

# Mustang Resources

Focusing in on Caula Graphite and Vanadium

Introductory note

Metals & mining

The recently announced A\$10m asset-for-shares swap with Fura Gems shifts Mustang's primary focus to the Caula Graphite and Vanadium Project, which is located along strike from Syrah Resources' large graphite project. Maiden Caula graphite and vanadium resources reflect high grades (13.4% and 0.37%, respectively). The scoping study due in Q318 will provide investors with insight into project economics, but the good grades and positive graphite metallurgical test results to date are encouraging signs. Trial mining could generate first revenues by mid-2019.

Year end June	Revenue (A\$m)	PBT* (A\$m)	EPS* (c)	DPS (c)	P/E (x)	Yield (%)
06/16	0.0	(5.50)	(8.3)	0.0	NA	NA
06/17	0.0	(3.17)	(2.8)	0.0	NA	NA

Note: \*PBT and EPS are normalised, excluding amortisation of acquired intangibles, exceptional items and share-based payments.

## Montepuez to be merged into Fura Gems

Mustang Resources has announced a proposed A\$10m transaction whereby Mustang will contribute its Montepuez ruby project into Fura Gems (FURA.TSX) in return for three tranches of shares in Fura. The deal structure allows Mustang's shareholders to retain an indirect interest, of around 8%, in a substantial combined ruby project in Mozambique, which stands to benefit from the injection of funding and additional marketing expertise by Fura. In addition, Mustang's shareholders also gain exposure to Fura's Coscuez emerald mine in Columbia, where bulk sampling is already underway.

## Focus now centres on Caula graphite and vanadium

Hiving off the ruby assets allows Mustang to focus its attention and funds more fully on Caula – which is rapidly proving to be a high-quality graphite and vanadium resource. In parallel to the scoping study currently underway and due by the end of this quarter, Mustang intends to progress to trial mining and processing at Caula, with first graphite and vanadium concentrates planned for mid-2019.

## Significant potential value at Caula

Based on applying peer-group in-situ resource multiples to Caula's 2,933kt of contained graphite (24 July 2018 resource update) and 81.6kt of contained vanadium (20 July 2018 maiden resource update), we would value the Caula graphite resource at US\$27.5m (A\$37.5m) and the vanadium resource at US\$16.8m (A\$22.9m) for a total valuation for Caula of US\$44.2m (A\$60.3m). This does not take into account any potential upside should further drilling continue to increase the scale of this project.

24 July 2018

**Price** **A\$0.02**

**Market cap** **A\$18m**

US\$0.73/A\$

Net cash (A\$m) at 31 March 2018 2

Shares in issue 959m

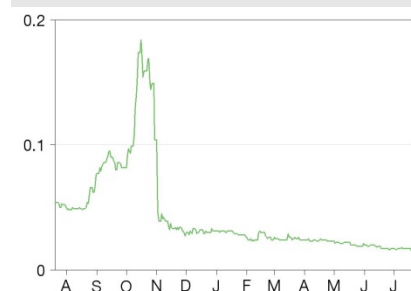
Free float 88.8%

Code MUS

Primary exchange ASX

Secondary exchange N/A

### Share price performance



% 1m 3m 12m

Abs 11.8 (20.8) (65.2)

Rel (local) 10.0 (26.0) (68.3)

52-week high/low A\$0.18 A\$0.02

### Business description

Mustang Resources is an exploration and development company with two primary projects, both in Mozambique: the advanced Montepuez ruby project (currently subject to a proposed asset for shares transaction with Fura Gems) and the Caula Graphite and Vanadium project.

