



**ASX RELEASE**

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**21 FEBRUARY 2020**

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**Directors**

Lee Christensen  
Dr James Searle  
Jason Ferris

**Ticket**

ASX: TSL

## INVESTOR PRESENTATION

Titanium Sands Limited (ASX: TSL) ("**TSL**" or "**the Company**") provides its Investor Presentation.

Authorised for release to ASX by the Board of Directors of Titanium Sands Limited.

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LTD



- Creating a world class Mineral Sands deposit in Sri Lanka

- Investor Presentation

- 21 February 2020

# Marvellous Mannar

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## Competent Persons Statement

This presentation contains references to exploration results and other technical comments which have been reviewed and compiled by James Searle BSc (hons), PhD, a Competent Person who is a Member of the Australian Institute of Mining and Metallurgy, with over 38 years of experience in metallic and energy minerals exploration and development, and as such has sufficient experience which is relevant to the style of mineralisation and type of deposits under consideration as a Competent Person as defined in the 2012 Edition of the “Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves”. Dr Searle is the Managing Director of Titanium Sands Limited and consents to the inclusion of this technical information in the format and context in which it appears. The Company confirms that it is not aware of any new information or data that materially affect the information included in the relevant market announcements and, in the case of estimates of the Proposed Tenure Acquisition or the Company’s existing Mineral Resources that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply with respect to the resource block model and total heavy mineral content and have not materially changed. The Company confirms that the form and context in which the Competent Persons’ findings are presented have not been materially modified from the relevant original market announcements.



# COMPANY OVERVIEW

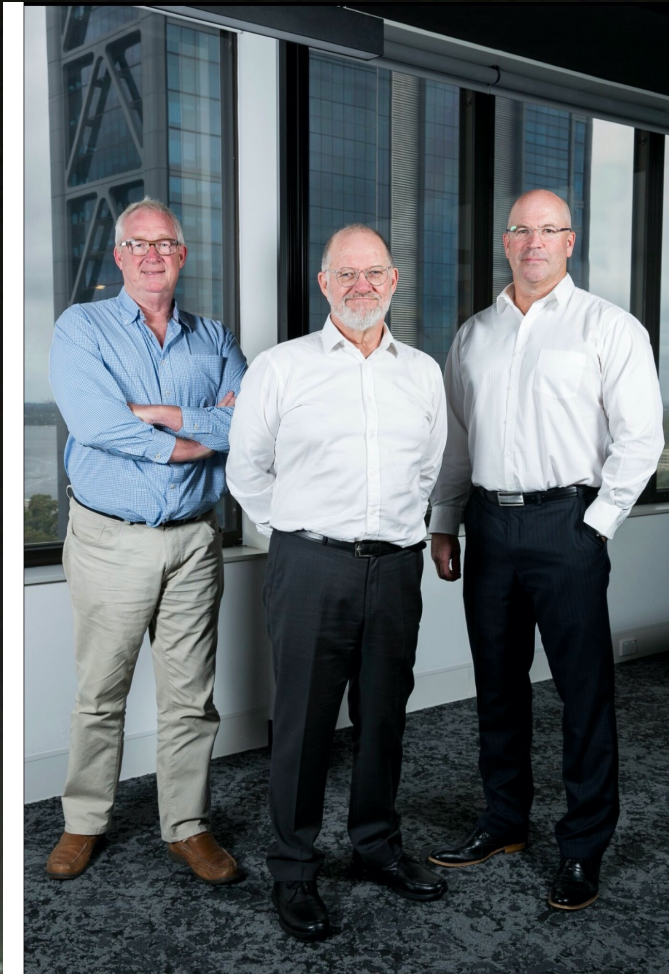
*Creating a world class, low cost heavy mineral sand deposit in Sri Lanka*

