J.J. McDONALD & SONS MINING PTY LTD

ACN 051 399 261 ABN 29 051 399 261

RETENTION LICENCE NO. 2/2003

MAYDENA, TASMANIA

ANNUAL REPORT

TO

09 January 2005

GERHARD K. KRUMMEI

DECEMBER 2004

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ABSTRACT

Bench scale ore characterisation and marketing were the main focus of activities this year and both yielded positive results.

Larger size laboratory samples are being processed to investigate specific quality problems and to provide small test samples for distribution in the market place.

Good contacts have been established and maintained with two larger Japanese trading houses with a strong focus on East Asia, while market opportunities continue to be investigated in Europe and elsewhere.

Technical and marketing outcomes encourage moves towards production.

Keywords:

Maydena; Pine Hill;
Silica flour;
Ore characterisation
Marketing

C O N T E N T S

1. INTRODUCTION

This report outlines activities by J.J. McDonald &Sons Mining Pty. Ltd. in regard to its first year's activities relating to its Retention Licence 2/2003, granted for a three year period to 09.01.2007.

This tenement has its origins in EL 17/1998 previously held by this company. It is located just south of the sealed Gordon River road approximately 4 km west south west of Maydena and about 90 km by road from Hobart (Fig.1). There is good access to and within the prospect area. Power, water, housing and basic facilities are readily available from within a short radius of the prospect. The narrow gauge rail-line from New Norfolk to Maydena is being progressively upgraded for passenger traffic. A 700m long gravel airstrip is located 3 km north west of the silica sand deposit.

The primary target for investigation and assessment remains 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 main objectives of this year's activities towards this aim were:

- Drilling
- Continuation of beneficiation/processing investigations
- Continuing marketing efforts for silica flour and co- or by-products
- Commence site planning for quarry and processing plant.

2. PREVIOUS WORK

Exploration by Pioneer Silicon Industries Pty. Ltd. In 1988/89 identified a lag deposit of hard silica rock at the Western Quarry containing a small resource of material deemed suitable for the manufacture of silicon. From this, approximately 19,000 tonnes of crushed, screened silica rock was produced in 1991 and 1992 for shipment. 10,000 tonnes were consigned to Pioneer's silicon smelter at Electrona and about 9,500 tonnes went to Temco's Bell Bay ferrosilicon plant. Extraction, by Duggans Pty. Ltd. under M.L.1396 P/M, virtually ceased upon closure of the Electrona smelter in 1992, although a small parcel of 850 tonnes of silica rock is reported to have been mined in 1995. At the end of the earlier exploration work, an occurrence of white silica sand was located between Pine Hill and the Styx Road in an area now known as the Eastern Quarry Area. Pioneer investigated this deposit in the vicinity of the Eastern Quarry by 23 shallow RC drill holes. Preliminary estimates suggested a resource in the order of some 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 sand might be suitable for the manufacture of table ware glass.

During its tenure of EL 17/1998, which contained these deposits, J.J. McDonald & Sons Pty. Ltd., using the air core drill sampling method, completed 43 drill holes totalling 553 m which outlined a raw material resource of about 6 million tonnes of loose silica. A small part in the south west of the deposit, included in the above estimate, remains to be more fully assessed by drilling.

The drilling also demonstrated that the deposit is more variable, complex and higher in iron oxides than previous data suggested.

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

Bench scale beneficiation tests and bulk sample processing tests, including acid wash tests on samples of the glass size fraction sand, showed that the -250 micron fraction could be upgraded to a high quality product containing only about 50ppm Fe2O3 without major environmental impact, with lower levels of iron a possibility.

Sources of good quality limestone and dolomite were identified in relative proximity to the silica sand deposit for eventual acid neutralization uses.

The company's activities in the marketplace identified the natural silica flour as potentially the deposit's most important component economically. This material provided the major focus for ongoing geological, processing and marketing activities, though the coarser size fractions remain of interest for future attention.

Details of past activities and outcomes are provided in reports listed in the Bibliography. (See Item 8 below).

3. ACTIVITIES FOR PERIOD

A range of activities were undertaken with the main focus on raw material beneficiation and marketing. In detail, these were:

3.1 Work Done

- Aerial photography, in conjunction with Forestry Tasmania, in preparation for contour map production using photogrammetry
- Assaying of a number of previously collected drill chip samples

- Drill programme planning
- Ore characterization research by Roche Mining
- Collection of small composite bulk samples from holes 107, 108, 109 and the Eastern Quarry dump for beneficiation tests
- Collection of a 6 tonne bulk sample for processing
- Marketing: Market review with East Asian focus completed (by a consultant) and contact maintained with several potential customers
- Conceptual planning for a quarry and processing plant site commenced
- Contact maintained with Norske Skog re possible land purchase/lease
- Various project related meetings with members of MRT, DIER, DPIWE, DSD, DED, local MHA, PO and CEO of Derwent Shire and technical consultants (Development Approval related).

3.2 Statistical Summary

No. of samples assayed:	90	approx
No. of determinations:	1009	approx
No. of acid leach tests	28	
No. of sizing analyses	22	

3.3 Expenditure

This period (Jan – Dec 2004)	$56,814
Cumulative to 31.12.04 (RL2/2003 only)	$56,814

4. RESULTS

4.1 Photogrammetry

Arrangements were made with Brooks, Lark and Carrick, Surveyors, Hobart to extend the topo-contour coverage of the Eastern Quarry area to the north and south of the silica sand deposit using cost effective photogrammetric methods.

The required aerial photography, carried out in conjunction with Forestry Tasmania on a cost share basis, was completed in December 2004. Subject to the quotation process in progress, contour map preparation will begin in early 2005. This latest data will be merged with contour maps prepared by HECEC in 1999 and provide coverage, at a 2m contour interval, for the Pine Hill sand deposit and immediate surrounds. These essential maps will provide a basis for further drill programme, quarry and processing site planning.

