cnr Lisburn Street)
East Brisbane Qld 4169Telephone (07) 891 1911
Facsimile (07) 891 5460Chem Unit
Executive Building
100 George Street
BRISBANE QLD 4001

Attention: Mr A Brunner

Dear Sir

Re: Pioneer Homes
Free Street Retirement Village
Newmarket
Parkland Validation
Supplementary Report

The area of concern at the north western corner of the Parkland was remediated by scraping approximately 200mm from the surface and removal of this material; out of the Parkland area.

This operation; and further testing; was carried out on the 27 November 1990.

The following information is for inclusion in our validation report of the Parkland area.

- 1) Drawing No. M901101 - P (Revision A).
Residuals - November 1990.
- 2) Remediation Summary

We would be pleased to receive the CHEM Unit; Site Contamination Report as a matter of urgency.

Yours faithfully

sch4p4(6) Personal information

Ed Bezins
KOUKOUROU & PARTNERSC/C Pioneer Homes
Ballmer & Parker
Russell Holland & AssociatesAdelaide
(08) 353 0222Melbourne
(03) 853 7922Sydney
(02) 821 1401Branch at Gawler
(085) 22 6802

(1)

PIONEER HOMES
FREE STREET RETIREMENT VILLAGE
NEWMARKET
PARKLAND VALIDATION - SUPPLEMENTARY REPORT

REMEDIATION SUMMARY
CHROME (PARTS PER MILLION)

FIRST REMEDIATION

KV2a - Brisbane City Council 122] 11 October 1990
KV2b - Koukourou & Partners 125]

FIRST REMEDIATION

KV3a - Brisbane City Council 681] 11 October 1990
KV3b - Koukourou & Partners 700]

SECOND REMEDIATION

KV3c - 70] 27 November 1990
KV3d - 85]

FIRST REMEDIATION

LV1a - Brisbane City Council 823] 11 October 1990
LV1b - Koukourou & Partners 1300]

SECOND REMEDIATION

LV1c - 60 27 November 1990

FIRST REMEDIATION

LV2a - Brisbane City Council 140] 11 October 1990
LV2b - Koukouru & Partners 320]

SECOND REMEDIATION

LV2c - 40 27 November 1990

(2)

FIRST REMEDIATION

PV13a - Brisbane City Council	193	] 11 October 1990
PV13b - Koukourou & Partners	330	

SECOND REMEDIATION

PV13c -	90	27 November 1990
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NO PRIOR REMEDIATION

P5	516
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FIRST REMEDIATION

PSA	75	27 November 1990
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sch4p4(6) Personal information

ED BERZINS
KOUKOUROU & PARTNERS
5 December 1990

RTI DL RELEASE - EHP



Area of loose loamy
fill containing chromium
removed and stockpiled
on 9/10/90.

RTI DL RELEASE - EHP

KOUKOUROU & PARTNERS
LEVEL 1, 922 STANLEY ST,
EAST BRISBANE 4169
TELEPHONE: (07) 891 1911
FACSIMILE: (07) 891 5460

sch4p4(6) Personal information

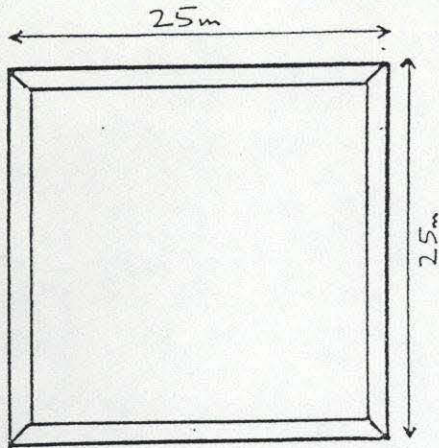
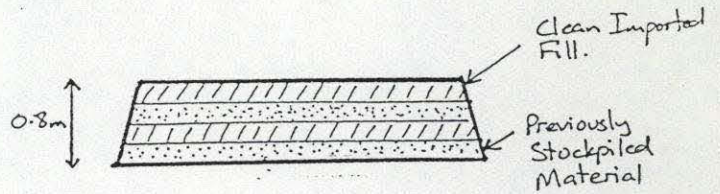
1/10/90

