

Pilgangoora high grade core
PLS progresses Pilgangoora with met tests, drilling

Recommendation

Strong BUY; High Risk

Price

7.9c

Valuation

25c

PLS has made a series of announcements recently

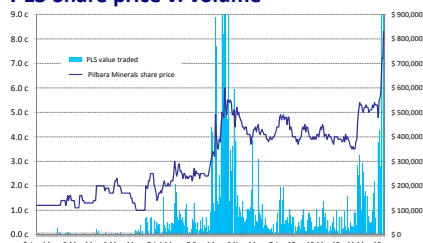
- **25 May : high grade spodumene concentrate, with low Fe and high recoveries;**
- **2 June : Resource “upgrade” at Pilgangoora, with virtually no change in overall tonnes and grade, but with a significant high grade portion;**
- **9 June : further thick, higher grade intercepts from drilling at Pilgangoora;**

On the basis of the above 3 factors, and taking into account the capital raising announced on 1 June, Beer & Co upgrades our risked valuation to 25c.

Snapshot

Market Cap	\$50m
Shares on Issue	635.5m
Cash on hand (31 March 2015)	\$1.3m
52 Week High	9.2c
52 Week Low	1.0c
1 month / 6 month VWAP	6.6c / 5.2c

PLS Share price v. volume



Pilbara Minerals acquired a 50% stake in the Tabba Tabba project in October 2013.

PLS published a feasibility study on Tabba Tabba in February 2014 and has since raised equity to bring it into production.

In May 2014, PLS announced the acquisition of 100% of Pilgangoora, 55km from Tabba Tabba in the Pilbara region.

PLS is progressing a feasibility study for Pilgangoora and is awaiting a permit to begin production at Tabba Tabba

Author : Pieter Bruinstroop
pbruinstroop@beerandco.com.au

Pilgangoora metallurgical testwork

PLS has samples of Pilgangoora ore with a number of parties.

The first test results showed that the ore concentrates to 6.5% Li₂O (benchmark is 6.0%) with only 0.11% Fe (benchmark is 0.06% to 0.17% Fe). Hence it is a high Li₂O, low Fe concentrate.

Reported Li₂O recovery was 90% at the flotation stage. Our analysis assumes 80% overall. We are not upgrading at this stage.

Resource “upgraded”

PLS now has over 20Mt in Resources plus an Exploration Target of a further 50 – 60Mt. However, we model only a 1.0Mt/yr operation.

PLS also stated that the Central Zone contains a high grade core of 12.73Mt at 1.42% Li₂O.

More, thick, high grade intercepts from drilling at Pilgangoora

The resource upgrade was based on drill results to the end of March. Since then, PLS has reported a plethora of thick high grade intercepts. These suggest significant further upside potential to our valuation of Pilgangoora.

Higher grade mining inventory leads to higher valuation.

Of the \$8m required to bring Tabba Tabba into production, \$7m has been spent. PLS has executed a further equity raising, mostly by Convertible Notes. We expect these notes will be converted into equity and this ensures that PLS is funded to bring Pilgangoora into production.

The higher grade mining inventory, starting with 12.7Mt at 1.42% Li₂O, has increased our valuation, out-weighting the dilution of the raising.

Beer & Co confirms our Strong BUY, High Risk recommendation.

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Pilgangoora Resource Upgrade

Pilgangoora Resources

On 2 June, 2015, PLS announced an “upgraded” Mineral Resources estimate and Exploration Target, as shown in Figures 1 and 2. The resource announcement includes drilling only to the end of March 2015.

PLS Resource upgrade :

- Indicated resources same tonnes, trivially lower grade;
- Inferred resources are slightly more tonnes at slightly lower grade

Figure 1 : Pilgangoora Resource estimate, June 2015

Category		Ta ₂ O ₅ grade		Contained Ta ₂ O ₅		Li ₂ O grade		Contained Li ₂ O	
Indicated	Ta ₂ O ₅	6.0 Mt	233 ppm	1,396 t	3.1 Mlb				
	Li ₂ O	4.7 Mt				1.36 %	64,300 t		
Inferred	Ta ₂ O ₅	17.8 Mt	208 ppm	3,710 t	8.2 Mlb				
	Li ₂ O	15.7 Mt				1.10 %	172,800 t		
TOTAL	Ta₂O₅	23.8 Mt	214 ppm	5,107 t	11.3 Mlb				
	Li₂O	20.5 Mt				1.16 %	237,100 t		

Source : PLS ASX announcement, 2 June 2015, Beer & Co

The difference between the volume for tantalite and for spodumene arises as the estimate includes some drilling, before PLS acquired the tenements, which sought only tantalite and so the samples were not assayed for spodumene.

