

21 June 2018

Australia

EQUITIES

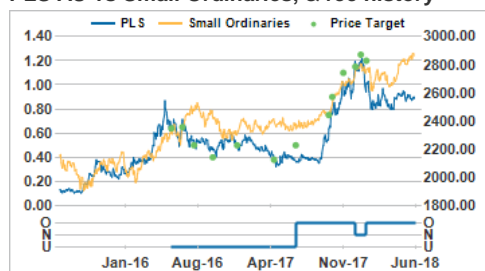
PLS AU Outperform
Price (at 06:10, 20 Jun 2018 GMT) A\$0.90

Valuation	A\$	1.21
- DCF (WACC 10.0%, beta 1.6, ERP 5.0%, RFR 3.8%)		
12-month target	A\$	1.20
12-month TSR	%	+33.3
Volatility Index		Very High
GICS sector		Materials
Market cap	A\$m	1,452
30-day avg turnover	A\$m	4.0
Number shares on issue	m	1,613

Investment fundamentals

Year end 30 Jun		2017A	2018E	2019E	2020E
Revenue	m	0.0	30.1	421.7	590.5
EBIT	m	-28.0	2.1	111.2	273.2
Reported profit	m	-26.0	-5.7	60.7	168.4
Adjusted profit	m	-26.0	-6.0	60.7	168.4
Gross cashflow	m	-16.1	-2.2	90.0	228.2
CFPS	¢	-1.3	-0.1	5.2	13.1
CFPS growth	%	67.2	90.2	nfmf	153.7
PGCFPS	x	nfmf	nfmf	17.4	6.9
PGCFPS rel	x	nfmf	nfmf	1.60	0.70
EPS adj	¢	-2.1	-0.4	3.5	9.7
EPS adj growth	%	60.0	83.2	nfmf	177.6
PER adj	x	nfmf	nfmf	25.9	9.3
PER rel	x	nfmf	nfmf	1.60	0.66
Total DPS	¢	0.0	0.0	0.0	0.0
Total div yield	%	0.0	0.0	0.0	0.0
ROA	%	-12.8	0.4	14.0	27.2
ROE	%	-17.4	-2.1	15.2	33.7
EV/EBITDA	x	-64.0	268.7	11.5	4.9
Net debt/equity	%	-48.5	23.7	53.3	-3.1
P/BV	x	5.5	4.3	3.6	2.8

PLS AU vs Small Ordinaries, & rec history



Note: Recommendation timeline - if not a continuous line, then there was no Macquarie coverage at the time or there was an embargo period.

Source: FactSet, Macquarie Research, June 2018
(all figures in AUD unless noted)

Analysts

Macquarie Securities (Australia) Limited



Ben Crowley +61 8 9224 0839
ben.crowley@macquarie.com



Hayden Bairstow +61 8 9224 0838
hayden.bairstow@macquarie.com



Hai Le +61 8 9224 0886
hai.le@macquarie.com



Andrew Bowler +61 8 9224 0846
andrew.bowler@macquarie.com

Pilbara Minerals

First concentrates at Pilgangoora

Key points

- PLS has produced its first Spodumene and Tantalite concentrates from the Pilgangoora fines flotation circuit ahead of schedule.
- PLS will commence commissioning the coarse circuit over the coming weeks and expects to reach full production in 6-9 months.
- We expect PLS to become a mainstay of Australian spodumene production.

Event

- PLS has produced its first spodumene and tantalite concentrates from its Pilgangoora Lithium Tantalum project.

Impact

- First concentrates ahead of schedule.** PLS has produced its first spodumene and tantalite concentrates ahead of its schedule and our expectation. The concentrates have not yet been tested for quality but PLS reports the plant is performing well. This initial concentrate is from the fines flotation circuit with commissioning of the coarse DMS circuit expected in six weeks' time. PLS is targeting Stage 1's full ~350ktpa production rate in 6-9 months and its first shipment of product in August, broadly in line with our forecasts.
- First DSO payment received.** PLS announced the first shipment of DSO earlier this month. The product is on specification and PLS has already received payment for the first month's production.

Earnings and target price revision

- No change.

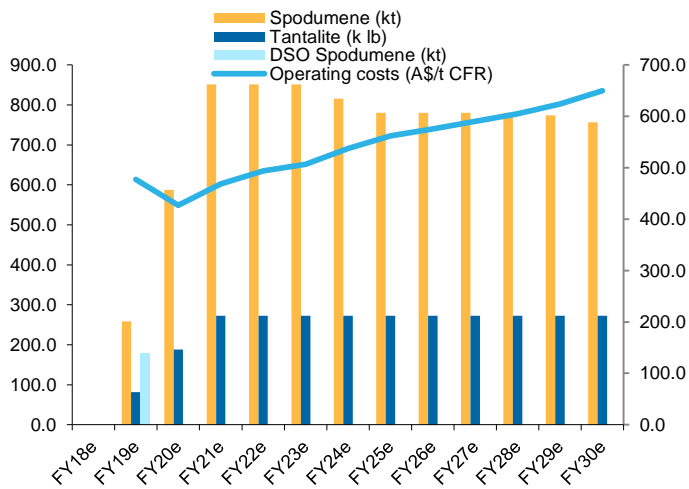
Price catalyst

- 12-month price target: A\$1.20 based on a Sum-of-the-parts NPV methodology.
- Catalyst: The successful commissioning and ramp-up of Pilgangoora's processing facility remains key for PLS. PLS expects to bring the dense media separation circuit, which produces a coarse concentrate, into commissioning over the coming weeks. A decision on going ahead with the Stage 2 expansion is expect in the near term.

