BUXTON RESOURCES LIMITED



Research Note

AN ELEPHANT IN ITS SIGHTS

Investment Highlights

- In our view, Buxton Resources' (BUX) Double Magic Project in the West Kimberley region of Western Australia has many of the geological features recognised to host world class magmatic nickel-copper deposits which contain Platinum Group Elements (PGE). The Company has outlined a large scale Induced Polarisation (IP) anomaly (Merlin prospect) which has the potential to host a very significant nickel-copper-PGE system. The anomaly has had two holes drilled into the very top which demonstrated that there are fertile sulphides within the system. A significant 10,000m drill program is planned following the conclusion of the wet season (June 2017 Q). We see it as highly likely that further positive nickel-copper intercepts will be returned this drill season, which could define a new deposit. We are initiating coverage of BUX with a Speculative Buy rating and note the high impact that a new discovery could have on the share price, considering the Company's tight capital structure.
- **Double Magic: A Potential Company Maker:** We see the Double Magic Project as having the potential to deliver a significant magmatic nickel sulphide deposit. An IP survey has identified a large flat-lying pipe-like body >2 km long between approximately 60m to 400m below surface, extending to beyond 500m depth at the eastern end possibly indicating a magmatic feeder zone. Furthermore, the Company has mapped outcropping nickel-copper mineralisation over a strike length of 700m proximal to the anomaly, which is predominately primary mineralisation, with values up to 1.52% Ni and 1.4% Cu. Based on the size of the anomaly, we calculate it has the potential to contain a world class deposit. We provide a comparative table on page 3 of this report. The anomaly exhibits some irregular geometrics which further enhances the potential for higher grade sulphide accumulations.
- Evidence Suggests Anomaly Mineralised: At the end of the last drill program, two drill-holes intercepted the very top of the recently defined IP anomaly that demonstrated that there are fertile Ni-Cu sulphides in the system. Hole DMRC0004 returned 18m at 0.51% Ni and 0.21% Cu from 152m and hole DMDD0003 assayed 9.6m at 0.59% Ni and 0.21% Cu from 142.4m. What is interesting about these results is the high Ni/Cu ratio (2.42-2.8), which is equivalent to Nova's 2.4, and above world class deposits like Jinchuan, Voisey's Bay and Mt Keith. We also note that elevated PGE's have been recorded, which suggest a magmatic genesis for the system. Osmium (Os), Iridium (Ir) and Ruthenium (Ru) elements are also elevated, these are generally immobile and provide further evidence of a primary nickel-copper deposit.
- Drilling to Commence Following the Wet Season: The Company is currently planning targets for a c.10,000m drill program to be conducted following the wet season. The drilling will initially aim to demonstrate the presence of a large mineralised system and then systematically explore for higher-grade zones within the >2km long corridor identified.
- Solid Team: BUX has a solid team headed up by Managing Director Eamon Hannon, who is a highly experienced geologist with grass roots exploration and development experience. He worked for Fortescue Metals Group (FMG) from 2004 to 2012 and led the team that delineated more than 10Bt of iron ore Mineral Resources.
- **Catalysts:** March: Define Drill Targets; April/May: Commence Drilling; June Q: First Drill Results from 10,000m program to test the Merlin prospect.

7 March 2017				
12mth Rating	SPECU	LATIVE BUY		
Price	A\$	0.26		
Target Price	A\$	na		
12mth Total Return	%	na		
RIC: BUX.AU	E	BBG: BUX AU		
Shares o/s	m	88.6		
Free Float	%	87.3		
Market Cap.	A\$m	23		
Net Debt (Cash)	A\$m	1.9		
Net Debt/Equity	%	na		
3mth Av. D. T'over	A\$m	0.085		
52wk High/Low	A\$	0.26/0.055		
2yr adj. beta		0.354		
Valuation:				
Methodology		na		
Value per share	A\$	na		
Analyst:		Simon Tonkin		
Phone:	(+61 8) 9225 2816			
Email:	stonkin@nsl.com.au			



RESEARCH NOTE – PATERSONS SECURITIES LIMITED

SUMMARY

We are initiating coverage of Buxton Resources (BUX) with a Speculative Buy rating. In our view, BUX's Double Magic Project (Merlin prospect) in the West Kimberley region of Western Australia has many of the geological features recognised to host world class magmatic nickel-copper-PGE deposits. Preliminary evidence suggests that the system is fertile with nickel-copper sulphides, that appear to be large and of magmatic origin, outcrops at surface and exhibiting geochemical ratios that are consistent with many of the large Tholeiitc (Magmatic) Ni-Cu sill deposits globally.