The major changes from the previous Resource estimate, announced on 9 March, are :

- The Indicated Resource is the same volume, but the Ta₂O₅ grade is 2ppm lower (ie. rounding error) and the Li₂O grade 0.02% lower (again, rounding error);
- The Inferred Resource is 2.1Mt bigger for the Tantalite, but the grade is 12ppm lower (208ppm v. 220ppm) and 3.8Mt larger for the Spodumene, with the grade 0.03% higher (at 1.10% v. 1.07%).

Exploration Target is increased, but more than enough tonnes before

Figure 2 : Pilgangoora Exploration Target, June 2015

			Li ₂ O grade		Ta ₂ O ₅ grade	
Northern area	20 Mt	- 25 Mt	1.2 %	- 1.5 %	200 ppm	- 250 ppm
Central & Southern	30 Mt	- 35 Mt	1.2 %	- 1.5 %	150 ppm	- 200 ppm
TOTAL	50 Mt	- 60 Mt	1.2 %	- 1.5 %	175 ppm	- 225 ppm

Source : PLS ASX announcement, 2 June 2015, Beer & Co

Grade – tonnage curve shows a smaller, high grade zone

The size of the Exploration target has increased by 25Mt. The Li₂O grade has remained the same but the Ta₂O₅ grade is 50ppm lower for the Central and Southern zones, and the same for the Northern zone.

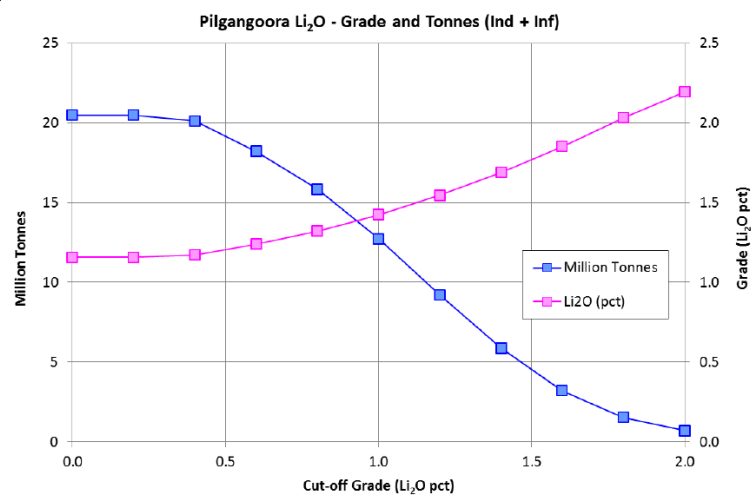
High Grade Zone

We model Pilgangoora as a 1.0Mt/.yr operation. The key to valuation is grade rather than tonnes.

Figure 3 is a tonnage – grade chart from PLS’s 2 June 2015 resource announcement. PLS state that using a cut-off grade of 1.0% Li₂O, the resulting resource is

12.73Mt at 1.42% Li₂O.

Figure 3 : Grade v tonnage curve for Pilgangoora



Source : PLS ASX announcement, 2 June 2015.

Revised Mining Inventory

For an operation at 1.0Mt/yr, in Beer & Co’s view, the target resource would be about 15Mt, with a Mining Inventory of about 10Mt; that gives a 10 year mine life, with time and money to find more and improve the grade.

Accordingly, there is little value in the last 50Mt or so of a 70Mt inventory.

