MINERALOGY REPORT 2008

HARTS RANGE GARNET PROJECT

NORTHERN TERRITORY

OLYMPIA RESOURCES LTD

Report No: OLY08/033

AUTHOR: **Susan Stewart**

DISTRIBUTION: **OLYMPIA** **1**

DATE: **December 2008**

EXECUTIVE SUMMARY

The Harts Range (Aturga) Project is located along the Plenty Highway. The measured resource is in the mining lease ML23868. The indicated resource mainly falls in the mining lease but is also in EL10150. The inferred resource is in EL24360 and EL25098.

The average mineralogy used in previous resource estimates was determined to be insufficient to represent the whole of the deposit. This study was designed to gain a better understanding of the mineralogy throughout the whole deposit.

Olympia Resources Limited created 12 minibulk composites for each resource type and geology environment Aturga Project. These were sent off to Roger Hamilton for Grain point counting. Table.

Table of Contents

FIGURES

TABLES

APPENDIX

1. INTRODUCTION

Olympia Resources Ltd carried out a mineralogy program, during 2008, to determine the mineralogy within the different units in the resource.

2. LOCATION AND ACCESS

The tenements are located along the Plenty Highway (Figure 1).

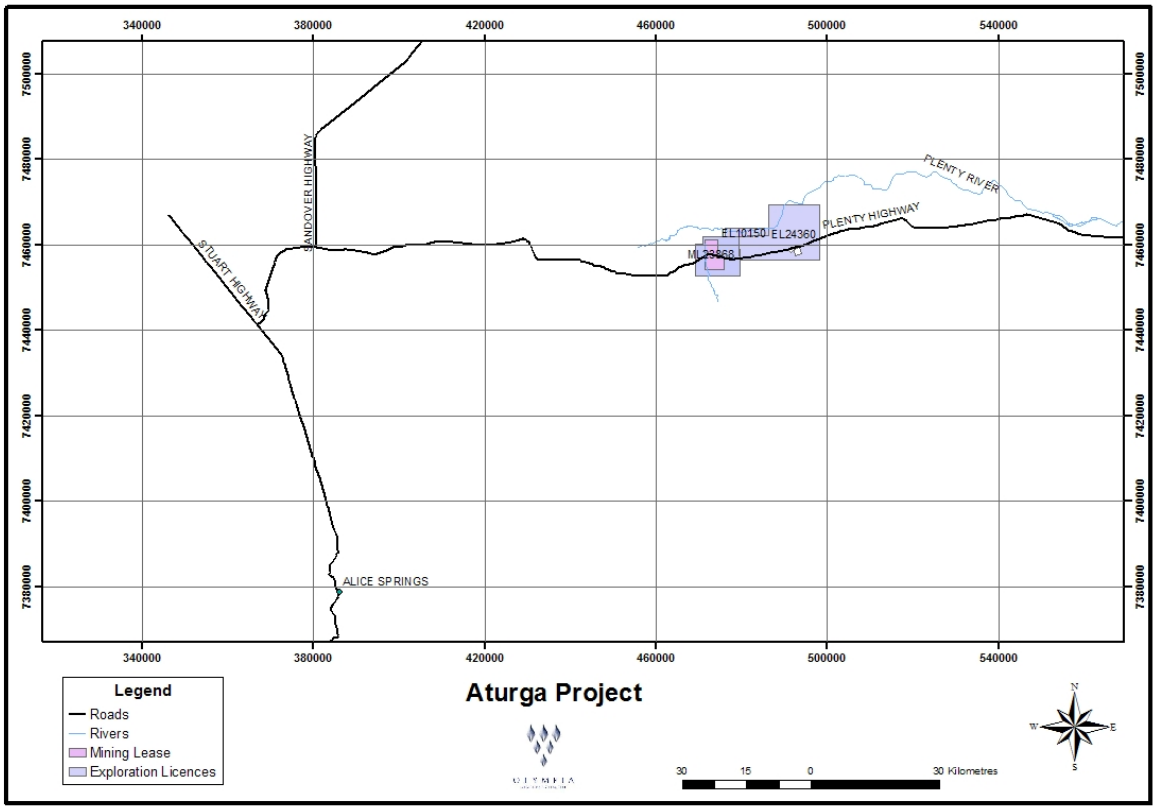

Figure 1 Location of the Aturga Project

3. TENURE

The Harts Range tenements which were affected in the mineralogy study were within the Measured, Indicated and Inferred resources. The majority of the measured and indicated resources are within ML23868 which is enclosed in EL10150. The inferred resources lie in EL25098 and EL24360. Table 1 summarises the tenements and Figure 2 shows the tenements within the Aturga Project.

