

## ASX Release

29 September 2014

### Company Details

ASX Code:	STB
Share Price	\$0.19
Market Cap	\$26M
Shares on issue	139M
Company options	23M
Cash at Bank	\$10M

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## Company presentation

South Boulder Mines (ASX: STB) is pleased to lodge a copy of the presentation that Managing Director Mr. Paul Donaldson will be giving at this year's Asmara Mining Conference that is being held in Asmara, Eritrea from Wednesday, 1 October through Friday, 3 October 2014.

#### More information:

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**South Boulder Mines Limited:** Telephone +61 8 6315 1444

**ABN:** 56 097 904 302

Paul Donaldson  
**MANAGING DIRECTOR**

Amy Just  
**COMPANY SECRETARY**

#### About South Boulder Mines Ltd

South Boulder is an ASX-listed (ASX: STB) resources company currently developing the emerging, world-class Colluli Potash Project located in Eritrea, Africa. The Colluli Potash Project is located in the Danakil Depression region of Eritrea ~65km from the coast comprising approximately 400km<sup>2</sup>. South Boulder Mines Limited has been actively exploring for potash at the Colluli Potash Project in Eritrea since 2009. Colluli is the world's shallowest potash deposit (starting at 16m), facilitating the low capex open pit mining and favourably positioned to supply the world's fastest growing markets.

The JORC/NI43-101 Compliant Mineral Resource Estimate for the Colluli Potash Project now stands at 1.08 billion tonnes @ 18% KCl for 194Mt of contained potash. Substantial project upside exists in higher production capacity and market development for other contained products. South Boulder Mines Ltd is working with the Eritrean government to developing a modern, open pit potash mine.



**SOUTH BOULDER**  
MINES LTD



# **Colluli: The Gateway to the Danakil**

## **Asmara Mining Conference 2014**

*Paul Donaldson – CEO and Managing Director*

*Helping grow a better future*

# Forward Looking Statements and Disclaimer

The information in this presentation is published to inform you about South Boulder Mines (the “Company” or “STB”) and its activities. STB has endeavoured to ensure that the information in this presentation is accurate at the time of release, and that it accurately reflects the Company’s intentions. All statements in this presentation, other than statements of historical facts, that address future production, project development, reserve or resource potential, exploration drilling, exploitation activities, corporate transactions and events or developments that the ‘Company expects to occur, are forward-looking statements. Although the Company believes the expectations expressed in such statements are based on reasonable assumptions, such statements are not guarantees of future performance and actual results or developments may differ materially from those in forward-looking statements.

Factors that could cause actual results to differ materially from those in forward-looking statements include market prices of potash and, exploitation and exploration successes, capital and operating costs, changes in project parameters as plans continue to be evaluated, continued availability of capital and financing and general economic, market or business conditions, as well as those factors disclosed in the Company’s filed documents.

There can be no assurance that the development of the Colluli Project will proceed as planned. Accordingly, readers should not place undue reliance on forward looking information. Mineral Resources have been estimated using the Australian JORC (2004) Code (‘JORC 2004’), which is a permitted code under Canadian National Instrument 43-101 (‘NI 43-101’). In addition to the CIM Definition Standards on Mineral Resources and Mineral Reserves. Mineral Resource classifications under the two reporting codes are recognised as equivalent in categories with no material differences. To the extent permitted by law, the Company accepts no responsibility or liability for any losses or damages of any kind arising out of the use of any information contained in this presentation. Recipients should make their own enquiries in relation to any investment decisions.



## Colluli highlights

1. Large, high grade potassium bearing resource close to surface in an emerging potash province.
2. Close proximity to coast and geographically favourable relative to key markets.
3. Unique combination of salts suitable for low cost production of potassium sulphate (SOP or sulphate of potash).
4. Strong and effective relationship with joint venture partners - ENAMCO



# Potash and demand drivers

Potash is a generic term used to describe a variety of potassium bearing minerals and manufactured chemicals used primarily as fertiliser.



