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QUARTERLY, ANNUAL & FINAL REPORT

PIPERS BROOK AREA, NORTH EASTERN TASMANIA, EL 16/85

Period 31.5.1986 to 30.8.1986
and from 31.8.85 to 30.8.1986

Report prepared by,
QUEENSLAND MINES LIMITED
on behalf of:
PIONEER SILICON INDUSTRIES PTY LTD.

Distribution:
Department of Mines, Tasmania
Queensland Mines Limited

Date: 19 SEPTEMBER, 1986
Report No: PCS 1986/6

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INTRODUCTION

EL16/85 was granted to Pioneer Concrete (Tasmania) Pty. Ltd. for a period of one year ending 30 August, 1986.

Since that date, regular reports have been submitted and this report represents the last quarterly period from 31.5.1986 to 29.8.1986. It is also intended as the Annual Report.

The exploration programme in the EL area is now confined to seven Mining Lease Application areas (MLAs 1244 to 1250 inclusive) and as such we declare the ground relinquished. In this respect, the report can be considered as the Final Report.

1. Exploration During Quarterly Period

Since the last quarterly report, results on the test pitting and bulk sampling on areas to the west of Saltwood Station are now available.

The location of these areas, a summary of the resource estimates and the bulk sampling results are included as Appendix 1 of this report.

2. Previous Work

2.1 Initial Reconnaissance

A rapid survey of quartz gravel deposits in the Pipers Brook region was made and the results were reported by R.G. Wright. His report, "Quartz Gravel Survey, N.E. Tasmania" is included as Appendix 3 of this report.

2.2 Bridwood - Weymouth Areas

Following the initial reconnaissance, test pitting, bulk sampling and resource elements were made at three locations in the Bridwood area and at one locality at Weymouth.

The results of these investigations were reported by R.G. Wright in his report, "Test Pitting for Quartz Gravel, Bridwood Station and Weymouth", and this is included as Appendix 2 of this report.

3. Future Exploration

Investigation of the gravel deposits within the EL are now complete and seven ML applications (MLA's 1244 to 1250 inclusive) in the Saltwood area have been made.

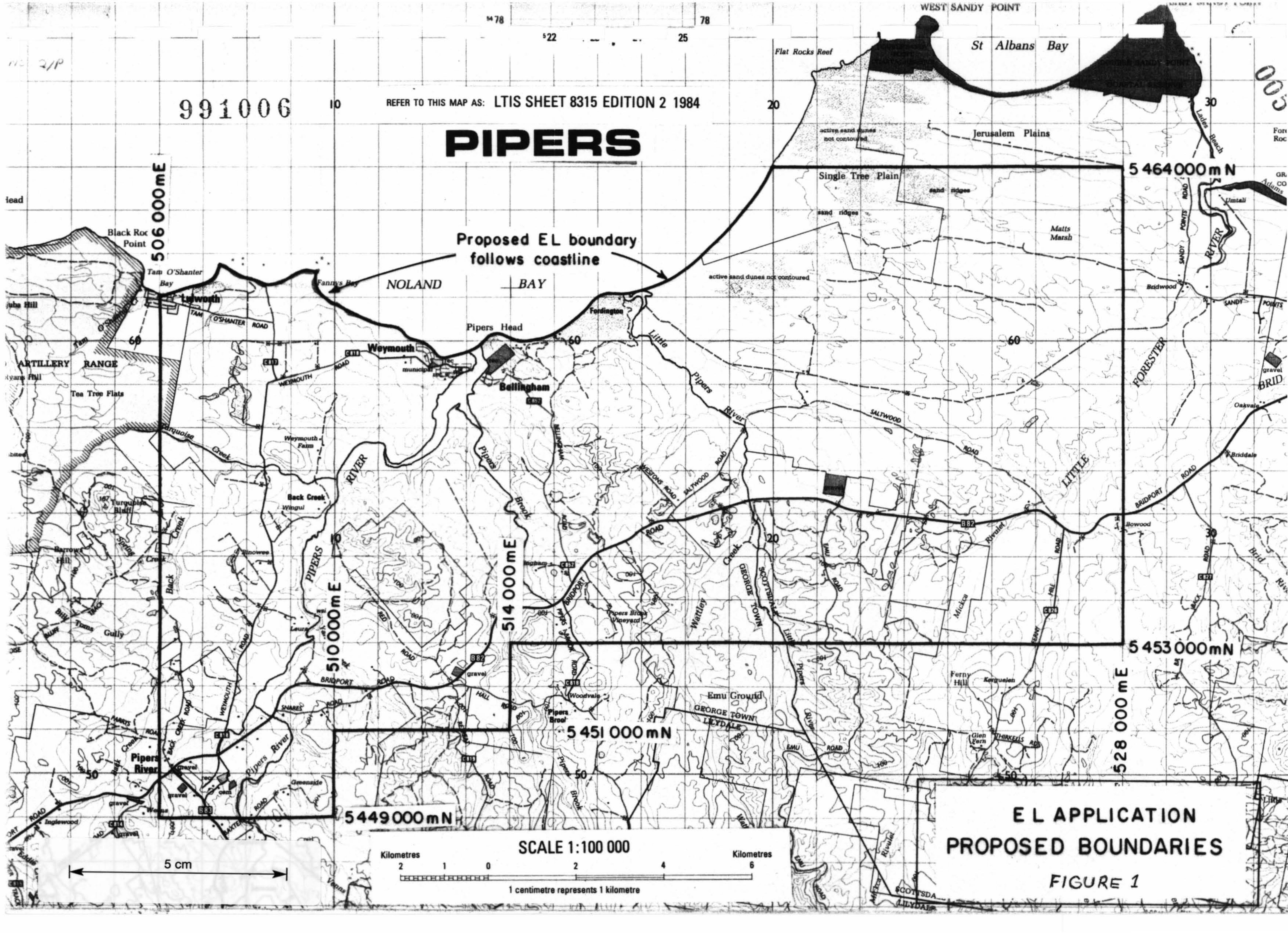
Our efforts are now directed towards the successful completion of the ML applications.

Therefore, we now wish to relinquish all the ground covered by EL 16/85.

Financial Statement

The total expenditure as previously reported for the first three quarterly periods was $11,247.09. For the period 31.5.1986 to 30.8.1986 expenditure was $14,839.42, giving an annual expenditure for the EL of $26,086.51.

A separate financial statement for the final quarterly period is attached.


991006
REFER TO THIS MAP AS: LTIS SHEET 8315 EDITION 2 1984
PIPERS
Proposed EL boundary follows coastline
506 000mE
510000mE
514 000mE
528 000mE
5 464 000m N
5 453 000mN
5 451 000mN
5449000mN
NOLAND BAY
St Albans Bay
WEST SANDY POINT
Flat Rocks Reef
Jerusalem Plains
Single Tree Plain
Matts Marsh
Black Rock Point
Tam O'Shanter Bay
Lulworth
Weymouth
Pipers Head
Bellingham
Fordington
Bridwood
Bowood
Pipers River
Emu Ground
Ferny Hill
Glen Fern
Woodvale
ARTILLERY RANGE
Tea Tree Flats
SCALE 1:100 000
Kilometres
1 centimetre represents 1 kilometre
5 cm
E L APPLICATION
PROPOSED BOUNDARIES
FIGURE 1

APPENDIX 1

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TEST PITTING FOR QUARTZ GRAVEL SALTWOOD STATION

NORTH EAST TASMANIA

EXPLORATION LICENCE 16/85 - PIPERS RIVER

PIONEER CONCRETE (TAS) PTY. LTD.

by

R.G. WRIGHT

CONSULTING GEOLOGIST

DEVONPORT

DISTRIBUTION

J.S. Noakes - Queensland Mines Ltd.

Tasmanian Department of Mines.

July, 1986.

Report No: PSC 1986/3.

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TEST PITTING FOR QUARTZ GRAVEL

SALTWOOD STATION

LIST OF FIGURES

LIST OF APPENDICES

1. INTRODUCTION

Exploration Licence 16/85 - Pipers River was granted to Pioneer Concrete (Tas.) Pty. Ltd. on the 30th August, 1985.

The licence, of 225 sq km area, covers a region prospective for coarse quartz pebble gravel.

This report details the results from test pitting carried out at seven sites on Saltwood Station, situated 11 km west of Bridport.

2. PREVIOUS WORK

A rapid survey of gravel deposits in the Pipers Brook - Scottsdale region was completed by the author in April 1985 (Wright, 1985). Exploration Licence 16/85 was taken up as a result of this reconnaissance. A programme of test pitting was later undertaken on gravel deposits on Bridwood Station and to the west at Weymouth. Results from this programme are detailed in Wright, 1986. Assay results from bulk samples collected during this phase of pitting are attached at Appendix I.

3. TEST PITTING PROGRAMME

Work undertaken late last year on the Bridwood property indicated that further coarse gravel deposits could occur to the west on Saltwood Station.

The owner of Saltwood, Mr. J.D. McCarthy, kindly showed the author the location of numerous gravel deposits located by him during his 11 years ownership of the property.

Discussion with Mr. D. K. Barrett, manager of Bridwood station was also helpful as he had worked on both properties over the past 14 years.

Inspections were made of 14 separate gravel deposits on Saltwood (Refer Figure 1). The deposits occur along three ENE trending zones possibly reflecting the drainage direction of the ancient Little Pipers River. Most deposits are generally too thin and low yielding to be of interest as a source of +20mm quartz pebbles. A total of 7 deposits were finally selected for test pitting to check on thickness, yield and tonnage potential. Most of the gravel has a loose sandy matrix so Mr. McCarthy was contacted to use his tractor for the pitting programme. The tractor was fitted with a front bucket scoop and was successful, in most places, in penetrating the full thickness of each gravel deposit.

Secondary silicification was a problem on the Saltwood deposit and not all the pits could be bottomed through to the underlying Mathinna shale bedrock.

A total of 60 pits were dug on the property and the descriptive logs of these are included in Appendix II.

4. BULK SAMPLE SCREENING RESULTS

A total of 16 bulk samples ranging from 48 - 68 kg weight were collected from various test pits (Refer Table 1 and Figures 2,5,6 & 7).

The samples were first weighed on a Salter clock scale provided by J. McCarthy.

The samples were then individually run through a screening plant owned by Mr. N. Gerke of Scottsdale. The +20mm fraction was collected and re-bagged and weighed again with the clock scale.

Results are detailed on Table I.

The average yield of +20mm pebbles from deposits on Saltwood are generally less than 20%. The Saltwood deposit has twice this yield at an average of 38%. Yield at the Cow Paddock deposit is also high at 57%. Overall tonnage available from this deposit, however, is unfortunately low as is detailed later.

TABLE 1

BULK SAMPLE SCREENING RESULTS - SALTWOOD STATION

Location	Pit No.	Sample Depth metres	Pebble Type	Total Sample Weight Kg	Weight of +20mm Fractures Kg	% Yield
Saltwood Gravel Deposit	S1	0-1.2	Sub angular vein quartz pebbles - clay and silica matrix in some pits.	53	20	38
	S3	0-0.6		59	20	34
	S5	0-0.75		55	14	25
	S7	0-0.65		66	30	45
	S9	0-0.95		69	35	51
	S15	0-0.45		57	22	39
	S16	0-0.45		61	19	31
					Depth weighted average	38%
Cow Paddock Gravel Deposit	S30	0.15-0.55	Rounded, elongate flat shingle pebbles - various lithologies	68	39	57
	S31	0.45-0.75		59	25	42
	S34	0.15-0.5		57	40	70
					Depth weighted average	57%
N.W. Gravel Deposit	S36	0.15-0.65	Shingle pebbles - as above	59	9	15
	S37	0.45-0.85		48	10	21
					Depth weighted average	18%
Little Pipers River Gravel Deposit	S45	0.1-0.55	Sub rounded, clean, vein quartz pebbles	57	10	18
	S46	0.4-0.7		55	9	16
					Depth weighted average	17%
New Gravel Pit Deposit	S54	0 -1.0	Sub rounded, clean, vein quartz pebbles	60	10	17
	S57	0.2-0.75		60	9	15
					Depth weighted average	16%

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NOLAND BAY

EWE RUN GRAVEL DEPOSIT SEE FIG 3

COWPADDOCK GRAVEL DEPOSIT SEE FIG 5

SALTWOOD GRAVEL DEPOSIT SEE FIG 2

NORTH WESTERN GRAVEL DEPOSIT SEE FIG 6

OLD PIT GRAVEL DEPOSIT SEE FIG 4

LITTLE PIPERS RIVER GRAVEL DEPOSIT

NEW GRAVEL PIT DEPOSIT SEE FIG 7

Weymouth

Bellingham

BRIDPORT ROAD

Little Pipers River

SALTWOOD ROAD

LITTLE FORESTER RIVER

320 000mE

340 000mE

5460 000mN

5456 000

LEGEND

QUARTZ GRAVEL DEPOSITS

PROPERTY BOUNDARY

5 cm

PIONEER SILICON INDUSTRIES

LOCATION MAP
TEST PITS - SALTWOOD AREA
EL 16/85

AUTHUR D.W. DRAWN:	SCALE 1: 50,000 DATE. AUGUST 1986	DRAW NO: Tas(5) 15P FIGURE 1

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5. RESERVE ESTIMATES

5.1 SALTWOOD GRAVEL DEPOSIT

This deposit is situated about 3km NE of Saltwood homestead (Refer Figures 1 and 2).

The gravel forms a capping on a low EW arcuate ridge. At its eastern end much of the gravel is strongly silicified and caps a low hill with a spot height of 49m above sea level.

An estimate of gravel reserves present in this area is as follows:

Volume = 650 x 100 x 0.65

= 42,000 cubic metres.

Tonnage = 75,600 tonnes (Assumed density of 1.8).

Reserves of +20mm pebbles (Yield 38%)

= 28,700 tonnes.

The deposit is the main reserve of coarse quartz pebble gravel on Saltwood Station and it was pegged as a mineral lease on the 26th June, 1986.

5.2 EWE RUN GRAVEL DEPOSIT

This deposit consists of a low ESE trending rise situated about 1 km W of the Saltwood deposit. (Refer Figure 3).

No bulk samples were taken from this deposit because of its thinness and low visual yields.

A small pit has been opened up on the eastern end of the deposit by Mr. McCarthy and here the yield of +20mm pebbles may reach 20-25%. Most of the patch has already been quarried and little is left as a reserve.

5.3 OLD PIT GRAVEL DEPOSIT

Two small pits had been dug in the past to test the northern edge of this deposit - situated again on a low flat rise. (Refer Figure 4).

Six pits were dug across the area to check on the extent and thickness of the gravel.

Results were disapointing with only 3 of the pits locating gravel from 0.2-0.6m thick below 0.4-0.6m of white sand. Visual yields were low at upto 10-15%.

5.4 COW PADDOCK GRAVEL DEPOSIT

Six pits were dug along this narrow deposit of unusual flat, shingle gravel. The well rounded pebbles are of a variety of lithologies - vein quartz, fine quartzite, et. and possible represent an old beach line deposit.

The gravel layer is 0.3-0.4m thick under 0.15-0.45m of grey-white sand. The deposit is about 450m long by about 30m wide. Average yield of +20mm pebbles from the 3 samples taken for screen testing is 57%, weighed by thickness.

Volume = 450 x 30 x .35

= 4725 cubic metres.

Tonnage = 8500 tonnes (assumed density of 1.8).

Reserves of +20mm pebbles (Yield 57%)

= 4,800 tonnes.

Check assaying of these pebbles will be undertaken to determine whether they meet specifications for the Electrona plant.

5.5 NORTH WESTERN GRAVEL DEPOSIT

Small exposures of flat shingle-type gravel occur on the south western edge of a paddock just east of the Little Pipers River. (Refer Figure 6).

Seven pits were dug in this area to reveal an isolated patch of gravel varying from 0.3-0.5m thick below upto 0.45m of surface sands. Two bulk samples gave an average yield of 18% +20mm pebbles.

5.6 LITTLE PIPERS RIVER GRAVEL DEPOSIT

A 450m long zone of white quartz pebble gravel is exposed on a scree slope on the eastern side of the Little Pipers River (Refer Figure 7).

A total of 8 pits were dug along this zone and showed that the gravel averages only 0.35m in thickness.

The thickness and yield of +20mm pebbles decreased southwards along the deposit. Average yield from two bulk samples collected from the northern end of the deposit was 17%. Estimated average for the whole deposit was only 5-10%.

5.7 NEW GRAVEL PIT DEPOSIT

Seven pits were dug adjacent to a recently excavated area of coarse, clean quartz pebble gravel. (Refer

Figure 7).

The clean gravel horizon varies in thickness from 0.1 to 0.9m below upto 0.65m of sand. To the south the gravel becomes heavily stained and cemented with manganese and iron oxides.

Volume = 240 x 60 x 0.45

= 6,500 cubic metres.

Tonnage = 11,700 tonnes (Density of 1.8).

Reserves of +20mm pebbles (Yield 16%)

= 1,800 tonnes.

6. CONCLUSIONS

A total of 14 separate gravel deposits were located on Saltwood Station. Most are too thin and low yielding to be of interest as a source of quartz pebbles.

Seven of the deposits were investigated with test pits but only one, the Saltwood deposit, proved to have significant size and yield.

This deposit has the potential to produce upto 30,000 tonnes of +20mm quartz pebbles.

R. G. WRIGHT

CONSULTING GEOLOGIST.

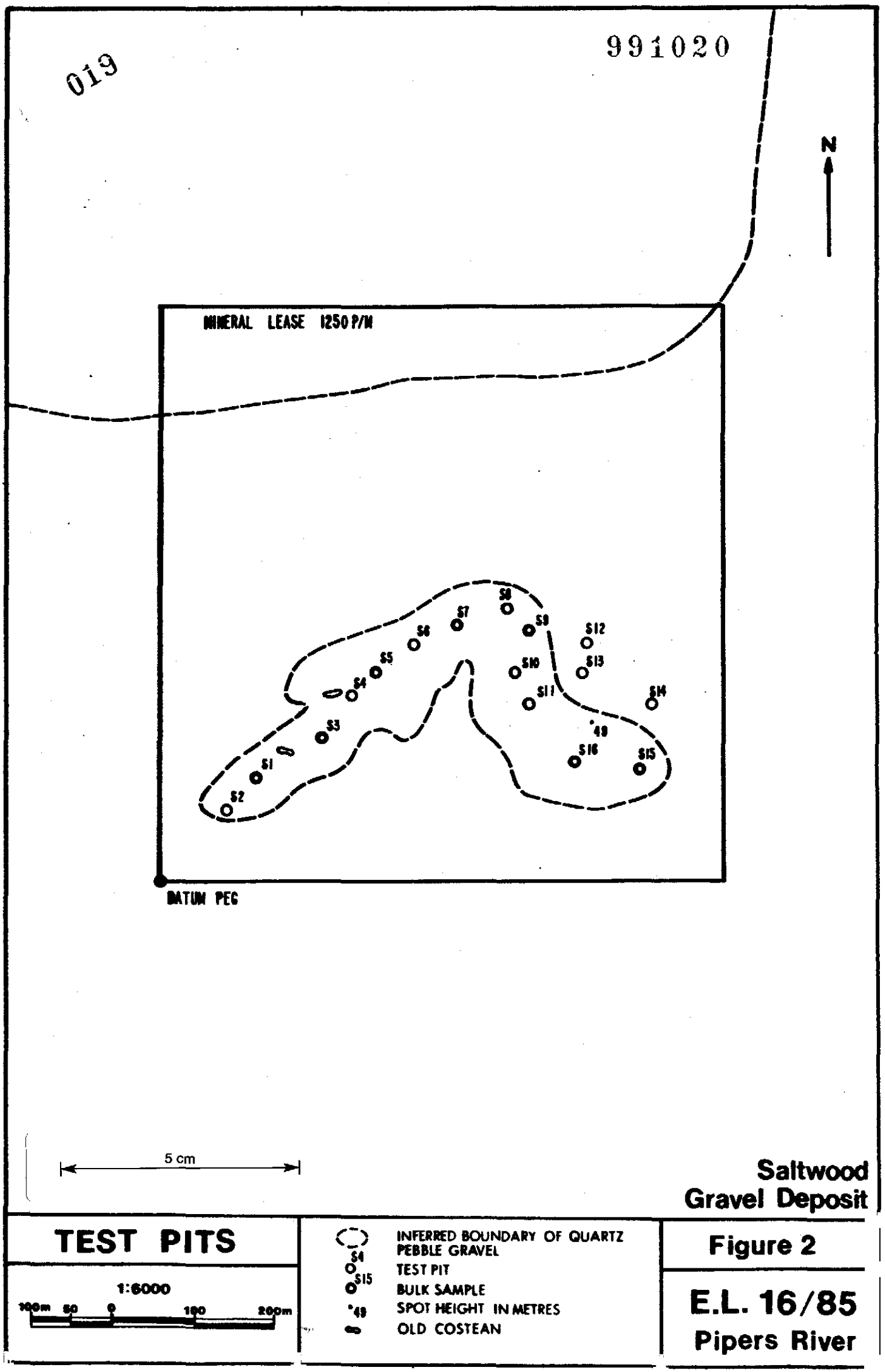
REFERENCES

Wright, R. G., 1985. Quartz Gravel Survey - N. E. Tasmania.

