



Research Analyst
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CAPITAL STRUCTURE

Share Price:	4.0c
Shares On Issue (m):	114
Options (m):	13
Market Cap (undiluted, A\$m):	4.5

DIRECTORS

Adrian Griffin – Non-Exec Chairman
Patrick McManus – Managing Director
George Sakalidis – Non-Exec Director
Gary Johnson – Non-Exec Director

MAJOR SHAREHOLDERS

UOB-Kay Hian	8.9%
Robert Van Der Laan	5.9%
Adrian Griffen	4.7%
HSBC Nominees	3.8%
John Milward	3.5%

1 YEAR PRICE CHART



RECOMMENDATION: SPECULATIVE BUY

Revised Scoping Study for Dandaragan Phosphate Project

SUMMARY

Potash West's 100% held Dandaragan Trough asset contains both rock phosphate and potash within glauconite. Despite the long term goal of the company to progress its potash projects (as evidenced by the company name), the company's immediate focus is to become a producer of Single Super Phosphate (SSP) from this greensand deposit to then eventually fund the potash production. As such, this report discusses the SPP project only.

The SSP project requires relatively low amounts of capital expenditure, is conveniently located near all necessary infrastructure and entails very little technical risk, as the mining and processing involved are relatively simple.

With an anticipated 20+ year mine life, the project is attractively leveraged to forecast rises over the medium to long term in price and demand, globally, for SSP.

We have calculated a **fully risked NPV range of between \$31million and \$43 Million** for the phosphate project alone. This compares to the current market capitalisation of around \$4.5 million. Whilst the potash may have significant value, the ability to fund the significant infrastructure is heavily dependant on cash flow from the SSP project.

In addition, we view the potash side of the asset to be essentially a technology play around development of the K-Max process. This proprietary process would allow the company to viably extract potash from the glauconite at efficiencies far greater than current conventional methods. For the purposes of this note we consider this blue-sky and have attributed no present value to it in our valuation of PWN.

Like virtually all junior exploration companies, PWN entails significant risk. However, we view the current market capitalisation as significantly undervaluing PWN's potential.

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PROJECT OVERVIEW

Potash West recently released an update to their original scoping study which has seen the project economics significantly improve. This improvement is based on being able to process the chalk-rich layer through the current process flow sheet to achieve a product suitable to produce a saleable Single Superphosphate Product (SSP). Being able to process this chalk-rich layer has resulted in the mining costs dropping by more than 50% due to the requirement for selective mining being reduced.

Chalk layer treatment

Recent testwork, focusing on the chalk zone, has demonstrated the potential to recover phosphate from the chalk by implementing a selective flotation regime. The results have shown that an overall phosphate recovery of 58.1% can be expected when producing commodity grade SSP from processing the chalk at Dinner Hill. The recovery has reduced compared to that in the original Scoping Study (61.2%) as a result of some phosphate reporting to the calcite concentrate. Although the recovery is slightly lower than previously reported, the ability to process the phosphate-bearing chalk is expected to economically outweigh the small reduction in recovery. Processing the chalk allows for simpler mining, a lower mining strip ratio and longer mine life to that proposed in the original Scoping Study.

NPV upside with improved metallurgical recovery

An increase in metallurgical recovery which, as the project progresses through the DFS stage, seems likely, should significantly increase the NPV. Given that this is a scoping study, and potential for improvements in metallurgical recovery have been identified, it is possible that the metallurgical recoveries will improve throughout the DFS.

Close to infrastructure

The location of this deposit near to established infrastructure such as major highways, farming towns, power and rail is of great advantage.

High SSP price risk

We see the biggest risk/hurdle to the project being the SSP commodity price. An average life of mine SSP price under A\$304/tonne results in a negative project NPV value. Currently, SSP prices are around \$300/tonne, with broad consensus forecasts for prices to rise in the medium to long term. However, clearly there is not a great deal of safety margin at present prices, and it may be that this will hamper PWN's ability to attract capex financing under current market conditions.

***NPV sensitive to SSP price...
...but leveraged payoff akin to a call option***

Conversely, we see this project as significantly leveraged to rises in the SSP price; should the SSP price appreciate as per forecasts, the investment case quickly becomes highly compelling. In essence, we see the project as a virtual call option on the SSP price with an attractive risk/reward payoff.

