



16 October 2018

## **Strong progress on Definitive Feasibility Study puts Coburn mineral sands project on track for a development decision early next year**

*Key project approvals already in place, including mining licence, environmental approval and native title agreements; update of construction permits underway*

### **HIGHLIGHTS**

- **Definitive Feasibility Study (DFS) on the Coburn mineral sands project in WA is proceeding well and on track for completion in the March quarter, 2019**
- **DFS findings will underpin discussions with potential offtake and development partners; strong interest from potential customers driven by premium product quality and forecast supply deficit**
- **Bulk testwork using modern processing technology identifies improved design efficiencies**
- **JORC Mineral Resources and Ore Reserve Statement expected to be upgraded as part of the DFS**
- **DFS pricing across major works packages received to date shows potential operating cost savings compared to previous estimates**
- **Coburn has a high basket price of zircon and high-TiO<sub>2</sub> minerals and +19-year mine life based on its large JORC Resource**
- **Positive support for Coburn project from the local communities and Shark Bay Shire Council, with Coburn highlighted as a key part of the region's Economic Prospectus**
- **Strandline is well positioned to commercialise two major projects over the next few years: Coburn in WA and Fungoni in Tanzania, with combined production estimated at ~5% of global annual zircon and ~13% of global annual chloride grade ilmenite**

Strandline Resources Limited (ASX:STA) is pleased to advise that following strong progress on a number of fronts, it is set to complete the DFS on its Coburn mineral sands project in WA early next year.

The updated DFS will put Coburn on track for a development decision in the first half 2019, with first production potentially then scheduled for second half 2020.

Latest metallurgical testwork on representative bulk samples from the Coburn orebody, which were conducted at TZMI's Allied Mineral Laboratories, has confirmed Coburn's rich zircon and titanium mineral assemblage and high-quality product characteristics.

Samples of the various mineral sands products are now being distributed to potential offtake partners. Interim results show the zircon is best-suited for the ceramic and chemical industries and the HiTi minerals for chloride pigment production. Both sectors are widely forecast to be in supply deficit over coming years.

Optimisation work relating to mine planning, process design and product logistics is progressing well, with new value-add and de-risking initiatives being incorporated. Modern mining and processing technology combined with favourable industry dynamics are set to enhance the projects economics.

Coburn has a projected mine life of at least 19 years due to its large JORC Resource of 979Mt at 1.26% HM and Ore Reserve of 308Mt at 1.2% HM. The valuable mineral assemblage contained in the Coburn orebody translates into a high basket price, comprising zircon and a range of high-titanium minerals.

As part of the DFS, the Company is refreshing Coburn's JORC Mineral Resource and Ore Reserve Statement which will add to the overall robustness of the DFS outcome.

Stakeholder engagement activities have ramped up, with multiple meetings held with local government and members of the local communities. Coburn is a major long-life project and is earmarked to form a key part of the growth and diversification aspirations of the Shire of Shark Bay (refer Economic Prospectus document <https://www.sharkbay.wa.gov.au>).

The Company recently received its renewed construction licence to "take water" from Department of Water and Environmental Regulation (DWER), and has advanced flora, fauna and water monitoring as required under its active environmental approval received from Environmental Protection Authority.

Coburn is extremely advanced in the project cycle with key project approvals already in place, including mining and environmental approvals, native title and heritage agreements.

Pricing of key contract packages associated with implementing project infrastructure, including power, bulk earthworks, access road, bore field and the accommodation village, is also progressing as planned.

In parallel with the DFS, Strandline is holding discussions with potential offtake, investor and joint venture partners for Coburn and expects to be able to finalise arrangements as the Study nears completion and thereafter.

Strandline Managing Director Luke Graham said the strong progress made on the DFS and industry engagement activities means the Company remains on track to achieve an enhanced DFS outcome next quarter.

"Coburn is a large long-life project, in a tier-one jurisdiction with numerous key advantages, including a rich basket of products.

"With key project approvals already in place and strong support shown from stakeholders, the DFS will underpin a timely development decision and final selection of implementation and offtake partners." Mr Graham said.