TOP 20 SHAREHOLDERS – 74.78% | TOP 50 SHAREHOLDERS – 86.64%

LEE  
CHRISTENSEN  
NON-EXECUTIVE  
CHAIRMAN

JAMES  
SEARLE  
MANAGING  
DIRECTOR

JASON  
FERRIS  
NON-EXECUTIVE  
DIRECTOR



## Corporate Snapshot

ASX Code :	TSL
Shares on Issue	778.7m
Market Capitalisation (as 17/02/20 at \$0.045 per share)	AUD\$35m
Option on issue at \$0.05 (exp. 18/1/21)	30.0m
Options on issue at \$0.021 (exp. 25/1/21)	14.28m
Cash at Bank (as at 30/12/19)	AUD\$2.024m
Class B Performance Shares (mining license)	33.33m

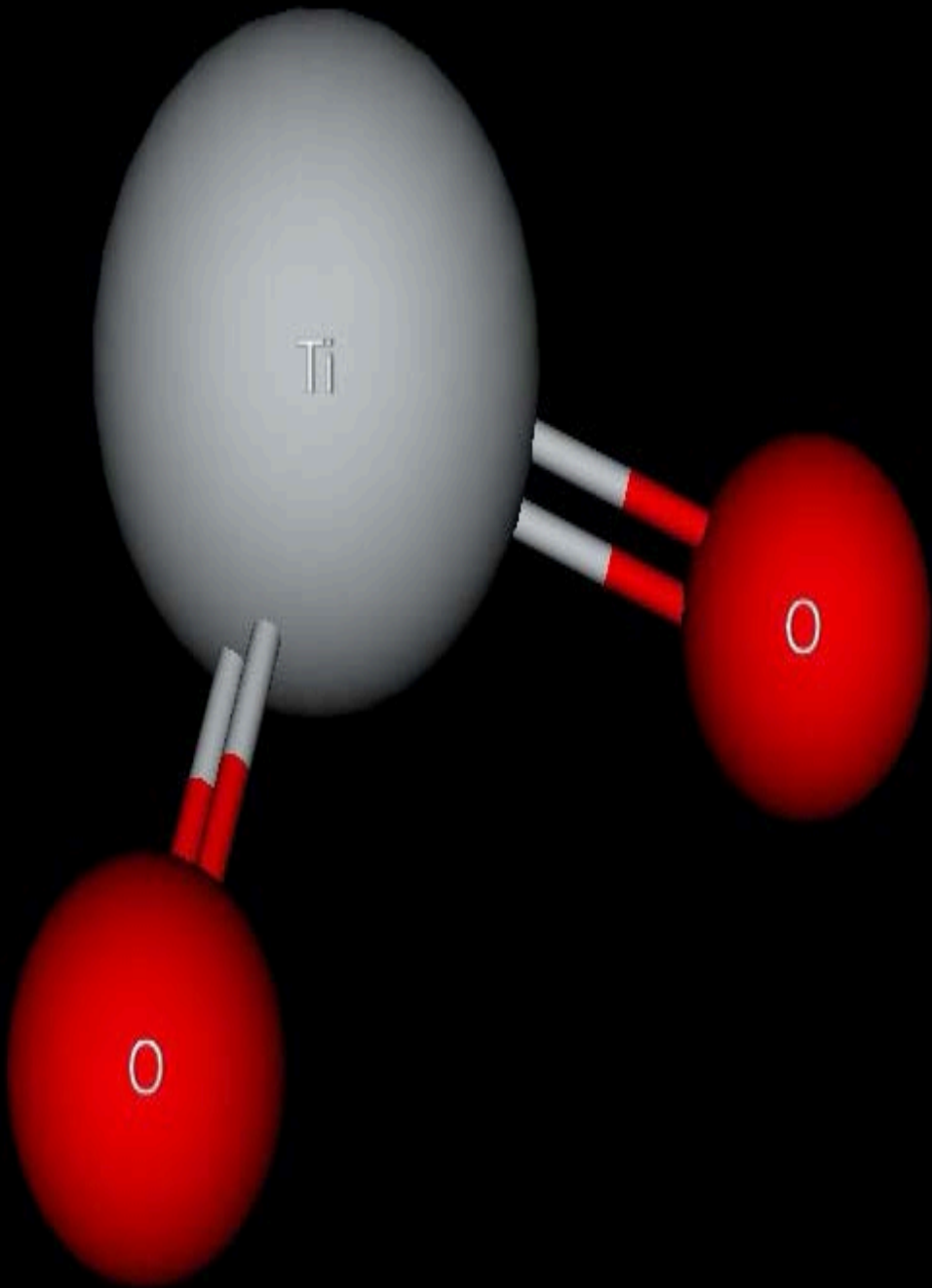
\* Plus shares to be issued on completion of BAL acquisition <https://www.asx.com.au/asxpdf/20200128/pdf/44dixwvpy22gi.pdf>





