

BuildingIQ (BIQ)

Smart Saving on Energy Costs

21 February 2017

Emerging Companies Research Team
smallcaps@pacpartners.com.au
+613 8633 9865

Key Points

- BuildingIQ (BIQ) is an emerging leader in the Building Energy Management Systems (BEMS) space.
- Momentum in revenue growth for FY16 has slowed compared to FY15, but BIQ has potential to benefit from upselling through its recent acquisitions, PAC Forecasts Revenue (exc. Other) FY16 \$3.8m and FY17 \$5.2m.
- Initiate coverage with a HOLD recommendation and a price target of \$0.11/share. Cash flows are negative in short term, potential considerable positive cash flows in the medium term (FY20: FCF \$2.5m est.) if BIQ continues to grow area under management and increase operating efficiencies.

Company Overview

What BuildingIQ does:

BIQ provides software-as-a-service (SaaS) for use in energy management and optimises energy usage in large buildings, typically generating energy savings in the range of 10-25%.

What this means:

BIQ essentially optimises the heating, ventilation and air conditioning systems of a building based on a range of factors such as current temperature, cost of electricity and number of occupants etc. BIQ does this remotely and the software continually updates its forecasting ability, this is BIQ's Predictive Energy Optimisation (PEO) platform (pg.3 Figure 2). BIQ also provides analytics and visualisation services for energy management, all contained in their 5i Platform (pg. 3 Figure 1). BIQ receives revenue primarily from a fee charged per area under management, and for installation.

Investment Story:

Management targeted revenue growth of 50% in FY16 (pg. 5 22nd Aug), but this goal has not been achieved. Revenue from continuing operations was \$4.3m in FY15. PAC forecasts revenue from continuing operations of A\$3.8m FY16. Lower than anticipated revenue for FY16 can be attributed to two main reasons. I) Slower adoption rate of BIQ PEO technology. To increase penetration, BIQ acquired Energy WorkSite and Facility WorkSite (Acquisitions pg. 4), which allows BIQ to initially service clients and then plans to upsell their PEO. II) Reductions to Revenue on 22nd Aug of \$0.7m. This a one-off scenario, but extends cash flow break even. Initially forecast 2HFY17, PAC estimates FY19 combined with the slower than anticipated adoption rate of BIQ technology.

Low liquidity (monthly value \$30k) due to Top 20 shareholders (pg. 8 Key Shareholders) owning 82%, also likely contributed to price decline, but the removal of restriction on US investors (pg. 5, 30th Jan), may help increase liquidity.

PAC's View:

Hold. Management has sought to create the best outcome given slower penetration of PEO technology, impairments and, reduced expenses (Wages and Marketing) when cash burn is too high. Growth in area under management is key, and \$40m potential pipeline is a significant opportunity.

Recommendation

HOLD

Previous Recommendation	Initiation Report
Risk Rating	High
Current Share Price	\$0.115
12 Month PT	\$0.110
Price Target Methodology	DCF
DCF Valuation	\$0.11
Market capitalisation	\$ 5.8m
Liquidity Value Monthly avg.	\$30k

Financial Forecasts & Valuation Metrics

FY	15A	16F	17F	18F	19F
A (\$m)					
Rev.(exc. Other)	4.3	3.8	5.2	7.5	13.0
NPAT	-5.2	-9.9	-3.9	-2.8	0.4

Source: PAC Partners estimates

Share Price Performance



Source: Capital IQ

Disclaimer: PAC Partners will be paid a fee by the ASX under the ASX Equity Research Scheme for this research. Please refer to the full disclaimer on page 11.