4.2 Drilling

Late in 2003, planning commenced for a short drilling programme of some 12 shallow air core holes to define more accurately the extent and character of the south west portion of the silica sand deposit. Unfortunately, this work had to be deferred due to the unannounced superposition of sporadic clear felling operations by Forestry Tasmania over the southern half of the deposit, which extended until June 2004 and rendered any exploration activity in the area erratic, unpredictable and unsafe. The drilling programme has been tentatively deferred to the post-burn period from about April 2005 onwards.

4.3 Beneficiation

4.3.1 Ore Characterisation Tests

Roche Mining was engaged to perform a series of comparative laboratory tests in order to “characterise” the raw material with respect to its responses to several standard processing procedures.

The results were intended to guide development of optimum processing routes and eventual process plant design.

Two types of material were selected for testing:

- Clean feed - low impurity material
- "Dirty" feed - higher impurity content, especially elevated iron.

Each sample was further separated into its fine fraction (-250 micron) silica flour component and its +250 micron coarse fraction.

The coarse fractions were further reduced to -250 microns for separate investigations.

This produced a total of four samples below -250 microns for detailed testing.

In the light of results obtained from attrition washing procedures, the tests were extended to include induced roll magnet separation clean-up and acid washing of attritioned products.

Procedures, flow sheets and results are presented in the Roche reports attached as Appendix I.

End Results – In summary:

Type	**Size**	**Feed**		**Product**		
	Microns	Impurity	ppm	Post Attrition ppm	Post IRMS ppm	Post Acid ppm
Clean Feed	-250	Fe_2O_3	497	193	90	50
		TiO_2	141	41	20	20
	+250	Fe_2O_3	1160	1740	110	50
	(crushed)	TiO_2	103	21	40	30
"Dirty" Feed	-250	Fe_2O_3	4810	1560	470	140
		TiO_2	289	25	<20	<10
	+250	Fe_2O_3	4770	1580	270	<160
	(crushed)	TiO_2	270	29	<10	10

These overall outcomes are regarded as encouraging. In particular, the end products of the clean feed material compare well with the results from a bulk sample processed by INDEX in 2001/2002 (viz. Krummei, 2002).

However, despite favourable indications, the further reduction of impurities in the end products, particularly iron, titanium, chromium and the alkali metals to premium quality levels, remains an on-going research challenge.

4.3.2 Bulk Sample Processing

Following completion and assessment of the ore characterisation tests by Roche Mining, several “bulk” samples were generated for further testing and, subject to quality, possible distribution of end products to potential customers.

Drill holes 196, 197 and 108 were selected for this purpose because the first round of assays of cutting from alternate 1m sample intervals exhibited unusually high values of titanium and alkali metals as well as elevated levels of iron (Krummei, 2001). In order to check and confirm these levels, drill cuttings from every previously untested alternate 1m interval were analysed (Appendix II). These results were then combined with the previous assays of alternate 1m intervals to give continuous data down each of the holes selected.

This second round of assaying essentially confirmed the high values of the target impurities encountered previously.

The outcome was a factor in the decision to collect material from these drill holes for ‘bulk’ testing to determine if, and to what extent, the undesirable contaminants can be removed.

Each one of samples 106B, 107B, 108B was then made up of about 1kg/m of stored drill cuttings from holes of the same numerical designation and suffixed 'B'. The weight of these samples ranged between 8 and 15 kg.

Sample EQ01B of about 20kg was collected from dump material at the Eastern Quarry.

A further large sample of about 6 tonnes and designated 90B was excavated from site 5263788mN/466120mE in an area of finer grained, better quality material about 40m north of drill hole 90. A small sub-sample of 90B was scalped off for preliminary investigations.

Sample 107B and sub-sample 90B have been processed by our metallurgical consultant in conjunction with AMMTEC Laboratories, Perth.

Samples 106B, 108B, EQ01B remain to be processed. Large bulk sample 90B remains in storage.

The process route was based on the simple Roche Mining flow sheet, consisting of screening out the -300 micron fraction. This was then attrition washed, de-slimed, subjected to WHIMS clean-up and submitted for assay by ALS Chemex.

The main results so far for the non-mag end products are as follows:

	Al_2O_3 %	Fe_2O_3 %	TiO_2 %	Cr_2O_3 ppm	CaO %	MgO %	K_2O %	Na_2O %
90B2/5/1	0.019	0.006	0.013	3	0.027	0.008	0.001	0.006
90B4/5/1	0.02	0.008	0.015	4	0.03	0.008	0.002	0.009
107B/5/1	0.017	0.005	0.005	<1	0.068	0.034	<0.001	0.006

Fe_2O_3 values are in line with expectations in all three samples, but aluminium, titanium, chromium and alkali metals (particularly sodium in sample 90B) remain unusually high.

Uranium and thorium concentrations are below detection levels of 20ppm.

As a result of discussions and a visit to Dorfner, one of Germany's largest producers of high quality silica flour products, a proposal for a sequence of further and more extensive beneficiation tests has been received and is under consideration.

4.4 Marketing

During the first half of the year, several Australia-based potential users of Pine Hill silica flour products were approached, all with negative results. Companies contacted were Marubeni (trader), Olex (optical cables), CSR (glass wool), Eumate International (supplier to semiconductor manufacturers), Degussa & Bayer (fillers, abrasions, silica based compounds).

Sumitomo expressed preference to continue sourcing its silica flour from Corinna, despite the opportunity for an alternative or fall-back supply offered by the Pine Hill material.

Among the encouraging outcomes achieved are:

4.4.1 Osthandel Chemie GmbH

A requirement in Dubai of about 500 tonnes of high purity silica sand was eventually covered from sources closer at hand.

Schott Glass of Germany, producer and supplier of high purity glass, is price conscious and regards the Tasmanian material as currently uncompetitive pricewise.