Action and recommendation

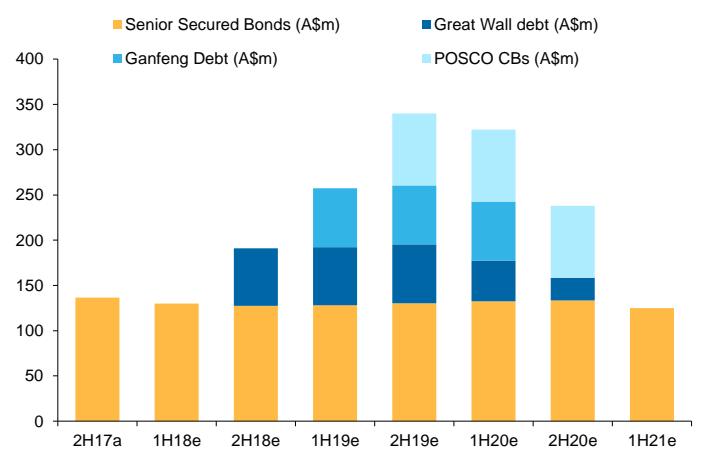
- Maintain Outperform.** Producing first concentrate in such a short period of time indicates to us that the additional investment and rigor that has been put into the Pilgangoora plant is already paying off. When combined with Pilgangoora's superior geology we continue to believe that PLS's operation will become one of the mainstays of Australian hardrock lithium (and tantalum) production. That the build has been completed in such an aggressive timeframe is impressive. A final decision on pushing ahead with the Stage 2 expansion to 800ktpa is expected later this year but with funding already committed and the early success of Stage 1, we see this as fait accompli.

Fig 1 Pilgangoora production and costs



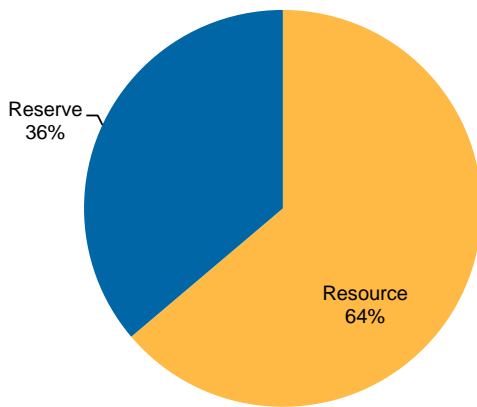
Source: PLS, Macquarie Research, June 2018

Fig 2 PLS debt facilities



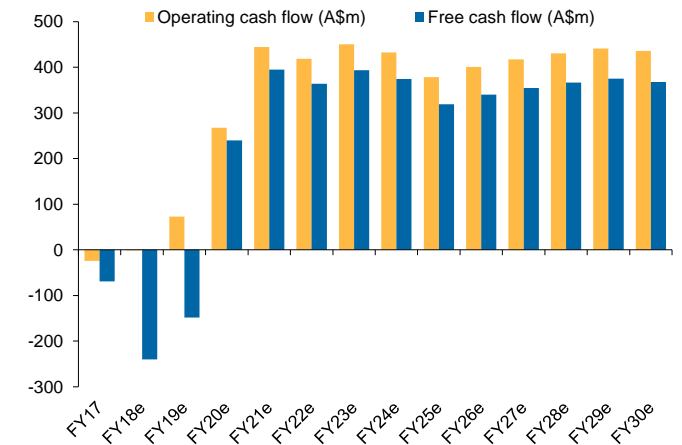
Source: PLS, Macquarie Research, June 2018

Fig 3 Pilgangoora resource and reserve breakdown



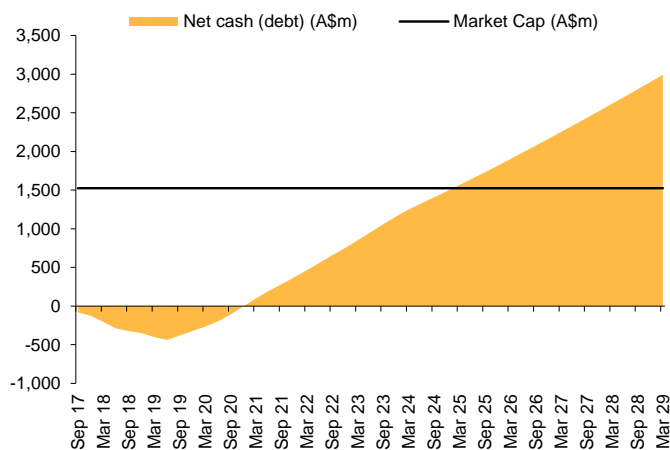
Source: PLS, Macquarie Research, June 2018

Fig 4 PLS operating and free cash flow



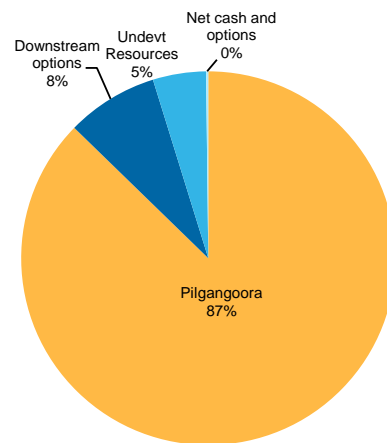
Source: PLS, Macquarie Research, June 2018

