

# Triton Minerals

**Metals & mining**
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## Ancuabe - broad high purities, great location

Located near to excellent infrastructure in Mozambique, including the port of Pemba, in a proven graphite-producing region, Triton's exploration licences (including its new flagship Ancuabe project) point to a potentially higher-value graphite resource due to higher purity levels being achieved across a broad range of size fractions via a simple flotation process. However, purity figures are based on limited test data, so Triton is expediting its understanding of Ancuabe material and its suitability for use in the high-growth lithium-ion batteries (LiBs) and expandable graphite end-markets. After these assessments and the release of a maiden JORC resource (due in Q117), Triton intends to fast-track a PFS.

## Ancuabe now the focus: LiB production key to value

Triton holds six exploration licences and has two more in application. The licences comprise the Balama North and Ancuabe project areas, with the latter the main focus of Triton's current investigations. Recent drill results have been announced for Ancuabe's T16 deposit. Results indicate that this new deposit is likely to form an important element of Triton's expandable graphite and LiB-focused strategy.

## Ancuabe: Flake sizes and purity hint at value within

Ancuabe is the subject of an accelerated development plan by Triton due to the higher percentage of larger flakes present and, in Ancuabe's case, should fetch the highest price due to the purity of the flotation concentrate carrying these larger flakes. Currently, and unusual for graphite deposits, a simple flotation process on Ancuabe material can yield 96% TGC across the flake size ranges present. A 99.95% purity is required for LiB production, this being the purity level typically achieved after purification, which removes any residual contaminants.

## Valuation: Funded through to PFS completion

At end November 2016, following an A\$8m equity raise via the issue of 131.6m new shares at A\$0.06 each, Triton had cash of A\$8.8m. According to management, this is enough to fund all its work programmes through to completion of a PFS. The first material catalyst on the path towards a PFS will be the release of a higher-confidence Ancuabe code-compliant mineral resource statement. This is expected in March 2017. We also highlight that Minjar Gold, successful bidder for Barrick's 50% interest in KCGM's super-pit, holds a 20% interest in Triton under its Chinese parent company name, Shandong Tyan. Furthermore, Max Ji, non-executive chairman of Triton, is also chairman and director of Minjar Gold.

### Historical financials

Year end	Revenue (A\$m)	PBT (A\$m)	EPS (c)	DPS (c)	P/E (x)	Yield (%)
12/12	0.0	(1.0)	(0.9)	0.0	N/A	N/A
12/13	0.0	(1.80)	(1.1)	0.0	N/A	N/A
12/14	0.0	(5.0)	(1.9)	0.0	N/A	N/A
12/15	0.0	(12.7)	(3.6)	0.0	N/A	N/A

Source: Company accounts

**Price** **A\$0.07**  
**Market cap** **A\$46m**

### Share price graph



### Share details

Code	TON
Listing	ASX
Shares in issue	658m

### Business description

Triton Minerals is a diversified minerals exploration and development company with assets in Australia and Africa. Its current main focus is the development of its graphite exploration licences in Mozambique, specifically the Ancuabe graphite project, which is being investigated specifically to feed into the nascent, but high-growth lithium-ion battery sector.

### Bull

- New strategy aligned to high-growth lithium-ion battery market.
- Ancuabe closer to existing graphite plant and port.
- Mozambique is host to the only western large graphite mine.

### Bear

- New strategy pushes Triton back on development curve.
- Offtake agreements being sought with Chinese cornerstone investor amongst other routes.
- Graphite market still needs to develop in size: this is expected through accelerating electric vehicle demand.

