

## Due Diligence and Valuation Report

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 Fair share value bracket: AU\$0.15 to AU\$0.21<sup>i</sup>  
 Share price on date: AU\$0.046<sup>ii</sup>

### Analyst Team

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### Market Data

52-Week Range:	AU\$0.033 – AU\$0.077 <sup>iii</sup>
Average Daily Volume:	175,703 <sup>iv</sup>
Market Cap. on date:	AU\$9.10MM <sup>v</sup>

### Financial Forecast Data (in AU\$)

	'15E	16E	'17E	'18E	'19E	'20E	'21E
High profit/(loss) MM	(4.0)	(3.1)	(1.0)	(1.3)	25.5	26.2	26.4
High EPS cents	(2.0)	(1.6)	(0.5)	(0.7)	12.9	13.2	13.4
Low profit/(loss) MM	(4.0)	(3.1)	(1.0)	(1.3)	32.3	33.0	33.4
Low EPS cents	(2.0)	(1.6)	(0.5)	(0.7)	16.3	16.7	16.9

**Fiscal Year (FY)** 1st July – 30th June

### Summary

Potash West NL is an Australia-based mineral exploration and development company, with interests in phosphate and potash projects. The company's assets include the Dandaragan Trough project in Western Australia, and South Harz potash project in Germany.

The projects benefit from the location advantages in terms of excellent connectivity and infrastructure. The company is currently focused on bringing the phosphate project to production in Dandaragan Trough, and advancing the exploration in the German project.

The addition of the German project is expected to enable the company to cater to multiple target markets, particularly China and Europe which together account for more than 70% of the global SOP consumption.

### Dandaragan Trough Project

The Dandaragan Trough has one of the world's largest glauconite deposits. Along with the



Company: POTASH WEST NL  
 Ticker: ASX:PWN,  
 Headquarters: Perth, Australia  
 Managing Director: Patrick McManus  
 Website: [www.potashwest.com.au](http://www.potashwest.com.au)

processing rights of potash and phosphate, the company also holds the rights to by-products.

### Phosphate Project

In 2014, the company upgraded the phosphate resource estimate at the Dinner Hill prospect to 120MMT indicated resources at 2.79% P<sub>2</sub>O<sub>5</sub>. The resource was upgraded, following the feasibility of processing calcite-rich chalk.

Post the resource upgrade, the company updated its phosphate scoping study, indicating a pre-tax IRR of 29.5% and NPV<sub>8</sub> of AU\$331MM, based on 340ktpa SSP production at 18.1% P<sub>2</sub>O<sub>5</sub>.

The scoping study in the project also highlighted the easy adoption of the process flow sheet. with a recovery of 70% to only 36% of the mass, indicating relatively non-expensive upgrade of resources to 5.4% P<sub>2</sub>O<sub>5</sub> for feed to the flotation plant. The project is expected to have a low capex of AU\$144MM.

Potash West currently plans to carry out a Definitive Feasibility Study on the phosphate project, and expects to complete the same by Dec 2015. It plans to complete the construction by 2017 and start production by mid-2018.

### K-Max Project

The company has also developed a proprietary K-Max process to extract Sulphate of Potash (SOP) and other co-products from glauconite. The company has also applied for a patent for the K-Max process. The Dinner Hill prospect has K-Max resource of 122MMT at 4.6% K<sub>2</sub>O. The scoping study for K-Max resource suggested pre-tax NPV<sub>10</sub> of AU\$808MM and IRR of 21.0%.

The company's resource in the Dinner Hill prospect was 15% of the project area. and the company estimates exploration target of 1-1.5BT (at 4.0%-4.8% K<sub>2</sub>O), including 300-600MMT phosphate mineralization target (at 1.5%-3% P<sub>2</sub>O<sub>5</sub>) in the whole Dinner Hill Area.

## German Project

In July 2014, the company entered into a farm-in agreement with Exploration Pty Ltd. (EE), through which it can earn upto 55% interest in two exploration tenements in the South Harz region in Germany. The company's tenements, Kuellstedt and Graefentonna, cover more than 450km<sup>2</sup>, with historical drilling intersecting potash mineralization at shallow depths (from 200m below surface).

In August 2014, ERCOSPLAN commenced the review of geological data in the Kuellstedt application license area, which is expected to be completed in 14 weeks. Based on the results, the company plans to fast-track exploration in the region, including definition of JORC resource.

## Valuation

Given the due diligence and valuation estimations based on the discounted project cash flows, Arrowhead believes that Potash West NL's fair share value lies between AU\$0.15 to AU\$21. Our valuation is based on the phosphate project in the Dandaragan Trough, due to the company's focus on bringing it to production due to shorter development time and lower capex.

We have also conducted the valuation from the K-Max project; however we have not included it in our analysis due to company's plans to advance it after starting potash production. We have not carried the valuation for the German project, given the early exploration stage.

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## Company Presentation

Potash West NL (PWN) is an ASX-listed mineral exploration company seeking to make the transition to producer status. The company's asset base comprises the Dandaragan Trough project in Western Australia, and a South Harz potash project in Germany. The projects are located close to major infrastructure facilities, providing easy access to the market.

The Dandaragan Trough deposit is the world's largest glauconite deposit, and is spread over an area of more than 2,000km<sup>2</sup>. The Company plans to develop its phosphate project first, as the development time is shorter, capital cost is lower and there are lower technical risks with the well-established process. It plans to conduct a Definitive Feasibility Study on phosphate production by December 2015, followed by construction in December 2017 and production by July 2018. Following the commencement of phosphate production, it plans to develop the potash project, processing glauconite to produce Sulphate of Potash (SOP) and a range of valuable by-products, using its proprietary K-Max process.

In 2014, the company updated its scoping study on the phosphate project at Dinner Hill prospect, with IRR of 29.5% and NPV<sub>8</sub> of AU\$331MM, based on 340ktpa SSP production at 18.1% P<sub>2</sub>O<sub>5</sub>. The scoping study for K-Max resource suggested NPV<sub>10</sub> of AU\$808MM and IRR of 21.0% at a mining rate of 2.4Mtpa.

In July 2014, the company entered into a farm-in agreement through which it can earn up to 55% interest in a German potash project by funding early stage exploration. Through its Joint Venture firm, East Exploration Pty Ltd. (EE), the company has applied for exploration licenses within two tenements in the South Harz region in Germany. The tenements are situated in a historically significant potash mining belt, and have the advantage of geological information availability. In August 2014, EE appointed ERCOSPLAN to review the geological data in the Kuellstedt application license area. Potash West plans to target the European markets through production from this project.

### Potash West NL's Portfolio and Company Premiums

- *Large, multi-resource, greensand deposit in Australia...:* The Dandaragan Trough Project area is spread over 2,000 km<sup>2</sup>, and hosts one of the world's largest glauconite deposits, along with phosphate mineralization. Along with rights to the glauconite and phosphate minerals within the tenements, Potash West also holds rights to by-products produced by processing these minerals. The Dinner Hill prospect within the project has a phosphate resource estimate of 120MMT at 2.79% P<sub>2</sub>O<sub>5</sub>, and K-Max resource estimate of 122MMT at 4.6% K<sub>2</sub>O. The mineralization displays strong geological continuity, providing scope for additional resources to the south, east, and north of the tenement. The current resource was established in ~15% of the Dinner Hill prospect; over the broader prospect area, the company estimates an exploration target of 1.0BT to 1.5BT at 4.0% to 4.8% K<sub>2</sub>O, including 300–600MMT phosphate mineralization target at 1.5% to 3% P<sub>2</sub>O<sub>5</sub>.
- *...coupled with interest in the potentially attractive German potash project...:* In July 2014, the company entered into a farm-in agreement through a Joint Venture firm, East Exploration Pty Ltd. (EE). EE has applied for two exploration licenses in the South Harz region of Germany, and Potash West can earn up to 55% interest in the project by funding early stage exploration. South Harz is a prolific potash producing region in Germany, with over 500MMT potash ore mined during the past 100 years. The mineralization in the company's application license areas, covering more than 450km<sup>2</sup>, intersects at a shallow depth (from 200m below surface), suggesting low mining costs. The project also benefits from the availability of significant historical geological information; currently EE has appointed ERCOSPLAN to review the same in the Kuellstedt application license area.
- *... provides a unique opportunity to access multiple, significant geographical markets:* The geographical distribution of the company's asset portfolio provides it with the unique opportunity to cater to the demand from Australian, Asian and European markets. The company's assets—the Dandaragan Trough project and the recently added German project—are well connected and located close to major infrastructure facilities, thus providing easy access to target markets. While the products from the Dandaragan Trough project could be marketed for local consumption (currently a major share of the Australian demand is imported), as well as exported to India and China; the German project, if successful, could expand the company's target market to Europe. This will enable

the company to cater to multiple regions which account for more than 70% of the global SOP consumption (in 2013, China and Europe were the major consumers of SOP, accounting for 49% and 24% of the global consumption, respectively)