Fig 5 PLS cumulative cash generation



Source: PLS, Macquarie Research, June 2018

Fig 6 PLS NPV breakdown



Source: PLS, Macquarie Research, June 2018

Fig 7 PLS – financials

Pilbara Minerals																	
ASX: PLS	Price: (A\$ps)	0.90		Year end: Jun				Rating: Outperform	Up/dn	TSR							
	Mkt cap: (A\$m)	1,541		Diluted shares (m)				1,713	Target: 1.20	33% 33%							
ASSUMPTIONS		FY17	FY18e	FY19e	FY20e	FY21e	FY22e	FY23e	ATTRIBUTABLE MINE OUTPUT								
Exchange Rate	A\$/US\$	0.75	0.78	0.78	0.75	0.75	0.75	0.75	Spodumene (kt)								
Lithium Carbonate Equivalent	US\$/t	10,698	12,084	8,163	7,525	8,813	10,875	11,913	Pilgangoora	kt	-	-	258	587	851	851	851
Spumene	US\$/t	765	977	809	741	813	834	864	Pilgangoora DSO	kt	-	-	180	0	0	0	0
Tantalum	US\$/t	107	74	50	50	52	54	56	Total	kt	-	-	258	587	851	851	851
RATIO ANALYSIS		FY17	FY18e	FY19e	FY20e	FY21e	FY22e	FY23e	Tantalite (k lb)								
Diluted share capital	m	1,230	1,744	1,744	1,744	1,744	1,744	1,743.7	Pilgangoora	k lb	-	-	82	188	272	272	272
EPS (diluted and pre sig. items)	A¢	-2.1	-0.4	3.5	9.7	18.2	19.1	20.6	Total	k lb	-	-	82	188	272	272	272
P/E	x	-42.6x	-250.3x	25.9x	9.3x	4.9x	4.7x	4.4x	Sales								
CFPS	A¢	(2.0)	(0.1)	4.2	15.3	25.5	24.0	25.8	Spodumene	kt	-	-	258	587	851	851	851
P/CF	x	-45.8x	-1387.1x	21.5x	5.9x	3.5x	3.7x	3.5x	DSO Spodumene	kt	-	-	180	0	0	0	0
DPS	A¢	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Tantalite	k lb	-	-	-	-	-	-	-
Dividend yield	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	Total	kt	-	-	438	587	851	851	851
Franking Level	%	0%	0%	0%	0%	0%	0%	0%	C1 Cash Costs	(A\$/t)			300	271	294	311	319
Book value per share	x	0.16	0.21	0.25	0.33	0.51	0.70	0.91	C2 Cash Costs	(A\$/t)			411	382	414	435	448
P/Book value	x	5.5x	4.3x	3.6x	2.8x	1.8x	1.3x	1.0x	CFR China	(A\$/t)			477	427	468	494	507
R.O.E. (pre sig items)	%	-13%	-2%	14%	30%	36%	27%	23%	C1 Cash Costs	(US\$/t)			233	204	221	233	239
R.O.A. (pre sig items)	%	-8%	0%	12%	26%	35%	29%	26%	C2 Cash Costs	(US\$/t)			319	288	311	326	336
Interest Cover	x	13.5x	0.3x	3.7x	8.4x	35.6x	-258.7x	-29.8x	CFR China	(US\$/t)			370	322	351	370	380
EBITDA per share	A\$ps	-0.02	0.00	0.08	0.19	0.32	0.32	0.33									
EV/EBITDA	x	-51.7x	627.8x	12.7x	4.6x	2.0x	1.4x	0.6x									
Free cash flow yield	%	(4%)	(16%)	(10%)	16%	26%	24%	26%									
EARNINGS		FY17	FY18e	FY19e	FY20e	FY21e	FY22e	FY23e	OPERATIONAL OUTLOOK								
Sales Revenue	A\$m	0	30	422	591	941	967	1,001									
Other Revenue	A\$m	2	1	0	0	0	0	0									
Total Revenue	A\$m	2	31	422	591	941	967	1,001									
Operating Costs	A\$m	(0)	(15)	(253)	(224)	(353)	(370)	(381)									
Operational EBITDA	A\$m	2	16	169	366	588	596	620									
Exploration Expense/Write-offs	A\$m	(10)	(3)	(1)	(1)	(1)	(1)	(1)									
Corporate & Other Costs	A\$m	(20)	(10)	(28)	(33)	(34)	(35)	(36)									
EBITDA	A\$m	(28)	3	140	332	553	560	583									
D&A	A\$m	(0)	(1)	(28)	(59)	(85)	(85)	(85)									
EBIT	A\$m	(28)	2	111	273	468	475	497									
Net Interest	A\$m	2	(8)	(30)	(33)	(13)	2	17									
Profit Before Tax	A\$m	(26)	(6)	81	241	455	477	514									
Tax Expense	A\$m	0	0	(21)	(72)	(136)	(143)	(154)									
Minorities	A\$m	0	0	0	0	0	0	0									
Adjusted NPAT	A\$m	(26)	(6)	61	168	318	334	360									
Significant Items (post tax)	A\$m	0	0	0	0	0	0	0									
Reported NPAT	A\$m	(26)	(6)	61	168	318	334	360									
CASHFLOW		FY17	FY18e	FY19e	FY20e	FY21e	FY22e	FY23e	RESERVES AND RESOURCES (ATTRIBUTABLE)								
Net Profit	A\$m	(26)	(6)	61	168	318	334	360	Reserves								
Interest/Tax/D&A	A\$m	(9)	(5)	46	107	146	88	93	Pilgangoora								
Working Capital/other	A\$m	11	10	(34)	(8)	(20)	(3)	(2)	Mt	Li2O (%)	Li2O (kt)	Ta2O5 (ppm)	Ta2O5 (kt)	Ta2O5 (Mlbs)			
Net Operating Cashflow	A\$m	(24)	(1)	73	267	444	419	450	Proved	17.5	1.31%	230	0	2.4	5.4		
Capex	A\$m	(45)	(239)	(222)	(28)	(49)	(55)	(56)	Probable	62.9	1.26%	790	119	7.5	16.5		
Investments	A\$m	0	0	0	0	0	0	0	Total	80.4	1.27%	1,020	124	9.9	14.1		
Sale of PPE and Other	A\$m	0	0	0	0	0	0	0	Resources								
Free cash flow	A\$m	(69)	(240)	(149)	239	395	364	394	Pilgangoora Total								
Dividends Paid	A\$m	0	0	0	0	0	0	0	Mt	Li2O (%)	Li2O (kt)	Ta2O5 (ppm)	Ta2O5 (kt)	Ta2O5 (Mlbs)			
Debt	A\$m	(10)	116	129	(112)	(130)	(33)	(75)	Measured	22.1	1.4%	312	144	3.2	7.0		
Equity Issuance	A\$m	66	171	5	8	2	0	0	Indicated	107.0	1.34%	1,435	118	12.7	27.9		
Other	A\$m	0	0	0	0	0	0	0	Inferred	84.1	1.27%	1,071	105	8.8	19.4		
Net Financing Cashflow	A\$m	56	287	134	(104)	(128)	(33)	(75)	Total	213.2	1.32%	2,818	116	24.6	54.3		
Net change in cash	A\$m	(13)	47	(14)	136	267	331	319									
BALANCE SHEET		FY17	FY18e	FY19e	FY20e	FY21e	FY22e	FY23e	EQUITY DCF VALUATION								
Cash	A\$m	222	134	120	256	523	853	1,172	Projects								
PP&E & Mine Development	A\$m	104	463	756	725	689	658	629	Pilgangoora								
Exploration	A\$m	6	7	10	13	16	20	23	Downstream JV								
Total Assets	A\$m	336	643	943	1,065	1,332	1,640	1,937	Undeveloped Resources								
Debt	A\$m	124	221	350	238	108	75	0	Other Projects & Investments								
Total Liabilities	A\$m	136	278	512	496	444	418	356	Corporate								
Total Net Assets / Equity	A\$m	200	366	432	568	888	1,222	1,581	Unpaid capital								
Net Debt / (Cash)	A\$m	(97)	87	230	(18)	(414)	(778)	(1,172)	Net cash (debt)								
Gearing (net debt/(nd + equity))	%	(94%)	19%	35%	(3%)	(87%)	(176%)	(286%)	Net Equity Value (@ 10% WACC)								
Gearing (net debt/equity)	%	(49%)	24%	53%	(3%)	(47%)	(64%)	(74%)	Price Target								
									(1x NPV) 1.20								

