

J.J. McDONALD & SONS MINING PTY LTD

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MINERAL RESOURCES
18 SEP 2000
TASMANIA

EXPLORATION LICENCE NO. 17/98

MAYDENA, TASMANIA

ANNUAL REPORT

TO

04.09.2000

EL17/98
SEP 2000

See folio 43

00_4484

Annual Report to 4 September 2000 - EL 17/1998,
Maydena
J.J. McDonald and Sons Mining Proprietary Limited*
Krummei, G. EL17/1998

AMG REFERENCE POINTS ADDED

GERHARD K. KRUMMEI

AUGUST 2000

ABSTRACT

There was steady progress on several fronts.

The geological data-base was updated as new exposures were generated.

A potential source of limestone suitable for possible use to neutralise acid during the product upgrade process was identified through a literature search. The area, only about 2 km east of the Eastern Quarry silica sand deposit, was inspected for access and outcrop. The size and quality of the indicated resource offers some scope for markets other than sole use for acid neutralisation associated with the silica project.

Efforts to promote the prospect and its potential products resulted in a number of enquiries for hard rock silica, glass sand and silica fines. Test samples were dispatched for assessment by the interested parties. Feed-back pointed to the need for further information about the size ranges, quality and quantity of the -100 micron fraction component of the silica sand material. An investigation, based on 15 drill hole sample composites, has been commissioned and is in progress.

Keywords:

Maydena; Pine Hill; Silica sands; Silica rock;
Limestone; Marketing; Sizings.

CONTENTS

ABSTRACT

1. INTRODUCTION
2. PREVIOUS WORK
3. ACTIVITIES FOR PERIOD
 - 3.1 Work Done
 - 3.2 Statistics
 - 3.3 Expenditure
4. RESULTS
 - 4.1 Geology
 - 4.2 Drilling
 - 4.3 Beneficiation
 - 4.4 Marketing
5. CONCLUSIONS
6. RECOMMENDATIONS
7. PROPOSED FUTURE ACTIVITIES
8. REFERENCES

APPENDICES

- APPENDIX 1 : Drill Log - D.D.H. Styx 1
 APPENDIX 2 : Test Sample Descriptions
 APPENDIX 3 : Test Assay Results
 APPENDIX 4 : Results - Decrepitation Test

ILLUSTRATIONS

Fig.1	Location Map	1 : 100,000
Fig. 2	Exploration Licence 17/98 - Geology	1 : 25,000
Fig. 3	Resource Location Map	1 : 25,000
Fig. 4	Location Map - Test Samples	1 : 25,000

1. INTRODUCTION

This report details activities by J.J. McDonald & Sons Mining Pty. Ltd. relating to Exploration Licence 17/1998 during the second year of tenure ended 04.09.2000.

Exploration licence tenure over an area of 7 km sq. was granted to J.J. McDonald & Sons Mining Pty. Ltd. for a period of five years from 04.09.1998.

E.L. 17/98 surrounds and extends to the east of Pine Hill, located just south off the sealed Gordon River Road approximately 4 km west south west of Maydena and about 90 km by road from Hobart (Fig.1).

The primary target for investigation and assessment is the deposit of silica sand located largely to the west of the Eastern Quarry, about 1 km south east of Pine Hill (Fig. 2).

The overall aim of the investigations is to determine if a commercially viable operation can be established, based on products derived from the silica sand resource in the tenement.

The objectives of this year's activities were:

- * Finalise the 1st pass assessment of the sand resource by completing some 25 shallow RC/air core drill holes and related activities
- * more accurate definition of the north west and south east sand contacts by hand augering
- * completion of literature studies on limestone occurrences in the district and familiarisation with the limestone bearing segment at the north eastern extremity of the tenement
- * investigation of the silica flour component of the deposit using drill hole samples, with a focus on the -100 micron size fraction
- * initiate market enquiries to identify potential clients and a saleable product range

2. PREVIOUS WORK

Exploration by Pioneer Silicon Industries Pty. Ltd. in 1988/89 identified a lag deposit of hard silica rock containing a small resource of material at the Western Quarry deemed suitable for the manufacture of silicon. In the course of this work, a deposit of white silica sand was located between Pine Hill and the Eastern Quarry just west of the Styx Road. This deposit was tested in the vicinity of the Eastern Quarry by 23 shallow RC drill holes. Preliminary estimates suggested a resource in the order of 0.75 - 1.5 million cu. m. of mostly low iron silica sand containing about 10% of high grade lump silica.

Assay results from a number of subsequent, excavator generated pit samples by the North West Bay Co. Pty. Ltd. supported the high quality of the resource and, together with sizing determinations on a bulk sample, indicated that the material might be suitable for the manufacture of table ware glass.

In the first year of tenure of E.L. 17/98 J.J. McDonald & Sons Pty. Ltd., using the air-core drill sampling method, extended the sampling into the western segment of the deposit along more widely spaced drill centres. 23 drill holes totalling 294m were completed and demonstrated that the deposit is more variable, complex and higher in iron oxides than previous data suggested.

However, in contrast to the area in the immediate vicinity of the Eastern Quarry, assay results suggest that the western segment of the deposit carries significantly less contamination of iron oxides, titanium and alumina.

Confirmation that this pattern extends to the western and south western extremities currently under timber and amounting to about a third of the deposit, is required by drilling.

Laboratory sizing determinations indicate that the deposit is a possible source of silica flour as well as glass sand while geological mapping points to a small resource potential for silica rock as well.