PROJECT FINANCIALS

Based on the numbers provided in the updated scoping study we have calculated a project NPV₁₂ of \$209.5M and an IRR of 28.6%. This figure is for the project as a funded and permitted project, and represents the NPV at the commencement of production. It has been assumed that the capital (\$143.4M) will be spent over 18 months with production commencing immediately after this period.

Risked NPV range of 31-43 million

To derive a current day valuation for the project, we assume three years to secure financing and permitting, and apply a discount rate range of between 70% and 90% per annum over this period, for a current NPV range of **\$31 million to \$43 million**. We stress that this second stage discount rate is very arbitrary (as it is in the realms of genuine uncertainty rather than a factor with meaningful probability-based estimates) but is necessarily very high to capture the extreme difficulty of funding such projects in the junior sector at present. An improvement in the sector on this front and the commensurate likelihood of management sourcing such funding (possibly from a strategic partner) would, of course, very significantly de-risk the project, and imply a much higher NPV. This discount rate also needs to be very high to allow for the very low current cash balance of the company; at best, necessitating dilutionary equity raisings at low price levels, and, at worst, threatening the survival of the company.

Current funding climate is very difficult

Planned initial sales at discount to capture market share

The NPV is based on an average SSP price over the life of the mine of \$383. We note that this is somewhat higher than current prices, as discussed below. In order to gain entry to the market, PWN plan to sell their product at a 10% discount (to assumed long-term price of \$389) in year 1. The discount decreases in each subsequent year by 2% until there is no discount applied in year 6. This discounting results in the average life of mine price being slightly lower than the assumed long term price.

As discussed above, the project NPV is relatively sensitive to changes in the SSP price: see Figure 1 below that plots this sensitivity. A 20% drop in the SSP price across the life of the mine reduces the un-risked project NPV to less than \$6M. However, should the SSP price increase the NPV will also rise significantly.

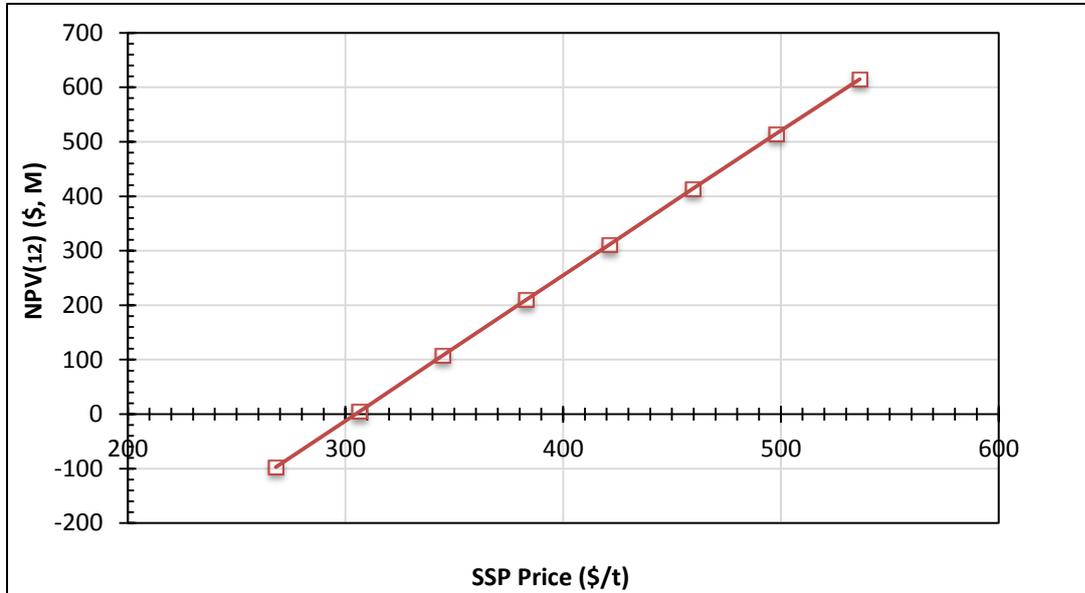


Figure 1: SSP Price Sensitivity Analysis

COMMODITY PRICE

20 year mine life for 341K tpa SPP

PWN plans to produce 340,550tpa SSP annually over a 20 year lifespan with 100,000tpa expected to be consumed locally.