Source: PLS, Macquarie Research, June 2018

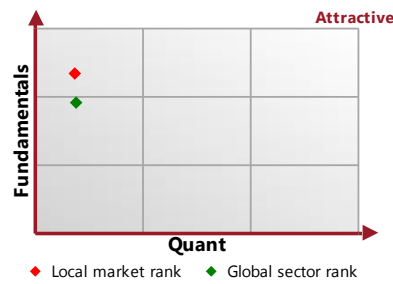
Macquarie Quant View

The quant model currently holds a strong negative view on Pilbara Minerals. The strongest style exposure is Growth, indicating this stock has good historic and/or forecast growth. Growth metrics focus on both top and bottom line items. The weakest style exposure is Profitability, indicating this stock is not efficiently converting investments to earnings; proxied by ratios like ROE or ROA.

1418/1619

Global rank in
Materials

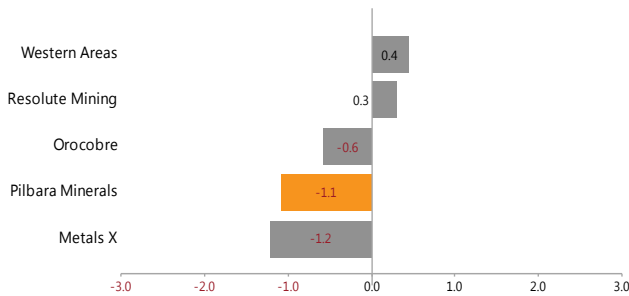
% of BUY recommendations 67% (2/3)
Number of Price Target downgrades 0
Number of Price Target upgrades 0



Displays where the company's ranked based on the fundamental consensus Price Target and Macquarie's Quantitative Alpha model.
 Two rankings: Local market (Australia & NZ) and Global sector (Materials)

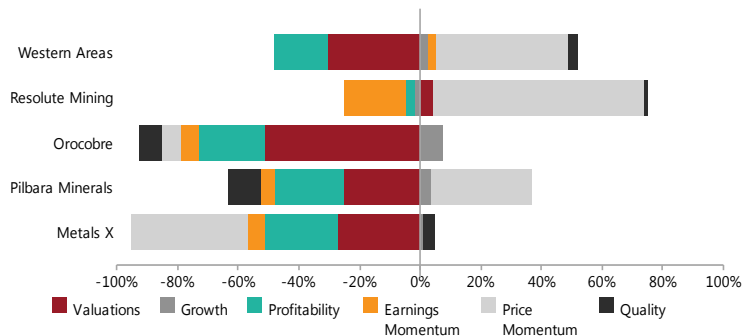
Macquarie Alpha Model ranking

A list of comparable companies and their Macquarie Alpha model score (higher is better).



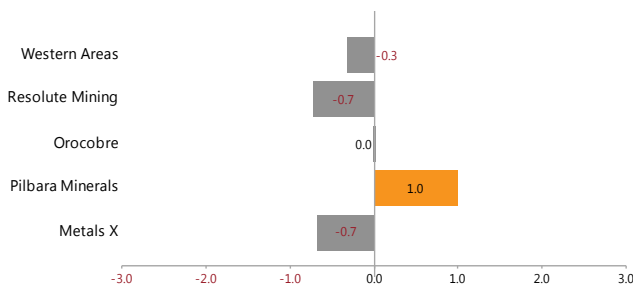
Factors driving the Alpha Model

For the comparable firms this chart shows the key underlying styles and their contribution to the current overall Alpha score.



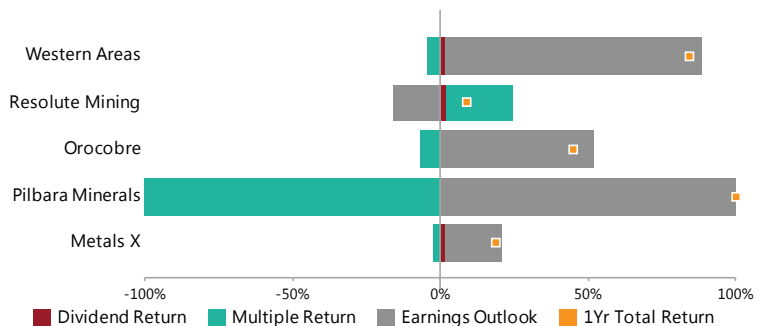
Macquarie Earnings Sentiment Indicator

The Macquarie Sentiment Indicator is an enhanced earnings revisions signal that favours analysts who have more timely and higher conviction revisions. Current score shown below.