Bremthaler Quazitwerk GmbH indicated possible interest in the Pine Hill material for blending with some of its own products; Quantities and price yet to be determined. The Pine Hill silica sand compares with that company's Sipur C product which analyses SiO_2 99.7% min, Fe_2O_3 45 ppm.

4.4.2 Itochu

Contact and relations with the trading division of this Japanese conglomerate continued to strengthen during the year. There are regular information and up-date meetings, with the company showing continuing interest to source suitable silica flour material from Pine Hill for their customers in East Asia.

4.4.3 Iwatani

This Japanese conglomerate and trading house, introduced to J.J. McDonald & Sons Mining by a marketing consultant is showing a high level of interest in the Pine Hill project and material. (See Section 4.4.4 below).

The marketing arm of the company's Ceramics Division has good contacts with most, if not all, of the major producers of high quality motherglass for TFT screens (large market) and optical glass (small market). Small, introductory samples of upgraded material were submitted for inspection and preliminary tests.

Further positive feedback was received following a brief visit to the company's headquarters in Osaka by our marketing consultant to meet representatives of Iwatani and one of its major customers.

Update contacts with Iwatani continue.

4.4.4 Market Survey

Following on from last year's preliminary market survey and appraisal of market contacts achieved during the year, the company completed a review of market opportunities in East and South East Asia for high purity, high value silica flour and sand.

There were a number of positive outcomes, among them:

- The high quality of Pine Hill silica sand material appears suitable for several specific, high value niche markets in the silica sand and rock industry.

- The Fe and Ti levels in the Maydena silica material are workable, but it is important to ensure that Na and K is minimal due to their adverse effect on the electrical properties in the TFT panels.

- The niche market focus for the Pine Hill silica flour should be manufacturers of motherglass destined for the production of TFT-LCD substrates. High quality optical glass for camera lenses is a smaller, but still important market.

- Four major producers of TFT-LCD motherglass identified with plant locations in Japan, Korea, Taiwan and the US.

- Three major producers of high quality optical glass identified.

- Iwatani are well positioned to bring the Maydena silica flour into the market in Japan, Korea and Taiwan at an early date. The company could be a long-term marketing partner for J.J. McDonald & Sons Mining.

4.5 Mine Planning

As a raw material resource and a basic process route had been outlined and, in response to encouraging feed-back from the market place, initial steps were taken mid-year to start a mine planning process. This included a site familiarisation visit by a mining/process engineer from Belminco, Perth.

Scoping meetings were held with Thomson & Brett Pty. Ltd., John Miedecke & Partners Pty. Ltd. and Pitt & Sherry to determine the nature and framework of investigations, with cost estimates, required to support an application for a Development Permit. The Planning Officer and the General Manager of the Derwent Valley Council were also introduced to the project.

Unfortunately, the thrust of these activities had to be suspended due to the Hauler Project proposed by Forestry Tasmania for the Risbys Basin area. This project overlaps the eastern segment of RL2/2003 and raised several issues for clarification and resolution before mine planning can sensibly resume.

Notwithstanding this development, discussions have commenced with Pitt & Sherry with a view to implementing a baseline study to monitor water quality and pH values in the project area during the next year of tenure.

4.6 Rehabilitation

Bulk sample pit 90B, located in a recently clear-felled area over the deposit, was backfilled with top soil and harvest litter replaced.

No other rehabilitation was required.

5. CONCLUSIONS

5.1 Drill coverage over the deposit now needs to be finalised by the completion of some 10-15 shallow holes in the south west segment for further resource assessment and to provide information for basic quarry-site planning.

5.2 Laboratory scale investigations have indicated a basic, simple beneficiation process for the production of silica flour from natural fine and ground down coarser material. Some of the latter will be the starting point for attempts at further upgrading to premium products.

5.3 Market contacts developed during the year provide further confidence for a move towards production.

6. PROPOSED FUTURE ACTIVITIES

- Produce a contour base map of the southern half of the deposit and merge it with pre-existing data for the northern half to assist with further resource definition and mine site planning.

- Produce a contour map of the northern part of the tenement to assist with process site planning.

- Complete a small drilling programme of some 12 holes to assess the quality and depth of the raw material resource in the south west of the deposit.

- Continue with ongoing beneficiation investigations at both laboratory and pilot plant scale aimed at developing a product range, improving end product quality and consistency and producing quality material for testing by customers.

- Continue to identify sales opportunities and develop market contacts and relationships.

- Ongoing contact with state, regulatory and local authorities on project-related activities.

- Application for a mining lease of about 2 sq km to be submitted.

7. REFERENCES

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APPENDIX 1

ORE CHARACTERISATION – ROCHE REPORTS

Roche
MINING
A DIVISION OF DOWNER EDI LIMITED

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Memorandum

To:	Gerhard Krummei
From:	Maureen O'Connor
cc:	Graeme Wylie, Rick Brazier, Jessica Dunning
Ref	81024
Date:	3 August 2004
Subject:	**ACID LEACH TESTS**

Introduction:

Two 50kg samples of silica sand supplied by JJ MacDonald from a Tasmanian deposit, one "clean" and the other "dirty" have been previously processed to try to reduce the Fe_2O_3 content but analysis indicated that the reduction was less than hoped for[1]. Further test work was conducted on the +38µm material was attritioned, deslimed, and passed over an induced roll magnetic separator (IRMS) to separate magnetic material from non-magnetic material. The non-magnetic material from the IRMS was the feed material for the acid leach test work conducted as part of this scope of work. The aim of the work was to reduce the Fe_2O_3 content to below 30ppm.

Terms of Reference:

Terms of reference for the testwork are outlined in Roche MT proposal MT MS 04085 and faxed to Gerhard Krummei (JJ M^{c}Donald) from Graeme Wylie on 18 June 2004.