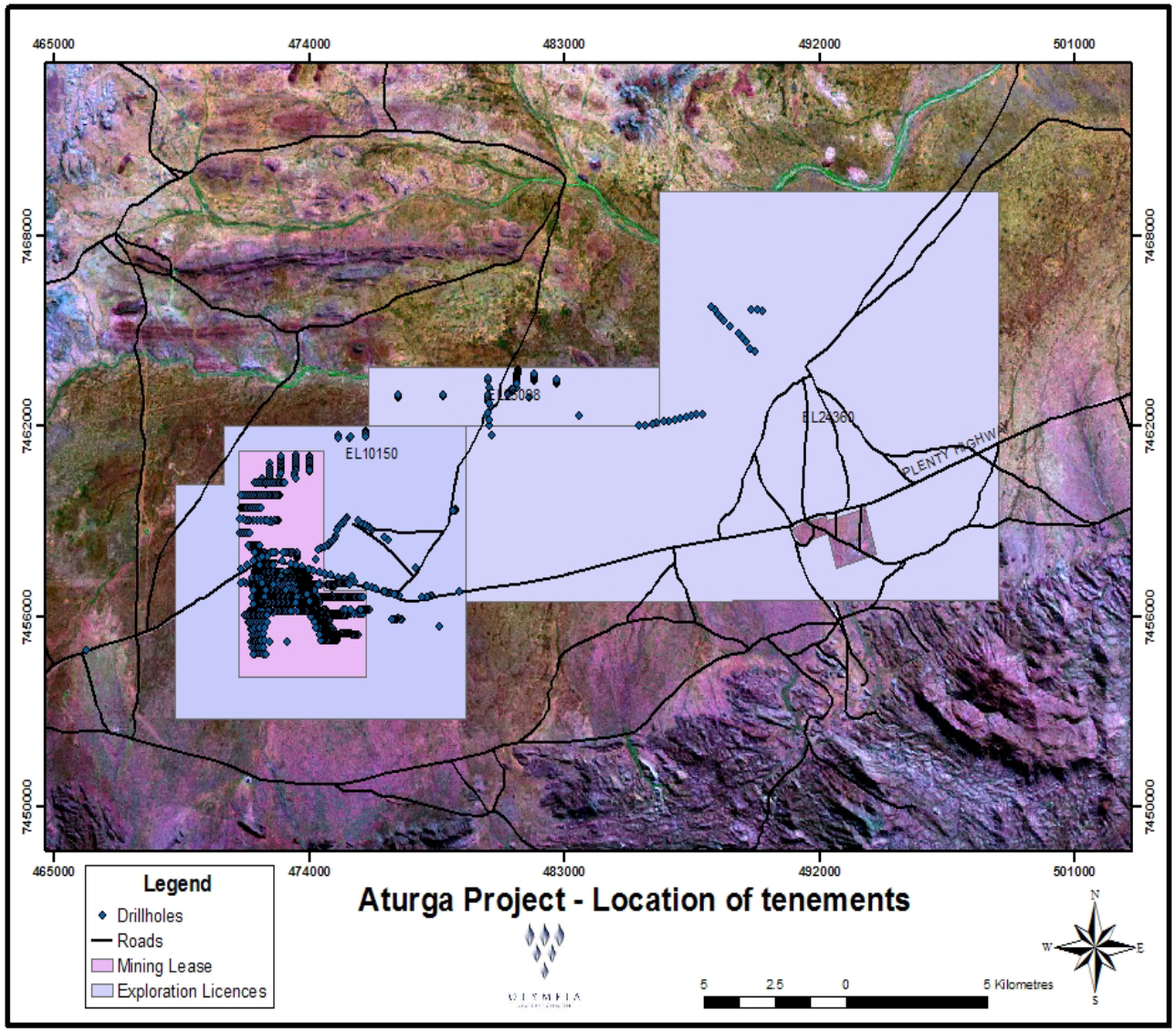

Figure 2 Tenements within the Aturga Project

Table 1 Tenement Summary

Tenement	Prospect Name	Grant Date	Area (Blocks)	Area (km^2)	Min Exp.
EL10150	Riddoch Dunes	23rd Jan 2002	29	87	$31,000
EL25098	Plenty River	2nd Oct 2006	6	18	$32,000
EL24360	Spinifex Bore	15th Sep 2006	61	183	$50,000
ML23868	Aturga	12th Aug 2005	8.4	25.3	
Total			**104.4**	**313.3**	**$113,000**

4. PREVIOUS WORK

The following is the previous work carried out on the garnet content of Harts Range Resource.

The garnet content of the heavy mineral fraction of the sands was determined by various methods, as detailed by Baxter *et al* (2003). The methods were:

- Hand sorting with rare earth magnets
- Gravity sorting on a Wilfey Table
- Grain counting of various size fractions
- S.G. separation in methyl iodide liquid (MI)

It was found that the most accurate and efficient method was MI separation. Detailed grain counts were performed by Hamilton (2003a) on ten separate size fractions of four heavy mineral composites, which were also separated by MI. The grain counts gave an average garnet content of 18.1%. The MI separations gave an average of 18.4%. The MI %garnet value is slightly overstated, owing to the presence of minor ilmenite and other oxides in the “garnet sink”. They occur predominantly in the finer fractions.

A total of 48 composite heavy mineral samples from within EL10150 had their garnet contents determined by MI separation. The heavy mineral sinks making up each composite were selected so as to reflect the average composition of the unit from which they were taken. Between 1 and 11 sinks were combined to make up each composite. The results are summarised in Table 2 and Figure 3.

.