Bench scale acid wash tests on a sample of the glass fraction sand aimed at the removal of iron oxides showed that the material could be easily up-graded to a high quality product containing less than 50 ppm iron without major environmental impact, with levels of iron below 10 ppm a possibility.

3. ACTIVITIES FOR PERIOD

The main focus of activities during the period under review remained on matters and aspects relating to the silica sand deposit. As a flow-on from the successful completion of the acid washing tests, some time was also devoted to the identification of a potentially suitable limestone resource for eventual use in acid neutralisation.

3.1 Work done:

This included:

- * compilation of annual report
- * shallow hand augering in an attempt to define more precisely the north western and south eastern limits of the sand deposit
- * inspection of bedrock geology in cuttings of a new haulage track built by Fletcher Challenge south of the deposit
- * review of literature on limestone prospectivity/exploration in the Maydena district
- * inspection and logging of drill core from hole Styx 4 drilled by the Tas. Dept. of Resources and Energy and stored at the MRT core storage facility
- * visit to prospect site with MRT geologist Dr. C. Calver to spot the collar of hole Styx 4, inspect geological features in the silica sand area and orientation inspection of limestone outcrops along old drill track in the Roberts Hill area
- * collection and freight of silica sand samples from the western face of the Eastern Quarry and stockpile for testing by potential clients
- * collection and dispatch of batches of silica rock samples for testing by potential clients, from both Western and Eastern Quarry areas
- * visit to Glasstech Asia 2000 and Asia Glass exhibitions, Singapore, to gain end-product and market knowledge and introduce the Tasmanian material from Maydena

3.2 Statistical Summary:

No. of large samples to clients - rocks	:	6
- silica sand	:	4
track length mapped	:	700 m
No. of sizing samples (fines sizing)	:	15

3.3 Expenditure:

For perio 01. 10. 99 to 31. 08. 200	:	\$24,409
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4. RESULTS

4.1 Geological:

Attempts to define more precisely the north west and south east silica sand /bedrock contact at the 1m sand thickness level gave mixed results. This was due to the difficulty of penetrating the gravelly material to and past the required depth. A much narrower intercept of sand had to be used to determine the contact positions. However, these may exaggerate the limits of economically significant sand as they give little additional information on the extent of the thin apron of sand formed by the outward and downslope spread of material around the main deposit.

Subject to access, the use of a power auger or shallow backhoe pitting would be a more effective method for this purpose.

Road-side cuttings associated with the construction of a timber haulage road by Fletcher Challenge immediately to the south of the deposit exposed a 200m length of fine, mostly good quality silica sand and bed-rock contacts. Bedrock in this area consists of a sequence of sub-vertical to steeply north dipping, fine-grained, well bedded sediments, some possibly carbonate rich. These overlie a pile of weathered and heavily decomposed basalts of probable Cambrian age, with intercalated, weathered, clayey sediments.

Near the western end of the road this sequence is offset by northerly trending zone of structural disturbance with weathered, fine grained bedded sediments to the west.

It is likely that this fault zone limits the westward extent of the silicified dolomitic horizon which is the source rock for the silica sand deposit of the Eastern Quarry area.

In the absence of drill logs, core remnants from drill hole Styx 4, completed by the Tasmania Department of Resources and Energy, were examined at the MRT drill core storage facility, Hobart (Appendix 1).

The relationship of the drill hole geology to the rest of the prospect remains unclear. Further uncertainty is introduced by considerable or total core loss over various sections of the hole. (Fig.4)

The 14.5m intersection of clay from the collar down does not match the surface geology around it, or the sequence of silica sands and gravels encountered in hole 68 drilled in the same general vicinity.

Silica sand appears from 17.5 to 38.5m, with apparent total core loss thereafter to 53.5m, presumably in sand. Below that, a 1.5m layer of brown, sandy clay covers silicified dolomite intersected at 55m. This points to a thickness of sand somewhere between 21 and 36m in the drill column, not the +50m previously said to be present.

Despite the encouraging width of the intersection, the thickness of overburden and depth of burial combine to render this sand resource uneconomic at present.

The successful completion of preliminary laboratory acid wash tests to reduce impurity levels in the glass size fraction of the silica sand pointed to the possible eventual need of limestone for acid neutralization in a commercial operation.

In this context, a literature study was undertaken to identify a suitable source of limestone in the district.

A report on the limestones in the Maydena area was prepared by Hughes and Everard (1953) and summarised in Hughes (1957), which drew attention to occurrences of high grade limestone in the Roberts Hill/Risbys Basin area.

More recently, the regional prospectivity of the Maydena - Florentine Valley area was assessed by Calver (1990), who identified an area of some 2 km sq of prospective carbonate sequences located along and just beyond the eastern boundary of E.L. 17/98 in the Roberts Hill area (Fig.2 & 3).

A fully cored diamond drill hole some 300m south west of Roberts Hill through Ordovician Gordon Limestone intersected a 50m true thickness of high grade limestone averaging 94.9% CaCO₃ and 0.64% Mg. It confirmed the Cashions Creek Limestone as the most prospective unit in the limestone sequence (Calver, 1992).

Subsequent grid-based, detailed mapping, surface rock-chip sampling and the completion of 626m of percussion drilling in 8 holes resulted in a resource estimate of about 1 million tonnes of limestone grading 94.5% CaCO₃ and 0.38% Mg to a down-dip depth of 50m (Wrigley, 1992 & 1993).