Unpub. Queensland Mines Ltd. Report, May, 1985.

1986. Test Pitting for Quartz Gravel - Bridwood Station and Weymouth, N. E. Tasmania.

Unpub. Queensland Mines Ltd., Report No. PSC:1986/1, March, 1986.


019
991020
N
MINERAL LEASE 1250 P/M
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
S13
S14
S15
S16
49
DATUM PEG
5 cm
Saltwood
Gravel Deposit
TEST PITS
1:6000
100m 50 0 100 200m
INFERRED BOUNDARY OF QUARTZ PEBBLE GRAVEL
TEST PIT
BULK SAMPLE
SPOT HEIGHT IN METRES
OLD COSTEAN
Figure 2
E.L. 16/85
Pipers River

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5 cm

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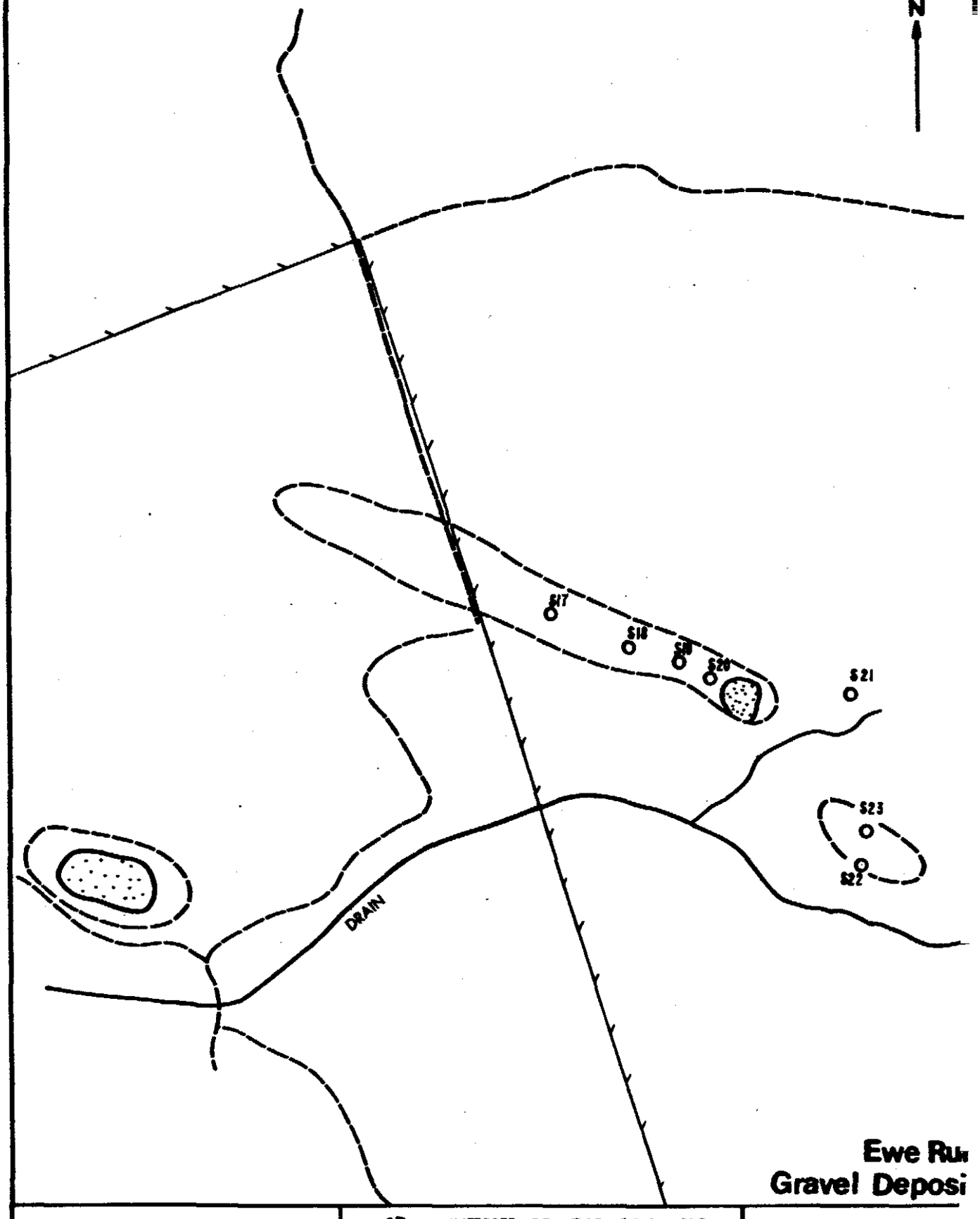

Ewe Ru
Gravel Deposi

TEST PITS

1:6000

100m 50 0 100 200m

INFERRED BOUNDARY OF QUARTZ PEBBLE GRAVEL

S18 TEST PIT

CURRENT GRAVEL PIT

FENCE

TRACK

Figure 3

E.L. 16/85

Pipers River

TAS(S)

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N

N

DRAIN

S29 S24 S25 S26 S28 S27

5460000

Old Pit
Gravel Deposit

TEST PITS

1:6000

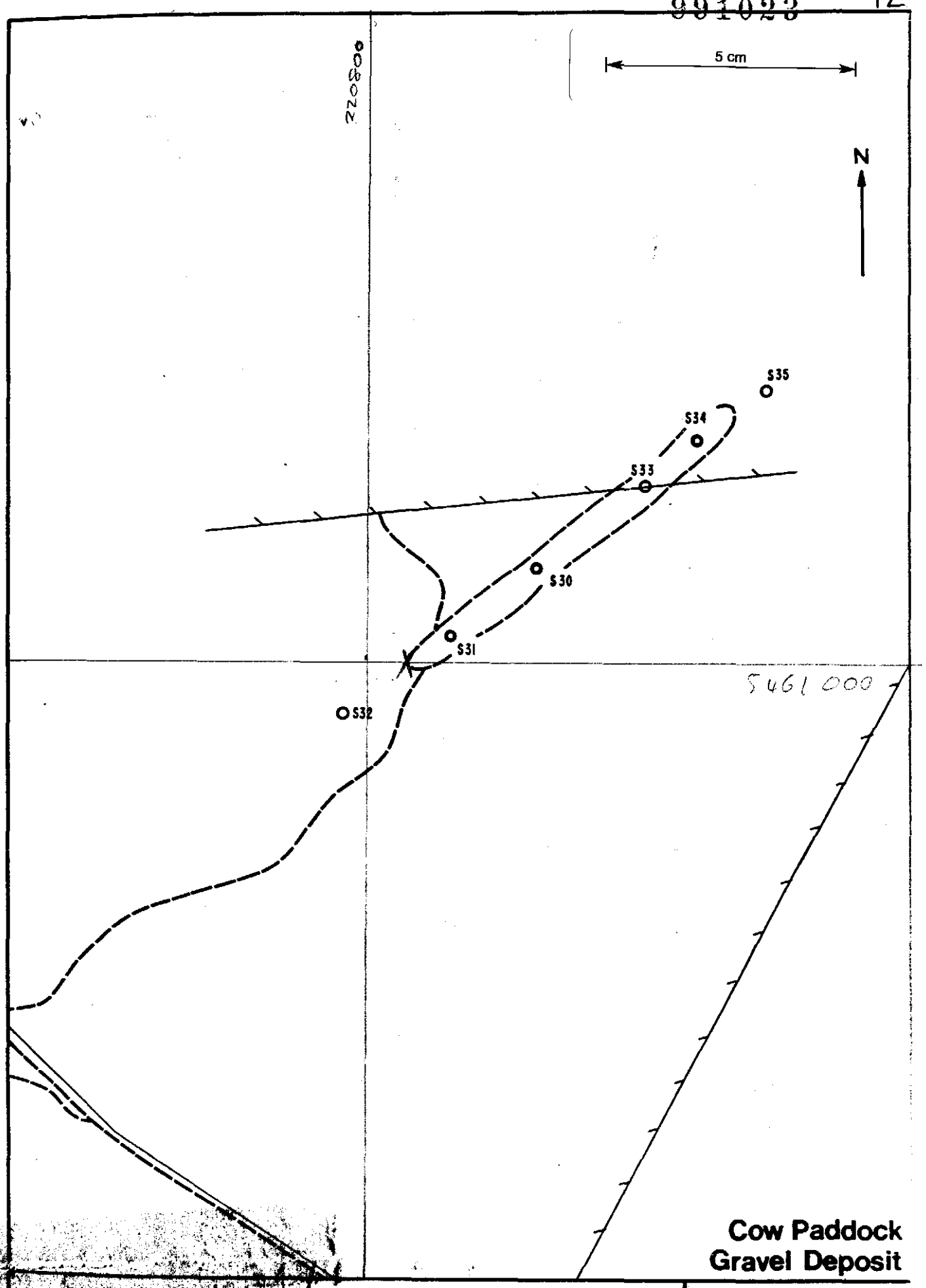
100m 50 0 100 200m

5 cm

Figure 4

E.L. 16/85
Pipers River

TASAS MAP



Cow Paddock Gravel Deposit

TEST PITS

1:6000

100m 50 0 100 200m

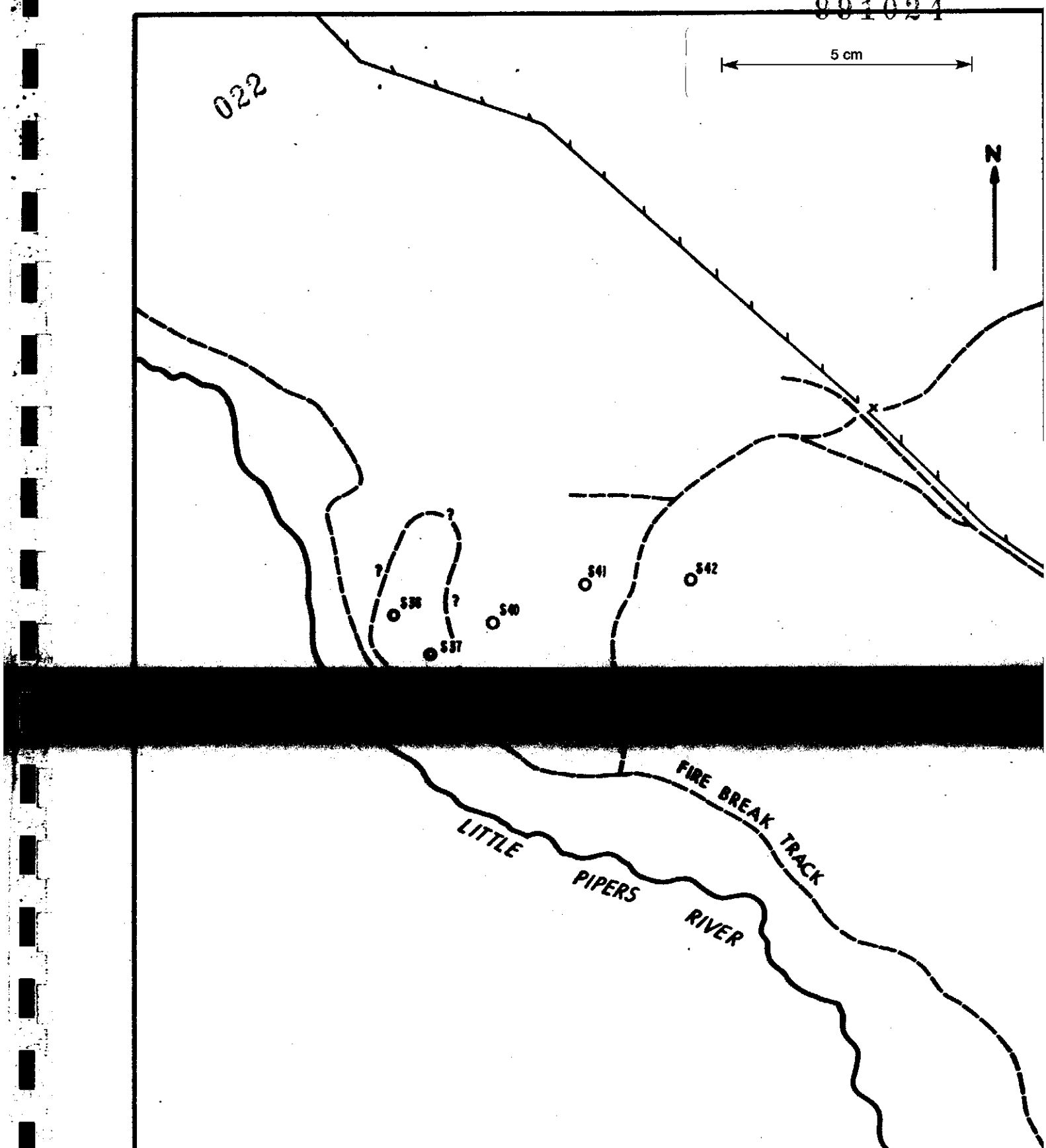
INFERRED BOUNDARY OF QUARTZ PEBBLE GRAVEL

S35 TEST PITS

S30 BULK SAMPLE

Figure 5

E.L. 16/85
Pipers River



North Western Gravel Deposit

TEST PITS

1:6000

100m 50 0 100 200m

INFERRED BOUNDARY OF QUARTZ PEBBLE GRAVEL

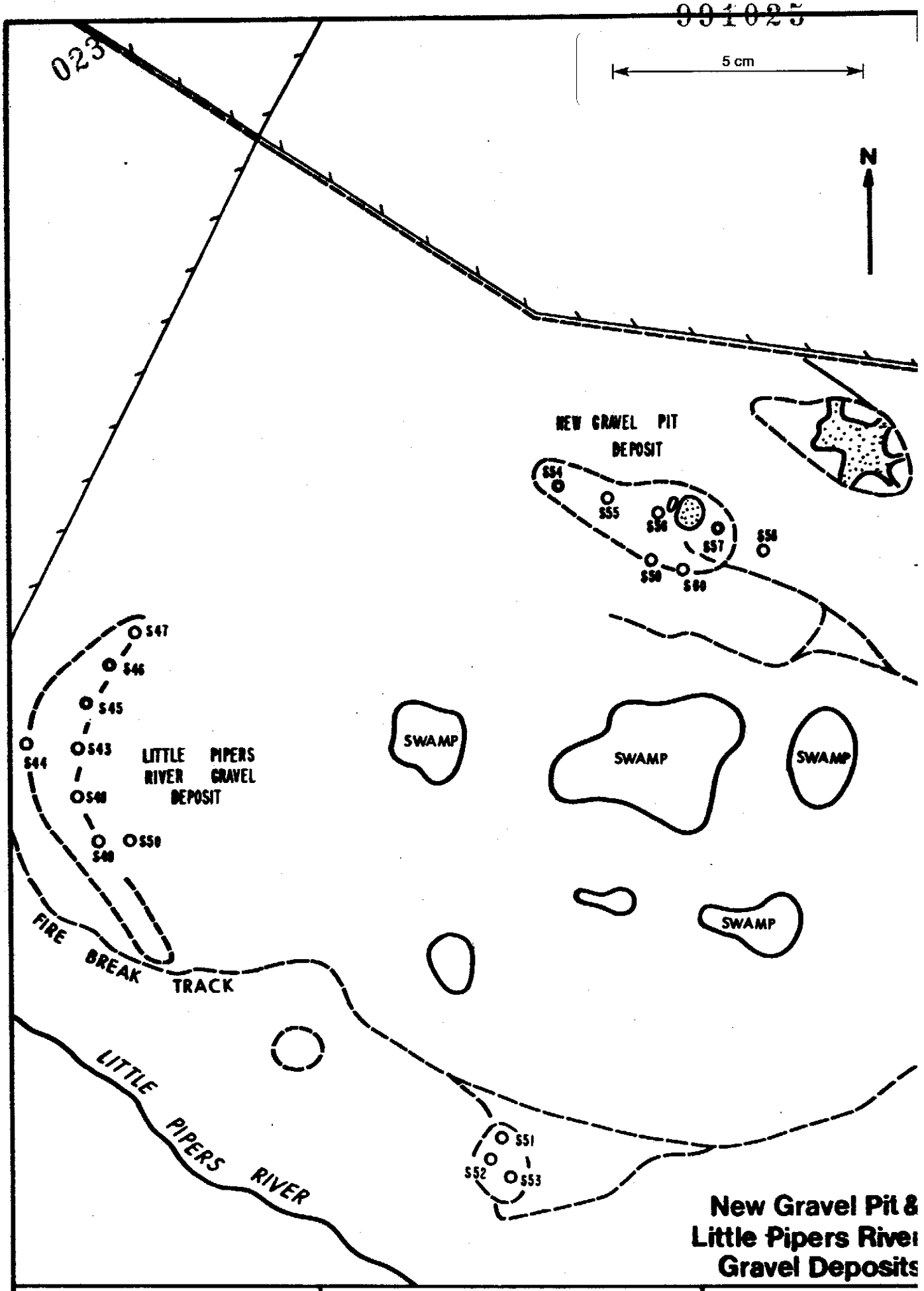
S42 TEST PITS

S37 BULK SAMPLE

Figure 6

E.L. 16/85
Pipers River

991025



New Gravel Pit & Little Pipers River Gravel Deposits

TEST PITS

1:8000

100m 50 0 100 200m

INFERRED BOUNDARY OF QUARTZ PEBBLE GRAVEL

S47 TEST PITS

S46 BULK SAMPLE

Figure 7

E.L. 16/85

Pipers River

TAS(S)

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APPENDIX I

Assay Results - Bulk Samples collected during pitting on Bridwood Station, December 1985

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SGS Australia Pty. Ltd.

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74 McEvoy St., Alexandria, Sydney, N.S.W. 2015
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WESTERN AUSTRALIA
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QUEENSLAND MINES LIMITED
Suite 2 / 8th Floor
50 Margaret Street
SYDNEY NSW 2000

Attention: Mr J.S. NOAKES

Our ref LA 4629

Your ref JSN/rm

Date received 7/4/86

Date completed 24/4/86

Issued at SYDNEY

May 1, 1986

ANALYSIS OF SAMPLES SUPPLIED

ANALYTICAL REPORT

		SiO_2	Al_2O_3	Fe_2O_3	TiO_2	CaO	MgO	Na_2O	K_2O	P_2O_5	MnO	Cr_2O_3	LO
		%	%	%	%	%	%	%	%	%	%	%	%
	Hopkins												
1		99.8	0.017	0.010	0.010	0.005	0.002	0.006	0.003	< 0.001	///	///	0.1
	Continue												
2		99.6	0.016	0.007	0.083	0.073	0.029	0.004	0.002	< 0.001	///	///	0.
25	Bridgewood Beetle Samples	99.3	0.20	0.11	0.004	0.003	0.005	0.006	0.019	< 0.001	///	///	0.
36		99.6	0.044	0.027	0.033	0.002	0.002	0.005	0.008	< 0.001	///	///	0.
11 46		99.8	0.022	0.010	0.036	0.002	0.002	0.004	0.003	< 0.001	///	///	0.
12													
13 56		99.5	0.24	0.007	0.013	0.006	0.001	0.009	0.014	< 0.001	///	///	0.
14													
15													
16	SAMPLE A	6.4	29.5	26.0	0.66	0.63	13.5	0.10	///	///	0.070	24.0	< 0
17													
18	METHOD:		AAS	AAS	AAS	AAS	AAS	AAS	AAS	Color-metric	AAS	AAS	Gra imc
19			SiO_2 by difference										
20			Samples washed, hand crushed (AGATE) LOI ~ 100°C										

All

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SGS Australia Pty. Ltd.