# Why Mineral Sands?

- Mineral sands are old beach, river or dune sands that contain concentrations of the important minerals, [rutile](#), [ilmenite](#), zircon and monazite.
- These minerals all originally grew as crystals in igneous rocks such as granite or basalt and some metamorphic rocks. Over millions of years, these rocks were weathered and eroded. The harder minerals including quartz were washed down to the sea by heavy rainfall and fast flowing streams.
- The minerals were then carried back up onto the beach by waves. As the waves washed up and down on the beach, they carried the lighter quartz grains with them back into the sea, leaving the grains of the heavy minerals behind on the beach. Wind also helped to concentrate the heavy minerals by blowing away the lighter quartz sand. These processes were repeated many times over millions of years, eventually creating a large deposit of mineral sands on the beach.
- As the sea level rose and fell over geological time, the shoreline also moved. As this happened, the deposits of mineral sand were covered by more sand and built up or were eroded and redeposited elsewhere. This is why we sometimes find mineral sand deposits many kilometres inland and well below sea level.



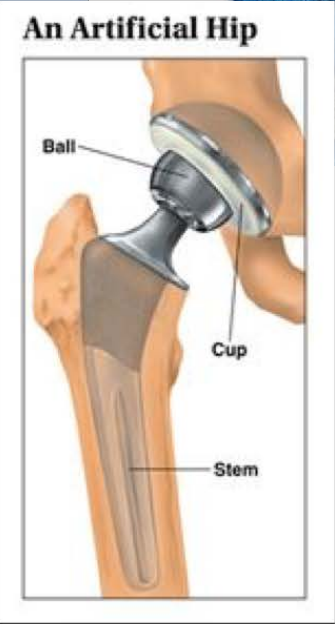
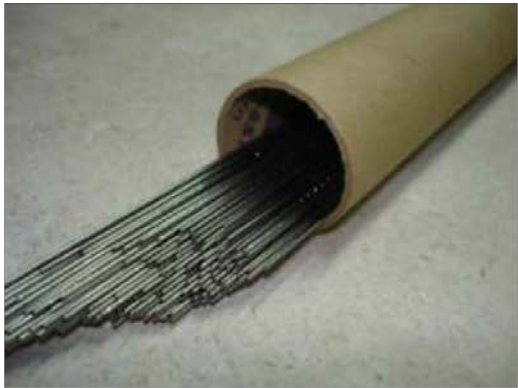
# Mineral Sands, where is it used?

- There are two core product streams in the Mineral Sands industry being : titanium minerals (also referred to as titanium dioxide ore feedstocks or  $\text{TiO}_2$  ore feedstocks) and zircon.
- **Titanium Minerals**  
Titanium minerals – ilmenite, leucoxene and rutile – are primarily used as feed stock for the production of titanium dioxide pigment, with a small percentage also used in titanium metal and fluxes for welding rods and wires. Titanium dioxide is the most widely used white pigment and is used in the manufacture paint, ceramics, various opaque uses and lightweight mixed metals including titanium metal.
- **Zircon**  
Zircon has a range of end-uses, the largest of which is ceramic products, which accounts for more than 50 per cent of global zircon consumption.

Global  
TiO<sup>2</sup> Market  
Opportunities and Forecasts  
2018 to 2023

Global Paints and Coatings market  
Forecast to reach USD\$204.83b in 2023

Growing at a CAGR of 4.92% (2018 to 2023)



TiO<sup>2</sup>

ZIRCON

Global  
Ceramic Tiles  
Market

OPPORTUNITIES AND FORECASTS,  
2014 - 2022

Ceramic Tiles Market  
is expected to garner  
\$145,949 million by 2022.