The better grades are interpreted to occur in several superposed lenses along the same horizon. Only the western stack has been drill tested and appears to be open-ended laterally and down dip.

The eastern stack, with a strike length of some 500m, trends into private ground owned by Fletcher Challenge at the eastern extremity of E.L. 17/98.

This untested trend warrants further investigation in due course.

4.2 Drilling:

The proposed year 2000 exploration programme envisaged the resumption of the second and final round of the first pass drilling for information on the lateral and depth extent and quality of the western and south western third of the silica sand deposit.

Commencement of drilling was geared to the timber harvesting operations in this segment by Fletcher Challenge, notionally slated to re-start about mid-year 2000. To that end, latter company constructed a well-surfaced, 700m long timber haulage road just to the south of the deposit.

As in the initial drilling phase, linking drilling activities to timber harvesting would have significantly reduced the environmental impact of the drilling programme, in addition to providing exposures and better access to drill sites as well as an opportunity to complete the topographic base maps of the area, all at a significant cost saving.

It now seems that the timber harvesting operation has been deferred and is unlikely to commence for another 12 - 18 months, with the result that the start-up of the drilling programme is under review.

4.3 Beneficiation:

In view of market interest in some of the finer size fractions below about 100 microns, the results of laboratory acid washing tests, details of which were included in the annual report for the year ended September 1999, were subject to further review, assessment and technical discussions with the metallurgical consultants.

Based on their experience with the glass-size fraction, the latter believe that upgrading the -100 micron fraction which includes the silica flour component, to a low iron, high purity product would present no major difficulty. This opinion requires eventual laboratory confirmation.

To this end and to achieve a better understanding of the -100 micron fraction of the deposit, 15 composite drill samples were selected and submitted for sizing determinations focusing on the fine fractions.

Results are awaited.

4.4 Marketing:

4.4.1 Hard Rock Silica:

A composite batch of about 10 samples of hard rock silica (EQR 06) collected from various parts of the sand deposit area were forwarded to Howard Quarries, South Australia, to be assessed for decorative use and facing stone.

There appears to be some doubt as to the suitability of the material for these purposes, although it was not rejected outright.

A 5 kg specimen of white, good quality silica rock (EQR 05) was submitted to Temco, Bell Bay, for furnace performance tests.

Results gave quartz efficiencies between 95% and 96% (Appendix 4). These are good results and represent a significant improvement on those of 81% and 89% for material from the Western Quarry reported by Patterson (1990) of Pioneer Silicon Industries.

Results of chemical analyses are awaited.

Results are also awaited for six samples of hard rock silica from the Western (samples WQR 01 & 02) and Eastern Quarry (samples EQR 01-04) areas (Appendix 2) submitted to Mitsubishi.

4.4.2 Silica Sand:

As a result of participation at the Glasstech Asia 2000 and Ceramic Asia 2000 exhibitions in Singapore an number of useful marketing contacts were made, mainly in Asia. In response to a request by Gruppo Minerali of Italy, a 50 kg sample, divided into two parts, of high purity silica sand from the face of the Eastern Quarry was freighted to Europe for tests.

Their chemical assays gave satisfactorily low results for iron oxide and alumina (Appendix 3) but sizings and gradings are considered too fine for the Italian glass industry. However, attention was drawn to the possible commercial usefulness of the fine fractions.

Further to an enquiry from Mitsubishi, Japan, two samples of silica sand from the Eastern Quarry were sent to Japan for assay. Sample QF 3 comprised high purity material from the western quarry face and sample QF 4 represented stockpiled material on the quarry floor.(Appendix 3 & Fig.4).

Assay results proved to be satisfactory and advice of the company's intentions are awaited.

4.4.3 Silica Flour:

In addition to encouragement from Gruppo Minerali, Mitsubishi also expressed interest in sourcing fine material in the -100 to +25 micron range.

In view of these enquiries, J.J. McDonald commissioned sizing determinations and sizing assays on the material drawn from the -100 micron fraction from 15 drill hole composites selected across the project area. The purpose of the work is to give some indication of the resource quantity and quality available in the marketable size ranges.

Work is in progress and results are awaited.

5. CONCLUSIONS

5.1 A potential source of good grade limestone for use in acid neutralization has been identified in relative proximity to the silica sand deposit. Off-take for the silica sand project would be relatively small and the high quality of the material could render it a more widely sought-after product in the region in areas such as agriculture, viticulture, horticulture, manufacturing and processing etc., and for the production of lime with the advent of a natural gas supply to Hobart.

5.2 There appears to be sufficient market interest in silica flour and other fine fraction products to warrant more detailed investigations of the -100 micron fraction of the deposit.

5.3 The surprisingly good results of Temco's decrepitation tests encourage further focus on the hard rock silica component of the sand deposit.

5.4 The limited product awareness and marketing effort was successful in generating a number of useful contacts and several worthwhile enquiries, with raw product test assays by potential clients eliciting generally favourable market reaction and comment.

6. RECOMMENDATIONS

6.1 Exploration

- * Complete 1st-pass resource drilling and assessment with a view to establishing an improved resource outline and estimate and to identify sub-areas for more detailed investigations to help outline a preliminary extraction plan

- * subject to completion of timber harvesting operations in the area, extend topographic map coverage over the entire sand deposit using aerial photography

- * submit application for exploration tenure for 3 km sq over Ordovician limestone sequences immediately to the east of E.L. 17/98

6.2 Beneficiation

- * continue with investigations on product upgrade relating to both the glass size and silica flour components of the deposit, guided in part by market enquiries

6.3 Marketing

- * maintain ongoing dialogue with potential customers and continue with new customer identification, product awareness and marketing efforts

- * investigate the market in south west Tasmania for limestone products.

