



# The Lake Wells Sulphate of Potash Project

## Definitive Feasibility Study Presentation

September 2019

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## **Competent Person's Statement**

The information in the announcement that relates to Mineral Resources and Reserves is based on information that was compiled by Mr. Duncan Gareth Storey. Mr. Storey is a Director and Consulting Hydrogeologist with AQ2, a firm that provides consulting services to the Company. Neither Mr. Storey nor AQ2 own either directly or indirectly any securities in the issued capital of the Company. Mr. Storey has 30 years of international experience. He is a Chartered Geologist with, and Fellow of, the Geological Society of London (a Recognised Professional Organisation under the JORC Code 2012). Mr. Storey has experience in the assessment and development of palaeochannel aquifers, including the development of hypersaline brines in Western Australia. His experience and expertise are such that he qualifies as a Competent Person as defined in the 2012 edition of the "Australian Code for Reporting of Exploration Results, Mineral Resources and Ore reserves". Mr. Storey

consents to the inclusion in this report of the matters based on this information in the form and context as it appears.

The information in this report that relates to Exploration Results is based on information compiled by Christopher Shaw who is a member of the Australian Institute of Geoscientists (AIG). Mr. Shaw is an employee of Australian Potash Ltd. Mr. Shaw has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity currently being undertaken to qualify as a Competent Person as defined in the 2012 edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr. Shaw consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

The information in this report that relates to mineral processing is based on information compiled by Mr Antoine Lefavre, a Competent Person who is a Member of the *Ordre des Ingénieurs du Québec* (Order of Engineers of Quebec). Mr Lefavre is employed by Novopro Projects Inc. and has sufficient experience that is relevant to the style of minerals processing and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Lefavre consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

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# Investment Highlights

- 1 **Flagship SOP asset: JORC2012 Measured Resource of 18.1Mt and 3.6Mt Reserve**
- 2 **Enormous upside: Life of Mine run-rate uses only 21% of Total Measured Resource**
- 3 **Strong board and management team with decades of project financing, development, management and SOP marketing experience**
- 4 **Sector leading capital intensity against peer space and first quartile operating costs**
- 5 **Very strong supply constrained Global and domestic SOP market with CAGR set to grow total global demand from +6Mt to nearly 9Mt by 2040**
- 6 **Existing infrastructure in place with multiple export port and distribution options via road and rail**
- 7 **Rapid pathway to development with FEED to commence immediately, financing and off-take selection process underway**

# Company Snapshot



## Board

### Jim Walker

*Non-executive Chairman*

WesTrac, Diggers & Dealers, Austin, Seven Group

### Rhett Brans

*Non-executive Director*

Carnavale, AVZ, Perseus, Tiger

### Brett Lambert

*Non-executive Director*

Mincor, Western Mining, Intrepid

### Matt Shackleton

*Managing Director & CEO*

*Chartered Accountant*

Mount Magnet South, Canyon, DRCM

### Sophie Raven

*Company Secretary*

*Corporate Lawyer*

## Management

### Scott Nicholas

*Chief Financial Officer*

MACH Energy, Atlantic

### Jay Hussey

*Chief Commercial Officer*

Migao, China specialist

### Stewart McCallion

*Project Manager*

Blackham, Hancock

### Chris Shaw

*Exploration Manager*

Anglo, Gryphon, Normandy

## Capital Structure

Share Price (26/08/2019)	A\$0.11
Shares on Issue (ASX: APC)	357m
Listed Options (ASX: APCOA, 20c, 10/2019; APCOB, 12c, 08/2021)	85m
Unlisted Options (10c - 22.5c, 2021)	21m
Market Capitalisation	A\$39m
Cash (30/06/2019)	A\$3m
Enterprise Value	A\$36m