Growing at a CAGR of  
8.1% (2016 - 2022)



© Allied Market Research



Providing product to a US\$340b industry.

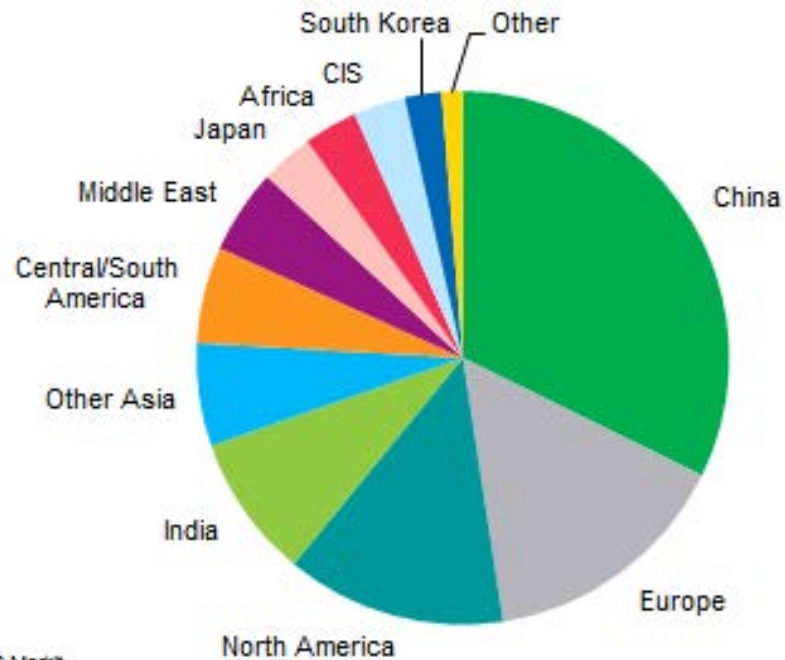
## Key Value industries of Mineral Sands?

- **The global paints and coatings market** is forecast to reach **US\$204.83 billion** by 2023.
- **Ceramic Tiles Market Outlook-2022** Global ceramic tiles market size is expected to reach **US\$145 billion** by 2022,



The world Mineral Sands market is growing at an unprecedented rate with demand for paints, ceramics and building supplies continuing to grow.

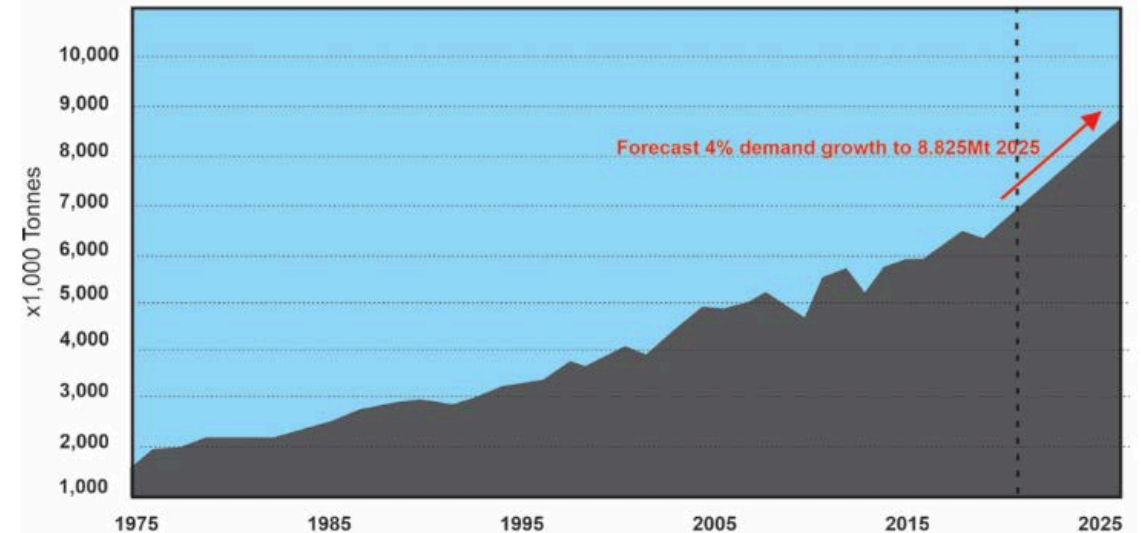
World production of paints and coatings—2018