Table of Contents

Summary Swot..... 2

Summary of Platform 3

Acquisition: Energy WorkSite and Facility WorkSite and OptiCool..... 4

Timeline: Significant Announcements..... 5

Peer Review, Market Size and Key Drivers 6

Key Management and Directors 7

Key Shareholders 8

Summary Swot

Strengths	Weaknesses
<ul style="list-style-type: none"> Upselling opportunities from acquisitions Strong cash reserves 	<ul style="list-style-type: none"> Slower than anticipated uptake of technology High Operating Expenses
Opportunities	Threats
<ul style="list-style-type: none"> Greater Penetration in the US or Asian Markets Potential pipeline of Revenue \$40m 	<ul style="list-style-type: none"> New Entrants such as Quantify Changes/Advances in BEMS Technology

Summary of Products and Services:

Background:

BuildingIQ Pty Ltd was founded in 2009 with headquarters in Sydney. BuildingIQ Pty Ltd merged into BuildingIQ, Inc in Delaware (2012) due to strategic investors, Siemens, Paladin Capital Group and Exto Partners. BIQ headquarters is currently located in San Mateo, California.

Platform:

BIQ offers several services depending on the complexity and level of integration. BIQ's services are all encompassed within their 5i Platform and are offered through 4 layers these are: Automated, Control, Analytics and Visualisation (**Figure 1**).

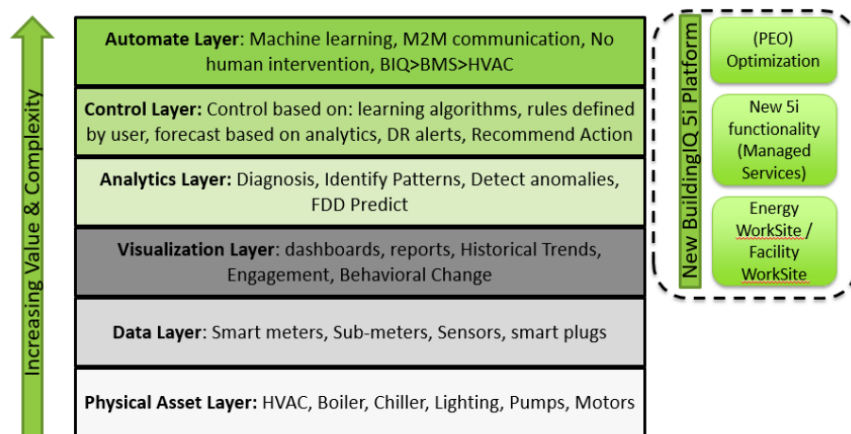
Automated Layer: No human intervention required, software continues to update itself, improving its accuracy, optimises HVAC based on factors such as current temperature, cost of electricity and number of occupants (**Figure 2**). Initially acquired as 'OptiCool' from the CSIRO, since then BIQ significantly expanded and commercialised the software.

Control Layer: Forecast energy usage based on analytics, learning algorithms and recommend an action to optimise energy usage.

Analytics Layer: Identifies energy usage, patterns and creates a diagnosis. This has been enabled through the acquisition of Energy WorkSite (Acquisition pg. 5).

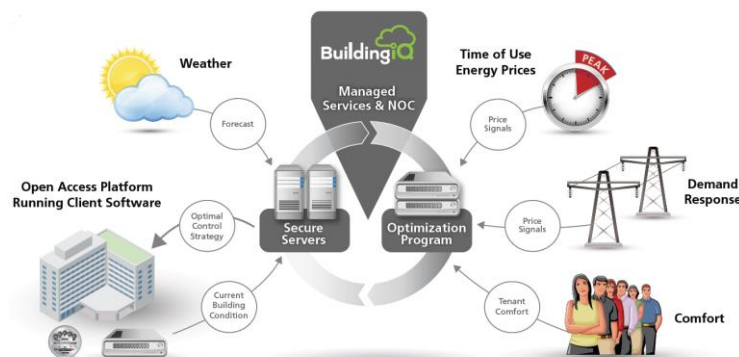
Visualisation Layer: Provides historical trends and reports of the building's energy usage. This has been enabled through the acquisition of Facility WorkSite (Acquisition pg. 5).

Figure 1:



Source: BuildingIQ

Figure 2: PEO



Source: BuildingIQ

Acquisitions: EWS, FWS and OptiCool

Acquisition: Energy WorkSite & Facility WorkSite

On April 14th BIQ acquired in cash Energy WorkSite (EWS) and Facility WorkSite (FWS) from NorthWrite Inc. for A\$4.0m (\$US3m). A\$1.3m (\$US1.0m) was paid upfront and A\$2.7m was deferred till January (\$850k USD) and April (\$1.15m USD) 2017.