NEW SOUTH WALES
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Telephone 699 7935 Telex: SGSSYD AA22395

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90 Railway Parade, Queens Park
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Our ref LA 4655

Your ref

Date received 15.04.86

Date completed 22.05.86

Issued at SYDNEY

QUEENSLAND MINES LIMITED
FCA House 8th Floor
50 Margaret Street
SYDNEY / NSW 2000

Attention: Mr John S. NOAKES
Chief Geologist

May 26, 1986

ANALYSIS OF SAMPLES SUPPLIED

ANALYTICAL REPORT BRIDWOOD SAMPLE

	Sample Ref.	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	Na_2O	K_2O	TiO_2	LOI
1		%	%	%	%	%	%	%	%	%
2	8	99.5	0.14	0.051	0.002	0.004	0.006	0.009	0.042	0.26
3	15	99.1	0.37	0.073	0.005	0.010	0.008	0.024	0.033	0.36
4	22	99.0	0.42	0.082	0.002	0.007	0.008	0.015	0.045	0.38
5	27	99.1	0.36	0.067	0.001	0.006	0.008	0.024	0.010	0.42
6	31	99.8	0.008	0.004	0.001	0.001	0.004	0.002	0.003	0.17
7	32	99.6	0.060	0.036	0.004	0.004	0.004	0.009	0.073	0.20
8	33	99.8	0.017	0.013	0.001	0.002	0.004	0.003	0.042	0.14
9	35	99.3	0.13	0.078	0.002	0.003	0.004	0.005	0.092	0.37
10	41	99.8	0.013	0.013	0.001	0.002	0.003	0.002	0.055	0.13
11	42	99.7	0.020	0.015	0.001	0.002	0.003	0.003	0.033	0.17
12	47	99.6	0.11	0.032	0.001	0.004	0.004	0.016	0.074	0.20
13	49	99.6	0.11	0.010	0.006	0.002	0.005	0.004	0.039	0.20
14	52	99.7	0.083	0.005	0.003	0.002	0.005	0.009	0.055	0.17
15	53	99.4	0.24	0.026	0.005	0.007	0.009	0.026	0.11	0.13
16	58	99.6	0.11	0.019	0.004	0.004	0.004	0.010	0.036	0.23
17										
18	Method:		AAS	AAS	AAS	AAS	AAS	AAS	Color-imetric	Grav-imetric
19										
20										

1/1

APPENDIX II

Test Pit Results - Saltwood Station

TEST PIT RESULTS - SALTWOOD STATION

(All measurements in metres)

1. SALTWOOD GRAVEL DEPOSIT

PIT S1

0 - 0.2	Black loamy soil with white vein quartz pebbles.
0.2 - 1.2+	Pale grey-white sandy gravel with pebbles upto 10-15cm diameter. Estimated yield 20-30% of +20mm pebbles.
	Base of the gravel was not exposed as the gravel section was too thick and coarse-grained for the tractor to penetrate.
	Bulk Sample of gravel from 0-1.2m taken for screening tests.

PIT S2

0 - 0.2	Black loamy sand with quartz pebbles.
0.2 - 0.5	Grey sandy gravel with pebbles upto 30 x 15cm size. Estimated yield 20-30% of +20mm pebbles.
0.5 - 0.8	Pale grey to pale brown fine sand which becomes sporadically ferruginized at depth.

PIT S3

0 - 0.1	Grey black loamy soil with quartz pebbles.
0.1 - 0.6	Grey sandy gravel with pebbles upto 20 x 15cm. Estimated yield 20-30% +20mm pebbles.
	Bulk Sample of gravel from 0-0.6m taken for screening tests.
0.6 - 0.8	Yellow brown soft clay with thin joints filled with manganese oxides.

PIT S4

0 - 0.2	Grey black loamy soil with white quartz pebbles.
0.2 - 0.55	Pale grey sandy gravel with pebbles upto 15 x 10cm. Estimated yield 20% +20mm pebbles.
0.55 - 0.65	Yellow brown and orange, manganese oxide-stained clay.

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PIT S5

0 - 0.2	Black-grey loamy soil.
0.2 - 0.75	Sandy pale brown gravel with pebbles upto 10cm diameter. Estimated yield 20% of +20mm pebbles.
	Bulk Sample of gravel from 0 - 0.75m taken for screening tests.
0.75 - 0.80	Hard, partly silicified gravel with clayey sand matrix.

PIT S6

0 - 0.3	Grey-black loamy sand with quartz pebbles.
0.3 - 0.7	Pale grey-brown sandy gravel with pebbles upto 10cm diameter. Estimated yield is 15-20% +20mm pebbles.
0.7 - 0.75	Hard partly silicified gravel as seen in Pit S5.

PIT S7

0 - 0.15	Grey sandy loam with quartz pebbles.
0.15 - 0.65	Pale grey to light brown sandy gravel with pebbles upto 10cm diameter. Estimated yield is 20-30% +20mm pebbles.
	Bulk Sample of gravel taken from 0 - 0.65m for screening tests.
0.65 - 0.7	Hard partly silicified gravel.

PIT S8

0 - 0.2	Black loamy sand with an occasional quartz pebble.
0.2 - 0.7	Pale grey-brown sandy gravel with pebbles upto 25 x 20cm size. Estimated yield 20-25% +20mm pebbles.
0.7 - 0.85	Pale grey to brown sand with sparse white quartz pebbles. These sands are strongly stained with dark brown manganese oxides.

PIT S9

0 - 0.3	Grey black sandy loam with occasional quartz pebble.
0.3 - 0.95	Pale grey to brown sandy gravel - wet at the base of the pit. Pebbles are upto 15cm diameter. Estimated yield is 30-40% +20mm pebbles. Bulk Sample of gravel from 0-0.95m taken for screening tests.
0.95 - 1.0	Variably silicified quartz pebble gravel - too hard for the tractor to dig.

PIT S10

0 - 0.3	Black loamy soil with an occasional quartz pebble.
0.3 - 0.55	Pale grey-brown sandy gravel with pebbles upto 10cm diameter - many are cemented conglomerate fragments. Estimated yield is 20-30% +20mm pebbles.

PIT S11

0 - 0.2	Black loamy sand with quartz pebbles.
0.2 - 0.5	Pale grey-brown sandy gravel with pebbles upto 10cm diameter. Estimated yield 20-30% +20mm pebbles.
0.5 - 0.55	Variably silicified quartz gravel.

PIT S12

0 - 0.1	Black loamy sand with sparse quartz pebbles upto 2-3cm diameter.
0.1 - 0.25	Grey-white sand with a few 3-5cm diameter quartz pebbles at base.
0.25 - 0.35	Red brown clay.

PIT S13

0 - 0.1	Grey black loamy sand with an occasional quartz pebble.
0.1 - 0.2	Pale grey-brown sandy gravel with pebbles upto 5cm. Estimated yield 20% of +20mm pebbles.
0.2 - 0.3	Red brown clay.

PIT S14

0 - 0.1	Grey sandy loam.
0.1 - 0.8	Pale brown fine sand.
0.8 - 0.85	Red brown ferruginous sand.

PIT S15

0 - 0.2	Black loamy soil with quartz pebbles.
0.2 - 0.45	Pale grey sandy gravel with pebbles upto 10cm diameter. Estimated yield 20-25% of +20mm pebbles of gravel between 0-0.45m.
	Bulk Sample taken for screening tests.
0.45 - 0.5	Variably silicified gravel.

PIT S16

0 - 0.15	Grey brown loamy sand with quartz pebbles.
0.15 - 0.45	Pale grey sandy gravel with pebbles upto 20cm-mostly of silcreted gravel. Estimated yield 15-20% of +20mm pebbles.
	Bulk Sample of gravel from 0 -0.45m collected for screening tests.
0.45 - 0.5	Variably silicified gravel.

2. EWE RUN GRAVEL DEPOSIT

PIT S17

0 - 0.1	Grey-brown loamy sand.
0.1 - 1.0	Grey white gravelly sand with rounded pebbles upto 8cm diameter.
	Yield estimated to be 5%.

PIT S18

0 - 0.15	Grey-brown loamy soil.
0.15 - 0.85	Gravelly sand with rounded pebbles upto 6 cm diameter.
	Yield estimated to be 1-2%.
0.85 - 0.90	Red brown ferruginized sand.

PIT S19

0 - 0.15	Grey loamy soil with a few small rounded white quartz pebbles.
0.15 - 0.4	Grey-white gritty sand.
0.4 - 0.65	Grey-white sub-rounded to rounded quartz pebble gravel. Pebbles upto 10cm diameter. Overall yield is estimated to be 10%.
0.65 - 0.8	Grey-white gritty sand.
0.8 - 0.85	Red brown ferruginous sand.

PIT S20

0 - 0.1	Grey loamy soil with small quartz pebbles.
0.1 - 0.4	Pale grey, sandy rounded quartz pebble gravel. Pebbles upto 10 x 3cm with estimated yield of +20mm pebbles 10-15%.
0.4 - 0.45	Red-brown ferruginized gravel as above.

PIT S21

0 - 0.5	Black loamy sand.

The tractor hydraulic hose blew out at this stage so the following two pits were dug by hand.

PIT S22

0 - 0.5	Grey loamy soil with rounded white pebbles.
0.05 - 0.45	Pale grey-brown sandy gravel. Estimated yield of +20mm pebbles is 10-15%.
0.45 - 0.5	Red brown ferruginized gravel.

PIT S23

0 - 0.1	Grey loamy soil.
0.1 - 0.6	Clean sandy gravel with rounded quartz pebbles upto 5cm diameter. Estimated yield 10-15%.

033

3. OLD PIT GRAVEL DEPOSIT

PIT S24

0 - 0.15	Grey brown loamy soil.
0.15 - 0.55	Pale grey fine sand.
0.55 - 0.95	Pale grey sandy to gritty gravel with pebbles upto 10cm diameter. Estimated yield 5-10%.
0.95 - 1.0	Dark red-brown ferruginized gravel as above.

PIT S25

0 - 0.15	Grey loamy sand with a few 1-2cm quartz pebbles.
0.15 - 0.7	Grey white fine sand.
0.7 - 0.8	Red brown ferruginized sparsely pebbled sand.

PIT S26

0 - 0.1	Grey loamy sand.
0.1 - 0.65	Grey white fine sand.
0.65 - 0.7	Black to brown ferruginized sand and gravel with pebbles upto 3cm diameter.

PIT S27

0 - 0.15	Grey loamy sand.
0.15 - 0.4	Grey gritty sand.
0.4 - 1.0	Pale grey even grained gravel with average grain size of 1cm. A few pebbles, however, are upto 15 x 10cm size. Estimated yield of +20mm pebbles is 10-15%.

PIT S28

0 - 0.1	Grey loamy sand.
0.1 - 0.55	Grey white sand.
0.55 - 0.75	Coarse quartz pebble gravel with pebbles upto 10cm diameter. These gravels are variably, and in places heavily, stained or cemented with iron and manganese oxides.

034

0.85 - 1.0	Gravel as above but stained with manganese and iron oxides. Material is loose and poorly consolidated.

PIT S38

0 - 0.4	Black sandy loam.
0.4 - 1.0	Grey to pale brown sporadically pebbly sand.

PIT 39

0 - 0.1	Grey brown loamy sand.
0.1 - 0.4	Grey fine sand.
0.4 - 0.75	Grey shingle gravel with average pebble size of 1cm. Yield of +20mm pebbles is 10%.
0.75 - 0.95	Dark brown to black manganese oxide stained fine sands.

PIT S40

0 - 0.1	Grey brown loamy sand.
0.1 - 0.7	Grey white fine sand.
0.7 - 0.75	Red brown iron oxide stained slightly clayey sand.

PIT S41

0 - 0.2	Grey loamy sand.
0.2 - 0.6	Pale grey-white fine sand.
0.6 - 0.65	Orange brown iron and manganese oxide stained and cemented sand.

PIT S42

0 - 0.1	Grey fine sand.
0.1 - 0.75	Grey white fine sand.
0.75 - 0.8	Brownish black and pale yellow stained and cemented sands as seen in Pit S41.

6. LITTLE PIPER'S RIVER GRAVEL DEPOSIT

PIT S43

0 - 0.1	Grey silty loam.
0.1 - 0.4	Grey fine sand.
0.4 - 0.7	Pebbly grit with rounded quartz pebbles

upto 10cm. Average pebble size is about 1cm. Estimated yield 5-10%.

0.7 - 0.8	Dark brown ferruginous and manganese stained and cemented grit with an occasional pebble.

PIT S44

0 - 0.6	Grey slightly loamy sand.
0.6 - 0.65	Black and orange to yellow brown stained and cemented fine sand.

PIT S45

0 - 0.1	Grey black loamy pebbly grit.
0.1 - 0.55	Pebbly grit and gritty gravel. Average pebble size is about 5-10mm and yield of +20mm pebbles is 5-10%. Bulk Sample of gravel taken from 0.1-0.55m for screening tests.
0.55 - 0.65	Grey black manganese oxide stained and cemented pebbly grit.

PIT S46

0 - 0.1	Grey slightly loamy sand.
0.1 - 0.4	Pale brown pebbly fine sand.
0.4 - 0.7	Pebbly grit and gritty gravel. Average pebble size is about 5mm and yield estimated to be 5-10%. Bulk Sample of gravel from 0.4-0.7m taken for screening tests.
0.7 - 0.9	Black manganese oxide stained and cemented pebbly grit as above.

036

PIT S47

0 - 0.2	Grey loamy sand.
0.2 - 0.55	Quartz pebble gravel with pebbles averaging about 3-5mm. Estimated yield only 5%.
0.55 - 0.85	Black to dark grey manganese oxide stained pebbly grit.

PIT S48

0 - 0.1	Grey loamy grit with rounded white quartz pebbles.
0.1 - 0.45	Coarse pebbly grit with pebbles averaging about 3-5mm. Estimated yield 3-5%.
0.45 - 0.5	Red brown and orange yellow sandy clay.

PIT S49

0 - 0.15	Grey loamy grit with white quartz pebbles.
0.15 - 0.55	Grey pebbly grit with average pebble size of 2-3mm. Yield only 1-2%.
0.55 - 0.6	Red brown and yellow strongly cemented grit as above and with an occasional 3-5cm pebble.

PIT S50

0 - 0.4	Grey loamy sand.
0.4 - 0.5	Red brown and dark black stained and cemented sands.

PIT S51

0 - 0.4	Sandy loam with rounded white quartz pebbles. Estimated yield 1-2%.
0.4 - 0.6	Red brown variably ferruginized pebbly sand.

PIT S52

0 - 0.2	Grey loamy sand with white quartz pebbles.
0.2 - 0.4	Grey pebbly grit.
0.4 - 0.5	Red brown cemented grit as above.

PIT S29

0 - 0.1	Grey loamy sand.
0.1 - 0.6	Grey sand.
0.6 - 0.7	Red brown ferruginous sand.

4. COW PADDOCK GRAVEL DEPOSIT

PIT S30

0 - 0.15	Black loamy sand.
0.15 - 0.55	Coarse, well-rounded and flattish shingle gravels with pebbles averaging about 3-4cm long. Estimated yield 40-50% of +20mm pebbles. Bulk Sample of gravel between 0.15-0.55m taken for screening tests.
0.55 - 0.8	Clean gritty loose sand - which is the matrix to the above gravel layer.
0.8 - 1.25	Dark brown hard ferruginized cemented with iron oxides.
1.25 - 1.55	Pale brown pebbly grit as above - only weakly ferruginized.

PIT S31

0 - 0.2	Grey loamy sand with an occasional rounded quartz pebble upto 8cm diamter.
0.2 - 0.45	Grey white clean sand with an occasional pebble.
0.45 - 0.75	Coarse round shingle gravel with pebbles averaging about 2-3cm long. Estimated yield is 40-50% +20mm pebbles. Bulk Sample of gravel between 0.45-0.75m taken for screening tests.
0.75 - 1.0	Loose clean pebbly grit.
1.0 - 1.2	Ferruginized pebbly grit as above.

PIT S32

0 - 0.2	Grey loamy sand.
0.2 - 0.7	Pale grey fine sand.
0.7 - 0.85	Red brown ferruginized sand as above.

PIT S33

0 - 0.2	Grey loamy sand.
0.2 - 0.5	Pale grey shingle gravel with pebbles averaging about 2-3cm long. Estimated yield of +20mm pebbles is 40-50%.
0.5 - 0.75	Pale grey grit.
0.75 - 0.95	Variably iron-stained pebbly grit.
0.95 - 1.75	Pale brown, clean pebbly grit.

PIT S34

0 - 0.15	Grey loamy sand.
0.15 - 0.5	Coarse clean shingle gravel with pebbles averaging about 3-4cm. Estimated yield of +20mm pebbles is 60%. Bulk Sample of gravel between 0.15-0.5m taken for screening tests.
0.5 - 0.85	Yellow variably ferruginized sand.

PIT S35

0 - 0.8	Pale orange dune sand.

5. NORTH WESTERN GRAVEL DEPOSIT

PIT S36

0 - 0.15	Grey brown loamy sand.
0.15 - 0.65	Grey, sandy clean gravel with rounded flat shingle-type pebbles averaging 1.5-2cm length. The gravels are set in a yellow sandy matrix from about 0.45m depth. Estimated yield 10-15%. Bulk Sample of gravel from 0.15-0.65m taken for screening tests.
0.65 - 1.0	Yellow to orange fine sand with sporadic pebbles.

PIT S37

0 - 0.1	Pale grey loamy sand.
0.1 - 0.45	Grey fine sand.
0.45 - 0.85	Pale grey shingle gravel with pebbles averaging 1.5-2cm length. Estimated yield is 20-25% of +20mm pebbles. Bulk Sample of gravel from 0.45-0.85m taken for screening tests.

039

0.75 - 0.8	Orange to yellow brown ferruginized sand with sporadic quartz pebbles.

PIT S58

0 - 0.15	Grey black loamy sand.
0.15 - 0.95	Pale grey fine sand.
0.95 - 1.05	Silicified pale grey to grey brown sand as above.

PIT S59

0 - 0.2	Grey black loamy sand.
0.2 - 0.65	Grey fine sand.
0.65 - 0.75	Quartz pebble gravel with pebbles averaging about 10-20mm. Estimated yield 10%.
0.75 - 0.85	Dark brown to black, hard, heavily cemented gravels as above.

PIT S60

0 - 0.4	Black to grey sandy loam.
0.4 - 0.75	White, clean quartz pebble gravel set in a sparse sandy matrix. Average pebble size is 10-20mm. Estimated yield is 10-15%.
0.75 - 0.85	Red brown and black, hard, heavily cemented gravel.

040

PIT S53

0 - 0.2	Grey pebbly silty to loamy grit.
0.2 - 0.65	Grey pebbly coarse grit with pebbles averaging about 3-5mm diameter. Estimated yield of +20mm pebbles only 1-2%.
0.65 - 0.75	Red brown to black variably cemented pebbly grit.

7. NEW GRAVEL PIT DEPOSIT

PIT S54

0 - 0.1	Grey black loamy sand with white quartz pebbles.
0.1 - 1.0	Pale grey clean quartz pebble gravel in a gritty sand matrix. Average pebble size is about 10mm. Yield of +20mm pebbles is 5-10%.
	Bulk Sample of gravel from 0-1.0m depth taken for screening tests.
1.0 - 1.1	Red brown iron oxide cemented gravel as above.

PIT S55

0 - 0.1	Grey loamy sand with white quartz pebbles.
0.1 - 0.7	Grey white clean quartz pebble gravel with pebbles averaging about 10mm. Estimated yield is 5-10%.
0.7 - 0.8	Yellow brown and yellow ferruginized sands.

PIT S56

0 - 0.15	Grey loamy and pebbly sand.
0.15 - 0.45	Pale grey clean pebbly grit. Estimated yield only 5%.
0.45 - 0.55	Yellow brown ferruginous grit with sparse pebbles.

PIT S57

0 - 0.2	Black loamy to sandy soil with white quartz pebbles.
0.2 - 0.75	Pale grey clean quartz pebble gravel in a fine sandy matrix. Average pebble size is 10-15mm. Estimated yield 5-10%.
	Bulk Sample of gravel from 0.2-0.75m taken for screening tests.

041

APPENDIX 2

042

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TEST PITTING FOR QUARTZ GRAVEL - BRIDWOOD STATION & WEYMOUTH

NORTH EAST TASMANIA

EXPLORATION LICENCE 16/85

PIONEER CONCRETE (TAS.) PTY. LTD.

by

R.G. Wright

CONSULTING GEOLOGIST

Distribution

J. Noakes - Queensland Mines

Tasmanian Department of Mines

Devonport

March, 1986.

Report No PSC: 1986/1

044

TEST PITTING FOR QUARTZ GRAVEL

- BRIDWOOD STATION & WEYMOUTH

043

LIST OF FIGURES

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Appendix I	Test Pit Results - Bridwood Station & Weymouth Areas.

045

INTRODUCTION

Exploration Licence 16/85 - Pipers River was granted to Pioneer Concrete (Tas.) Pty. Ltd. on 30th August, 1985.

The licence, of 225 sq. km., covers an area prospective for the occurrence of coarse quartz pebble gravels.

This report details the results from test pitting carried out at four sites on Bridwood Station, situated west of Bridport and work undertaken later at Weymouth.

2. PREVIOUS WORK

A rapid survey on the Pipers Brook-Scottsdale region was completed by the author between 16-23.4.85. Results from that survey are provided in Wright, 1985.

3. GEOLOGY

Four main types of gravel deposit were identified in the reconnaissance survey.