Merlin Prospect: Compelling Evidence for a Significant Magmatic Ni-Cu Deposit

Figure 1, shows a cross section of the Merlin prospect and the compelling evidence for the presence of a significant magmatic nickel-copper system:

- Outcropping Mineralisation: BUX has mapped outcropping disseminated nickel-copper sulphides above Conductor D which were discovered along a strike length of over 700m at an average thickness of 5 to 10m with values up to 1.52% Ni and 1.4% Cu. This sill of host rock (in this case Ruins dolerite) is indicative of magmatic Ni-Cu systems which intrude into the regolith (country rock).
- 2) Massive Sulphides: As part of its previous drill program, BUX tested Conductor D which included massive sulphides in DMRC0003 (8m at 3.05% Ni an1.88% Cu from 35m). This is also part of the mineralised intrusion which has been confirmed to come to surface.
- 3) Significant IP Anomaly Capable of Containing a World Class System: A significant IP anomaly has been discovered and has identified a large flat-lying pipe-like body >2 km long between approximately 60m to 400m below surface, extending to beyond 500m depth at the eastern end, possibly indicating a magmatic feeder zone.
- 4) Two Holes Into IP Anomaly: As part of a previous drill program, BUX tested Conductor C, solid results were returned with 18m at 0.51% Ni and 0.21% Cu (DMRC0004) and 9.6m at 0.59% Ni and 0.21% Cu (DMDD0003). This suggests there is good potential for the IP anomaly to be mineralised.
- 5) Elevated PGE's: Elevated PGE's have been recorded which suggest a magmatic genesis for the system. Osmium (Os), Iridium (Ir) and Ruthenium (Ru) elements are elevated and are generally immobile and provide further evidence that the Merlin prospect is be a primary nickel-copper-PGE deposit.
- 6) **Ratios are Indicative of Large Systems:** Our analysis suggests that the preliminary Ni-Cu and PGE ratios are indicative of a significant and potentially world class system.
- 7) No Graphite or Saline Water: In addition, ground water in the area is fresh and there is an absence of graphite in the drilling thus far. This further supports the evidence that the IP anomaly contains fertile sulphides and not saline water or graphitic shale.

A 10,000m drill program is planned following the wet season and will initially aim to demonstrate the presence of a large mineralised system and then systematically explore for higher-grade zones.



Source: Buxton Resources Limited

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Significant IP Anomaly

The Company has outlined a large scale Induced Polarisation (IP) anomaly at the Merlin prospect. The IP anomaly stretches in excess of 2km and at least several hundred metres across, ranging in depth between ~60 to 400m below surface. Adding to the potential, this body appears to plunge down and be open beyond 500m depth at the eastern end, possibly indicating a magmatic feeder zone. These magmatic feeder conduits tend to contain massive sulphide mineralisation.



Source: Buxton Resources

SIGNIFICANT DRILL TARGET

Based on the size of the IP anomaly we believe it has the potential to contain a world class Tholeiitc (Magmatic) Ni-Cu deposit (Figure 3). The initial holes drilled into the IP anomaly have a grade of 0.5% Ni and 0.2% Cu, however, there are likely to be higher grade areas which the Company will target in due course that could yield a Nova style grade concentration (>2% Ni). A deposit of Nova's size would be worth multiples of BUX's current share price. Sirius Resource (SIR) which owned the Nova deposit was taken over for \$1.8bn.

	Mt	Ni%	Cu%	Co%	Ni Eq. Metal t
Jinchuan	500	1.53	0.81	0.09	8,200,000
Voisey's Bay	141	1.63	0.85	0.09	3,278,250
Mt Keith (Komatiite)	294	0.52			1,528,800
Nebo-Babel	203	0.41	0.42	0.02	1,349,950
Nova-Bollinger	14.3	2.30	0.90	0.08	427,570
Savannah	17.9	1.53	0.81	0.09	394,650

Source: Buxton Resources

We note that the Double Magic project is relatively isolated being in the Kimberley region of Western Australia. The closest major town is Derby located 85km away and the closest nickel operation (400km away) is Savannah owned by Panoramic Resources (PAN). Therefore, we believe the discovery needs to be of a size (>400kt of contained Ni) to justify its development. This is a similar size to Savannah owned by Panoramic (PAN) and Nova owned by Independence Group (IGO).