- *Profit maximization by harnessing the potential synergy between phosphate and K-Max projects in the Dandaragan Trough project:* The phosphate and the potash projects in the Dandaragan Trough have been evaluated independently; however if combined together, it could lead to revenue maximization and cost reduction. The waste from the K-Max plant (coarse mineralization) could be used to recover phosphate, resulting in an estimated 50% higher phosphate production. Similarly, potash and other co-products could be extracted from the concentrate and slimes, the by-products of phosphate processing. The company, however, is yet to confirm on the economic feasibility of the same.
- *Successful application of the proprietary K-Max process could provide a potential revenue-earning stream:* The company developed the K-Max process, a one-of-its kind flow sheet, to extract potash and other products by processing glauconite in the greensand. This enables the production of sulphate of potash (SOP) and various co-products such as high-magnesium SOP, single superphosphate, iron oxide and aluminium sulphate from glauconite. The company holds 100% Intellectual property (IP) of the process, and has already applied for its patent. It plans to conduct a pilot run on its glauconite deposits, which if successful, would be applied to a host of other glauconite deposits. The success of this project might result in significant revenue generation.

### **Potash West NL's Portfolio and Company Risks**

We believe that the company's operational risk has reduced, given the JORC-compliant resource estimate on its Dandaragan Trough Project and the project's strong technical and financial viability (suggested by the initial scoping study). The farm-in agreement for potentially attractive German Potash project is expected to diversify the company's asset base, thus reducing the concentration risk.

However, currently, the company does not have any operational asset, though it is planning to conduct a Definitive Feasibility Study on the Dandaragan Trough Project.

Although the company has raised capital through IPO and private placement, we believe that significant capital infusion will be required to finance future activities. Additionally, Potash West faces other risks inherent to mining firms, such as regulatory risk, commodity price risk, and title risk.

### **Potash West NL's Corporate Strategy**

Potash West is currently focusing on advancing the potash project in the Dandaragan Trough project, while simultaneously developing the German Potash project.

The *Dandaragan Trough project* will enable the company to consolidate prospective ground in Western Australia, thus reducing competing market interests, dominating the Australian glauconite resource market, defining cost effective extraction, maintain efficiency and cost profile, and advancing toward definitive feasibility. The project has ready local and export market at its doorstep, being close to rail and export ports.

The recent farm-in on the *German potash project* further provides it with a unique opportunity to expand its presence in the European market. Though still in the exploration stage, availability of information on historical geological exploration on the project area is expected to reduce the time for development.

The IP of the K-Max process can be applied to other Glauconite developers and has the potential to be expanded to other minerals. There has been interest from third parties in this and the company is looking to leverage its technology assets over the next 12 months.

## News

**Potash West completes AU\$2.9MM placement:** On October 10, 2014, Potash West announced capital raise of AU\$2.9MM through placement of 58MM shares at AU\$0.05 per share. The proceeds from the placement will be used in Dandaragan Trough project and Kullestedt potash project.

**Potash West acquires additional tenements in the Dandaragan Project:** On August 20, 2014, Potash West announced an acquisition of 300km<sup>2</sup> of prospective tenements to the Dandaragan Trough Project. The addition is expected to consolidate the company's holding over prospective areas of Dandaragan Trough Project and add to the existing extensive resource base, close to the Dinner Hill prospect.

**East Exploration commissions review of geological data:** On August 18, 2014, East Exploration (EE), the company's JV arm in Germany, commissioned Ingenieurgesellschaft Geotechnik und Bergbau mbH (ERCOSPLAN) to review the geological data of the Kuellstedt project. The process, including collation, analysis and reporting of the geological data, is expected to be completed in 14 weeks.

**Potash West earns interest in Germany's potash project:** On July 29, 2014, Potash West announced 25% interest in East Exploration Pty Ltd. (EE) following the payment of AU\$100k. EE holds 450km<sup>2</sup> of exploration permits in the prospective South Harz region of Germany. The company can earn a further 25%, subject to payment of AU\$200k, for funding the licenses and reviewing the historical geological data. The company can earn upto 55% from EE, subject to payment of AU\$50k.

**Potash West announces completion of AU\$800k placement:** On July 9, 2014, Potash West raised AU\$800k through the placement of ~23MM fully paid ordinary shares. The proceeds from the placement will be used in Dandaragan Trough project.

**Updated scoping study demonstrates improvements at Phosphate Project:** On April 15, 2014, Potash West announced the results of the updated phosphate scoping study on the Dandaragan Trough Project. The study suggests attractive economics, with IRR of 29.5% and pre-tax NPV<sub>8</sub> of AU\$331MM. It also indicated average revenue of AU\$124MM based on the production of 340ktpa SSP at 18.1% P<sub>2</sub>O<sub>5</sub>.

**Potash West upgrades Dinner Hill phosphate resource:** On March 20, 2014, Potash West re-estimated and upgraded the Dinner Hill phosphate resource to 120MMT indicated resource at 2.8% P<sub>2</sub>O<sub>5</sub>, 3.1% K<sub>2</sub>O, and 8.2% CaO at a cut-off grade of 2.15% P<sub>2</sub>O<sub>5</sub>. The resource re-estimation was based on significant improvements in the metallurgical flow sheet, following the demonstration on the potential to recover phosphate from chalk by using selective floatation regime.

**Potash West test work program produces positive results:** On February 12, 2014, Potash West confirmed the recovery of phosphate from the Gingin Chalk at its Dinner Hill deposit. Recent testing conducted by the company exhibited the likelihood of recovering phosphate from chalk by implementing a selective flotation regime. 58.1% of phosphate can be recovered by processing chalk at Dinner Hill deposit when producing commodity grade SSP (compared to the earlier scoping study suggesting 61.2% phosphate recovery). Though the current recovery rate is lower; the capability to process phosphate from chalk is expected to economically outweigh the reduction.

**Potash West announces appointment of advisor:** On February 6, 2014, Potash West announced the appointment of Intuitive Pvt. Ltd as a corporate advisor to assist it with the introduction of potential new investors and interested parties in a global capacity.

## Listing Information

Potash West NL listed on ASX on May 11, 2011 (Ticker: PWN). It is also listed on OTCPink (Ticker: PWNNY)

## Contacts

<b>Registered office</b>	Potash West NL, Suite 3, 23 Belgravia Street, Belmont WA 6104, Belmont WA 6984, Australia
<b>Telephone</b>	+61 8 9479 5386
<b>Facsimile</b>	+61 8 9475 0847
<b>E-mail</b>	<a href="mailto:info@potashwest.com.au">info@potashwest.com.au</a>

## Major Shareholders<sup>vi</sup>

Equity Holder	No. of Shares (MM)	Percentage Issue Capital (%)
Citicorp Nominees Pty Limited	35.02	17.70%
Yap Thai Choy	12.00	6.06%
Uob Kay Hian Private Limited	9.55	4.83%
HSBC Custody Nominees	8.74	4.42%
Mr. Robert Peter Vanderlaan	5.97	3.02%
Mr. Adrian Christopher Griffin	5.08	2.57%
SBI Investments Llc	5.00	2.53%
Mr. Dennis Bell	4.46	2.25%
Mr. John Stephen Bladon	3.73	1.88%
Torbinup Resources Pty Ltd	3.52	1.78%
Mr. Patrick Bernard Mc Manus & Mrs. Vivienne Edwina Mc Manus	3.11	1.57%
Chui Yuen Lee	3.00	1.52%
Gilpin Park Pty Ltd	2.86	1.44%
Philip Anthony Feitelson	2.00	1.01%
Sept Rogues Ltd	1.83	0.92%
JP Morgan Nominees Australia	1.55	0.78%
Nutsville Pty Ltd	1.43	0.72%
National Nominees Ltd	1.37	0.69%
Chaoyang Zheng	1.31	0.66%
Pontian Orico Plantations Sdn Bhd	1.19	0.60%

## Management and Governance<sup>vii</sup>

Potash West NL's management comprises professionals with a proven record and sound geological background.