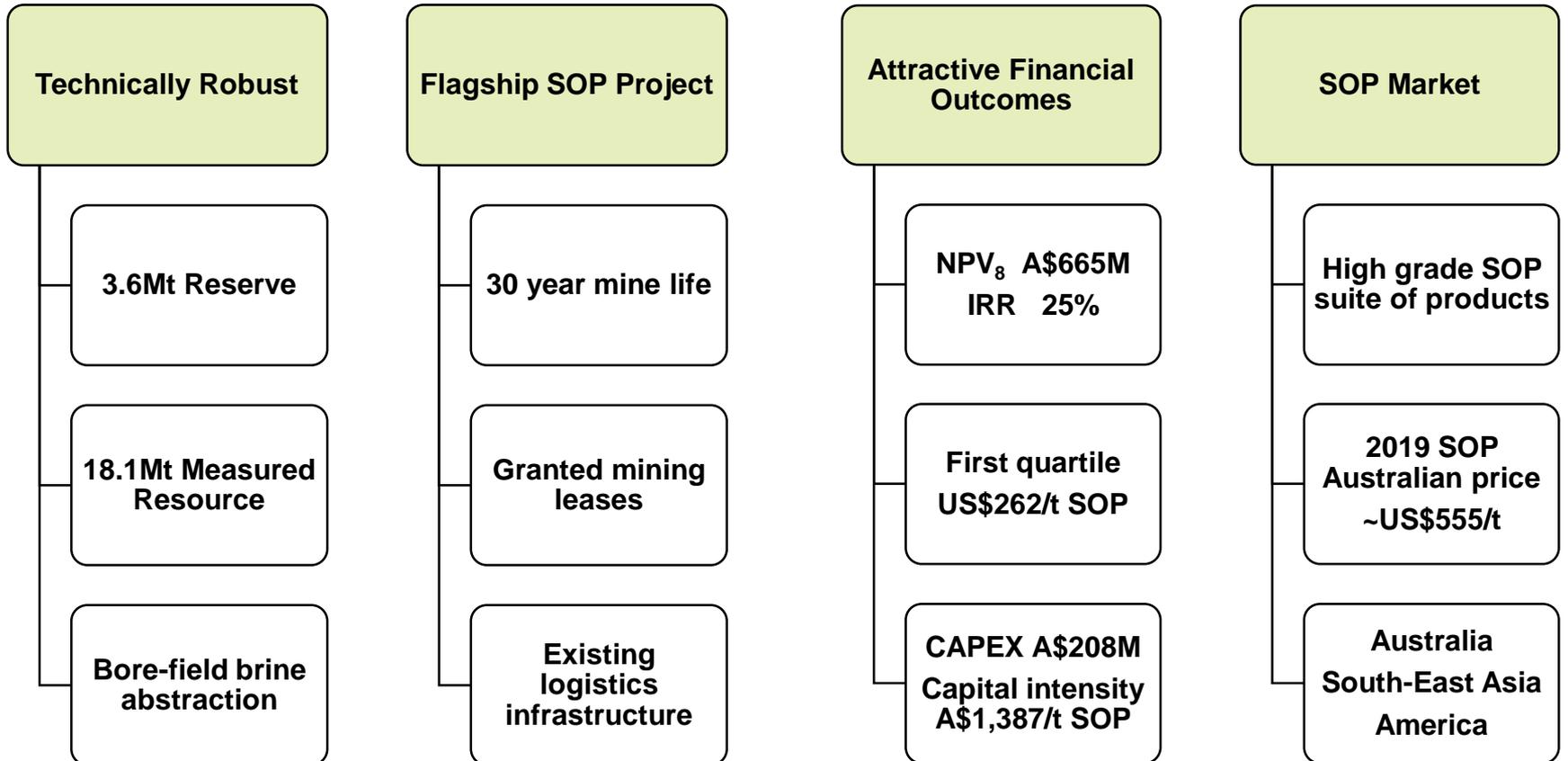
## Major Shareholdings

Top 40	55%
Yandal (Creasy)	8.5%
Perth Select Seafood	4.5%
Directors & Mgmt	2.5%

## Research Coverage



# DFS Summary



# Leading Industry Partners

Contributor	Background	Description of Contribution
	Independent water resources consultancy with expertise in hydrogeology and hydrology	Exploration, resource and reserve, borefield design, process water supply
	Experts in engineering, environmental services, and geosciences	Evaporation and harvest pond design, capital and sustaining capital costs, and operating costs
	Specialises in developing and engineering projects applied to the metallurgical, mining, mineral processing and chemical industries	Process plant design including test work, trial concentration ponds, and process engineering. Product modelling of potassium flow from palaeochannel to final SOP product
	Engineering and project management group providing a complete range of services for the evaluation, development, implementation and optimisation of projects	Process plant capital and sustaining cost, operational costs, and maintenance
	Provides environmental consulting expertise with a team of geochemists, environmental engineers and geoscientists	Environmental and approvals strategy and implementation
	Leading independent corporate advisory group	Financial modelling, WACC, and FX assumptions
	Leading independent provider of potash price, market data, and business intelligence	Sulphate of potash and muriate of Potash supply and demand fundamentals including price forecasts

# Global SOP

Country	Company	Location	Capacity tpa	Method	Mt	% Global Prod
USA	Compass	Utah	320,000			
Chile	SQM	Atacama	240,000			
India	Archean	Rann of Kutch	65,000			
China	Xinjiang Luobupo	Lop Nur, Xinjiang	1,800,000			
China	Qinghai Lenghu Bindi	Dayantan	900,000			
China	Qinghai CITIC Guo'an	Taijinaier	300,000	<b>Solar salt</b>	<b>3.6</b>	<b>32.3%</b>
Belgium	Tessengerlo	Ham	580,000			
Sweden	Kemira	Halsingborg	110,000			
Finland	Yara	Kokkola	220,000			
Other European	Various	Various	40,000			
Egypt	Evergrow	Giza	300,000			
Other MENA	Various	Various	255,000			
Taiwan	Sesoda, Green-on	Various	220,000			
Other	Various	Various	249,000			
China	Migao	Various	320,000			
China	Various	Various	4,100,000	<b>Mannheim</b>	<b>6.4</b>	<b>56.9%</b>
Germany	K+S	Werra	1,050,000			
Russia	Rusal/Meta Chem/other	Various	150,000	<b>Kieserite/MOP/other</b>	<b>1.2</b>	<b>10.6%</b>
<b>Total Production Capacity</b>					<b>11.2</b>	<b>100%</b>

Source: Argus

# Australian SOP Companies

Company	Project	Study stage	Capacity tpa	Pre-Production CAPEX A\$M	Market Capitalisation A\$M
<b>Australian Potash (ASX: APC)</b> <sup>1</sup>	<b>Lake Wells</b>	<b>DFS</b>	<b>150,000</b>	<b>208</b>	<b>39.3</b>
Agrimin (ASX: AMN) <sup>2</sup>	Lake Mackay	PFS	426,000	545	115.2
BCI Minerals (ASX: BCI) <sup>3</sup>	Mardie	PFS	100,000	97/498	71.6
Danakali (ASX: DNK) <sup>4</sup>	Colluli	FEED	472,000	431 <sup>4</sup>	171.1
<b>Kalium Lakes (ASX: KLL)</b> <sup>5</sup>	<b>Beyondie</b>	<b>FEED</b>	<b>90,000</b>	<b>216</b>	<b>188.8</b>
Reward Minerals (ASX: RWD) <sup>6</sup>	Lake Disappointment	PFS	400,000	451	13.0
Salt Lake Potash (ASX: SO4) <sup>7</sup>	Lake Way	Scoping Study	200,000	<b>237</b>	216.3

1. Definitive Feasibility Study ASX Announcement 28 August 2019

2. Investor Presentation March 2019

3. Investor Roadshow Presentation May 2019

4. Investor Presentation July 2019; Capex cost of USD302 translated to AUD431

5. Investor Presentation August 2019

6. AGM Presentation May 2019

7. Investor Presentation August 2019

# Asset Overview



## Ownership

Australian Potash Limited (100%)

## Commodity

Sulphate of Potash suite of products

## Operation Type

Bore-field (78 bore network) abstraction, solar salt evaporation and processing

## Deposit

Brine contained within a palaeochannel

## Tenement Area

- 3 mining leases
- 17 exploration licenses
- Tenements cover an area of 2,100km<sup>2</sup>

## Status

- Scoping Study completed March 2017
- Definitive Feasibility Study completed August 2019
- >A\$15m invested to date

## JORC Reserves and Resources

- Reserves: 3.6Mt of SOP
- Resources: 18.1MT of SOP

# SOP Probable Ore Reserve

- 95% of SOP production from aquifers from Probable Ore Reserves of 3.6Mt
- 5% recovered from Measured resource over the 30 year mine life

## Recovered Brine and Mass for first 10 years of operations and LOM

Brine Volume Recovered (Mm <sup>3</sup> )	Mining Period	Average Pumping Rate (L/s)	K Concentration (mg/L)			Mass Potassium Recovered (MT)	Mass SOP Recovered (MT)	Proportion of Measured Resource
			Start	End	Average			
170	0-10 yrs	540	3,570	3,390	3,450	0.6	1.3	7%
511	0-30 yrs	540	3,570	3,250	3,350	1.7	3.8	21%