Geological Comparison with Nova

Preliminary observations from the Merlin prospect suggest there is excellent potential for a Tholeiitc (Magmatic) Ni-Cu deposit. We have compared the geologic features from the recent Nova discovery (2012) with the Merlin prospect. There are a number of similarities including age, mineralisation and potential mineralisation style. The fact that there is a number of thick Ruins Dolerite mineralised sills intruding into the country rock is an indication of the potential for a significant mineralised system. We note that when the Nova deposit was discovered in July 2012, Sirius Resources (SIR) was drilling an Electromagnetic (EM) target and used further IP to discover the proximal Bollinger deposit.

These deposits produce much of the world's nickel sulphides. They are typically Ni-Cu sulphide with elevated PGE concentrations (and can include the by-products: Cobalt, Gold and Silver) in mafic-ultramafic igneous intrusions and volcanic flows. They are linked to a specific genetic process that may occur in mafic magmas: Segregation of an immiscible sulphide melt from mantle derived magmas that a) have been contaminated with crustal sulphur, and/or 2) experienced an increased silica content from wallrock assimilation (rarer) [Source: Stephen J. Piercey]

The Double Magic Project is a completely new and untested field. The size potential is completely unknown, however, the Company has delineated a significant IP anomaly. We believe it is likely that that further positive nickel-copper intercepts will be returned this drill season, which could define a new deposit. It takes time and persistence to discover Ni-CU-PGE magmatic deposits within large systems.

Figure 4: Geological Comparison between Nova-Bollinger Ni-Cu-Co deposit and the Merlin Prospect				
Mineralisation Criteria	Nova/Bollinger Ni-Cu-Co-PGE Deposit	Merlin Preliminary Observations		
Geologic Time Scale	Fraser Zone ~ 1.305 Ga (Early Proterozoic)	Early Proterozoic - similar age to Savannah Ni-Cu mine		
Tectonic Environment	Fringe of the south-east margin of the Achaean Yilgarn craton	Continental setting, LIPs (Large Igneous Province)		
Host Rock	Hosted by a series of sills emplaced into a sedimentary pile at \sim 1.3 Ga. The rocks were metamorphosed to granulite facies during a tectonothermal event at > 1.2 Ga. The sills formed from a series of crustally contaminated "basaltic" melts that achieved sulphide saturation prior to emplacement	The Ruins Dolerite is a medium- to fine-grained mafic- ultramafic intrusive that is host to the known nickel- copper sulphide mineralization. Sills of the Ruins Dolerite host the known nickel-copper sulphide mineralisation. The sills are indistinctly, contain pods of meta-peridotite and up to several hundred meters thick.		
IP Anomaly	Extends 2km to the North East	In excess of 2km		
Sulphide Area	0.5km ²	Outcropping mineralisation observed over 700m		
Mineralisation	pyrrhotite (~80-85%), pentlandite (~10-15%) and chalcopyrite (5-10%)	Pyrrhotite, Pentlandite and Chalcopyrite		
Mineralisation Style	Nova: Thick zones of massive, matrix and disseminated sulphides; Bollinger: disseminated to stringer sulphide, massive and breccia sulphide,	Disseminated sulphides observed in drill core at Conductor C. Massive sulphides observed in drill core near surface at Conductor D.		
Grades	Nova-Bollinger Mineral Resource 14.6Mt at 2.2% Ni, 0.9%Cu, 0.08% Co Tholeiitc Ni-Cu-PGE Deposits Economic Grade: 0.5-3% Ni, Cu 0.2-2% Cu; Co, PGM, Au and Ag are common by-products. PGE's not economic levels at Nova	Massive Sulphide Hit: 8m at 3.05% Ni, 1.88% Cu (Conductor D). Disseminated mineralisation at Conductor C: 18m at 0.51% Ni, 0.21% Cu from 152m and 9.6m at 0.59% Ni, 0.21% Cu from 142.4m Elevated PGE's unlikely to be economic		

Source: Company Reports, Patersons Estimates



Nickel-Copper-PGE Ratios Similar to World Class Deposits

We have used the preliminary drill and sampling results from the Merlin prospect to compare with various ratios from other world class deposits. Our analysis suggests that the Merlin prospect known ratios are within these parameters. In our comparison, we have used the two holes drilling into conductor C as this appears to be the best representation that we have at this early stage. For the PGE's were have used the information released on 14 December 2016. The significant of Iridium which is immobile suggest the deposit is a primary source.