Personnel	Designation	Current and Total Experience
Adrian Griffin	Non-executive Chairman	<p>Adrian Griffin is an Australian-trained mining professional with exposure to metal mining and processing worldwide during a career spanning more than three decades. A pioneer of the lateritic nickel processing industry, he has helped develop extraction technologies for a range of minerals over the years. He also specializes in mine management and production. He is also the managing director of ASX-listed Midwinter Resources NL, an Africa-focused iron ore project developer.</p> <p>He is a former CEO of Dwyka Diamonds Limited, an AIM- and ASX-listed diamond producer. He was a founding director and executive of Washington Resources Limited and also a founding director of Empire Resources Limited, Ferrum Crescent Limited and Reedy Lagoon Corporation Limited. Adrian was also a founding director of ASX-listed Northern Uranium Limited, of which he is currently a non-executive director.</p>
Patrick McManus	Managing Director	<p>Patrick McManus has a degree in mineral processing from Leeds University and is an MBA from Curtin University. A mining professional for more than 30 years, his work has taken him to several sites within Australia and overseas, including Eneabba and the Murray Basin in Australia, Madagascar, Indonesia and the US.</p> <p>Patrick has worked in operational, technical and corporate roles for RioTinto, RGC Limited and Bemax Resources Limited. He was a founding director and, from January 2007 to March 2010, Managing Director of ASX-listed Corvette Resources Limited.</p>
George Sakalidis	Non-executive Director	<p>George Sakalidis is an exploration geophysicist of more than 20 years standing. His career has encompassed extensive exploration for gold, diamonds, base metals and minerals. He was a director of North Star Resources NL, Image Resources and the unlisted Imperium Minerals Limited.</p> <p>George compiled one of Australia's largest aeromagnetic databases, now held by Image Resources and contributed to a number of discoveries, including gold discoveries at the Three Rivers and the Rose deposits in Western Australia. He was also instrumental in the acquisition of the Image Resources exploration tenements, design and interpretation of the magnetic surveys that led to the discovery of the large mineral sands resources at the Dongara project of Magnetic Minerals NL, of which he was a founding director.</p>
Gary Johnson	Non-executive Director	<p>Gary Johnson is a metallurgist with more than 30 years of experience in all aspects of the mining industry. In his early career, he gained operational and project expertise with a range of metals in operations in Africa and Australia. Later, he was a member of the team operating the metallurgical pilot plant at the giant Olympic Dam copper, gold and uranium project in South Australia. Currently, he runs his own consulting company and holds several patents in the field of hydrometallurgy. He is currently a director of the TSX-listed Hard Creek Nickel Corporation.</p> <p>In 1998, after 10 years as chief metallurgist for a large gold producer, Gary formed his own specialized hydrometallurgical consulting company. During this period, he worked closely with LionOre Mining International to develop the Activox<sup>®</sup> process for treating sulphide concentrates. In 2006, when LionOre acquired Gary's company, he joined LionOre as a senior executive. In 2007, LionOre was taken over by MMC Norilsk Nickel and in 2009 Gary became managing director of the latter's Australian operations.</p>

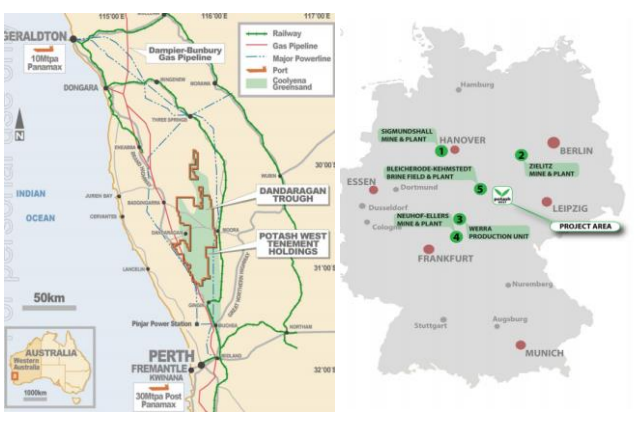


## Assets and Projects

### Overview

Potash West is a mineral exploration company, seeking to make the transition to producer status. The company's assets include the Dandaragan Trough project in Western Australia (covering over 2,000km<sup>2</sup>), and the South Harz potash project in Germany (with application licenses in tenements over 450km<sup>2</sup>). The projects are located close to good infrastructure facilities, providing easy access to the market.

### Company's Asset Portfolio

Project locations	Project overview
	<div data-bbox="828 577 1177 661" style="background-color: #4a7ebb; color: white; padding: 5px; margin-bottom: 10px;"> <b>Dandaragan Trough Potash Project</b> </div> <div data-bbox="1218 619 1461 661" style="background-color: #4a7ebb; color: white; padding: 5px; text-align: right;"> <b>Western Australia</b> </div> <ul style="list-style-type: none"> <li>Target Commodity: Phosphate; and Sulphate of Potash (SOP) and other co-products through processing glauconite using K-Max technology</li> <li>Interest - 100%</li> <li>Tenement Area - 2,140km<sup>2</sup></li> </ul> <div data-bbox="828 829 1177 913" style="background-color: #4a7ebb; color: white; padding: 5px; margin-top: 10px;"> <b>German Potash Project</b> </div> <div data-bbox="1339 871 1461 913" style="background-color: #4a7ebb; color: white; padding: 5px; text-align: right;"> <b>Germany</b> </div> <ul style="list-style-type: none"> <li>Target Commodity: Potash</li> <li>Interest - to earn upto 55%</li> <li>Tenement Area - 462km<sup>2</sup></li> </ul>
<p>Source: Company filings</p>	<p>Source: Company filings</p>

### Dandaragan Trough Project

**Asset Summary:** The Dandaragan Trough Project is located in Western Australia, and is expected to be one of the world's largest glauconite deposits, along with hosting phosphate mineralization. The project has unique advantages in terms of connectivity to major road/rail routes and export ports, and its proximity to the local markets.

The Dinner Hill prospect has a phosphate resource of 120MMT (at 2.79% P<sub>2</sub>O<sub>5</sub> and 3.1% K<sub>2</sub>O), and a K-Max resource estimate of 122MMT (at 1.8% P<sub>2</sub>O<sub>5</sub> and 4.6% K<sub>2</sub>O). The resource is estimated over 15% of the Dinner Hill, suggesting significant upside potential. The company expects an exploration target of 1.0BT to 1.5BT (at 4.0% to 4.8% K<sub>2</sub>O) over the broad project area. The exploration target includes 300–600MMT of phosphate mineralization target at a grade of 1.5% to 3% P<sub>2</sub>O<sub>5</sub>.

In 2014, the company updated its scoping study on the phosphate project, highlighting a pre-tax IRR of 29.5% and NPV<sub>8</sub> of AU\$331MM, based on

340ktpa SSP production at 18.1% P<sub>2</sub>O<sub>5</sub>. As per the study, Dinner Hill project is expected to have a low capex of AU\$144MM and a payback period of less than 4 years.

The company has also developed a process flow sheet, K-Max, to extract Sulphate of Potash, high magnesium SOP, single superphosphate, iron oxide and aluminum sulphate from glauconite. The scoping study for K-Max resource at Dinner Hill highlighted NPV<sub>10</sub> of AU\$808MM and IRR of 21.0% at a mining rate of 2.4Mtpa.

Potash West is currently focused on advancing its phosphate project, and expects production to commence by mid-2018.

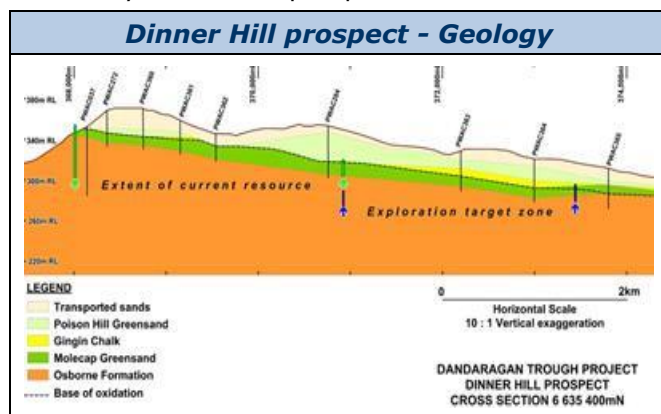
**Target Commodity:** Single Superphosphate (SSP) from the phosphate project; and Sulphate of Potash (SOP) from processing glauconite using K-Max technology (including co-products such as high-magnesium SOP (KMS), high-grade Iron oxide, and aluminium sulphate, and Superphosphate)

**Location:** The tenements commence from 100km north of Perth. The Dinner Hill project, the focus

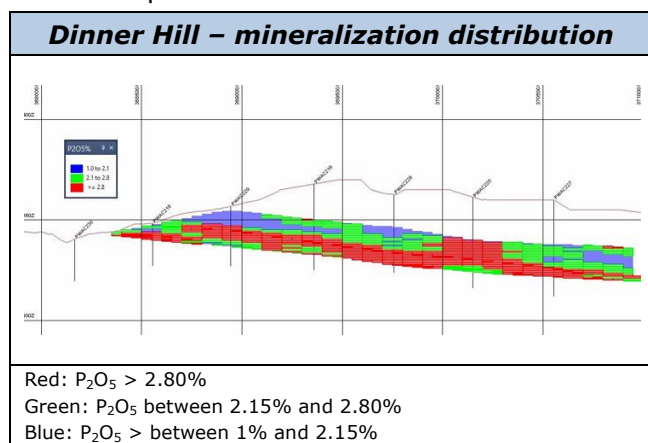
of company's current exploration, is located 175km north of Perth.