### Analysts

Tom Hayes	+44 (0)20 3077 5725
Charles Gibson	+44 (0)20 3077 5724

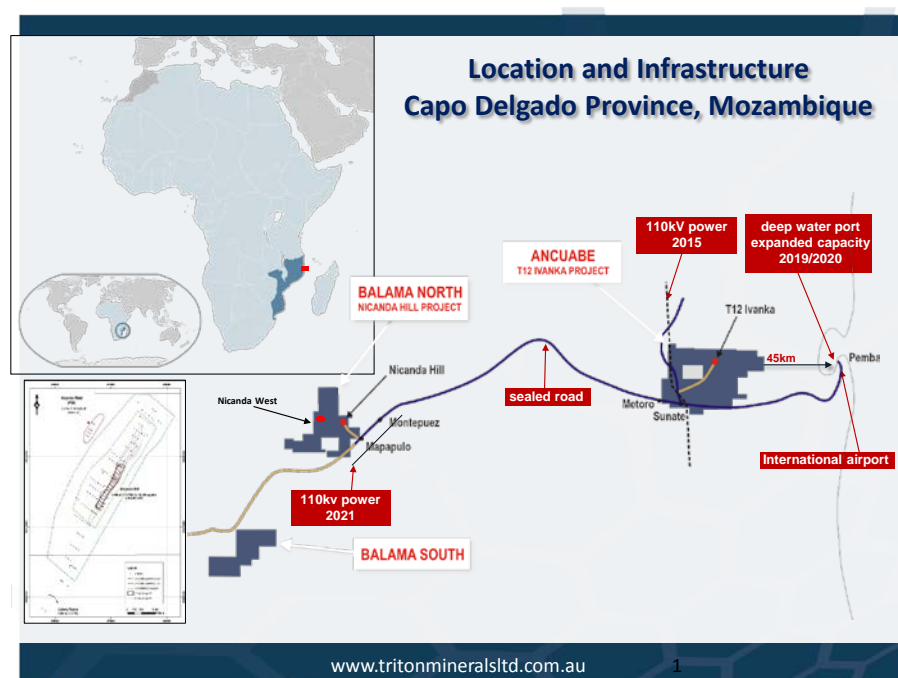
[mining@edisongroup.com](mailto:mining@edisongroup.com)

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## Triton: Refocused and recapitalised

2016 was pivotal for Triton Minerals as the company changed its development strategy. This followed a change of management, voluntary administration (March 2016) and recapitalisation late in 2016, leaving it well positioned to pursue its Mozambique exploration programme, and potentially funded through to completion of PFS on its now key Ancyabe graphite project. Under previous management, the focus had been on its two Balama North deposits: Nicanda Hill and Cobra Plains. However, they are not as optimally aligned to feed into the highest-growth end-markets (LiB and expandable graphite) as is the Ancyabe graphite project, which is the focus of Triton's realigned development strategy. Ancyabe deposits contain the graphite most applicable to these high-growth markets. We forecast that demand for LiBs could grow at a CAGR of c 22%, as the graphite market refocuses towards energy storage. Management is consequently expediting the Ancyabe project, which is located favourably in terms of infrastructure, being only c 50km west inland by sealed road off the coastal port of Pemba, northern Mozambique, and serviced by high-voltage power lines.

**Exhibit 1: Project and infrastructure locations**



Source: Triton Minerals

### Balama North: Why it now sits behind Ancyabe

Previously Triton focused on developing its Balama North and Nicanda Hill deposits, which are close to Syrah's current Balama operation. However, exploration and development of these assets appeared to be an attempt to monetise the entire graphite resource, rather than tailor the product stream to a specific market segment. Based on this now obsolete strategy, under its previous management Triton agreed binding and non-binding agreements with Chinese end-users to use Triton graphite for a myriad of downstream uses. None of these past agreements remains valid.

### Offtake agreements: New focus on LiB/expandable markets

Now the aforementioned binding and non-binding offtake agreements are invalid, Triton is looking to open up discussions with new offtake partners for its Ancyabe material. For this to happen, Triton will need to produce samples of finished graphite concentrate for end-user assessment. This is commonplace when commodities have no open market on which they are traded. Triton will need to

accelerate its marketing programme to match the expedited exploration and development programme underway on Ancuabe.

## Ancuabe: Better infrastructure, better suited to LiBs?

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Ancuabe is roughly 60km west and inland of Pemba, a coastal port town in northern Mozambique, and significantly closer to port infrastructure than its previously touted Balama North project, 180km further west.

Triton holds its eight exploration licences in a Mozambique-registered company called Grafex, owned 80/20 with a local shareholder.

### Ancuabe – early signs hint at purity and size potential

At face value Ancuabe could be a very profitable operation which, due to its focus on specific high-growth end-markets, could become a highly geared operation to graphite prices. This is based purely on the minimal amount of metallurgical data available to date for Ancuabe. The metallurgical data available relate to the testing of six samples over 2016. These have shown that Ancuabe, via a simple flotation process, yields very high-purity graphite across a broad range of size fractions. Along with our own analysis of similar project data from companies operating in the region, this supports our view that flake size distribution is a poor indicator of a project's potential value. It is more important to understand the graphitic carbon purity level per individual size fraction. This is a far more sensible approach to monetising graphite resources as it allows for a more tailored smaller operation, requiring less capex, relative to the end-markets into which it is being sold.