PWN are expecting the SSP price to remain stable in the near term, as shown in Figure 2, based on an analysis from global commodity analyst CRU. (Note that Figure 2 is in USD. The company has assumed a long term AUD/USD exchange rate of 0.90.)



Figure 2: SSP Commodity Price Prediction

However, longer term forecasts are for the price to rise significantly, as global demand increases put pressure on supply.

COMMODITY DEMAND

In 2011-12 the most prevalent types of manufactured fertiliser used by agricultural businesses were urea (1.2 million tonnes), ammonium phosphates (1.1 million tonnes) and single superphosphate (709,000 tonnes). Western Australian agricultural businesses applied fertiliser to the largest area of agricultural land (18.2 million hectares, or 39% of all fertilised agricultural land in Australia). This shows that there is a significant demand for SSP locally in Western Australia.

GRADE & DEPOSIT SIZE

A recent announcement from PWN has increased the P_2O_5 grade from 2.65% to 2.79%, with the P_2O_5 cut-off grade increasing from 1.85% to 2.15%. The resource increased from 90Mt to 120Mt. It should be noted that the primary impurity, CaO, has also increased in grade from 4.54%

to 8.17%. However, this is mostly due to the extra 30Mt containing significantly higher grades of CaO than the remaining resource.

This total resource is compared to existing phosphate deposits located in Australia in Table 1 below.

Table 1: Australia's Economic Demonstrated Resources

Deposit	Location	Ore Type	EDR (Mt)	Average P ₂ O ₅ Grade (%)	P ₂ O ₅ (Mt)
Phosphate Hill	Queensland	Phosphorite	168.6 (a)	25.5 (a)	41.38 (a)
Paradise South	Queensland	Phosphorite	380.2	9.6	36.57
Paradise North	Queensland	Phosphorite	3.34	28.4	0.95
Wonarah	Northern Territory	Phosphorite	300.0	18.3	54.96
Nolans Bore	Northern Territory	Fluorapatite	25.3	12.0	3.04
Ammaroo	Northern Territory	Phosphorite	13.0	16.4	2.13
Mount Weld	Western Australia	Carbonatite	56.3	14.34	8.07
Christmas Island	Indian Ocean	Guano	(b)	(b)	(b)

(a) Incitec Pivot has not published updated resource figures since acquiring Phosphate Hill in 2006.
 (b) Figures not publically available.

Source: Australian Atlas of Minerals Resources, Mines & Processing Centres, Geoscience Australia

The phosphate nodules correspond with statements within the scoping study which show that material is "relatively well liberated". The phosphate nodules are visible in ROM ore samples as shown in Figure 3 below.