**Regional Geology:** The project's tenements cover Cretaceous sediments of the Coolyena Group. Greensands in the area are an unconsolidated mixture of silica and glauconite, and share similar physical characteristics to Cataby and Eneabba mineral sand deposits located nearby. The greensands contain significant amounts of potash in the glauconite and phosphate.

The tenements primarily cover the Poison Hill and Molecap Greensand, separated by Gingin Chalk. The greensand formations are covered by a layer of sand, with an average thickness of 11m. The following table shows the geological cross-section of the key Dinner Hill prospect:



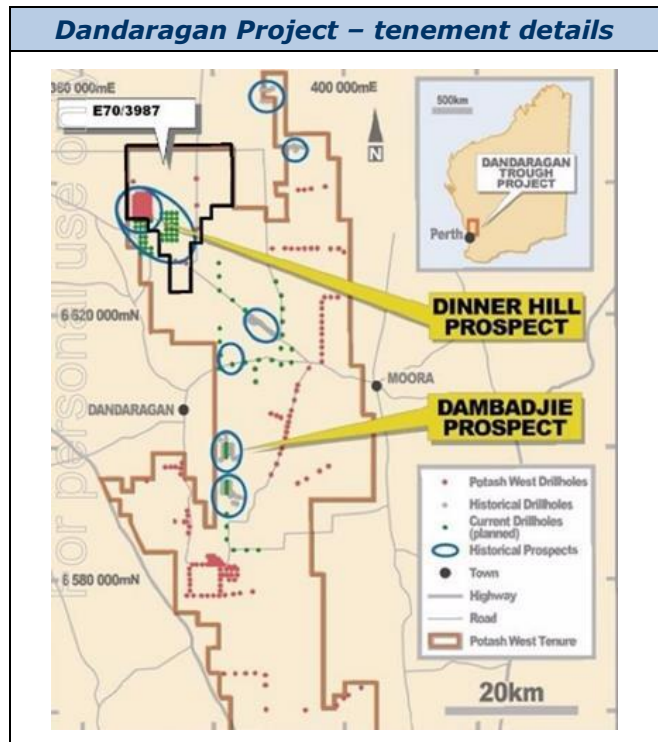
Within the resource area, mineralization is primarily encompassed in the lower portions of the Poison Hill Greensand, the Gingin Chalk, and the Molecap Greensand.



**Tenement Details:** The company's tenements and applications in the Dandaragan Trough project area cover 2,140 km<sup>2</sup>, with extensive greensand units. The Dinner Hill project area

covers approximately 60km<sup>2</sup> in the north-west of the trough.

Along with rights to the glauconite and phosphate minerals within the tenements, Potash West NL also holds rights to any by-products produced by processing these minerals.



**Potential Mineralization:** the JORC resource is currently estimated within 9km<sup>2</sup> area in the Dinner Hill prospect. The higher grade portion of the K-Max resource occurs in the Molecap Greensand. In March 2014, Potash West upgraded the phosphate resource estimates in the Dinner Hill prospect to 120MMT indicated resource at 2.79% P<sub>2</sub>O<sub>5</sub>. The resource upgrade followed the confirmation of the capability to recover phosphate from the calcite-rich chalk layer through a selective flotation system.

	Resource (MMT)	P <sub>2</sub> O <sub>5</sub> (%)	K <sub>2</sub> O (%)
<b>Phosphate</b>			
Indicated	120	2.79	3.10
<b>Total</b>	<b>120</b>	<b>2.79</b>	<b>3.10</b>
<b>K-Max (Molecap greensand)</b>			
Indicated	120	1.8	4.6
Inferred	2	2.2	4.4
<b>Total</b>	<b>122</b>	<b>1.8</b>	<b>4.6</b>

The current resource is estimated over 15% of the 60km<sup>2</sup> prospect area, highlighting the significant upgrade potential. Over the total Dinner Hill area, the company estimates an exploration target of 1-1.5BT fresh greensand at 4-4.8% K<sub>2</sub>O (including 300-600MMT phosphate mineralization at 1.5-3.0% P<sub>2</sub>O<sub>5</sub>). The exploration target is not compliant with JORC.

**Scoping Study – Phosphate:** In April 2014, Potash West updated its Phosphate scoping study following the resource upgrade and the capability to process calcite-rich chalk mineralization – resulting in lower costs and longer mine life.

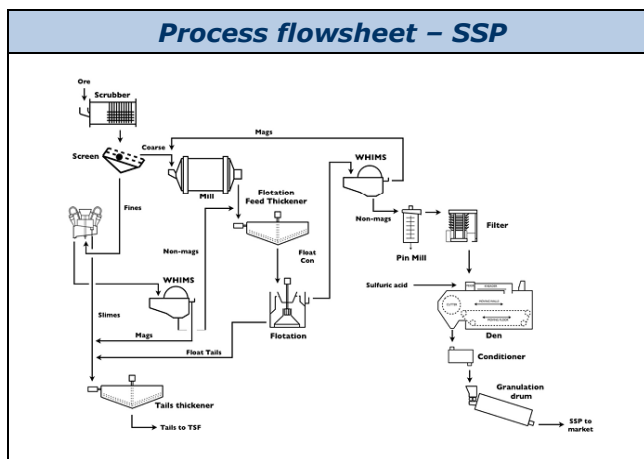
The study highlighted an IRR of 29.5% and pre-tax NPV<sub>8</sub> of AU\$331MM. It also highlighted average revenue of AU\$124MM based on production of 340ktpa SSP at 18.1% P<sub>2</sub>O<sub>5</sub>.

Phosphate Scoping Study	
Processing rate	3.8Mtpa
Processing output	340ktpa SSP
Mine life	20 years
Average annual revenue	AU\$124.0MM (AU\$ 383/T SSP)
Operating annual cash costs	AU\$82.1MM (AU\$ 241/T SSP)
Payback period	<4 years
IRR	29.5%
NPV <sub>8</sub>	AU\$331MM
Capital cost	AU\$144MM

**Location:** The scoping study assumes a 3.8Mtpa processing facility to be located between Moora and Dandaragan in Western Australia, which is well positioned in terms of road and rail access, export ports (200km from Kwinana and Geraldton ports), and proximity to natural gas and electricity corridors. The well-established infrastructure and connectivity is expected to result in lower transportation costs.

**Processing:** The mined greensands will be treated in a superphosphate processing plant to produce phosphate rock at 30% P<sub>2</sub>O<sub>5</sub> concentration. The phosphate rock will then be treated with purchased sulfuric acid to produce SSP.

The scoping study highlighted the easy adoption of the process flowsheet to the newly identified Phosphate resource with a recovery of 70% to only 36% of the mass. The feed will use phosphate with average grade 2.8% P<sub>2</sub>O<sub>5</sub> to approximately 5.4% P<sub>2</sub>O<sub>5</sub>.



**Scoping Study – K-Max:** The K-Max process is a proprietary technology used by the company to produce Sulphate of Potash (SOP) and various co-products from glauconite. The company has also applied for a patent over the K-Max technology. The scoping study for K-Max resource at Dinner Hill highlighted NPV<sub>10</sub> of AU\$808MM and IRR of 21.0% at a mining rate of 2.4Mtpa.

K-Max Scoping Study	
Mining Rate	2.4Mtpa
Mine life	60+ years
Average annual revenue	AU\$365.0MM (AU\$150/T of feed)
Operating annual cash costs	AU\$137.0MM (AU\$55/T of feed)
IRR	21.0%
NPV <sub>10</sub>	AU\$808MM
Capital cost	AU\$650MM

**Beneficiation and Processing:** The scoping study suggested ore mining through an in-pit slurry unit and concentrator. The screened material (<1mm) will then be fed to wet magnetic separators to recover glauconite. The concentrated glauconite-rich ore will be then treated in the chemical plant to recover elements (K, P, Mg, Fe and Al) which will be converted into saleable products.

K-Max Processing Output (ktpa)	
Mining Rate	2.4Mtpa
SOP	85
KMS	195
Iron Oxide	220
Aluminium Sulphate	900
Phosphate	310

**Project Schedule:** The company plans to conduct a DFS on the project by 2015, and aims to commence the production 2018.