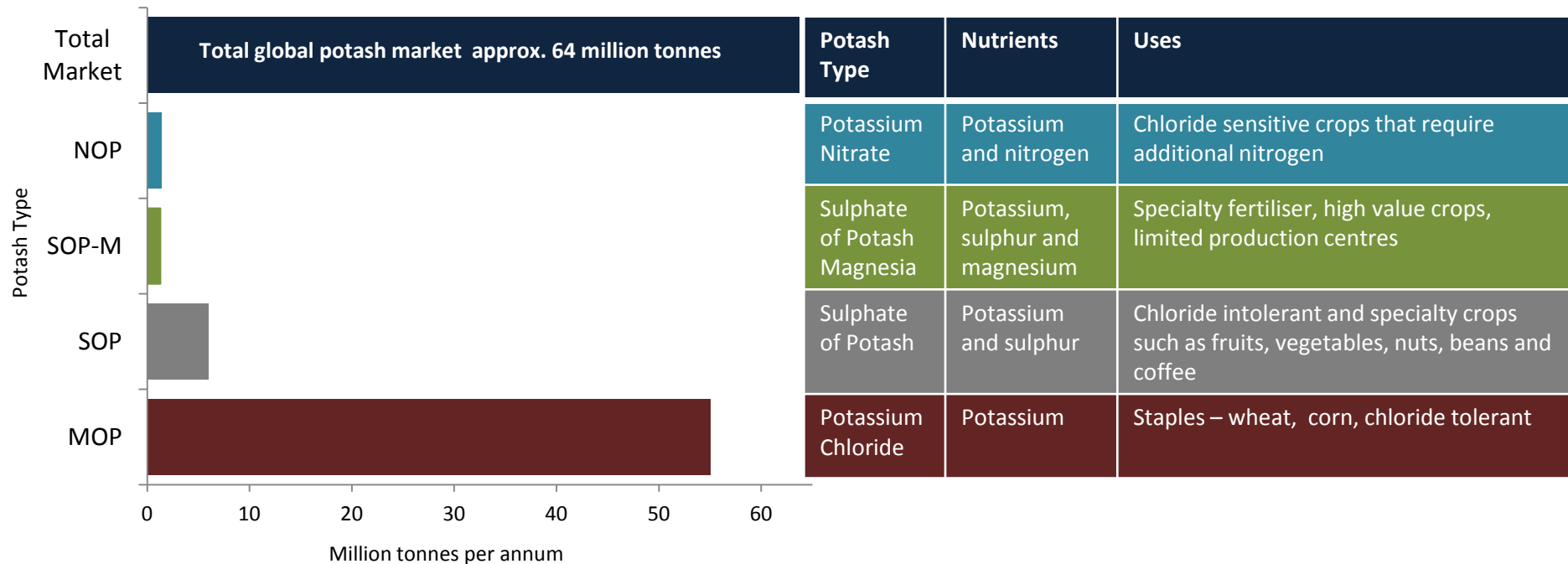
## Key drivers of growth

1. Increasing global population: +80 million people annually
2. Decreasing arable land
3. Changing dietary preferences





# Potash comes in a variety of forms



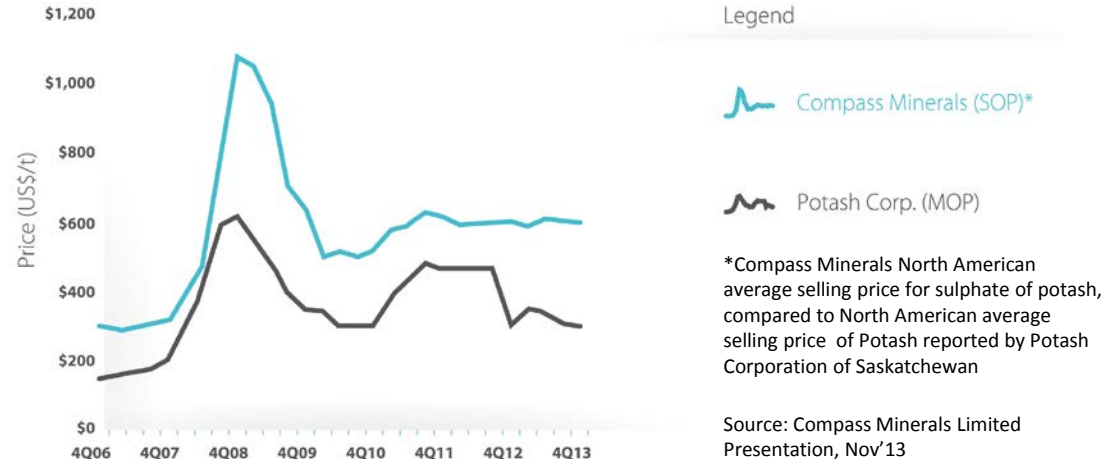
Source: UN FAO, BMO Capital Markets



# SOP – Price premium and limited advanced projects

## Significant price premium over potassium chloride (MOP)

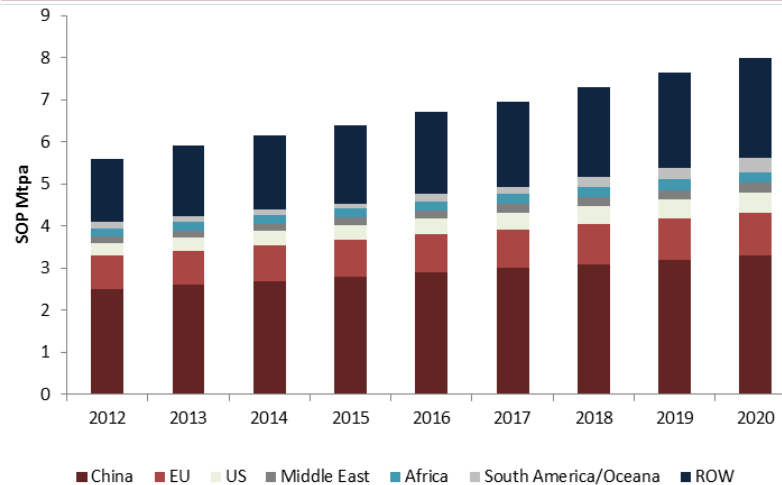
- Historical price premium has been in the order of 35%
- Current premium over 80%
- Suitable for high value crops
- Advantageous in saline and arid soils



## Limited advanced new projects

- 4% CAGR projected
- Approximately 2 million tonnes of growth over the next 10 years
- Limited new projects
  - Greenfield SOP Projects at DFS = 1
  - Greenfield SOP Projects at PFS = 2

## Significant price premium over potassium chloride



## 4% CAGR projected

Source: Parthenon Analysis, EPM Mining

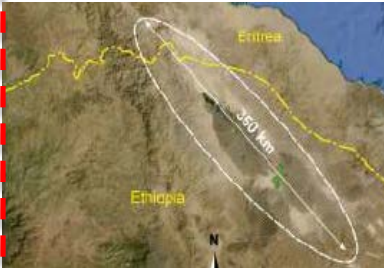
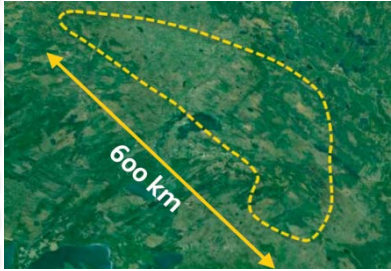
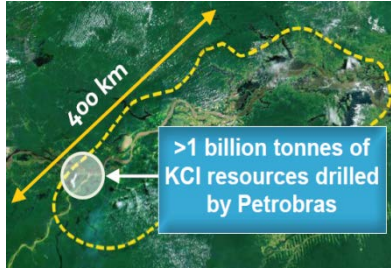
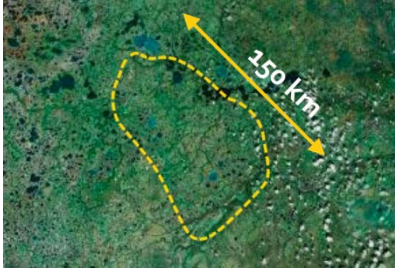


# The Danakil Depression - an emerging potash province

The Danakil Potash belt compares favourably in terms of size, resource depth and environmental issues against other potash belts globally.

**> 4.2 billion tonnes of measured and indicated potassium salts across the Danakil to date<sup>1</sup>**

Key Global Potash Belts<sup>2</sup>

Attributes	Danakil, East Africa – Eritrea, Ethiopia	Saskatchewan, Canada	Manaus – Santarem Basin, Amazonas, Brazil	Urals, Russia
Size				
Operator(s) Profile	<ul style="list-style-type: none"> <li>350km across</li> <li>Emerging junior mining companies</li> <li>South Boulder, Allana, Circum</li> <li>Mineralised zones occur much closer to the surface</li> </ul>	<ul style="list-style-type: none"> <li>600km across</li> <li>Established, large cap companies</li> <li>i.e. Canpotex</li> </ul>	<ul style="list-style-type: none"> <li>400km across</li> <li>Emerging mining companies</li> <li>i.e. Brazil Potash,</li> </ul>	<ul style="list-style-type: none"> <li>150km across</li> <li>Established, large cap companies</li> <li>K&amp;S Group, Uralkali (Bela-Russian)</li> </ul>
Resource Depth	<ul style="list-style-type: none"> <li>Typically only 20-100m in Eritrea</li> <li>150 – 950m in Ethiopia<sup>3</sup></li> </ul>	<ul style="list-style-type: none"> <li>Canadian deposits typically range from 1,500–2,000m</li> </ul>	<ul style="list-style-type: none"> <li>Similar depth as Saskatchewan</li> <li>Typically ~500-2,000m<sup>1</sup></li> </ul>	<ul style="list-style-type: none"> <li>Russian depths are typically 1,800 to 2,000m</li> </ul>
Climate	<ul style="list-style-type: none"> <li>Conducive to the use of Evaporation and geothermal power</li> </ul>	<ul style="list-style-type: none"> <li>Cold climate</li> <li>Evaporative solar ponds less effective</li> </ul>	<ul style="list-style-type: none"> <li>Wet climate, heavy rainfall</li> <li>Evaporative solar ponds less effective</li> </ul>	<ul style="list-style-type: none"> <li>Cold climate</li> <li>Evaporative solar ponds less effective</li> </ul>
Environment / Social	<ul style="list-style-type: none"> <li>Flat, arid desert with sparse population</li> <li>Minimal community/social concerns</li> </ul>	<ul style="list-style-type: none"> <li>Heavily populated area</li> <li>Significant community/social concerns</li> </ul>	<ul style="list-style-type: none"> <li>Tropical climate, dense vegetation</li> <li>Considerable environmental issues</li> </ul>	<ul style="list-style-type: none"> <li>Mountainous terrain</li> <li>Low environmental concerns</li> </ul>