Figure 5: Suphide Geochemistry of Global Magmatic Ni-Cu Deposits					
Deposits	Ni/Cu	Ni/Co	Pd/Pt	Pd/Ir	(Pt+Pd)/(Ni+Cu)
	Tholeiitic sill/dike deposits				
Eagle (United States)	1.23	35.7	0.64	-	0.2
Insizwa (Karoo) (South Africa)	0.91	-	2.4	18.12	0.73
Jinchuan (China)	1.76	56	1	14.37	0.04 to 0.45
Kabanga (Tanzania)	5 to 10	10 to 15	0.3 to 2.0	2 to 20	0.06 to 0.4 (+1.6)
Noril'sk–Talnakh (Russia)	0.58	58	3.43	217.34	1.1 to 4.8
Pechenga (Russia)	1.86	26	1.33	9.7	0.05 to 0.26
Voisey's Bay (Canada)	1.87	18	1.29	59.98	0.05
Nova (Australia)	2.56	28.8	2.10	nd	0.0001
Merlin (Australia - Preliminary Data)	2.4-2.8	nd	0.92	13.7	0.006
	Reef-type deposits				
Duluth (United States)	0.33	10.5	3.35	184.17	2.9 to 4.8
Platreef (South Africa)	1.27	-	1.5	88 to 166	2.1 to 4.4
Merensky reef (South Africa)	2.6	-	0.54	14.69	17.4 (+112.6)
J-M reef (United States)	2.03	-	3.47	901.7	353.99
	Komatiitic Ni-Cu deposits				
Kambalda (Australia)	13.5	0.07	1.39	8.87	0.19 to 0.26
	Meteoritic impact-related deposits				
Sudbury (Canada)	1.11	32	1.26	30.65	0.06 to 1.37

Source: USGS, Company Reports, Patersons Estimates

CORPORATE

At 31, December 2016 BUX had \$1.9m in cash. As we noted previously, the Company has a tight capital structure with only 88.6m shares on issue. There are a further 25.97m options at various exercise dates (November 2017 – November 2019) and pricing (\$0.12-\$0.28/sh). At the current share price, the majority of the options are in-the-money. If all options were exercised then this would bring in an additional \$4.5m.

National Business Holdings is a substantial shareholder in BUX holding 9.8%. Directors and Management hold 2.9%.



ASSETS

Double Magic Project, West Kimberley

In early 2015, BUX acquired 100% of the Double Magic project (93km²) from private vendors for 1.6m shares and \$120k. The attraction to the project was 1) The presence of nickel host lithology (Ruins Dolerite) 2) Located in a mirror tectonic position to the Savannah mine, 3) numerous EM Conductors with a 2km² central area 4) Shown to contain nickel sulphides with historic drill results 5) Three walk-up drill targets had already been identified.



Source: Buxton Resources Limited

Geology

The Project areas lie within the Palaeoproterozoic Hooper Province of the King Leopold Orogen in the Kimberley region of Western Australia. The geology of the Project is characterized by mica schists of the Marboo Formation which are intruded by thick sills of the Ruins Dolerite. The sills are indistinctly layered, contain pods of meta-peridotite and are up to several hundred metres thick. The Ruins Dolerite is a medium-to fine-grained mafic-ultramafic intrusive that is host to the known nickel-copper sulphide mineralization. This mineralization is interpreted to represent primary orthomagmatic sulphide mineralization, however there appears to be significant re-mobilisation and alteration of the mineralization in places. The Ruins Dolerite is very similar in age and composition to intrusions in the Halls Creek Orogen such as the Sally Malay Suite that hosts the Savannah Nickel-Copper Mine of Panoramic Resources.

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Drill Programs

The 2015 maiden drill program was a success with the presence of high tenor nickel-copper in multiple targets. In total, 24 holes were drilled in two phases of drilling testing a total of 8 EM conductors. Significantly, seven holes at Conductors B & D intersected grades >3% Ni over intervals of between 1 and 4m. 19 of the holes testing 8 targets intersecting mineralisation >0.25% Ni and 10 of those holes intersected mineralisation >1% Ni at 4 targets. The only disappointing aspect of the drill program for the market was that the Company was unable to replicate the first drill hole of the drill program into Conductor D (Merlin prospect) which returned 8m at 3.05% Ni and 1.87% Cu from 41m of massive and matrix sulphides.



