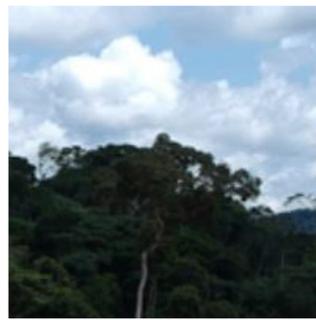
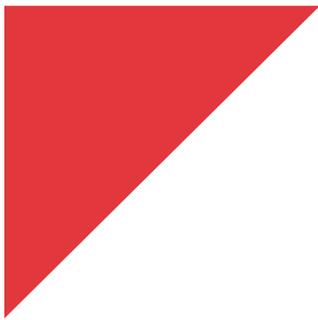




# Tin Explorers & Developers Group



Member Profiles Report  
November 2020

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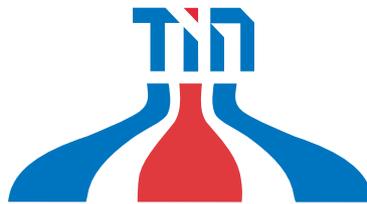
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# Tin Explorers & Developers Group Overview

The International Tin Association's Tin Explorers & Developers Group brings together some of the leading companies striving to become part of the next generation of global tin producers.

This report profiles these companies and provides information on the flagship tin projects they are working to develop, which are amongst the most promising potential sources of new tin supply worldwide.



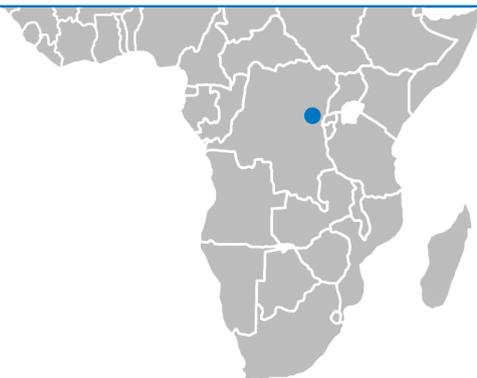
**Alphamin Resources** is a low-cost tin concentrate producer from its high-grade deposit at Mpama North. The company has an additional five exploration licenses covering a total of 1,270km<sup>2</sup> in the North Kivu Province of the Democratic Republic of Congo (DRC). Alphamin is headquartered in Mauritius and listed on the Toronto Stock Exchange (TSXV: AFM) and the Johannesburg Stock Exchange AltX (JSE AltX: APH). Mpama North has an NI 43-101 compliant Resource grade of 4.5% tin, placing it amongst the highest grade deposits in the world.

## Market Information (as of 22/10/20)

TSX-V Code	AFM
Shares on Issue	1,180.4 m
Market Capitalisation	US\$ 197.45 m

## Major Shareholders

Denham Capital	58.4%
Sprott	4.5%
Gerald Group	3.8%



Processing plant at Mpama North

## The Mpama North Mine

Alphamin completed construction of its Mpama North mine and began producing tin concentrate in Q2 2019. The mine is now approaching nameplate capacity, with 10,000 tonnes of tin-in-concentrate production scheduled for 2020.

Alphamin's management team has successfully developed and brought the Bisie tin mine to production and is focused on taking the business to the next level as they aim to realise the full value potential of this tin complex.

Mpama North is already in production, and by using the positive cashflow it generates, additional production from Mpama South and other prospective targets is planned.

Alphamin are aiming to increase annual tin output and Life of Mine through incremental production from Mpama South and by adding more mines in close proximity to the current production and licensed footprint.

Currently, all-in sustaining costs (AISC) at the Mpama North mine are between US\$ 10,000 and US\$ 12,000 per tonne. Alphamin aims to lower these further as the production process is further refined and more volume is added.

## Project Information

<b>Project Name</b>	Mpama North
<b>Country</b>	DR Congo
<b>Mine Type</b>	Underground
<b>Product</b>	Concentrates
<b>Output (t/y Sn)</b>	10,000
<b>Mine Life (years)</b>	12
<b>Start Date</b>	2019
<b>Capital Cost (US\$ M)</b>	151.4
<b>Cash Cost (US\$/t of tin)</b>	10,000 - 12,000

## NI 43-101 Mineral Reserve

Ore (Mt)	3.33	<b>Metal (t)</b>
Sn (%)	4.01	<b>133,400</b>

## NI 43-101 Measured & Indicated Mineral Resource

Ore (Mt)	4.6	<b>Metal (t or g)</b>
Sn (%)	4.52	<b>208,000</b>

**Elementos** is an Australian, ASX-listed metals company with a portfolio of tin projects including Oropesa in Spain, Cleveland in Tasmania and Temengor in Malaysia. The company is actively developing each of these projects with Oropesa the priority following its acquisition in 2018. The company believes that having a diversified tin portfolio in jurisdictions with a long mining history is a lower risk growth strategy.

