Circum Minerals' World-Class Tier One, Low Cost, Scalable Ethiopian Potash Project



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Introduction



Developing Circum's World-Class Tier One, Low Cost Ethiopian Potash Project

- Circum is developing its **100% owned** Danakil Potash Project in Northern Ethiopia
- Mineral resource of 4.9 billion tonnes at 18.1% KCl with reserves of 107.8 Mt of KCl equivalent
- Seismic data suggests potential total resource of 12 to 14 billion tonnes
- Targeting annual production of 2 Mt of MOP and 0.75 Mt of SOP for Phase 1 using low cost, low risk solution mining and solar evaporation
- Scalable production resources sufficient to support at least two, possibly three expansions
- Mine gate cash costs projected to be among the lowest in the world
- One of the **lowest capital intensity** per annual tonne of any major potash project in the world
- Substantial transportation advantages to India, Southeast Asia and South China
- Management team has experience building mines and a track record of creating value

Danakil Project Overview

Danakil Project at a Glance

Location	Northern Ethiopia
Ownership	100%
Size	365 sq km
Production Target	2 Mtpa MOP, 0.75 Mtpa SOP
Mining	Solution mining
Process	Solar evaporation
Initial Capital Costs	US\$2.3 billion
Peak Funding	US\$1.8 billion due to early revenue from initial production
Total Operating Costs (FOB Djibouti)	US\$81/t MOP US\$156/t SOP
After-tax NPV@10% ^{(1),(2)}	US\$2.1 billion
After-tax Nominal IRR ⁽²⁾	26%
Project Stage	 DFS July 2015, Optimized in Feb 2016 Mining License Agreement approved by Minister of Mines and awaits the approval of the Cabinet

Project Location



1. Real Weighted Average Cost of Capital

2. Based on a flat, real MOP price of US\$350/t and a flat, real SOP price of US\$580/t, assuming 2% inflating factor. Note: Including marketing benefits

Low Cost, High Margin, Capital Efficient Project



MOP Cash Cost Curve⁽¹⁾ (US\$/t EXW)



SOP Cash Cost Curve⁽¹⁾ (US\$/t EXW)



Capital Intensity per Tonne (US\$/t)



Margin over CIF Production Costs⁽²⁾

3,000 - For global greenfield projects



Sources: Cash cost data from Integer; CIF production costs from Goldman Sachs (except Circum); and capex information from companies' presentations and announcements. 1. MOP and SOP cash cost curves from 2014 when Integer undertook the analysis.

2. Margins based on MOP price of US\$350/tonne less CIF production cost (including sustaining capital). Product price of US\$413/tonne assumed for Circum based on 2 Mt⁴ MOP at US\$350/tonne and 0.75 Mt SOP at US\$580/tonne.

Danakil Depression – Emerging Potash Basin



Danakil Depression Potash Mining Companies Location Map





- One of the hottest places on Earth (+50°C) with very little rain
- Climatic conditions conducive for low-cost solar evaporation
- Few settlements or flora and fauna in the region so minimal environmental or social issues anticipated
- Circum accounts for almost half of the reported potassium bearing salts in the Danakil Basin

Danakil Basin Reported Potassium Salts*

Billion tonnes



* Reported potassium bearing salts of Circum, Israel Chemicals (ICL) and Danakali Ltd. Available Yara resources included in Inferred category.

Favorable Location to Key Markets





1. Ashmead Maritime, February 2016

2. Goldman Sachs Investment Research, January 2015 and Integer Potash Market Research, June 2015

High Quality Extensive Resource . . .





Source: NI 43-101 Mineral Resource calculated by K-Utec, July 2015.

... with Significant Upside Potential



Seismic interpretation of undrilled area indicates exploration potential of an additional 7-9 billion tonnes for a total potential resource of 12-14 billion tonnes.