7. PROPOSED FUTURE ACTIVITIES

7.1 Exploration

- * drilling of about 25 RC/air-core holes totalling some 300m, mainly in the western and south western segments of the silica sand deposit
- * drill collar survey
- * assaying and sizing determinations, including focus on fine fractions
- * mineralogy, if required
- * locate and, if available, check assay select samples of limestone from high grade intervals in MRT drill holes at Roberts Hill/Risbys Basin - subject to add-on tenement grant
- * complete aerial photography/topo base map production with focus on the western and south western segments of the deposit - subject to completion of timber harvesting over this area

7.2 Beneficiation

- * continuation of investigations on product upgrade for both the glass size and silica flour components of the deposit, with special attention to the removal of iron, titanium and sodium from the -100 micron fraction

7.3 Marketing

- * continue with new customer identification , product awareness and marketing efforts
- * investigation of the market potential for limestone products in south west Tasmania

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APPENDIX 1

DRILL LOG - D.D.H. STYX 4

DRILL HOLE LOG

670014

AREA: Eastern Quarry Area, Pine Hill, Maydena

MAP SHEET: 4626 Maydena

DRILLER: Tasmania Department of Resources
and Energy

DRILL HOLE: Styx 4

METHOD: Diamond Drill Hole

AMG CO-ORDS: 5263718N
466605E

DATE: 1990 approx.

ANGLE: Vertical very approx.

LOGGED BY: G.K.

FINAL DEPTH: 56.50m

FROM	TO	DESCRIPTION	SAMPLE NUMBER
0	14.5	Clay	
		0 - 5.40: Reddish brown - buff clay	
		5.40- 14.50: Buff clay, changing to light grey clay progressively with depth; with small grains (up to 1-3mm) of quartz, quartzite, siliceous sandstone	
14.5	17.5	Rubble : Fragments of chert, white, bony quartz, silicified quartzite, silicified dolomite with quartz crystals in cavity	
17.5	19.0	Sand : fine, pale buff with red brown tinge; minimal recovery; could be spill-over from next run.	
19.0	23.5	Sand : orange-brown, medium grained, angular sand; poorly sorted; abundant rusty, magnetic particles	
23.5	29.5	Sand : pale buff, with fewer rusty, magnetic particles poorly sorted, with coarse, angular, flaky particles	
29.5	32.5	Sand : fine, pale orange brown; minor black, crusty and rusty magnetic particles	
32.5	38.5	Sand : fine grained, pale buff, with specs of orange grains, some magnetic	
38.5	53.5	No core : no returns; ?? possibly sand?	
53.5	55.0	Clay : brown, sandy	
55.0	56.5	Dolomite : greyish, silicified; faint effervescence with HCl	

APPENDIX 2
TEST SAMPLE DESCRIPTIONS

TEST SAMPLES - DESCRIPTIONS

Sample No.	DESCRIPTION
WQR 01	Composite grab sample of grey, relatively iron oxide free hard rock silica (silicified breccia) from upper middle parts of the Western Quarry. Sample weight: 2 kg approx.
WQR 02	Composite grab of float of white and grey hard silica breccia. Sample weight: 2 kg approx.
EQR 01	Composite grab sample of good quality, white, hard silica rock. Sample weight: 2 kg approx.
EQR 02	Composite grab sample of white and greyish, cherty, somewhat more friable, good quality silica rock with nil or minimal iron oxide staining. Float. Sample weight: 2 kg ±
EQR 03	Composite grab sample of whitish/buff, ?organic stained silica rock from various parts of outcrop. Material somewhat friable. Sample weight: 2 kg approx.
EQR 04	Composite grab sample of boulders of cherty silica rock from sand in western and northern faces of Eastern Quarry. Sample weight: 2 kg approx.
EQR 05	Large boulder of good quality, white silica rock; little iron oxide staining from embankment of track cutting. Sample weight: 5 kg approx.
EQR 06	Composite grab sample of silica rock specimens mainly from, around and along strike of silica rock outcrop at western end of silica sand area. Also several pieces of silica rock from sand at Eastern Quarry. Sample weight: 5 kg approx.

Note: For sample locations see Fig.4, this report.

APPENDIX 3.
TEST SAMPLE ASSAY RESULTS

GRUPPO

670018



LABORATORIO CHIMICO TECNOLOGICO

CERTIFICATO N. GM96/00

Data : 07.04.00
 Ns. rif. : C-LAB 492/04/CB

Cliente : GRUPPO MINERALI

c.a. dr. Bozzola
 ing. Costa

Denominazione campioni : 1) Sabbia Australiana sacco A
 2) Sabbia Australiana sacco B

Analisi richieste : 2 analisi chimiche di 6 determinazioni (polveri)

Metodo analisi chimica : fluorescenza raggi X con apparecchio SIEMENS

ANALISI CHIMICA

DETERMINAZIONI		S. Austr. Sacco A	S. Austr. Sacco B
Al ₂ O ₃	%	<0,05	<0,05
Fe ₂ O ₃	%	0,002	0,004
TiO ₂	%	0,003	0,003
CaO	%	<0,05	<0,05
K ₂ O	%	<0,05	<0,05
Na ₂ O	%	<0,05	<0,05