## Summary of the Coburn Mineral Sands Project

Coburn is defined by a large deposit with a global JORC 2004 Resource of 979Mt @ 1.26% HM and a proved and probable Ore Reserve estimate of 308Mt @ 1.2% HM (refer to Annexure 1). The Project has a high value heavy mineral assemblage composition of 23% zircon, 48% chloride grade ilmenite, 7% rutile and 5% leucoxene.

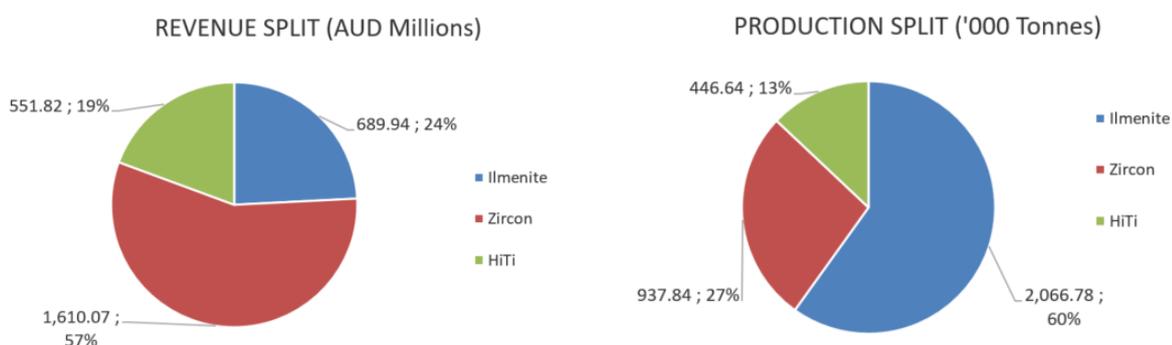
The DFS will redefine the technical and commercial aspects of the project. The Company initiated the DFS after receiving positive results from its internal project reviews and market engagement activities, which were undertaken in response to the strong upturn in the mineral sands market and improving industry dynamics.

The revised DFS will leverage off the significant work done to date on the project while focusing on a multitude of value improvement initiatives and execution readiness activities. The DFS will generate updated capital and operating costs and an enhanced execution plan for the project.

The previous definitive-level study was produced in 2013 and a subsequent Cost Review Update (Review) undertaken in 2015 indicated a net present value (NPV<sub>8</sub>) for the Project of A\$306 million, with potential significant upside leveraged to improving market conditions. The 2015 Review showed Coburn's internal pre-tax rate of return (IRR) is forecast to be 26%, generating A\$2.9 billion of sales revenue over a projected 19-year life, with mining rate of 23.4Mtpa<sup>1</sup>. The average product pricing assumptions used in the 2015 Review was zircon US\$1327/t, ilmenite US\$250/t and HiTi US\$927/t, based on free-on-board (FOB).

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<sup>1</sup> Refer to the ASX Announcement dated 09 February 2015 for full details of the material assumptions underpinning the production target and financial results for the Coburn Project. The Company confirms that all the material assumptions underpinning the production target and financial results continue to apply and have not materially changed.



**Figure 1** Coburn estimated production metrics per product type - Cost Review Update 2015

Coburn is one of a very few large-scale zircon-rich mineral sands projects world-wide at this advanced level of development readiness. The salient points of Coburn are as follows:

- Tier-1 mining jurisdiction of Western Australia and close to the dominant mineral sands market of Asia;
- Large scale project delivering strong economics, with +19 year mine life at 23.4Mtpa mining rate;
- High quality product suite covering zircon (66% ZrO<sub>2</sub>), chloride ilmenite (62% TiO<sub>2</sub>) and HiTi90 (90% TiO<sub>2</sub>);
- Project approvals in place (environmental, native title, heritage & mining) and essentially, development-ready;
- Access to existing infrastructure (roads, port and gas infrastructure) and established professional services industry;
- Extremely low strip ratio and slimes content – simple and efficient mining and tails handling;
- Conventional dry mining, mineral extraction and rehabilitation methodologies;
- Attractive revenue to operating cash cost ratio (RC ratio) with opportunity to improve through implementing value improvement initiatives during the DFS; and
- Coburn will generate a host of key socio-economic benefits including capital inflows to regional Australia, significant job creation, indigenous engagement, training and job diversity, as well as community partnership programmes

Mining is based on a contractor using the dozer trap technique for ore and bulldozer only for overburden. Overburden is pushed aside by bulldozers equipped with carry blades. Bulldozers are used to push the ore downwards into a dozer trap (Dozer Mining Unit – DMU), where it would be mixed with water and pumped as a slurry into the wet concentrator plant (WCP). Overburden is then pushed back into the void created by the removal of the ore. Tailings from the WCP would then be pumped back into the pit, covering the previously mined overburden.