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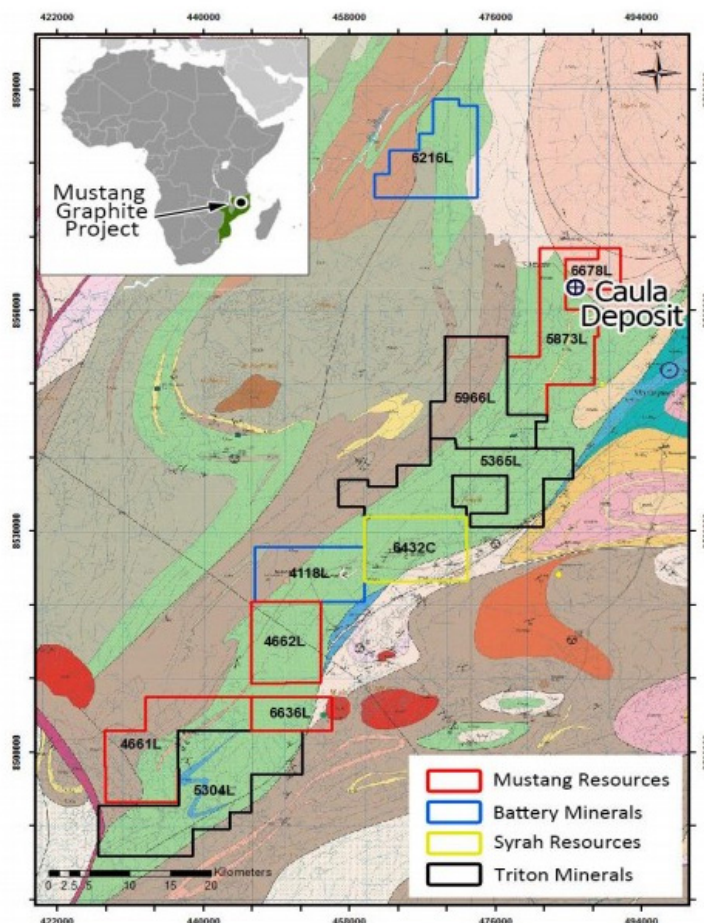
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## Caula: Graphite and vanadium

Mustang's Caula graphite and vanadium project is in Mozambique along strike from Syrah Resources' Balama project, which is projected to supply 40% of the flake graphite market by 2020.<sup>1</sup> The updated graphite resource at Caula (July 2018) confirmed the high-grade nature of the Caula deposit at 13.4% average total graphitic carbon (TGC), while the presence of significant vanadium (0.37% average  $V_2O_5$ ) in the same deposit was confirmed by the recent maiden vanadium resource (July 2018). A scoping study on Caula is expected this quarter.

**Exhibit 1: Location of Caula and other graphite projects in the Montepuez District**



Source: Mustang Resources – company announcement, 6 November 2017

Given the strong evidence of high-grade, near-surface graphite and vanadium mineralisation, Mustang made the decision in March to advance trial mining and processing in parallel to the scoping study on commercial-scale production. First production from trial mining is expected mid-2019. As well as generating revenue from the sale of the graphite and vanadium concentrate, trial mining and processing would generate detailed technical information for use in feasibility studies of full-scale project development and provide product samples for evaluation by potential offtake partners.

<sup>1</sup> Syrah Resources, Macquarie Bank Australia conference presentation, May 2018

## Resource update confirms high graphite grades (13.4% TGC)

**Exhibit 2: Caula graphite resource (July 2018)**

Caula Graphite Deposit – Mustang Resources – as at 8 July 2018 (8.0 % TGC Cut-off)						
Resource Block	Volume (M m <sup>3</sup> )	Density (ton/m <sup>3</sup> )	GTIS (Mt)	Average Grade (% TGC)	Contained Graphite (tonnes)	Resource Category
Oxidised Zone	3.3	2.550	8.5	13.4	1,130,000	Measured
Fresh Zone	5.1	2.650	13.4	13.5	1,803,100	Measured
Total	8.4	2.610	21.9	13.4	2,933,100	Measured