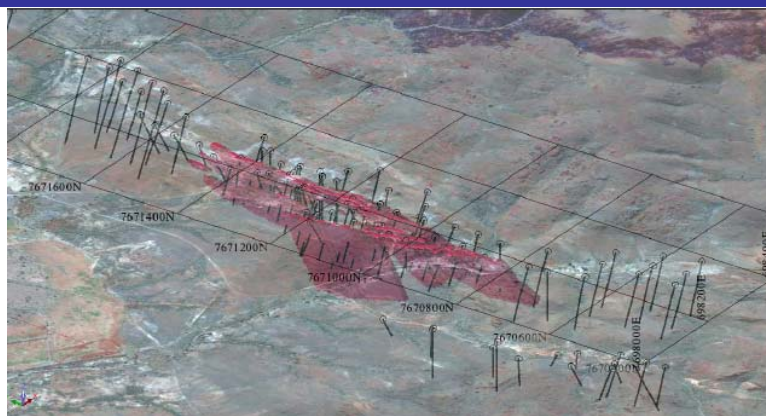
PLS is continuing to drill as :

- Drilling is currently cheap; and
- PLS is searching for a coherent, high grade portion on which to begin operations.

Accordingly, Beer & Co’s revised mining inventory is focussed on the high grade core identified by PLS. The bulk of this resource is in the Central Zone and the newly defined south-western pegmatite, so that it could “hang together”, as shown in Figure 4.

Beer & Co revises our mining inventory to focus on the higher grade core

Figure 4 : Central Zone mineralisation



Source : PLS ASX announcement, 9 March 2015

Figure 5 shows the revised mining inventory used for Pilgangoora in this analysis, which is based on the resources shown in Figure 1 and Figure 3, plus the Exploration target shown in Figure 2.

Figure 5 : Mining Inventory used in Beer & Co's analysis

		Grade		Contained metal	
		Li ₂ O	Ta ₂ O ₅	Li ₂ O	Ta ₂ O ₅
High Grade	12.73 Mt	1.42 %	225 ppm	181 kt	6.3 Mlb
Other Resources	11.10 Mt	1.27 %	202 ppm	141 kt	4.9 Mlb
Other Mineralisation	52.88 Mt	1.27 %	200 ppm	672 kt	23.3 Mlb
TOTAL	76.71 Mt	1.30 %	204 ppm	993 kt	34.6 Mlb

Source : PLS ASX announcement, 2 June 2015, Beer & Co

Further High Grade Drill Results

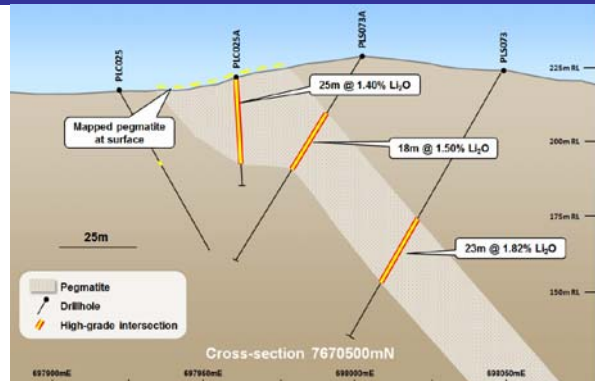
More good Li₂O intercepts, but shows that Ta₂O₅ has lower grades at south end

On 9 June 2015, PLS reported further drill results from 3,716m of 37 RC holes in the southern area of Pilgangoora. Better results included :

- 26m at 1.68% Li₂O and 49ppm Ta₂O₅, from 14m, including
 - 3m at 2.08% Li₂O and 40ppm Ta₂O₅, from 20m; and
 - 4m at 2.06% Li₂O and 35ppm Ta₂O₅, from 25m;
- 7m at 1.86% Li₂O and 50ppm Ta₂O₅, from 44m, including
 - 2m at 2.66% Li₂O and 60ppm Ta₂O₅, from 45m
- 11m at 1.79% Li₂O and 59ppm Ta₂O₅, from 46m, including
 - 4m at 2.38% Li₂O and 60ppm Ta₂O₅, from 46m.