### Ancuabe purity up to c 98.6% without chemicals across all sizes

An important aspect of graphite deposit assessment is how pure the graphite is after its concentration during a simple – and chemical-free – flotation process. Chemical treatment (using, for instance, caustic soda) is obviously undesirable due to environmental concerns and potential difficulties arising from project permitting. It is also important to understand the weathering profile of graphite deposits, as the degree of weathering can affect the quality of the end-product produced.

### Mineralogy key to value proposition – more data coming for Ancuabe

Mineralogy is key to assessing graphite quality, with a number of mineralogical characteristics being key indicators of future economic viability; in relation to Ancuabe such characteristics are:

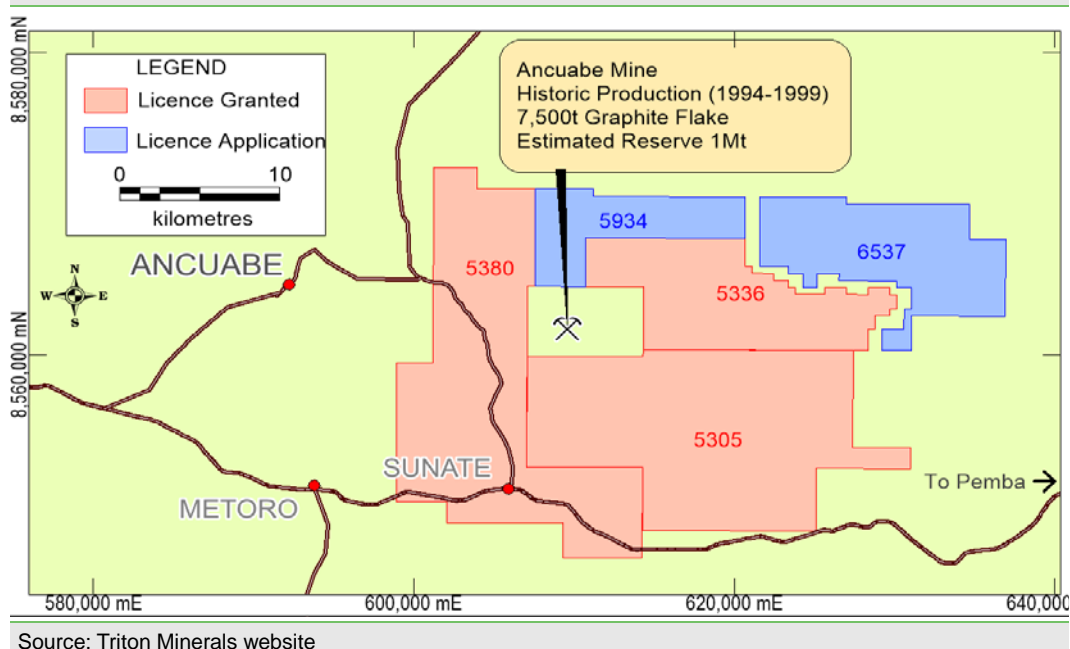
- **Flake shape** – this helps govern downstream processing requirements, especially as the graphite can require spheroidisation and coating before being used in LiB manufacture.
- **Flake size** – this is not as critical to the eventual use of graphite in high-end applications such as LiB, as has been conveyed to the market by graphite companies. Increasing flake size can be seen to correlate well to higher graphite purities and certainly flake sizes above 150 microns are preferred for LiB production. However, we see little correlation between the highest graphite purity levels at the largest of flake sizes versus purity levels at the smallest size fractions. Flake sizes can also be to the detriment of a graphite resource as impurities can be found intercalated within surrounding graphite particles, in some instances requiring additional steps of grinding purification, which will naturally increase production costs.
- **Flake size distribution** – this can provide a simple indication of what end-uses could be suitable for the graphite products sold. However, it should be viewed alongside all other factors in determining the best process flow sheet design to treat the graphite ore.
- **Identification of gangue (waste) minerals and their relationship with graphite particles** – as mentioned above, the situation of waste minerals within the graphite will need to be addressed when processing graphite for very pure end-uses. There is a trade-off between flake

size, shape and purity and any graphite developer will need to balance these factors to optimise the process flow sheet design.