GRUPPO MINERALI
 Responsabile Laboratorio
 Dr. Carlo B. Giusti

HEAD OFFICE
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BRANCHES
 ALL PRINCIPAL PORTS IN JAPAN

OVERSEAS OFFICES
 THAILAND, SINGAPORE, MALAYSIA,
 PHILIPPINES, INDONESIA, TAIWAN,
 NETHERLANDS

LABORATORIES
 YOKOHAMA, OSAKA, SINGAPORE

ORIGINAL
 (Ref. SA)

670019
 JAPAN MARINE SURVEYORS & SWORN MEASURERS' ASSOCIATION
 LICENSED BY THE JAPANESE GOVERNMENT



NIPPON KAIJI KENTEI KYOKAI

FOUNDED IN 1913

International Inspection & Surveying
 MARINE CONSULTANT
 MARINE SURVEY AND CARGO INSPECTION
 PETROCHEMICAL SUPERINTENDING
 LIQUEFIED GAS INSPECTION
 CHEMICAL ANALYSIS
 TANK CALIBRATION
 SAMPLING AND TESTING
 FREIGHT CONTAINER INSPECTION
 AUTHORIZED AND LICENSED INSPECTOR FOR
 DANGEROUS GOODS AND BULK CARGOES
 CARGO WEIGHING AND MEASURING

YOKOHAMA

Date: July 21, 2000
 Certificate No. M676/00

Analysis Certificate

THIS IS TO CERTIFY THAT the undermentioned samples were analyzed by us with the following results :

Applicant: Mitsubishi Corporation
 Description of Sample: Silica Powder
 Sample submitted by: the applicant
 Remarks: None

Result of Analysis :

	<u>QF-3</u>	<u>QF-4</u>
1. SiO ₂	99.71 %	99.67 %
2. Fe ₂ O ₃	0.004 %	0.025 %
3. Al ₂ O ₃	0.013 %	0.019 %
4. Na ₂ O	0.003 %	0.004 %
5. K ₂ O	0.003 %	0.006 %
		(Last Item)

ト.三菱商事
 建設部 炭業資材課
 7-4-4
 石色 様

Application No.: Riken 179



NIPPON KAIJI KENTEI KYOKAI
 Physical & Chemical Research Institute

(Signature)
 HIRAI, GENERAL MANAGER

This survey/inspection has been conducted under the quality system conforming to ISO9002/JISZ9902 registered by QualityNK, which is accredited by JAB(The Japan Accreditation Board for Conformity Assessment).

APPENDIX 4
RESULTS - DECREPITATION TESTS



DECREPITATION TEST

Scope and Application:

TEMCO
Bell Bay
BHP Manganese

This test is designed to assess the physical properties and suitability of ore for smelting in submerged arc furnaces. The behaviour of some ores, (particularly quartz ores), to thermal shock and high temperatures varies from crumbling to parting to explosive fracture.

Sample:

W2797

(EQROG)

Take approximately 500g of ore that lies within the usual range of material size fed as charge to the furnace and above 25mm, (for quartzite +25mm -150mm).

Initial Mass Ore :

769.9 grams.

Procedure:

Place the sample into a stainless steel decrepitation box, with a lid, and then into a muffle furnace at 1000 degrees C for one hour. After this time remove the sample from the muffle furnace and allow to cool to room temperature, (DANGER TAG THE HOT SAMPLE). When cool sieve the sample over a 25mm sieve.

+25mm Material :

728.2 grams.

-25mm Material :

27.2 grams.

Recombine the sieved fractions and place the sample into one side of the decrepitation test tumble drum. Rotate the drum for 100 revolutions, (3 min. 40 sec.), then resieve over a 5mm sieve.

+5mm Material :

717.9 grams.

-5mm Material :

36.6 grams.

Expression of Results:

Calculate the percentage +25mm after heating (A) and the percentage +5mm after tumbling (B).