## Market Information (as of 10/11/20)

ASX Code	EL
Shares on Issue	3,106 m
Market Capitalisation	US\$ 15.5m

## Major Shareholders

Bond Street Custodians	20.4%
Keo Projects	3.4%
Andes Investors	2.2%



## The Oropesa Tin Project

The Oropesa tin deposit is located in north-west Andalusia, 180km northeast of Seville in southern Spain. Oropesa is a hard-rock tin deposit amenable to open-pit extraction methods, with the potential for further development as an underground mining operation.

Elementos completed the acquisition of the project in January 2020. Results from an initial Economic Study (Q2 2020) were positive, with an estimated cash cost of \$11,534/tonne. The study gave a post-tax NPV (8%) of approximately US\$ 66 million.

The company plans to undertake a Definitive Feasibility Study and finalise environmental permitting as its next steps in developing Oropesa.

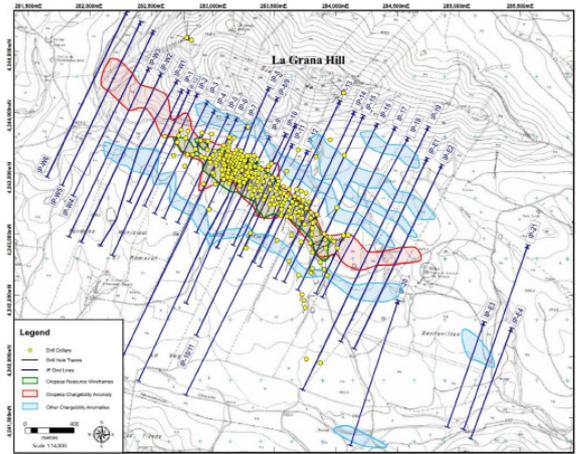
## The Cleveland Tin Project

Cleveland was an underground tin and copper mine near Luna, in Tasmania, operated by Aberfoyle between 1968 and 1986 which produced some 24,000 tonnes of tin. Elementos plans to redevelop the project in three stages, beginning with reprocessing of tailings followed by the open pit resource and subsequently the underground resources of tin, copper and tungsten. A PFS was completed in August 2015 for the tailings operation as well as a maiden ore reserve estimate. In September 2018, the JORC-Compliant resource was updated following a successful drilling programme.

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Oropesa induced polarity anomalies, with drill hole locations

## Project Information

<b>Project Name</b>	Oropesa	Cleveland *
<b>Country</b>	Spain	Australia (TAS)
<b>Mine Type</b>	Open Pit	Tailings, OP & UG
<b>Product</b>	Concentrates	Concentrates
<b>Output (t/y Sn)</b>	2,440	~1,000
<b>Mine Life (years)</b>	14	~15
<b>Start Date</b>	2022	2023

\*Tailings to be initial focus of staged development

## Oropesa

### JORC-Compliant Resource

Ore (Mt)	12.54	Metal (t)
Sn (%)	0.54	67,520

## Cleveland Hard Rock

### JORC-Compliant Resource

Ore (Mt)	7.47	Metal (t)
Sn (%)	0.75	56,100
Cu (%)	0.30	22,200

## Cleveland Tailings

### JORC-Compliant Resource

Ore (Mt)	3.7	Metal (t)
Sn (%)	0.29	11,000
Cu (%)	0.13	5,000



# AfriTin Mining

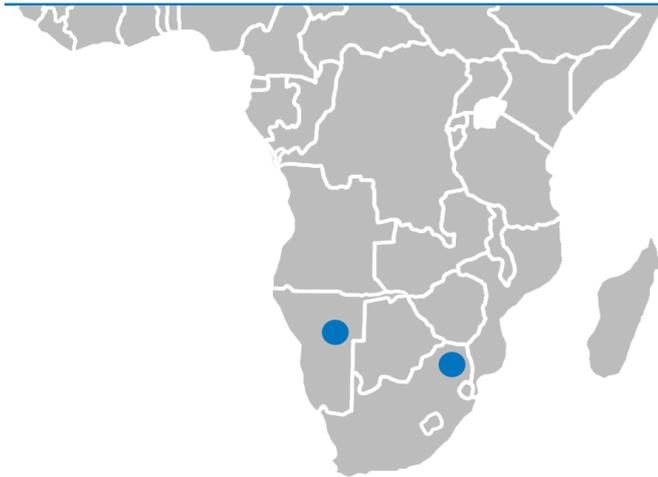
**AfriTin Mining** was established in 2017 to acquire the tin assets of Bushveld Minerals Limited. The company was listed on AIM in November of the same year and is focussed on creating a portfolio of conflict-free, tin producing assets. The company owns two tin projects: the Uis brownfield mine in Namibia and the Mokopane project in South Africa.