Facility WorkSite (FWS) is a low-cost management platform that provides work order management, preventative maintenance and asset performance reporting services. This is the foundation service (Visualisation Layer) of BIQ's 5i Platform and provides the opportunity to upsell more value adding services (**Figure 3 below and pg. 3 Figure 2**).

Energy WorkSite (EWS) is a data analytics/monitoring software service that allows commercial and industrial facilities to accurately track and benchmark energy use. This is part of Analytics Layer of the 5i Platform (**Figure 3 below and pg. 3 Figure 2**). Similar to FWS in terms of ability to upsell to more value added services.

The acquisition of EWS and FWS significantly added to BIQ's area under management (AUM) adding approximately 761 buildings to the portfolio (**Figure 4**).

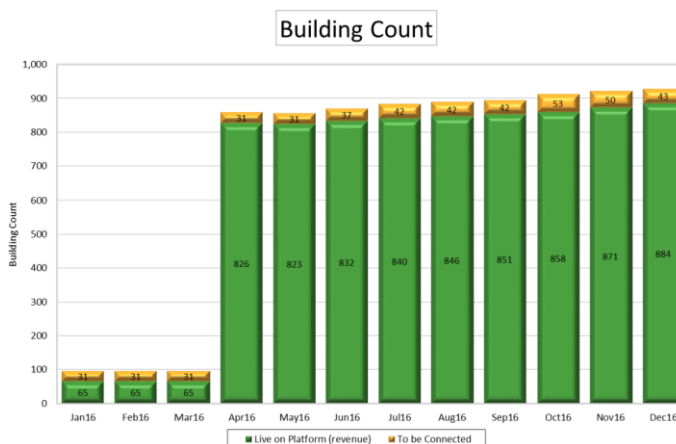
Acquisition: OptiCool

In 2009 CSIRO licensed 'OptiCool' technology to BIQ. BIQ continually developed and optimised the technology and executed a one-time payment of A\$0.5m in December 2016 to purchase the patent. This is at the core of BIQ's Predictive Energy Optimisation (PEO, Figure 3).

Figure 3:



Figure 4:



Source: BuildingIQ

Risks from Acquisition:

- Upselling benefits may not materialise, or may take more time to eventuate than anticipated
- Revenue per square foot may not increase to the expected range

Timeline: Significant Announcements

PAC's View: BIQ experienced difficulty maintaining revenue momentum from FY15 into FY16 and did not meet their revenue target of 50% (22nd Aug). However, management has sought to create the optimal outcome given; slower than anticipated uptake of clients, such as with the acquisition of EWS and FWS (14th Apr), revenue impairments (22nd Aug), and also reduced expenses when cash burn became too high (31st Oct and 30th Jan).