Notes:

1. Measured and Indicated tonnages for Danakil based on combined tonnages from South Boulder Mines, Allana Potash and Ethiopian Potash (Agriminco) South Boulder Mines tonnages from stated N43-101/JORC resource, Allana tonnages from Allana Feasibility N43-101 compliant project summary, Ethiopian Potash (subsequently Agriminco) tonnages obtained from SEDAC, N43-101 resource report
2. Based on Brazil Potash presentation (February 2013).
3. Ethiopia drill depths obtained from Allana reports





# Large, high grade potassium bearing resource

**Over 1 billion tonnes of potassium bearing salts** – all potassium salts in the Colluli resource are suitable for the production of potash fertilisers.

**Shallow mineralisation supports Colluli as open pit** – a proven, safer mining method, easier to expand and better overall resource recovery than underground.

**One of only three** major resources containing kainite salt (key salt for SOP production) in solid form globally.

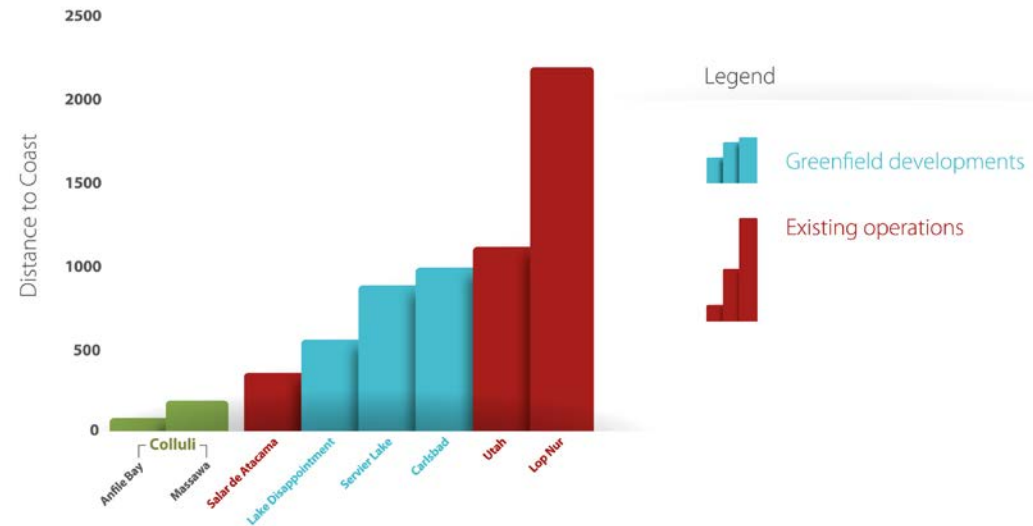
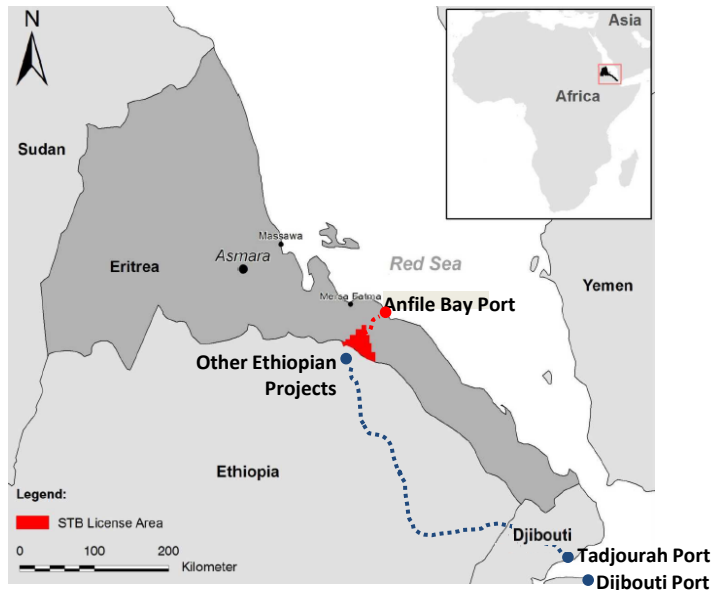
Colluli at a Glance	
Location	South Eritrea
Size	Approximately 400km <sup>2</sup>
Product	Sulphate of Potash
Resource <sup>1</sup>	Measured: 262Mt Indicated: 581Mt Inferred: 173Mt <u>Total: 1016Mt</u>
Potassium Bearing Salts	Sylvinite: 110Mt Carnallite: 309Mt Kainite: 597Mt
Process	Flotation/Solar Evaporation
Stage	PFS level testwork program underway

<sup>1</sup> Refer to Resource Statement on Page 30



# Close and unmatched proximity to the coast

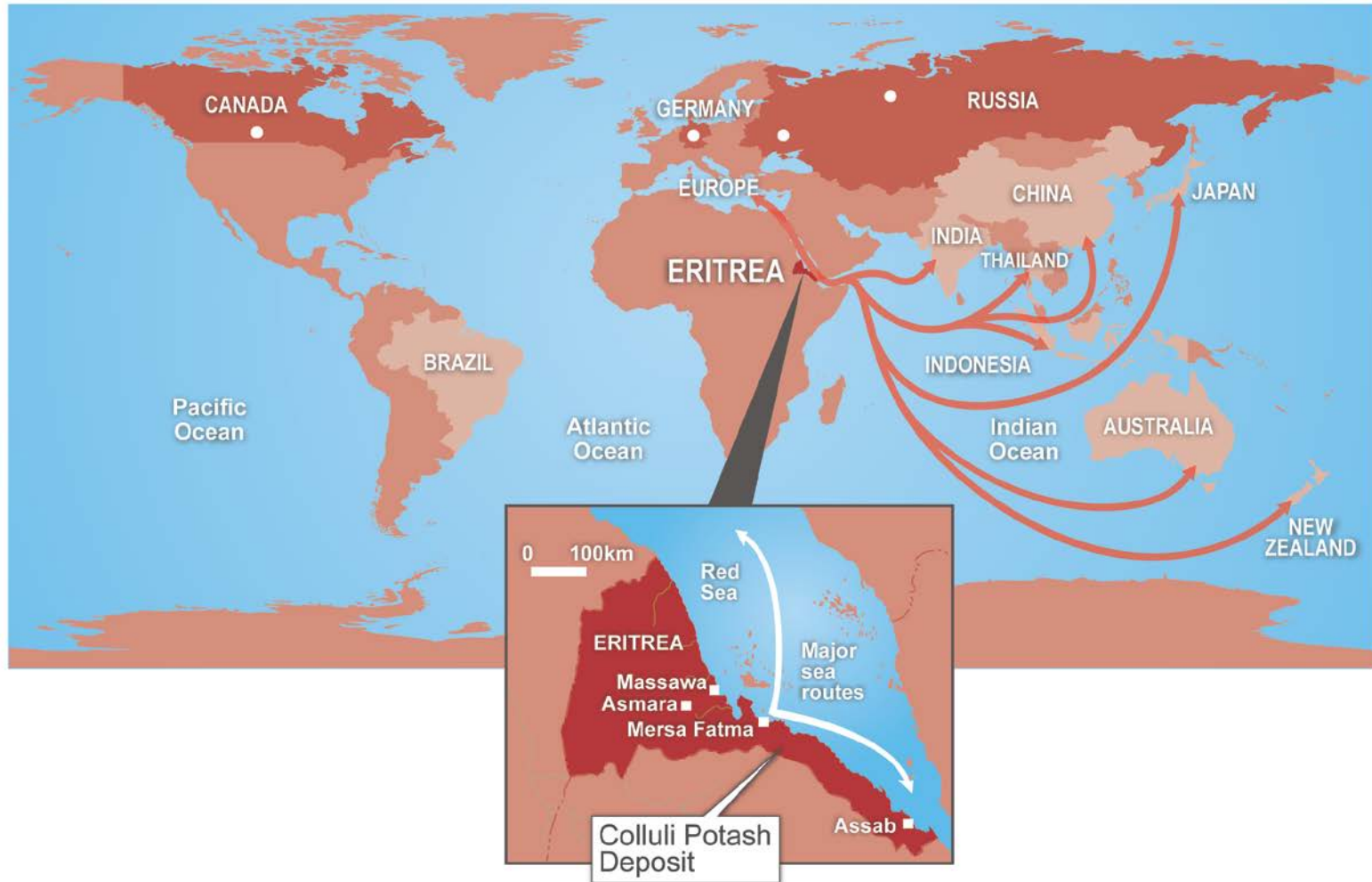
*Colluli is the closest potassium sulphate resource to the coast globally and has the most favourable coastal access from the Danakil depression.*