1. Recent, angular, vein-quartz lag gravels developed over weathered Mathinna siltstones.

2. Angular to sub-rounded Recent lag gravels developed over ?Pleistocene glacial pebbley grit sequences.

3. Poorly sorted, sub-rounded to sub-angular ?Pleistocene gravels draped liked blankets over low hills of Mathinna sediment - generally in areas close to the coast.

   These poorly-sorted gravels contain very little sand or silt content and give high yields (upto 50%) of coarse +20mm sized quartz pebbles. They have an irregular distribution and shape and are possibly of glacial origin.

   Recent test pitting on Bridwood Station has shown that they have developed as lag crusts above sporadically pebbley yellow-brown clays and clayey sands.

   Mr. V. Threader of the Tasmanian Department of Mines has queried the suggested origin of these gravels and samples were taken for him during the pitting programme to check on their age.

4. Tertiary fluviatile and braided stream deposits occur east and west of the Little Pipers River. These limonite-stained, sub-rounded quartz gravels and silty sands reach thicknesses of 6-7m in pits operated by Brambles south of the George Town to Bridport Road.

Test pitting for Pioneer has been concentrated on the blanket gravel deposits because, while they are thin at between 1-2m, their high yield of vein quartz pebbles makes them attractive feed stock for the Electrona plant.

4. TEST PITTING PROGRAMME

A total of 63 pits were dug in four areas on Bridwood Station between 13-15-12.85. A further 44 pits were dug on the Weymouth gravel deposit on 21 and 22.2.86.

Test results are provided in Appendix I and location plans are attached as Figures 1-5 inclusive.

The pits were dug with a Mitsubishi MS180 excavator on hire from Mr. R. Gerke of Scottsdale.

The work showed that it is very difficult to judge from surface gravel exposures how thick or which type of gravel is being tested. Often coarse surface gravels are only 10-20cm thick veneers over yellow-brown clay. The presence of she-oak trees is usually a good indication of clay at shallow depth. Open eucalyptys forest is normally a better sign for a thicker gravel section.

The angularity of surface pebbles is not always a reflection of the underlying gravel. In some places angular surface gravels overly upto 2m of sub-rounded boulder gravel. The pebbles obviously break down into angular pieces at surface. Elsewhere drift sand with small 1cm pebbles sometimes masked 1-2m thick sections of good boulder gravel.

The cleanest gravel occurs on the crests of hills. Test pits on the flanks usually show iron and manganese oxide staining and cementing which comes closer to the surface as the flats are approached. Gravels on the hill crests are usually leached and free of iron oxides and clay, sometimes to depths of over 1 metre. Below this a clay matrix and iron-manganese oxides and secondary silica sometimes form harder zones. Usually this is still rip-able but possibly too contaminated for use as high grade silica ore.

Secondary silicification is a problem as it can sometimes cement the whole gravel profile. It is irregular in distribution and hard to predict how extensive it is without closed spaced pitting.

Outcrop of silicified gravel are present at the southern Bridwood deposit. River Hills North in the old E pit, the E end of the Gravel Pit deposit and on the W central side of the Weymouth deposit.

Gravel dug from pits in the River Hills North deposit also has the property of cementing up again after excavation. These gravels would need to be screened as soon as they are dug to be sure that large, clay-rich, re-cemented fragments did not report in the +20mm fraction.

5. BULK SAMPLE SCREENING RESULTS

A total of 24 bulk samples ranging in weight from 60-80kg were collected from various test pits. (Refer Table 1).

These were carefully weighed on a set of Avery Scales kindly provided by Mr. J. Beatty of General Jones Pty. Ltd.,

Scottsdale. The bulk samples were then individually run through a screening plant owned by Mr. N. Gerke of Scottsdale. The +20mm fraction was collected and re-bagged and weighed again.

Table I shows the results from the screening tests together with brief comments on matrix material and maximum pebble size. The overall average yield for the four deposits on Bridwood Station is 30%, as weighted by depth of the gravel profiles.

Some pits, as shown by the yields of 40-50%. exposed very large quartz boulders. Pit 53 at Gravel Pit uncovered several boulders upto 50cm long. Yield figures from these areas could well be higher than indicated from the sampling.

Test pitting at Weymouth was disappointing - a large area of surface gravel to the east of the northern-most pits proved to be only thin veneers.

Testing elsewhere showed that previous quarry operations had removed nearly all the thicker sections of coarse gravel. Yields elsewhere were generally less than 10%.

Some relict patches could probably be located with further pitting but are not likely to contain large reserves of coarse pebbles.

One 10kg sample from each of the four deposits on Bridwood Station were sent to France in late March for furnace tests. These tests will check on the suitability of the Bridwood gravels for silica production.

6. RESERVE ESTIMATES

6.1 BRIDWOOD GRAVEL DEPOSIT

These deposits occur about 7km due W of Bridwood homestead. Test pitting has shown that four separate deposits occur on a rough NS trend. The two northern deposits A and B have been quarried in the past and only limited tonnages could be recovered from these areas. The two other deposits, C and D have not been worked before.

The thickest sections of each deposit occurs on the western side of each low hill.

An estimate of reserves present in this area is as follows:

1. Old pit areas A & B

Four test pits in Area A show that no relict reserves are available.

The six pits dug into Area B which intersected gravel give an average relict thickness of 0.5m.

Volume = 360 x 90 x 0.5

= 16,200 cubic metres.

Tonnage = 29,000 tonnes (assumed density of 1.8)

Reserves of +20mm pebbles (Yield 35%) = 10,000 tonnes.

2. Area C

One pit dug here on the W end of a low ridge uncovered 0.9m of coarse gravel.

Volume = 70 x 70 x 0.9

= 4,400 cubic metres.

Tonnage = 8,000 tonnes (S.G. of 1.8).

Reserves of +20mm pebbles (Yield 40%) = 3,000 tonnes.

3. Area D

Nine out of ten pits dug into this area intersected gravel ranging from 0.2 upto 2.1m thickness. Average thickness for the area is 0.9m.

Volume = 300 x 150 x 0.9

= 40,500 cubic metres.

Tonnage = 73,000 tonnes (S.G. of 1.8).

Reserves of +20mm pebbles (Yield 40%) = 29,000 tonnes.

Total probable reserve of +20mm quartz pebbles in Areas B, C & D

= 42,000 tonnes.

6.2 RIVER HILLS NORTH GRAVEL DEPOSIT

Four out of the six pits dug at this site intersected gravel. Average thickness is 1.25m.

Volume = 200 x 50 x 1.25 + 150 x 50 x 1.25

= 22,000 cubic metres.

Relict Volume (50% quarried) = 11,000 cubic metres.

Tonnage = 19,800 tonnes.

Reserves of +20mm pebbles (Yield 24%) = 5,000 tonnes.

6.3 RIVER HILLS SOUTH GRAVEL DEPOSIT

Only four out of the eleven pits dug in this area uncovered thick gravel sections. Average thickness

from these four pits was 1.25m.

Volume = 400 x 120 x 1.25

= 60,000 cubic metres.

Relict Volume (40% quarried) = 36,000 cubic metres.

Tonnage = 65,000 tonnes.

Reserves of +20mm pebbles (Yield 25%) = 16,000 tonnes.

6.4 GRAVEL PIT DEPOSIT

Eight of the fifteen pits dug in this area exposed gravel from 0.4 upto 1.4m thick. Average thickness is 0.9m.

Volume = 330 x 100 x 0.9

= 29,700 cubic metres.

Relict Volume (25% quarried) = 22,000 cubic metres.

Tonnage = 40,000 tonnes.

Reserves of +20mm pebbles (Yield 28%) = 11,000 tonnes.

Estimated probable reserves of +20mm pebbles available on Bridwood Station are:

	Tonnes
Bridwood Deposit	42,000
River Hills North	5,000
River Hills South	16,000
Gravel Pit	11,000
TOTAL	74,000 tonnes

7. CONCLUSIONS AND RECOMMENDATIONS

Test pitting at four localities on Bridwood Station has located a probable total reserve of 74,000 tonnes of +20mm quartz pebbles. All the testing was done adjacent to previously worked gravel pits. Further deposits could well exist on the NW scrub-covered portion of this property. Traversing through this area is recommended after detailed study of aerial photographs. The survey should also be extended further west into the adjacent Saltwood property.

A brief visit to various small gravel pits with the owner, Mr. J. McCarthy of Karoola, showed that potential exists here for similar coarse gravels.

Test pitting at Weymouth was disappointing and no further work is needed in this area.

R. G. Wright,

Consulting Geologist.

REFERENCES

Wright, R.G., 1985 Quartz Gravel Survey - N.E. Tasmania.

Unpub. Queensland Mines Ltd. Report, May, 1985.

APPENDIX I

Test Pit Results - Bridwood Station
& Weymouth Areas.

TABLE I

BULK SAMPLE SCREENING RESULTS - BRIDWOOD STATION AND WEYMOUTH AREAS

Location	Pit No.	Sample Depth metres	Max. Pebble Length cm.	Matrix	Total Sample Weight Kg	Weight of +20mm Fraction Kg	% Yield
Bridwood Gravel Deposit	8	0-1.35	13	White silty to clayey sand	65.5	22.5	34
	15	0-0.75	18	White clay	60.0	21.5	36
	22	0-2.1	25	White clay - some limonite on pebbles	64.0	26.0	41
	25*	0-1.5	25	White clayey sand - some limonite on pebbles	61.0	20.0	33
	27	0-2.1	15	White sand	80.0	34.0	43
	31	0-0.9	15	Grey-white sand	80.0	33.5	42
						Depth Weighted Avge	39%
River Hills North Gravel Deposit	32	0-1.25	8	Grey-white sandy hard clay-sets after digging	78.0	13.0	17
	33	0-1.35	10	White sand	59.0	9.5	16
	35	0-1.2	5	Silty clay - sets hard again after digging	65.0	7.0	11
	36*	0-1.2	15	Pale brown silty-clayey sand	49.5	26.0	53
						Depth Weighted Avge	24%
River Hills South Gravel Deposit	41	1.35 - 2.25	8	Grey-brown sand	83.5	11.0	13
	42	0-1.65	12	White sand	64.0	13.0	20
	46*	0-1.0	10	Grey-brown, iron-stained sand	72.0	13.5	19
	47	0-1.45	30	Pale grey-brown clayey sand	71.0	30.0	42
						Depth Weighted Avge	25%
Gravel Pit Deposit	49	0-1.1	10	Grey-brown sand	63.5	18.0	28
	52	0-1.4	20	White sand	81.5	21.5	26
	53	0-1.05	10	White clay	66.5	16.0	24
	56*	0-0.8	15	White sand	67.0	17.5	26
	58	0-0.8	15	Pale brown silty-clayey sand	64.5	23.5	36
						Depth Weighted Avge	28%
Weymouth Gravel Deposit	W19	0-1.5	5	White sand	70.0	19.0	27
	W28	0-0.5	5	White sand	65.0	1.5	2
	W31	0-1.0	5	White sand	67.0	6.5	10
	W39	0-1.6	8	Grey-brown sand	77.0	5.5	7
	W43	0-0.95	4	White sand	81.5	6.5	8
						Depth Weighted Avge	13%

* 10Kg samples sent to France for furnace tests (20.3.86).
2Kg splits sent to S.G.S. Laboratories, Sydney, for Assay (14.3.86)

TEST PIT RESULTS - BRIDWOOD STATION & WEYMOUTH AREAS

(All measurements in metres)

1. BRIDWOOD GRAVEL DEPOSIT

PIT 1

0 - 0.1	Black sandy loam.
0.1 - 0.5	White to grey sandy quartz pebble gravel.
0.5 - 1.0	Stiff pale yellow brown - dark brown clay.

PIT 2

0 - 0.3	Black loamy soil.
0.3 - 1.0	White to grey fine sand.
1.0 - 1.8	Grey to yellow-brown clay.

PIT 3

0 - 1.3	White to grey fine sand.
1.3 - 1.6	Dark red to chocolate brown ferruginized sands - very compact and hard to dig with the excavator.

PIT 4

0 - 1.2	White surface sands.
1.2 - 2.3	Brownish black iron-stained sands.
2.3 - 2.9	Grey-white, clayey sands - iron stained as above.

PIT 5

0 - 1.4	White fine sand.
1.4 - 2.3	Pale yellow slightly iron-stained sand.
2.3 - 3.0	White clayey sands with water inflow at 3.0m depth.

PIT 6

0 - 0.3	Black loamy soil.
0.3 - 0.5	Quartz pebble gravel layer.
0.5 - 0.8	Sandy, iron-stained clay with occasional quartz pebble.
0.8 - 1.6	Pale grey to yellow brown stiff clay with occasional quartz pebble.

PIT 7

0 - 0.1	Black loamy soil.
0.1 - 1.5	Pale grey to yellow-brown stiff clay.

PIT 8

0 - 0.7	Quartz pebble lag gravel set in clay-rich matrix from 0.3m depth. Yellow-brown iron oxide staining occurs between 0.6-0.7m depth.
0.7 - 1.35	Sub-rounded to angular coarse quartz pebbles (50% + 20mm) in a pale grey, stiff, gritty clay.
1.35 - 1.7	Grey-white to pale yellow-brown clay. Sample 8 of this clay collected at 1.35-1.45m for V. Threader, Tas. Mines Department. Bulk sample of gravel from 0 - 1.35 collected for screening tests.

PIT 9

0 - 0.3	Sandy grey loam.
0.3 - 0.45	Pebbly grey sand.
0.45 - 1.5	Yellow-brown sandy clay which grades down into grey-white sparsely pebbled clay.

PIT 10

0 - 0.1	Blank loamy soil.
0.1 - 0.7	Grey-white fine sand.
0.7 - 1.0	Red-brown to black, very ferruginous, sandy clay pebble layer.
1.0 - 1.05	Yellow-brown grading down into grey-white sporadically pebbly clay as seen in pit 9.

PIT 11

0 - 1.2	Pale yellow clay with a 5cm thick crust of white quartz lag pebbles. Most of the gravel crust has been removed in the past.

PIT 12

0 - 0.1	Black loam with white quartz pebbles.
0.1 - 0.85	Pale grey-white clay with an occasional white quartz pebble.

PIT 13

0 - 0.2	Clayey gravel in old scraped area.

0.2 - 1.0	Pale grey-white clay with occasional white quartz pebble.

PIT 14

0 - 0.2	Black loamy soil.
0.2 - 0.6	White clayey sand.
0.6 - 2.1	Grey to pale yellow stiff clay.

PIT 15

0 - 0.75	Coarse quartz pebble lag gravel (60% + 20mm). Sample 15 from base of clayey gravel collected at 0.74-0.75m depth for V. Threader, Tas. Mines Department.
0.75 - 1.3	Stiff white clay. Bulk sample of gravel from 0 - 0.75m depth collected for screening tests.

PIT 16

0 - 0.2	Black loam with large white quartz pebbles.
0.2 - 1.5	Stiff pale brown clay.

PIT 17

0 - 0.3	White quartz pebble gravel set in stiff yellow to pale cream coloured clay. (Surface gravel removed).
0.3 - 1.0	Pale brown to pale cream clay with several pebbly grit layers.

PIT 18

0 - 0.3	Black surface loam with large white quartz pebbles and boulders.
0.3 - 1.5	Pale yellow brown stiff clay - ? weathered Mathinna siltstone.

PIT 19

0 - 0.2	Black loam with white quartz pebbles.
0.2 - 0.7	Pale yellow clay.

PIT 20

0 - 0.6	Pale grey fine sand with a few sparse quartz pebbles at surface.
0.6 - 1.5	Pale yellow brown stiff clay.

PIT 21

0 - 0.2	White quartz pebble lag gravel in black-brown sandy loam.
0.2 - 1.7	Pale grey - yellow, well jointed clay.

PIT 22

0 - 0.2	Black loamy sands with white quartz pebbles.
0.2 - 2.1	Coarse, white quartz pebbles and boulder gravel (50% +20mm) set in pale grey to yellow orange mottled clay. Pebbles upto 30cm long. Sample 22A collected from 2.0 - 2.1m for Mines Department.
2.1 - 2.8	Pale white to pale yellow stiff clay. Sample 22B collected from 2.3 - 2.4m depth.

The top 0.8m of the gravel is loose and unconsolidated - below this the gravel is bonded with clay.
Bulk sample from 0 -2.1m depth was collected for screening tests.

PIT 23

0 - 0.2	Black loamy soil with white quartz pebbles and boulders.
0.2 - 0.5	Gritty pebble and boulder gravels - loose and unconsolidated.
0.5 - 1.7	Pale yellow to pale orange stiff clay.

PIT 24

0 - 0.2	Black loamy soil with white quartz pebbles upto 10cm long.
0.2 - 0.4	Grey, unconsolidated pebbly sand.
0.4 - 1.25	Pale red-brown and pale yellow-white clay.

PIT 25

0 - 1.5	Boulder and pebble gravel - 0.1m thick on SE side of the pit but thickens to 1.5m on NW side. Loose and unconsolidated to 0.6m depth - below this cemented with yellow and pale red clay. Yield of +20mm pebbles estimated to be about 50% with pebbles upto 30cm long.
1.5 - 1.8	Pale yellow to white weathered Mathinna Siltstone-shale. Bulk sample of gravel from 0 - 1.5m depth collected for screening tests.

PIT 26

0 - 0.2	Black loamy soil with white quartz pebbles

upto 5cm long.

0.2 - 0.5	Loose grey pebble and boulder gravel - colluvial material downhill from gravels on crest of hill.
0.5 - 1.0	Stiff pale grey to yellow brown clay.

PIT 27

0 - 0.3	Black pebbly loam.
0.3 - 0.8	Loose, sandy pebble-boulder gravel.
0.8 - 2.1	Coarse boulder gravel (50-60% +20mm) set in a pale cream - pale grey clay. Minor yellow brown iron oxide spotting.
2.1 - 2.6	Pale cream to pale yellow stiff clay. Bulk sample from 0 - 2.1m depth collected for screening tests.

PIT 28

0 - 0.4	Black loamy soil.
0.4 - 0.7	Grey-brown sand with an occasional pebble.
0.7 - 1.0	Yellow brown to grey stiff clay.

PIT 29

0 - 0.2	Black loamy soil.
0.2 - 0.6	Quartz pebble gravel, unconsolidated to 0.4m depth.
0.6 - 1.5	Pale cream to pale yellow and grey stiff clay.

PIT 30

0 - 0.2	Black loamy soil with white quartz gravel.
0.2 - 0.4	Grey sandy, unconsolidated pebble layer.
0.4 - 1.45	Pale yellow-brown to pale grey clay.

PIT 31

0 - 0.3	Black loam with an occasional white quartz pebble.
0.3 - 0.9	Coarse boulder gravel, loose and free of clay with boulders of quartz upto 20cm long.
0.9 - 1.3	Pale yellow to cream - grey sands clay. Bulk sample from 0 - 0.9m depth collected for screening tests.

RIVER HILLS NORTH GRAVEL DEPOSIT

PIT 32

0 - 0.2	Black loamy soil with white quartz pebbles.
0.2 - 1.25	Grey pebbly gravel in a loose sandy matrix. Becomes harder, ?silicified at depth.
1.25 - 1.5	Pale cream, hard, sandy clays and grits - cemented with orange iron oxides. Bulk sample from 0 - 1.25m depth collected for screening tests.

PIT 33

0 - 0.2	Black loam with white quartz pebbles.
0.2 - 1.35	Coarse boulder gravel with pebbles upto 10cm long in a loose sandy matrix to 1.1m depth. Becomes harder, silicified and cemented with iron and manganese oxides towards 1.35m. Bulk sample from 0 - 1.35m depth taken for screening tests.

PIT 34

0 - 0.2	Black loam.
0.2 - 0.6	Grey brown fine sand.
0.6 - 1.05	Pale yellow brown clay - weathered Mathinna shale.

PIT 35

0 - 0.2	Black loam with white quartz pebbles upto 4-5cm long.
0.2 - 1.2	Pebble and boulder gravel in a grey gritty matrix. (30% +20mm). Pebbles upto 15cm long. Gravels become more indurated and silicified from about 0.6m depth.
1.2 - 1.35	Hard red-brown to brown iron-oxide cemented gravels as above. Bulk sample for 0 - 1.2m depth taken for screening tests.

PIT 36

0 - 0.25	Black loam with large white quartz pebbles and boulders.
0.25 - 1.2	Coarse boulder gravel with pebbles upto 15cm long in a grey sandy clay matrix.
1.2 - 1.4	Pale brown to cream soft clay. Bulk sample from 0-1.2m depth taken for screening tests.

060 PIT 37

0 - 0.1	Black loam with occasional white quartz pebble.
0.1 - 0.5	Yellow brown clay.