Table 2 Heavy Mineral Garnet Contents by MI Separation

Ore Type	Composites (No.)	% Garnet in HM (Range)	% Garnet in HM (av.)
Dune	22	14.0 – 23.8	18.1
Floodplain	5	15.1 – 18.8	17.1
Paleochannel	5	16.1 – 24.6	19.4
Combined floodplain and paleochannel	13	16.9 – 35.2	22.8
Aturga Creek channel	1	29.8	29.8
Swale	2	16.4 - 19.6	18.0

In general, it appears that the coarser materials have a higher garnet content of their heavy minerals than do the finer materials. These accords with the fact that within individual samples the coarser fractions have higher garnet contents. In addition the garnet content of the samples analysed appears to vary geographically within the ore types:

- The heavy minerals of the floodplain and paleochannel have higher garnet proportions downstream (to the north and then east) than upstream.
- The heavy minerals of the dunes have a less obvious trend, which is also for higher garnet contents to the north and east.
- The heavy minerals of the river channels also, on the basis of only three samples, appear to become richer in garnet downstream. The Aturga Creek channel has a heavy mineral content of 29.8% garnet and the Plenty River channel, about 9km downstream has an average content of 48.9% garnet.

It was determined that the mineralogy done to date was insufficient to represent the Harts Range Resource.

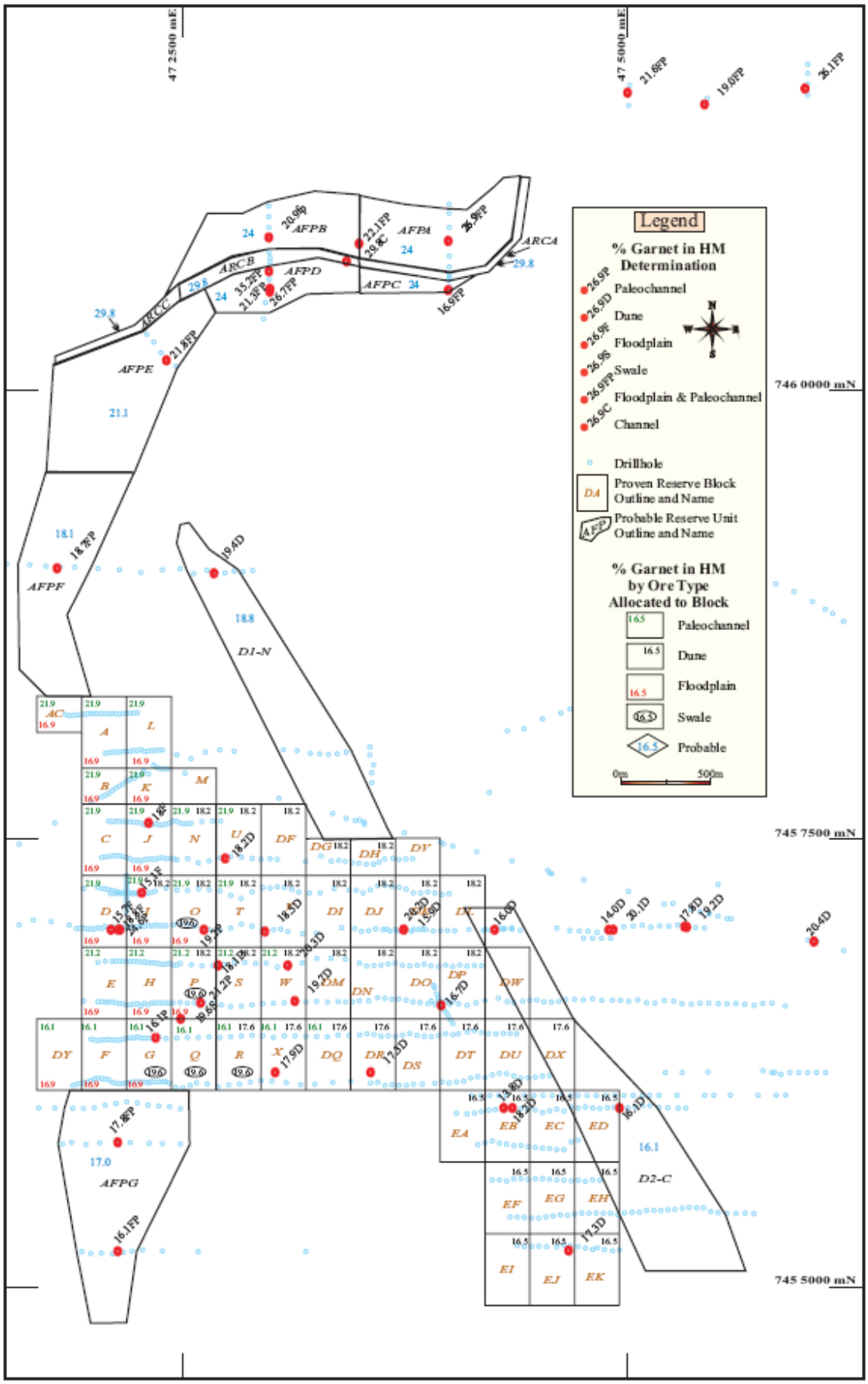

Figure 3 2003 Resource boundaries with Garnet% locations.

5. METHODOLOGY

The Aturga deposit was divided into Floodplain and Paleochannel and then further divided into measured, indicated and inferred resources. 12 composites were created from at least ten concentrates spread throughout the different resource types. The measured resource was divided into the northern, southern and total sections. The indicated resource was divided into the top section and the bottom section. The locations of the composites are shown in Figure 4 The inferred resource wasn't restricted by geological environment like the measured and inferred composites. The locations are shown in Figure 5

Samples Supplied
We were asked to prepare screened fractions and do point (grain) counts on same. The requested fractions were +600, +425, +250 and -250µm.

Methods
For ease and quickness of handling, the bulk samples were screened on the nearest size (aperture) of precision nylon cloth available. . Apertures were checked by stage micrometer.