NON COMPLIANT ESTIMATED POTENTIAL RESOURCE*

Potash Member	Tonnage (Mt)
Sylvinite	1,299.7
Upper Carnallite	740.8
Lower Carnallite	2,367.4
Kainitite	4,380.4
TOTAL	8,788.3

* Note: The potential quantity of the exploration target is conceptual in nature and there has been insufficient exploration to define a Mineral Resource and it is uncertain if further exploration will result in the determination of a Mineral Resource Estimate.

Favorable Competitive Positioning



Source: Broker research, company filings. Note: only includes DFS-stage projects

- 1. Based on current (2014) operating costs per tonne for respective companies
- 2. Ex-works pre transport and freight costs i.e. costs at mine gate

Target Cash Cost (US\$/t EXW⁽²⁾)

#

Solution Mining – Simple and Inexpensive

Benefits of Solution Mining

Favorable Economics

- Capex and opex lower than conventional mining
- Solar evaporation ideal for regional climate
- Faster time to production
- Higher IRR, faster payback period

Less Complex

- Ability to selectively mine potash layers
- No underground access is required
- No development shafts are needed
- Production volume is easily scalable

Low Risk

- Proven technology (see table below)
- Minimal impact on the environment
- No risk of mine flooding and losing entire project

Project/ Location	Owner	Project/ Location	Owner
Kazakhstan	Satimola	Canada	Karnalyte Resources
Northern Africa	Vale	Canada	Western Potash
Colorado	NaTec Mines	Congo	Mag Industries
Legacy (Canada)	K+S	Turkey	EtiSoda



* Figure for illustrative purposes only. Source: Circum Minerals

Solution Mining – Test Program



- The program commenced in March 2015 and a fullscale demonstration solution well has been sunk to 180m below surface.
- It was equipped with the piping, pumps and evaporation ponds necessary to extract potash from the deposit.
- The program will help determine cavern design, leach rates, solution quality and evaporation characteristics.
- The well is being operated by Circum's own Ethiopian process engineers and geologists with ongoing technical support provided by K-UTEC.
- Over 250 tonnes of Kainitite have been extracted from the lower potash horizons and is currently being evaporated in two large ponds.
- With this work, Circum has successfully pioneered solution mining beneath the extremely soluble Bishoffite horizon whereas competitors have chosen to avoid areas where Bishoffite is present.
- Crystalline products from the evaporation ponds are being transported to K-UTEC's facilities in Germany for refining to high purity SOP.
- Next phase involves mining Sylvinite in the same well.



Solution Mining Well Head & Evaporation Ponds



Kainitite Brine Harvesting

Infrastructure – Progress to Date

Substantial Progress Made on Infrastructure in Conjunction with the Government

Water	 Studies indicate Circum will have sufficient water access for operations Additional production wells were drilled in 2016 and pumping test took place over 22 days in September 2016 producing 600 million litres of water Test results showed sufficient water for operations from alluvial fans on license area
Power	 Government plans to expand National Power Network to the Danakil Region Feasibility study on transmitting 180MW to Dallol substation completed in 2014 and funding secured in 2016; project expected to be completed in 2019
Road	 A 130km paved road from Mekele to Danakil Basin was completed by the Government Government support of "short-cut road" reduced road route by over 200km Government awarded two construction contracts on road route in December 2016
Rail	 PFS on potential rail route to national rail network completed in June 2016 Overall capex was US\$0.3 billion (shared⁽¹⁾); US\$0.7 billion (unshared) Opex per tonne was US\$10 (shared⁽¹⁾); US\$14 (unshared)
Port	Port of Tadjoura to be completed in 2017

1. Rail line construction and operation shared with two other potash companies in the Danakil Basin.

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Infrastructure – Power & Water