Source: Mustang Resources – Caula graphite resource update, 24 July 2018

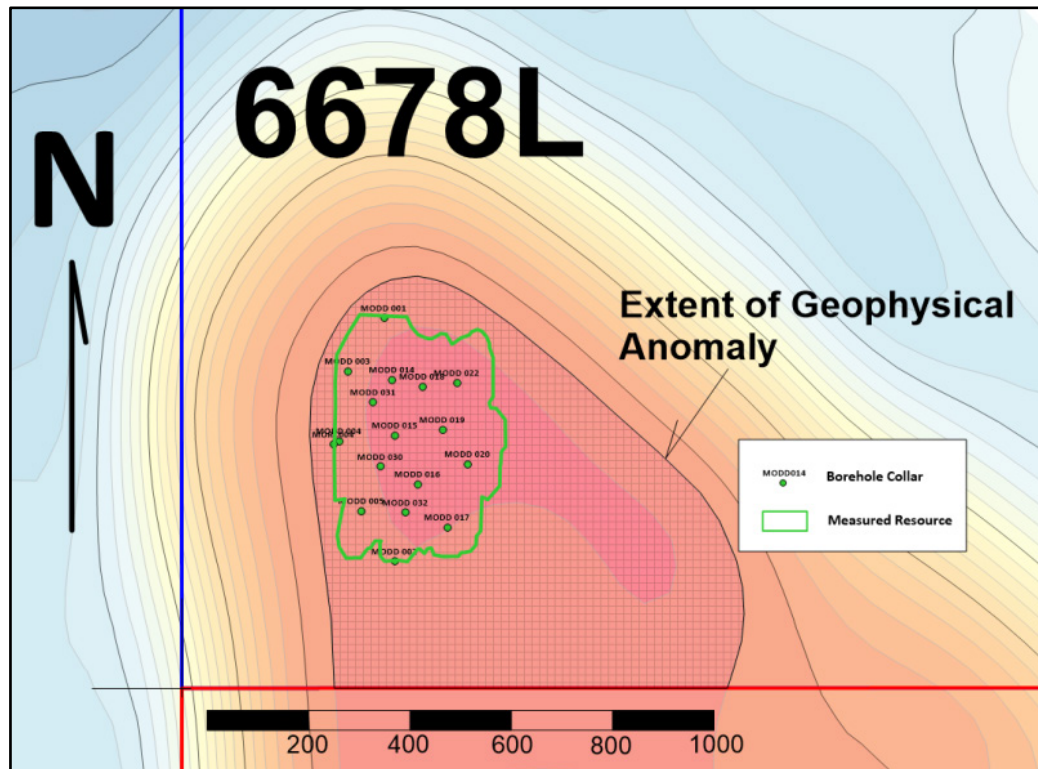
In November 2017, Mustang announced a maiden graphite resource for Caula of 5.4Mt at 13.0% TGC based on the results of just six drill holes. The recent (24 July 2018) resource update added a further 11 drill holes as shown in Exhibit 3 below. Not only did this update increase the size of the resource to 21.9Mt, but the already high graphite grade also increased marginally to 13.4% TGC.

The particular strengths of the Caula graphite resource are that:

- The graphite grade of 13.4% TGC compares to an average mined grade globally of just 4-6%.<sup>2</sup>
- The company believes that there is potential to define additional graphite and vanadium mineralisation immediately adjacent to the Caula resource. The resource is currently open at depth and a new programme of diamond and reverse circulation drilling has been planned to test for both up-dip and down-dip extensions.
- The Caula deposit lies within a broader 18km-long TEM anomaly and Mustang has identified several additional graphite-vanadium targets on this broader structure. Results from drill hole MODD010, which is located 7.5km south of the main Caula zone, returned 99m at an average grade of 12.56% TGC, supporting the hypothesis that the broader Caula project may host a large mineralised system. Mustang proposes to systematically drill test the TEM target through progressive step-out drilling from the Caula discovery.
- The latest (25 June 2018) metallurgical test results from Caula were very positive, showing that the project could potentially produce 68% large to jumbo flakes from fresh ore and 60% from oxidised ore, while maintaining average TGC in the concentrate of 97%.