The screened fractions were then reduced in size using a 14 chute 3mm gap riffle splitter to produce subsamples of about 3g. The sub samples were coned and quartered to produce an even smaller sample for grain counting (micro splits).

A nominal 300 grains were counted per sample. The grains were observed in air using a Zeiss binocular microscope at x25 and x40 as appropriate.

The work was carried out entirely by Roger Hamilton (MSc, 30 years experience, MAusIMM, competent person).

6. GEOLOGY

The geology of the Olympia deposits in the Harts Range has been described by Doepel (2003), who identified the following geological units:

- River Wash: Sands and gravels of the active channels of Aturga Creek and the Plenty River.
- Floodplain Deposits: Consolidated, but unaltered and unlithified, mostly from 1.5 to 4.5m thick.
- Dunes: Fixed sand-dunes, up to 20m thick. They contain carbonate alteration and some lithification, especially towards their base.
- Swales: Between the dunes. They are finer-grained than the dunes and more strongly lithified.
- Paleochannels: Older floodplain and river channel deposits unconformably beneath the floodplain, dune, and swale units. They are lithified and subject to carbonate alteration in part.
- Tertiary Clay: Tertiary clay unconformably underlies the above units. It is known from water bores in the area to be in excess of 100m thick in places. It is cream or green in colour, and contains minor sand grains.