## Probable Ore Reserve

Brine Volume Recovered (Mm <sup>3</sup> )	Average Produced K Concentration (mg/L)	K Mass (MT)	SOP Mass (MT)	Proportion of Measured Resource	Proportion of LOM Production
490	3,325	1.6	3.6	20%	96%

# Bore Field and Ponds

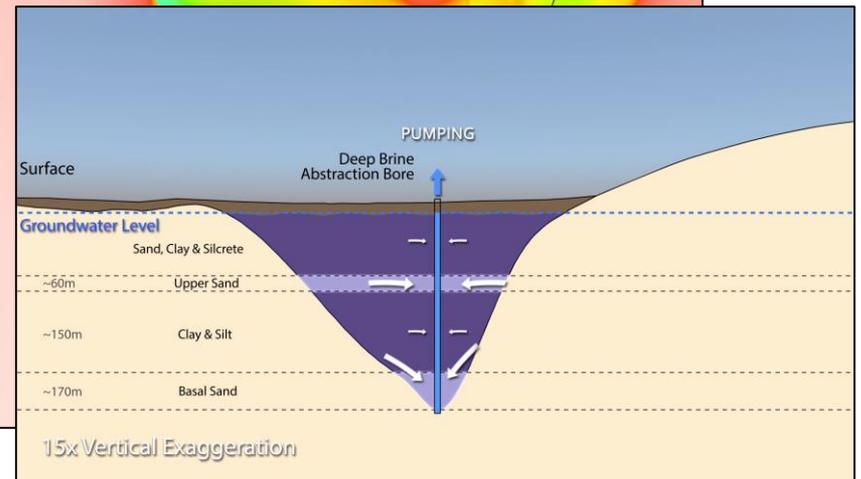
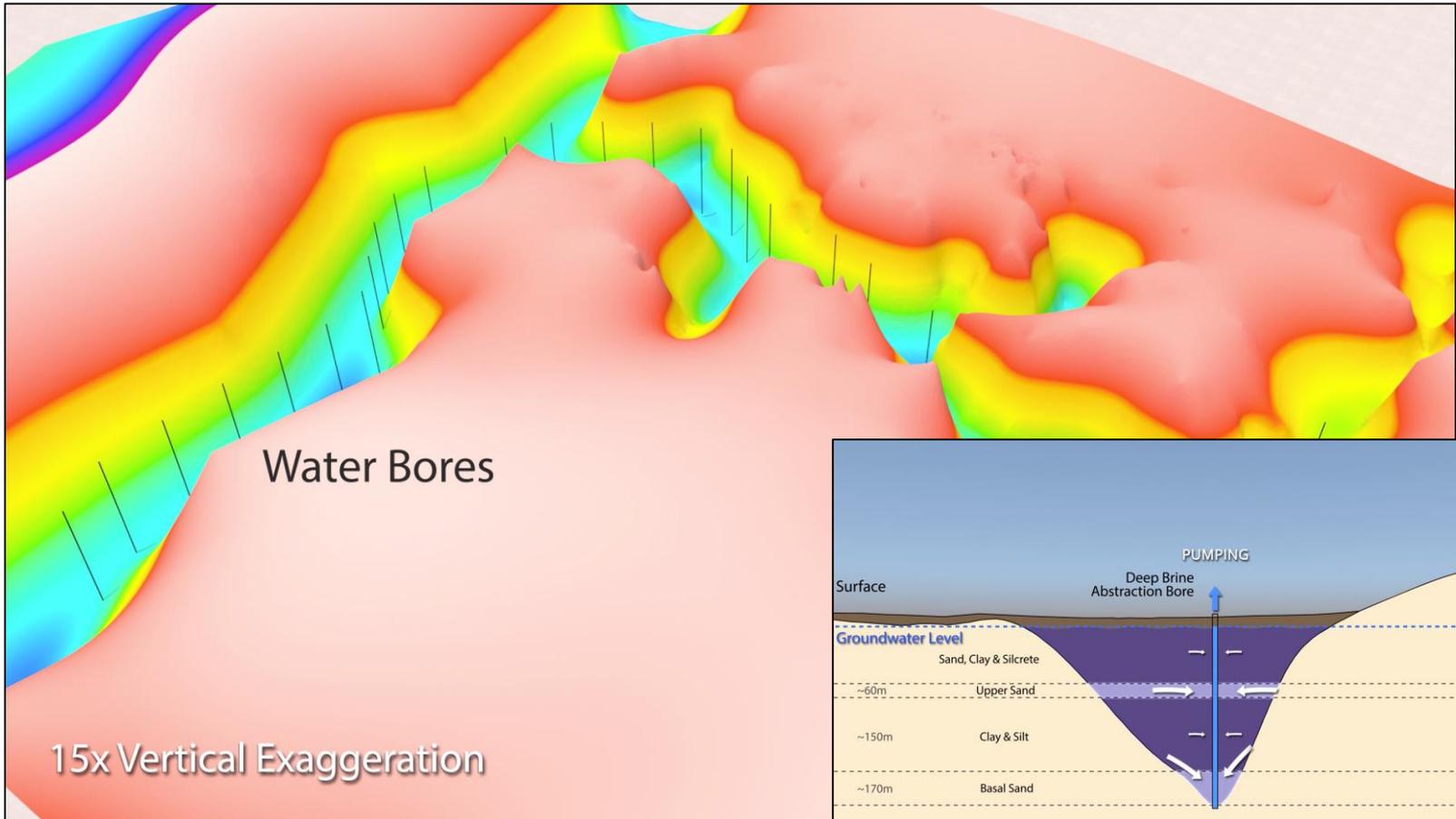
## Bore Field Pipeline

- ❑ Bore field design to abstract 540 litres/second over the life of mine
- ❑ Bore field comprises 78 bores across both lines and is approximately 77km
- ❑ Bore-field connected with reticulated powerlines and telemetry