Source: IHS Markit

© 2019 IHS Markit

TiO<sub>2</sub> Long term demand growth



Source Artikel at Informa Mineral Sands Conference Perth, 2019





# Mineral Sands value proposition

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- The value proposition for TSL mineral sands product is being developed and advanced through ongoing off-take discussions which are expected to take shape throughout 2020 as the Mannar Island projects nears production.
- **Market indications suggest a base case pricing for premium sulphate ilmenite feedstock product of between USD\$180-220p/t (\$240 high grade) and rutile at around USD\$1,118 p/t.**
- Zircon forms the basis for specialty uses include fibre optics, glass, paints, catalysts, underarm deodorants, adhesives, cosmetics, dental ceramics plus various research applications. **Market indications suggest that zircon is selling for around USD\$973p/t.**
- Garnet is used as an abrasive in high pressure paint stripping and industrial cleaning solutions and is **sold for between USD\$200 – USD\$220p/t.**



# Benefits of Sri Lanka

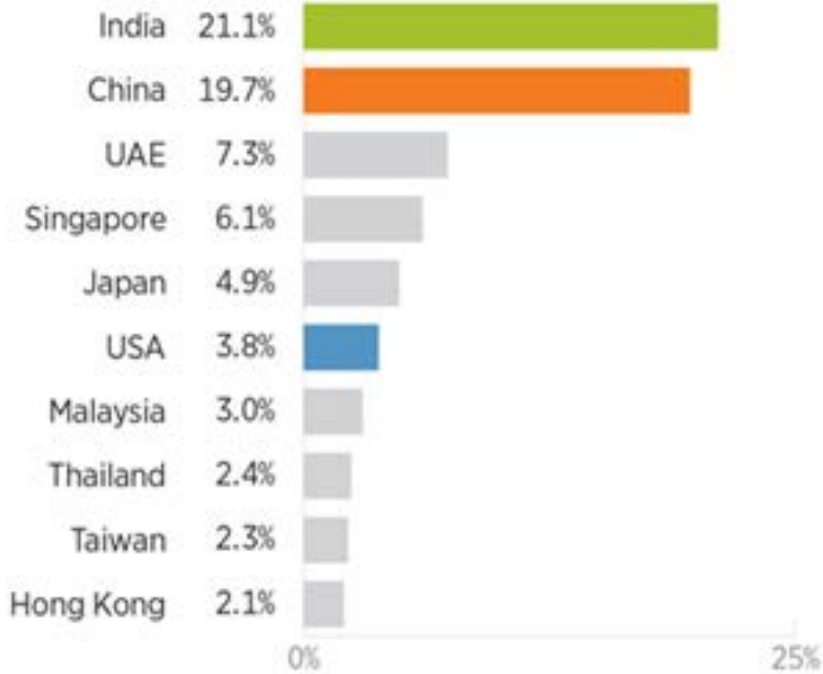


- Sri Lanka is a democratic nation of approximately ~21m people
- Sri Lankan government is supportive of foreign investment and local job creation.
- Mannar Island has excellent existing infrastructure including access to rail, road, water and power and is close to existing shipping ports.
- Sri Lanka is an attractive mining jurisdiction with Chinese, Japanese, Indian and UAE offtake potential.
- Sri Lanka provides easy access to major global customers.
- Sri Lanka provides an attractive investment proposition for offtake partners and end users.