3. RIVER HILLS SOUTH GRAVEL DEPOSIT

PIT 38

0 - 0.2	Loam with white quartz pebbles.
0.2 - 1.2	Yellow brown and grey clay.

PIT 39

0 - 0.2	Black loam with white quartz pebbles upto 5-8cm long.
0.2 - 0.7	Yellow clay.

PIT 40

0 - 0.2	Black loam.
0.2 - 0.7	Pebbly grits and sands. Pebbles upto 5cm long.
0.7 - 0.95	Grey and pale yellow stiff clay.

PIT 41

0 - 0.2	Loam.
0.2 - 0.95	Grey sand - old dump material.
0.95 - 1.35	Ferruginous pebbly grit layer.
1.35 - 2.25	Clean white quartz gravel (40% +20mm) with pebbles upto 15cm long. Very clean and with little clay - water inflow from the base at 2.25m.
2.25 - 2.5	Hard grey sand - indurated with secondary silica? Bulk sample taken from 1.35-2.25m depth for screening tests.

PIT 42

0 - 0.6	Coarse quartz pebble and boulder gravel. (Top ?0.5m previously removed).
0.6 - 1.0	Coarse gravel as above heavily stained and cemented with iron and manganese oxides.
1.0 - 1.25	Yellow brown to pale cream gritty clay layer.
1.25 - 1.65	Quartz pebble gravel (50-60% + 20mm) in a pale grey clay matrix.
1.65 - 1.75	Pale cream pebbley clay. Bulk sample taken from 0 - 1.65m depth for screening tests.

PIT 43

0 - 0.1	Grey loamy sand.
0.1 - 0.7	Grey-white fine sand.
0.7 - 1.6	Coarse quartz boulder and pebble gravel strongly cemented with iron and manganese oxides. Too hard for the excavator to dig any deeper.

PIT 44

0 - 0.1	Black loam with white quartz pebbles.
0.1 - 1.0	Pale yellow to red brown clay.

PIT 45

0 - 0.15	Black loam with white quartz pebble upto 5-8 cm long.
0.15 - 0.45	Loose quartz pebble gravel in a sandy matrix.
0.45 - 0.9	Pale yellow white clay with an unusual green ?jarosite tinge.

PIT 46

0 - 0.2	Grey loamy sand.
0.2 - 0.65	White to grey fine sand.
0.65 - 1.0	Grey pebble and boulder gravel in loose clean sandy matrix. Yield about 30% of +20mm pebbles some of which are upto 8cm long.
1.0 - 1.35	Yellow brown to brown ferruginous silty sands and clays.
1.35 - 1.7	Yellow brown to pale cream stiff clay. Bulk sample of gravel from 0 - 1.0m taken for screening tests.

PIT 47

0 - 0.4	Coarse boulder gravel upto 10cm long in relatively loose grey clay matrix. About ?0.5m of gravel has already been scraped off this site.
0.4 - 0.65	Dark brown, hard ferruginized pebble gravel of 2-3cm diameter.
0.65 - 0.9	Pale yellow to white gravelly clay to clayey gravel. Sample 47 collected for Mines Dept.
0.9 - 1.45	Variably ferruginized and ?silica cemented quartz pebble gravel of 2-3cm diameter. Bulk sample of gravel from 0 - 1.45m depth taken for screening tests.

062

PIT 48

0 - 0.2	Grey loamy sand.
0.2 - 0.3	Gritty grey sand with patches of 1cm pebbles.
0.3 - 0.9	Grey to pale yellow stiff clay.

4. GRAVEL PIT DEPOSIT

PIT 49

0 - 0.2	Grey loamy sand.
0.2 - 1.1	Loose, coarse pebble and boulder gravel in grey sandy matrix. (30-40% +20mm). Pebbles upto 10cm long.
1.1 - 2.1	Yellow brown to cream clay heavily stained with brown to black manganese oxides from 1.1 to 1.55m depth. Bulk sample taken from 0 - 1.1m depth for screening tests.

PIT 50

0 - 0.15	Grey loamy soil.
0.15 - 1.1	White fine sand.
1.1 - 1.5	Coarse, poorly sorted boulder gravel with greenish cherty pebbles upto 20cm long. At depth this gravel is hard and heavily cemented with secondary silica.

PIT 51

0 - 0.2	Grey loamy sand.
0.2 - 1.6	White fine sand.
1.6 - 1.9	Coarse pebble gravel in a hard limonite cement. Pebbles upto 10cm long.

PIT 52

0 - 0.3	Black loamy soil.
0.3 - 1.4	Coarse quartz pebble and boulder gravel in a loose, clean sandy matrix. (40% +20mm).
1.4 - 1.5	Brown, ferruginized and silicified sandstone with scattered pebbles. Very hard - excavator could not penetrate. Bulk sample from 0-1.4m depth collected for screening tests.

PIT 53

0 - 0.25	Black loamy soil with white quartz pebbles.

063

0.25 - 1.05	Coarse boulder gravel with little sand matrix (40-50% + 20mm). Some boulders of quartz are upto 50cm long.
1.05 - 1.5	Pale brown to cream soft to hard, variably silicified, ferruginous sandstone. Bulk sample from 0 - 1.05 collected for screening tests.

PIT 54

0 - 0.2	Grey loamy sand.
0.2 - 0.7	Coarse gravel with pebbles upto 10cm long (30% + 20mm) in a grey sandy matrix. The eastern end of the pit shows the gravel deepening to 1.2m depth but below about 0.7m depth it is moderately stained with yellow brown limonite.
0.7 - 1.4	Yellow brown to pale cream stiff clay - heavily stained below the contact for 20 - 30cm with iron oxides.

PIT 55

0 - 0.2	Grey loamy sand.
0.2 - 0.45	Grey white fine sand.
0.45 - 0.9	Yellow brown and grey stiff clay.

PIT 56

0 - 0.25	Grey loamy sand with abundant white quartz pebble float at surface.
0.25 - 0.8	Coarse, loose quartz boulder gravel with pebbles upto 12cm long.
0.8 - 1.1	Indurated, silicified pebbly grits and sands. Bulk sample collected from 0 - 0.8m depth for screening tests.

PIT 57

0 - 0.3	Black to grey loamy sand.
0.3 - 0.6	Grey, loose, pebbley sands and gravels (20 - 30% + 20mm) with pebbles upto 10cm long.
0.6 - 1.1	Dark brown to yellow brown strongly ferruginized clay grades into yellow - brown and pale grey clay at about 0.8m depth.

PIT 58

0 - 0.6	Coarse white quartz boulder gravel (50 - 60% + 20mm) in a loose grey sandy matrix. Pebbles upto 20cm long. Surface ?0.5m previously removed.

0.6 - 0.8	Coarse gravel on an uneven clay bottom. Cemented with yellow brown limonite-stained sandy clay. Sample 58A collected between 0.7 - 0.8m depth for Mines Department.
0.8 - 1.9	Pale cream to pale yellow-brown sandy clay containing sporadic clumps of subrounded-angular pebbles upto 20cm long. Sample 58B collected at 1.9m depth. Bulk sample from 0-0.8m depth collected for screening tests.

PIT 59

0 - 0.4	Loose quartz gravel with pebbles upto 10cm long.
0.4 - 0.95	Brown to pale brown and black manganese oxide-stained silty clays grading down into yellow-brown and pale cream clay from about 0.8m depth.

PIT 60

0 - 0.25	Black loam with quartz pebble float upto 30cm long.
0.25 - 1.0	Pale cream to pale yellow stiff clay.

PIT 61

0 - 0.3	Black sandy loam.
0.3 - 0.8	Grey white gritty sand with small pebbles upto 1cm diameter at base.
0.8 - 0.9	Strongly ferruginized, hard, quartz pebble gravel with pebbles upto 7cm long. Too hard for excavator to dig.

PIT 62

0 - 0.3	Black-grey loamy sand.
0.3 - 1.6	Grey white fine sand.
1.6 - 1.8	Ferruginous hard sandstone with occasional white quartz pebble. Hard to dig - water inflow at 1.6m depth.

PIT 63

0 - 0.3	Grey loamy sand.
0.3 - 2.0	Grey white fine sand.
2.0 - 2.1	Dark to pale brown strongly ferruginized pebble and boulder gravel with pebbles upto 10cm long. Too hard to dig with the excavator.

5. WEYMOUTH GRAVEL DEPOSIT

PIT W1

0 - 0.2	Grey loamy sand with white quartz pebbles (10% +20mm).
0.2 - 1.2	Soft, pale yellow weathered Mathinna shales.

PIT W2

0 - 0.4	White sand
0.4 - 0.8	Pale yellow, weathered Mathinna shales.

PIT W3

0 - 0.7	Grey loamy sand.
0.7 - 1.7	Heavily ferruginized sand - iron oxide cementing decreases towards base of pit.

PIT W4

0 - 0.75	White to grey loamy sand.
0.75 - 1.0	Strongly ferruginized black to dark brown sand - difficult to dig with the excavator.

PIT W5

0 - 0.7	Grey white loamy sand.
0.7 - 0.9	Dark brown, heavily ferruginized sand grading downwards into pale yellow clayey sand.

PIT W6

0 - 0.6	Grey-white sand.
0.6 - 1.0	Heavily ferruginized sand with occasional 2-3cm pebble between 0.6-0.9m depth. Below this grades into yellow-white to pale brown variably ferruginous sand.

PIT W7

0 - 0.8	Grey white sand.
0.8 - 1.2	Grey white sandy clay stained with iron oxide between 0.8 - 0.9m depth.

PIT W8

0 - 0.75	Grey white loamy sand.
0.75 - 1.95	Dark brown ferruginized sandy clay which grades down into pale yellow to pale grey sandly clay from about 1.65m depth.

066

PIT W9

0 - 0.7	Grey white sand.
0.7 - 3.5	Variably ferruginized sandy clay which grades into green ?glauconitic clay with rare quartz pebbles upto 5cm diameter from about 2m depth.

PIT W10

0 - 0.2	Grey-white loamy gravel.
0.2 - 0.7	Gravelly sand with white quartz pebbles (5% + 20mm).
0.7 - 1.5	Grey and yellow-brown clay.

PIT W11

0 - 1.3	Black loamy soil over dark brown and yellow sandy clay.
1.3 - 1.5	White quartz pebble layer with water.
1.5 - 2.2	Yellow and cream clay.

PIT W12

0 - 0.2	Loose, white quartz pebble gravel (20% +20mm).
0.2 - 0.6	Yellow brown stiff clay.

PIT W13

0 - 0.1	Pebbly sand (1% + 20mm).
0.1 - 0.4	Yellow brown clay.

PIT W14

0 - 0.2	Loose white quartz gravel (30-40% +20mm).
0.2 - 0.5	Pale yellow-brown clay.

PIT W15

0 - 0.1	Black sandy loam.
0.1 - 0.3	Loose, white quartz pebble gravel. (10% +20mm).
0.3 - 0.5	Yellow-brown clay.

PIT W16

0 - 0.3	Loamy, sandy gravel with angular fragments (10-15% +20mm).
0.3 - 0.6	Pale yellow clay.

067

PIT W17

0 - 0.3	Grey loamy sand with white quartz fragments (5% + 20mm).
0.3 - 0.5	Pale yellow white to grey very weathered Mathinna siltstones and shales.

PIT W18

0 - 0.3	Grey loamy, sandy gravel.
0.3 - 0.90	Yellow white weathered Mathinna siltstones.

PIT W19

0 - 1.5	White, mostly unconsolidated quartz pebble gravel. (30% + 20mm). Between 0.9-1.1m depth gravel is partly silicified but still rip-able.
1.5 - 1.9	Yellow stiff clay. Bulk sample from 0-1.5m depth collected for screening tests.

PIT W20

0 - 0.1	Surface loam sands and gravel.
0.1 - 0.3	Loose white gravel (20% + 20mm).
0.3 - 0.6	Stiff yellow brown clay with manganese oxide along joints.

PIT W21

0 - 0.2	Grey loamy sand with occasional quartz pebble.
0.2 - 0.5	Loose white quartz pebble gravel (15% +20mm).
0.5 - 0.8	Pale yellow-brown and cream mottled clay.

PIT W22

0 - 0.2	Black to grey swampy loamy sand and fine silt.
0.2 - 0.4	Loose quartz pebble gravel (5-10% +20mm).
0.4 - 0.6	Yellow-brown stiff clay.

PIT W23

0 - 0.1	Grey sandy loam with occasional quartz pebble.
0.1 - 0.4	Loose, white quartz fragmental gravel (10% + 20mm).
0.4 - 0.5	Yellow brown clay.

068

PIT W24

0 - 0.1	Grey sand with white quartz pebbles.
0.1 - 0.4	White, poorly consolidated quartz pebble gravel (20% + 20mm).
0.4 - 0.7	Ferruginous and slightly silicified gravel as above. Very hard to dig.
0.7 - 0.9	Pale grey to yellow-brown weathered Mathinna siltstones.

PIT W25

0 - 0.1	Dark grey loamy sand.
0.1 - 0.8	Pale grey silty sand which grades into pale yellow-brown to cream, weathered, sandy-siltstone at 0.35m depth.

PIT W26

0 - 0.1	Grey loamy sand with white quartz pebbles.
0.1 - 0.4	Grey-white loose quartz pebble gravel (20% + 20mm).
0.4 - 0.65	Stiff yellow brown to red brown clay.

PIT W27

0 - 0.4	White quartz pebble gravel in loose sandy matrix (20% +20mm).
0.4 - 0.65	Pale grey to yellow brown fine clayey sand.

PIT W28

0 - 0.5	Sample of gravel cut from the face of an old pit. Gravel crust formed on surface - much sandier further into the fresh gravel (10-15% + 20mm). Bulk sample taken for screening tests.

PIT W29

0 - 0.4	Loose, sandy loam with white quartz pebbles (1-2% + 20mm).
0.4 - 0.6	Dark brown to yellow brown stiff clay.

PIT W30

0 - 0.1	Pebbley loamy sand (5% + 20mm).
0.1 - 0.4	Pale brown and cream, very weathered siltstone.

PIT W31

0 - 1.0	Coarse quartz pebble gravel in a loose sandy matrix (10-15% + 20mm).
1.0 - 1.3	Cream to pale brown clay. Bulk sample of gravel from 0 - 1.0m depth taken for screening tests.

PIT W32

0 - 0.2	Loose grey quartz pebble gravel (10% + 20mm) - top ?0.3m previously removed.
0.2 - 0.5	Yellow brown and white clay.

PIT W33

0 - 0.3	Grey loamy sand with white quartz pebbles (10% + 20mm).
0.3 - 0.7	Yellow brown clayey sand with sparse quartz pebbles.

PIT W34

0 - 0.2	Grey loamy sand.
0.2 - 0.6	Quartz pebble gravel (5% + 20mm).
0.6 - 0.8	Highly ferruginous yellow-brown to red brown hard cemented gravel and gritty sands. (5% + 20mm).

PIT 35

0 - 0.1	Grey swampy loam.
0.1 - 0.9	Grey silty clay grading down into yellow brown and grey clay.

PIT W36

0 - 0.2	Grey loamy sand.
0.2 - 0.35	Loose, white quartz pebble gravel (5% + 20mm).
0.35 - 0.65	Red-brown to dark brown ferruginous gritty clay.

PIT W37

0 - 0.2	Grey surface loam.
0.2 - 0.5	Grey-white fine sandy silt.
0.5 - 0.8	Red-brown and white clay.

PIT W38

0 - 0.2	Grey loamy sand with white quartz pebbles (5% + 20mm).
0.2 - 0.45	White loose gravel with little sand matrix (5-10% + 20mm). Pebbles generally about 10mm diameter.
0.45 - 0.95	Pale red brown clay with thin quartz pebble layers.

PIT W39

0 - 0.2	Loose white quartz pebble gravel in a grey sandy matrix.
0.2 - 0.6	Black to grey fine sand.
0.6 - 1.6	Loose coarse gravel in sand matrix (10 - 15% + 20mm).
1.6 - 1.8	Gravel as above in stiff pale brown clay - hard to dig. Bulk sample of gravel from 0 - 1.6m depth collected for screening tests.

PIT W40

0 - 0.2	Black to dark brown silty loam - swamp deposit.
0.2 - 0.6	Red brown to grey sandy clay.
0.6 - 1.7	Grey, odiferous sandy clay with a pebbley layer between 1.15-1.25m.

PIT W41

0 - 0.1	Grey loamy soil.
0.1 - 0.8	Yellow brown clay with 1cm ferruginous nodules.

PIT W42

0 - 0.5	Dark brown to grey loamy and swampy sand.
0.5 - 1.2	Loose grey quartz pebble gravel (10-15% +20mm pebbles).
1.2 - 1.3	Red brown to dark brown very ferruginized hard gravel - as above - but cemented with iron oxides.

PIT W43

0 - 0.2	Grey loamy and sandy gravel.
0.2 - 0.95	Coarse quartz pebble gravel with a trace of sand (15-20% + 20mm).

0.95 - 1.15	Dark brown to red brown weathered Mathinna sandy siltstone. Bulk sample from 0 - 0.95m depth taken for screening tests.

PIT W44

0 - 0.2	Dark brown pebbley loamy soil.
0.2 - 0.65	Loose quartz pebble gravel (10-15% + 20mm).
0.65 - 0.9	Gravel as above but strongly cemented with iron oxides.