## Old Kenmare processing plant being refurbished

An existing old graphite mine, called the Ancuabe Graphite Mine (not to be confused with Triton's project of the same name) can be found in the middle of Triton's licence areas (see below). Kenmare owned the old Ancuabe graphite mine, which is now owned by German graphite specialist, AMG, and its operating subsidiary Graphit Kropfmuehl (GK). We understand from an AMG GK presentation that it is refurbishing the old Ancuabe mine, which is understood to include a 6ktpa plant expandable to 9ktpa. Furthermore, it is still unclear if the refurbished plant will be tailored to LiB end-market specifications (a market that will be much more developed than in the 1990s when the mine was operating). We would also like to know how Triton could benefit from operational synergies associated with this refurbished mine situated within the centre of its tenements.

**Exhibit 2: Tenement, old graphite mine and processing plant map**



## Drilling, geophysics and met work: T12 and T16 best

At present Ancuabe has only a small inferred resource covering the T12 deposit. The inferred resource given Exhibit 3 was completed in May 2016. The TGC grade is typical of Mozambican/Tanzanian graphite grades.

**Exhibit 3: Ancuabe inferred-only resource estimate from May 2016**

Classification	Weathering state	TGC (%)	Tonnes (m)	Contained graphite (Mt)
Inferred	Oxide	5.2	1.2	0.06
	Transitional	5.3	1.2	0.06
	Fresh	5.4	12.5	0.67
	Total	5.4	14.9	0.80

Source: Triton Minerals

Since the announcement of the above resource estimate, Triton has continued to drill the T12 deposit, even after it placed itself into voluntarily administration. Initial metallurgical test works show T12 is dominated by purity levels within the larger flake size fractions. The main highlights of the five metallurgical samples and one original test sample are:

- Concentrate grades of between 97.2% and 99.6% total carbon (TC) were realised.
- Individual size fractions achieved purity levels of 99.6%.
- Between 25% and 40% of flakes were coarser than 300 microns, equivalent to the 'jumbo' size fraction in the graphite sector.
- Head grades of between 3.5% and 9.0% total graphitic carbon (TGC).
- 60% to 77% of graphite flakes >150 microns (no purity data for this size fraction was given).
- 25% to 40% of graphite flakes >300 microns (no purity data for this size fraction was given).
- No discernible difference in graphite purity from oxidised, transitional or fresh weathering domains.

We expect Triton will now fill in the gaps of its metallurgical testing on Ancuabe graphite. We will examine forthcoming releases to understand the repeatability of purity levels per individual size fraction. We also note that the recovery factors achieved on the samples tested so far are expected to improve as the tailings waste is not recycled.

Triton has identified another prospect within the larger Ancuabe project, called T16, which is also considered prospective for high-purity concentrate production at flake size fractions applicable to the LiB market. In its 16 December 2016 announcement, Triton published exploration targets across its T12 to T16 deposit areas. These carry no indication of grade (other than by reference to the JORC 2012 inferred resource estimate on T12, published May 2016), and were based on high-conductance VTEM responses. The exploration targets are provided in Exhibit 4:

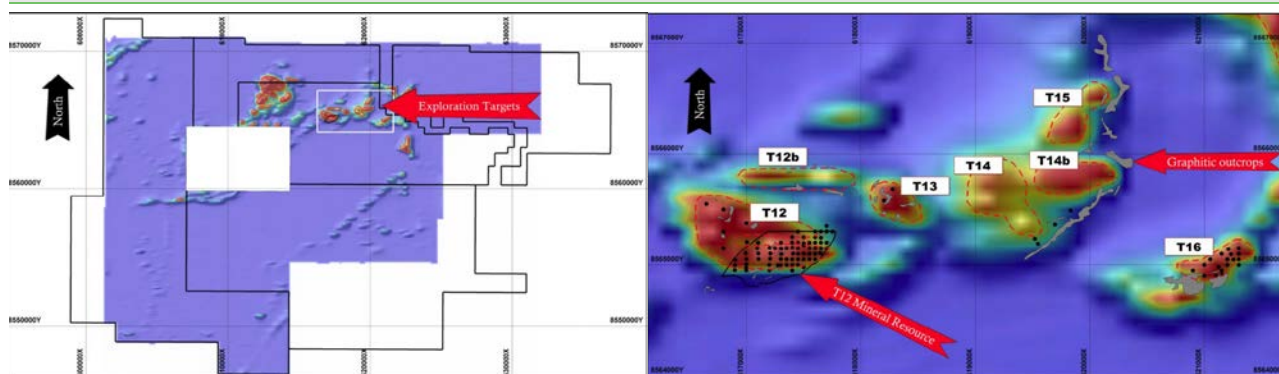
**Exhibit 4: VTEM survey derived exploration targets**