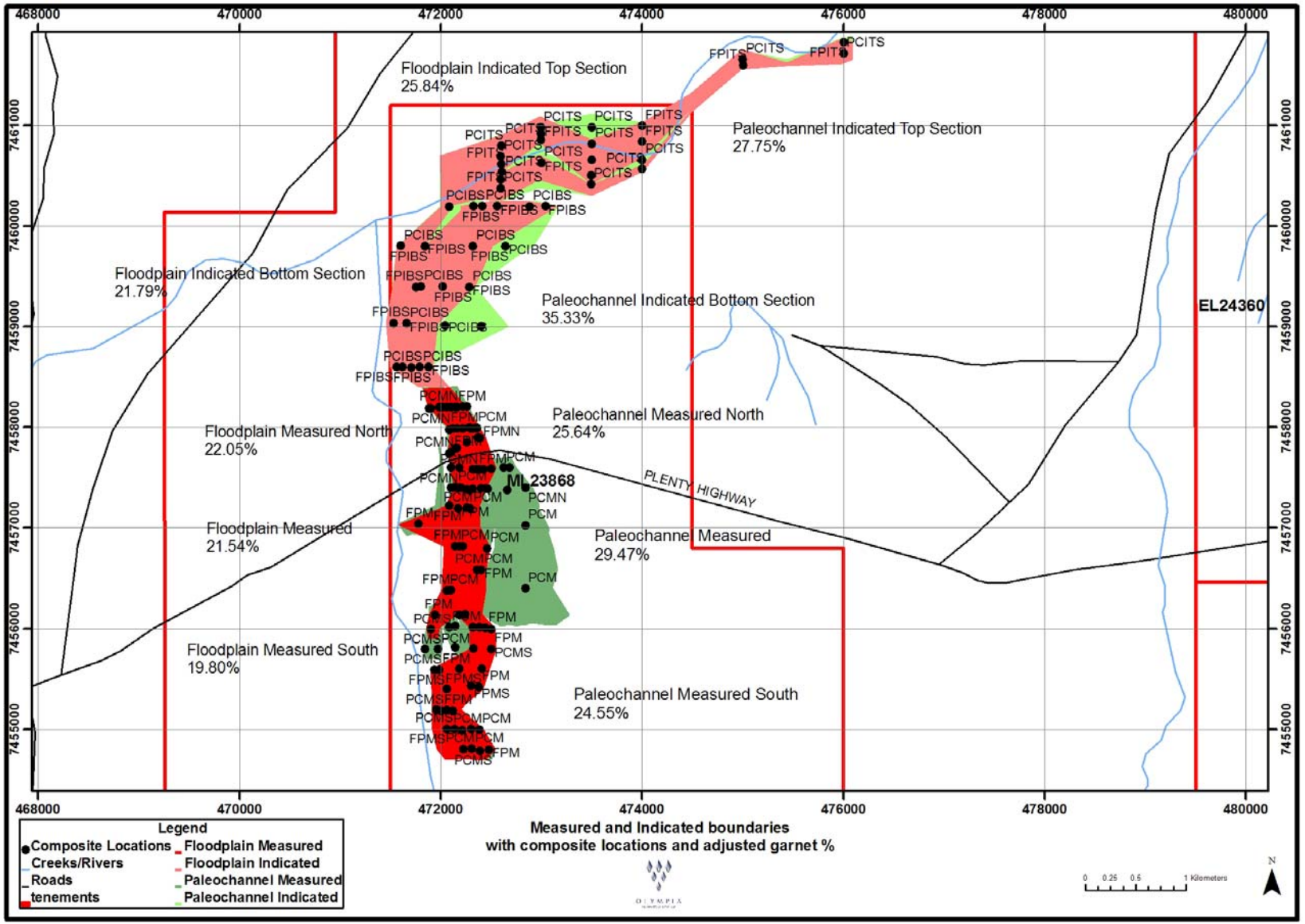

Figure 4 Location of Measured and Indicated Composites

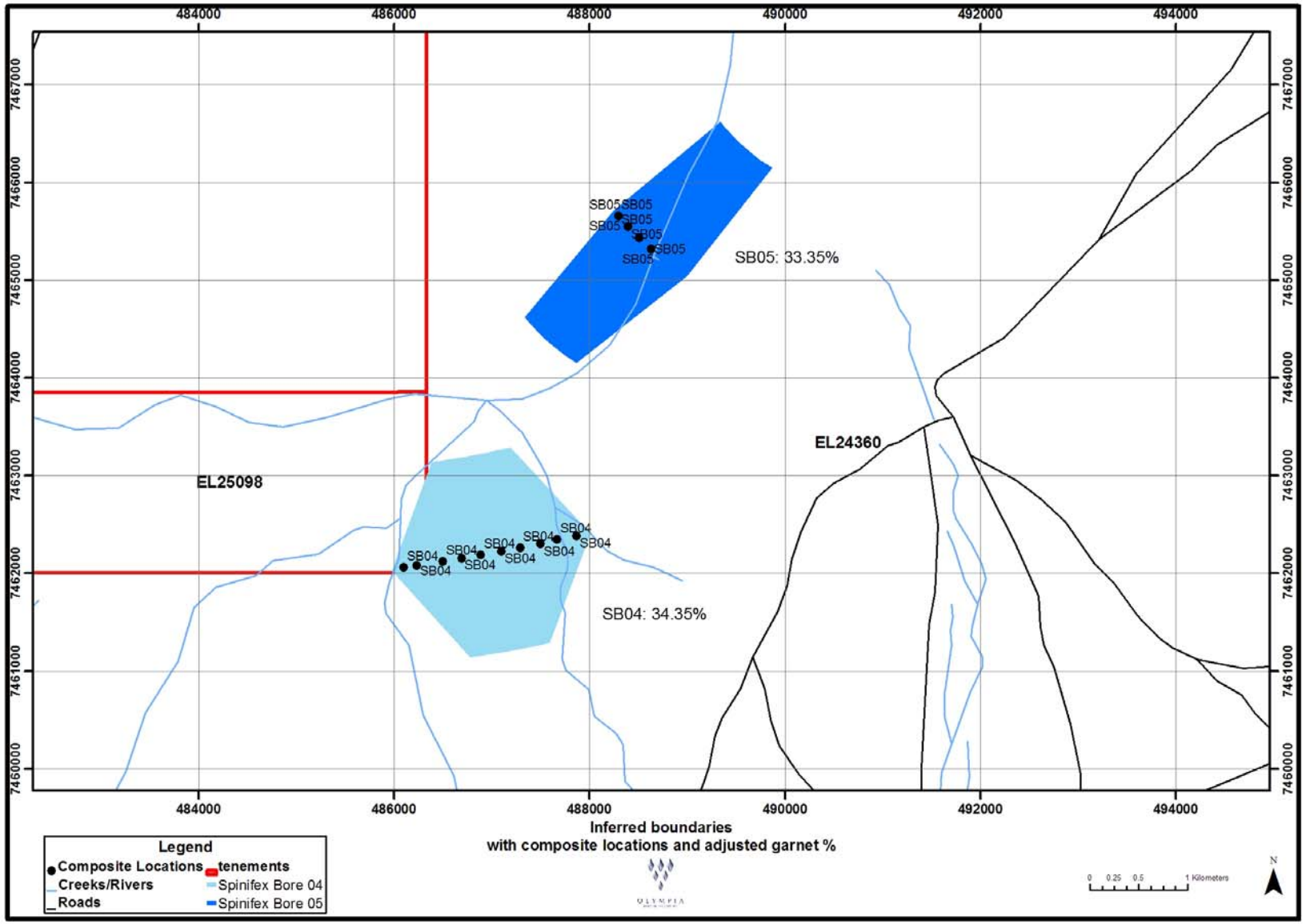

Figure 5 Location of Inferred Composites

7. RESULTS

The results are shown on Figures 4 and 5 and reported in Table 3. The percentages were adjusted to account for the different SG's of the minerals. Some were taken from test work outlined in Baxter (2004), the remaining was their designated average SG. This mineralogy identified that there is a higher garnet percentage in the paleochannel then in the floodplain. There is also a general increase from south to north of the garnet percent overall. These results will be used in the updated resource.

8. REFERENCES

Baxter, J.L. and Doepel, J.J.G., 2004. *Riddoch Garnet-AMH project. Resource and Reserves report (updated May, 2004, Olympia Resources Ltd.* CRM Report WA04/020.

Doepel, J,J,G., 2003. *Harts Range Project 2002 Drilling Report, Exploration Licences 10150 & 9190, Operator: Olympia Resources NL.* CRM Report WA03/001.