<sup>2</sup> Syrah Resources, International Battery Seminar presentation, March 2018

**Exhibit 3: Caula drill hole locations**



Source: Mustang Resources – company announcement, 24 July 2018

The graphite market is divided between natural graphite and synthetic graphite (produced from coke and pitch and tending to be of higher purity but not as crystalline as natural graphite). By end-use the largest segment is in refractory applications, but graphite is also used as anode material for lithium-ion batteries, which is a key demand growth area. Industry analysts Roskill forecast graphite demand growth of 5–7% per annum over the next 10 years, with demand from batteries to grow five to 10 times over that period.<sup>3</sup>

Natural flake graphite can be used for refractory applications, fire-resistant building materials, graphite foil (requiring high purity flakes and used in many high tech applications) and battery applications (using higher purity flakes to produce spherical graphite). Larger flakes and higher purity flakes attract a premium price which would benefit Caula as metallurgical tests have demonstrated that 63% of total production could fall in the large to jumbo size range at concentrate grades of 97% TCG. Graphite prices are highly dependent on grade and quality metrics and as such, not reflected in a single market index; however, strong price performance in recent years has reflected growing demand from battery applications.

## Maiden Caula vanadium resource

Alongside the strong graphite mineralisation at Caula, the project also offers good vanadium grades from within the same orebody. On 20 July 2018, Mustang announced a maiden vanadium resource for Caula incorporating the six drill holes used to complete the November 2017 maiden graphite resource, as well as the 11 more recent scoping study drill holes (see Exhibit 3 for drill hole locations). The maiden resource totals 22Mt of measured resources at average grade of 0.37% V<sub>2</sub>O<sub>5</sub> (81.6kt contained).

<sup>3</sup> <https://roskill.com/market-report/natural-synthetic-graphite/>

**Exhibit 4: Caula vanadium resource (July 2018)**

Caula V <sub>2</sub> O <sub>5</sub> Deposit – Mustang Resources – as at 17 July 2018 (0.2 % V <sub>2</sub> O <sub>5</sub> Cut-off)						
Resource Block	Volume (M m <sup>3</sup> )	Density (ton/m <sup>3</sup> )	GTIS (Mt)	Average Grade (% V <sub>2</sub> O <sub>5</sub> )	Contained V <sub>2</sub> O <sub>5</sub> (tonnes)	Resource Category
Oxidised Zone	3.5	2.550	8.9	0.31	27,400	Measured
Fresh Zone	4.9	2.650	13.1	0.41	54,200	Measured
Total	8.4	2.609	22.0	0.37	81,600	Measured

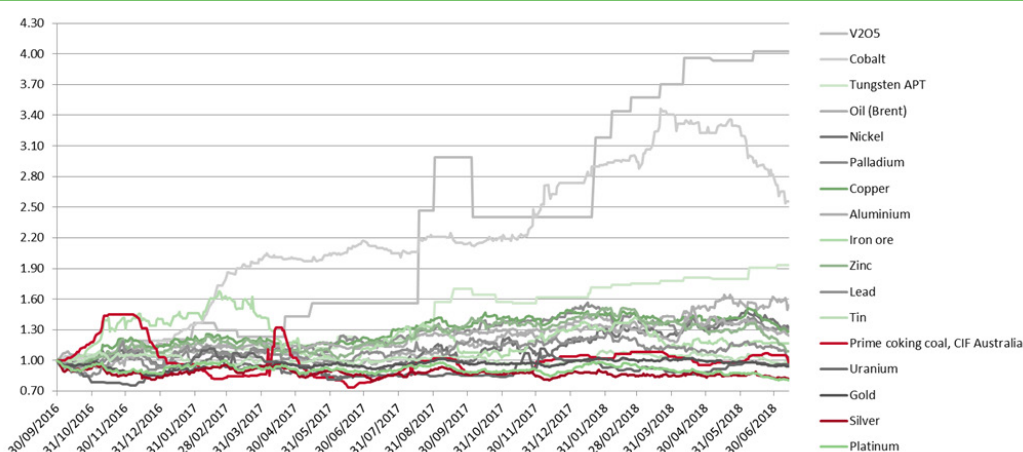
Source: Mustang Resources – maiden vanadium mineral resource announcement, 20 July 2018