- 75km to designated loading point at Anfile Bay
- 180km from the Port of Massawa (4 berth bulk and container terminal)



# Well located to key growth markets



# Colluli's switch from MOP to SOP - strong economic uplift

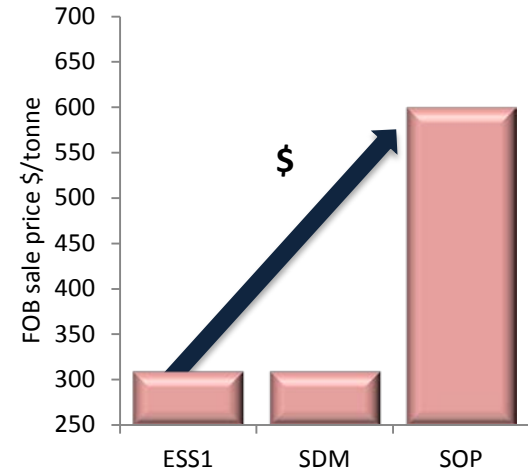
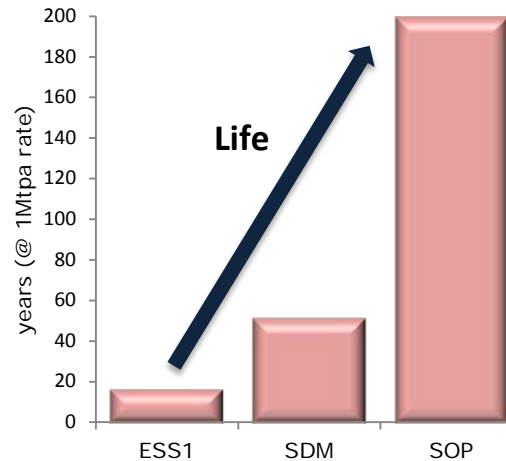
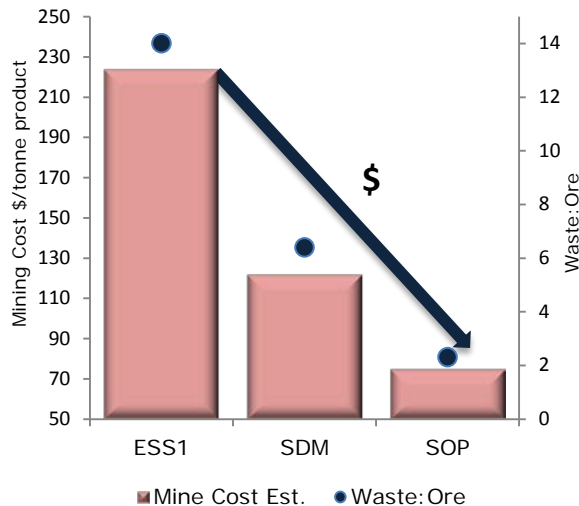
- Switching from MOP to SOP better matches resource, process and product

- |                                |                                 |   |
|--------------------------------|---------------------------------|---|
| • Lower strip ratio            | 14:1 to 2.3:1                   | ✓ |
| • Lower mine cost              | \$224 to \$75/tonne of product  | ✓ |
| • Potentially longer mine life | 17yrs to 200yrs                 | ✓ |
| • Substantial price premium    | +\$US300 price premium over MOP | ✓ |

## Reduction in strip ratio and mining costs

## Substantial potential increase in mine life

## Substantial Premium based on current and historical product prices



Source: 6<sup>th</sup> February 2014, South Boulder Mines ASX release, 'Positive Results from Colluli Processing Review'  
 21<sup>st</sup> March 2013, Colluli Potash Project, Updated Economics  
 ESS1 = Engineering Scoping Study, 1 million tpa potassium chloride  
 SDM = Staged Development Model



