Appendix 5

Glass Sand Analysis

(No. of pages excluding this page = 4)

This page has intentionally been left blank

WALLARAH MINERALS PTY LTD
ABN 77 002 503 399

130 TALL TIMBERS RD, DOYALSON NORTH, NSW 2262
PHONE: (02) 4358 4994 FAX: (02) 4358 1348
wallarah@sialon.com.au

REPORT ON SAND FROM CUDGEN

For R.W. Corkery & Co. Pty Limited on behalf of Gales Holdings Pty Ltd

Introduction:

The aim of the testing was to determine if the Cudgen Sand is suitable for glass manufacture.

Testing:

Composite samples of each of four boreholes were made combining approximately 800g from each 1 to 10 metre sample and 10 to 20 metre sample.

Test Results: See Tables 1 and 2.

Discussion:

The test results show that the sand would require considerable beneficiation to approach glass grade sand chemical specification.

The required Fe203 level for amber glass is 0.25% and for flint glass 0.03%. The Fe_20_3 content of the samples tested ranged from 0.67% to 0.95%.

Beneficiation undertaken by Dr. Tony Farmer of Agricola showed that with leaching with acqua regia the Fe_20_3 content from a composite sample could be reduced to 0.08% but this type of beneficiation would not be commercially feasible.

After hand washing one of the borehole samples provided, it was noted under a 20x magnification there were considerable numbers of dark grains. There could be a number of possible minerals – but most likely ilmenite, possibly tourmaline, picotite or other spinels or chromium bearing minerals.

Ilmenite being FeO $Ti0_2$ would be a source of iron in the sand.

The levels of $Ti0_2$ in the samples varied from 0.18% to 0.34% showing a fairly low level of either rutile or ilmenite. Under a lens, there appears to be either reddish brown grains of zircon or rutile present in small quantities.

With the disappearance of mineral sands mines from the east coast, the price of Ilmenite has risen to over $100/tonne (packed in bags) with Zircon around $1500/tonne and rutile around $700/tonne.

A heavy media test using bromoform liquid (SG 2.9) would separate the mineral sands (around 4.2 – 4.5 S.G.).

These heavy mineral sands would need to be removed in order to approach even an amber glass grade sand specification.

A major problem with the closest glass user Q.G.M and A.C.I subsidiary owned by Ownes Illinois is that they have only one bulk sand silo. This is used for sand from Stradbroke Island which is of exceptional quality, have a Fe_20_3 content of 0.01%. This is used for both flint and amber glass at a price of about $40/tonne F.I.S.

Q.G.M. would need a very good price to warrant building another silo for amber coloured glass.

Conclusion:

There are a number of impediments to making this sand into a glass grade sand especially noting the supply of Stradbroke sand of exceptional quality and is probably uneconomic.

The Cudgen sand's level of Al_20_3 is high (due to clays etc) – 1.19% - 1.96% (Stradbroke 0.03%) as well as $Ti0_2$ – 0.18% - 0.34% (Stradbroke 0.035%) and Cr_20_3 – 0.03 – 0.06% (Stradbroke 0.0004%).

Admittedly, the Cudgen material is unwashed.

The presence of mineral sands – ilmenite, zircon and rutile should not be totally ignored and a simple bromoform or similar heavy media separation test could be carried out.

R.K. DRUITT
9th February, 2006.

Table 1: **CUDGEN SAND**

				BOREHOLE:			
				1 COMP	2 COMP	3 COMP	4 COMP
			Metres:	1-10, 10-20	1-10, 10-20	1-10, 10-20	1-10, 10-20
				CHEMICAL ANALYSIS			
Method	Analyte	Units	LOR				
WEI-21	Recvd Wt	kg	0.02	1.52	1.52	1.51	1.51
ME-ICP85	Al203	%	0.01	1.96	1.89	1.19	1.75
ME-ICP85	Cr203	%	0.01	0.04	0.04	0.06	0.03
ME-ICP85	Fe203	%	0.01	0.75	0.86	0.95	0.67
ME-ICP85	Si02	%	0.01	92.3	91.7	94.8	93.6
MC-ICP85	Ti02	%	0.01	0.33	0.34	0.18	0.29
ME-GRA05	LOI	%	0.01	1.53	1.98	0.85	1.16

Table 2: **CUDGEN SAND**

BOREHOLE:

Metres:				1 COMP 1-10, 10-20	2 COMP 1-10, 10-20	3 COMP 1-10, 10-20	4 COMP 1-10, 10-20
SIZING ANALYSIS							
Method	Aperture	Units	LOR				
SCR-61	+850um	%	0.1	0.1	2.0	2.0	0.1
SCR-61	+600um	%	0.1	0.2	1.8	2.0	0.3
SCR-61	+425um	%	0.1	1.0	4.6	6.7	0.7
SCR-61	+250um	%	0.1	14.5	43.8	43.1	24.7
SCR-61	+212um	%	0.1	52.5	29.6	29.0	44.9
SCR-61	+150um	%	0.1	17.2	9.1	7.2	13.3
SCR-61	+106um	%	0.1	7.5	3.2	2.0	3.0
SCR-61	+75um	%	0.1	1.5	0.7	0.6	1.1