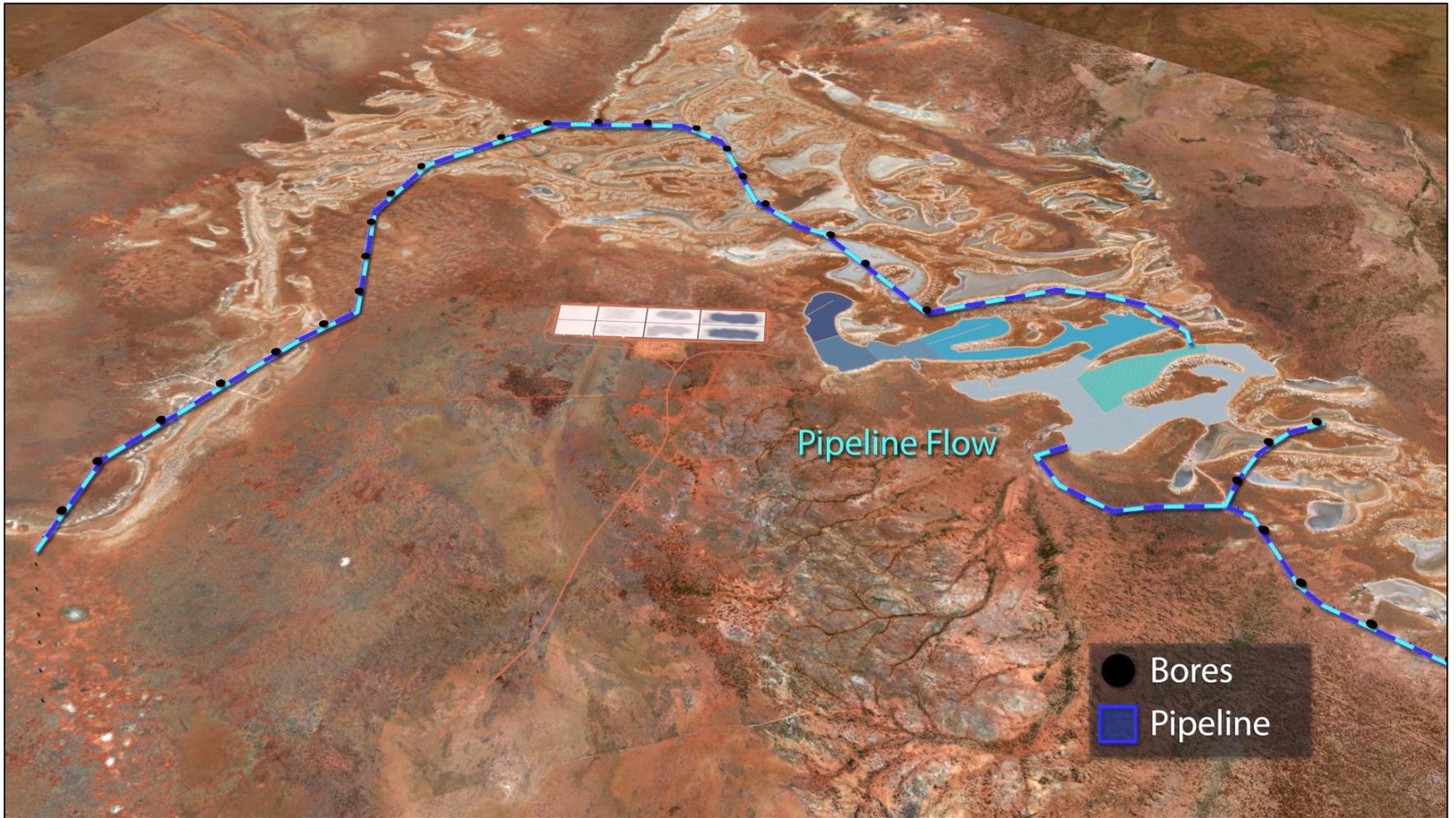
## Evaporation Ponds

- ❑ Evaporation ponds design based on grade and climate modelling completed by Novopro
- ❑ There are three ponds in the evaporation sequence:
  - ❑ 10.03 km<sup>2</sup> required for the Buffer and Pre-concentration Ponds
  - ❑ 2.67 km<sup>2</sup> required for Harvest Pond
- ❑ Buffer Pond (where brine is stored and released to buffer seasonable variations in evaporation)
- ❑ Pre-concentration Ponds (where the brine is concentrated on-playa up to the sodium chloride saturation point)
- ❑ Harvest Ponds (where the potassium bearing salts are deposited in off-playa, lined ponds for harvesting and transporting to the processing plant)