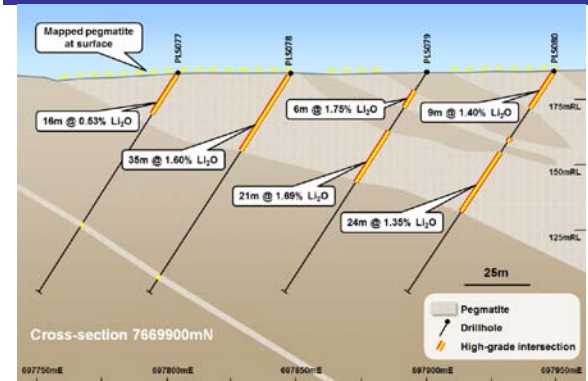
Figure 6 shows good grades over thick intercepts from Pilgangoora drilling.

Figure 6a : Cross Section of Pilgangoora mineralisation



Source : PLS ASX announcement, 2 June 2015.

Figure 6b : Cross Section of Pilgangoora



Source : PLS ASX announcement, 2 June 2015.

While the Li₂O grades are high, the Ta₂O₅ grades are low, supporting the observation that the Ta₂O₅ grades decline towards the south. Note that 150ppm Ta₂O₅ has about the same value as 0.40% Li₂O, so these results are not superior to the high grade resource.

PLS has since re-located the drill rig to the northern portion of the tenement area before completing any required infill drilling.

Metallurgical Testwork

On 25 May, PLS announced results from its first batch of metallurgical testwork.

Background

There are 2 forms of metallurgical testwork being done :

- Work to produce a concentrate, grading at least 6%, for sale to consumers; and
- Consumers are testing the resulting concentrate to determine how well the Pilgangoora product can fulfil their needs.

The results reported on 25 May, 2015, relate to the former.

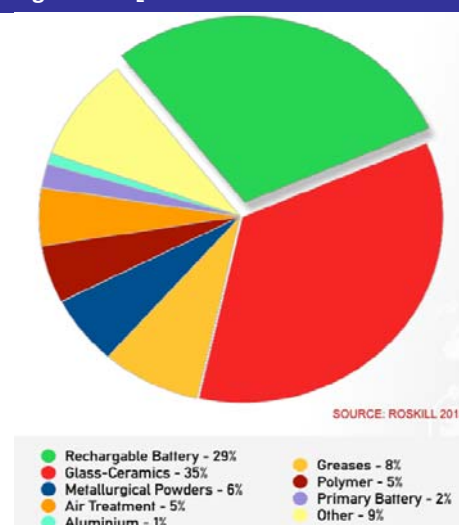
PLS has received requests from 5 different companies to test the concentrate.

Figure 7 shows the range of demands for Li_2O , of which glass – ceramics is the most significant; Li_2O has a zero co-efficient of expansion making it necessary as an additive for large panes of glass, especially as used in high rise buildings.

While Figure 7 shows that the major demand is glass – ceramics, Figure 8 shows that the projected demand for re-chargeable batteries, based on lithium carbonate (Li_2CO_3), is projected to grow strongly and soon dominate.

PLS's Li_2O is directed at the glass-ceramics segment, which is still the largest user, though rechargeable batteries are expected to become a larger user

Figure 7 : Li_2O demand



Source : PLS June 2015 presentation

Concentrate Production

To produce a saleable concentrate, it must :

- Have a minimum 6% Li_2O content; and
- An iron (Fe) content of no more than 0.116% (or 0.17% Fe_2O_3).

The 25 May 2015 announcement referred to a 100kg bulk sample of Pilgangoora material tested by the German industrial minerals specialists, ANZAPLAN.

There were two stages to the testwork : the first being flotation testing, and the second stage being magnetic separation, followed by screening.

Met tests results show a high grade concentrate, with low iron and good recoveries

The flotation stage :

- Recovered 90% of the assayed Li_2O ; and
- Produced a concentrate assaying 5.7% Li_2O and 0.37% Fe_2O_3 .

Magnetic separation reduced the Fe_2O_3 from 0.37% to 0.11%.

Screening out the fines, to produce a product of 100 to 300 μm (ie. 1/10 to 3/10 of a millimetre) gave a final specification of

- 6.5% Li_2O ; and
- 0.09% Fe

Figure 8 : Historical and projected Li_2O demand



Source : PLS June 2015 presentation

Conclusions

The results reported show that the Pilgangoora ore can be upgrade to a good to high quality feed for glass – ceramics production.