550 EAST

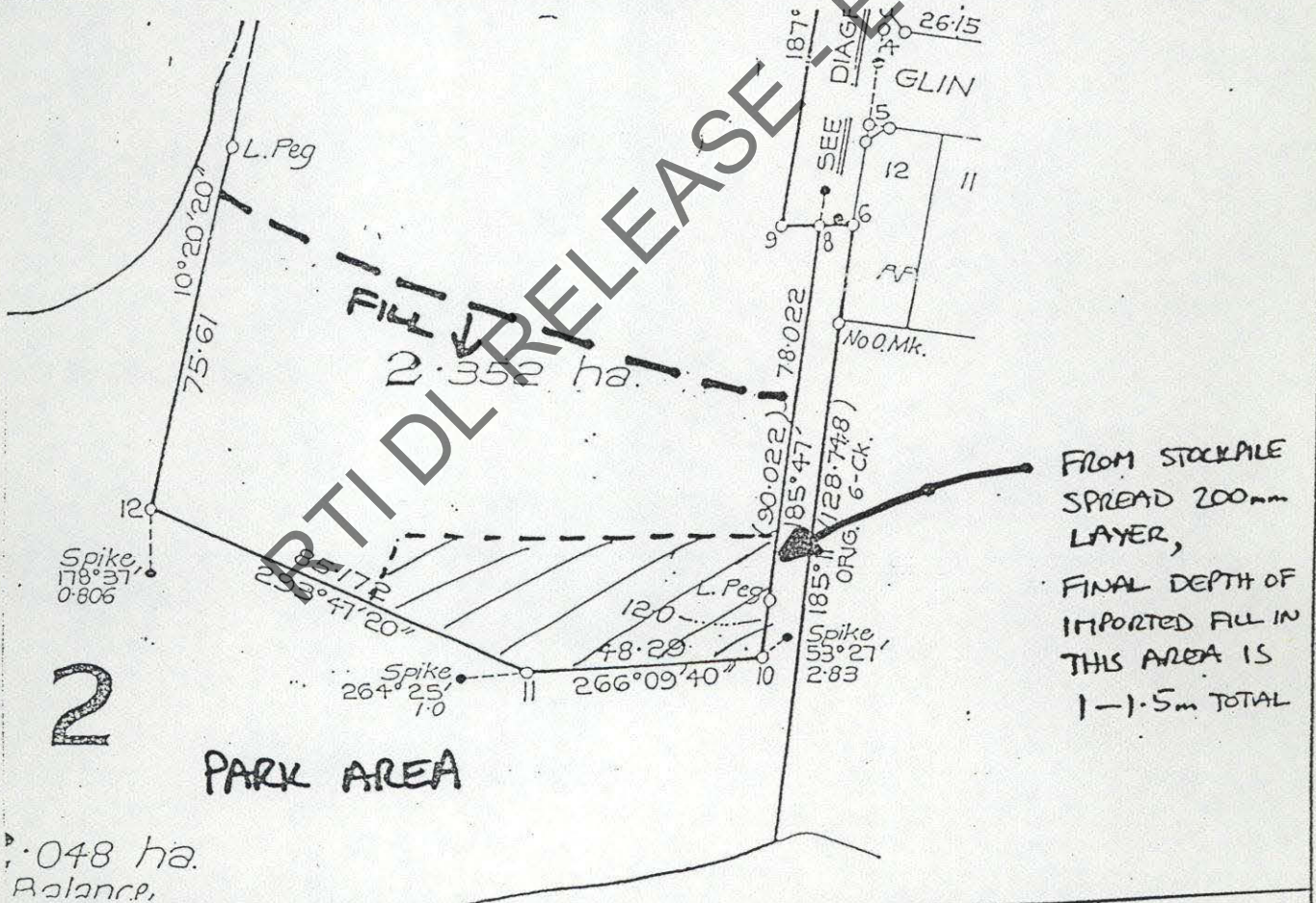
WR REG.
151.937 E
286.580 N

800 NORTH

SCALE 1:250
BEFORE REDUCTION



STEP 1 - CREATE LAYERED STOCKPILE



Koukourou & Partners

Consulting Engineers

CIVIL, STRUCTURAL,
Level 1/922 Stanley Street
East Brisbane, Qld. 4169
Telephone 891-1911