A =

96.4

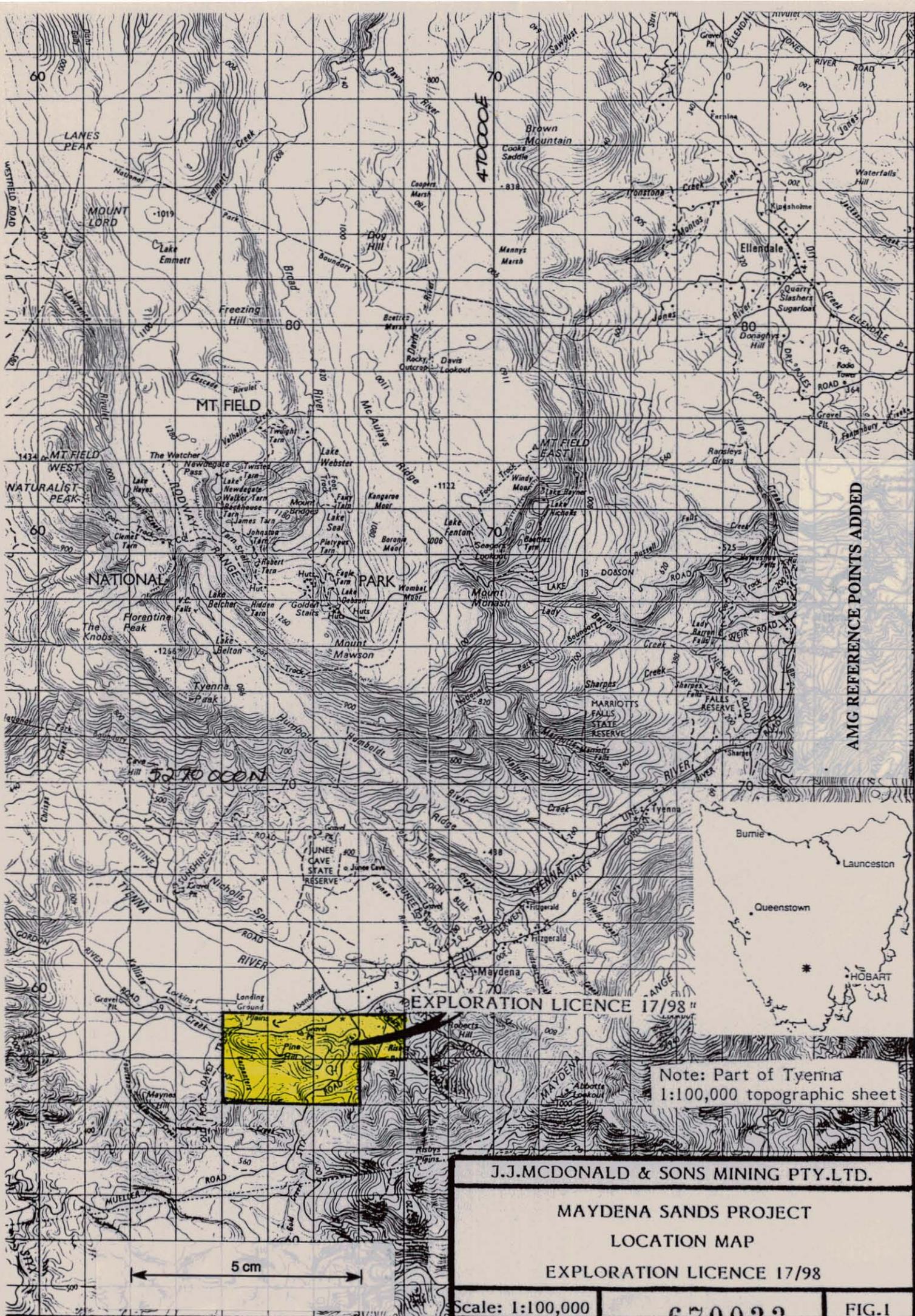
B =

95.1

References:

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GOOD
D.H.