# Production process is simple and proven

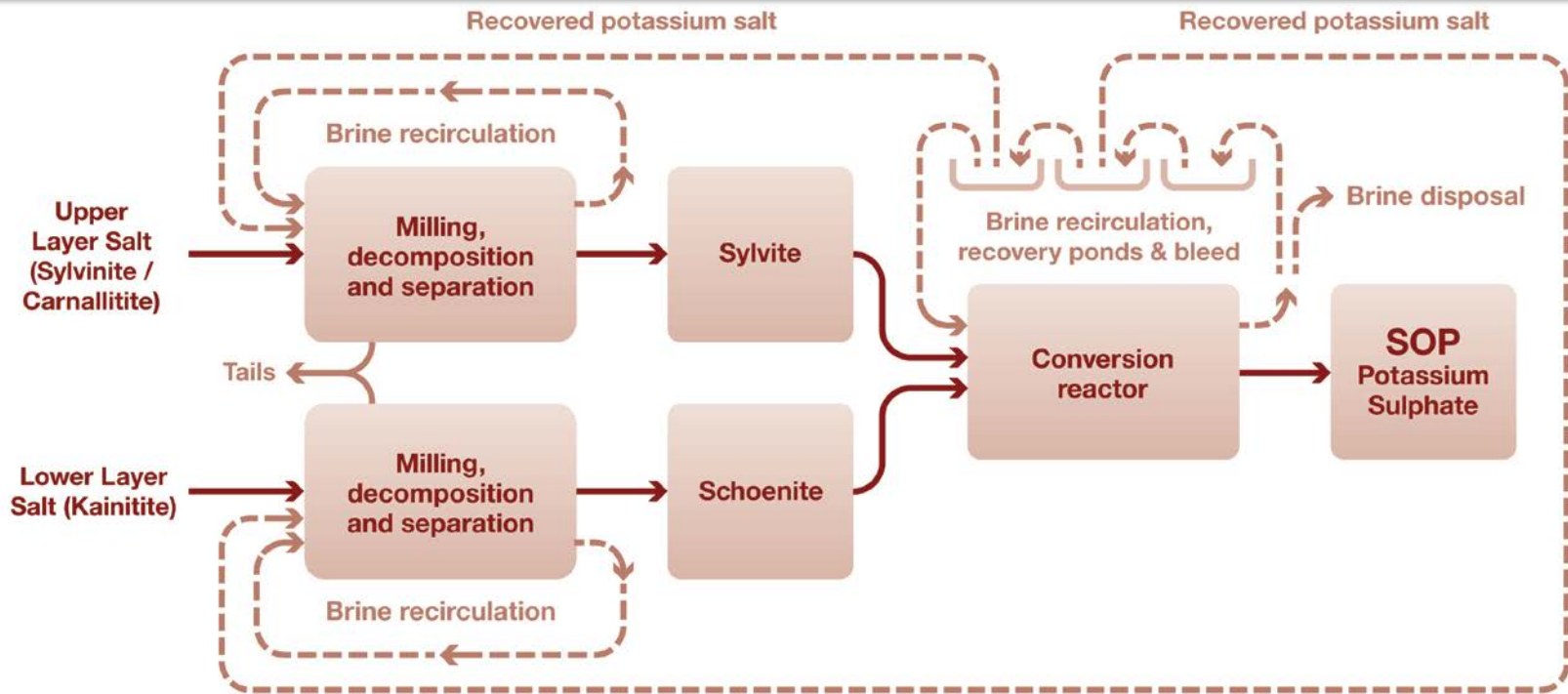
1. Colluli's key salts can be purified using simple liberation and conventional flotation processes.
2. The combination of the purified salts results in an ambient temperature, high yield conversion directly to potassium sulphate.
3. This simple, proven process is currently used by low cost brine producers.
4. The key difference is that Colluli starts with salts rather than brine. This is a major advantage of the Colluli resource. It reduces footprint size, improves reliability of productivity, and reduces complexities of brine chemistry management.
5. The presence of kainite and sylvite (from sylvinite and carnallite) give the Colluli a major advantage for SOP production. It is the combination of these salts that minimise energy inputs and result in maximum potassium yield.





# Preliminary process concept

Potassium chloride produced is combined with kainite to produce SOP



This is the lowest energy input, highest potassium yield route to potassium sulphate



# Limited low cost potassium sulphate (SOP) resources globally



Potassium sulphate production is generally produced by:

1. Low cost production from kainite /sylvite (KCl) rich brines
2. Combining magnesium sulphate with sylvite
3. High cost reaction of potassium chloride and sulphuric acid

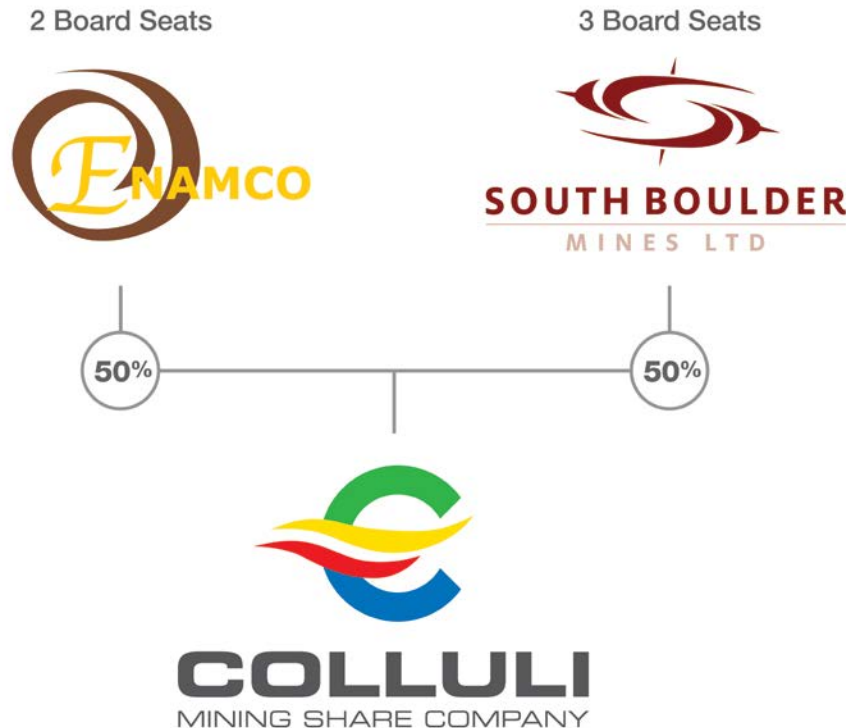


## Other key factors for Colluli

1. No communities within the exploration tenements.
2. Process can accommodate seawater – consistent and unlimited water supply to be piped from the Red Sea coast to the Colluli site. No major abstraction from local aquifer.
3. Unsealed coastal road runs within 60km of the Colluli site.
4. No clearing required.
5. Ease of access for construction equipment and mining fleet.



# Colluli Mining Share Company (CMSC) incorporated



**Colluli Mining Share Company was incorporated in March 2014.**

- 1. 3 board meetings held to date**
- 2. Financials approval process for CMSC established**
- 3. Board overseeing and governing the Colluli development**



# Adopting the principles of modularity

**Colluli has changed the development philosophy from large scale development to one where modularity and expandability are key themes.**

## **Why Modularity?**

- 1. Risk Mitigation: Safety, Capital/Commercial**
- 2. Process Optimisation**
- 3. Capital Management**
- 4. Ease of Expandability**

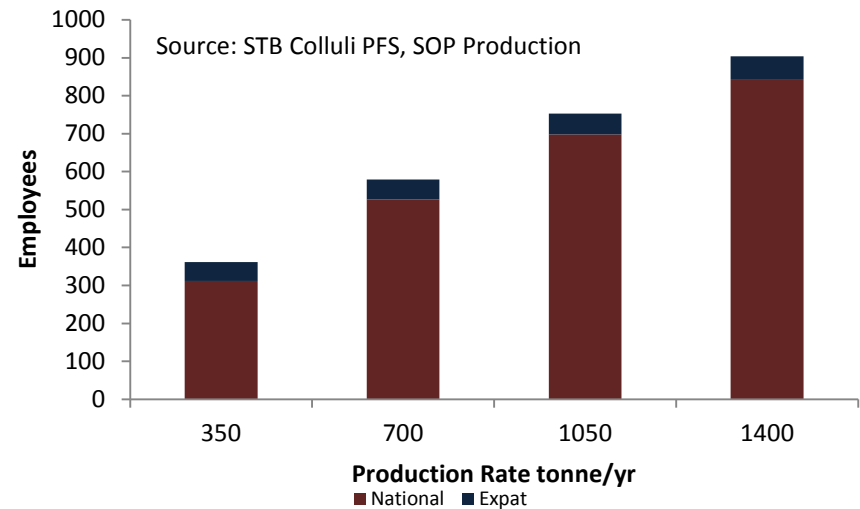




# Risk mitigation

## Safety:

- Managing workforce size, skills and training
- Avoiding competition for limited skills within developing mining industry
- Developing capability at a manageable rate