SOIL TESTING, SUPERVISION
42 Fullarton Road
Norwood, Sth. Aust. 5067
Telephone 363-0222

Designed	Date 30.10.90
Drawn	Scale NTS
Checked	Sheet No.
Approved	Drawing No. M900502



CHEM UNIT

CHEMICAL HAZARDS AND EMERGENCY MANAGEMENT UNIT
A Division of the Bureau of Emergency Services

Telephone: (07) 224 4422
Facsimile: (07) 224 4471

P.O. BOX 13,
NORTH QUAY, QLD 4002

AAB:CKC

22 November 1990

Mr G B Lawrence
Kou Kourou & Partners
PO Box 116
EAST BRISBANE QLD 4169

Dear Sir,

TREATMENT OF STOCKPILED MATERIAL FREE STREET

I refer to your proposal dated 30 October 1990 for blending and handling of stockpiled material which has been removed from the proposed parkland.

The method as proposed is acceptable. However, I suggest that you aim to reduce the final level of contamination obtained from the blending process to a level which is equal to but not higher than that already existing in Stages 2 and 3.

For your information, 250 mg/kg of Cr is the level which is likely to be used as an investigative threshold in future.

Yours faithfully

sch4p4(6) Personal information

ALAN A BRUNNER
Scientific Adviser
Industrial Processes



FILE NOTE

10th December, 1990

RE: FREE STREET NEWMARKET, RETIREMENT VILLAGE.

Following completion of the blending of the stockpiled contaminated material, and its placement and compaction in the lower area specified, a sampling program was carried out by G. Lawrence. The object of this testing was to sample the full depth of the placed, blended material, and check the levels of total chromium. Seven test bores were taken as marked on the attached plan, at a spacing of approximately 20m. The material obtained was sealed and delivered to Australian Laboratory Services straight away for analysis.