Phosphate project timelines	Timeline
Resource upgrade	April 2015
Feasibility study	Dec 2015
Construction	Q4 2017
Full-scale production	Mid 2018

The company also plans to construct a pilot plant to process glauconite deposits to better understand the applicability of K-Max technology.

K-Max project timelines	Timelines
Pilot plant	1H 2019
Pre-Feasibility study	1H 2019
Feasibility study	1H 2020
Construction	1H 2021
Full-scale production	2H 2021

## Molecap Greensand

The Molecap Greensand is a major unit primarily composed of coarse quartz and medium-sized green glauconite grains. The thickness of the unit varies within the underlying topography as the unit was laid down in shallow sea over an irregular topography. Geological modelling of the resource and surrounding area suggest that the Molecap becomes shallower and thickens to the south and east. The Company has identified 122MMT of higher grade mineralization at 4.6% K<sub>2</sub>O and 1.8% P<sub>2</sub>O<sub>5</sub>, at an average thickness ranging from 8m to 14m within the Molecap Greensand. The Molecap Greensand has been the primary target at Dinner Hill prospect based on higher potassium oxide grade and thickness.

## Poison Hill Greensand

The Poison Hill Greensand has features of glauconitic quartz sandstone and shallow marine and is weakly lithified, medium-to very coarse-grained, poorly-sorted, clayey glauconitic sandstone that in places has a lower unit of glauconite clay. It is over 40m thick at its type locality; Poison Hill, which is located within the E70/3636 tenement. The upper part of the unit is strongly ferruginised, however unaltered material has been exposed by bulldozing it along with the base of the northern ridge.

## Gingin Chalk

The Gingin Chalk contains some glauconitic mineral and the unit locally comprises thinly interblended greensand and chalk. The Gingin Chalk overlies the Molecap Greensand and is typical of chalk deposits of this age globally and was deposited on the floor of a shallow, warm sea supporting abundant marine life and with little inflow of terrestrial debris.

## Osborne Formation

The Osborne Formation has glauconite sandstone, with minor siltstone and clay stone. Although it contains less glauconite than the overlying Molecap and Poison Hill Greensands, it is still prospective for glauconite production.

## German project

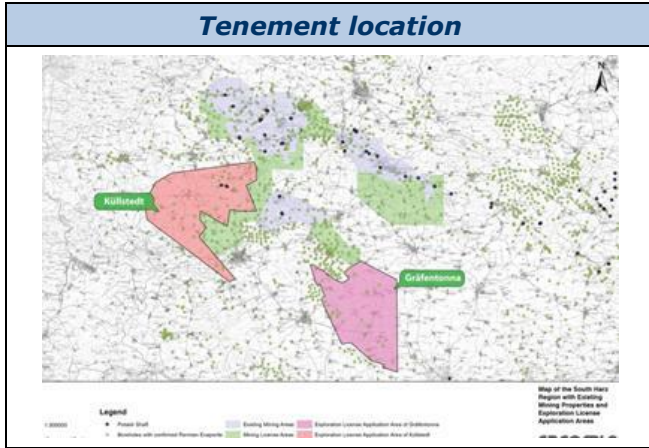
**Company's interest in the project:** Currently 25%; estimated to increase to 55% for a total consideration of AU\$550k, subject to funding early stage exploration.

**Asset Summary:** In July 2014, the company entered into a Joint Venture agreement to earn an interest in the East Exploration Pty Ltd. (EE). EE aims to develop potash deposits in the South Harz region in Germany, and has applied for 2 exploration licenses covering over 450km<sup>2</sup>. The mineralization in the license areas intersect at shallow depth and EE has commissioned ERCOSPLAN in August 2014 to review the geological data in the Kuellstedt application license area. Potash West aims to target the European market with the production from the German project.

**Location:** South Harz region in Germany, nearby the town of Sonderhausen.

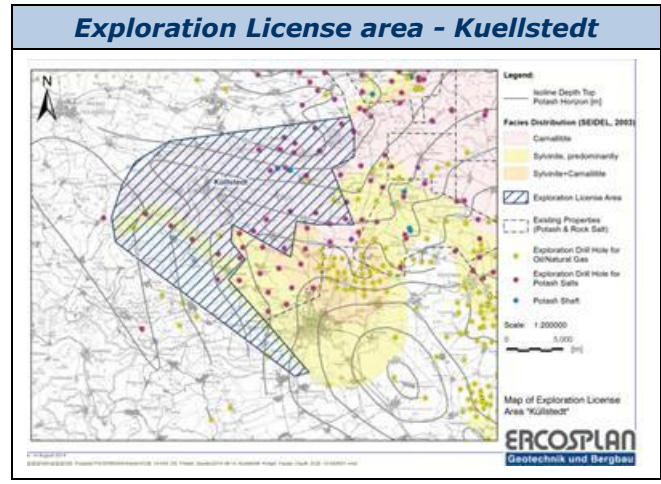
**Historical Mineralization:** Since 1896, over 500MMT potash ore has been mined from the region, producing over 100MMT potash fertilizers. Extensive exploration work during 1960-80 indicated presence of sylvinite (KCl and NaCl) and carnallite (KCl and MgCl) in the region. The company plans to use the drilling and assaying information to evaluate the geological and economic potential of the licenses.

**Tenement details:** The company has applied for two exploration license areas – Kuellstedt (246 km<sup>2</sup>) and Graefentonna (216 km<sup>2</sup>). Historical potash mineralization was intersected between 200m and 1,000m in these areas.



**Recent developments:** In August 2014, EE commissioned ERCOSPLAN Ingenieurgesellschaft Geotechnik und Bergbau mbH (ERCOSPLAN) to review the geological data from 50 historical drill holes in the Kuelstede application area.

The result of the study is expected in 14 weeks, based on which the company will decide the next steps, including defining a JORC-compliant resource in the project area.



## Technologies and Markets

### Potash Description

Potash refers to potassium compounds and potassium-bearing materials, used primarily in fertilizers. Potash is critical in the regulation of plants' physiological functions and improves plant quality and increases yields.

The common forms of potash are Muriate of Potash, MOP (KCl) and Sulphate of Potash, SOP (K<sub>2</sub>SO<sub>4</sub>).

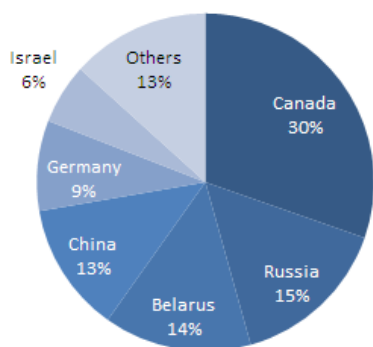
**Sources:** Potash deposits are limited to a few regions across the world, but often occur in large deposits. Potash fertilizers contain about 20 to 62% K<sub>2</sub>O. They consist of potassium in combination with chloride, sulfate, nitrate, and other elements.

Historically, the large evaporate deposits of Saskatchewan and Belarus has provided potash to the world markets. These types of deposits are of high grade but they occur at great depths.

Approximately 90% of potash is extracted by conventional underground mining methods. Solution mining is used when underground deposits are irregular and very deep.

**Production<sup>viii</sup>:** Potash production is limited to only 12 countries. Of these, the top 5 countries – Canada, Russia, Belarus, China, and Germany account for ~80% of the global mine production. Potash is imported by more than 100 countries worldwide and over 82% of world's potash production is exported.

**Potash mine production (2013)**



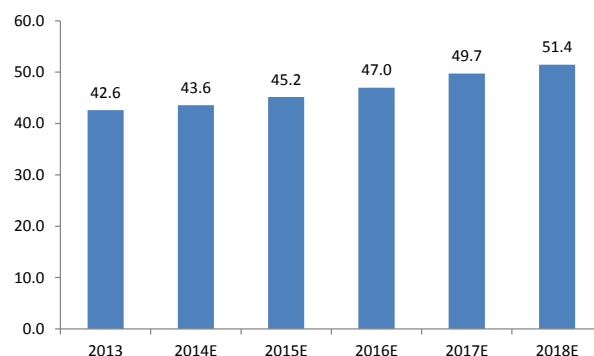
Source: USGS

According to a report by IFA, global potash capacity is expected to increase at a CAGR of

3.3% to reach 60.7MMT K<sub>2</sub>O by 2018 (2013: 49.7MMT K<sub>2</sub>O).

Global potash supply is expected to reach 43.6MMT K<sub>2</sub>O in 2014 (2013: 42.6MMT K<sub>2</sub>O). In the medium term, global potash supply is expected to reach 51.4MMT K<sub>2</sub>O by 2018. The incremental growth of 8.8MMT K<sub>2</sub>O between 2013 and 2018 is expected to come from North America (4.6MMT K<sub>2</sub>O), Russia and Belarus (3.4MMT K<sub>2</sub>O), and East China (0.8MMT K<sub>2</sub>O).