VTEM Target	Target area (m <sup>2</sup> )	Thickness 1 (m)	Tonnes 1	Thickness 2 (m)	Tonnes 2	T12 inferred MRE
12	483,000	10	12,075,000	20	24,150,000	14.9Mt @ 5.4% TGC
12b	173,000	10	4,325,000	15	6,487,500	
13	116,000	10	2,900,000	15	4,350,000	
14	275,000	10	6,875,000	15	10,312,500	
14b	155,000	10	3,875,000	15	5,812,500	
15	147,000	10	3,675,000	15	5,512,500	
16	121,000	10	3,025,000	15	7,562,000	
Total	987,000		24,675,000		40,037,000	

Source: Triton Minerals. Note: MRE stands for mineral resource estimate.

The following exhibit displays the location of all T-series deposits area. T12 and T16 are Triton's current areas of focus.

**Exhibit 5: Ancuabe tenement boundaries (LHS) and T12 to T16 deposit locations within exploration target area**



Source: Triton Minerals 16 December 2016

### T16 drill results may well be the resource that drives Ancuabe

On 2 February 2017, Triton released further drilling results for the T16 deposit. These highlighted the following drill intercepts:

- 14m at 8.07% TGC from 14m downhole.
- 34m at 7.36% TGC, from 12m downhole.

- 31m at 5.28% TGC from 8m downhole.
- 45 m at 9.7% TGC from 12 m downhole (IVC027).
  - including 22 m at 11.4% from 35 m downhole.
- 19 m at 8.1% TGC from 78 m downhole (IVC026).
- 17 m at 7.5% TC from 25 m downhole (IVC028).
- 14 m at 7.91% TGC from 22 m downhole (IVC026).

It is noted that the results above are close to surface and exhibit TGC grades of above average grade (for the region). These results, along with statements from the company that coarse flakes are visually identified in drill cores, are positive and bode well for future exploration success. We expect flotation testing to be undertaken to demonstrate the purity levels across size fractions. A maiden resource for T16 will be included in an upcoming revision to the existing T12 inferred resource, due to be announced by end Q117.

### Triton's non-core resources: To process when graphite market grows

Triton has code-compliant (JORC 2012) resources for its two Balama North deposits, Cobra Plains and Nicanda Hill, with one more for Nicanda West. They are outlined in the exhibits below for reference only; they are not the focus of Triton's new battery and expandable graphite development strategy. It is worth noting that they are some of the largest graphite resources (by tonnage) in the world and if the graphite market improves, Triton should re-visit these deposits to understand their future viability for development.

#### Exhibit 6: Balama North – Nicanda West inferred MRE (May 2016)

Classification	Weathering state	TGC (%)	Tonnes (m)	Contained graphite (Mt)
Inferred	Oxide	6.8	3.3	225
	Transitional	7.0	2.5	176
	Fresh	6.5	24.2	1,567
	Total	6.6	30.0	1,968

Source: Triton Minerals

#### Exhibit 7: Balama North – Cobra Plains inferred MRE (December 2014)

Deposit	Classification	Grade (TGC %)	Tonnes (Mt)	Contained graphite (Mt)
Cobra Plains	Inferred	103	5.2	5.7

Source: Triton Minerals

#### Exhibit 8: Balama North – Nicanda Hill MRE (31 December 2014)

Deposit	Classification	Grade (TGC %)	Tonnes (Mt)	Contained graphite (Mt)	Grade (V <sub>2</sub> O <sub>5</sub> %)	Contained vanadium pentoxide (Mt)
Nicanda Hill	Indicated	11.0	328	36.1	0.26	0.85
	Inferred	10.6	1,128	119.7	0.27	3.05
	Total	10.7	1,456	155.9	0.27	3.93

Source: Triton Minerals

## A\$8m raise: Funded to PFS completion

At end November 2016 Triton raised A\$8m via the issue of 131.6m new ordinary shares at A\$0.06 each, taking its cash balance to A\$8.8m. Management states it is fully funded through to completion of a PFS on Ancuabe. This will need to follow a successful completion to drilling at a mineral resource estimate for this project, due in early 2017 (we expect this before the end of Q117).

The company has no debt and a total of 81,745,189 options with exercise prices of A\$0.1 to A\$1.0 each on dates ranging from 16 March 2017 to 2 December 2019. Of this, 16.5m options are performance rights with no value.



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