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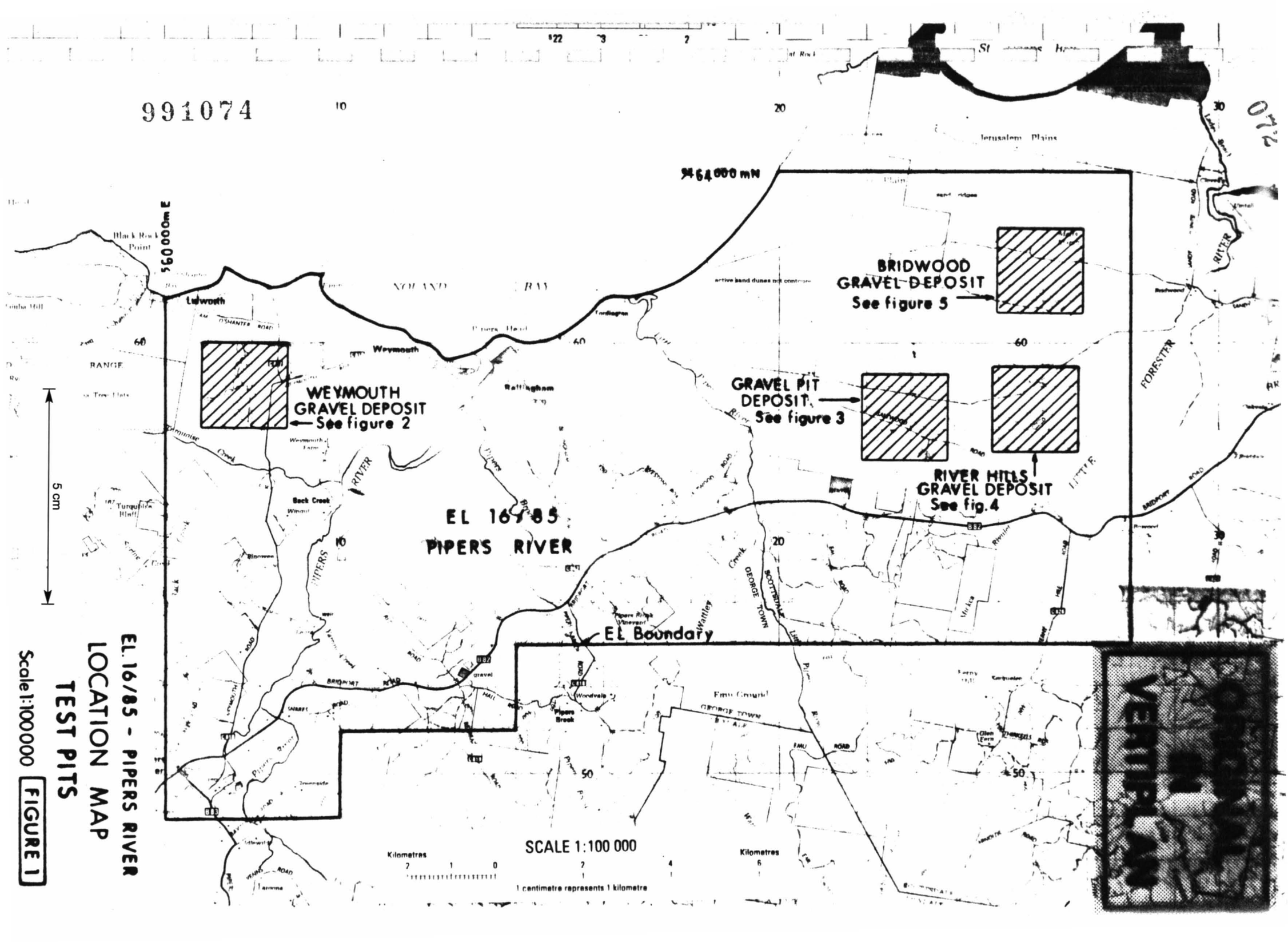
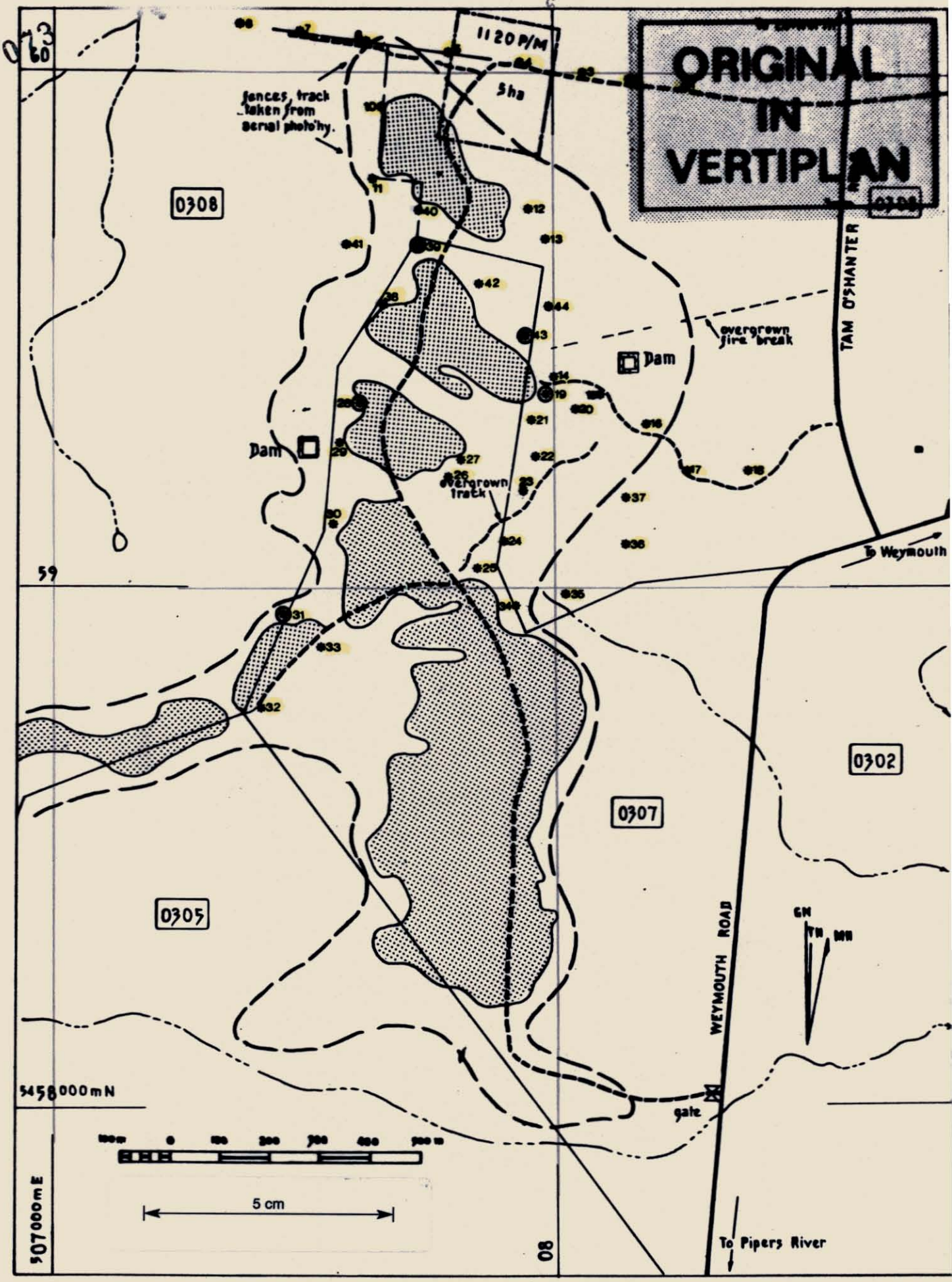


EL. 16/85 - PIPERS RIVER

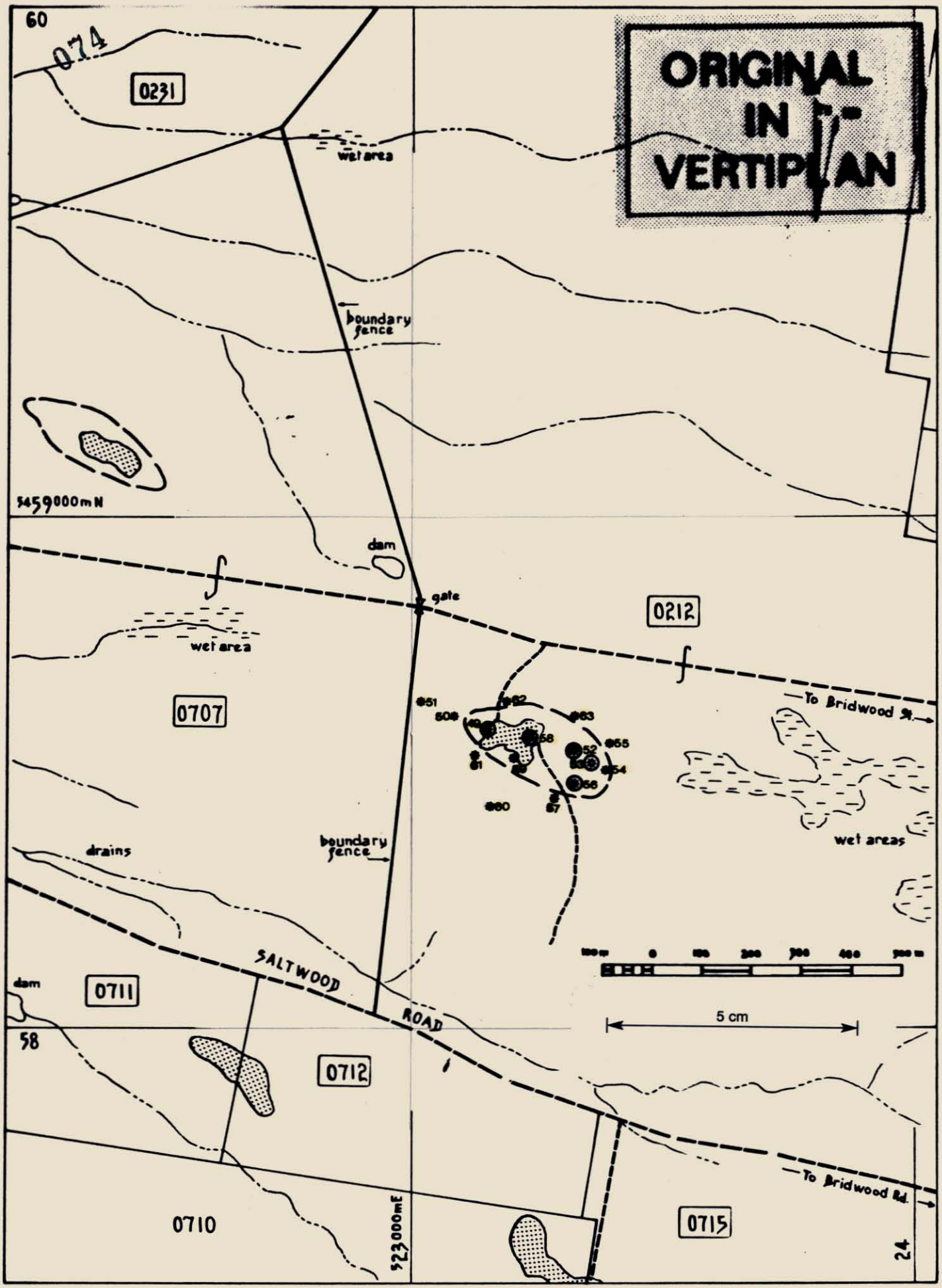
LOCATION MAP

TEST PITS

Scale 1:100000 FIGURE 1



EL. 16/85 - PIPERS RIVER
WEYMOUTH GRAVEL DEPOSIT
TEST PITS
Scale 1:10,000 FIGURE 2



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Inferred boundary of Quartz pebble gravel

Current gravel pits

Test Pits

Bulk Samples

Property boundary

Land parcel bdy.

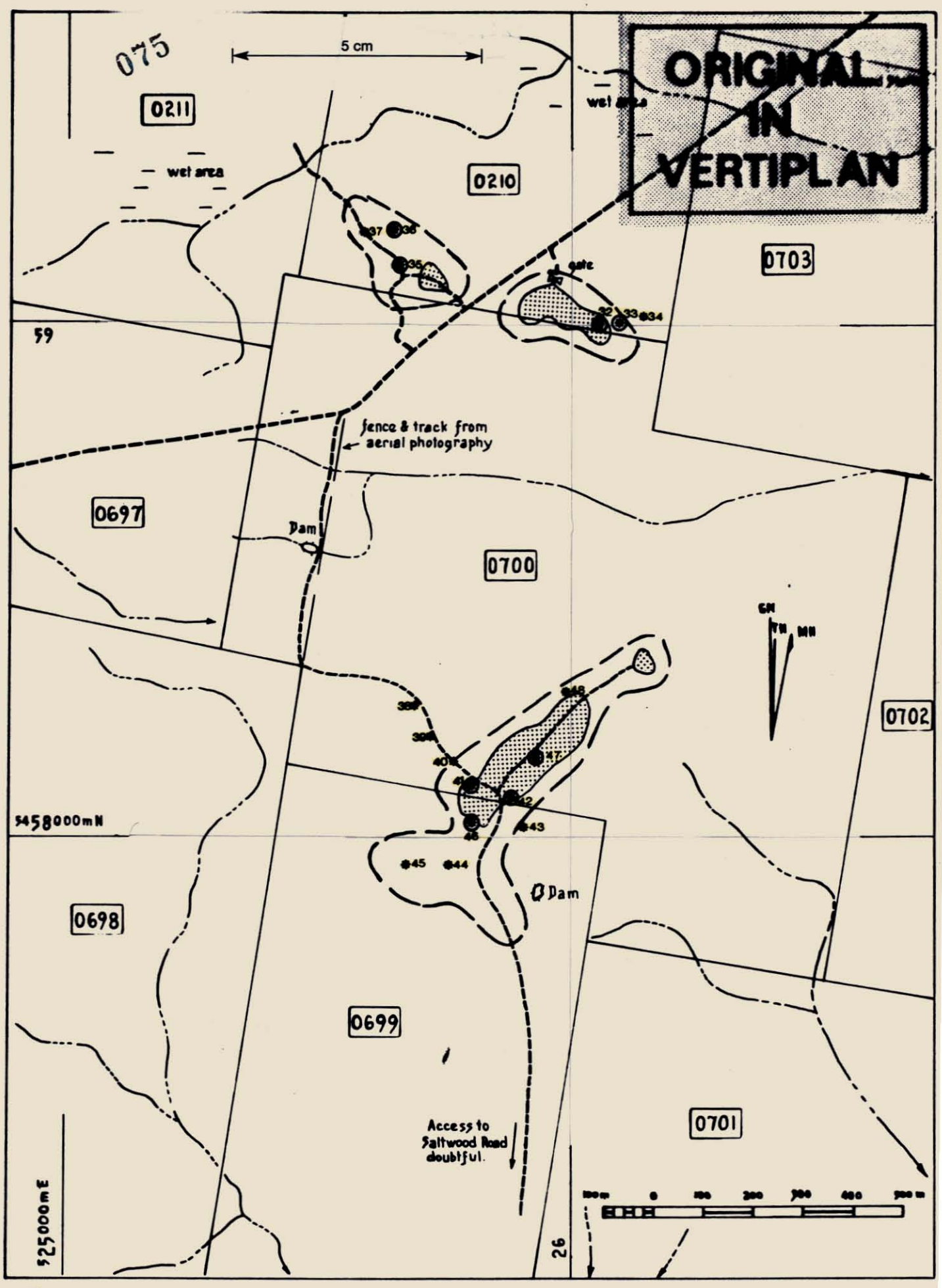
0307 Land parcel No.

EL. 16/85 - PIPERS RIVER

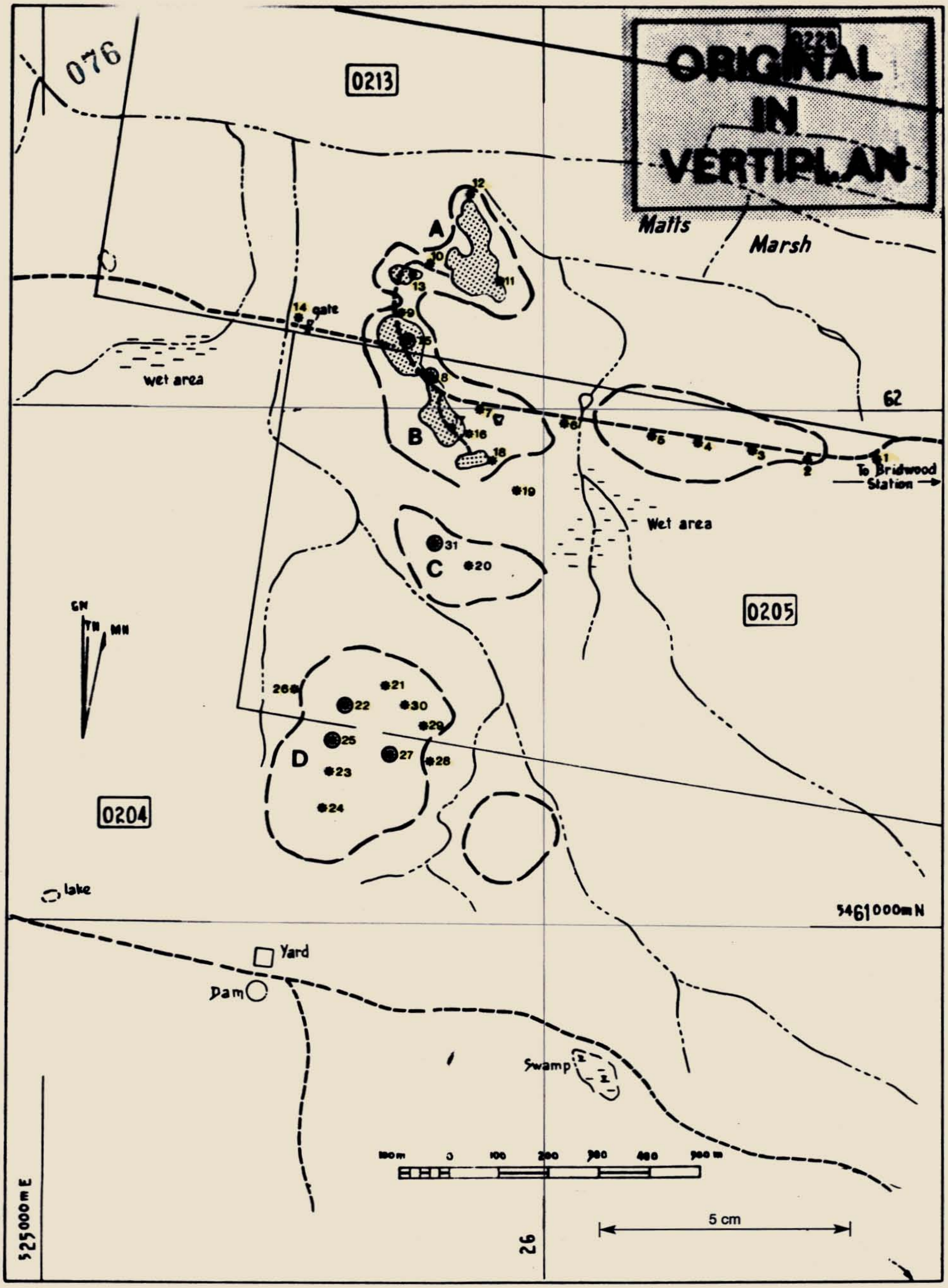
GRAVEL PIT DEPOSIT

TEST PITS

Scale 1:10,000 FIGURE 3


075
5 cm
ORIGINAL IN VERTIPLAN
0211
0210
0703
0697
0700
0702
0698
0699
0701
wet area
wet area
59
fence & track from aerial photography
Dam
Dam
gate
5458000mN
525000mE
26
Access to Saltwood Road doubtful.
Inferred boundary of Quartz pebble gravel
Current gravel pits
Test Pits
Bulk Samples
Property boundary
Land parcel bdy.
0307 Land parcel No.
EL. 16/85 - PIPERS RIVER
RIVER HILLS DEPOSIT
TEST PITS
Scale 1:10,000
FIGURE 4

991077



Inferred boundary of Quartz pebble gravel

Current gravel pits

Test Pits

Bulk Samples

Property boundary

Land parcel bdy.

0307 Land parcel No.

EL. 16/85 - PIPERS RIVER

BRIDWOOD DEPOSIT

TEST PITS

Scale 1:10,000 **FIGURE 5**

991078

077

991079

APPENDIX 3

078

991080

QUARTERLY REPORT

EL 16/85

Period 30.8.85 - 30.11.85

Queensland Mines Limited
For Pioneer Concrete
(Tasmania) Pty Ltd.

PSC 1985/6

CONTENTS

080

1. Exploration Completed

Only an initial reconnaissance programme was completed on the licence during the reporting period. The remainder of the time was spent negotiating with the landowners of the two most promising areas.

The reconnaissance was undertaken by Mr R. Wright, consulting geologist of Devonport. His brief was to visit all known gravel deposits in the region and make a visual estimate of the +20mm clean quartz yield of the gravels. Some samples were taken for analysis. The results of this programme are reported as Appendices 1 and 2.

Negotiations with the owners of the private land known as Tam O'Shanter and Bridwood stations were completed during the quarter.

2. Future Exploration

Two areas, at Tam O'Shanter and Bridwood will be investigated in detail. The programme will include pitting, sizing and analytical work.

3. Financial Statement for period 19.8.85 to 16.12.85

Staff Salaries	$707.50
Travel & Accommodation	475.98
Representation	26.47
Fuel	10.64
Exploration Equipment	28.42
Consumables	100.41
Publications	21.81
Freight	32.65
Drafting	17.99
Geological Contractors	1429.72
Assays	840.48
Lease Costs	587.50
TOTAL	$4279.57

APPENDIX 1

082

991084

QUARTZ GRAVEL SURVEY

N.E. TASMANIA

by

R.G. WRIGHT

CONSULTING GEOLOGIST

Distribution

J. Noakes - Queensland Mines

Devonport

May, 1985

083

991085

QUARTZ GRAVEL SURVEY - N.E. TASMANIA

LIST OF APPENDICES

1. INTRODUCTION

A rapid survey of quartz gravel deposits in the Pipers Brook - Scottsdale region was requested for Pioneer Concrete by Mr. J. S. Noakes, Chief Geologist, Queensland Mines Ltd.

A total of 69 sites were briefly inspected between 16-23.4.85.

2. GEOLOGY

Four main types of gravel deposit were identified during the survey:

1. Recent, angular, vein-quartz lag gravels over weathered Mathinna siltstone. These gravels are usually thin and patchy but can reach 2m thickness on scree slopes.

   Gravels of this type are unlikely to be extensive enough to be of interest.

2. Angular to sub-rounded, Recent lag gravels developed over Pleistocene, glacial, pebbly grit sequences. Again these are usually patchy and are derived from the pebble content in the underlying glacial drift. They are unlikely to be of interest to this survey.

3. Poorly sorted, sub-rounded to sub-angular Pleistocene gravels draped like blankets over low hills of Mathinna sediment - generally in areas close to the coast.

   These poorly-sorted gravels contain very little sand or silt content and would give a high yield of clean, coarse, +20mm sized quartz pebbles. They have an irregular distribution and shape and are probably of glacial origin. Their downgrading factor is their thickness which is generally below 1m.

   Their purity and high yield, however, makes them an important source for coarse quartz pebbles.

4. Tertiary fluviatile and braided stream deposits.

   Dissected remnants of limonite-stained and cemented, sub-rounded quartz gravels and silty sands occur E and W of Little Pipers River. These gravels can reach thicknesses of 6-7m and in the past have provided large quantities of road and concrete gravels.