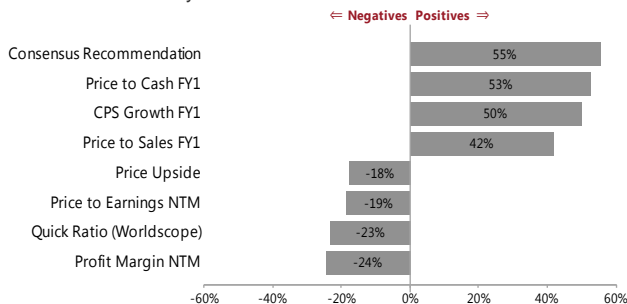
Drivers of Stock Return

Breakdown of 1 year total return (local currency) into returns from dividends, changes in forward earnings estimates and the resulting change in earnings multiple.



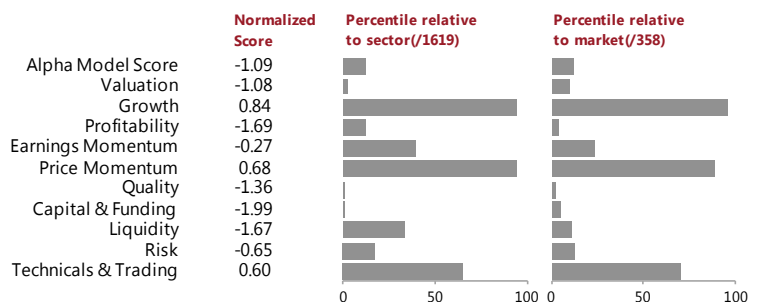
What drove this Company in the last 5 years

Which factor score has had the greatest correlation with the company's returns over the last 5 years.



How it looks on the Alpha model

A more granular view of the underlying style scores that drive the alpha (higher is better) and the percentile rank relative to the sector and market.



Source (all charts): FactSet, Thomson Reuters, and Macquarie Research. For more details on the Macquarie Alpha model or for more customised analysis and screens, please contact the Macquarie Global Quantitative/Custom Products Group (cpq@macquarie.com)

Important disclosures:

Recommendation definitions

Macquarie - Australia/New Zealand

Outperform – return >3% in excess of benchmark return

Neutral – return within 3% of benchmark return

Underperform – return >3% below benchmark return

Benchmark return is determined by long term nominal GDP growth plus 12 month forward market dividend yield

Macquarie – Asia/Europe

Outperform – expected return >+10%

Neutral – expected return from -10% to +10%

Underperform – expected return <-10%

Macquarie – South Africa

Outperform – expected return >+10%

Neutral – expected return from -10% to +10%

Underperform – expected return <-10%

Macquarie - Canada

Outperform – return >5% in excess of benchmark return

Neutral – return within 5% of benchmark return

Underperform – return >5% below benchmark return

Macquarie - USA

Outperform (Buy) – return >5% in excess of Russell

3000 index return

Neutral (Hold) – return within 5% of Russell 3000 index

return

Underperform (Sell)– return >5% below Russell 3000

index return

Volatility index definition*

This is calculated from the volatility of historical price movements.

Very high–highest risk – Stock should be expected to move up or down 60–100% in a year – investors should be aware this stock is highly speculative.

High – stock should be expected to move up or down at least 40–60% in a year – investors should be aware this stock could be speculative.

Medium – stock should be expected to move up or down at least 30–40% in a year.

Low–medium – stock should be expected to move up or down at least 25–30% in a year.

Low – stock should be expected to move up or down at least 15–25% in a year.

* Applicable to Asia/Australian/NZ/Canada stocks only

Recommendations – 12 months

Note: Quant recommendations may differ from Fundamental Analyst recommendations

Financial definitions

All "Adjusted" data items have had the following adjustments made:

Added back: goodwill amortisation, provision for catastrophe reserves, IFRS derivatives & hedging, IFRS impairments & IFRS interest expense

Excluded: non recurring items, asset revals, property revals, appraisal value uplift, preference dividends & minority interests

EPS = adjusted net profit / epowa*

ROA = adjusted ebit / average total assets

ROA Banks/Insurance = adjusted net profit / average total assets

ROE = adjusted net profit / average shareholders funds

Gross cashflow = adjusted net profit + depreciation

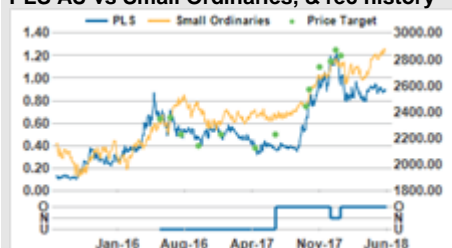
*equivalent fully paid ordinary weighted average number of shares

All Reported numbers for Australian/NZ listed stocks are modelled under IFRS (International Financial Reporting Standards).

Recommendation proportions – For quarter ending 31 March 2018

	AU/NZ	Asia	RSA	USA	CA	EUR	
Outperform	54.38%	58.90%	48.35%	43.91%	69.03%	45.26%	(for global coverage by Macquarie, 3.69% of stocks followed are investment banking clients)
Neutral	32.48%	27.88%	34.07%	48.73%	21.29%	38.95%	(for global coverage by Macquarie, 3.07% of stocks followed are investment banking clients)
Underperform	13.14%	13.21%	17.58%	7.37%	9.68%	15.79%	(for global coverage by Macquarie, 0.39% of stocks followed are investment banking clients)

PLS AU vs Small Ordinaries, & rec history



(all figures in AUD currency unless noted)

Note: Recommendation timeline – if not a continuous line, then there was no Macquarie coverage at the time or there was an embargo period.

Source: FactSet, Macquarie Research, June 2018

12-month target price methodology

PLS AU: A\$1.20 based on a Sum-of-the-parts NPV methodology

Company-specific disclosures:

PLS AU: Macquarie Group Limited together with its affiliates beneficially owns 1% or more of the equity securities of Pilbara Minerals Ltd.

Important disclosure information regarding the subject companies covered in this report is available at www.macquarie.com/research/disclosures.