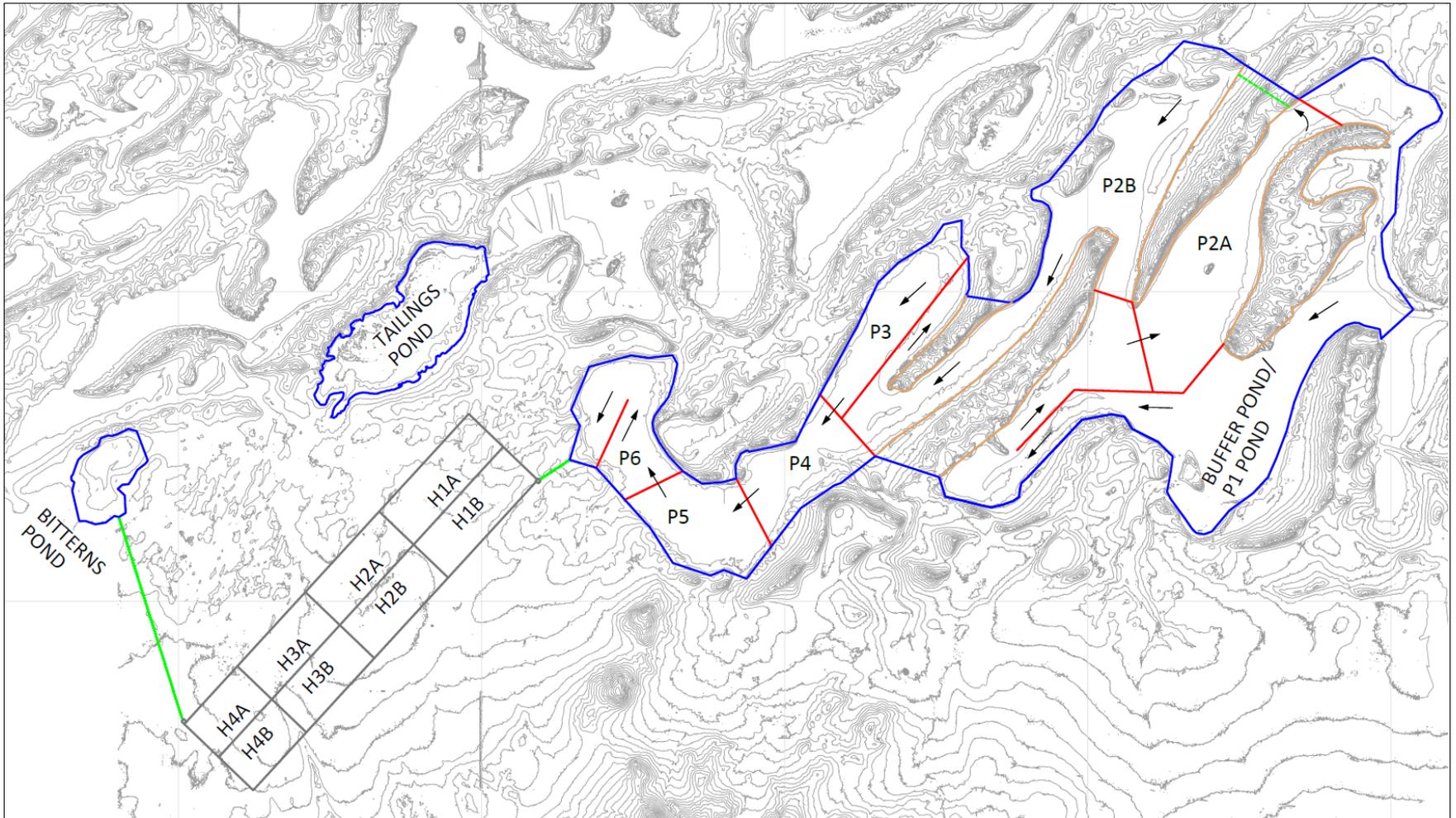
# Bore Field and Abstraction



# Bore Field and Abstraction



# Evaporation Ponds



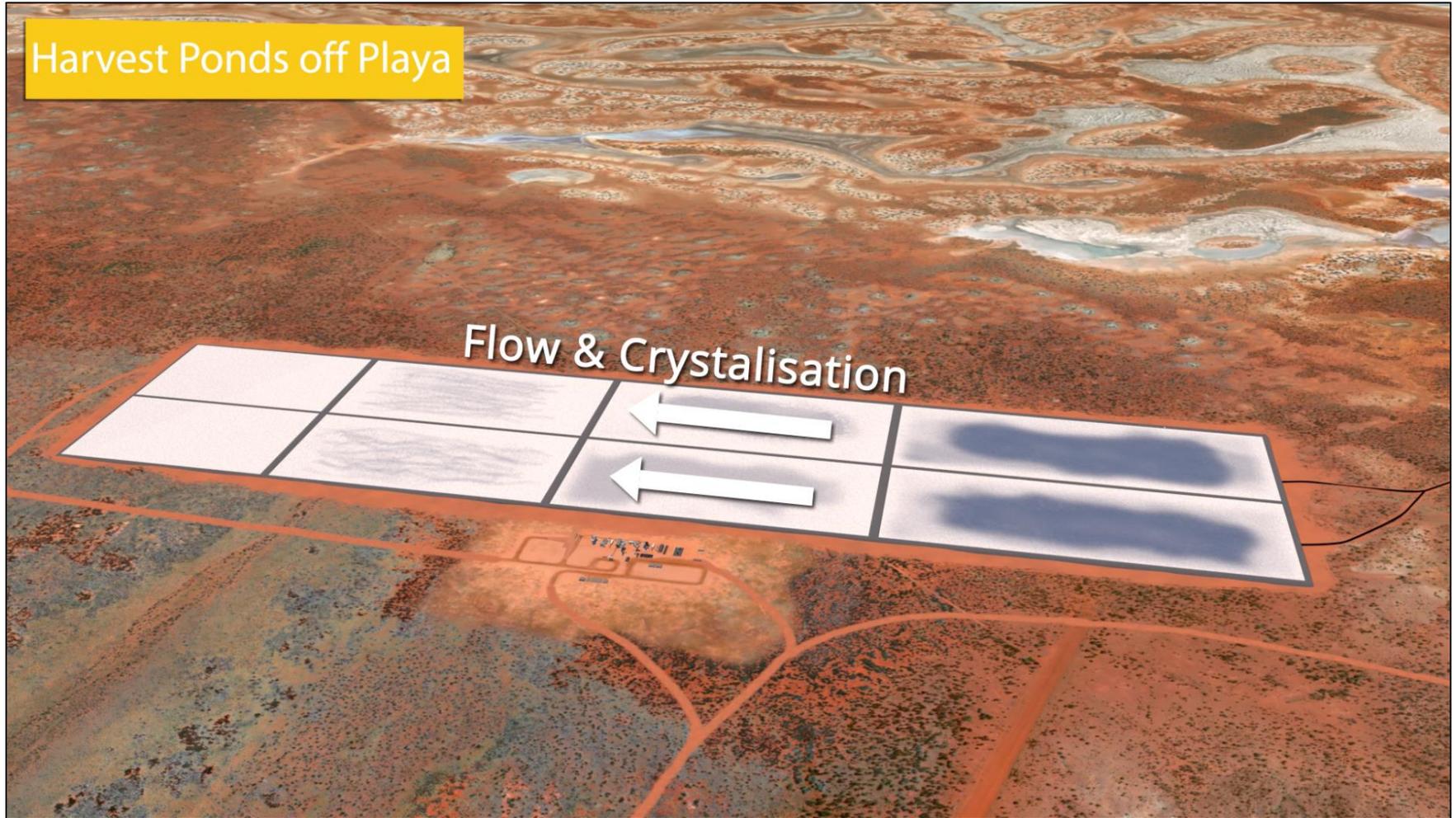
# Evaporation Ponds



# Evaporation Ponds

Harvest Ponds off Playa

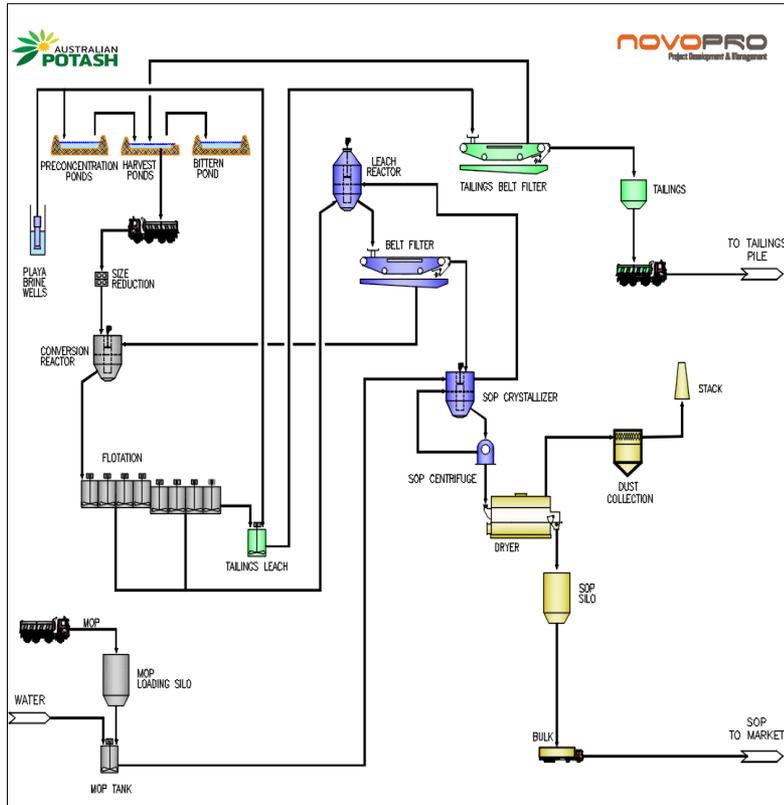
Flow & Crystallisation



# Process Plant



# Process Plant



## Simple Block Model

- ❑ Processing facility is designed to produced **150,000tpa of SOP** from salts recovered from the harvest ponds and from MOP addition
- ❑ Key process stages include:
  - ❑ Harvest salts – loaded onto trucks and transported to processing plant
  - ❑ Crushing – ensures all potassium bearing salts are sufficiently liberated
  - ❑ Conversion reactor – salts converted to potassium bearing schoenite in an exothermic reaction
  - ❑ Flotation – schoenite separated from the gangue material: high purity schoenite
  - ❑ Leaching – precipitates additional schoenite from addition of SOP mother liquor, removes remaining halite
  - ❑ MOP addition – MOP is dissolved then mixed with the high purity schoenite then fed into the SOP crystalliser
  - ❑ SOP crystalliser – converts high purity schoenite into SOP crystals at 50°C

# Site Operations

## Logistics

- ❑ Bulk haulage using super-quad trucks to Geraldton Port, backloaded MOP



# Site Infrastructure

## Site Infrastructure

- ❑ APC has received Request for Proposals (RFP) and budget quotations for the site infrastructure : preferred proposals selected & form basis for DFS costings

## Power station and reticulation

- ❑ Build, Own, Operate (BOO) Gas fired power station with total capacity of 12 MW