Dec-15	<p>16th Dec: Listed Building IQ. Raised A\$20m with 20m Depository Receipts via KTM. Mkt Cap A\$85m.</p> <p>17th Dec: BIQ has major partnerships with Siemens and Schneider Electric. Major partnership with Xcel Energy. Primary Clients: UCLA, California State University, Jefferson State Community College.</p>
Feb-16	<p>25th Feb: Future contracted revenue surpassed \$12m. Attained patents for PEO.</p>
Apr-16	<p>14th Apr: Acquired Energy WorkSite (EWS) and Facility Worksite (FWS) cash A\$4.0m. EWS and FWS adds \$1.3m recurring revenue per annum. 200+ buildings, average contract tenure 6 years.</p> <p>28th Apr: BuildingIQ and AMP Technologies (commercial real estate) enter Strategic Relationship.</p> <p>29th Apr: Low Q1 Cash Collections impacted by: R&D grant (expected Q2), annual payments from utility programs falling outside current quarter, deferred collection from US municipality to April (expected March), and slow sales period in Australia.</p>
May-16	<p>18th May: Expansion to new geographic markets: opening a Singapore office 2H16. FY15 actual NPAT (\$5.3m), forecasted NPAT (\$4.2m).</p>
Jul-16	<p>28th Jul: Q2FY16 Quarterly Results Released. Two months of cash receipts were received from US Department of Energy. Utility program receipt expected Q2, deferred to Q3. Slow collections from EWS and FWS. 5i Platform released. Buyout of CSIRO technology (A\$0.5m), royalty payments (A\$0.1m).</p>
Aug-16	<p>22nd Aug: Impairment of \$0.7m of revenue from major US Utility, no longer considered recoverable. BIQ will accept a cash payment of A\$0.2m to be received Sep. New contract with US utility expected to generate A\$0.3m revenue over twelve months.</p> <p>22nd Aug: Revenue 2H16 will be reduced by A\$0.15m. Revenue for June was \$0.35m, target \$0.4m. Sales and contracted revenue for FY16 have not met management forecasts and BIQ is unlikely to recapture shortfall in FY16. Targeted 50% revenue growth FY16 unlikely to be achieved. Extends the time frame to cashflow breakeven, initially forecasted 2H17F. Management will focus on cost saving, shortening sales cycles, reducing implementation time-frames, and considering inorganic opportunities.</p>
Oct-16	<p>31st Oct: Operating expenses reduced 13%, expected to be reduced by 20% end FY16. Q3FY16 saved \$0.45m due to reduction in headcount. FY16Q4F cash outflows for CSIRO technology (A\$0.5m), royalty payments (A\$0.1m). Received \$0.2m Nevada utility.</p>
Dec-16	<p>19th Dec: Escrow on 9,419,349 shares/CDIs extended till 4th Jan-17.</p> <p>19th Dec: CFO and Company Secretary Rob Goss resigns. Ian Gilmour appointed Interim Company Secretary.</p>
Jan-17	<p>30th Jan: Removal of restriction, allowing US residents to invest via CDI's.</p> <p>30th Jan: Q4FY16 Quarterly Results. Revenue A\$0.96M. Launched partnership with 'Current' by GE. 927 buildings (approx.70M square feet.) active on platform. OPEX down 30% over 1H2016.</p>

Peer Review

Listed Peers:

We have identified several listed peers; however, it is important to note that there are several private competitors such as Aquicore, PowerHouse Dynamics and GridPoint which are similar in operations but for which data is not available.

Furthermore, Quantify which is anticipated to list in 2017, can be seen as a potential competitor to BIQ. Quantify offers Internet of Things connected energy monitoring socket face plates, that reduce energy cost through management of HVAC systems.

BIQ primarily differentiates itself by offering an all in one solution from visualisation and data analytics to optimising energy usage.

Listed Small Mkt Cap Technology Firms, Revenue Less than A\$40M

Company Name	Mkt. Cap (A\$m)	Value (A\$m)	Revenue (A\$m)	EBITDA (A\$m)	EV/ Revenue (A\$m)	Share Price (A\$m)	Tangible BV/Share (A\$m)
COPsync, Inc. (NasdaqCM:COYN)	11.1	12.1	8.7	(11.1)	1.4	1.34	(0.57)
eg solutions plc (AIM:EGS)	15.8	13.0	10.9	(1.7)	1.2	0.74	0.1
Electronic Data Processing plc (LSE:EDP)	14.9	5.9	8.6	0.9	0.7	1.17	0.54
Energy One Limited (ASX:EOL)	6.7	4.4	4.6	0.9	1.0	0.36	0.12
Mobile Tornado Group plc (AIM:MBT)	24.9	37.9	3.4	(2.7)	11.1	0.08	(0.09)
BuildingIQ, Inc. (ASX:BIQ)	8.4	(6.6)	4.4	(5.8)	(1.5)	0.09	0.16

Source: PAC Partners estimates and Capital IQ

The tangible book value per share of BIQ is greater than the market price, this suggests that the market is expecting a decline in the assets (cash) of the firm. PAC estimates that the cash balance will decline in FY17 and FY18 and begin to increase thereafter.