The company believes that as the vanadium is associated with the graphite mineralisation it may be far cheaper to extract and process than the majority of producing vanadium projects, where the vanadium is located in a titaniferous magnetite ore body.<sup>4</sup>

Preliminary metallurgical testwork at Caulahas shown that vanadium would report to tailings during the graphite flotation process At Balama, Syrah Resources was able to show that a combination of wet high intensity magnetic separation (WHIMS) for magnetic material and flotation of non-magnetic material could produce a concentrate grading >3% V<sub>2</sub>O<sub>5</sub> overall. Chemical processing of that concentrate could produce a 98.5% V<sub>2</sub>O<sub>5</sub> product.<sup>5</sup> Preliminary metallurgical tests at Caula have suggested that (as at Balama) a portion of the vanadium could be recovered by WHIMS and additional vanadium recovered from the WHIMS tailings by froth flotation. This work is, however, at a preliminary stage. Ongoing test work is aimed at optimising vanadium recovery and concentrate grade.”

## Vanadium demand is expected to grow by CAGR of >5%

A combination of reduced supply resulting from mine closures (particularly Highveld Steel and Vanadium in 2014) and growing demand has seen the vanadium pentoxide price rise sharply to a high of \$18.60/lb currently.<sup>6</sup> Since September 2016, the vanadium pentoxide price has risen by more than 300%, making it the best-performing mineral in our dataset.

**Exhibit 5: Relative price performance of metals and minerals (indexed to September 2016)**


Source: Thomson Reuters Datastream

Demand growth is expected to remain strong (>5% per annum<sup>7</sup>), driven by:

4 Mustang maiden vanadium resource announcement, 20 July 2018

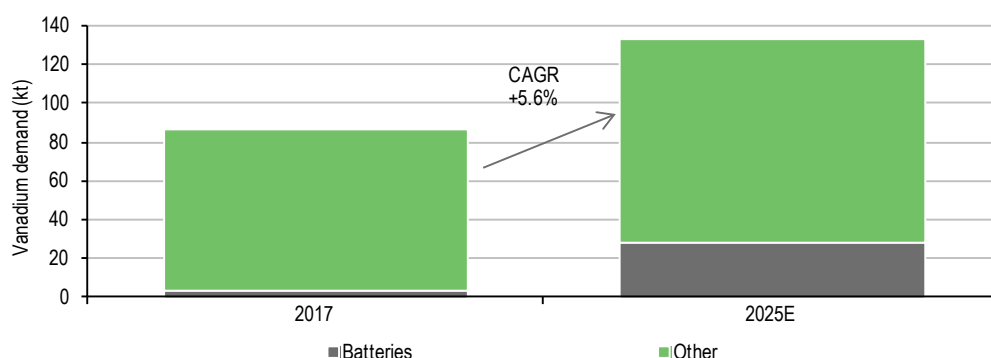
5 Syrah Resources Vanadium Scoping Study Results, July 2014

6 <https://www.vanadiumprice.com/>

7 Mustang maiden vanadium resource announcement, 20 July 2018



- new Chinese steel rebar specifications, which come into force in November this year (vanadium's primary use is in strengthening steel); and
- demand for vanadium redox flow batteries, which are rapidly gaining traction as a key technology in the (stationary) energy storage market.