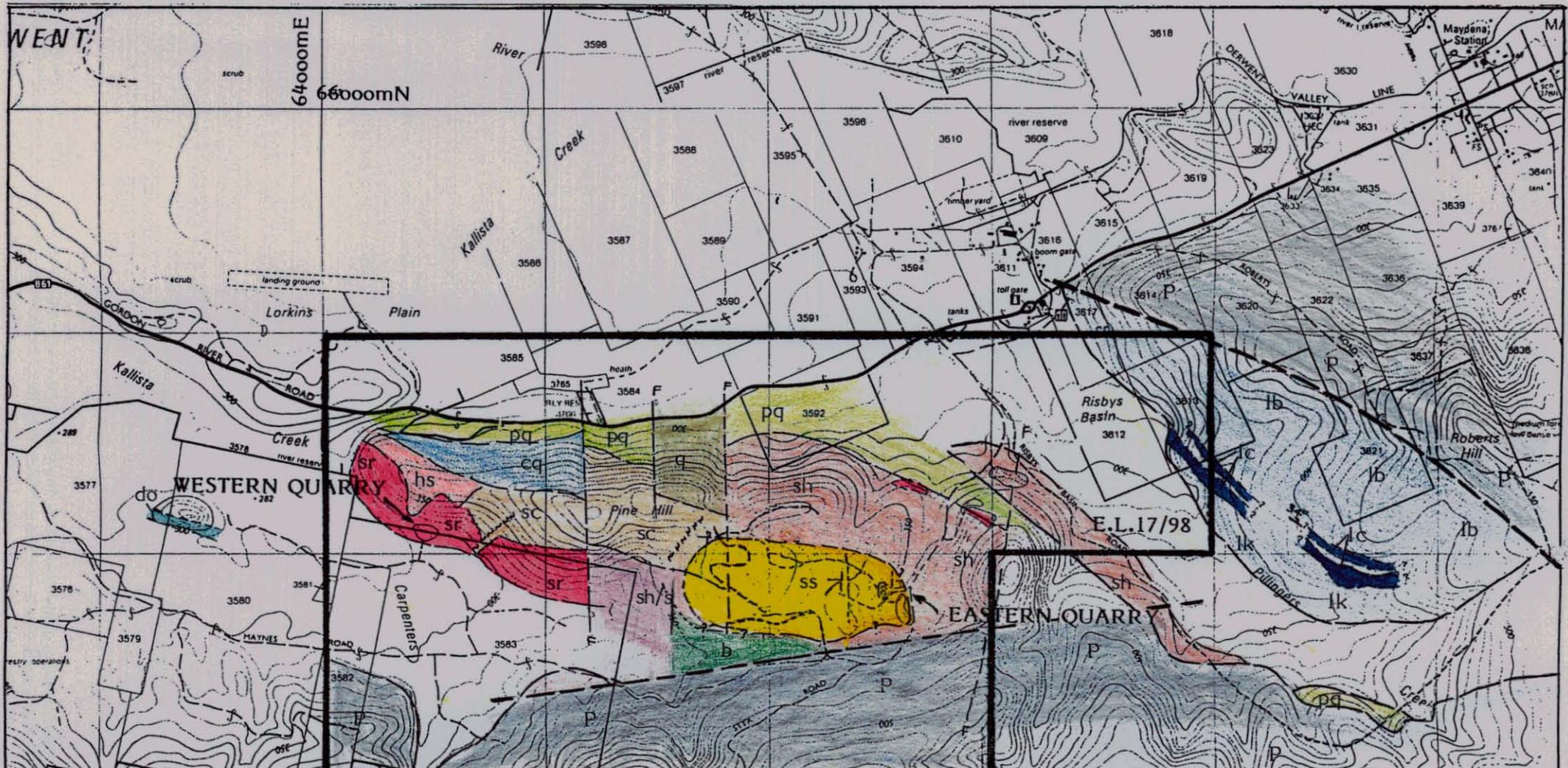
AMG REFERENCE POINTS ADDED

EXPLORATION LICENCE 17/98

Note: Part of Tyenna
1:100,000 topographic sheet

J.J.MCDONALD & SONS MINING PTY.LTD.		
MAYDNA SANDS PROJECT		
LOCATION MAP		
EXPLORATION LICENCE 17/98		
Scale: 1:100,000	670022	FIG.1

5 cm



Quat.	ss	Silica sand
	sr	Silica rock
Permian	P	Permian sediments
Ordov.	lb	Benjamin Limestone
	lk	Karmberg Limestone

Cambrian	q	Quartzite
	pq	Pyritic quartzite
	cq	Cloudy quartzite
	hs	Haematitic sandstone
	sc	Siliceous conglomerate
	sh	Shale
	sh/s	Shale and sandstone
	do	Dolomite
	b	Basalt

Note: Geology modified after Ellis (1988) and Calver (1992)

Note: Part of MAYDEN A 1:25,000 topo-sheet

J.J.MCDONALD & SONS MINING PTY.LTD.