Market Size and Key Drivers

Building Energy Management Market:

- Building Energy Management market in US 2015 was US\$2B.
- Expected to grow US\$10.8B in 2024, CAGR of 18.2%.
- Fastest growing market projected to be Asia Pacific, estimated CAGR of 20% and 19.9% in Europe.
- BIQ derives majority of revenue (90%) from US approx. 10% from Australia.

Key Drivers:

- Focus of building owners to control operating costs.
- Long term rising trend of electricity prices.
- Growing corporate awareness and transition to become environmentally friendly.
- Trend towards Internet of Things (IoT), constant monitoring by technologies and connected devices.
- Government support for energy efficiency programs.

Key Management / Directors

PAC's Overview of Management:

We believe that BIQ's board and key management boasts a strong level of experience in the industry, as evident with leaders such as Michael Nark, Gerd Goette, and Ken Pentimonti, but also contains a well-diversified skill set with members such as Alan Cameron and Tanya Cox.



Michael Nark

CEO/ Executive Director |

Michael Nark has held the position of CEO and Executive Director since September 2013. Michael has over 25 years of experience in software and technology related services. Michael has proven experience in leading and building successful, efficient organisations which are profitable and growing as evident in his previous position as CEO and President of Power Analytics . Michael holds a B.S. in Applied Science.



Alan Cameron

Chair/ Non-Executive Director |

Alan Cameron AO has been the non-executive chairman since June 2015. He previously was a partner of a major law firm for 12 years, prior to that Alan was the chairman of ASIC from 1993 to 2000. In the past, he was Deputy Chancellor of the University of Sydney and graduated from University of Sydney with degrees in Arts and Law.



Gerd Goette

Non-Executive Director | Gerd has been an Executive Director since December 2012. Gerd is a Partner at Siemens Venture Capital (SVC) based in Silicon Valley, California. He manages SVC's investments in BIQ, ChargePoint and others. Prior to joining SVC, Gerd was Vice President and head of CableTV Solutions in Siemens Information. Gerd has a master's degree in electrical engineering from Technical University Darmstadt, Germany



E. Kenneth Pentimonti

Non-Executive Director and Member of Nomination Committee |

Ken focuses on sourcing, negotiating, and monitoring investment opportunities for Paladin Capital Group, he guides private equity investment in early stage companies. Ken actively involved in Paladin's investment activities in alternative energy investments with a focus on renewable fuels, solar infrastructure, and energy storage. He has spent the 16 years financing and developing emerging growth companies in the IT and energy sectors. Mr. Pentimonti holds an M.B.A. from the Anderson School at UCLA and a B.A. degree in Economics and Political Science from Stanford University.



Tanya Cox

Non-Executive Independent Director, Chairman of Remuneration Committee, Chairman of Audit & Risk Management Committee and Member of Nomination Committee |

Tanya previously served as the Chief Operating Officer and Secretary at Dexus Property Group and served as its Executive General Manager of Property Services. Ms. Cox served as Chief Operating Officer of Dexus Funds Management Limited. She is a financial services professional with more than 25 years' experience. She is chair of the Green Building Council of Australia, a member of the NSW Climate Change Council.

Key Shareholders

Rank	Top 20 Shareholders	Shares	Held(%)
1	Anthony & Gabrielle Wales	19,994,060	24%
2	Siemens Venture Capital GmbH	15,802,533	19%
3	Pala	12,988,636	15%
4	Morgan Stanley Australia Ltd.	3,740,000	4%
5	Keith Kerridge	3,324,500	4%
6	Aster Capital Partners SAS	2,500,200	3%
7	Regal Funds Management Pty. Ltd.	1,640,607	2%
8	William Deane	1,598,782	2%
9	Glen Zell & Alan Watman	909,813	1%
10	James Spenceley	870,000	1%
11	Ian Moore	700,000	1%
12	Societe Generale - Custodian	700,000	1%
13	The Genuin Snake Oil Company	675,000	1%
14	MCC Venture Capital I Holdings Limited	625,000	1%
15	Virtus Trust Limited	576,133	1%
16	John Price	500,000	1%
17	Lynter Pty. Ltd.	500,000	1%
18	Technical Investnig Pty. Ltd.	500,000	1%
19	Alan Cameron	444,000	1%
20	Barry & Kerry Cronin	400,000	0%
	Top 20	68,989,264	82%
	Total	84,281,888	100%