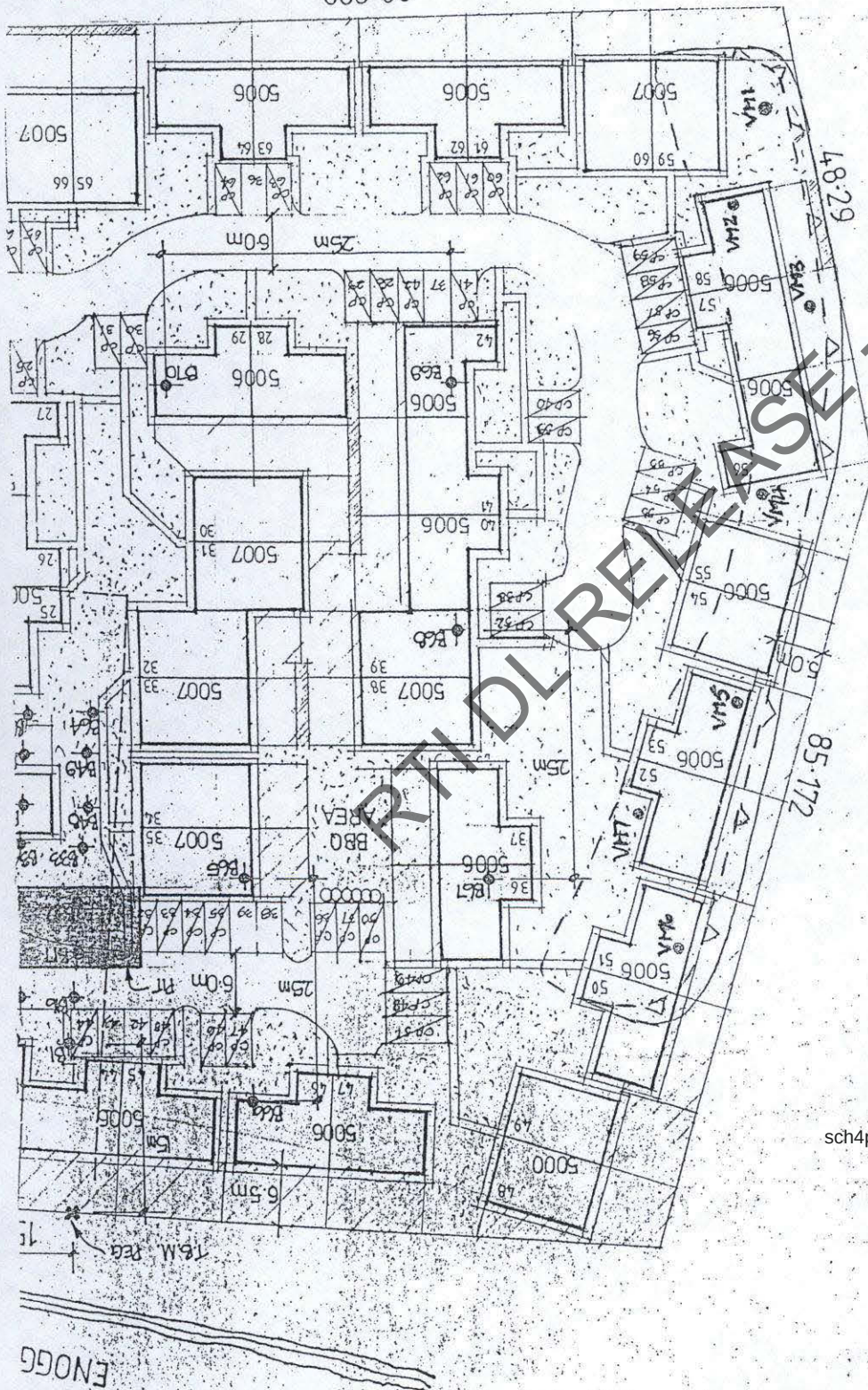
sch4p4(6) Personal information

G. B. LAWRENCE.

RTI DL RELEASE - EHP

75	UNITS	131	CARPARKS
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90.222



VM1	0-600 <small>min</small>
VM2	0-200 <small>min</small>
VM3	0-500 <small>min</small>
VM4	0-500 <small>min</small>
VM5	0-700 <small>min</small>
VM6	0-600 <small>min</small>
VM7	0-400 <small>min</small>

sch4p4(6) Personal information

Australian Laboratory Services PTY. LTD.

CONSULTING ANALYTICAL CHEMISTS

INCORPORATED
IN QUEENSLAND

LABORATORY REPORT

Brisbane Head Office and Laboratory
32 Shand Street, Stafford, Q. 4053
P.O. Box 66, Everton Park, Q. 4053.
Phone: (07) 352 5577.
Fax: (07) 352 5109.

Perth Laboratory
Lot 197 Victoria Road, Malaga, W.A. 6062.
Phone: (09) 249 2988. Fax: (09) 249 2942.

Townsville Laboratory
21 Bombala Street, Garbutt, Q. 4814.
Phone: (077) 79 9155. Fax: (077) 799 729.

Charters Towers Laboratory
18 Drew Street, Charters Towers, Q. 48
Phone: (077) 87 4155. Fax: (077) 87 421

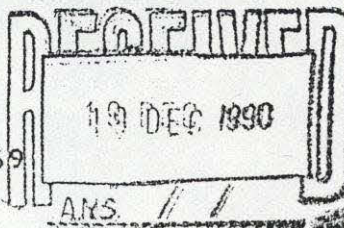
Bendigo Laboratory
127A Victoria Street, Eaglehawk, Vic. 3
Phone: (054) 46 1390. Fax: (054) 46 13

Orange Laboratory
10 Leewood Drive, Orange, N.S.W. 28
Phone: (063) 631 722. Fax: (063) 631 1