Source: Buxton Resources Limited

During the 2016 field season, the focus was on obtaining a better understanding of the structure of the lithogeochemistry, geophysics and genesis of mineralisation across the project and at the Merlin Prospect. It was decided that an IP survey, rather than previous EM surveys, would be needed to help define further drill targets. IP surveys check the electrical chargeability and resistivity of the rock vs EM which measures conductivity. Therefore, the IP should detect the chargeability of disseminated, stringer, or net-textured zones and not pickup distracting conductive bodies such as massive sulphide veins or graphite. In October 2016, BUX released the ground breaking IP survey results which showed a very large IP anomaly at depth. The IP anomaly stretches in excess of 2km and at least several hundred metres across, ranging in depth between ~60 to 400m below surface. Adding to potential, this body appears to plunge down and be open beyond 500m depth at the eastern end, possibly indicating a magmatic feeder zone.

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OTHER ASSETS

Zanthus JV (IGO 90%; BUX 10%)

The decision by BUX to joint venture its tenure in the Fraser Range to Independence Group provides investors with further confidence that the Company believes in the prospectivity of its Double Magic project in the West Kimberley (which is its main project). In August 2016, BUX formed a Joint Venture with Independence Group (IGO) for its Zanthus (E28/1959) and Widowmaker (E28/2201) tenements located in the Fraser Range. IGO paid BUX \$1.5m and the Company will be free carried on all expenditure until a Decision to Mine is made on the Tenements – at which point Buxton will have a 10% interest in possibly a world-class nickel deposit.

The Zanthus Ni-Cu Project is located approximately 60km along strike from IGO's Nova Ni-Cu-Co Project in the emerging Fraser Range Nickel Province, Western Australia. The project covers an area of 367km². Gravity data was gathered over an area of 137km² of the potential gneiss units interpreted as being similar to those that host "the Eye" mafic - ultramafic intrusive that contains the Nova-Bollinger deposit. The Widowmaker Project is also located in the Fraser Range and covers an area of approximately 225km2. The Fraser Range Nickel Province is host to a number of significant discoveries, most notably IGO's Nova Project with Buxton's Widowmaker Project located 22km along strike. Approximately 15km of strike length of the favourable lithological host-rock package is interpreted to underlie the Widowmaker Project with multiple, significant Ni, Cu and PGE anomalies identified in a historical calcrete soil sampling database.



Source: Buxton Resources Limited

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Yalbra Graphite Project

The Yalbra Graphite Project is located 250km North West of Meekatharra and 280km East of Carnarvon, Western Australia, and covers an area of 37km². BUX is attempting to commercialise the Yalbra Graphite Project by bringing in a strategic partner for development and/or offtake. Through drilling from 2013, BUX was able to define a JORC Resource of 4Mt at 16.2% TGC (Inferred) 650,000t of contain graphite. The Resource is one of the highest grade graphite projects in Australia and remains open along strike. Metallurgical testwork show that commercial grades of flake graphite concentrate @ 91% C(t) can be produced with 30% in the medium and coarse flake categories.



Source: Buxton Resources Limited



Figure 10: Map of simplified geology with drilling results - Yalbra Main Zone

Source: Buxton Resources Limited

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RISKS

Exploration Risk: BUX is primarily exploration focused. Exploration is inherently risky and there is no guarantee that an economic deposit will be delineated. Further drilling is needed to follow-up targets which may or may not result in further discoveries. The Double Magic Project is a new and completely untested field with the size potential completely unknown. It can take time and persistence to discover economic deposits within large magmatic systems.

Financing Risk: BUX may from time to time need to access the equity/debt markets to finance its exploration and development activities. There can be no assurances that this capital will be available at a reasonable cost; therefore, substantial future dilution could result.

Commodity Price Risk: BUX has commodity exposure through its large exploration and development portfolio to a diversified range of commodities (nickel, copper, graphite). There can be no assurances that prices will remain at current levels which can have a positive or negative impact on the economic extraction of a deposit.

DIRECTORS AND MANAGEMENT

Mr Eamon Hannon - Managing Director

Mr Hannon, a geologist and Fellow of the AusIMM, has a wealth of experience within the minerals industry from grass roots exploration through to project development. Having previously worked for Fortescue Metals Group (ASX:FMG) from early 2004 to late 2012 in the role of Director, Exploration and Evaluation, he lead the teams to delineate in excess of 10 billion tons of iron ore resources and greater than 1 billion tons of iron ore reserves.