- ❑ Trucked LNG, power reticulated to bore-field

## Site Access Road

- ❑ Minor re-alignment for site access road from the Great Central Rd
- ❑ CAPEX includes upgrade to existing access road to handle quad truck movements

## Accommodation camp

- ❑ 100-person permanent camp constructed, 52 person operating levels
- ❑ Includes medical, laundries, gymnasium, swimming pool, wet mess

## Site Communications

- ❑ Long haul microwave network between Laverton and the LSOP comprising of 6 towers between 30-50m high, high-speed LAN & WAN

# Implementation

## Project Delivery Model

- EPCM project execution model with oversight from the Company's team

Quarters from FID	(2)	(1)	1	2	3	4	5	6	7	8	9	10
FEED	█											
Approvals & Permitting	█											
Engineering & Procurement			█									
Brine borefield & pond construction			█									
Plant construction						█						
Plant commissioning & ramp-up											█	█
Steady state production												█

# Environmental & Social

## **Environmental and Social**

- ❑ Environmental Scoping Study (ESD) approved September 2018
- ❑ Environmental Review Document (ERD) due for lodgement with EPA in Q3 2019

## **Approvals**

- ❑ Receipt of all approvals planned for Project development commencing Q2 2020
- ❑ Ministerial Statement is estimated to be received Q2 2020
- ❑ Works Approval and Mining Proposal estimated to be granted Q2 2020

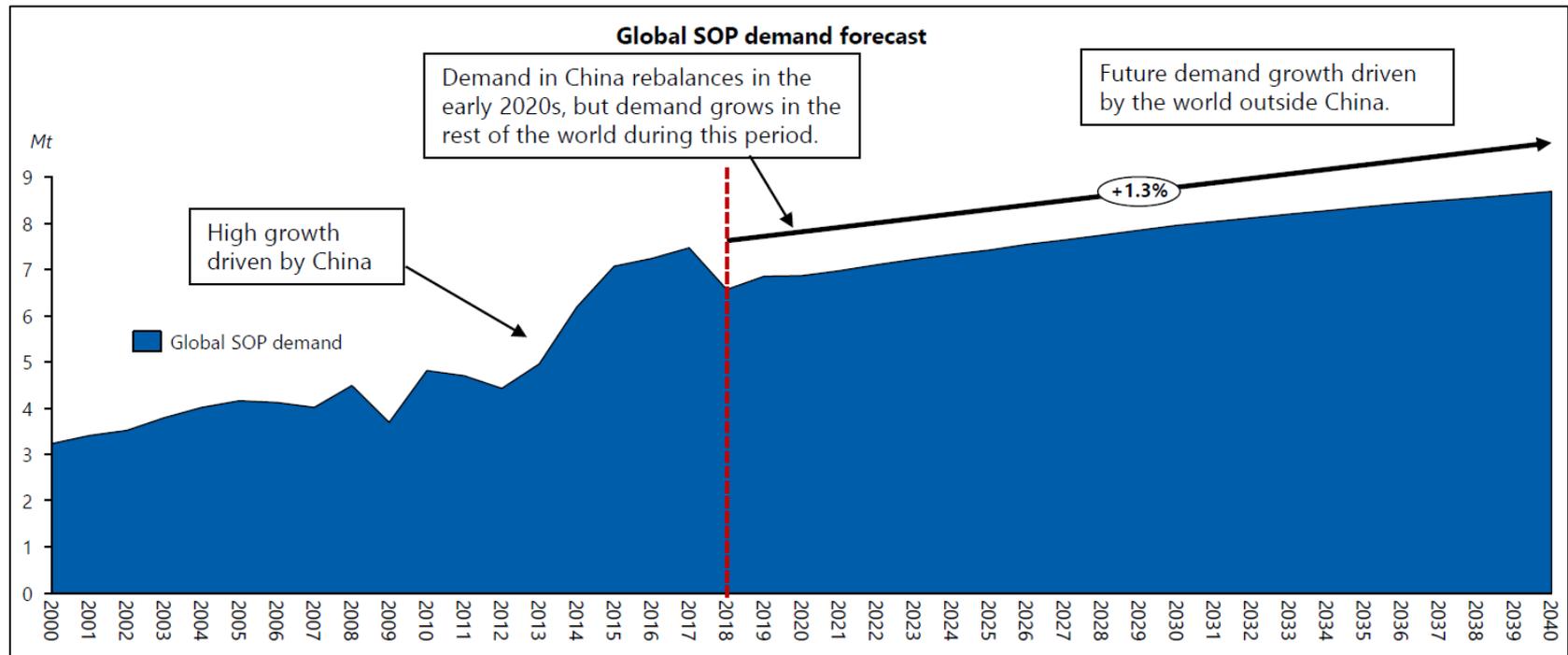
## **Granted Mining Leases**

- ❑ No 'Right to Negotiate' exists across development area
- ❑ Currently negotiating with local traditional owners around social license to operate