There are more tests to be done, including some by a firm that believes it has a process to produce battery grade Li_2CO_3 , which requires 99.9% Li_2CO_3 from spodumene.

The recovery of 90% of Li_2O at the flotation stage, suggests that overall recoveries could be higher than the 80% assumed in Beer & Co's analysis.

Other Updates

Tabba Tabba is still waiting for its works approval

Tabba Tabba

PLS is still waiting for the Works Approval to begin on-site construction.

In their June 2015 presentation, PLS advised that \$7m of the \$8m for the project had already been spent.

PLS also advised that the plant has been trucked to site as approval is expected in June.

Capital Raising

Due to the delay in the start of production from Tabba Tabba, PLS has been forced to raise more capital. This has been done in 2 parts, with the first part being a placement of 17.0m PLS shares at 4.5c each.

The second part of the raising is by the issue of 2 tranches of a Secured Convertible Note realising a total of \$5.7m. The holders of the notes also receive a total of 71.25m options, exercisable at 5c.

The notes are convertible at the holder's option at a 20% discount to the 5 day VWAP at any time after 6 months.

Valuation of PLS

The series of announcements have been generally positive for operations.

However, the capital raising is dilutive (as it must be given that our valuation is well above the share price).

Description

PLS has made a number of announcements impacting Beer & Co's valuation :

- Our start-up for Tabba Tabba has been further deferred, to August;
- The equity raising is at a discount to the market price, while our valuation is above the market price, so while the raising ensures that PLS is funded to bring Pilgangoora into production, the raising is dilutionary;
- We have revised the mining inventory to focus on the 12Mt of higher grade material at Pilgangoora first.

Financial Projections

Figure 9 shows Beer & Co's projected financial outcomes for PLS, combining PLS's 50% share of Tabba Tabba plus 100% of Pilgangoora.

It shows

- Pilgangoora ramps up to 1,000kt/yr, with the extra being PLS's share of Tabba Tabba
- Production of Li₂O is zero until Pilgangoora begins production;
- Production of Li₂O falls away after 2023, when the high grade material at Pilgangoora (refer to Figure 5) is exhausted.

Figure 9 : Beer & Co projected financial outcomes

AUD m	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2027-28	2028-29	2029-30	2030-31	2031-32
Ore Mined	0 kt	49 kt	75 kt	795 kt	1,120 kt	1,120 kt	1,120 kt	1,150 kt	1,000 kt	1,000 kt	1,000 kt	1,000 kt	1,000 kt
TazOs sold	0k lb	104k lb	117k lb	387k lb	547k lb	551k lb	551k lb	558k lb	421k lb	421k lb	421k lb	376k lb	376k lb
Li ₂ O sold	0.0M lb	0.0M lb	0.0M lb	15.1M lb	24.8M lb	25.0M lb	25.0M lb	25.0M lb	25.0M lb	25.0M lb	25.0M lb	22.5M lb	22.4M lb
TazOs revenue	0.0	8.6	9.7	31.9	45.2	45.5	45.5	46.0	34.8	34.8	34.8	31.0	31.0
Li ₂ O revenue	0.0	0.0	0.0	45.2	74.4	75.1	75.1	75.1	75.1	75.1	75.1	67.6	67.2
Total Revenue	0.2	9.2	10.7	78.1	120.6	121.6	121.6	122.2	110.9	110.9	110.9	99.7	99.2
Cost of Goods Sold	0.0	(3.9)	(4.1)	(42.7)	(59.3)	(60.3)	(61.3)	(63.6)	(53.9)	(54.0)	(54.0)	(54.1)	(54.2)
Corporate Costs	(1.0)	(1.3)	(1.3)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)
Dep'n & Amort'sn	0.0	(5.5)	(2.3)	(1.1)	(2.5)	(2.5)	(2.5)	(2.5)	(2.2)	(2.2)	(2.2)	(2.2)	(2.2)
E B I T	(0.8)	(1.5)	3.1	32.8	57.3	57.3	56.3	54.5	53.3	53.2	53.1	41.8	41.3
Interest Expense	0.0	0.0	0.0	(0.9)	(0.7)	(0.5)	(0.3)	(0.1)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
Tax Expense	0.0	0.0	(0.9)	(9.6)	(17.0)	(17.0)	(16.8)	(16.3)	(16.0)	(16.0)	(15.9)	(12.5)	(12.4)
NPAT	(0.8)	(1.5)	2.2	22.3	39.6	39.7	39.2	38.1	37.3	37.2	37.2	29.3	28.9
Ordinary shares - year end	618.5m	651.6m	833.9m	833.9m	833.9m	833.9m	833.9m	833.9m	833.9m	833.9m	833.9m	833.9m	833.9m
Earnings per Share	(0.1c)	(0.2c)	0.3 c	2.7 c	4.7 c	4.8 c	4.7 c	4.6 c	4.5 c	4.5 c	4.5 c	3.5 c	3.5 c