Power



- Maximum electrical power demand for proposed operations of 77MW.
- EEPCo⁽¹⁾ intends to expand the national power grid from Mekele to the Danakil region.
 - Feasibility study outlines transmitting 180MW to new Dallol sub-station.
- Total cost of US\$45-50M, of which 20% will be provided by the Government and the balance borrowed.
- In August 2016, the African Development Bank approved financing for the power line.
- Work to commence in 2017 and complete in 2019.
- Circum DFS includes design and cost of 10km, 100MVA line from Dallol sub-station to mine site.
- Substantial cost savings expected from grid power vs own power stations onsite (US\$0.02 vs. US\$0.30/kWh)

Water

- Water requirement of c.30 gigalitres per annum (c.80 million litres per day) given the solution mining techniques to be utilized.
- Umvoto hydrogeological model indicates Circum has access to sufficient water for its operations from the nearest three alluvial fan complexes, all within the license area.
- Recent work by Umvoto included:
 - Three new production wells drilled during 2016 (two were drilled in 2015)
 - Five smaller diameter monitoring holes were also drilled in 2016
 - Water pumped from five production wells over 22 days totalled 600 million litres without any significant impact in the monitoring wells
- Umvoto concluded in their report: "The field campaign and subsequent modelling works carried out as reported on above indicate that the alluvial fans are excellent aquifers, of sufficient storage and yield to supply the required volume of water to meet the mine demand scenarios."

1. Ethiopian Electric Power Company

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UMVOTO

earth - water - science - life

Infrastructure – Potash Export Road Route

Initial transport of potash will be by Road; Rail is the preferred long term option



Infrastructure – Rail Construction Status



Infrastructure – Port of Tadjoura in Djibouti



The new port is projected to be completed in 2017

- The Tadjoura port in Djibouti is located c.600km from the Danakil Project, and offers the possibility of low-cost sea transportation of potash into India, China and the rest of Asia.
- The port of Tadjoura will accommodate bulk carriers up to 65,000 DWT.
- The port capacity of up to 7.5 million tonnes p.a. is scalable.
- Port critical for economic development in both Djibouti and Ethiopia.
- Circum has had detailed discussions with the Port Authority and has issued a letter of intent for the future export of potash.
- Circum's contractor, Senet, has been engaged in the design of facilities for the export of potash.
- Circum is satisfied the proposed port design meets its criteria while the timetable to port completion is well within its project schedule.

Layout Divided into 3 Areas for Potash Companies⁽¹⁾



1. General plan of the potash terminal in Phase 1 (concept design) as provided by the Djibouti Port Authority.

Definitive Feasibility Study



DFS Financial Highlights

Key Assumptions

Annual Production	2 Mt MOP, 0.75 Mt SOP
Mine Life	26 years
Development Capex	US\$2.3 billion
Peak Funding	US\$1.8 billion

Operating Costs (US\$/t)	MOP	SOP
Production Opex	38	112
Transportation & Port Opex	<u>44</u>	<u>44</u>
Opex (FOB Djibouti)	81	156
Opex (incl sustaining capex)	121	196

Economics

Pre-tax NPV @ 10%	US\$2.8 billion
Pre-tax Nominal IRR	29%
After-tax NPV @ 10%	US\$2.1 billion
After-tax Nominal IRR	26%

DFS Optimization Work in 2016

- DFS completed in July 2015 and optimized in February 2016
 - Resulted in US\$245M reduction in Capex
- Indicative analysis examined impact of an alternative phased ramp up in production
 - Ramp up over 11-12 years
 - 0.75 Mt SOP + 1 Mt MOP in 4yrs + 1 Mt MOP in 4yrs
 - Reduction in peak funding to approximately US\$713M
 - NPV reduced to around US\$1.3 billion
- Recent fall in the potash price has limited impact on DFS results due to the fact that:
 - only the MOP price is down, the SOP price has held up quite well
 - Circum's operating costs are in the lowest cost quartile and will always ride out price falls better than competitors.

Source: Optimized Senet DFS, February 2016 and Danakil Definitive Feasibility Study prepared by SENET, July 2015.