**Table 1** Key Mining Details

Annual Ore Production	23.4Mtpa
Strip Ratio (tonnes of waste per tonne of ore)	0.5 to 1
Slimes	2.7%
Oversize	3.3%
Mine Life	19 years
Method	Open pit, backfill with waste and tailings

Processing uses conventional gravity, magnetic and electrostatic separation technologies. Ore is pumped as a wet slurry from the dozer mining trap on the pit floor to the WCP located at the edge of the open pit. The WCP is moved along the ore body at approximately one to three-year intervals as mining proceeds. The WCP recovers the heavy minerals by using wet spiral separation and reflux classifier units. Tailings are then pumped as a slurry back into the mine void, where they are dewatered so that the water can be reused in the mining and mineral concentration process. Concentrate from the WCP is to be trucked to the Mineral Separation Plant (MSP).

The MSP uses a conventional flowsheet to separate ilmenite, zircon and rutile into final saleable products with magnetic and electrostatic equipment. The final products from the MSP are to be trucked to a storage shed to be

built adjacent to the Geraldton port, where they will be exported to overseas markets. Product offtake negotiations are underway with a range of reputable counterparties.

**Table 2** Heavy Mineral Production

Product	Key Specification	Average Annual Production (Tonnes)	Life-of-Mine Production (Million Tonnes)
Zircon	66% ZrO <sub>2</sub>	49,500	0.94
Ilmenite	62% TiO <sub>2</sub>	109,000	2.07
HiTi 90	90% TiO <sub>2</sub>	23,500	0.45
<b>Total</b>		<b>182,000</b>	<b>3.46</b>

## Infrastructure

Coburn is located approximately 45km west of the North West Coastal Highway, linking the port of Geraldton some 250km to the south with coastal towns in the Gascoyne, Pilbara and Kimberley regions. A 42.5km access road into the mine site is required.

Power for the mine will be supplied from a dedicated gas-fired power station located close to key infrastructure. Water supply for the mine will come from artesian aquifers directly below the mine. Potable water will be produced from a site based reverse osmosis plant.

An accommodation village will be purpose-built near to the processing plant. Permanent offices will be established at the MSP and relocatable offices at the WCP.

For further enquiries, please contact:

**Luke Graham**

CEO and Managing Director  
 Strandline Resources Limited  
 T: +61 8 9226 3130  
 E: enquiries@strandline.com.au

For media and broker enquiries:

**Paul Armstrong**

Read Corporate  
 T: +61 8 9388 1474  
 E: nicholas@readcorporate.com.au



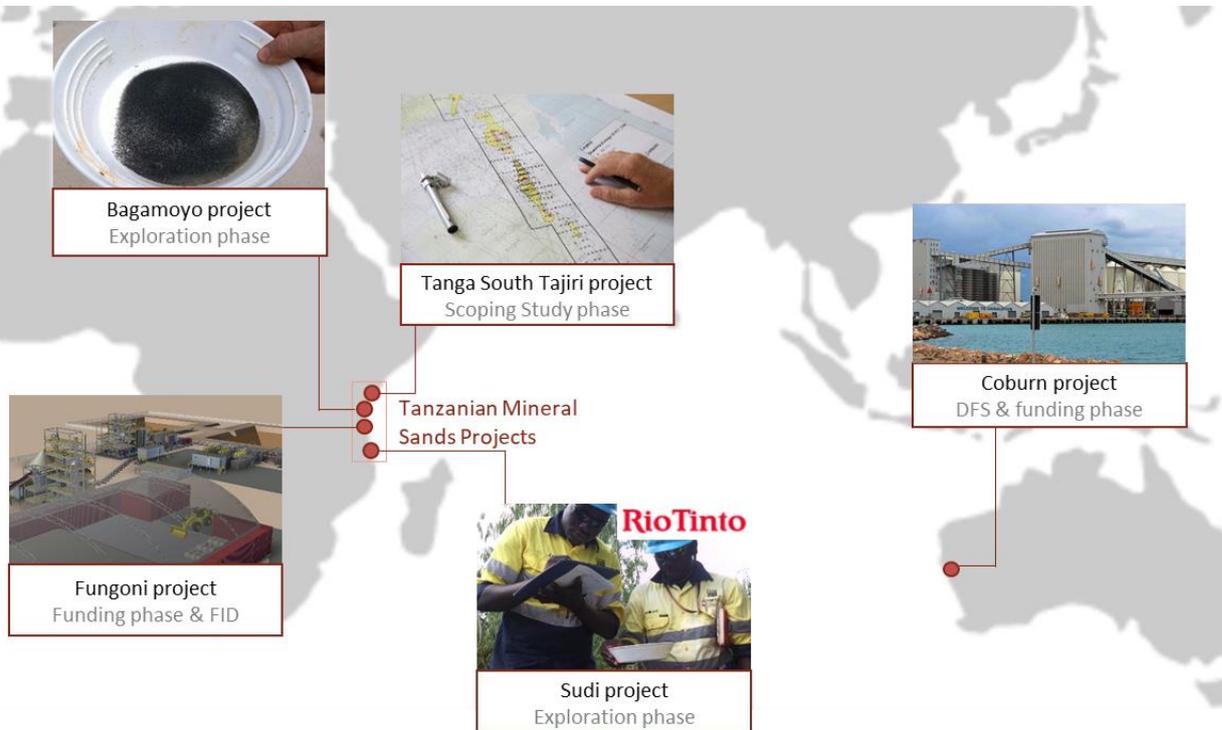
**Figure 2** Coburn project location map, 250km north of Geraldton port

## About Strandline Resources

Strandline Resources Limited (**ASX: STA**) is an emerging heavy mineral sands (**HMS**) developer with a growing portfolio of 100%-owned development assets located in Western Australia and within the world's major zircon and titanium producing corridor in South East Africa. Strandline's strategy is to develop and operate quality, high margin, expandable mining assets with market differentiation and global relevance.

Strandline's project portfolio comprises development optionality, geographic diversity and scalability. This includes two zircon-rich, 'development ready' projects, the Fungoni Project in Tanzania and the large Coburn Project in Western Australia, as well as a series of titanium dominated exploration targets spread along 350km of highly prospective Tanzanian coastline, including the advanced Tanga South Project and highly prospective Bagamoyo and Sudi projects.

The Company's focus is to continue its aggressive exploration and development strategy and execute its multi-tiered and staged growth strategy to maximise shareholder value.



**Figure 3** Strandline's 100%-owned assets in the two largest HMS producing jurisdictions, Africa and Australia

## Reserves and Resources

The information in this ASX announcement relating to estimates of Ore Reserves and Mineral Resources has been extracted from the ASX announcement dated 7 January 2010. The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and, in the case of Ore Reserves and Mineral Resource estimates, that all material assumptions and technical parameters underpinning the estimates in the market announcement continues to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.

## Forward Looking Statements

This report contains certain forward looking statements. Forward looking statements are only predictions and are subject to risks, uncertainties and assumptions which are outside of the control of Strandline. These risks, uncertainties and assumptions include commodity prices, currency fluctuations, economic and financial market conditions, environmental risks and legislative, fiscal or regulatory developments, political risks, project delay, approvals and cost estimates. Actual values, results or events may be materially different to those contained in this announcement. Given these uncertainties, readers are cautioned not to place reliance on forward looking statements. Any forward looking statements in this announcement reflect the views of Strandline only at the date of this announcement. Subject to any continuing obligations under applicable laws and ASX Listing Rules, Strandline does not undertake any obligation to update or revise any information or any of the forward looking statements in this announcement to reflect changes in events, conditions or circumstances on which any forward looking statements is based.