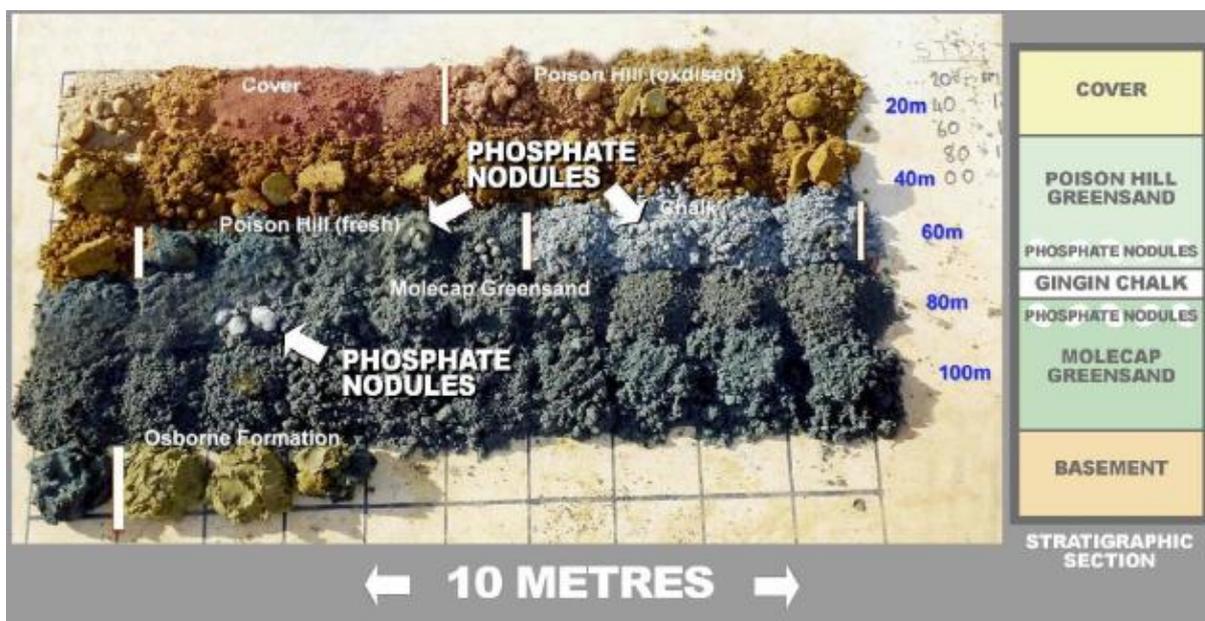


Figure 3: A Photo of the Dandaragan Trough Ore

Low grade mitigated by beneficiation

Whilst the grade of the PWN deposit is very low compared to other deposits the liberation characteristics of the phosphate minerals enable it be upgraded to a concentrate (>30% P₂O₅) by established

beneficiating techniques. The primary criteria when evaluating this deposit are that the concentrate grade is suitable for acidulation and production of SSP using standard industry practices.

For example, MBAC Fertilizer Corporation has released a DFS on their Itafos Phosphate Project located in central Brazil which allows them to upgrade a resource containing 5.09% P₂O₅ using flotation to a 28% P₂O₅ concentrate suitable for SSP production. This shows that, providing the ore characteristics are amenable, a lower P₂O₅ mineral resource can be upgraded to an intermediate product suitable to economically generate a saleable SSP commodity.

PROJECT LOCATION & INFRASTRUCTURE

The project is located less than 15km off the Brand Highway. It is anticipated that PWN will have to install a sealed road to transport reagents and final SSP product. This sealed road is estimated to cost approximately \$7M.

The project is located less than 20km from the town of Badgingarra, which has a population of less than 500, though with reasonable infrastructure, including a general store, post office, roadhouse and other businesses. Moora is located less than 80km from the Dinner Hill Resource and is where PWN plans to transport its SSP final product prior to delivering to Geraldton or Kwinana on the existing rail. It is assumed that PWN will have to build infrastructure, such as a covered stockpile to store its SSP product prior to transferring onto the existing rail network.

Moora is the most substantial wheat belt town between Geraldton and Perth. The town provides facilities and services such as commercial banks, schools, commerce and retail sectors, community recreational facilities; plus a pharmacy, dentist, doctors and district hospital.

Currently, Western Power has a 132kV line running on the west side of the Dinner Hill Resource, approximately 30km away, with construction of a 330kv transmission line underway.

Water quality important to flotation

Water has been reported to have been sourced from local borefields. The quality of water is important to phosphate flotation: laboratory conditioning and flotation tests demonstrated that adsorption of collector onto phosphate and the subsequent recovery of phosphate in anionic flotation were significantly influenced by the quantity and quality of water used in conditioning. Conversely, the quality of water

used in flotation was more influential on the recovery of quartz in the concentrate. Based on experience, the effect of water quality is typically not investigated until a PFS / DFS stage so whilst it is likely there is some risk associated here, the effect should be quantified during the DFS.

Close proximity to infrastructure crucial

As mentioned earlier, the location of this deposit near to established infrastructure such as major highways, farming towns, power and rail is of significant advantage to the PWN Dandaragan project.

MINING METHOD

Well established mining methods

The scoping study release states that mineralisation will be mined by a bulldozer, feeding an in-pit slurry unit, and that the greensand deposits of the Dandaragan Trough are an unconsolidated mixture of silica, glauconite and apatite, not dissimilar in physical characteristics to mineral sand deposits that are mined close by at Cataby and Eneabba. PWN proposes to mine using techniques that are well established in those deposits.