**Exhibit 6: Forecast vanadium demand growth**


Source: Mustang maiden vanadium resource announcement, 20 July 2018

On the supply side, just 18% of vanadium production comes from primary vanadium mines with the remainder supplied primarily as a by-product in combination with iron from vanadium-titanium-magnetite deposits. As a result, supply growth is determined primarily by demand for magnetite iron ore and may not respond to high vanadium prices. China is the largest producer of vanadium (c 60% of supply) but increasing environmental controls have restricted the ability of Chinese producers to increase supply in response to recent high prices.

Going forward, as demand for high grade  $V_2O_5$  for use in batteries increases, it is not clear where this new supply will come from as most traditional vanadium supply sources produce ferrovanadium. If metallurgical test results for Caula's vanadium can echo those of Syrah's Balama project (located along strike) then Mustang management believes that Caula could have the potential to produce high purity vanadium for the battery market.

## Potential value of Caula graphite and vanadium resources

On average, graphite exploration and development companies trade at a multiple of US\$9.36 per tonne of in-situ graphite contained in measured and indicated resources while vanadium companies trade at an average of US\$205.49/t per tonne of in-situ vanadium in measured resources.<sup>8</sup>

Applying these multiples to Caula's graphite and vanadium resources respectively gives us a valuation for graphite of US\$27.5m (A\$37.5m), and for vanadium of US\$16.8m (A\$22.9m).

**Exhibit 7: Caula graphite and vanadium resource value based on peer group multiples**

	Mt	Grade	Contained graphite/ V2O5 (kt)	In-situ multiple	Value (US\$m)	Value (A\$m)
Graphite	21.9	0.134	2933	9.36	27.5	37.5
Vanadium	22	0.004	81.6	205.49	16.8	22.9
<b>Total</b>					<b>44.2</b>	<b>60.3</b>

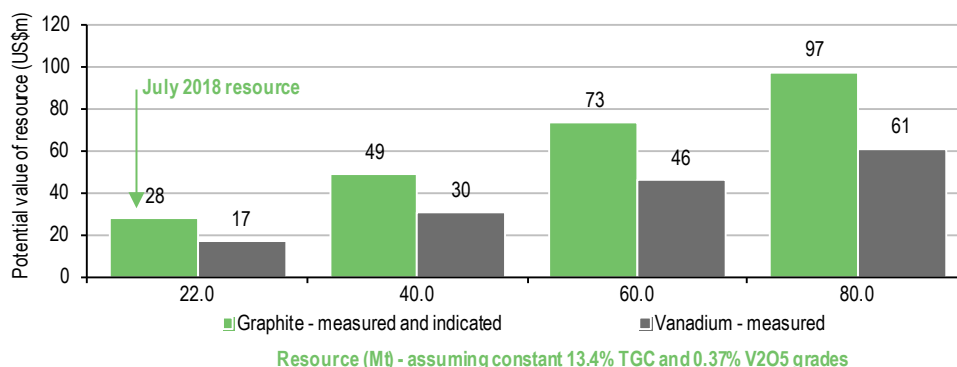
Source: Edison Investment Research. Note: Our analysis is based on a range of potential outcomes and peer group market valuation multiples for contained graphite resources.

The chart below also illustrates a range of potential longer-term value outcomes for the Caula graphite and vanadium project if further drilling continues to increase the size of the resource base. For the purposes of this sensitivity analysis, we have assumed that graphite grade remains 13.4%

<sup>8</sup> Mining Overview: Unlocking the price to NPV discount, November 2017. In the case of graphite we apply a single multiple to measured and indicated resources.

TGC and vanadium grade remains 0.37% V<sub>2</sub>O<sub>5</sub> (any change above/below this would increase/reduce contained graphite and vanadium and thus potential value accordingly).

**Exhibit 8: Sensitivity analysis on potential Caula graphite and vanadium resource value**



Source: Edison Investment Research. Note: our analysis is based on a range of potential outcomes and peer group market valuation multiples for contained graphite resources.