## Capital/Commercial:

- Analysis of Australian mining projects shows larger % cost increases with increasing project size
- Highest level of confidence in the bracket with the largest number of projects (\$100m - \$500m)

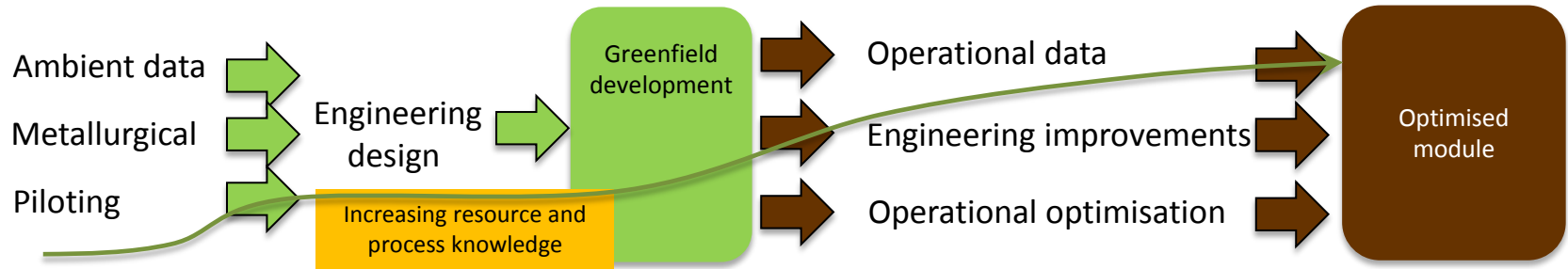
Value of Mining Projects Completed (\$m)	20 – 100	101 - 500	501 - 1000	+1000
Number completed	43	54	17	27
Average cost change	2.4%	-3.8%	4.0%	14.6%

Source: Deloitte Access Economics, March 2014



# Process and resource optimisation

## Process Optimisation

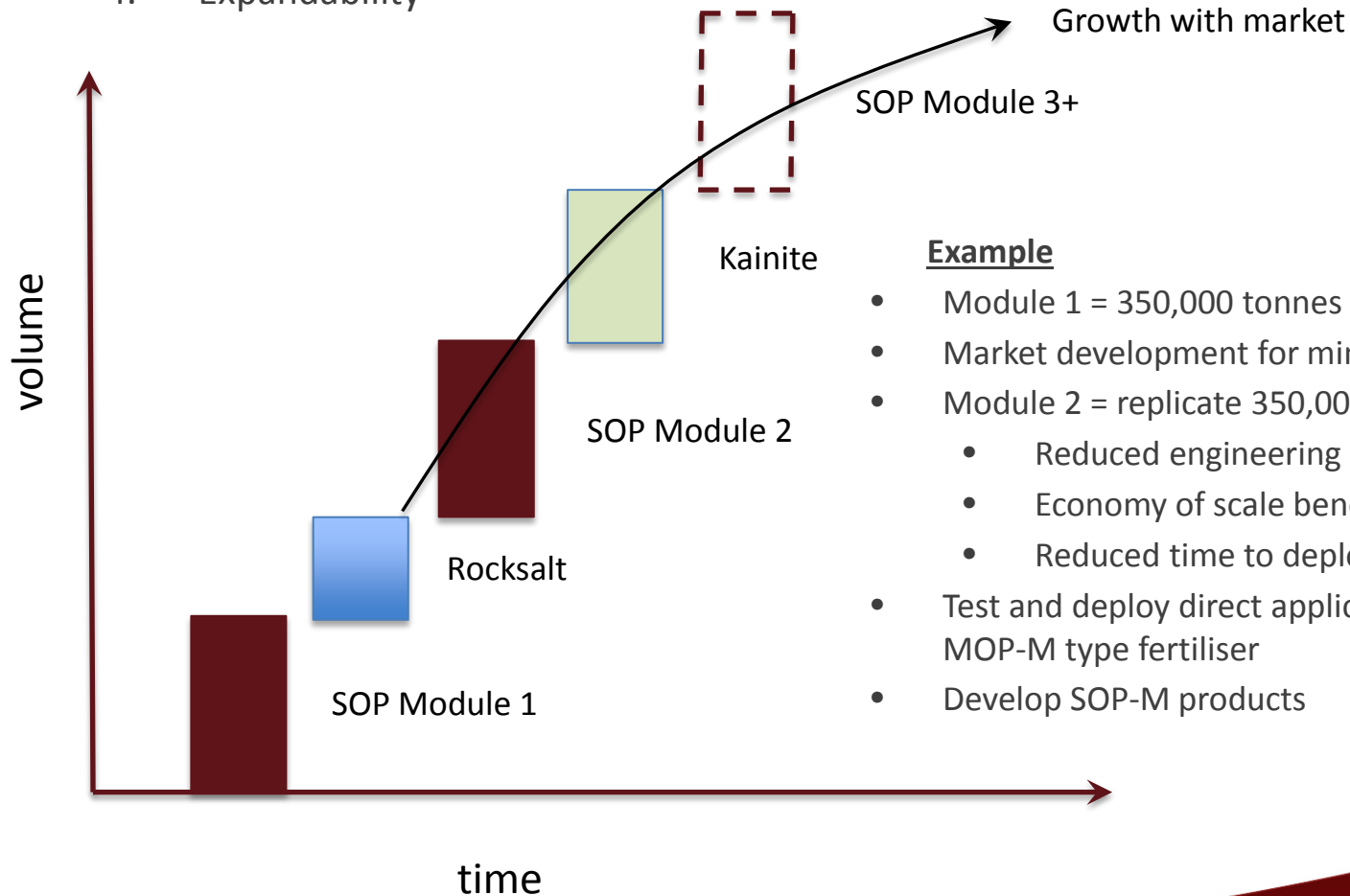


- Greenfield developments rely on data acquisition and metallurgical test programs for process design. While this proves and derisks the process, operational data and process understanding are core elements of process optimisation.
- Module designs can be optimised with the combination of data, plant performance, improved understanding of raw material and processing behaviour.