Page 1 of

KOUKOUROU & PARTNERS
P O BOX 116
EAST BRISBANE
QLD

4169



STAFFORD
Batch Number: 833
Sub-batch: 0
No. of Samples: 7
Date Received: 10/12/9
Date Completed: 18/12/9

ntact: MR G LAWRENCE

d No. VERBAL

Sample Type: SOIL

SAMPLE NUMBER	Element Unit Method	Cr ppm G033
---------------	---------------------------	-------------------

VM1 0-600	320
VM2 0-200	380
VM3 0-500	420
VM4 0-500	210
VM5 0-700	740
VM6 0-600	540
VM7 0-400	520

RTI DL RELEASE - EHP

etection Limit:

1

omments:

NEWMARKET
PARKLAND VALIDATION

All pages of this report have been checked
and approved for release. Signed

sch4p4(6) Personal information

30th October, 1990

CHEM UNIT
Executive Building
100 George Street
BRISBANE
QLD. 4001

Attention: Mr. A. Brunner

Dear Sir,

Re: Treatment of Stockpiled Material,
Retirement Village,
Free Street, Newmarket.

We would like to submit the following proposal for blending and handling of the stockpiled material, removed from the parkland and Stage 3 of the above project.

In order to remove the "hot spot" which was found, the entire area was stripped down to the clay base, and stockpiled. This would have resulted in the contaminated material being diluted substantially with the large amount of natural material excavated and mixed in the process.

We now propose to blend this material as follows, to further dilute any possible concentrations of material, and place it in the deepest area of filling, where it can be validated if necessary prior to being finally covered.

Step 1 - the stockpile of material to be treated consists of approximately 170m³. A 200mm deep layer is to be spread over a 25m square area, and then overlain with a 200mm layer of clean imported select fill. The process is to be repeated, which will give an 800mm pile of thinly layered material.

Step 2 - the material can then be blended by machinery working the full depth of the pile. This will ensure that the layers are mixed fully as each bucket load is taken.

Step 3 - the blended material is to be placed in the deepest area of the site which requires filling and spread in a 200mm deep layer. We propose the area marked on the attached plan, which will mean the layer is to be covered by a further 1-1.5m of clean imported filling.

We would appreciate your comments and approval on this procedure as soon as possible, as our client is extremely anxious to resolve the matter.

Yours faithfully,

sch4p4(6) Personal information

G.B. LAWRENCE
KOUKOUROU & PARTNERS



CHEM UNIT

CHEMICAL HAZARDS AND EMERGENCY MANAGEMENT UNIT

A Division of the Bureau of Emergency Services

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P.O. BOX 13,

NORTH QUAY, QLD 4002

FACSIMILE TRANSMISSION

DATE: 21 JANUARY 1991

FAX NO: 891 5460

TO: G LAWRENCE

KOUKOUROU & PARTNERS

FROM: A BRUNNER

TOTAL PAGES SENT (INCLUDING THIS PAGE) 1

COMMENTS: FREE STREET - NEWMARKET STAGE 2 & 3

AFTER CONSIDERATION BY THE UNIT TOXICOLOGIST, IT IS AGREED THAT FURTHER
BLENDING OF SOIL ON THE SOUTHERN END OF STAGE 2 & 3 IS NOT NECESSARY.
COULD YOU PLEASE ADVISE THE DEPTH OF FILL WHICH IS TO BE ADDED TO THIS
SECTION OF THE SITE.

sch4p4(6) Personal information

A BRUNNER

OFFICE ADDRESS: 8th Floor, Executive Building, 100 George Street, BRISBANE 4000

Civil Structural, Soil Testing.

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(Cnr Lisburn Street)
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Facsimile (07) 891 5460

Facsimile transmission

FAXED
21.1.91

To CAEM UNIT	Attention ALAN BRUNER	Fax. No. 220 4471
Date 21.1.1991	No. of Pages 2	From ED BELTINS
RE: FREESHEET - STAGES 2 & 3.		Fax. No. (07) 891 5460

DEPTHS OF FILLING.

BOREHOLE NoFILL DEPTH (METRES)

VM 1

0.5

2

1.9

3

1.75

4

1.3

5

1.1

6

1.2

7

0.7

sch4p4(6) Personal information

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