## Proposed sale of Montepuez to Fura Gems

Mustang Resources is proposing to undertake an asset-for-shares swap with TSX-V listed Fura Gems (Fura). Mustang will contribute its Montepuez Ruby licences into Fura in exchange for shares in Fura in three tranches as follows:

- A\$3.33m in Fura shares to be issued at a price of C\$0.50 on closing (approximately 6.5m shares);
- A\$3.33m in Fura shares to be issued at a price of C\$1.40 after 12 months (approximately 2.3m shares); and
- A\$3.33m in Fura shares to be issued at a price of C\$1.80 after 20 months (approximately 1.8m shares).

Prior to any potential future capital raising by Fura, this would give Mustang around 8% of Fura. The transaction is subject to various conditions precedent (on/before 30 November 2018). In parallel to the transaction, Fura Gems is also purchasing ruby licences in the same district from Regius Resources Group. Fura is proposing a dual listing on the London Stock Exchange this year.

## The strategic rationale for a ruby asset combination

Prior to the proposed transaction with Fura, Mustang held interests in ruby mining concessions and exploration licences in Mozambique totalling approximately 192km.<sup>2</sup> In late 2016, exploration bulk sampling began, leading to the first sale of rubies in October 2017. Unfortunately, the results of that auction were disappointing,<sup>9</sup> and Mustang responded by reducing bulk sampling activities while seeking alternative sales processed to extract maximum value from the asset. As at 10 April 2018, 329,309ct of rubies remained in inventory (which are excluded from the proposed ruby asset sale).

Mustang's Montepuez ruby project lies in close proximity to Fura's project of the same name and both are contiguous to Gemfields' Montepuez mine. Gemfields' Montepuez is one of the world's largest ruby deposits with total resources of 467Mct. It was discovered in 2009 and production from bulk sampling began in 2012. To date, Gemfields has sold Montepuez rubies totalling US\$407m.<sup>10</sup>

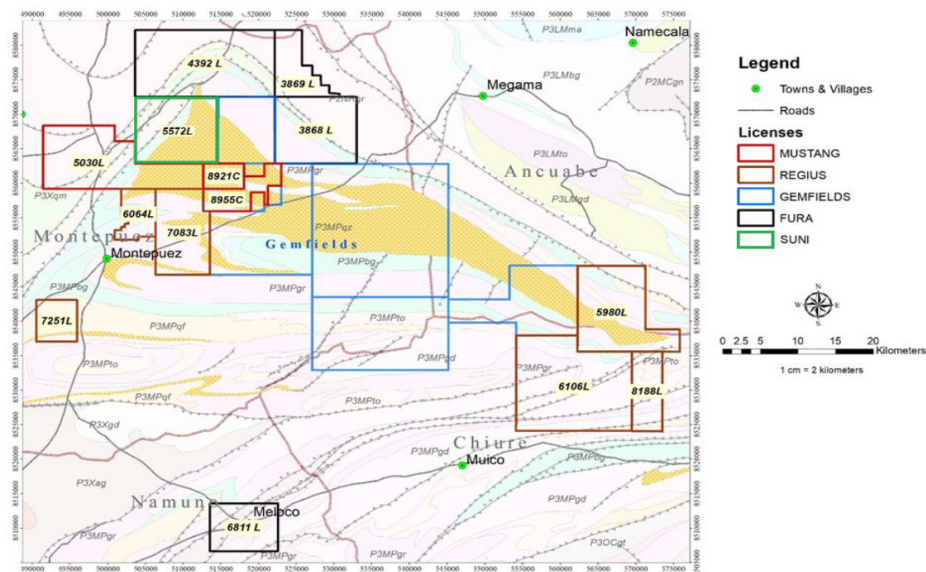
Combining Mustang, Fura and Regius, Mozambique's ruby projects potentially provide:

<sup>9</sup> Company announcement, 1 November 2017

<sup>10</sup> Source: Pallinghurst Resources. In June 2017, Pallinghurst Resources acquired Gemfields

- A unique land position totalling 1,104km<sup>2</sup> across the Montepuez ruby belt.
- Operational and information synergies across the three exploration programmes.
- Marketing benefits from increased scale – customers have stressed the importance of consistency of supply within each size and quality category – as well as the significant coloured gemstone marketing experience brought by the Fura management team.
- Fura will be contractually committed to investing A\$25m at Montepuez over the next 36 months.