# Marketing

## Market Demand

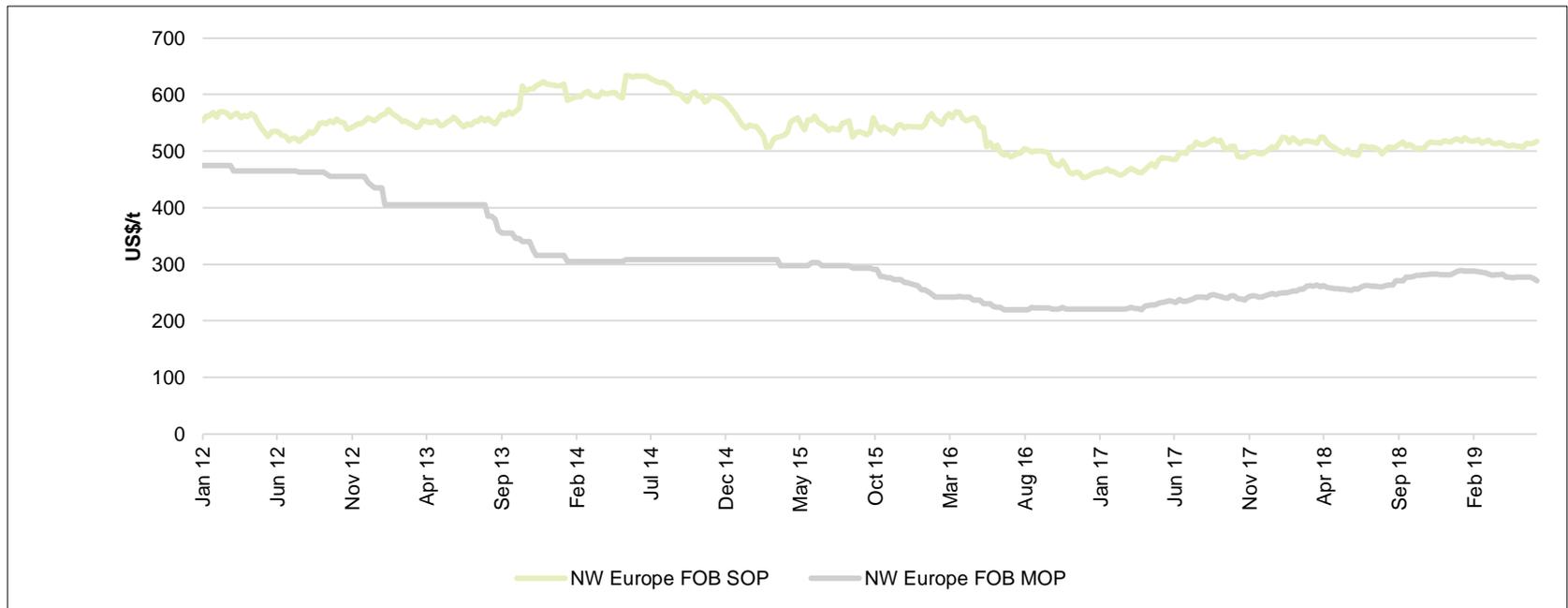
- ❑ Global SOP demand CAGR 1.3% CAGR 2018 to 2040 reaching 8.7mt in 2040
- ❑ Global SOP demand ex-China 2.3% CAGR (much higher)
- ❑ Demand growth driven by increasing SOP application rates (developing)/Europe



# Marketing

## Historical Pricing

- ❑ SOP premium over MOP averages US\$269/t last five years
- ❑ SOP Europe price last 5 years stable in the range of US\$500-US\$600/t
- ❑ Premium c.US\$100/t over MOP price considered floor premium - Mannheim conversion cost for MOP



# Marketing

## Target Markets and Offtakes

- ❑ Test-work confirmed the LSOP will produce high grade, premium suite of SOP products (53% K<sub>2</sub>O, <1% Cl, 17% S)
- ❑ Target markets include
  - ❑ Australia: 360ktpa of potash with opportunity to expand SOP
  - ❑ China: c.4Mt SOP
  - ❑ South East Asia and west coast USA (superior price premium)
- ❑ Two MOU's for offtake agreed in 2017 with Chinese agricultural entities
- ❑ Binding offtake discussions rapidly advancing with shortlist of strategic partners

# Financial Analysis

## DFS Financial Model

Physicals	Unit	LOM
Life of Mine	Years	30
SOP production	Tonnes	4.5Mt
Key Assumptions		
Ave realised SOP price	US\$/t	\$614
Exchange rate	A\$:US\$	0.67
Valuation		
Pre-tax NPV <sub>8</sub>	A\$m	665
Pre-tax IRR	%	25
Pre-tax operational payback	Years	4.00