Table 3 Bulk Composites Grain Point Mineralogy, 2008

Mineral	SG	FPM	FPMN	FPMS	PCM	PCMN	PCMS	FPITS	FPIBS	PCITS	PCIBS	SB04	SB05
		(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Almandine	4.03	21.54	22.05	19.80	29.47	25.64	24.55	25.84	21.79	27.75	35.33	34.35	33.35
Hornblende	3.29	75.60	74.57	74.82	66.83	71.42	72.97	69.79	74.78	69.85	62.52	63.00	65.41
Ilmenite	4.7	0.00	0.00	2.72	0.00	0.14	0.54	1.35	1.09	0.13	0.80	0.40	0.00
Geothite	4.3	0.12	0.50	0.12	0.00	0.12	0.12	0.00	0.25	0.12	0.24	0.49	0.24
Rock	3.3	0.29	0.38	0.29	0.19	0.38	0.38	0.28	0.19	0.76	0.28	0.02	0.28
Epidote	3.4	0.59	1.48	0.10	1.94	0.59	0.29	0.29	0.00	0.00	0.10	0.77	0.00
Monazite	5	1.31	0.58	1.44	1.57	1.44	1.15	2.00	1.45	1.29	0.57	0.00	0.71
Biotite	3.1	0.54	0.45	0.72	0.00	0.27	0.00	0.44	0.45	0.09	0.18	0.97	0.00
Total		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

FPM – Floodplain Measured
FPMN – Floodplain Measured North
FPMS – Floodplain Measured South
PCM – Paleochannel Measured
PCMN – Paleochannel Measured North
PCMS – Paleochannel Measured South
FPITS – Floodplain Indicated Top Section
PTIBS – Floodplain Indicated Bottom Section
PCITS – Paleochannel Indicated Top Section
PCIBS – Paleochannel Indicated Bottom Section
SB04 – Spinifex Bore 04
SB05 – Spinifex Bore 05

APPENDIX 1

DuneLabs Pty Ltd
Technical Note
24 November 2008

Samples: 1-12

- **Samples Supplied**

We were asked to prepare screened fractions and do point (grain) counts on same. The requested fractions were +600, +425, +250 and -250µm.

- **Methods**

For ease and quickness of handling, the bulk samples were screened on the nearest size (aperture) of precision nylon cloth available. . Apertures were checked by stage micrometer.

The screened fractions were then reduced in size using a 14 chute 3mm gap riffle splitter to produce subsamples of about 3g. The sub samples were coned and quartered to produce an even smaller sample for grain counting (micro splits).

A nominal 300 grains were counted per sample. The grains were observed in air using a Zeiss binocular microscope at x25 and x40 as appropriate.

The work was carried out entirely by the author (MSc, 30 years experience, MAusIMM, competent person).

- **Results**

The results were sent to the client as tables (one per sample) in Word (Office 2006 format).

- **Comments**

- The micro splits were retained in case further work was requested. These sample will be discarded in 1 month. The large sample residues will be returned to the client.
- "Rock" means a grain aggregate dominated by hornblende. While many oversize (+600) grain have inclusions, the term was only applied to grains with more than 30% visual white minerals.
- The numbers are grain counts, i.e. numbers %'s unless stated otherwise (like weighed manual sorts).
- The low numbers of grains counted (~300 per fraction will impact adversely on minor mineral abundance estimates). For minerals with greater than 30% abundance we expect errors to be confined to +/-5% absolute, i.e. 50% means 45-55%.
- Head counts are more reliable as they were derived from, typically, counting ~1500 grains per sample.
- The discrepancy between number% and wt%'s is largely due to SG. Note that there are other factors which contribute to error. These are poor sizing (in the +600 and -

250), shape factors (amphibole morphology) and separation during splitting due to the ~1 SG unit difference between garnet and amphibole.

- Monazite is over-estimated in an “all are equal size” assumption. point counting method . Monazite occurs largely in the -250 and to the fine end of the fraction.
- Garnets are generally clean (uncoated or stained) and have few inclusions. They exhibit slight wear (blunting of sharp edges to frosting).

Roger Hamilton
Mineralogist

Table 1. Sample 1 - FPIBS

Size	+600µ		+400µ		+250µ		-250µ		HEAD
gm	9.18		19.31		34.79		95.57		158.85
Frac Wt%	5.779		12.156		21.901		60.164		100
Almandine	36.8	2.127	30.7	3.732	25.5	5.585	12.1	7.280	18.7
Hornblende	59.5	3.439	68.2	8.290	73.4	16.075	84.4	50.778	78.6
Ilmenite			0.2	0.024			1.3	0.782	0.8
Geothite	0.7	0.040					0.3	0.180	0.2
Rock	2.6	0.150							0.2
Epidote	0.2	0.012	0.2	0.024					0
Monazite							1.6	0.963	1.0
Biotite	0.2	0.012	0.7	0.085	1.1	0.241	0.3	0.180	0.5
TOTAL	100		100		100		100		100.00
Counts	576		525		259		313		1673

+600		
Almandine	0.21g	42.9wt%
Others	0.28g	57.1wt%

Size : Size fraction in microns FracWt% : Fraction weight percent Head: Fraction number% which approximates plant feed

Table 2. Sample 2 - PCIBS

Size	+600µ		+400µ		+250µ		-250µ		HEAD
gm	20.38		26.68		30.34		57.18		134.58
Frac Wt%	15.143		19.825		22.544		42.488		100
Almandine	54.2	8.208	44.8	8.882	30.5	6.876	16.6	7.053	31.0
Hornblende	41.9	6.345	55.2	10.943	67.4	15.195	81.5	34.628	67.2
Ilmenite					1.3	0.293	0.8	0.340	0.6
Geothite	1.0	0.151							0.2
Rock	2.2	0.333							0.3
Epidote	0.7	0.106							0.1
Monazite					0.5	0.113	0.7	0.297	0.4
Biotite					0.3	0.068	0.4	0.170	0.2
TOTAL	100		100		100		100		100
Counts	583		374		380		238		1575

+600	Sort and weigh	
Almandine	0.24g	61.5wt%
Others	0.15g	38.5wt%

Size : Size fraction in microns FracWt% : Fraction weight percent Head: Fraction number% which approximates plant feed