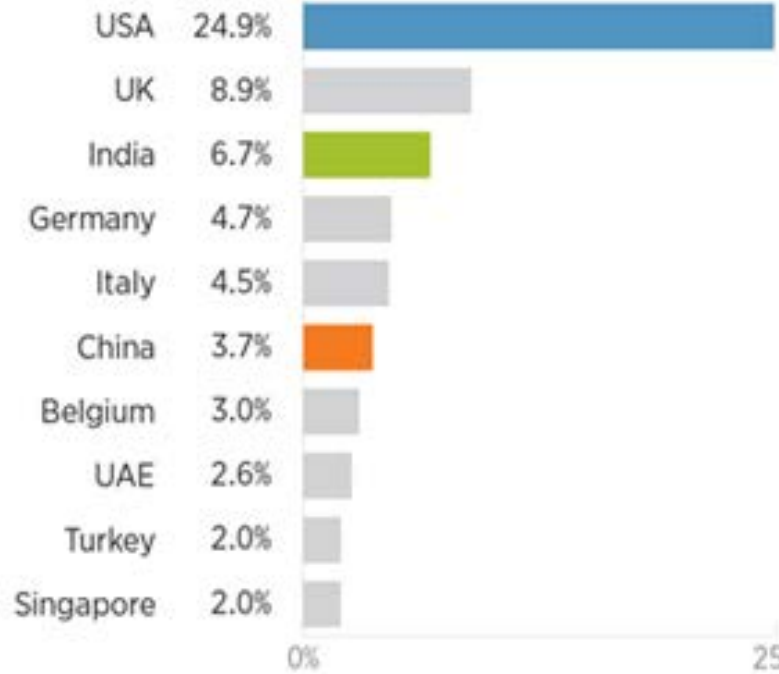
CHART 1

## Top Nations for Sri Lankan Imports and Exports

SHARE OF TOTAL SRI LANKAN IMPORTS



SHARE OF TOTAL SRI LANKAN EXPORTS



**SOURCE:** World Integrated Trade Solution, "Sri Lanka Exports, Imports and Trade Balance by Country 2017," <https://wits.worldbank.org/CountryProfile/en/Country/LKA/Year/LTST/TradeFlow/EXPIMP/Partner/by-country#> (accessed January 19, 2019).

BG3393 heritage.org

Sri Lanka's trade with China has been growing faster than its trade with the rest of the world over the last 5 years

# Sri Lanka is a Gateway to International Markets



## Bilateral trade with China

Sri Lanka's trade with China has been growing faster than its trade with the rest of the world over the last 5 years and China has emerged as:

- Sri Lanka's 2<sup>nd</sup> largest trading partner
- 2<sup>nd</sup> largest source of imports after India
- 6<sup>th</sup> largest export market after USA, UK, India, Germany, Italy.





# Titanium Sands – Mannar Island Project

- Mannar Island is approximately 100km North of Iluka's Puttalam Quarry mineral sands project.
- The Titanium Sands project encompasses almost 204km<sup>2</sup> / 93% (approx.) of Mannar Island in Sri Lanka's North West.
- Titanium Sands has a high grade surface exposed mineral resource estimate of 90Mt\* with 68.7% in the Indicated category.
- Recent RC Aircore drilling has identified major resource potential at depth beneath the surface resource that could if realised sustain a 50+ year dredge mining operation.
- The Mannar Island deposit has significant exploration potential within its current tenements  
(<https://www.asx.com.au/asxpdf/20200128/pdf/44dxdjvpy22gj.pdf>)
- The scoping study currently underway is examining a long life dredge mining operation with areas of supplementary dry mining.
- Off Take Partner discussions will continue throughout the first half of 2020.
- The increasing resource and scale of the Mannar island project is continuing to build shareholder value.



Mannar Project has the potential for an extended mine life.



The Mannar  
Island  
project has  
significant  
potential for  
an extended  
mine life.





Res Class	Domain	Volume (Mm³)	Tonnes (M)	THM %	Silt %	Oversize %	Ilm %	Leu %	Rut %	Zir %
Indicated	1	20.36	35.83	4.23	0.74	3.99	1.94	0.34	0.10	0.09
	2	14.97	26.05	8.03	0.75	20.53	3.88	0.72	0.11	0.15
	Sub Total	35.33	61.88	5.83	0.74	10.95	2.76	0.50	0.11	0.12
Inferred	1	1.06	1.87	3.85	0.57	2.67	1.69	0.31	0.10	0.09
	2	8.10	14.10	7.05	1.20	18.63	2.80	0.53	0.10	0.12
	3	1.23	2.15	3.93	0.43	0.72	1.80	0.38	0.11	0.09
	5	3.16	5.54	12.41	2.16	6.95	6.23	0.88	0.28	0.29
	6	2.57	4.50	11.12	3.13	10.80	5.76	0.84	0.14	0.21
	Sub Total	16.13	28.15	8.30	1.59	12.65	3.80	0.62	0.14	0.16
	Grand Total	51.45	90.03	6.60	1.01	11.48	3.08	0.54	0.12	0.13