Scope-of-work:

1 Retrieve the 4 samples from storage.
2 Split out 50g fractions for testwork.
3 Conduct leach tests with 35 wt% acid at consumptions of 25, and 10kg/t H_2SO_4 as per Table 1.
4 Conduct leach tests at temperatures of 20, 35 and 60°C as per Table 1.
5 Conduct leach tests at residence times of 15, 30, 45 and 60 minutes as per Table 1.
6 Submit solids for XRF assay.
7 Compile a brief memo style report.

Test No.	Acid Consumption (kg/t)	Leach Temperature (°C)	Leach Time (minutes)	Agitation
1	25	60	60	Yes
2	15	60	60	Yes
3	25	20	60	Yes
4	25	35	60	Yes
5	25	20	15	Yes
6	25	20	30	Yes
7	25	20	45	Yes

Table 1. Testwork conditions

[1] Roche Mining MT Memorandum from Maureen O'Connor to Graeme Wylie, JJ M^{c}Donald Silica Sand, 27 April 2004.

	Acid Dose kg/t	Leach Temp (°C)	Leach Time (min)	Al_2O_3 %	Fe_2O_3 %	TiO_2 %	CaO %	MgO %	K_2O %	Na_2O %
Feed				0.013	0.009	0.002	0.027	0.007		
Test 24.1	25	20	15	0.012	0.006	0.002	0.029	0.007	0.002	0.002
Test 24.2	25	20	30	0.012	0.005	0.002	0.028	0.007	0.001	0.002
Test 24.3	25	20	45	0.011	0.005	0.002	0.028	0.007	0.002	0.002
Test 24.4	25	20	60	0.012	0.005	0.002	0.028	0.007	0.001	0.002
Test 24.5	25	60	60	0.012	0.007	0.002	0.030	0.007	0.002	0.002
Test 24.6	25	35	60	0.012	0.006	0.003	0.029	0.007	0.001	0.002
Test 24.7	10	60	60	0.013	0.006	0.002	0.028	0.007	0.002	0.002
Feed				0.010	0.011	0.004	0.009	0.004		
Test 26.1	25	20	15	0.010	0.006	0.003	0.008	0.004	0.001	0.003
Test 26.2	25	20	30	0.009	0.005	0.004	0.007	0.004	0.001	0.002
Test 26.3	25	20	45	0.009	0.005	0.005	0.008	0.004	<0.001	0.003
Test 26.4	25	20	60	0.011	0.008	0.003	0.008	0.004	0.001	0.003
Test 26.5	25	60	60	0.009	0.005	0.004	0.007	0.003	0.002	0.003
Test 26.6	25	35	60	0.009	0.005	0.003	0.007	0.004	0.002	0.003
Test 26.7	10	60	60	0.010	0.005	0.004	0.008	0.004	0.001	0.003
Feed				0.037	0.047	0.002	0.034	0.01		
Test 28.1	25	20	15	0.027	0.031	0.002	0.033	0.009	0.002	0.002
Test 28.2	25	20	30	0.014	0.014	<0.001	0.015	0.006	<0.001	0.001
Test 28.3	25	20	45	0.025	0.026	0.002	0.028	0.009	0.002	0.002
Test 28.4	25	20	60	0.028	0.028	0.002	0.034	0.01	0.002	0.002
Test 28.5	25	60	60	0.024	0.016	0.002	0.031	0.009	0.002	0.002
Test 28.6	25	35	60	0.016	0.013	<0.001	0.014	0.004	0.002	0.003
Test 28.7	10	60	60	0.013	0.009	<0.001	0.016	0.006	0.001	0.001
Feed				0.02	0.027	<0.001	0.015	0.005		
Test 30.1	25	20	15	0.018	0.017	0.001	0.015	0.005	0.002	0.003
Test 30.2	25	20	30	0.017	0.016	0.001	0.015	0.004	0.002	0.003
Test 30.3	25	20	45	0.018	0.014	0.001	0.015	0.005	0.002	0.003
Test 30.4	25	20	60	0.017	0.014	0.001	0.015	0.005	0.002	0.003
Test 30.5	25	60	60	0.014	0.007	0.001	0.014	0.004	0.002	0.003
Test 30.6	25	35	60	0.025	0.023	0.002	0.031	0.009	0.002	0.002
Test 30.7	10	60	60	0.015	0.008	0.001	0.014	0.004	0.001	0.003

Table 2. Assays of the leached products
Test 24.1-7 refers to sample S1 -250µm attrition +38µm non-magnetic.
Test 26.1-7 refers to sample S1 +250µm crushed attrition +38µm non-magnetic.
Test 28.1-7 refers to sample S2 -250µm attrition +38µm non-magnetic.
Test 30.1-7 refers to sample S2 +250µm crushed attrition +38µm non-magnetic).

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After leaching for 30 minutes with sulphuric acid at a dosage of 25kg/t and a temperature of 20°C (Table 2), the Fe_2O_3 content in the clean sand was reduced from 90-110 to 50ppm, for S1, the -250µm material and the +250µm material crushed to -250µm. The Fe_2O_3 content of S2, the dirty sand, was reduced from 470 and 270ppm to 80-90ppm after leaching with sulphuric acid at 60°C for 60 minutes and a dosage of 10kg/t (Table 2).

The target of <30ppm Fe_2O_3 in the product sand was not achieved. We recommend that higher leach temperatures and longer leach times be investigated to determine conditions to achieve the target.

MAUREEN O'CONNOR
Senior Metallurgist

Roche
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To:	Gerhard Krummel	**Company:**	JJ McDonald
cc:			
From:	Graeme Wylie	**Reference:**	mlgw040412 Rev 1
Date:	30April 2004		
Subject:	**Testwork on Silica Sand**		
Pages (including cover page):	5	**Fax No:**	03 9820 2595

Dear Gerhard,

Herewith attached a copy of our report following review of the assays of the samples supplied to ALS.

If you have any questions, please get in touch.