Table 3. Sample 3 - FPMN

Size	+600µ		+400µ		+250µ		-250µ		HEAD
gm	13.91		20.69		30.86		71.41		136.87
Frac Wt%	10.163		15.117		22.547		52.174		100
Almandine	26.1	2.653	24.0	3.628	15.6	3.517	17.5	9.130	18.9
Hornblende	69.5	7.063	74.8	11.308	82.7	18.646	79.0	41.217	78.3
Ilmenite									
Geothite	0.3	0.030	0.1	0.015					T
Rock	4.1	0.417							0.4
Epidote			0.8	0.121	1.3	0.293	2.1	1.096	1.5
Monazite							0.7	0.365	0.4
Biotite			0.3	0.045	0.4	0.090	0.7	0.365	0.5
TOTAL	100		100		100		100		100
Counts	345		913		330		286		1874

+600	Sort and weigh	
Almandine	0.12g	29.3wt%
Others	0.29g	70.7wt%

Size : Size fraction in microns FracWt% : Fraction weight percent Head : Fraction number% which approximates plant feed

Table 4. Sample 4 - FPM

Size	+600µ		+400µ		+250µ		-250µ		HEAD
gm	10.09		21.43		40.19		88.73		160.44
Frac Wt%	6.289		13.357		25.050		55.304		100
Almandine	27.2	1.711	27.9	3.727	23.8	5.962	12.7	7.024	18.4
Hornblende	68.6	4.314	71.7	9.577	74.5	18.661	84.1	46.511	79.1
Ilmenite									
Geothite	0.2	0.013			0.3	0.075			0.1
Rock	4.0	0.252							0.3
Epidote					0.8	0.200	0.8	0.442	0.6
Monazite							1.6	0.885	0.9
Biotite			0.4	0.053	0.6	0.150	0.8	0.442	0.6
TOTAL	100		100		100		100		100
Counts	500		333		353		244		1430

+600	Sort and weigh	
Almandine	0.20g	30.3wt%
Others	0.46g	69.7wt%

Size : Size fraction in microns FracWt% : Fraction weight percent Head: Fraction number% which approximates plant feed

Table 5. Sample 5 - PCM

Size	+600µ		+400µ		+250µ		-250µ		HEAD
gm	20.11		28.03		36.51		64.54		149.19
Frac Wt%	13.479		18.789		24.472		43.26		100
Almandine	32.1	4.327	34.5	6.482	39.5	9.666	11.9	5.148	25.6
Hornblende	64.3	8.667	64.7	12.156	58.1	14.218	83.3	36.036	71.1
Ilmenite									
Geothite									
Rock	1.8	0.243							0.2
Epidote	1.8	0.243	0.8	0.150	2.2	0.538	2.4	1.038	2.0
Monazite					0.2	0.049	2.4	1.038	1.1
Other Trash									
TOTAL	100		100		100		100		100
Counts	280		400		453		368		1501

+600	Sort and weigh	
Almandine	0.18g	34.6wt%
Others	0.34g	65.4wt%

Size : Size fraction in microns FracWt%: Fraction weight percent Head: Fraction number% which approximates plant feed

Table 6. Sample 6 - PCMS

Size	+600µ		+400µ		+250µ		-250µ		HEAD
gm	19.71		24.71		28.38		54.23		127.03
Frac Wt%	15.516		19.452		22.34		42.692		100
Almandine	34.5	5.353	26.5	5.155	21.1	4.714	13.9	5.934	21.2
Hornblende	62.1	9.635	73.1	14.219	77.7	17.358	83.3	35.562	77.2
Ilmenite	0.3	0.047					0.9	0.384	0.4
Geothite			0.4	0.078					0.1
Rock	2.8	0.434							0.4
Epidote	0.3	0.047			1.2	0.268			0.3
Monazite							1.9	0.811	0.8
Biotite									
TOTAL	100		100		100		100		100
Counts	319		323		574		324		1540

+600	Sort and Weigh	
Almandine	0.26g	44.8wt%
Others	0.32g	55.2wt%
+600	Sort and Weigh	
Almandine	0.19g	42.2wt%
Others	0.26g	57.8wt%

2 repeats

Size : Size fraction in microns FracWt%: Fraction weight percent Head : Fraction number% which approximates plant feed

Table 7. Sample 7 - FPMS

Size	+600µ		+400µ		+250µ		-250µ		HEAD
gm	9.46		17.64		33.74		92.77		153.61
Frac Wt%	6.158		11.484		21.965		60.393		100
Almandine	44.3	2.728	34.4	3.950	11.3	2.482	13.0	7.851	17.0
Hornblende	50.5	3.110	65.6	7.534	87.3	19.175	81.0	48.918	78.7
Ilmenite					0.4	0.088	3.2	1.933	2.0
Geothite	0.5	0.031							0.1
Rock	4.7	0.289							0.3
Epidote					0.6	0.132			0.1
Monazite					0.2	0.044	1.6	0.966	1.0
Biotite					0.2	0.044	1.2	0.725	0.8
TOTAL	100		100		100		100		100.0
Counts	403			320		497		247	

+600	Sort and weigh	
Almandine	0.25g	48.1wt%
Others	0.27g	51.9wt%

Size : Size fraction in microns FracWt% : Fraction weight percent Head: Fraction number% which approximates plant feed