Significant Upside / Blue Sky Potential

Significant upside from numerous identified areas

Resource to Reserve Conversion	 Mining recovery factor for Sylvinite could increase from 24% (DFS) to 30-40%; dual and multiple-well caverns also possible in many cases Mining recovery factor for Kainitite could increase from 24% (DFS) to c.30% Could reduce annual sustaining capex by US\$20-30M, with possibly lower operating and maintenance costs, while extending mine life by 5-6 years Potential 11% increase in reserve estimate with further coring and test work 	Near Term
Rail Transport and By-Products	 Option to transport product by rail instead of road to Port of Tadjoura High level study completed in 2015 and pre feasibility study completed in June 2016 Cheaper transport solution (c.US\$14/t vs. US\$30/t) for upfront capex of c.US\$0.7B Reduced transport cost will support the economic feasibility of by-products such as industrial grade salt, magnesium chloride, magnesium sulfate, etc. Important for expansion of production beyond 2.75Mtpa 	
Bromine Revenue Stream	 During 2016, over 300 drill core samples were re-analysed and bromine content measured Bromine content was at commercially economic levels; up to 2% in places Bromine could be extracted from waste brine before disposal – would add additional revenue stream at low cost 	nger Term
Geothermal Power	Deposit close to area of volcanic activity with significant potential for geothermal power generation	

Circum's Development Progress



Site Photos





Corporate Overview

Management Team

Executive Directors

- Stephen R. Dattels, Chairman & Co-Founder
 - Founded UraMin (sold in 2007 for US\$2.5B to Areva)
 - Key executive at Barrick during its formative years
- Brad Mills, Executive Director
 - Managing Director at Plinian Capital Ltd.
 - CEO of Mandalay Resources Ltd. (TSX)
 - Former President of BHP Billiton's Base Metals Div.

AMED Appointees

- Carlo Baravalle, *Non-executive Director*
- David Twist, Non-executive Director

Other Non-executive Directors

- Mike Beck, Non-executive Director
- Ian Stalker, Non-executive Director

Management

- Chris Gilchrist, *Technical Consultant*
- Ian Burns, Chief Financial Officer
- Richard Jeanne, Senior Consulting Geologist
- Yonas Bekele Belay, Country Manager

* Includes connected and related parties to the directors.

Fully Diluted Equity

Issued shares	96.5m
Options and warrants	4.0m
Fully-diluted shares	100.6m

Shareholders (Fully-diluted)		
AMED	37%	
Directors & Management*	26%	
Plinian	10%	
Others	27%	



Key Investment Highlights

- One of the largest potash projects globally with proven technology, low capital intensity and resulting economies of scale
 - Proven mining and processing using solution mining and solar evaporation
 - At US\$838/t, Circum's Danakil is one of the most capital efficient potash projects in the world
- High quality resource base in premier new potash basin with favourable location to end markets
 - Resource of 4.9Bt (@18.1% KCI) is among the largest in the world with seismic data suggesting a total resource potential of 12-14Bt
 - Substantial transportation advantages to India, Southeast Asia and China
- World-class project with expected industry leading cost position and substantial upside potential from existing resource base
 - Lowest mine gate costs and among lowest FOB costs in the world
 - Resources support scalable production with potential for >5Mtpa operation
- Favourable mining jurisdiction with significant infrastructure support from Ethiopian government
 - Full commitment to support the emerging potash industry through infrastructure development
 - Favourable fiscal regime with a mining corporate tax rate at 25% and a 5% free carry
- Production of MOP and SOP products, both benefitting from highly attractive long-term market fundamentals
 - Increased fertilizer usage due to population / income growth and improved crop yields
 - Unique position to produce both MOP and SOP, which is a premium product
- Post-DFS optimization analysis shows attractive returns due to strong cash flow generation potential
 - Estimated margins in excess of 50% for both MOP and SOP products*
 - Potential for up to 70% of debt funding to boost equity returns



^{*} Based on DFS financials (which assumes a flat, real MOP price of US\$350/t and a SOP price of US\$580/t)