COMPANY SUMMARY

Price Information

Price (\$/share)	0.115
Mkt Cap (\$m)	5.8

Share Price & Volume Chart



Business Background

BIQ, Inc. provides Software-as-a-Service Solution to optimise energy usage in commercial buildings in the US and Australia. BIQ offers Predictive Energy Optimisation software to reduce heating and cooling energy costs in commercial buildings. Clients include; government buildings, hospitals, hospitality, education, large retail.

Key Drivers

Buildings and therefore Area Under Management (AUM) in sq. foot
 BIQ receives a monthly recurring fee based on the area under management
 Growing corporate awareness of sustainability, transition to become more environmentally friendly

Key Risks

Assumption of growth of 35% AUM is possible, but may not realise.
 Realised gains from the acquisition of EWS and FWS may not materialise.
 Changes in technology, such as with the new entrant of Quantify may market penetration and uptake.

PROFIT & LOSS (\$m)

Y/e Jun	FY15A	FY16F	FY17F	FY18F	FY19F	FY20F
Revenue	4.3	3.8	5.2	7.5	13.0	19.4
EBITDA	-3.4	-7.3	-3.5	-2.3	0.8	4.5
Depreciation & Amortisation	-0.7	-0.5	-0.4	-0.4	-0.4	-0.4
EBIT	-4.1	-7.7	-3.9	-2.8	0.4	4.1
Interest Expense	(0.1)	0.0	0.0	0.0	0.0	0.0
Income tax	0.0	0.0	0.0	0.0	0.0	(1.2)
Adj. NPAT underlying	-4.2	-7.7	-3.9	-2.8	0.4	2.9
Less non-controlling Interest	0.0	0.0	0.0	0.0	0.0	0.0
Abnormal items	-1.0	-2.2	0.0	0.0	0.0	0.0
NPAT Reported.	-5.2	-9.9	-3.9	-2.8	0.4	2.9

BALANCE SHEET (\$m)

Y/e Jun	FY15A	FY16F	FY17F	FY18F	FY19F	FY20F
Cash	21.0	12.2	5.3	2.5	2.5	5.0
PP&E	1.0	0.9	0.9	0.9	0.8	0.8
Receivables	3.3	0.3	0.4	0.5	0.7	1.1
Goodwill	0.0	1.3	4.0	4.0	4.0	4.0
Other Intangibles	0.0	0.0	0.0	0.0	0.0	0.0
Other Assets	0.1	0.1	0.1	0.1	0.1	0.1
Total Assets	25.6	15.0	10.9	8.2	8.8	11.8
Debt	0.0	0.0	0.0	0.0	0.0	0.0
Accounts Payable	1.5	0.8	0.6	0.6	0.7	0.7
Other Liabilities	0.0	0.0	0.0	0.0	0.0	0.0
Total Liabilities	1.6	0.9	0.8	0.9	1.0	1.2
NET ASSETS	24.0	14.0	10.1	7.4	7.7	10.6

Cash Flow (\$m)

Y/e Jun	FY15A	FY16F	FY17F	FY18F	FY19F	FY20F
Operating EBITDA	(3.4)	(7.3)	(3.5)	(2.3)	0.8	4.5
Interest & Tax	(0.1)	0.0	0.0	0.0	0.0	(1.2)
Change in Working Cap. & Others	(1.1)	2.4	(0.3)	(0.1)	(0.3)	(0.4)
Others	0.0	0.0	0.0	0.0	0.0	0.0
Operating Cash Flow	(4.6)	(4.9)	(3.8)	(2.5)	0.5	2.9
Capex	(1.3)	(0.4)	(0.4)	(0.4)	(0.4)	(0.4)
Free Cashflow (FCF)	(5.9)	(5.3)	(4.2)	(2.9)	0.1	2.5
Asset Sales (purchases)	(1.0)	(2.2)	0.0	0.0	0.0	0.0
Ord Dividends	0.0	0.0	0.0	0.0	0.0	0.0
Equity, (Debt Paydown)	27.6	0.0	0.0	0.0	0.0	0.0
Net Cashflow	20.7	(7.5)	(4.2)	(2.9)	0.1	2.5