Date	Stock Code (BBG code)	Recommendation	Target Price
23-Jan-2018	PLS AU	Outperform	A\$1.20
06-Jan-2018	PLS AU	Neutral	A\$1.25
20-Dec-2017	PLS AU	Neutral	A\$1.15
13-Nov-2017	PLS AU	Outperform	A\$1.10
10-Oct-2017	PLS AU	Outperform	A\$.90
29-Sep-2017	PLS AU	Outperform	A\$.75
19-Jun-2017	PLS AU	Outperform	A\$.50
13-Apr-2017	PLS AU	Underperform	A\$.38
20-Dec-2016	PLS AU	Underperform	A\$.50
06-Oct-2016	PLS AU	Underperform	A\$.40
09-Aug-2016	PLS AU	Underperform	A\$.50
04-Jul-2016	PLS AU	Underperform	A\$.65
31-May-2016	PLS AU	Underperform	A\$.64

Target price risk disclosures:

PLS AU: Any inability to compete successfully in their markets may harm the business. This could be a result of many factors which may include geographic mix and introduction of improved products or service offerings by competitors. The results of operations may be materially affected by global economic conditions generally, including conditions in financial markets. The company is exposed to market risks, such as changes in interest rates, foreign exchange rates and input prices. From time to time, the company will enter into transactions, including transactions in derivative instruments, to manage certain of these exposures.

Analyst certification:

We hereby certify that all of the views expressed in this report accurately reflect our personal views about the subject company or companies and its or their securities. We also certify that no part of our compensation was, is or will be, directly or indirectly, related to the specific recommendations or views expressed in this report. The Analysts responsible for preparing this report receive compensation from Macquarie that is based upon various factors including Macquarie Group Ltd total revenues, a portion of which are generated by Macquarie Group's Investment Banking activities.

General disclaimers:

Macquarie Securities (Australia) Ltd; Macquarie Capital (Europe) Ltd; Macquarie Capital Markets Canada Ltd; Macquarie Capital Markets North America Ltd; Macquarie Capital (USA) Inc; Macquarie Capital Limited, Taiwan Securities Branch; Macquarie Capital Securities (Singapore) Pte Ltd; Macquarie Securities (NZ) Ltd; Macquarie Equities South Africa (Pty) Ltd; Macquarie Capital Securities (India) Pvt Ltd; Macquarie Capital Securities (Malaysia) Sdn Bhd; Macquarie Securities Korea Limited and Macquarie Securities (Thailand) Ltd are not authorized deposit-taking institutions for the purposes of the Banking Act 1959 (Commonwealth of Australia), and their obligations do not represent deposits or other liabilities of Macquarie Bank Limited ABN 46 008 583 542 (MBL) or MGL. MBL does not guarantee or otherwise provide assurance in respect of the obligations of any of the above mentioned entities. MGL provides a guarantee to the Monetary Authority of Singapore in respect of the obligations and liabilities of Macquarie Capital Securities (Singapore) Pte Ltd for up to SGD 35 million. This research has been prepared for the general use of the wholesale clients of the Macquarie Group and must not be copied, either in whole or in part, or distributed to any other person. If you are not the intended recipient you must not use or disclose the information in this research in any way. If you received it in error, please tell us immediately by return e-mail and delete the document. We do not guarantee the integrity of any e-mails or attached files and are not responsible for any changes made to them by any other person. MGL has established and implemented a conflicts policy at group level (which may be revised and updated from time to time) (the "Conflicts Policy") pursuant to regulatory requirements (including the FCA Rules) which sets out how we must seek to identify and manage all material conflicts of interest. Nothing in this research shall be construed as a solicitation to buy or sell any security or product, or to engage in or refrain from engaging in any transaction. In preparing this research, we did not take into account your investment objectives, financial situation or particular needs. Macquarie salespeople, traders and other professionals may provide oral or written market commentary or trading strategies to our clients that reflect opinions which are contrary to the opinions expressed in this research. Macquarie Research produces a variety of research products including, but not limited to, fundamental analysis, macro-economic analysis, quantitative analysis, and trade ideas. Recommendations contained in one type of research product may differ from recommendations contained in other types of research, whether as a result of differing time horizons, methodologies, or otherwise. Before making an investment decision on the basis of this research, you need to consider, with or without the assistance of an adviser, whether the advice is appropriate in light of your particular investment needs, objectives and financial circumstances. There are risks involved in securities trading. The price of securities can and does fluctuate, and an individual security may even become valueless. International investors are reminded of the additional risks inherent in international investments, such as currency fluctuations and international stock market or economic conditions, which may adversely affect the value of the investment. This research is based on information obtained from sources believed to be reliable but we do not make any representation or warranty that it is accurate, complete or up to date. We accept no obligation to correct or update the information or opinions in it. Opinions expressed are subject to change without notice. No member of the Macquarie Group accepts any liability whatsoever for any direct, indirect, consequential or other loss arising from any use of this research and/or further communication in relation to this research. Clients should contact analysts at, and execute transactions through, a Macquarie Group entity in their home jurisdiction unless governing law permits otherwise. The date and timestamp for above share price and market cap is the closed price of the price date. #CLOSE is the final price at which the security is traded in the relevant exchange on the date indicated. Members of the Macro Strategy team are Sales & Trading personnel who provide desk commentary that is not a product of the Macquarie Research department or subject to FINRA Rule 2241 or any other regulation regarding independence in the provision of equity research.