During his 20 years of experience, Mr Hannon has explored for and developed gold, base metals and industrial materials over 4 continents and more than 10 countries including Tanzania, Mexico, Mongolia, New Zealand, Sweden and Australia. He was integral to the major mining development of the Svartliden gold mine in Scandinavia. In addition, Mr Hannon was the Director for the Bankable Feasibility Study of Fortescue Metals Group's Solomon mine. The Solomon mine at 60 million tons per annum iron ore production was the single biggest tonnage start up mine in Australia's mining history. The feasibility was signed off for construction by the Fortescue Board with full Environmental Approval in under 18 months.

Mr Seamus Cornelius - Non-Executive Chairman

Mr Cornelius brings to the Board over 25 years of corporate experience in both legal and commercial negotiations. Mr Cornelius has been living and working as a corporate lawyer in China for 17 years. He has been based in Shanghai and Beijing since 1993. From 2000 to 2010 he was an international partner with one of Australia's leading law firms and specialized in dealing with cross border investments, particularly in energy and resources. Mr Cornelius has for many years advised large international companies on their investments in China and in recent years has advised Chinese state owned entities on their investments in natural resource projects outside of China including in Australia.

Mr Anthony Maslin - Non-Executive Director

In his six years as a stockbroker at Hartley Poynton Stockbrokers in Perth, Mr Maslin was instrumental in the capital raisings and promotion of several resource development companies. In the subsequent seven years in his role as founding Managing Director of Solar Energy Systems Ltd (Now Solco Ltd (ASX Code: SOO)) he had significant experience in capital raisings and management of both people and projects. Mr Maslin has also worked as a corporate promotion consultant to a number of listed companies. He held the position of Managing Director of Buxton Resources from December 2010 to October 2014.

Mr Feng (Frank) Xue - Non-Executive Director

Mr Xue is an experienced mining executive and entrepreneur based in Shanghai. He currently serves as one of the experts on the strategic decision committee of China CEFC Energy Company Limited and as the General Manager of Projects Management & Procurement Center of China CEFC Energy Company Limited.



1300 582 256 patersons@psl.com.au www.psl.com.au

Research Rob Brierley - Head of Research Hira Sakrani - Research Assistant Brad Seward - Associate Analyst	Phone: Phone: Phone:	(+61 8) 9263 1611 (+61 3) 9242 4052 (+61 8) 9225 2835	Email: Email: Email:	rbrierley@psl.com.au hsakrani@psl.com.au bseward@psl.com.au
Strategy & Economics Tony Farnham - Economic Strategist / Analyst Andrew Quin - Research Strategy Coordinator Kien Trinh - Senior Quantitative Analyst	Phone: Phone: Phone:	(+61 2) 9258 8973 (+61 8) 9263 1152 (+61 3) 9242 4027	Email: Email: Email:	tfarnham@psl.com.au aquin@psl.com.au ktrinh@psl.com.au
Commodities Cam Hardie - Analyst Simon Tonkin - Senior Analyst Juan Pablo (JP) Vargas de la Vega - Analyst	Phone: Phone: Phone:	(+61 3) 9242 4153 (+61 8) 9225 2816 (+61 8) 9225 2818	Email: Email: Email:	chardie@psl.com.au stonkin@psl.com.au jpvargas@psl.com.au
Industrials Martyn Jacobs - Analyst Jon Scholtz - Analyst	Phone: Phone:	(+61 3) 9242 4172 (+61 8) 9225 2836	Email: Email:	mjacobs@psl.com.au jscholtz@psl.com.au
Institutional Dealing				
Dan Bahen Michael Brindal Artie Damaa Paul Doherty Chris Kelly Jeremy Nugara George Ogilvie Phil Schofield Sandy Widle	Phone: Phone: Phone: Phone: Phone: Phone: Phone: Phone: Phone:	(+61 8) 9263 1274 (+61 8) 9263 1186 (+61 2) 8238 6215 (+61 3) 8803 0108 (+61 3) 9242 4078 (+61 3) 8803 0166 (+61 8) 9263 1627 (+61 2) 8238 6223 (+61 8) 9263 1232	Email: Email: Email: Email: Email: Email: Email: Email: Email:	dbahen@psl.com.au mbrindal@psl.com.au adamaa@psl.com.au pdoherty@psl.com.au ckelly@psl.com.au jnugara@psl.com.au gogilvie@psl.com.au pschofield@psl.com.au
Sandy wyne	Phone:	(+010) 9203 1232	Email:	swyne@psi.com.au

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