Table 8. Sample 8 - PCITS

Size	+600µ		+400µ		+250µ		-250µ		HEAD
gm	22.23		27.35		30.79		59.29		139.66
Frac Wt%	15.917		19.583		22.046		42.453		100
Almandine	45.1	7.179	36.4	7.128	23.7	5.224	10.5	4.458	24.0
Hornblende	49.4	7.862	62.9	12.318	75.9	16.733	87.3	37.061	74.0
Ilmenite			0.5	0.098					0.1
Geothite	0.4	0.064							0.1
Rock	5.1	0.812							0.8
Epidote									
Monazite							2.2	0.934	0.9
Biotite			0.2	0.039	0.4	0.088			0.1
TOTAL	100		100		100		100		100.0
Counts	275		418		378		329		1400

+600	Sort and weigh	
Almandine	0.28g	52.8wt%
Others	0.25g	47.2wt%

Size : Size fraction in microns
FracWt% : Fraction weight percent
Head : Fraction number% which approximates plant feed

Table 9. Sample 9 - FPITS

Size	+600μ		+400μ		+250μ		-250μ		HEAD
gm	8.35		18.17		30.13		71.79		128.44
Frac Wt%	6.501		14.147		23.458		55.894		100
Almandine	38.0	2.470	38.2	5.404	26.7	6.263	14.8	8.272	22.4
Hornblende	58.0	3.771	61.0	8.630	70.9	16.632	80.7	45.106	74.1
Ilmenite							1.7	0.950	1.0
Geothite									
Rock	3.9	0.254							0.3
Epidote			0.8	0.113	0.8	0.188			0.3
Monazite					0.8	0.188	2.2	1.179	1.4
Biotite	0.1	0.007			0.8	0.188	0.6	0.335	0.5
TOTAL	100		100		100		100		
Counts	590	0	359	0	340	0	359	0	1648

+600	Sort and weigh	
Almandine	0.34g	38.2wt%
Others	0.55g	61.8wt%

Size : Size fraction in microns_FracWt% : Fraction weight percent_Head: Fraction number% which approximates plant feed

Table 10. Sample 10 – SB05

Size	+600µ		+400µ		+250µ		-250µ		HEAD
gm	10.48		17.25		28.89		77.81		134.43
Frac Wt%	7.796		12.832		21.491		57.881		100
Almandine	57.1	4.452	45.9	5.890	31.4	6.748	20.7	11.981	29.1
Hornblende	37.5	2.924	54.1	6.942	68.3	14.678	78.4	45.379	69.9
Ilmenite									
Geothite	1.5	0.117			0.3	0.064			0.2
Rock	3.9	0.304							0.3
Epidote									
Monazite							0.9	0.521	0.5
Biotite									
TOTAL	100		100		100		100		100
Counts	517		296		334		332		1479

+600	Sort and weigh	
Almandine	0.47g	68.1wt%
Others	0.22g	31.9wt%
+600	Sort and weigh	
Almandine	0.21g	65.6wt%
Others	0.11g	34.4wt%

REPEAT

Size : Size fraction in microns FracWt%: Fraction weight percent Head: Fraction number% which approximates plant feed

Table 11. Sample 11 – SB04

Size	+600µ		+400µ		+250µ		-250µ		HEAD
gm	17.69		19.78		28.31		84.37		150.15
Frac Wt%	11.782		13.173		18.854		56.190		100
Almandine	58.2	6.857	41.7	5.493	30.0	5.656	21.3	11.968	30.0
Hornblende	40.1	4.725	54.3	7.152	67.8	12.783	76.1	42.761	67.4
Ilmenite							0.5	0.281	0.3
Geothite	0.7	0.082	1.5	0.198	0.4	0.075			0.4
Rock	0.2	0.024							T
Epidote	0.2	0.024	2.5	0.329	0.9	0.170	0.5	0.281	0.8
Monazite									
Biotite	0.6	0.071			0.9	0.170	1.6	0.899	1.1
TOTAL	100		100		100		100		100
Counts	541		299		333		288		1461

+600	Sort and weigh	
Almandine	0.29g	64.4wt%
Others	0.16g	35.6wt%
+600	Sort and weigh	
Almandine	0.27g	58.7wt%
Others	0.19g	41.3wt%

REPEAT

Size : Size fraction in microns FracWt%: Fraction weight percent Head: Fraction number% which approximates plant feed

Table 12. Sample 12 - PCMN

Size	+600µ		+400µ		+250µ		-250µ		HEAD
gm	15.36		18.95		26.77		63.90		124.98
Frac Wt%	12.290		15.162		21.419		51.128		100
Almandine	31.6	3.884	30.4	4.609	20.2	4.327	18.1	9.254	22.1
Hornblende	64.3	7.902	66.6	10.098	77.8	16.663	79.6	40.698	75.4
Ilmenite	0.2	0.025	0.6	0.090					0.1
Geothite	0.3	0.037	0.6	0.090					0.1
Rock	3.4	0.418							0.4
Epidote	0.2	0.037	0.6	0.090	1.6	0.343	0.3	0.153	0.6
Monazite							2.0	1.023	1.0
Biotite			1.2	0.182	0.4	0.086			0.3
TOTAL			100		100		100		100
Counts	589		268		357		342		1556

+600	Sort and weigh	
Almandine	0.34g	35.1wt%
Others	0.63g	64.9wt%

Size : Size fraction in microns FracWt% : Fraction weight percent Head: Fraction number% which approximates plant fee