DCF VALUATION & SENSITIVITY

PV of Cashflows 2016 to 2020	(16)	Risk Free Rate	3.2%
PV of Term Year Cashflow	25	Equity Risk Premium	6.1%
Net Debt	0	Equity Beta	1.80
		Cost of Equity	14.1%
		Terminal Growth	3.0%
		TV Multiple	8.00
PV of Equity	9	After Tax WACC	14.1%
PV of Equity per share	\$ 0.11		

KEY RATIOS

Y/e Jun	FY15A	FY16F	FY17F	FY18F	FY19F	FY20F
EBITDA Margin (%)	-80%	-193%	-66%	-31%	6%	23%
NPAT Margin (%)	-121%	-264%	-75%	-37%	3%	15%
ROA (%) y/e	-16%	-52%	-36%	-34%	4%	24%
ROE (%) y/e	-18%	-55%	-39%	-38%	5%	27%
NTA per share (\$)	30%	16%	8%	5%	6%	9%
Eff Tax Rate (%)	0%	0%	0%	0%	0%	30%
Interest Cover (x)	-4620%	0%	0%	0%	0%	0%

VALUATION PARAMETERS

Y/e Jun	FY16F	FY17F	FY18F	FY19F	FY20F
EPS (cps)	-0.1	-0.05	-0.03	0.00	0.03
PE Adj (x)	-1.1	-2.2	-3.0	23.0	2.94
Enterprise Value (\$m)	-3.8	-5.3	-2.5	-2.5	-5.0
EV / EBITDA (x)	nmf	nfm	nmf	nmf	nmf
EV / EBIT (x)	nmf	nmf	nmf	nmf	nmf
Price / NTA	1.3	1.3	1.2	1.1	1.1
DPS (cps)	0.0	0.0	0.0	0.0	0.0
Dividend Yield (%)	0.0%	0.0%	0.0%	0.0%	0.0%
Free Cash / Share	-0.1	0.0	0.0	0.0	0.0
Price / FCF PS (x)	-1	-203	-294	12582	336

Contact Information

Melbourne (Head Office) Level 10, 330 Collins Street Melbourne VIC 3000 +61 3 8633 9831
Sydney Level 9, 56 Pitt Street, Sydney NSW 2000 +61 2 9233 9600
Perth Suite 4, Level 1, 11 Ventnor Avenue, West Perth WA 6000

CRAIG STRANGER

Managing Director
03 8633 9832
cstranger@pacpartners.com.au

SEAN KENNEDY

Corporate Finance
03 8633 9836
skennedy@pacpartners.com.au

ANTHONY STANI

Corporate Finance
03 8633 8251
astani@pacpartners.com.au

BROOKE PICKEN

Equity Capital Markets
03 8633 9831
bpicken@pacpartners.com.au

PAUL JENSZ

Director, Senior Industrial Analyst
03 8633 9864
pjensz@pacpartners.com.au

ANDREW SHEARER

Senior Analyst
03 8633 9862
ashearer@pacpartners.com.au

ROGER CHEN

Analyst
03 8633 9868
rchen@pacpartners.com.au

ALEX SMITH

Analyst
03 8633 9865
asmith@pacpartners.com.au

BRENDAN FOGARTY

Corporate Sales
03 8633 9866
bfogarty@pacpartners.com.au

TOM FAIRCHILD

Corporate Sales
03 8633 9867
tfairchild@pacpartners.com.au

RYAN GALE

Advisor
03 8633 9833
rgale@pacpartners.com.au

SOL JONES

Desk Assistant – Sydney
02 9994 5554
sjones@pacpartners.com.au

PHIL CAWOOD

Institutional Sales – Sydney
02 9994 5552
pcawood@pacpartners.com.au

IAN LEETE

Corporate Sales – Sydney
02 9994 5551
ileete@pacpartners.com.au

SEBASTIAN JURD

Senior advisor – Sydney
02 9994 5553
sjurd@pacpartners.com.au

Recommendation Criteria

Investment View

PAC Partners Investment View is based on an absolute 1-year total return equal to capital appreciation plus yield.