# The advantages of modularity

1. De-risking the project
2. Resource utilisation – introducing other value accretive products
3. Market penetration
4. Expandability



## Example

- Module 1 = 350,000 tonnes product
- Market development for mined rocksalt
- Module 2 = replicate 350,000 tonne module
  - Reduced engineering costs
  - Economy of scale benefits
  - Reduced time to deploy
- Test and deploy direct application kainite as MOP-M type fertiliser
- Develop SOP-M products



# Colluli's infrastructure solution based on modularity



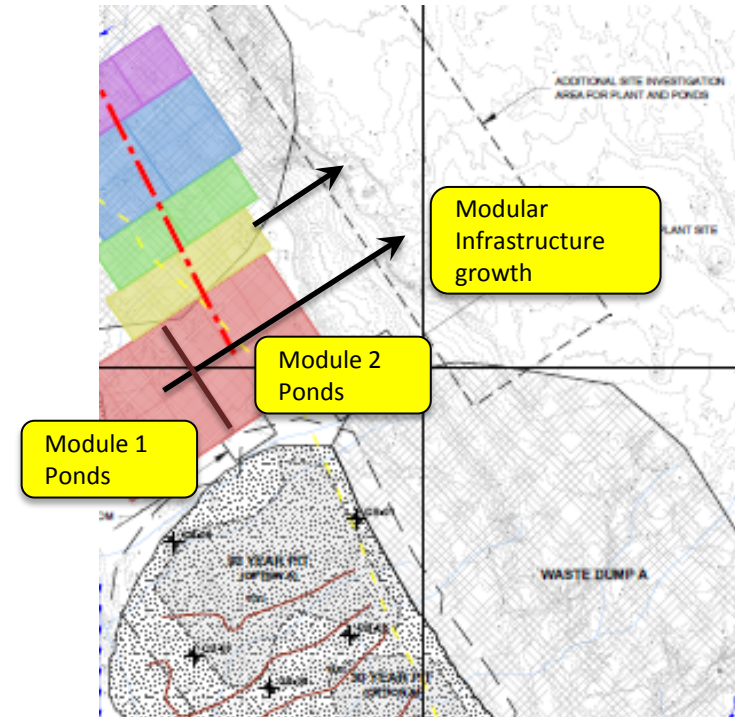
Modular Servicing Bays (example)



Modular Fuel Pods (example)



Modular Offices and Camp (example)



- Simpler logistics
- Reduced Earthworks
- Ease of expandability
- Improved capital management
- Improved process ramp up



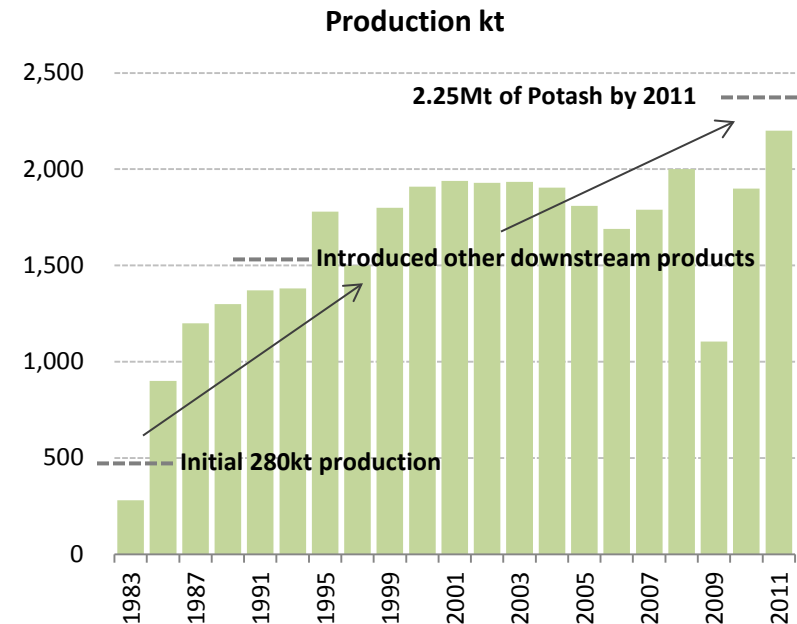
# Case study: Modular expansion at the Dead Sea

A modular expansion path was used at Arab Potash Company's (APC) Dead Sea operations. This laid the foundation for ongoing growth.

## Modular Expansion Case Study: APC

- Produce in the Dead Sea
- Modular expansion a success
  - Began in 1983 with 280kt potash production
  - Introduced downstream industries such as salt, NPK, Magnesia, Bromine & Potassium Nitrate
  - By 2011 producing 2.25Mt of potash
- This supports STB's planned 'first generation', 'second generation' and 'long term' expansion stages