**Global potash supply (MMT K<sub>2</sub>O)**



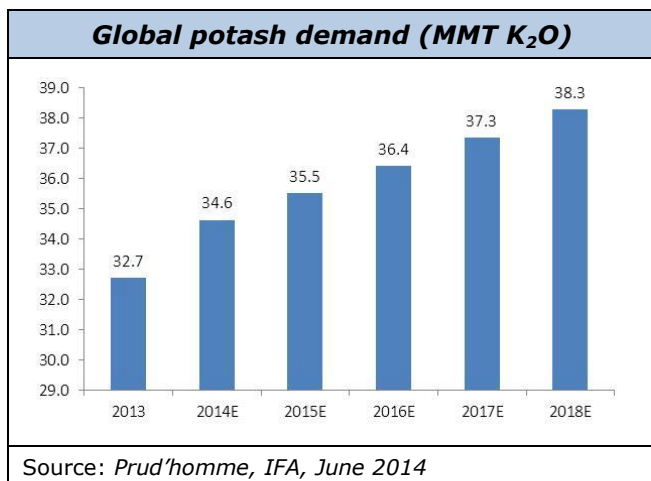
Source: IFA, June 2014

**Application<sup>ix</sup>:** Potash has three main uses: fertilizer, livestock feed supplements and industrial processes. Fertilizers use 95% of world's potash production. Potash is a key ingredient in fertilizers that enhance water retention of plants, increases crop yields and plants' disease resistance.

In feed supplements, the key function of potash is to contribute to animal growth and milk production. Potash is also used to produce glass, ceramics, soaps etc.

**Demand<sup>x</sup>:** Potash demand is highly correlated to crop production, as it is an essential component of fertilizer. The potash market is primarily driven by the rising population and the need for nutritious food with rise in the per capita income. Potash is a core part of soil nutrition and cannot be replaced by other sources.

With increased population, farm output is expected to rise by 70% by 2050, which will require higher crop yields as a result of decreasing arable land per capita. In the medium term, potash consumption is expected to increase to 38.3MMT K<sub>2</sub>O by 2018 (2013: 32.7MMT K<sub>2</sub>O). In the long term, potash demand is expected to grow at a rate of 3-5%.



**Price outlook:** During the commodity rally of 2003-2008, potash prices rose sharply from US\$200/T to US\$1000/T in June 2008. After a temporary slowdown during the global economic downturn beginning at the end of 2008, potash consumption levels have begun to return to pre-crisis levels in most key markets.

Potash prices are currently below the US\$300/T level, and are expected to be under pressure in the near term due to a supply surplus. In the medium to long term, we expect the potash prices to increase, supported by demand recovery.



### Potash from Greensand (Glaucanite)

The term 'greensand' refers to a specific formation, generally sandstone, which contains glauconite. Greensands are characterized by their high total iron content (Fe<sub>2</sub>O<sub>3</sub>) and high K<sub>2</sub>O content, with glauconite typically containing ~6% K<sub>2</sub>O.

Glaucanite is an iron potassium phyllosilicate (mica group) mineral of characteristic green color with very low weathering resistance and very friable. However, potash from glauconite processing has negligible share in the global production.

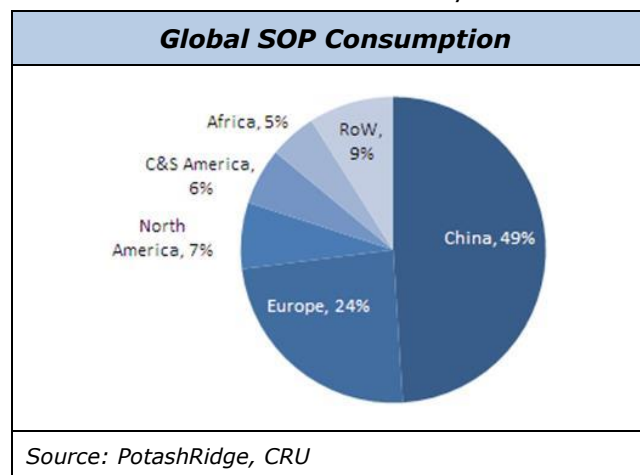
Glaucanite is currently mined on a small scale either as a soil conditioner, slow release fertilizer, or as a water purifier for iron contaminated groundwater. There are a few pits scattered over New Jersey, Illinois, Wisconsin, Iowa, in the US, and Russia; even New Zealand has a few very small-scale operations<sup>xii</sup>.

### Sulphate of Potash (SOP)<sup>xiii</sup>

Potassium sulfate (K<sub>2</sub>SO<sub>4</sub>) is a non-flammable crystalline salt which is soluble in water. It is also called as sulphate of potash, arcanite, or potash of sulfur.

Though potassium is relatively abundant, K<sub>2</sub>SO<sub>4</sub> is rarely found in its pure form in nature. Usually, it is found mixed with salts containing Magnesium (Mg), Sodium (Na), and Chloride (Cl). K<sub>2</sub>SO<sub>4</sub> is mainly used in farming, and is particularly necessary for soils and crops that require sulphur, and where Cl needs to be avoided.

Global Sulphate of Potash (SOP) market is characterized by a huge demand-supply gap, due to increasing demand and limited production. In 2013, the consumption of SOP was 4.8MMT, driven by the demand from China and Europe. Further, the demand for SOP is expected to grow at a CAGR of 11.4% between 2013 and 2019 to reach 9.8MMT by 2019.<sup>xiv</sup>



The price for SOP is generally higher compared to MOP, and was at US\$670 in 3Q14, as per the filings by Compass Minerals<sup>xv</sup>. We expect the

price of SOP to rise in the medium term, driven by the increasing demand-supply gap.

### Potassium Magnesium Sulphate (KMS)

Potassium Magnesium Sulphate (KMS) has three essential plant nutrients – Potassium (K), Magnesium (Mg), and Sulphur (S).

KMS has neutral pH and does not change the soil acidity or alkalinity. Also, in some countries KMS is certified for use in organic crop production; from specific sources. Some sources are also sold as feed grade for animals and poultry as it is a dietary source of K, Mg, and S.

KMS has a unique combination and is majorly used in cases where the soils have excess Cl or the crops for which Cl needs to be avoided.

### Iron Oxide (Fe<sub>2</sub>O<sub>3</sub>)

Iron (III) oxide (Fe<sub>2</sub>O<sub>3</sub>) is one of the three main oxides of iron, along with iron (II) oxide (FeO), and iron (II, III) oxide (Fe<sub>3</sub>O<sub>4</sub>). Fe<sub>2</sub>O<sub>3</sub> occurs naturally as the mineral hematite.

Fe<sub>2</sub>O<sub>3</sub> is a main input to the production of iron, steel and many other alloys. Ferric oxide is used as polish on metallic jewelry and lenses as it gives a superior finish. Fe<sub>2</sub>O<sub>3</sub> is also used as pigments, majorly in dental composites alongside titanium oxides. The pigments, Pigment Brown 6, Pigment Brown 7, and

Pigment Red 101, are approved by the Food and Drug Administration for use in cosmetics.

### Aluminum Sulfate (Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub>)

Aluminium sulfate, a type of alum, is mainly used to purify drinking water, treat waste water, and make paper.

Aluminium sulfate is also used in dyeing and printing of textiles as it helps the dye adhere to the clothing fibers by making the pigment insoluble. It is also used as water proofing agent and accelerator in concrete by the construction industry.

### Superphosphate

Superphosphate is primarily used as a fertilizer, produced from phosphate rock or naturally found in guano.

It is produced by the reaction of concentrated sulphuric acid or phosphoric acid with phosphate rock. It is also found naturally in deposits around seabird colonies by the buildup of guano.

Superphosphate is of two variants - single superphosphate when treated with sulphuric acid, and triple superphosphate when treated with phosphorus acid.

Aside from being a fertilizer, superphosphate is widely used as an animal feed, and is used by the construction, food and drug industries.



## Value

The Fair Market Value for Potash West NL's shares stands between AU\$29.51MM and AU\$41.28MM.

The Fair Market Value for Potash West NL's publicly traded share stands between AU\$0.15 to AU\$21.