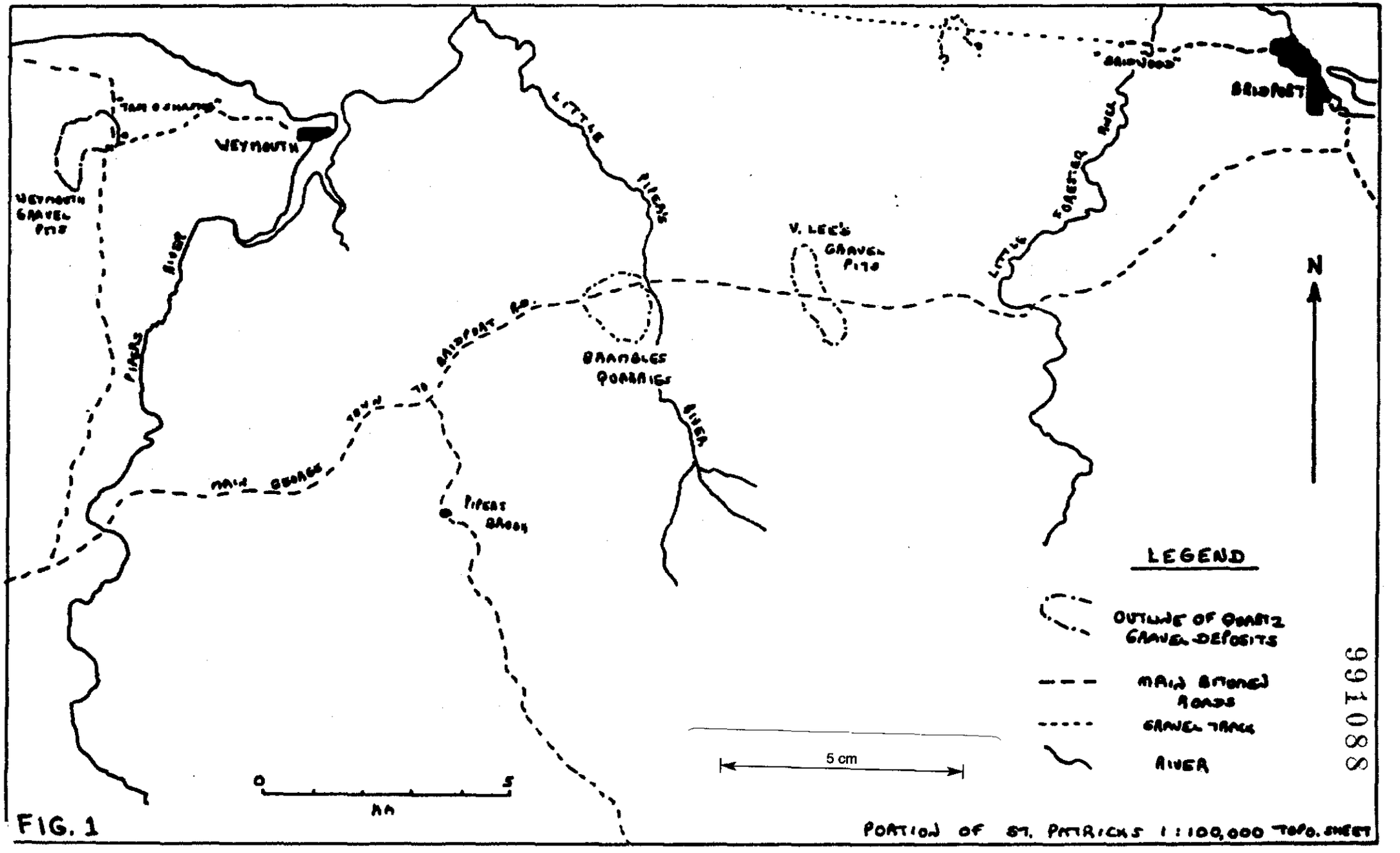


FIG. 1

PORTION OF ST. PATRICKS 1:100,000 TOPO. SHEET

They consist of irregular coarse gravel layers preserved in various cut and fill channel structures. Most of them contain a high percentage of fine sand and silt and selective mining would be required to obtain coarse 20mm+ quartz gravel.

Only the top 0.5-1.0m is leached and free of iron-oxide staining and cement.

Some of these gravels could provide clean quartz pebbles of around +20mm size for blending with the very coarse blanket gravel material.

3. LOCATIONS OF INTEREST

Figure 1 shows the location of the main areas of interest. Details of these and the other sites inspected during the survey are provided in Appendix I.

Location maps at 1:100 000 scale are attached as Appendix II.

Further investigation is recommended at the following six localities:

3.1 WEYMOUTH

Extensive 1m thick blanket gravel deposits occur along a low NS ridge about 5 km W of Weymouth.

Extensions to the gravel lie to the E of the present pits which are situated on land owned by Mr. G. Nixon of "Tam O'Shanter" station and ?Crown land to the S.

Further details are provided in Appendix I on Weymouth 5045 - Location 1.

3.2 BRAMBLES QUARRIES

Tertiary gravels and sands upto 5-6m thick are being worked by Brambles on their M.L. 930P/M situated south of the George Town to Bridport Road.

A large area of thick but iron-stained gravel may occur to the W of the present southern pits.

Refer to Weymouth 5045 - Location 11 for details.

3.3 VINCE LEE'S GRAVEL PITS

Gravel pits on Tertiary and Pleistocene-Recent gravels occur E of Little Pipers River.

A NW trending zone of unusual, evenly-sized gravels of around 20mm size and upto 1.5m thickness have been worked in various pits in this area.

Extensions to this zone of gravel may occur to the SE of the present pits.

Details of these areas are given in Bowood 5245 Locations 3 and 4.

3.4 BRIDPORT DISTRICT

A coarse, clean, blanket type gravel deposit was located on "Bridwood" station about 7 km W of Bridport.

This deposit has not been worked apart from gravel used for various station tracks.

Test pits would be needed to determine its full extent and overall thickness.

Details are given in Bridport 5246 - Location 3.

3.5 HALFWAY ROAD AREA

An extensive area of blanket type clean gravels occurs along the eastern slopes of a low hill of Mathinna sediments. The area is situated about 5km S.E. of the old Waterhouse townsite.

The gravels average only 0.5m thick but appear to cover a large area.

Details are provided in Oxberry 5446 - Location 3.

3.6 FORESTER AREA

Numerous Council pits have exploited a zone of sugary quartzite/quartz pebble gravel on top of a NW trending ridge just E of the old Forester townsite (about 16km NE of Scottsdale).

The gravels, which are upto 2m thick, probably continue both NW and SE along the ridge.

Details are provided in Pearly Brook 5445 - Location 3.

4. SUMMARY AND CONCLUSIONS

Six localities with potential for coarse, clean quartz gravel were identified in a rapid survey of the Pipers Brook - Scottsdale region.

Further traversing and test pitting would be required to delineate which are the most prospective localities.

R.G. WRIGHT

Consulting Geologist.

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APPENDIX I

Geological description of gravel deposits located on 2:25,000 topographic sheets.

Refer Appendix II for location plans.

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WEYMOUTH 5045

LOCATION 1

Extensive gravel pits cover a NS ridge situated about 5km W of Weymouth.

The northern pits occur on land owned by Geoff Nixon of "Tam O'Shanter" Station.

The main area to the S was quarried in the past by B.M.G. and is thought to be on Crown Land. No titles are current at present over this area.

A blanket of coarse, poorly sorted quartz pebble gravel upto 2m thick lies over pale brown weathered Mathinna siltstone.

Loose, leached surface gravel has been scraped off the top and sides of the hill - generally to depths of 0.5-1m.

At depth the gravels are variably cemented with haematite-limonite and silica.

The angular to sub-rounded gravels consist of:

White vein quartz	90%
Pinkish quartz pebbles (limonite along internal fractures)	8%
Fine - coarse gritty sand	2%

Yield of pebbles greater than 20mm is estimated to be 30%

Further reserves of loose surface gravel upto 1m thick are indicated to the east of the present workings. Exploration on hill tops to the south and southwest may also locate further deposits.

LOCATION 2

Gravels similar to those at location 1 are exposed in a small quarry just E of Lulworth on the Tam O'Shanter 1:25,000 sheet W of Weymouth.

Nearly 3 m of poorly sorted quartz pebble gravel with a 40cm silty sandstone interbed is exposed in the quarry.

Bedrock here is weathered greenish grey Mathinna siltstone.

Most of the gravel is variably cemented with haematite-limonite and silica but the top 0.5m is leached and unconsolidated.

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510 000E

NOLAND BAY

WEYMOUTH

BRIDPORT

BOWOOD

RETREAT

NABOWLA

Stony Head

Maitland Bay

Black Rock Pt

Tam O'Shanter Bay

Fannys Bay

Noland Bay

Pipers Head

Weymouth Bay

Bellingham

Lulworth

Ryans Hill

Tea Tree Flats

Turquoise Bluff

Barrows Hill

Back Creek

Weymouth Farm

Laura

Pipers River

Greenisle

Inglewood

Gaebourn

Lawrona

Malmaine

Mowbray

Lewis

The Glen

Lebrina

Jerusalem Plains

Single Tree Plain

Matts Marsh

Bridwood

Forester Rock

Clovelly

Umtali

Adams Beach

Granite Point

Caravan Park

Bridport

Sports Ground

Anderson Bay

Barnbougle

Fish Farm

Bar Marsh

Boyds Pond

Adams Cut

Melaleuka Park

GREAT

WATERHOUSE

Drains

Powderhorn

Airfield

Briddale

Little Hills

Brewers Hills

Bodingtons Road

Barford

Saint Michael

Cox's

The T

Duncraggen

Sorell

Bridport

Sandy Points Road

Little Forester River

Bridport Road

Back Road

Saltwood Road

Bridport Rivulet

Ferny Hill Ferry

Micalo Rivulet

Micalo Creek

Brooks Road

Pipers Brook

The Emu Ground

Sports Ground

E.L. Boundary

Retreat Road

Weymouth Road

Pipers River Road

Back Creek Road

Turquoise Creek

Back Creek

Gully

Horse Creek

Fourteen Mile Creek

Dan Creek

Andersons Road

Trooper Truck Road

Lawrona Road

Malmaine Road

Lewis Road

Montgomery Road

Lees Road

Lochmans Road

Vondows Road

Kentalls Road

Golconda Road

Arnolds Road

Lungs Road

Pipers Road

Wyndham Road

Denison Road

Lisle River

Meadow Bank Road

Richs Road

Oak Dene Road

Eastern Line Road

Golconda

Riverside

Vermont

Grange

Fairbanks

Woodcroft

Wingland

Nabowla

Lisle

Starfish Creek

Denison

Mackie

Forester River

Little Forester River

Brid

Brid Creek

Brewers Hills Creek

Duncraggen River

Oaklands

Shantry Hills

Ferny Hill

Little Salt Road

Eastern Line

Northern Line

Midland Highway

Bridport Road

Back Road

Sandy Points Road

Waterhouse

Starvation Nob

Black Hill

Woodcroft

Fairbanks

Golconda

Nabowla

Lebrina

Retreat

Bellingham

Weymouth

Pipers River

Bridport

Sorell

Lisle

Riverside

Vermont

Grange

Golconda

Fairbanks

Woodcroft

Wingland

Briddale

Powderhorn

Barnbougle

Boyds Pond

Fish Farm

Bar Marsh

Sports Ground

Caravan Park

Granite Point

Forester Rock

Clovelly

Umtali

Adams Beach

Jerusalem Plains Shed

Single Tree Plain

Matts Marsh

Bridwood

Saltwood

Bridport Rivulet

Micalo Rivulet

Ferny Hill

Pipers Brook

The Emu Ground

Sports Ground

Weymouth Farm

Back Creek

Wingals

Tea Tree Flats

Turquoise Bluff

Barrows Hill

Ryans Hill

Laura

Greenisle

Inglewood

Gaebourn

Lawrona

Malmaine

Mowbray

Lewis

The Glen

Lebrina

Retreat

Bellingham

Pipers Head

Fannys Bay

Tam O'Shanter Bay

Black Rock Pt

Maitland Bay

Stony Head

Lulworth

Pipers River

Weymouth Bay

Noland Bay

Bridport

Sorell

Lisle

Riverside

Vermont

Grange

Golconda

Fairbanks

Woodcroft

Wingland

Nabowla

Briddale

Powderhorn

Barnbougle

Boyds Pond

Fish Farm

Bar Marsh

Sports Ground

Caravan Park

Granite Point

Forester Rock

Clovelly

Umtali

Adams Beach

Jerusalem Plains Shed

Single Tree Plain

Matts Marsh

Bridwood

Saltwood

Bridport Rivulet

Micalo Rivulet

Ferny Hill

Pipers Brook

The Emu Ground

Sports Ground

Weymouth Farm

Back Creek

Wingals

Tea Tree Flats

Turquoise Bluff

Barrows Hill

Ryans Hill

Laura

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Inglewood

Gaebourn

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Mowbray

Lewis

The Glen

Lebrina

Retreat

Bellingham

Pipers Head

Fannys Bay

Tam O'Shanter Bay

Black Rock Pt

Maitland Bay

Stony Head

Lulworth

Pipers River

Weymouth Bay

Noland Bay

5440 COON

KEY

— — — 1:25,000 AREAS

□ SAMPLE LOCATIONS

5 cm

E.L. 16/85 AND ADJACENT AREAS

SAMPLE LOCATIONS

SCALE: 1:100,000

FIGURE 1

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KEY

— — — 1:25,000 AREAS

□ SAMPLE LOCATIONS

E.L. 16/85

SAMPLE LOCATIONS

(AREAS TO EAST)

SCALE: 1:100,000

5 cm

FIGURE 2

093

The sub-rounded to sub-angular gravels consist of:

Vein quartz pebbles	95%
Pale gray Mathinna siltstone pebbles	1%
Gritty sand	4%
Yield of pebbles greater than 20mm is estimated to be	40%

The high iron content of the matrix probably downgrades these gravels.

LOCATION 3

Gravel pits, now back-filled, used to be worked west of "Binowee" on property owned by Terry L. Mahnken of Pipers River. Area is held by Mahnken as ML104OP/M of 273 Ha.

Limited exposures show angular to rounded quartz gravel strongly stained with limonite which according to Mahnken was upto 1.5m thick when quarried by Brambles. Yield of 20mm pebbles would be less than 20%.

To the south of the old main pit area the hill tops are capped by lateritized sandstones.

To the south west recently scraped areas show 30-40cm thick surface lag gravels overlying pebbly and gritty clays and sands.

The surface gravels consist of:

Rounded grey quartz pebbles	20%
Gritty sand	60%
Silty clay	20%
Yield of pebbles greater than 20mm would be less than	10%

LOCATION 4

A very small gravel pit on coarse angular white vein quartz scree over Mathinna siltstone.

Deposit is less than 0.5m thick and has no surface area.

Tracks throughout this locality have much white sand and patches of angular quartz fragments appear to be formed as surface lag concentrations over weathered Mathinna siltstones.

Generally these deposits are less than 0.5m thick but in places are upto 2m adjacent to the creeks. Overall are very patchy with little tonnage potential.

Epoch Minerals N.L. has dug numerous test pits alongside the tracks testing for alluvial gold possibilities.

LOCATION 5

A council gravel pit on the southern flank of a low hill E of Pipers Brook Road on property 0263.

Gravels are upto 1m thick in places and show some limonite staining of rounded to sub-rounded pebbles.

Yield of greater than
20mm quartz pebbles would be about 30%

The northern side of the hill shows only gritty sands suggesting that gravel reserves are confined to the south side of the hill. The gravels are restricted to a blanket cover of limited extent.

The area has no interest in the current survey.

LOCATION 6

Three large pit areas situated east of the Bellingham Road and north of the main George Town to Bridport Road.

A blanket of rounded to sub-rounded vein quartz pebbles has been scraped off the tops and sides of three separate hill by the ?Forestry Department.

The poorly sorted gravels are from 0.5-1m thick and at depth are indurated and stained with limonite. Bedrock is weathered pale yellow-white to purple brown Mathinna siltstone.

Most of the available gravel has been removed so relict reserves are limited.

Yield of pebbles greated than 20mm
is estimated to be about 30-40%.

LOCATION 7

A gravel pit situated on the northern flank of an isolted hill just north of the Bridport Road.

Occurs on private property "Blue Gum Park", so was not inspected. From the road it would appear to be identical to the blanket deposits seen at location 6.

LOCATION 8

An area of numerous new gravel pits situated on the western side of Vince Lee's M.L.1019P/M of 1317 Ha.

Just south of Saltwood Road, a small pit exposes a section of 20-30cm thick sands and loamy gravels overlying a 20m wide gravel-filled channel upto 1m thick.

The poorly sorted, angular to sub-rounded gravels consist of:

Vein quartz pebbles	30%
Fine grained, silty sandstone - quartzite	60%
Sand matrix	10%
Yield of pebbles greated than 20mm would be about less than	10%

The gravels are probably re-worked Recent sediments derived from erosion of nearby Teriary and Pleistocene gravels. The low yield limits their interest.

LOCATION 9

Extensive shallow and deeper pits on impure gritty sands with rare pebble layers. Identical sequence to that seen at Location 8.

Cleanest sand is the top 50cm of white, loose, leached surface material.

At depth the sands are variably cemented with iron oxides.

LOCATION 10

Extensive areas of gravel exposed on a slightly elevated hill.

Gravels here are similar to those seen at Locations 6 and 7 but have suffered more erosion to contribute to the Recent sands to the N.

The loose top 30cm has been scraped up over large areas. At depth below this the gravels are variably cemented with limonite - minor haematite.

Yield of greater than 20mm pebbles would be about 30% as angular white quartz fragments.

LOCATION 11

A new quarry area on the south side of the hill on Brambles Holdings Ltd 114 hectare mineral lease 930 P/M.

A 5-6m thick sequence of limonite-stained, poorly sorted gritty and pebbly sand and clayey sand is exposed in the new pit.

The gravel rich sections of the sequence consist of:

Angular to sub-rounded, vein quartz fragments - stained with limonite	70%
Fine grained sandstone - quartzite	15%
Sand and clay matrix	15%
Yield of pebbles greater than 20mm is estimated to be	30-40%

A large area of gravel of good thickness may occur to the W of these pits adjacent to a NW line of Mathinna siltstone hills.

The main problem with these gravels would be their high iron content due to the widespread limonite staining. Only the top 0.5-?2m of surface material would be leached enough to be of use.

LOCATION 12

A traverse was run S along a track into the Forest area W of location 11.

Angular white quartz fragments are abundant in sandy loam exposed on the hill and paddocks west of the forest area.

Most of this looks to be surface lag concentrations derived from Mathinna Bed siltstones.

Thickness of this material is probably no mare than about 10 cm.

LOCATION 13

An exposure on the main Bridport Road which shows a 40m wide channel of the ancient Little Pipers River.

Coarse boulder gravel upto 3m thick is exposed in the cutting. The gravel is a restricted relict preserved on the edge of the present river.

LOCATION 14

A deposit of yellow white beach sand exposed on the top of a hill just E of Bellingham. Held by C. & E.J. Coates as ML 40/3055.

The locality has no potential for coarse vein quartz gravel.

RETREAT 5044

LOCATION 1

An old gravel pit S of the Bridport Road about 4km W of Pipers River.

A 10-20cm thick surface layer of angular to rounded quartz pebbles lying over thin yellow brown to white sandy clays. These in turn overly deeply weathered Mathinna siltstone.

Only 10% of the pebbles would be greater than 20mm size and the area of gravel appears very restricted.

LOCATION 2

Track through State Forest reserve SE of Lefroy.

Upto 1m thickness of angular white quartz as scree and lag gravel deposits built up from the underlying Mathinna sediments.

Generally the surface gravels are only 10-20cm thick with yield of about 20-30% of greater than 20mm quartz fragments.

LOCATION 3

Gravel reserve 0410 on east side of Industry Road.

A small pit on surface lag gravels upto 30cm thick overlying yellow silty clays.

About 40% of the angular white quartz fragments are greater than 20mm size.

LOCATION 4

Gravel reserve 0330 on the east side of Industry Road.

Surface lag gravels upto 20cm thick have been scraped up over various areas. The gravel has developed over yellow brown clay and much of it at depth is stained with limonite.

About 30% of the quartz pebbles are greater than 20mm.

Gravels are extensive on the hill top but overall too thin to be of interest.

LOCATION 5

Gravel reserve 0318 east of Dalrymple Road.

Thin, 10-20cm thick lag quartz gravels over yellow brown clay as seen at location 4. Only 10-20% of the gravel would be greater than 20mm. Old pit area now overgrown by trees.

LOCATION 6

Gravel reserve 0320 south of location 5.

Another old pit area with a thin surface lag gravel over pebbly clay as seen at locations 4 and 5.

LOCATION 7

Angular white quartz gravel as cap on top of hill of Mathinna siltstone.

Less than 10cm thick and limonite-haematite stained.

Isolated relict of original lag gravel deposits.

LOCATION 8

Gravel reserve on SE side of Malmaney Sugarloaf. Area not inspected as on private property. Probably lag scree gravels over Mathinna sediments.

LOCATION 9

Gravel reserve 0379 east of pine plantation E of Pipers River.