Country-specific disclaimers:

Australia: In Australia, research is issued and distributed by Macquarie Securities (Australia) Ltd (AFSL No. 238947), a participating organisation of the Australian Securities Exchange. **New Zealand:** In New Zealand, research is issued and distributed by Macquarie Securities (NZ) Ltd, a NZX Firm. **Canada:** In Canada, research is prepared, approved and distributed by Macquarie Capital Markets Canada Ltd., a (i) member of the Investment Industry Regulatory Organization of Canada and the Canadian Investor Protection Fund, and (ii) participating organisation of the Toronto Stock Exchange, TSX Venture Exchange & Montréal Exchange. This research is distributed in the United States, as third party research by Macquarie Capital Markets North America Ltd., which is a registered broker-dealer and member of Financial Industry Regulatory Authority and the Securities Investor Protection Corporation. Macquarie Capital Markets North America Ltd. accepts responsibility for the contents of reports issued by Macquarie Capital Markets Canada Ltd. in the United States and sent to US persons. Any US person wishing to effect transactions in the securities described in the reports issued by Macquarie Capital Markets Canada Ltd. should do so with Macquarie Capital Markets North America Ltd. This research is intended for distribution in the United States only to major Institutional Investors (as such term is defined in SEC 15a-6 and Section 15 of the Securities Exchange Act of 1934, as amended) and is not intended for the use of any person or entity that is not a major institutional investor. Research analysts of Macquarie Capital Markets Canada Ltd. are not registered/qualified as research analysts with FINRA. The Research Distribution Policy of Macquarie Capital Markets Canada Ltd. is to allow all clients that are entitled to have equal access to our research. **United Kingdom:** In the United Kingdom, research is issued and distributed by Macquarie Capital (Europe) Ltd, which is authorised and regulated by the Financial Conduct Authority (No. 193905). **Germany:** In Germany, this research is issued and/or distributed by Macquarie Capital (Europe) Limited, Niederlassung Deutschland, which is authorised and regulated by the UK Financial Conduct Authority (No. 193905). and in Germany by BaFin. **France:** In France, research is issued and distributed by Macquarie Capital (Europe) Ltd, which is authorised and regulated in the United Kingdom by the Financial Conduct Authority (No. 193905). **Hong Kong & Mainland China:** In Hong Kong, research is issued and distributed by Macquarie Capital Limited, which is licensed and regulated by the Securities and Futures Commission. In Mainland China, Macquarie Securities (Australia) Limited Shanghai Representative Office only engages in non-business operational activities excluding issuing and distributing research. Only non-A share research is distributed into Mainland China by Macquarie Capital Limited. **Japan:** In Japan, research is issued and distributed by Macquarie Capital Securities (Japan) Limited, a member of the Tokyo Stock Exchange, Inc. and Osaka Exchange, Inc. (Financial Instruments Firm, Kanto Financial Bureau (kin-sho) No. 231, a member of Japan Securities Dealers Association). **India:** In India, research is issued and distributed by Macquarie Capital Securities (India) Pvt. Ltd. (CIN: U65920MH1995PTC090696), 92, Level 9, 2 North Avenue, Maker Maxity, Bandra Kurla Complex, Bandra (East), Mumbai – 400 051, India, which is a SEBI registered Research Analyst having registration no. INH000000545. **Malaysia:** In Malaysia, research is issued and distributed by Macquarie Capital Securities (Malaysia) Sdn. Bhd. (Company registration number: 463469-W) which is a Participating Organisation of Bursa Malaysia Berhad and a holder of Capital Markets Services License issued by the Securities Commission. **Taiwan:** In Taiwan, research is issued and distributed by Macquarie Capital Limited, Taiwan Securities Branch, which is licensed and regulated by the Financial Supervisory Commission. No portion of the report may be reproduced or quoted by the press or any other person without authorisation from Macquarie. Nothing in this research shall be construed as a solicitation to buy or sell any security or product. The recipient of this report shall not engage in any activities which may give rise to potential conflicts of interest to the report. Research Associate(s) in this report who are registered as Clerks only assist in the preparation of research and are not engaged in writing the research. Macquarie may be in past one year or now being an Issuer of Structured Warrants on securities mentioned in this report. **Thailand:** In Thailand, research is produced, issued and distributed by Macquarie Securities (Thailand) Ltd. Macquarie Securities (Thailand) Ltd. is a licensed securities company that is authorized by the Ministry of Finance, regulated by the Securities and Exchange Commission of Thailand and is an exchange member of the Stock Exchange of Thailand. The Thai Institute of Directors Association has disclosed the Corporate Governance Report of Thai Listed Companies made pursuant to the policy of the Securities and Exchange Commission of Thailand. Macquarie Securities (Thailand) Ltd does not endorse the result of the Corporate Governance Report of Thai Listed Companies but this Report can be accessed at: <http://www.thai-iod.com/en/publications.asp?type=4>. **South Korea:** In South Korea, unless otherwise stated, research is prepared, issued and distributed by Macquarie Securities Korea Limited, which is regulated by the Financial Supervisory Services. Information on analysts in MSKL is disclosed at <http://dis.kofia.or.kr/websquare/index.jsp?w2xPath=/wg/fundMgr/DISFundMgrAnalystStut.xml&divisionId=MDIS03002001000000&servicId=SDIS03002001000>. **South Africa:** In South Africa, research is issued and distributed by Macquarie Equities South Africa (Pty) Ltd, a member of the JSE Limited. **Singapore:** In Singapore, research is issued and distributed by Macquarie Capital Securities (Singapore) Pte Ltd (Company Registration Number: 198702912C), a Capital Markets Services license holder under the Securities and Futures Act to deal in securities and provide custodial services in Singapore. Pursuant to the Financial Advisers (Amendment) Regulations 2005, Macquarie Capital Securities (Singapore) Pte Ltd is exempt from complying with sections 25, 27 and 36 of the Financial Advisers Act. All Singapore-based recipients of research produced by Macquarie Capital

(Europe) Limited, Macquarie Capital Markets Canada Ltd, Macquarie Equities South Africa (Pty) Ltd and Macquarie Capital (USA) Inc. represent and warrant that they are institutional investors as defined in the Securities and Futures Act. **United States:** In the United States, research is issued and distributed by Macquarie Capital (USA) Inc., which is a registered broker-dealer and member of FINRA. Macquarie Capital (USA) Inc. accepts responsibility for the content of each research report prepared by one of its non-US affiliates when the research report is distributed in the United States by Macquarie Capital (USA) Inc. Macquarie Capital (USA) Inc.'s affiliate's analysts are not registered as research analysts with FINRA, may not be associated persons of Macquarie Capital (USA) Inc., and therefore may not be subject to FINRA rule restrictions on communications with a subject company, public appearances, and trading securities held by a research analyst account. Information regarding futures is provided for reference purposes only and is not a solicitation for purchases or sales of futures. Any persons receiving this report directly from Macquarie Capital (USA) Inc. and wishing to effect a transaction in any security described herein should do so with Macquarie Capital (USA) Inc. Important disclosure information regarding the subject companies covered in this report is available at www.macquarie.com/research/disclosures, or contact your registered representative at 1-888-MAC-STOCK, or write to the Supervisory Analysts, Research Department, Macquarie Securities, 125 W.55th Street, New York, NY 10019.