Buy	Hold	Sell
>20%	20% – 5%	<5%

A Speculative recommendation is when a company has limited experience from which to derive a fundamental investment view.

Risk Rating

PAC Partners has a four tier Risk Rating System consisting of: Very High, High, Medium and Low. The Risk Rating is a subjective rating based on: Management Track Record, Forecasting Risk, Industry Risk and Financial Risk including cash flow analysis.

Disclosure of Economic Interests

The views expressed in this research report accurately reflect the personal views of about the subject issuer and its securities. No part of the analyst's compensation was, is or will be directly or indirectly related to any recommendation or view expressed in this report.

The following person(s) do not hold an economic interest in the securities covered in this report or other securities issued by the subject issuer which may influence this report:

- the author of this report
- a member of the immediate family of the author of this report

Disclaimer

PAC Partners Pty Ltd. ("PAC Partners" or "PAC") is a Corporate Authorised Representative of PAC Asset Management Pty Ltd holder of an Australian Financial Services Licence (AFSL No. 335 374). PAC Partners is a business partner of Phillip Capital Limited ("PhillipCapital") (AFSL 246 827).

The information contained in this report is provided by PAC Partners to Wholesale Investors only. Retail investor and third party recipients should not rely, directly or indirectly, on this report. Users of this research report should not act on any content or recommendation without first seeking professional advice. Whilst the report has been prepared with all reasonable care from sources which we believe are reliable, no responsibility or liability is accepted by PAC Partners, for any errors or omissions or misstatements however caused. Any opinions, forecasts or recommendations reflect our judgement and assumptions at the date of publication or broadcast and may change without notice. This report is not and should not be construed as an offer to sell or the solicitation of an offer to purchase or subscribe for any investment. This publication contains general securities advice. In preparing our Content it is not possible to take into consideration the investment objectives, financial situation or particular needs of any individual user. Access of this report does not create a client relationship between PAC Partners and the user. Before making an investment decision on the basis of this advice, you need to consider, with or without the assistance of a securities adviser, whether the advice in this publication is appropriate in light of your particular investment needs, objectives and financial situation. PAC and its associates within the meaning of the Corporations Act may hold securities in the companies referred to in this publication. PAC believes that the advice and information herein is accurate and reliable, but no warranties of accuracy, reliability or completeness are given (except insofar as liability under any statute cannot be excluded). No responsibility for any errors or omissions or any negligence is accepted by PAC or any of its directors, employees or agents. Any content is not for public circulation or reproduction, whether in whole or in part and is not to be disclosed to any person other than the intended user, without the prior written consent of PAC Partners.

This report was prepared solely by PAC Partners Pty Ltd. ASX did not prepare any part of the report and has not contributed in any way to its content. The role of ASX in relation to the preparation of research reports is limited to funding their preparation, by PAC Partners Pty Ltd in accordance with the ASX Equity Research Scheme. ASX does not provide financial product advice. The views expressed in this research report may not necessarily reflect the views of ASX. To the maximum extent permitted by law, no representation, warranty or undertaking, express or implied, is made and no responsibility or liability is accepted by ASX as to the adequacy, accuracy, completeness or reasonableness of the research reports.

Disclosure of Corporate Involvement

PAC Partners has not in the previous 12 months carried out work on behalf of the Company described in this report and received fees on commercial terms for its services. PAC Partners and/or their associates may own securities of the Company described in this report. PAC Partners does and seeks to do business with companies covered in the research. PAC may receive commissions from dealing in securities. As a result, investors should be aware that PAC Partners may have a conflict of interest that could affect the objectivity of this report.

For more information about PAC Partners please visit www.pacpartners.com.au