A small pit has been opened up to collect a 20cm skin of lag, angular white vein quartz developed on the northern slope of an NW Mathinna sediment ridge.

The gravels have developed over a sequence of yellow white and purple brown clay containing scattered white quartz fragments.

The quarts fragments are very iron stained and only 5% of the surface material is greater than 20mm in size.

LOCATION 10

Gravel reserve 0391 west of the Pipers River Road.

Now a barren paddock with a small clump of gum trees.

The old pit area probably was backfilled.

LOCATION 11

Old, overgrown pit adjacent to the main Bridport road.

Contains lateritic gravels and minor limonite stained quartz pebbles.

LOCATION 12

Gravel reserve 0411 south of Industry Road.

Round edge cutting shows angular white quartz fragments and lateritic gravel cemented in a silty, ferruginous matrix. Several large boulders of strongly limonite-cemented gravel contains pieces of white vein quartz upto 30cm long.

LOCATION 13

Old gravel pits between Trooper Track and Industry Road.

Visible from the Bridport Road but not marked onto the 1:25,000 sheet.

Exposures in the pits shows a section of upto 1.9m of pale brown siltstone containing three gravel bands upto15cm thick.

Overlying this limonite-stained and cemented section is 30-40cm of loose, leached lag quartz gravel.

The surface gravels consist of:

Angular to sub-rounded vein quartz pebbles	80%
Yellow brown Mathinna silty shale pebbles (usually greater than 20mm size)	10%
Yellow-grey silty matrix	10%
Yield of pebbles greater than 20mm would be about	30%

The gravel from this area would have prblems with its high iron content and too many large Mathinna siltstone pebbles.

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BRIDPORT 5246

LOCATION 1

A water reservoir situated just N of the Sandy Points Road just W of Bridport.

Flat-bedded, grey clayey sands are exposed in the banks of this excavation.

No gravel layers are exposed and only rare angular pebbles were seen in the section.

LOCATION 2

A small scraped area has exposed a coarse white quartz pebble gravel with pebbles upto 20cm long.

Gravels are only 0.50m thick and overlie mottled grey and red brown clay.

The angular to sub-rounded gravels consist of:

Quartz pebbles - some with pink iron oxide colouration along internal joints.	90%
Grey, rounded, fine-grained sandstone - quartzite	1-2%
Grey brown silty sand matrix	8%
Yield of pebbles greater than 20mm is estimated to be	40-50%

Another quarry marked to the SE was not inspected because the track was too overgrown - may be worth a visit in future.

Extent of this gravel is difficult to judge and would require traverses through the surrounding bush.

LOCATION 3

Several small pits situated 7km W of Bridport on "Bridwood" station managed by Don Barrett.

A low hill is covered with coarse quartz pebble gravel similar to that seen at location 2, SW of Bridport.

The angular to sub-rounded gravels consist of :

Quartz pebbles - some of which contain iron oxide in thin fractures	95%
Fine grained sandstone-quartzite	Trace
Sand matrix	5%
Yield of pebbles greater than 20mm	60%

Difficult to judge the overall extent and thickness of these gravels as much timber cover to the south and the deposit has not been extensively worked in the past.

Test pits are needed to outline thickness and extent.

LOCATION 4

A small reservoir dug into weathered yellow brown Mathinna siltstones. Only sparse angular vein quartz float in the surface thin soils.

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BOWOOD 5245

LOCATION 1

Gravel reserve 0889 situated N of the Bridport Road.

This area contains very thin surface lag gravels of angular quartz over Mathinna sediments.

LOCATION 2

Gravel reserve 0888 south of the Bridport Road.

The pit on the western edge of the reserve has exposed a coarse pebble gravel lying over deeply weathered Mathinna siltstone.

The gravels which are upto 0.8m thick consist of:

Angular to sub-rounded white vein quartz	40%
Pale grey to pale brown fine grained cross-bedded sandstone-quartzite pebbles (Most are greater than 20mm size).	50%
Gritty sand matrix	10%
Yield of pebbles greater than 20mm size would be about	50%

Most of these would be sandstone quartzite.

The surface 0.5m is usually loose and leached but limonite stains and cementing builds up at depth.

Other pits to the E and SE expose much smaller pebble sizes and contain a higher sandy silt matrix content. The proportion of pebbles of greater than 20mm size would only be about 20%.

A small pit on the N boundary of the reserve has exposed a 2.5m thick section of poorly sorted pebbly grits and sands and clayey sands. Only the surface lag gravels over this material contains a concentration of pebbles and 50-60% of these consist of sandstone-quartzite.

Suitable quartz gravels could occur in this area but they may be of limited extent. Other problems are the high proportion of fine grained sandstone-quartzite, the high silt/clay content to the E and limonite staining and cement in the base of the gravel sections.

LOCATION 3

Shallow pits have exposed a sequence of pebbly grits and sands. The loose, leached top 40cm of the grits have been scraped up for road gravel.

The quartz pebbles are very evenly sized at about 20mm.

The gravel consists of:

Angular to sub-rounded white quartz	80%
Grey sandstone quartzite	10%
Sandy matrix	10%
Yield of pebbles greater than 20mm is estimated to be	60%

Overall these gravels could be of interest as they are clean white pebbles at or close to 20mm size. The main problem is their average thickness of only 30-40cm below about 10cm of sandy loam.

Several pits to the north were not inspected but these probably contain the same type of material.

LOCATION 4

Recently worked quarries have opened up evenly sized gravels upto 1.5m thick on the E side of a low hill. The gravels are very similar to those seen at location 3 and possibly indicate that a NW trending zone of even size gravel could be outlined in this area. Hills on trend to the SE may be prospective for this material.

The gravel consists of:

Angular to sub-rounded white quartz pebbles	95%
Grey sandstone-quartzite pebbles	1%
Grey sandy loam	4%
Yield of pebbles greater than 20mm is estimated to be	40-50%

In some areas the yield of 20mm pebbles drops to 20-30% and in others the iron oxide content is very high. Selective mining would be needed to obtain the purest gravel.

A hill to the SW consists of Tertiary basalt overlying the gravel sequences.

LOCATION 5

A large and deep quarry operated by the Lilydale Council and situated E of the Ferny Hill Road.

The quarry has exposed a limonite-stained 6-7m thick sequence of silty gravels and sands which constitute part of an old 50-60m wide Tertiary drainage system. Bedrock is weathered Mathinna siltstones.

The gravels consist of:

Sub-rounded to sub-angular vein quartz pebbles	50%
Rounded fine grained sandstone -quartzite pebbles	1%
Silty to sandy matrix	49%
Yield of pebbles of greater then 20mm size would be	15-20%

The gravels are of low interest for this survey because of their low yield and the widespread iron oxide staining and cement.

LOCATION 6

Two old pits expose a section of silty gravels and sands upto 4m thick. This section is identical to that seen to the N at location 5 and is probably part of the same drainage system.

The surface 0.5m is leached and loose material overlying limonite-stained and cemented pebbly sands and silts.

LOCATION 7

A small pit was opened up by the Council in an area of sandy clay and surface gravel according to the owner, Mr. Hirst of "Bowood" station. The site was not inspected.

LOCATION 8

Gravel reserve 0846 situated west of the Scottsdale to Bridport Road.

Gritty sands occur on the top of a low hill. No gravel layers have been intersected in the workings.

LOCATIONS 9, 10, 11 and 12

Small pits on white surface gritty sands. No gravel layers exposed in the workings.

LOCATION 13

Roughly bedded, graded pebbly and gritty sands upto 5-6m thick exposed in 2 pits situated west of the Scottsdale to Bridport Road. The grits are variable cemented with limonite at depth.

Two gravel bands upto 50cm thick are exposed in the gritty sand section.

Yield of 20mm quartz pebbles from this material would be only 1-2%.

LOCATION 14

Shallow scrapings for loose surface grits above limonite-haematite cemented grits with minor pebble layers. Material is identical to that seen at location 13 and has similar low potential.

LOCATION 15

This gravel pit was not inspected because the track was heavily overgrown. A visit is recommended in future as a small pit to the NW contained coarse quartz pebble gravels.

NABOWLA 5244

LOCATION 1

Locked gates to the Forestry gravel pit prevented an inspection. Would expect to find silty gravels and sands as exposed at locations 5 and 6 on the Bowood 1:25,000 sheet.

LOCATION 2

Local Council pit on a 2m section of gritty sands.

Only the top 0.5m is clean and loose white grit. Below this the sands are silty and limonite-stained.

LOCATION 3

Numerous old pits occur both sides of Oak Dene Road.

All of them have exploited the top 0.5-1m of surface white gritty sands. At depth the sands have a yellow silty clay matrix.

LOCATION 4

A large private pit on "Oakvale" station. Gritty sands are

[redacted]

LOCATION 5

Gravel reserve 1005 situated W of Scottsdale.

Shallow pit has exposed 30-40cm of white gritty sand with an occasional quartz pebble. Below 40cm the grits are silty and limonite stained and cemented.

WATERHOUSE 5447

LOCATION 1

Gravel reserve 0094 situated E of the Homestead Road.

A small pit has exposed a variable thickness of loose feldspathic gravel overlying weathered Devonian granite.

The locality has no potential for silica gravel.

OXBERRY 5446

LOCATION 1

Gravel reserve 0030 situated SE of the Waterhouse Road.

Land to the N of the deposit occurs on "Marengo" station managed by Barry Clifford and owned by Martin Demarus.

Land to the south forms part of "Palawan" station.

The gravel occurs as a poorly sorted blanket upto 80cm thick over a low hill of weathered Mathinna siltstone.

The gravels consist of:

Sub-rounded to angular white vein quartz pebbles	95%
Rounded pale brown silty sandstone-quartzite (generally larger than 20mm)	1-2%
White silty sand	3%
Yield of 20mm quartz pebbles is estimated to be about	40-50%

Some areas of the pit show limonite cementing of the gravels and these zones have been left in place.

Most of the gravel appears to have been removed but extensions are possible to the SE and possible to the NW.

Another gravel pit occurs to the N of "Barooga" station but this was not inspected.

LOCATION 2

Small quarry on Mathinna siltstones and shales.

LOCATION 3

Several gravel pits N and S of the Halfway Road. These are located on private properties owned by the following people:

Property	Owner
0069	Frank Abraham, "Barooga" Station
0070	Lyndsay G.Hall, "Halfway" Station
0067	Lyndsay G.Hall, "Halfway" Station
0068	Danny Hall, Scottsdale

A 50cm thick white quartz pebble gravel occurs over a wide area N and S of the Halfway Road. The gravels are developed on the E flank of a low hill of Mathinna siltstones and sandstones. Further E isolated outcrops of Devonian granite are exposed.

The gravels consist of:

Sub-rounded to angular white vein quartz pebbles. About 5-10% of them show some limonite staining	95%
Pale brown quartzite fragments - usually larger than 20mm	1-2%
Gritty to silty sand matrix	3%
Yield of 20mm pebbles is estimated to be about	40-50%

As usual at depth the gravels are variably indurated and stained with iron oxides.

The gravel layer is thin but extensive and could give a good yield of 20mm quartz pebbles.

PEARLY BROOK 5445

LOCATION 1

Quarry reserve 0193 on the W side of the Waterhouse to Scottsdale Road.

Roughly bedded, cross-bedded silty sands similar to those seen in section S of Bridport. Gravel layers upto 30cm thick are present but overall the site has low potential for quartz pebble gravel.

A surface lag gravel layer is upto 50cm thick and contains angular to sub-rounded quartz pebbles.

Yield of 20mm size quartz pebbles would be about 20% from the surface concentrations.

LOCATION 2

A small roadside quarry on gritty clays produced by in-situ weathering Devonian granite.

LOCATION 3

Gravel reserve 0156 situated 1km W of the old Forester townsite.

The top and sides of a SE trending ridge of Mathinna siltstone has been extensively scraped for its blanket cover of quartzite gravels by the ?local Council.

The gravels consist of sub-rounded to angular, pale grey to pale brown, evenly-sized sugary quartzite and vein quartz pebbles.

Up to 2m thickness of loose, leached gravel is present on the top of the hill. At depth the gravels are indurated and cemented with limonite.

The gravel consists of:

Quartzite and vein quartz pebbles (partly ?feldspathic)	95%
Sandy matrix	5%
Yield of 20mm pebbles is estimated to be	20-25%

Further reserves of these gravels could occur to the NW and SE along the trend of the main ridge.

LOCATIONS 4 and 5

Small roadside pits on coarse white surface sands.

SCOTTSDALE 5444

LOCATION 1

A 4 km long NNE trending zone of major gravel pits held under lease by the Ballarat Clay Co. Pty. Ltd. consolidated lease 38M76 of 346 Ha.

Entry to these pits is restricted but examination of the Tasman Highway road cutting suggests that they are probably the usual clean coarse grits seen elsewhere in this district.

LOCATION 2

A small roadside pit on stratified, poorly sorted pebbly grits and sands at least 2m thick.

Most of the pebbles are 5mm average size but some upto 30mm are present.

Yield of 20mm pebbles probably no more than 1-2%.

LOCATION 3

Gravel pits on the SW side of Hang Dog Hill. These have exposed yellow-white silty to sandy clays with sporadic pebbles of various lithologies, quartz, quartzite, granite, shale, etc.

The surface lag gravel has been scraped up for use as road metal.

LOCATION 4

Surface scrapings on western side of a low hill. Gravels are lag, scree concentrations of angular white quartz and sugary sandstone-quartzite.

Thickness of gravel is generally less than 30cm overlying yellow to white sandy clay.

Yield of 20mm size fragments would be 40-50%

Material is not of interest due to its high percentage (30%) of pale brown, siliceous sandstone fragments.

LOCATION 5

A deep quarry on top of a steep hill situated NW of the Kamona Road.

Poorly sorted, cross-bedded and stratified clean pebbly grits and sands have been worked to a depth of 7-8m below the surface. The grits are very clean with very little silt or clay content. Average grain size would be about 5-10mm.

The material was probably derived during the Pleistocene glaciation from a Devonian granite source.

LOCATION 6

Shallow pits on 10-20cm thick surface grits. No pebbles seen in the exposures.

LOCATIONS 7, 8 and 9

Gritty and occasionally pebbly sands worked in small and large pits. Clean, loose surface material has been scraped up by the ?Council. Yield of 20mm pebbles at location 8 would be less than 10%.

APPENDIX 2

Location plans -
1:100,000 scale

APPENDIX 3

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991118

Appendix III

MEMO TO: J.S. NOAKES

FROM: R.G. WRIGHT

SUBJECT: QUARTZ GRAVEL SAMPLES SENT TO ANALABS - BURNIE

DATE: 4th June, 1985.

N-E Tasmania

The following ten samples were collected from the six main sites mentioned in my May 1985 report:

NE1 Quartz pebbles of +20mm size from the quarry just E of the old Forester townsite.

NE2 Grey and white quartz pebbles of +20mm size from the quarry on Halfway Road - adjacent to the letterbox for "Coonawarra" Station.

NE3 Samples of +20mm size sandstone-quartzite pebbles. Same site as NE2.

NE4 Samples of +20mm size quartz pebbles near gate on EW fence -7km W of Bridport on "Bridwood" station.

NE5 Quartz pebbles adjacent to 1 inch screen on Vince Lee's pits S of the main George Town to Bridport Road.

NE6 Samples of +1 inch sandstone - quartzite pebbles. Same site as NE5.

NE7 White, partly iron-stained quartz pebbles of +20mm size. Downhill from limonite-stained quarry face in the southern Brambles pits.

NE8 Samples of +20mm size sandstone-quartzite. Same site as NE7.

NE9 White and some greyish quartz pebbles of +20mm size from the northern pit at the Weymouth deposit.

NE10 Sample of silty sandstone-quartzite pebbles. Same site as NE9.

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ANALABS

991119

A division of MacDonald Hamilton & Co. Pty. Ltd.
Phone (09) 458 7999 — 52 Murray Road, Welshpool, W.A. 6106 — Telex AA92560

ANALYTICAL REPORT No. 999.0 08 3102

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

Queensland Mines Ltd.,
FCA House
8th Floor, 50 Margaret St.,
Sydney N.S.W. 2000

ORDER No.	PROJECT

DATE RECEIVED	RESULTS REQUIRED
28.5.85	URGENT

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
		3	

STATE OF SAMPLES	PRE-TREATMENT								ANALYSIS			
REFER BELOW	SAMPLE NUMBERS	DRY	CRUSH	SPLIT	PULVERISE	SIEVE	OTHER SEE REMARKS	NONE	REFER TO ANALYSIS SECTION	PREPARATION	METHOD
RO	NE 1-10	1	2				1		TiO2 Al2O3 Fe2O3 MnO MgO CaO Na2O K2O P2O5 ZrO2 SiO2 LOI		4
									Cd Bi Pb Cr Co		1

RESULTS TO: As Above
Attn: J.S. Noakes

RESULTS TO:

REMARKS

1. Wash

STATE OF SAMPLES		ANALYSIS — PREPARATION				ANALYSIS — METHOD	
whole core	WC	perchloric acid	A1	cold acid	CA	atomic absorbtion	AAS
split core	SC	hydrochloric acid	A2	specific sulphide	SS	x-ray fluorescence	XRF
cutting	CU	nitric acid	A3	other mixed acids	Mo	spectrophotometry	SPE
rock	RO	aqua regia	A4	alkaline attack	AA	colorimetry	CO
soil	SO	nitric-perchloric	A5	volatilization	VO	chromatography	CHR
pulp	PU	HF mixture	A6	ignition	IG	titration	TTN
water	WA	HF under pressure	A7	pressed powder (XRF	PP	other chemicals means	CHE
tissue	TI	fusion	A8	glass fusion (XRF,	GF	miscellaneous	MIS
stream sediment	SS					fluorescence	FLU
heavy mine	HM					inductively coupled plasma	ICP

AUTHORISED OFFICER

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ANALABS

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991120

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	999.0 08 3102	17.6.85		1 OF 2

TUBE No.	SAMPLE No.	Na2O	MgO	Al2O3	SiO2%	P2O5%	K2O	CaO	TiO2	Cr
23	NE 01	50	40	250	99.8	X	X	60	350	5
24	NE 02	50	40	950	99.7	X	50	100	150	15
25	NE 03	730	770	44000	92.7	0.009	9200	130	5000	25
1	NE 04	40	50	950	99.6	X	40	80	150	15
2	NE 05	40	50	250	99.8	X	10	60	350	5
3	NE 06	100	120	950	99.3	X	160	100	2500	10
4	NE 07	40	40	250	99.8	X	10	60	200	X
5	NE 08	70	380	2700	99.0	X	600	120	2350	15
6	NE 09	30	30	50	99.9	X	X	60	150	X
7	NE 10	120	990	16500	97.0	X	3300	150	1950	15
8										
9										
10										
11										
12										
13										
14										
15										
16										
19										
20										
21										
22										
23	DETECTION	10	10	50	0.1	0.007	10	10	50	5
24	DIGESTION									
25	METHOD	103	103	103	408	402	103	103	103	103

Results in ppm unless otherwise specified
T = element present: but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

FINANCIAL STATEMENT

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QUEENSLAND MINES LIMITED 991122

Expenditure Statement

Date: 18th Sept 1986

Project Name: EL 16/85 Code: 1702

Account Codes		From: ..... To:	
		Dollars	Cents
0101	STAFF SALARIES	2,685	.00
0102	FIELD WAGES		
0103	CONTRACT WAGES		
0106	TRAVEL & ACCOMMODATION	1,201	.85
0107	FIELD ACCOMMODATION		
0108	VEHICLE/HOUSE/INSTRUMENT RENTALS	1,657	.41
0109	REPRESENTATION		
0110	MEETINGS		
0111	FUEL	52	.00
0112	EXPLORATION EQUIPMENT		
0113	CONSUMABLES		
0114	REPAIRS & MAINTENANCE		
0115	PUBLICATIONS	133	.87
0116	FREIGHT	467	.44
0117	DRAFTING	71	.50
0118	TELEPHONE & TELEX		
0119	SECURITY		
0120	MEDICALS		
0126	AIRBORNE SURVEYS		
0127	CONSULTANTS FEES		
0128	GEOLOGICAL CONTRACTORS	7,241	.35
0129	GEOPHYSICAL CONTRACTORS		
0130	GEOCHEMICAL CONTRACTORS		
0131	SURVEYING CONTRACTORS		
0132	DRILLING CONTRACTORS	444	.00
0133	GEOPHOTO CONTRACTORS		
0134	LABORATORY	845	.00
0135	ACCESS EXPENSES		
0150	LEGAL FEES		
0151	GOVERNMENT CHARGES		
0152	INSURANCES		
0153	COMPENSATION	40	.00
0154	COMPUTER EXPENSES & ANALYSES		
0155	J.V. PAYMENTS		
0156	GENERAL EXPENSES		
TOTAL		14,839	.42