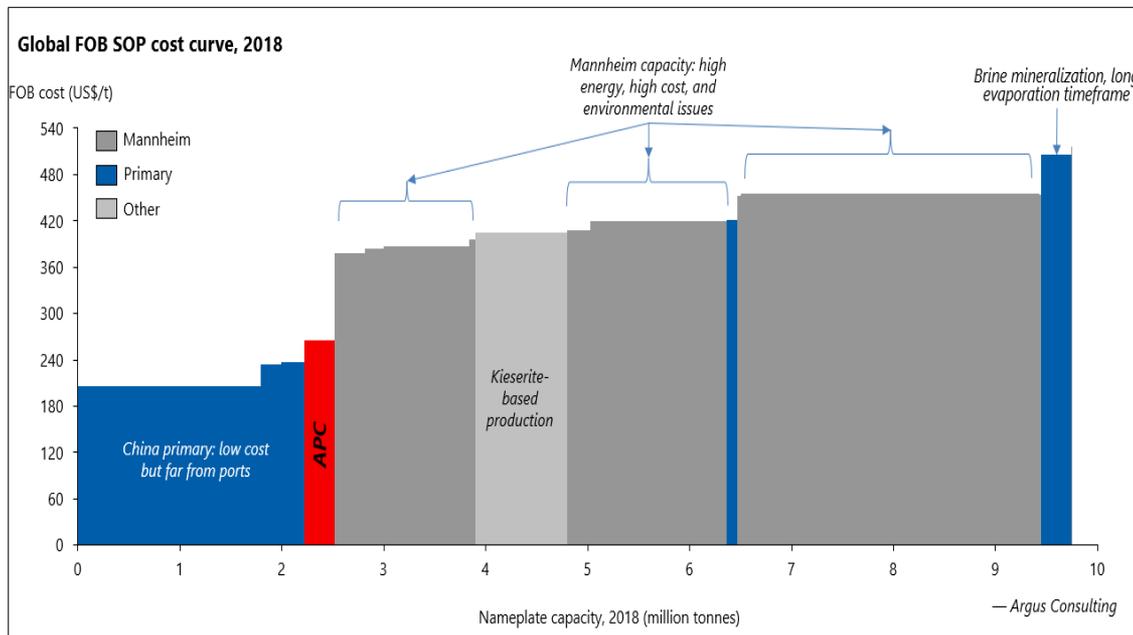
## DFS Capex and Opex

Capex Item	A\$m
Project indirects	37
Bore-field	48
Evaporation ponds	26
Processing plant	58
Non-process infrastructure	19
Contingency	20
<b>Total Capex</b>	<b>208</b>
<i>Capital Intensity (A\$/t SOP)</i>	<i>1,387</i>

# Financial Analysis

## First Quartile SOP Producer

- ❑ Cash cost US\$262/t - Project comfortably first quartile of the industry cost curve
- ❑ +50% global SOP production from Mannheim – energy intensive, high cost, environmental issues
- ❑ Natural ‘floor’ in cost curve of US\$400/t due to Mannheim SOP production



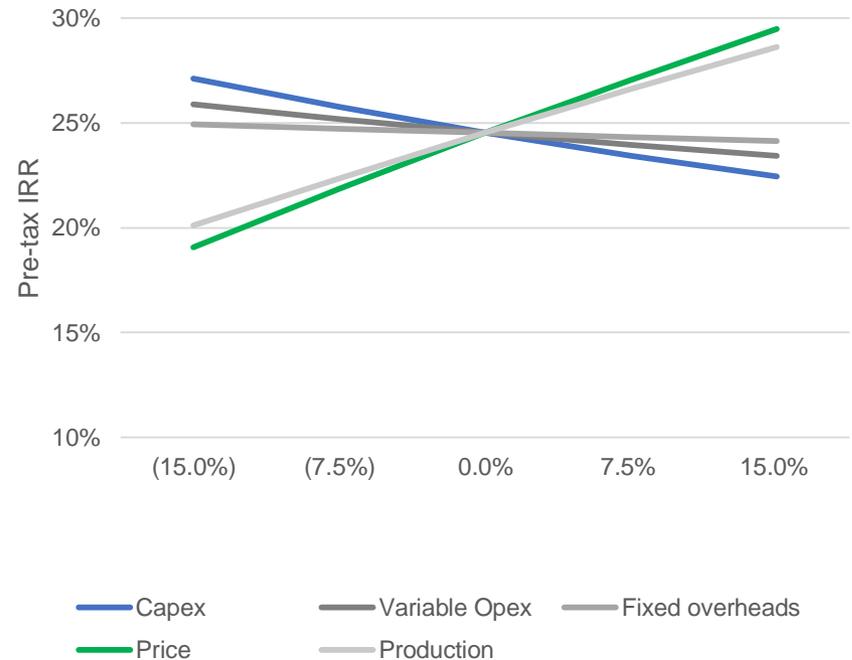
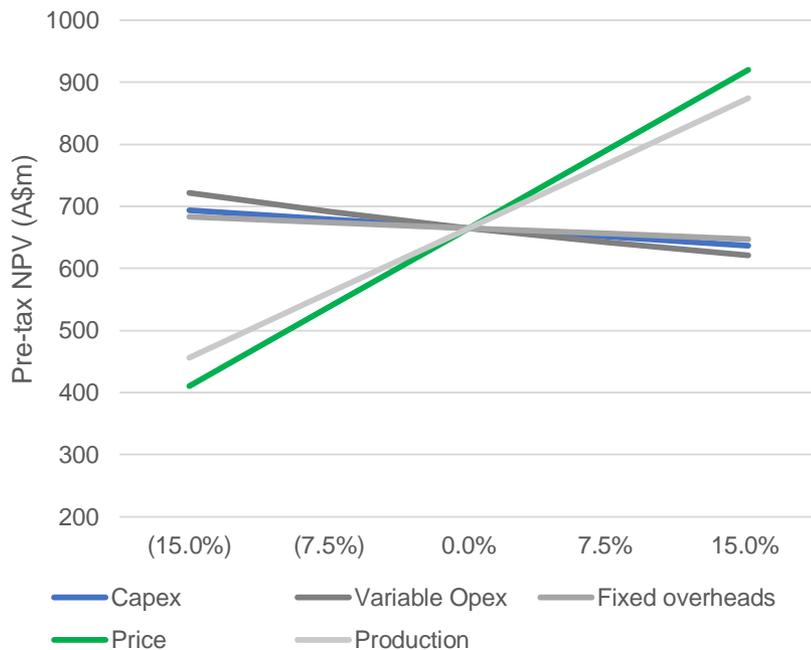
LOM OPEX <sup>1</sup>	US\$/t
Salt harvesting	16
Power supply	40
Reagents & Consumables	116
Labour	30
Transport and Logistics	36
Maintenance	4
Indirects	20
<b>Total Cash Cost</b>	<b>262</b>

<sup>1</sup>. Excludes corporate costs, sustaining capital, royalties, and taxes

# Financial Analysis

## Sensitivities

- Scenarios on key sensitivities (-15%) of the Project still deliver attractive financial returns



# Notes

**“Two out of every five  
people on Earth today  
owe their lives to the  
higher crop outputs that  
fertilizer has made  
possible”  
Bill Gates**