CAPITAL COSTS

The CAPEX costs were benchmarked against the Santana PFS which was released to the TSX in 2012. The Santana Phosphate Project is located in southeast of Para State near the state border of Mato Grosso and Para States in Northern Brazil.

Benchmarked capex 188 million

The Santana Phosphate project plans to process 1.5Mtpa of ore with an average grade of 12.2% P₂O₅. Similar to PWN, they are planning to produce a SSP product, though at an increased rate of 500,000tpa.

By benchmarking costs against the Santana PFS and using the AUSIMM cost estimation handbook an overall CAPEX cost of ~\$A188M was calculated. This cost is within the +/-35% of the \$A143.4M capital cost estimated by Strategic Metallurgy, which is appropriate for a scoping study.

We note that using the CAPEX figure of \$188M reduces the un-risked project NPV from \$208M to \$161M.

OPERATING COSTS

Opex greatest effect on NPV

OPEX costs have also been benchmarked against the Santana PFS. Sensitivity analysis shows changes in processing costs to have the greatest effect on the project NPV, reinforcing the value to be found by improving processing during the DFS stage.

PROCESS PLANT

Sulphuric acid cost circa \$61/tonne

Santana gives an overall processing cost of \$115.64/tonne of SSP which includes beneficiation, sulphuric acid, acidulation and granulation. With Santana producing its own acid on site the sulphuric acid costs for this operation are significantly reduced compared to PWN. Santana currently has a sulphuric acid cost of \$37.77/tonne of SSP. Using the Santana acid/flotation concentrate ratio of 0.705, a sulphuric acid cost of \$120/tonne (upper cost quoted in the Metallurgy section) plus an estimated \$25/tonne sulphuric acid transport costs, PWN is calculated to have a sulphuric acid cost of ~\$61/tonne of SSP.

Increasing the Santana sulphuric acid costs to levels similar to PWN would increase their overall processing cost to ~US\$139/tonne of SSP or ~AU\$155/tonne, 13% higher than PWN's quoted Process Plant costs of AU\$135/tonne.

Whilst the grade of the Santana ore (12.2 % P₂O₅) is significantly higher than PWN ore (2.79% P₂O₅) this has not been taken into account in calculating process plant OPEX as there are a number of important unknown factors of each ore, some of the most prominent include:

- Liberation characteristics of phosphate minerals in each ore; and
- Crushing and grinding energy requirements of each ore. PWN is assumed to be significantly lower given the intended mining method and exclusion of a crushing circuit which is contained within the Santana flow sheet.

A sensitivity analysis conducted on the process plant shows that a change in this cost will have the biggest effect on all OPEX costs on the NPV. However, significant increases in process plant operating costs seems unlikely.

POTASH & K-MAX PROCESS

By preferentially developing the Dandaragan Trough phosphate project, PWN aims to set up initial infrastructure and generate cash flow which will allow funding of development of The K Max process by Strategic Metallurgy, a partner of PWN. The K-Max process treats the large glauconite deposits in the greensands to produce potash, alum and iron oxide, as well as phosphate. This process has been developed by and is owned by PWN through Strategic Metallurgy.

K-Max a technology play with attendant risks

As stated in the original scoping study, there is presently no recognised process for treating glauconite rich feeds.

There is no doubt that it is rarely easy getting new processes up and running. Strategic Metallurgy, however, have experience in developing new processes through its owner, Gary Johnson, who spent ten years as Chief Metallurgist for a large gold producer before forming his own specialized hydrometallurgical consulting company in 1998. During this period, he worked closely with Lion Ore Mining International to develop the Activox process for treating sulphide concentrates. He also was closely involved with Tati Nickel Mining Company (Pty) Limited, in Botswana, which grew to become the largest nickel mine in Africa. Ultimately, however, the K-Max process is, to some extent at least, a technology play with commensurate risks.

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Barclay Wells currently receives a corporate mandate fee from PWN to promote the company's securities and PWN has commissioned this report as part of that mandate. Further, Barclay Wells and its associates currently own securities in PWN.

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