© Macquarie Group

Equities

Research

Head of Equity Research

Paul Checchin (Australia & NZ) (612) 8232 4197

Retail / Consumer / Food & Bev

Rob Freeman (612) 8237 1152

Quinn Pierson (612) 8232 6391

Energy

Andrew Hodge (612) 8237 0321

ESG

Anita Stanley (maternity) (612) 8232 9869

Financials

Banks

Victor German (612) 8232 6089

John Buonaccorsi (612) 8232 0523

Diversified Financials

Brendan Carrig (612) 8237 6043

Insurance

Andrew Buncombe (612) 8232 0629

Healthcare

David Bailey (612) 8237 2427

Industrials

Capital Goods

John Purtell (612) 8232 8633

Pelen Ji (612) 8237 3523

Infrastructure

Ian Myles (612) 8232 4157

Transport & Gaming

David Fabris (612) 8232 5705

Chemicals, D&C, Packaging, Builders, Steel

John Purtell (612) 8232 8633

Pelen Ji (612) 8237 3523

Peter Steyn (612) 8232 5144

Resources

Hayden Bairstow (618) 9224 0838

Ben Crowley (618) 9224 0839

Andrew Hodge (612) 8237 0321

Real Estate

Paul Checchin (612) 8232 4197

Rob Freeman (612) 8237 1152

Telcos / Media

Andrew Levy (612) 8232 5165

Utilities

Ian Myles (612) 8232 4157

New Zealand

Stephen Hudson (649) 363 1414

Warren Doak (649) 363 1416

Nick Mar (649) 363 1476

Andrew Levy (Telecommunications) (612) 8232 5165

Emerging Leaders – Industrials

Tim Lawson (612) 8237 7332

Mitchell Sonogan (612) 8232 0675

Shaun Weick (612) 8232 8248

Matt Johnston (612) 8232 7007

Quantitative

Gurvinder Brar (Global) (44 20) 3037 4036

John Conomos (Australia) (612) 8232 5157

Jeremy Lamplough (612) 8232 1060

Data Services

Sheridan Maher (maternity) (612) 8232 9786

Caroline Andri (612) 8237 7180

Find our research at

Macquarie: www.macquarieresearch.com/ideas/Thomson: www.thomson.com/financialReuters: www.knowledge.reuters.com

Bloomberg: MAC GO

Factset: <http://www.factset.com/home.aspx>CapitalIQ www.capitaliq.comContact macresearch@macquarie.com for access requests.

Email addresses

FirstName.Surname@macquarie.com

Sales

Equities

Dan Ritchie (Australia) (612) 8232 3124

Dave Robertson (New Zealand) (649) 363 1498

Sales

Dan Pittorino (612) 8237 0905

(Desk Head - Sydney)

Mike Johnson (612) 8232 4717

(Desk Head - International Sales)

Andrew Haigh (Desk Head - London) (44 20) 3037 4843

Leighton Patrick (612) 8232 2552

(Desk Head - New York) (1 212) 231 2552

Dominic Smith (Desk Head - Asia) (65) 6601 0212

Dan Pittorino (Sydney) (612) 8237 0905

Richard Weekes (Sydney) (612) 8232 7586

Alex Williams (Sydney) (612) 8232 3110

David Harris (Melbourne) (613) 9635 8595

Daniel Raats (Melbourne) (613) 9635 8271

Julia Thomas (Melbourne) (613) 9635 9323

Tim Russell (London) (44 20) 3037 4865

Michael McNair (New York) (1 212) 231 2571

Jay Shyam (New York) (1 212) 231 2491

Anura Logan (Asia) (613) 9635 8177

Kristen Edmond (Leave) (612) 8232 3111

Sales Trading

Tim Shaw (Head of Sales Trading) (612) 8232 4386

Andrew Donald (613) 9635 8270

(Desk Head - Melbourne)

Sam Molina (Sydney) (612) 8232 5935

Francis Sarks (Sydney) (612) 8232 4458

Ben McIntyre (Sydney) (612) 8237 2833

Mike Keen (London) (44 20) 3037 4905

Electronic Execution

Valerie Kingsmill (612) 8237 2230

Darren Miller (612) 8232 8261

Tarinee De Silva (612) 8232 3151

Portfolio Trading

Garth Leslie (612) 8232 9982

Michael Khalife (612) 8232 8893

Block Trading

Tim Shaw (Desk Head - Sydney) (612) 8232 4386

Specialist Sales

Phil Zammit (Emerging Leaders) (612) 8232 3122

Harry Boghossian (Emerging Leaders) (612) 8237 5456

Kurt Dalton (Property) (612) 8232 5943

Stuart Murray (Derivatives) (612) 8232 5090

Gavin Maher (Resources) (612) 8232 4151

Alternative Strategies

Greg Mann (Equity Finance) (612) 8232 1820

Shannon Donohoe (612) 8232 6997

(Stock Borrow & Loan)

Syndication

Paul Staines (612) 8232 7781

Angus Firth (612) 8232 4039

Tiffany Ward (612) 8232 5151

Eric Roles (612) 8232 4565

Corporate Access

Julie Loring (612) 8232 7543

Eliza Davidson (612) 8237 5064

Transition Management & Portfolio Solutions

Mick Larkin (612) 8232 0639

Scott Macaulay (612) 8232 4782

Elliot Graham (612) 8237 4704

Mark Levinson (612) 8232 5245

David Goodman (London) (612) 8232 5245