### Potash West NL Limited Balance Sheet Forecast

<b>CONSOLIDATED BALANCE SHEET</b>	<i>all figures in '000 AU\$, unless stated differently</i>								<i>Low bracket estimates</i>
<i>year ending June 30th</i>	<b>2015E</b>	<b>2016E</b>	<b>2017E</b>	<b>2018E</b>	<b>2019E</b>	<b>2020E</b>	<b>2021E</b>	<b>2022E</b>	
Total Current Assets	4,066	7,216	8,055	2,066	35,174	66,310	97,821	130,206	
Total Non-Current Assets	9,866	38,666	81,866	146,666	141,834	136,902	131,868	126,730	
<b>TOTAL ASSETS</b>	<b>13,932</b>	<b>45,882</b>	<b>89,920</b>	<b>148,731</b>	<b>177,009</b>	<b>203,212</b>	<b>229,689</b>	<b>256,936</b>	
Total Current Liabilities	403	475	560	663	3,462	3,496	3,530	3,565	
Total Non-current Liabilities	-	-	-	-	-	-	-	-	
<b>TOTAL LIABILITIES</b>	<b>403</b>	<b>475</b>	<b>560</b>	<b>663</b>	<b>3,462</b>	<b>3,496</b>	<b>3,530</b>	<b>3,565</b>	
Total Shareholder's Equity	13,529	45,407	89,360	148,068	173,547	199,716	226,159	253,371	
<b>TOTAL LIABILITIES and EQUITY</b>	<b>13,932</b>	<b>45,882</b>	<b>89,920</b>	<b>148,731</b>	<b>177,009</b>	<b>203,212</b>	<b>229,689</b>	<b>256,936</b>	

### Important information on Arrowhead methodology

The principles of the valuation methodology employed by Arrowhead BID are variable to a certain extent, depending on the sub-sectors in which the research is conducted. But all Arrowhead valuation researches possess an underlying set of common principles and a generally common quantitative process.

With Arrowhead commercial and technical due diligence, the company researches the fundamentals, assets and liabilities of a company, and builds estimates for revenue and expenditure over a coherently determined forecast period.

Elements of past performance such as price/earnings ratios, indicated as applicable, are mainly for reference. Still, elements of real-world past performance enter the valuation through their impact on the commercial and technical due diligence.

### Arrowhead BID Fair Market Value Bracket

The Arrowhead Fair Market Value is given as a bracket. This is based on quantitative key variable analyses such as key price analysis for revenue and cost drivers or analysis and discounts on revenue estimates for projects, especially relevant to projects estimated to provide revenue near the end of the chosen forecast period. Low and high estimates for key variables are produced as a valuation tool.

In principle, an investor comfortable with the high brackets of our key variable analysis will align with the high bracket in the Arrowhead Fair Value Bracket, and, likewise, in terms of low estimates. The investor will also note the company intangibles to analyze the strengths and weaknesses, and other essential company information. These intangibles serve as supplementary decision factors for adding or subtracting a premium in investor's own analysis.

The bracket should be taken as a tool by Arrowhead BID for the reader of this report and the reader should not solely rely on this information to make his decision on any particular security. The reader must also understand that while on the one hand global capital markets contain inefficiencies, especially in terms of information, on the other, corporations and their commercial and technical positions evolve rapidly. This present edition of the Arrowhead valuation is for a short to medium-term alignment analysis (one to twelve months). The reader should refer to important disclosures on page 20 of this report.

## Information on the Potash West NL valuation

**Potash West NL Valuation Methodology:** The Arrowhead fair valuation for Potash West NL is based on the discounted cash flow (DCF) method. Our valuation is based on the phosphate project in the Dandaragan Trough, given its advanced stage and the company's focus to bring it to the production level. We have calculated the NPV of the project based on estimated cash flows, which we have subsequently discounted by a hurdle rate. We have also accounted for the project stage through a implied P/NPV multiple, which is applied to NPV of the project to arrive at an implied equity value.

The fair value bracket for the company is derived from the valuation of the phosphate project, adjusted for central expenses and cash.

Though we have also separately analyzed the valuation of the K-Max project; we have not included the valuation of the K-Max process in our analysis as we expect further work on the project to start after the commencement of production at phosphate project. We have also excluded the German project for valuation, given the early exploration stage of the project.

**Time Horizon:** The Arrowhead fair valuation for Potash West NL is based on a DCF method. The time period chosen for the valuation is based on the expected mine life of the project. Though the later years have a marginal effect on valuation due to heavy discounting, they are included to present a full project cycle situation.

**Underlying Business Plan:** The company is currently advancing the phosphate project in the Dandaragan Trough, and conducting the exploration German project. Post the commencement of phosphate production in the Dandaragan Trough project, it plans to develop the glauconite deposits to produce Sulphate of Potash (SoP) and other co-products using its proprietary K-Max process.

**Terminal Value:** Terminal Value is estimated to depend on a terminal growth rate of 0%, representing the maturity, technology change and prospective competitiveness in the business.

**Prudential Nature of Valuation:** This Arrowhead Fair Value Bracket estimate is a relatively prudential estimate, as it is based on the company's focus project – the phosphate production in the Dandaragan Trough project, and excludes the K-Max project (pilot plant scheduled to begin after commencement of phosphate), and the German project (given the early stage exploration).

## Key variables in Potash West NL's revenue estimations

### Variable 1 – Hypothesis for production and mining at Dandaragan Trough project

We have considered the company's scoping study results to determine the mining rate. We have marginally discounted the company estimates for our Low case estimates.

We have assumed that the phosphate production will commence from 2H 2018.

SSP production	FY 2019
Low	330 ktpa
High	340 ktpa

For the K-Max potash project, we assume the production to commence from 2H 2021

Mining rate (K-Max)	FY 2022
Low	2.3 Mtpa
High	2.4 Mtpa

### Variable 2 – Commodity Prices

We have estimated the price in line with company's estimates in its scoping study results.

Superphosphate price	
Low	US\$340/T
High	US\$350/T

Potash project	SOP	KMS	Aluminium Sulphate	Iron Oxide
Low	US\$650/T	US\$270/T	US\$150/T	US\$80/T
High	US\$700/T	US\$290/T	US\$160/T	US\$90/T

### Variable 3 – Exchange rate

We have estimated the AU\$/US\$ exchange rate based on current and expected economic conditions.

AU\$/US\$ Exchange Rate	
Low	0.90
High	0.87

### Variable 5 – Capex

Capex	
Phosphate project	US\$ 144MM
K-Max project	US\$ 650MM

### Variable 6 – Implied P/NPV multiple

We have discounted the NPV of the project with P/NPV multiple to account for the inherent project risks, including the current stage and the timelines to bring the project to production.

P/NPV	
Phosphate project	0.25x
K-Max project	0.10x

## Analyst Certifications and Important Disclosures

### Analyst Certifications

I, Samarth Agrawal, certify that all of the views expressed in this research report accurately reflect my personal views about the subject security and the subject company.

I, Kanniga Rajamanickam, certify that all of the views expressed in this research report accurately reflect my personal views about the subject security and the subject company.

### Important disclosures

Arrowhead Business and Investment Decisions, LLC received fees in 2011-14 from Potash West NL for researching and drafting this report and for a series of other services to Potash West NL, including distribution of this report and networking services. Arrowhead and some of its employees own call options and shares in Potash West equity.

Aside from certain reports published on a periodic basis, the large majority of reports are published by Arrowhead BID at irregular intervals as appropriate in the analyst's judgment.

Any opinions expressed in this report are statements of our judgment to this date and are subject to change without notice.

This report was prepared for general circulation and does not provide investment recommendations specific to individual investors. As such, any of the financial or other money-management instruments linked to the company and company valuation described in this report, hereafter referred to as "the securities", may not be suitable for all investors.

Investors must make their own investment decisions based upon their specific investment

objectives and financial situation utilizing their own financial advisors as they deem necessary.

Investors are advised to gather and consult multiple information sources before making investment decisions. Recipients of this report are strongly advised to read the information on Arrowhead Methodology section of this report to understand if and how the Arrowhead Due Diligence and Arrowhead Fair Value Bracket integrate alongside the rest of their stream of information and within their decision taking process.

Past performance of securities described directly or indirectly in this report should not be taken as an indication or guarantee of future results. The price, value of, and income from any of the financial securities described in this report may rise as well as fall, and may be affected by simple and complex changes in economic, financial and political factors.

Should a security described in this report be denominated in a currency other than the investor's home currency, a change in exchange rates may adversely affect the price of, value of, or income derived from the security.

This report is published solely for information purposes, and is not to be considered as an offer to buy any security, in any state.

Other than disclosures relating to Arrowhead Business and Investment Decisions, LLC, the information herein is based on sources we believe to be reliable but is not guaranteed by us and does not purport to be a complete statement or summary of the available data.

Arrowhead Business and Investment Decisions, LLC is not responsible for any loss, financial or other, directly or indirectly linked to any price movement or absence of price movement of the securities described in this report.