MAYDEN A SANDS PROJECT

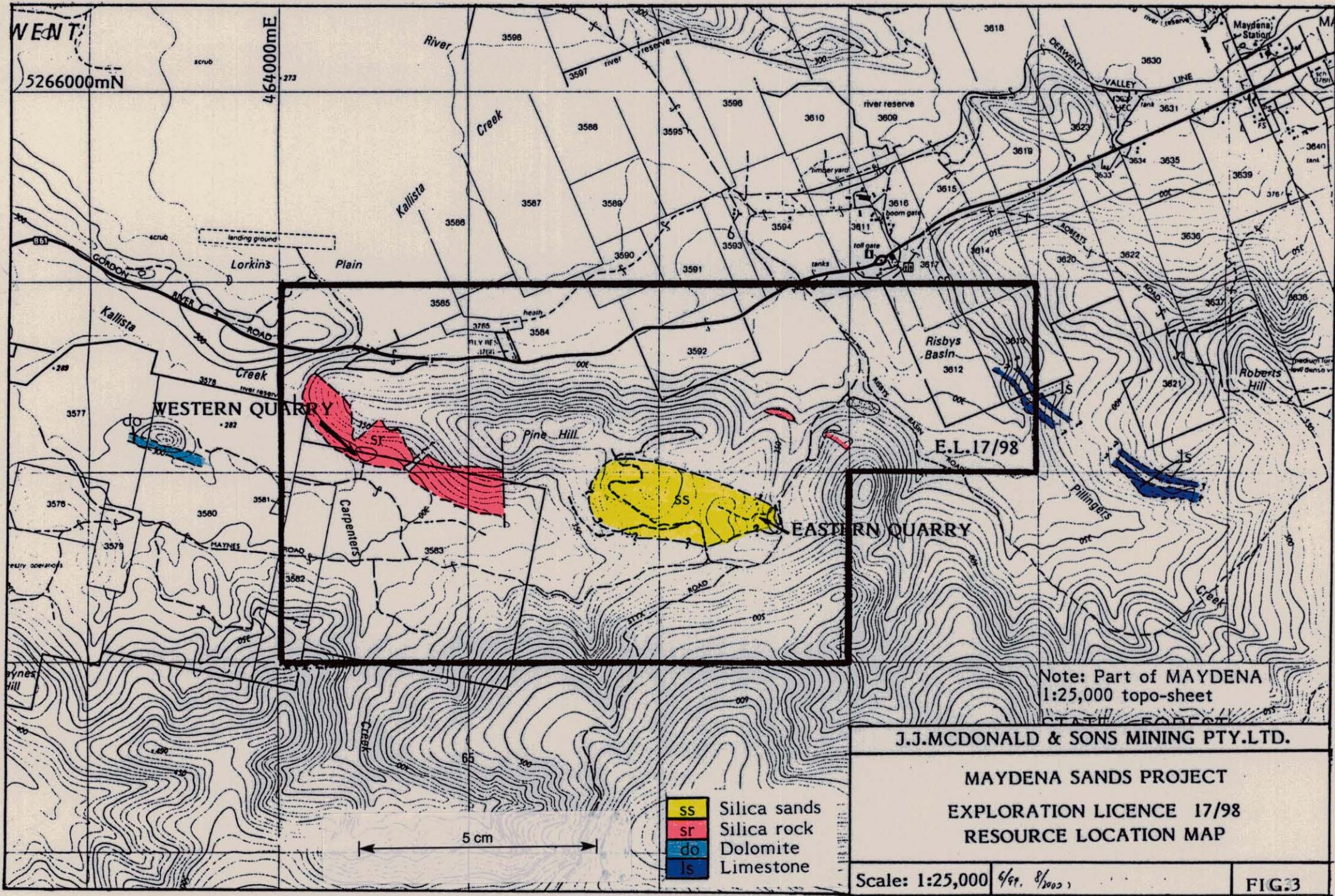
EXPLORATION LICENCE 17/98

GEOLOGY

Scale: 1:25,000

FIG.2

670023



Note: Part of MAYDNA
1:25,000 topo-sheet
STATE FOREST

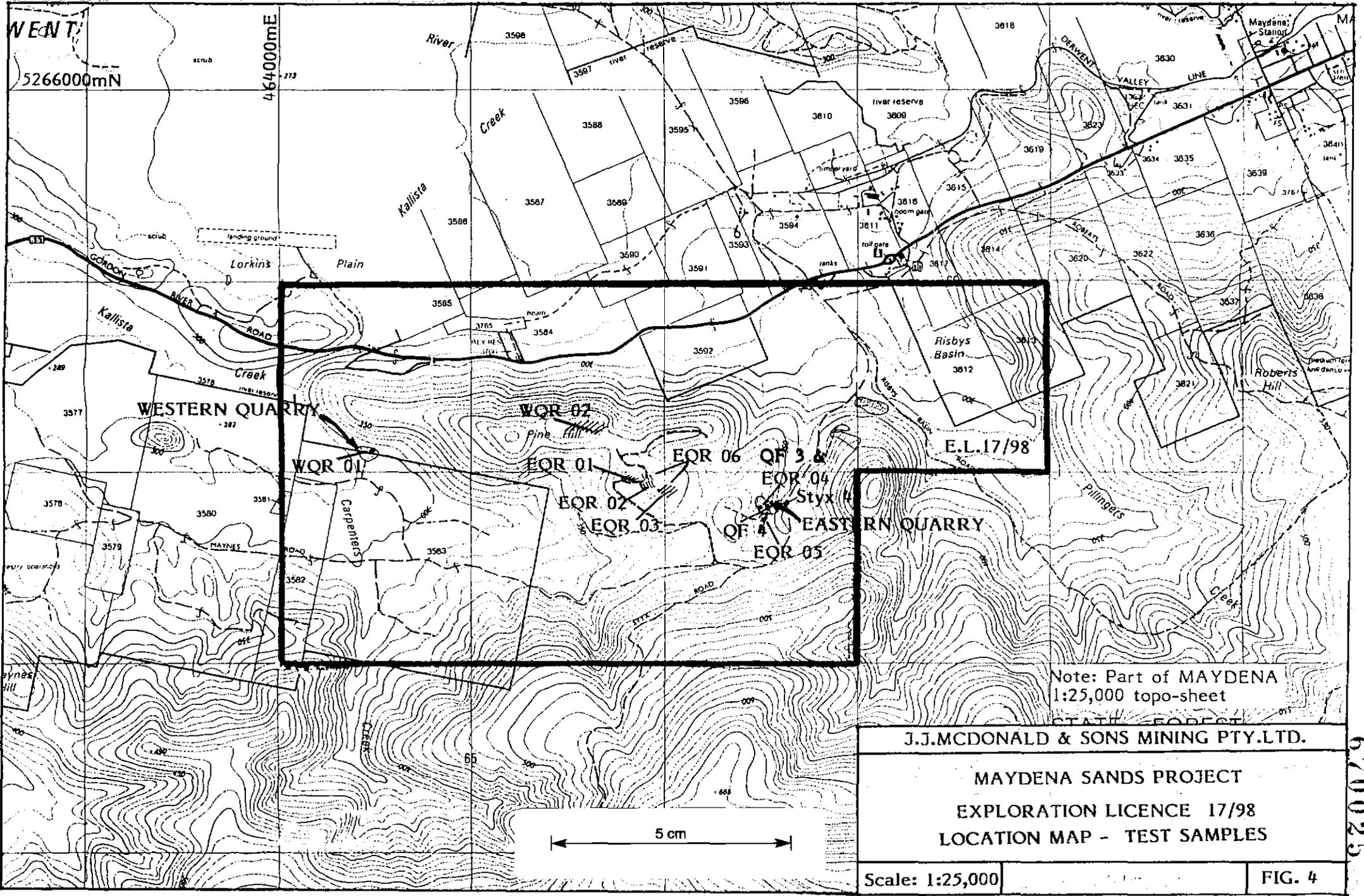
J.J.MCDONALD & SONS MINING PTY.LTD.

MAYDNA SANDS PROJECT
EXPLORATION LICENCE 17/98
RESOURCE LOCATION MAP

Scale: 1:25,000 6/98, 8/2002

FIG:3

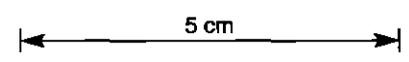
670024



Note: Part of MAYDNA 1:25,000 topo-sheet

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MAYDNA SANDS PROJECT
 EXPLORATION LICENCE 17/98
 LOCATION MAP - TEST SAMPLES



Scale: 1:25,000

FIG. 4

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