Best regards,

GRAEME WYLIE
Area Sales Manager

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Memorandum

To:	Graeme Wylie
From:	Maureen O'Connor
cc:	Rick Brazier, Jessica Dunning
Ref	80965
Date:	27 April 2004
Subject:	**JJ M°Donald Silica Sand**

Introduction:

Two 50kg samples of JJ M°Donald silica sand, one clean and the other dirty, were characterised as outlined in the scope of work previously supplied. In summary, the samples were split to obtain a head sample and wet screened at 250µm. The +250µm sample was then roll crushed to –250µm. Both the natural –250µm and crushed +250µm to –250µm were kept separately and both subdivided to produce 3 sub-samples for the following

- heavy liquid separation at 250µm,
- wet shaking table and the table tails subjected to magnetic separation using a Reading induced roll magnet and,
- attritioning and desliming using a 38µm screen.

Results:

The flowsheet of the testwork followed is shown in Figures 1 and 2, for clean and dirty sand respectively, and the weight % of each stream based on the feed is also given. The assay of each stream is given in Tables 1 and 2 for clean and dirty sand respectively.

Table 1. S2 Clean sand - Assay of the streams indicated on Figure 1.

Stream	Weight %	Al_2O_3 ppm	Fe_2O_3 ppm	TiO_2 Ppm	Cr_2O_3 ppm	CaO ppm	MgO ppm
S1	100	163	497	141	<10	273	83
S2	28.4	652	2060	117	12	151	77
S3	25.3	361	1300	109	11	130	59
S4	14.2	378	1290	71	12	160	98
S5	13.6	125	226	65	<10	129	55
S6	23.3	701	1740	41	<10	147	81
S7	71.6	176	478	114	<10	334	85
S8	71.5	136	386	104	<10	313	74
S9	47.2	142	415	98	<10	393	96
S10	46.3	132	197	81	<10	362	82
S11	51.8	131	193	21	<10	294	67
S23	28.4	639	1160	103	<10	149	74

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Table 2 S2 Dirty sand - Assay of the streams indicated on Figure 2.

Stream	Weight %	Al_2O_3 ppm	Fe_2O_3 ppm	TiO_2 ppm	Cr_2O_3 ppm	CaO ppm	MgO ppm
S12	100	3780	4810	289	22	712	558
S13	33.3	1570	4770	109	49	283	205
S14	33.2	1480	4390	108	44	279	180
S15	15.5	1400	4060	71	36	322	323
S16	13.9	595	1060	40	<10	221	72
S17	26.5	423	1560	25	11	198	107
S18	66.7	3290	4630	213	25	630	677
S19	66.5	3210	4320	203	19	627	664
S20	41.1	3070	4270	186	22	706	834
S21	35.7	2180	2260	142	<10	621	233
S22	43.8	590	1580	29	14	385	395

For sample 1, contamination of the feed material occurred during the wet screening and the roll crushing. This is almost impossible to avoid when a roll crusher is used as contamination from the steel rolls actually contaminates the sample. This was not an issue for sample 2 as the sample was dirty to begin with.

Summary & Recommendations:

Attritioning (followed by desliming) using a 38µm screen was the most effective processing to reduce the contaminants in the silica sand for S1 –250µm, S2 –250µm and S2 +250µm crushed to –250µm. It is believed this would also be the case for S1 +250µm crushed to –250µm without contamination.

Using a magnetic separation step in the processing would separate out any iron contamination into the magnetic fraction. Hence, it is recommended that magnetic separation be used in the processing if iron contamination cannot be avoided.

Magnetic separation could also be used to further reduce the contaminants present in the +38µm fraction taken from the attritioning (and desliming) stage. This should be confirmed by testing.

The magnetic separation step substantially reduced contaminant content. Although the mass recovery was low this was because only about half of the feed to the wet shaking table reported to the table tails. Magnetic separation should be tried as an alternative to gravity separation and attritioning on both the natural –250 µm and +250µm (crushed to –250µm) materials as a means of increasing recovery.

We also recommend that full characterisation of the feed material, assay by size, is carried out to determine in where the contaminants report. This will assist determining the most effective processing route.

Maureen O'Connor

CJ MCDONALD & SONS MINING P/L

STAFFORD

Page-no: 1

Attention: MR GERHARD KRUMMEI
YourOrder:
SampleType:MISCELLANEOUS
Project:

Batch-no: 39861
Sub-batch:0
No-samples:8
Received: 14/05/04
Checked:

Element		Al2O3	Fe2O3	TiO2	Cr	CaO	MgO	MnO	V2O5
Unit		%	%	%	ppm	%	%	%	%
Method		M289-1	M289-1	M289-1	M289-1	M289-1	M289-1	M289-1	M289-1
C/3215	S25	0.037	0.157	0.016	3	0.066	0.023	0.002	<0.001
C/3216	S27	1.68	4.20	0.050	70	0.142	0.194	0.194	<0.001
C/3217	S29	0.213	0.766	0.016	63	0.061	0.293	0.004	<0.001
C/3218	S31	0.409	1.90	0.035	73	0.091	0.152	0.021	0.002
C/3211	S24	0.013	0.009	0.002	<1	0.027	0.007	<0.001	<0.001
C/3212	S26	0.010	0.011	0.004	<1	0.009	0.004	<0.001	<0.001
C/3213	S28	0.037	0.047	0.002	<1	0.036	0.010	<0.001	<0.001
C/3214	S30	0.020	0.027	<0.001	<1	0.015	0.005	<0.001	<0.001
Limit of Detection		0.001	0.001	0.001	1	0.001	0.001	0.001	0.001

JJ MCDONALD & SONS MINING P/L

Attention: MR GERHARD KRUMMEI
YourOrder:
SampleType:MISCELLANEOUS
Project:

STAFFORD

Batch-no: 39861
Sub-batch:0
No-samples:8
Received: 14/05/04
Checked:

Element Unit Method	K2O % M289-1	Na2O % M289-1	Cu ppm M289-1	Ni ppm M289-1	Pb ppm M289-1	Zn ppm M289-1	As ppm M289-1
C/3215 S25	0.004	0.005	9	8	2	8	<1
C/3216 S29	0.006	0.010	17	8	3	33	<1
C/3217 S20	0.010	0.005	6	48	3	13	<1
C/3218 S21	0.012	0.013	4	47	4	6	<1
C/3211 S24	0.001	0.003	<1	<1	<1	<1	<1
C/3212 S26	0.001	0.003	4	<1	<1	<1	2
C/3213 S28	0.002	0.003	2	<1	<1	2	<1
C/3214 S30	0.001	0.003	<1	<1	1	<1	<1
Limit of Detection	0.001	0.001	1	1	1	1	1

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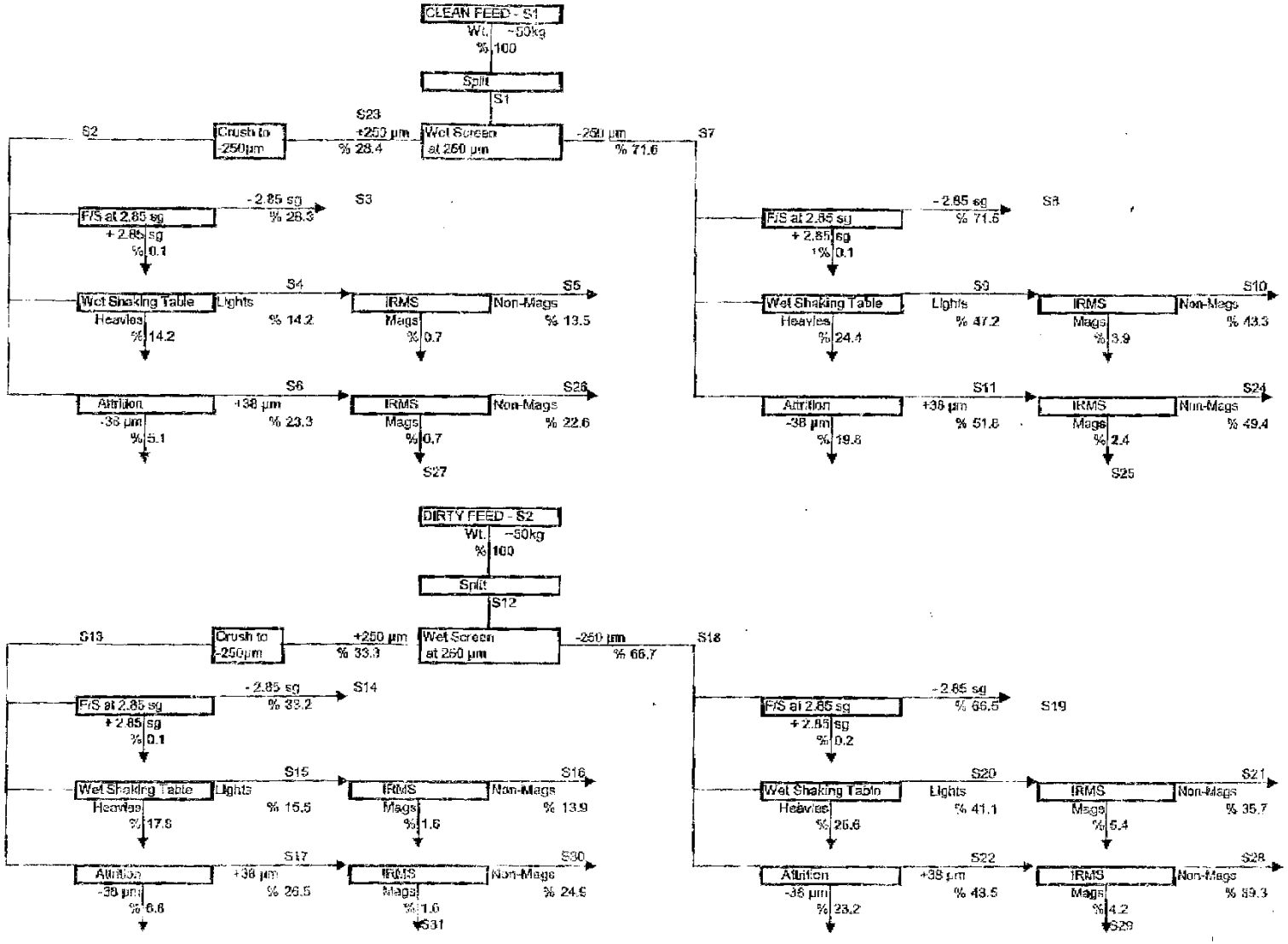

APPENDIX 2

ASSAY RESULTS

CERTIFICATE OF ANALYSIS

Batch: ST40122
Sub Batch: 0

CONTACT:	MR GERHARD KRUMMEI	**LABORATORY:**	BRISBANE
CLIENT:	JJ MCDONALD & SONS MINING P/L	**DATE RECEIVED:**	18/08/2004
ADDRESS:	SUITE 28 487 ST KILDA ROAD MELBOURNE VICTORIA 3004	**DATE COMPLETED:**	03/09/2004
		SAMPLE TYPE:	SAND
		No. of SAMPLES:	22
ORDER No.:	ALS 224178		
PROJECT:			

COMMENTS

NOTES

This is the Final Report and supersedes any preliminary reports with this batch number.
Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: BRISBANE

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32 Shand Street
Stafford QLD 4053
Australia

Phone: 61-7-3243 7222
Fax: 61-7-3243 7254
Email: shaun.kenny@alschemex.com

Signatory

Batch: ST40122
Sub Batch: 0
Date of Issue: 03/09/2004
Client: JJ MCDONALD & SONS MINING P/L
Client Reference:

CERTIFICATE OF ANALYSIS

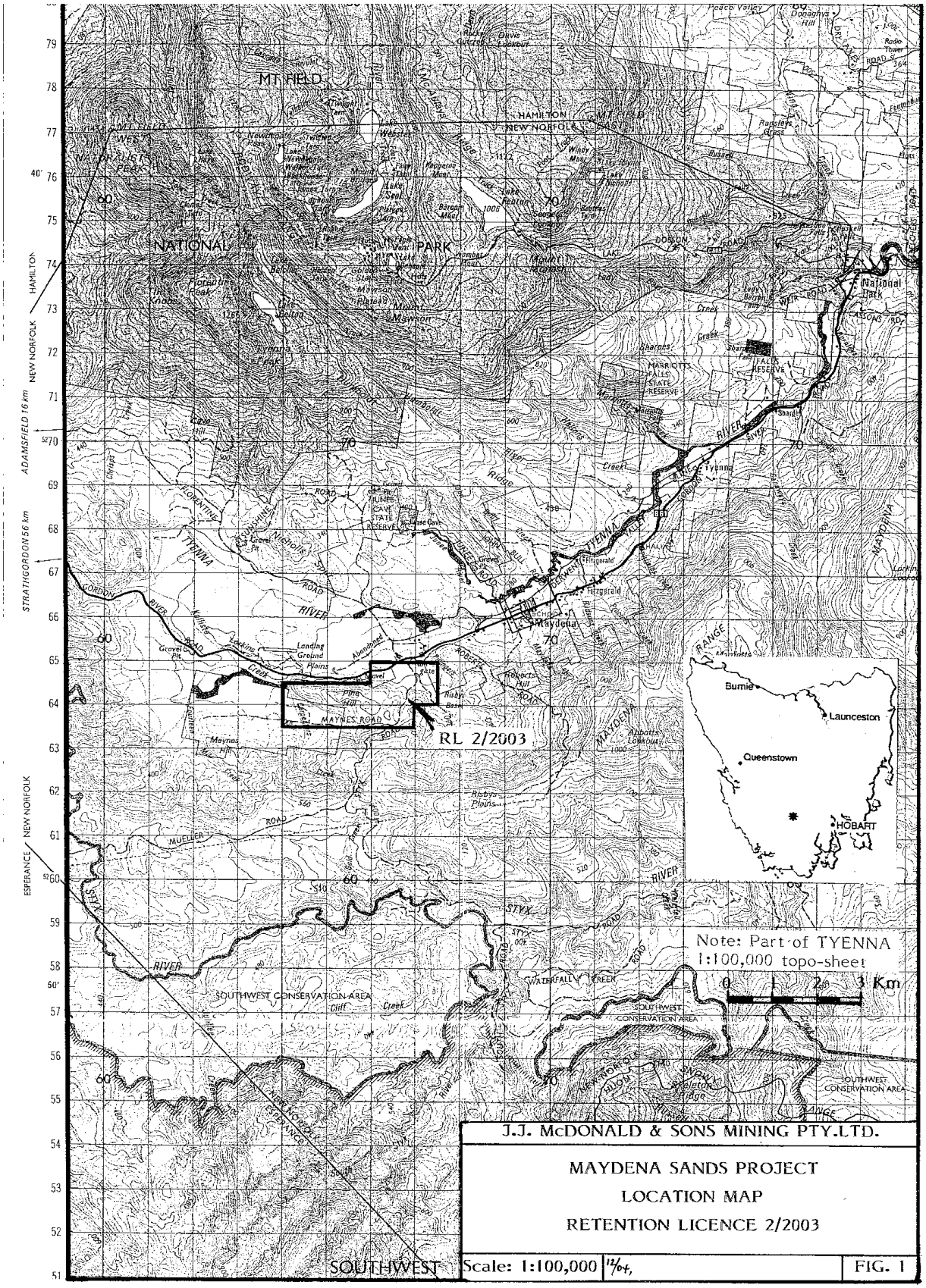
SAMPLE	Element	Al2O3	Fe2O3	TiO2	CaO	MgO	Na2O	K2O
	Unit	%	%	%	%	%	%	%
	Method	M289-1	M289-1	M289-1	M289-1	M289-1	M289-1	M289-1
	LOR	0.001	0.001	0.001	0.001	0.001	0.001	0.001
70501 DH 106 2-3m		0.018	0.063	0.068	0.017	0.005	0.003	<0.001
70502 4-5m		0.020	0.027	0.050	0.018	0.006	0.004	0.001
70503 6-7m		0.026	0.082	0.130	0.022	0.009	0.003	0.002
70504 8-9m		0.022	0.019	0.071	0.019	0.008	0.002	<0.001
70505 10-11m		0.027	0.061	0.048	0.055	0.024	0.002	<0.001
70506 0-1m		0.022	0.084	0.061	0.016	0.005	0.003	0.002
70507 DH 107 0-1m		0.119	0.026	0.044	0.027	0.009	0.003	0.001
70508 2-3m		0.050	0.058	0.046	0.025	0.010	0.003	<0.001
70509 4-5m		0.033	0.034	0.031	0.026	0.010	0.002	<0.001
70510 6-7m		0.053	0.082	0.063	0.048	0.023	0.003	<0.001
70511 8-9m		0.035	0.037	0.039	0.042	0.019	0.002	<0.001
70512 10-11m		0.021	0.048	0.031	0.102	0.052	0.002	<0.001
70513 12-13m		0.165	0.053	0.047	0.106	0.051	0.003	0.020
70514 14-15m		1.06	0.141	0.093	0.119	0.073	0.004	0.070
70515 DH 108 0-1m		0.175	0.071	0.080	0.096	0.043	0.003	0.006
70516 2-3m		0.071	0.031	0.042	0.080	0.038	0.002	0.001
70517 4-5m		0.101	0.056	0.060	0.063	0.027	0.002	0.002
70518 6-7m		0.148	0.058	0.039	0.098	0.047	0.002	0.002
70519 8-9m		0.129	0.031	0.024	0.094	0.036	0.002	0.008
70520 10-11m		0.559	0.165	0.084	0.113	0.068	0.003	0.058
70521 90B Head sample		0.032	0.031	0.100	0.020	0.005	0.003	0.002