## Annexure 1 – Coburn Resource and Reserve JORC Tables

Coburn has a JORC 2004 proven and probable Ore Reserve estimate of 308Mt @ 1.2% HM<sup>2</sup>. A summary of the Ore Reserve estimate is provided in Table 3 below:

**Table 3** Coburn Project Ore Reserve Estimate (January 2010)

ORE RESERVES SUMMARY FOR COBURN ZIRCON PROJECT								
Summary of Ore Reserves <sup>(1)</sup>					HM assemblage <sup>(2)</sup>			
Deposit	Reserve Category	Tonnage	Contained HM	HM Grade	Zircon	Ilmenite	Rutile	Leucoxene
		(Mt)	(Mt)	(%)	(%)	(%)	(%)	(%)
Amy Pit A	Proven	53	0.7	1.3	24	46	5	6
Amy Pits B-E	Probable	255	3.1	1.2	23	48	7	4
	<b>Total<sup>(3)</sup></b>	<b>308</b>	<b>3.8</b>	<b>1.2</b>	<b>23</b>	<b>48</b>	<b>7</b>	<b>5</b>

(1) Cut-off grade applied is 0.8% HM  
 (2) Mineral assemblage is reported as a percentage of total HM content. Slimes average 2.7% of the ore and oversize 3.3%.  
 (3) Appropriate rounding applied

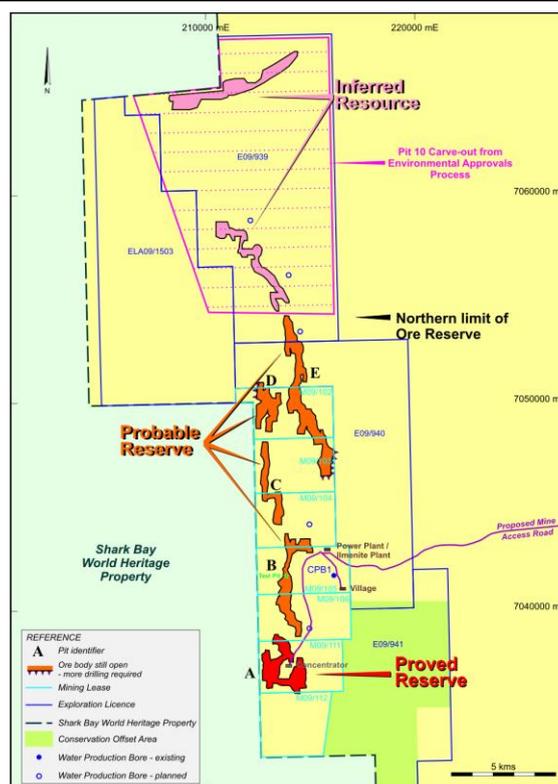
The Ore Reserve estimated is based upon a JORC 2004 Mineral Resource estimate of 979Mt @ 1.26% HM<sup>3</sup>. A summary of the Mineral Resource estimate is provided in Table 4 below:

**Table 4** Coburn Project Mineral Resource Estimate (January 2010)

MINERAL RESOURCE SUMMARY FOR COBURN ZIRCON PROJECT <sup>(1)</sup>				
Deposit	Mineral Resource Category	Tonnage <sup>(2)</sup>	Contained HM	HM Grade
		(Mt)	(Mt)	(%)
Amy South	Measured	119	1.5	1.3
Amy Central	Indicated	599	7.2	1.2
Amy North	Inferred	261	3.6	1.4
	<b>Total<sup>(3)</sup></b>	<b>979</b>	<b>12.3</b>	<b>1.26</b>

(1) Cut-off grade applied is 0.8% HM  
 (2) Inclusive of Ore Reserves  
 (3) Appropriate rounding applied

The Coburn Mineral Resources contain 10.2 million tonnes of contained heavy mineral, which includes 2.8 million tonnes of zircon, 6.0 million tonnes of ilmenite and 1.4 million tonnes of HiTi minerals (rutile and leucoxene).



**Figure 4** Coburn Project – Image of Amy Pit Ore Reserves A-E

<sup>2</sup> Refer to the ASX announcement dated 07 January 2010 for full details of the Ore Reserves estimate. This Ore Reserve estimate has not been updated to the JORC Code 2012 on the basis that the information has not materially changed since it was last reported.

<sup>3</sup> Refer to the ASX announcement dated 07 January 2010 for full details of the Mineral Resource estimate. This Mineral Resource estimate has not been updated to the JORC Code 2012 on the basis that the information has not materially changed since it was last reported.