## Modular Production Profile



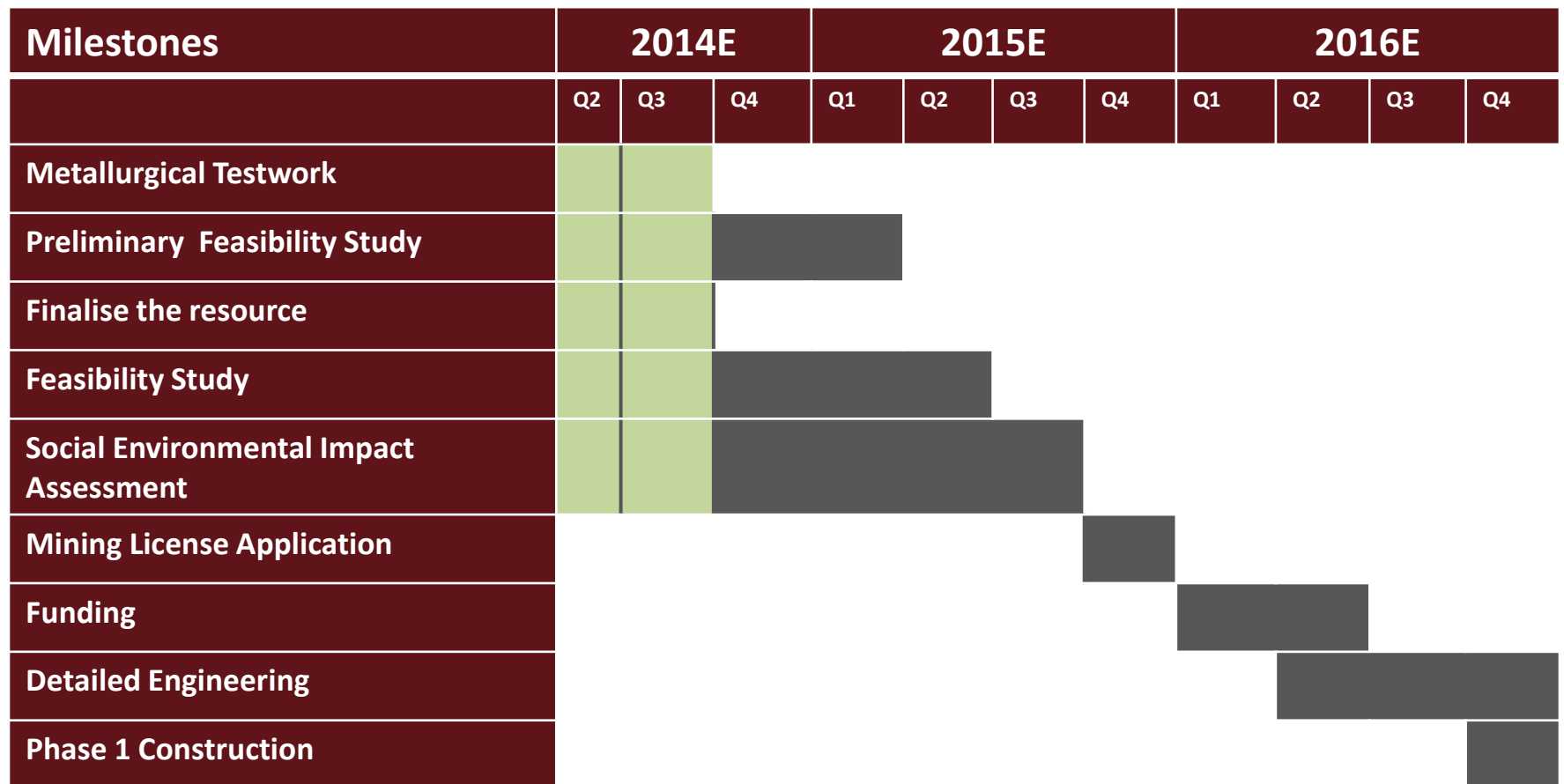


# 2014 Accomplishments

Options review to process all salts completed	Feb
CMSC incorporated	Mar
Initiated transfer of resource model to AMC consultants	Mar
Commencement of metallurgical testwork for SOP production	Apr
Appointed study manager	May
Established all project workstreams for feasibility studies	May
Anfile Bay allocated to the project as export location	Jun
Oceanography studies initiated	Jul
Preliminary process design flowsheets developed	Aug
First tranche of environmental baselines submitted	Aug
Resource hole 'twinning' and geotech drilling initiated	Sep



# PFS well progressed



## Colluli summary

1. Large, high grade potassium bearing resource close to surface.
2. Close proximity to coast and geographically favourable relative to key markets.
3. Unique combination of salts suitable for low cost production of potassium sulphate (SOP or sulphate of potash).
4. Strong and effective working relationship with the government.





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# Thank you

# Appendix





# Highly capable team working through SOP PFS



Colluli Study Manager : James Durrant

Commencement Date : May 2014



Resource  
Mine planning  
Mine geotech



Infrastructure and process design  
(with Global Potash Solutions)



Hydrogeology, ponds  
and infrastructure  
geotech



Metallurgical Testing



Export logistics



Social and Environmental Impact  
Assessment



# Potential market opportunities

Markets for these products are well established.

## Potential Markets for Various Resource Mineralisation

Mineral Present at Colluli	Colluli Resource <sup>1</sup>	Global Market Context
rock salt (NaCl)	+ 650Mt	300Mtpa global salt market
halite (NaCl)		
bischofite (MgCl <sub>2</sub> )	+200Mt	6 – 7Mtpa global market
anhydrite	Avg 4% ( ~40Mt)	187Mtpa Gypsum market
kieserite (MgSO <sub>4</sub> )	40Mt	Established fertiliser segment

<sup>1</sup> Refer to Resource Statement on Page 30



# Resource statement

The Current Colluli JORC-Compliant Mineral Resource Estimate by potash mineral is as follows:

Occurrence	Tonnes (Mt)	Equivalent KCl	Contained KCl (Mt)	% of Total Resource
Sylvinite (KCl.NaCl)	110	28.4%	31	16%
Polysulphate ( $K_2SO_4.NaCl.MgSO_4.H_2O$ )	65	10.8%	7	4%
Carnallite (KCl.MgCl <sub>2</sub> .H <sub>2</sub> O)	309	12.3%	38	19%
Kainite (KCl.MgSO <sub>4</sub> .3H <sub>2</sub> O)	596	19.8%	118	61%
Total	1,080	18.0%	194	100%

The Colluli Potash Project has a current JORC/NI43-101 Compliant Measured, Indicated and Inferred Mineral Resource Estimate of 1,079.00Mt @ 17.97% KCl or 11.35% K<sub>2</sub>O (total contained potash of 194.09Mt KCl or 122.61Mt K<sub>2</sub>O). The resource contains 261.81Mt @ 17.94% KCl or 11.33% K<sub>2</sub>O of Measured Resources, 674.48Mt @ 17.98% KCl or 11.36% K<sub>2</sub>O of Indicated Resources and 143.50Mt @ 18.00% KCl or 11.37% K<sub>2</sub>O of Inferred Resources.

This information was prepared and first disclosed under the JORC Code 2004. It has not been updated since to comply with the JORC Code 2012 on the basis that the information has not materially changed since it was last reported by independent consultants ERCOSPLAN and announced by South Boulder on 16 April 2012.

## Competent Persons and Responsibility Statement

The information in this report that relates to Exploration Results and Mineral Resources is based on information compiled by Greg Knox using estimates supplied by South Boulder Mines Ltd under supervision by Ercosplan. Dr Henry Rauche and Dr Sebastiaan Van Der Klauw are co-authors of the JORC and NI43-101 compliant resource report. Greg Knox is a member in good standing of the Australian Institute of Mining and Metallurgy and Dr.s' Rauche and Van Der Klauw are members in good standing of the European Federation of Geologists (EurGeol) which is a "Recognised Overseas Professional Organisation" (ROPO). A ROPO is an accredited organisation to which Competent Persons must belong for the purpose of preparing reports on Exploration Results, Mineral Resources and Ore Reserves for submission to the ASX.

Mr Knox, Dr Rauche and Dr Van Der Klauw are geologists and they have sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which they have undertaken to qualify as a Competent Person as defined in the 2004 Edition of the "Australian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Knox, Dr Rauche and Dr Van Der Klauw consent to the inclusion in the report of the matters based on information in the form and context in which it appears.



# Experienced board and management



## **Paul Donaldson, CEO and Managing Director**

Mr Donaldson was appointed to the role of Chief Executive Officer in February 2013. He joins South Boulder Mines from a series of senior management roles with BHP Billiton. Mr Donaldson has experience in large scale open cut mine management, supply chain logistics, mineral processing, business improvement and marketing.



## **Liam Cornelius, Non Executive Director**

Mr Cornelius graduated from Curtin University of Technology with a BAppSc in Geology. He has been involved in the exploration industry within Australia and Africa for 18 years. As a founding member of South Boulder Mines, Mr Cornelius has played a key role in outlining areas of interest for the company.



## **Seamus Cornelius, Non Executive Chairman**

Mr Cornelius has 21 years of corporate experience in both legal and commercial negotiations. He has been based in Shanghai and Beijing since 1993, where he has been living and working as a corporate lawyer. From 2000 to 2011 Mr Cornelius was an international partner with one of Australia's leading law firms, specialising in cross border investments in the energy and resource sectors.



## **James Durrant, Project Coordinator**

Mr. Durrant joined South Boulder Mines after a series of operational roles within BHP Billiton. With tertiary qualifications in both mechanical and mining engineering, Mr. Durrant brings project management, organisational design and operational management of large scale open cut mines skills to the organisation.



## **Tony, Kiernan, Non Executive Director**

Mr Kiernan was previously a commercial lawyer and is currently Chairman of the Australian iron ore producer BC Iron Ltd (ASX:BCI) and a non-executive director of several listed mining companies including Chalice Gold Mines Ltd (ASX: CHN), which has been operating in Eritrea since 2009.



## **Zeray Leake, Country Manager**

Mr Leake is a Geologist with over 12 years experience in the development and exploration of potash, gold, base metals and industrial minerals.

Mr Leake previously worked for the Geological Survey of Eritrea.