Batch: ST40122
Sub Batch: 0
Date of Issue: 03/09/2004
Client: JJ MCDONALD & SONS MINING P/L
Client Reference:

QUALITY CONTROL REPORT

SAMPLE	Element	Al_2O_3	Fe_2O_3	TiO_2	CaO	MgO	Na_2O	K_2O					
	Unit	%	%	%	%	%	%	%					
	Method	M289-1	M289-1	M289-1	M289-1	M289-1	M289-1	M289-1					
	LOR	0.001	0.001	0.001	0.001	0.001	0.001	0.001					
BLANKS													
BLANK		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001					
DUPLICATES If applicable, duplicate results for fire assay golds are shown in the main body of the report.													
70509		0.034	0.032	0.031	0.026	0.010	0.002	<0.001					
Original Result		0.033	0.034	0.031	0.026	0.010	0.002	<0.001					
70519		0.141	0.032	0.023	0.096	0.043	0.002	0.008					
Original Result		0.129	0.031	0.024	0.094	0.036	0.002	0.008					
70520		0.571	0.170	0.091	0.116	0.068	0.003	0.060					
Original Result		0.559	0.165	0.084	0.113	0.068	0.003	0.058					
REFERENCE STANDARDS The data that appears on this report are results for the internal standards analysed in conjunction with this batch.													
STANDARD I.D.													
RESULT OF STANDARD		0.040	0.013	0.016	0.005	<0.001	0.004	0.004					
TARGET RANGE													

ILLUSTRATIONS



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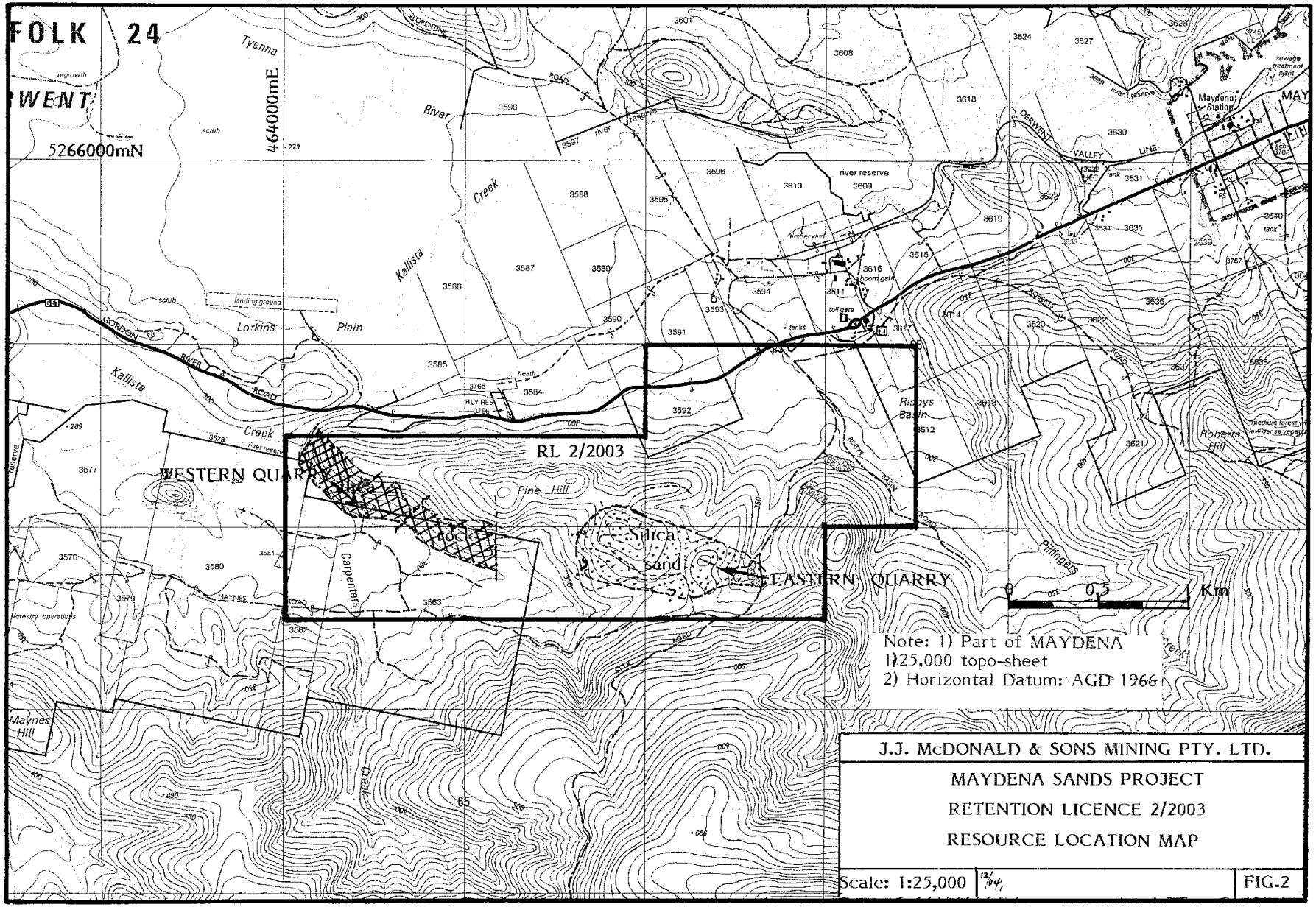
MAYDENA SANDS PROJECT

LOCATION MAP

RETENTION LICENCE 2/2003

Scale: 1:100,000 | 12/04, | FIG. 1



J.J. McDONALD & SONS MINING PTY. LTD.

MAYDENA SANDS PROJECT

RETENTION LICENCE 2/2003

RESOURCE LOCATION MAP

Scale: 1:25,000 | 13/04/ | FIG.2