## Market Information (as of 28/02/20)

AIM Code	ATM
Shares on Issue	653 m
Market Capitalisation	US\$ 17.5 m

## Major Shareholders

Naminco	14.1%
The Orange Trust	9.9%
Bushveld Minerals Limited	8.0%



Uis Phase 1 Pilot Plant

## The Uis Tin Project

The Uis Tin project, located in Namibia, was discovered in 1911 and developed by Iscor of South Africa as the largest hard-rock tin mine in the world. Production ended in 1990 as a result of low tin prices.

During December 2018, AfriTin undertook the first large-scale blast of mining material at Uis, with ramp-up to full-scale concentrate production beginning in Q3 2019. As of August 2020, AfriTin is now producing nearly 40 tonnes of tin-in-concentrate per month, with a target of 60 tonnes by the end of 2020.

AfriTin has declared a maiden JORC resource at Uis of 71.54 Mt of ore at a grade of 0.134 % tin for 95,539 t of contained tin. The footprint of the mining area is significant and recent resource work has shown the scale of the by-product potential. A significant number of pegmatites have been delineated within a 5 km radius of the existing plant infrastructure. Phase 2 is expected to produce 5,000 t of tin concentrate per annum with the Definitive Feasibility Study earmarked to start in early 2020.

## Project Information

<b>Project Name</b>	Uis
<b>Country</b>	Namibia
<b>Mine Type</b>	Open Pit
<b>Product</b>	Concentrates
<b>Concentrate Output (t/y) Phase 1</b>	630
<b>Phase 1 Start Date</b>	2019
<b>Concentrate Output (t/y) Phase 2</b>	5,000
<b>Phase 2 Start Date</b>	2022

## JORC-Compliant Mineral Resource

Ore (Mt)	71.54	Metal (t)
Sn (%)	0.134	95,539
Ta (%)	0.0085	6091
Li <sub>2</sub> O (%)	0.63	450,265

**Cornish Metals (previously Strongbow Exploration)** is a TSX-V listed Canadian exploration company, focused on building a strategic metals company through its portfolio of assets located in the United Kingdom and North America. The Company acquired the rights to the South Crofty tin project in Cornwall, UK in July 2016 while maintaining an interest in other properties prospective for tin and nickel, as well as royalties on tungsten assets.

**Market Information (as of 23/10/20)**

TSX-V Code	CUSN
Shares on Issue	133.8 m
Market Capitalisation	US\$ 12 m

**Major Shareholders**

Osisko Gold Royalties	32.7%
Management / Directors	10%



**The South Crofty Tin Project**

The South Crofty Tin Project is located in the towns of Pool, Camborne, and Redruth in the county of Cornwall, South West England, approximately 465km west of London. South Crofty was the last tin mine to close in Cornwall and the UK, ceasing operations in 1998 due to the low tin price and proposed changes to environmental regulation.

Several companies have attempted to revive the mine between 2001 and 2013. Significant advances were made, primarily the agreement to secure a site for future mill construction, and the grant of a mining permit which is valid until 2071, subject to certain planning conditions being met. The project changed hands numerous times before Strongbow acquired it from administration in July 2016 following definition of an NI 43-101 compliant mineral resource earlier in the year. A Preliminary Economic Assessment (PEA) was released for the project in early 2017 envisaging an underground mine producing tin with copper and zinc by-products. The project remains fully permitted.

Further drilling at South Crofty began in mid-2020, along with an initial drill program at the United Downs copper-tin discovery. Early results from South Crofty indicate high-grade mineralisation, with new tin 'lodes' found. The United Downs discovery contains 1.19% Sn and is within trucking distance (8km) to the potential South Crofty processing plant, providing production upside.