#### Exhibit 9: Mustang's Montepuez ruby licences in relation to Fura (and Gemfields)



Source: Fura Gems

### Mustang shareholders gain exposure to Coscuez emerald mine

In addition to allowing Mustang's shareholders to retain an indirect stake in the enlarged Mozambique ruby project, the proposed transaction would also give them exposure to Fura Gem's Coscuez emerald mine in Colombia. In October 2017, Fura agreed to acquire 76% of Coscuez for a total consideration of US\$10m (of which US\$2.5m has been paid to date, with the remainder due over three years).

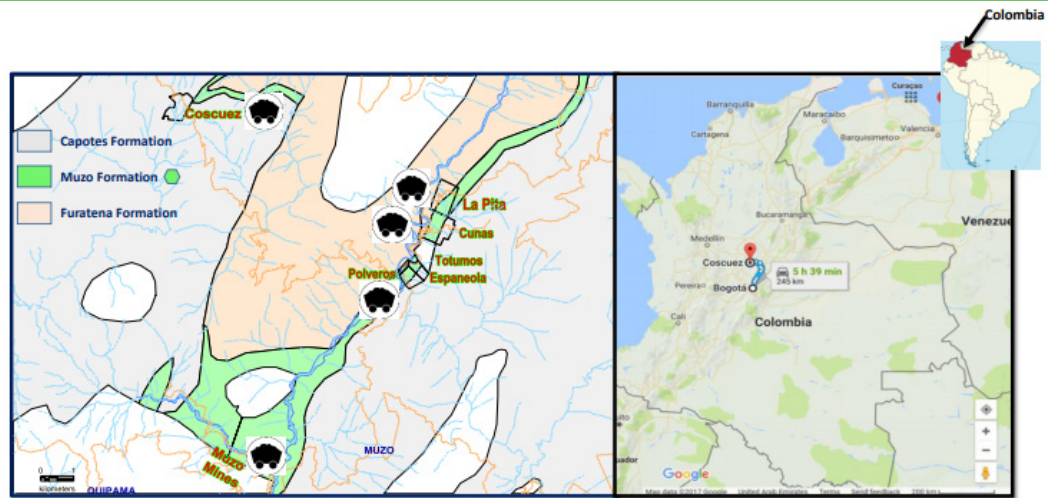
Colombian emeralds account for more than 50% of the emeralds mined globally today, mostly from the Muzo district where Coscuez is located. Emeralds have been produced at Coscuez since at least 1646, but to date modern exploration and mining methods have not been applied to this significant orebody. Mining at Coscuez is an underground mine accessed through a number of small adits. By the end of 2018, Fura aims to:

- ramp up production to extract a 30kt bulk sample, processed through a new 50tph wash plant;
- collect representative samples from the orebody at different working levels through the bulk sampling programme, to inform mine planning and resource modelling;
- conduct 2,500m of diamond drilling to better define the orebody; and
- define 43-101 compliant resource and reserves.

In the period to April 2018, Fura had extracted 1.6kct of emeralds from 232t of ore (average grade of 6.9cpt). Within the weeks of first production, the company recovered a high-quality 25.97ct emerald, which they named the Åre Emerald. Fura intends to undertake the first sale of emeralds from Coscuez in Q119.



## Exhibit 10: Location of Coscuez emerald mine



Source: Fura Gems

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