## Valuation

### Cost of equity

Risk-free rate	3.3%	xvi
Beta	1.0	xvii
Risk premium	7.0%	xviii
Additional Risk Premium	0.0%	xix
Cost of Equity	10.0%	
Terminal Growth Rate	0%	xx

### Key Variables

	Production rate	Commodity Price	Exchange rate
Max value	<i>Please refer to the Key Variable Section</i>		
Min value			

### Valuation - Phosphate project

<b>FCFE (High) Time</b>										
Period -->	0.67	1.67	2.67	3.67	4.67	5.67	6.67	7.67	8.67	
	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	
EBITDA	-	-	-	-	54,842	56,209	57,591	58,986	60,395	
Tax	-	-	-	-	(14,251)	(14,620)	(14,993)	(15,369)	(15,749)	
Capital Expenditure	(7,200)	(28,800)	(43,200)	(64,800)	(2,736)	(2,763)	(2,791)	(2,819)	(2,847)	
<b>Free Cash Flow</b>	<b>(7,200)</b>	<b>(28,800)</b>	<b>(43,200)</b>	<b>(64,800)</b>	<b>37,855</b>	<b>38,826</b>	<b>39,807</b>	<b>40,798</b>	<b>41,799</b>	
Discount Factor	0.94	0.85	0.78	0.71	0.64	0.58	0.53	0.48	0.44	
<b>Present Value of FCF</b>	<b>(6,758)</b>	<b>(24,584)</b>	<b>(33,534)</b>	<b>(45,744)</b>	<b>24,301</b>	<b>22,666</b>	<b>21,134</b>	<b>19,697</b>	<b>18,352</b>	
<b>FCFE (Low) Time</b>										
Period -->	0.67	1.67	2.67	3.67	4.67	5.67	6.67	7.67	8.67	
	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	
EBITDA	-	-	-	-	45,137	46,383	47,642	48,914	50,199	
Tax	-	-	-	-	(11,344)	(11,680)	(12,019)	(12,362)	(12,709)	
Capital Expenditure	(7,200)	(28,800)	(43,200)	(64,800)	(2,493)	(2,518)	(2,543)	(2,569)	(2,595)	
<b>Free Cash Flow</b>	<b>(7,200)</b>	<b>(28,800)</b>	<b>(43,200)</b>	<b>(64,800)</b>	<b>31,300</b>	<b>32,185</b>	<b>33,080</b>	<b>33,983</b>	<b>34,895</b>	
Discount Factor	0.94	0.85	0.78	0.71	0.64	0.58	0.53	0.48	0.44	
<b>Present Value of FCF</b>	<b>(6,758)</b>	<b>(24,584)</b>	<b>(33,534)</b>	<b>(45,744)</b>	<b>20,093</b>	<b>18,790</b>	<b>17,562</b>	<b>16,407</b>	<b>15,321</b>	

In the model, the valuation is continued till 2028 from which point the terminal value is established. For all data see reference table below

### Arrowhead Fair Value Bracket

	High	Low
Present Value of FCF + TV	179,396	132,335
Implied P/NPV - Phosphate project	0.25x	0.25x
<b>Implied value - Phosphate project</b>	<b>44,849</b>	<b>33,084</b>
Implied value - Corporate	(3,865)	(3,865)
+ Cash	295	295
<b>Equity Value Bracket</b>	<b>41,278</b>	<b>29,513</b>
Shares Outstanding (in '000)	197,914	197,914
<b>Fair Value Bracket</b>	<b>AUD 0.21</b>	<b>AUD 0.15</b>
<b>Current Market Price</b>	<b>AUD 0.046</b>	<b>AUD 0.046</b>
<b>Current Market Capital</b>	<b>9.10</b>	<b>9.10</b>
<b>Target Market Capital</b>	<b>41.28</b>	<b>29.51</b>

## Valuation – K-Max project<sup>xxi</sup>

We have presented below the indicative valuation for the K-Max project in the Dinner Hill prospect. However, as the company plans to advance the project post the commencement of phosphate production, we have not included the valuation in our analysis.

<b>FCFE (High) Time</b>									
Period -->	0.67	1.67	2.67	3.67	4.67	5.67	6.67	7.67	8.67
	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E
EBITDA	-	-	-	-	-	-	-	205,148	203,883
Tax	-	-	-	-	-	-	-	(58,261)	(57,849)
Capital Expenditure	-	(32,500)	(65,000)	(65,000)	(130,000)	(162,500)	(162,500)	(32,500)	(6,634)
<b>Free Cash Flow</b>	-	<b>(32,500)</b>	<b>(65,000)</b>	<b>(65,000)</b>	<b>(130,000)</b>	<b>(162,500)</b>	<b>(162,500)</b>	<b>114,387</b>	<b>139,401</b>
Discount Factor	0.94	0.85	0.78	0.71	0.64	0.58	0.53	0.48	0.44
<b>Present Value of FCF</b>	-	<b>(27,742)</b>	<b>(50,457)</b>	<b>(45,885)</b>	<b>(83,455)</b>	<b>(94,866)</b>	<b>(86,271)</b>	<b>55,225</b>	<b>61,204</b>
<b>FCFE (Low) Time</b>									
Period -->	0.67	1.67	2.67	3.67	4.67	5.67	6.67	7.67	8.67
	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E
EBITDA	-	-	-	-	-	-	-	178,688	177,433
Tax	-	-	-	-	-	-	-	(50,326)	(49,919)
Capital Expenditure	-	(32,500)	(65,000)	(65,000)	(130,000)	(162,500)	(162,500)	(32,500)	(6,083)
<b>Free Cash Flow</b>	-	<b>(32,500)</b>	<b>(65,000)</b>	<b>(65,000)</b>	<b>(130,000)</b>	<b>(162,500)</b>	<b>(162,500)</b>	<b>95,862</b>	<b>121,432</b>
Discount Factor	0.94	0.85	0.78	0.71	0.64	0.58	0.53	0.48	0.44
<b>Present Value of FCF</b>	-	<b>(27,742)</b>	<b>(50,457)</b>	<b>(45,885)</b>	<b>(83,455)</b>	<b>(94,866)</b>	<b>(86,271)</b>	<b>46,282</b>	<b>53,315</b>

In the model, the valuation is continued till 2028 from which point the terminal value is established. For all data see reference table below

## Implied Value Bracket

	High	Low
<b>Present Value of FCF + TV</b>	<b>563,102</b>	<b>426,199</b>
Implied P/NPV	0.10x	0.10x
<b>Implied Equity value</b>	<b>56,310</b>	<b>42,620</b>

## Notes and References

- i Arrowhead Business and Investment Decisions Fair Value Bracket - AFVBTM. See information on valuation on pages 17-22 of this report and important disclosures on page 20 of this report.*
- ii Bloomberg, as on 17-Nov-14*
- iii 52 weeks to 17-Nov-14. Source: Bloomberg*
- iv 3 months to 17-Nov-14. Source: Bloomberg*
- v Bloomberg as on 17-Nov-14*
- vi Company Management*
- vii Source: <http://www.potashwest.com.au/management.php>*
- viii Source: <http://minerals.usgs.gov/minerals/pubs/commodity/potash/mcs-2011-potas.pdf>;  
<http://www.allanapotash.com/ij/pdf/ppt/AAA-Presentation-Sept2012.PDF>;  
<http://www.encantopotash.com/Repository/Home/Corporate-Presentation.pdf>;  
[http://magnaresourcesltd.com/investors/MAGNA\\_PPT\\_1207%20Potash.pdf](http://magnaresourcesltd.com/investors/MAGNA_PPT_1207%20Potash.pdf)*
- ix Source: <http://www.westernpotash.com/about-potash>*
- x Source: <http://www.thehindubusinessline.com/features/investment-world/macro-view/article3387746.ece>*
- xi Source: <http://www.infomine.com/investment/metal-prices/potash/5-year/>*
- xii Source: <http://sites.google.com/site/glaucunitenz/globally-rest-of-the-world>*
- xiii International Plant Nutrition Institute*
- xiv [http://www.potashridge.com/files/doc\\_presentations/Presentation-September-2014.pdf](http://www.potashridge.com/files/doc_presentations/Presentation-September-2014.pdf)*
- xv Compass Minerals 3Q14 filings. Source: <http://phx.corporate-ir.net/External.File?t=1&item=VHlwZT0yffBhcmVudEIEPTUxNzE3Njh8Q2hpbGRJR01NTg1MDC=>*
- xvi Bloomberg, as on 11-Nov-14*
- xvii Arrowhead estimate*
- xviii Bloomberg, as on 11-Nov-14*
- xix Arrowhead estimate*
- xx Arrowhead estimate*
- xxi Indicative valuation for reference. Not included in valuation*