Conceptual processing plant at South Crofty

**Project Information (2017 PEA)**

<b>Project Name</b>	South Crofty
<b>Country</b>	UK
<b>Mine Type</b>	Underground
<b>Product</b>	Concentrates
<b>Output (t/y Sn)</b>	~5,000
<b>Mine Life (years)</b>	8
<b>Capital Cost (US\$ M)</b>	118.7

**NI 43-101 Lower Mine Indicated Resource**

Ore (Mt)	1.66	Metal (t)
Sn (%)	1.81	30,046

**NI 43-101 Lower Mine Inferred Resource**

Ore (Mt)	0.74	Metal (t)
Sn (%)	1.91	14,131

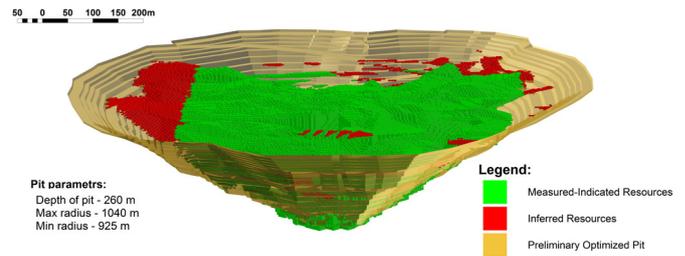
**NI 43-101 Upper Mine Indicated & Inferred Resource**

Ore (Mt)	0.72	Metal (t)
Sn (%)	0.68	4,908
Cu (%)	0.68	4,907
Zn (%)	0.61	4,414

**JSC Tin One Mining**, formerly known as JSC Syrymbet, was founded in 1998 to carry out the development of the Syrymbet deposit, including mine and processing plant construction, in Kazakhstan. The Syrymbet licence area also incorporates the Sarybulak tantalum-niobium prospect. The company is a privately owned subsidiary of the Lancaster Group, a diversified holding company specialising in long term development opportunities. Samruk-Kazyna Invest, a subsidiary of the Kazakhstan government’s asset management division, has a minority share.

## Major Shareholders

Lancaster Group	75%
Samruk-Kazyna Invest	25%



Contour of the Preliminary Optimised Pit

## The Syrymbet Tin Project

The Syrymbet deposit is located in the Syrymbet ore field, north-west of the Kokchetav middle massif, within the Volodarskiy ore province. The venture is wholly owned by JSC Tin One Mining, which is permitted to carry out development and production within the licence area until 2030. Commercial mineralisation at the deposit was first discovered by a drill-hole program in 1985, with further exploration in 1990 leading to the discovery of tin-bearing weathered crust with commercial potential. The ore field is associated with the intrusion of two late Devonian granite-porphry stockworks (Syrymbet and Sarybulak).

The company claims that the deposit is currently the world’s largest undeveloped tin deposit, based on 2012 JORC reporting standards. JORC-compliant mineral resource estimation (MRE) reports from 2015 and 2018 indicate in-situ resources comprising 123 Mt of ore, containing 492 kt of tin.

In 2018, State authorities commenced the construction of a railway siding and a potable water pipeline, which are required for the development of the project.

Tin One Mining published a Definitive Feasibility Study for the project in 2020. The Study indicates that alongside tin, the project will also produce a copper and CaF<sub>2</sub> product, which will help to reduce tin mining costs. With a cash cost of US\$ 35.72 per tonne milled, Syrymbet is forecast to be in the lowest quartile of tin mines by cost.

## Project Information

<b>Project Name</b>	Syrymbet
<b>Country</b>	Kazakhstan
<b>Mine Type</b>	Open Pit
<b>Product</b>	Concentrates
<b>Output (t/y Sn)</b>	6,500
<b>Mine Life (years)</b>	14
<b>Start Date</b>	2021
<b>Capital Cost (US\$ M)</b>	285

## JORC-Compliant Measured & Indicated Resource

Ore (Mt)	54.8	Metal (t)
Sn (%)	0.43	236,354

## JORC-Compliant Inferred Resource

Ore (Mt)	68.5	Metal (t)
Sn (%)	0.37	255,482

## JORC-Compliant Probable Reserve

Ore (Mt)	26.3	Metal (t)
Sn (%)	0.55	145,200

## Assumptions

The information within this report was collated from multiple sources including personal communication, company websites, quarterly and annual reports, press releases and presentations available prior to 23/10/2020 unless otherwise stated. Mineral resource figures and forecast mine costs, schedules and other quantitative data presented on the member profile pages originates directly from the company with which it is associated, although the actual figure may have been converted or adjusted by the International Tin Association in order to make figures more comparable where appropriate.

Cash Costs reflect the direct costs of mining and processing the ore into refined tin and are reported net-of-by-product. Where mineable by-products or co-products exist, the additional revenue is offset against the Cash or Full Cost to calculate a resultant cost per tonne of tin. Any costs presented in this report have all been published by the companies themselves and the method of calculation may therefore vary from the descriptions provided above. As costs are expressed in US dollars there may be some inherent error where exchange rates have changed over time, particular with respect to cost assumptions made by the individual companies in their studies.

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