Source : Beer & Co estimates

Revised Valuation of PLS

Figure 9 shows an increase in the shares on issue as Beer & Co expects the CNs to be converted into equity. Our projections are that PLS will have nearly, but not quite, enough cash to redeem these notes if the option was with PLS.

Figure 10 shows the detail of Beer & Co's revised valuation of PLS.

Beer & Co's revised valuation is now 25c/share

Figure 10 : Beer & Co's valuation of PLS now 25c

discount rate = 12.0 %	risk :	30-Jun-14		11-Jun-15	
		100%	Product	per share	
Tabba Tabba Resources	85 %	\$ 3m	\$ 3m	0.4 c	0.7 c
Tabba Tabba Extensions	65 %	\$ 3m	\$ 2m	0.3 c	0.4 c
Strelly	45 %	\$ 2m	\$ 1m	0.1 c	0.1 c
franking credits	50 %	\$ 1m	\$ 1m	0.1 c	0.1 c
Pilgangoora Indicated	50 %	\$ 159m	\$ 79m	9.5 c	14.7 c
Pilgangoora Inferred	40 %	\$ 28m	\$ 11m	1.4 c	2.2 c
Pilgangoora Extension	20 %	\$ 7m	\$ 1m	0.2 c	0.4 c
franking credits	20 %	\$ 78m	\$ 29m	3.5 c	5.9 c
Corporate	100 %	(\$8m)	(\$8m)	(0.9c)	(0.9c)
Cash / debt	100 %	(\$0m)	(\$0m)	(0.0c)	(0.1c)
cash raised	100 %	\$ 13m	\$ 13m	1.5 c	1.2 c
TOTAL		\$ 287m	\$ 133m	15.8 c	24.6 c
Shares on issue		330.3m	FPO shares	110.4m options	
		288.2m	issued FY15	110.4m op. ex'd	
		108.0m	CN conversion		

Source : Beer & Co estimates

Figure 10 shows

- While the focus may be on Tabba Tabba to get into production, it is only a very small part of the overall value of PLS, which is focussed on Pilgangoora;
- PLS's accounts for June 2014 treated the convertible notes on issue at that time as debt, though most have since been converted into equity.

Beer & Co maintains a Strong BUY, High Risk recommendation

Conclusions

Beer & Co initiated research on PLS in September 2014. At that time the share price was 2.5c and our valuation was 10c.

Despite the delays to Tabba Tabba, Beer & Co has progressively upgraded our valuation, as we have suggested was possible.

Beer & Co sees further upside potential from :

- Successful project delivery and hence de-risking;
- Further upgrades to the Pilgangoora estimate; and
- Reduced costs through lower waste to ore for Pilgangoora, as our analysis assumes 10t of waste per tonne of ore, and Figure 6 shows the potential for a lower ratio.

Beer & Co maintains our Strong BUY, High Risk recommendation.

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Report prepared by : Pieter Bruinstroop pbruinstroop@beerandco.com.au

BEER & CO PTY LTD ABN 88 158 837 186,
AUTHORISED REPRESENTATIVE MELBOURNE VENTURE SECURITIES PTY LTD AFSL No. 224 313

Melbourne Office:
Suite 4, Level 2, Bank House
11 - 19 Bank Place,
Melbourne, Vic, Australia 3000
Telephone: (+613) 9600 3599
Facsimile: (+613) 9602 2291
Email: info@beerandco.com.au
Web: www.beerandco.com.au