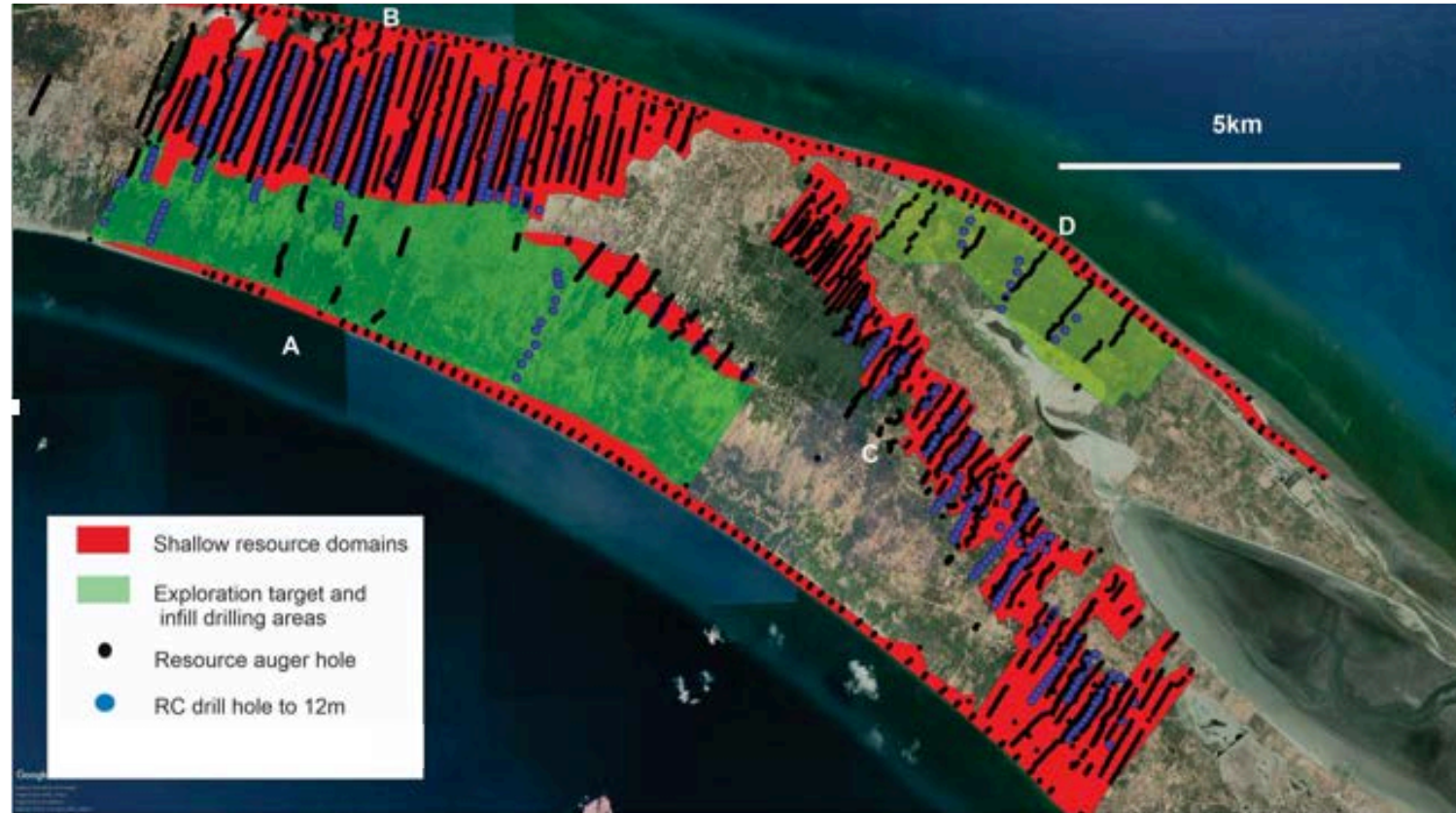
Mineral Resource estimations for the Mannar Domains with a 2% THM cut-off.

# Resource

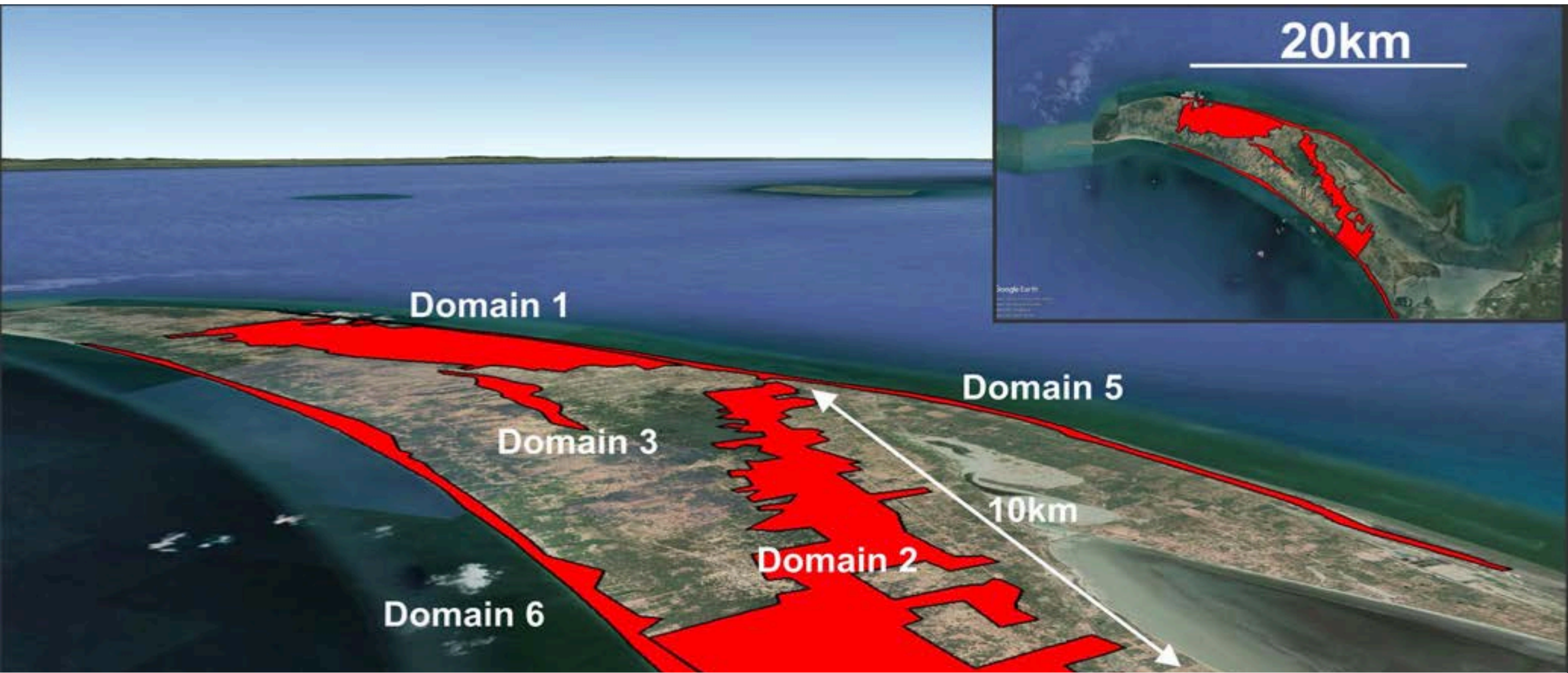
- Royalty rate in Sri Lanka for industrial minerals is 4% if not exported and 5% when exported.
- Confirmed **JORC Resource of 90.03MT\* at 6.6%THM** with **61.88Mt in the Indicated category.**
- The resource drilling has defined an extensive area of heavy mineral sands up to 2.5km wide and 15km long.



PROJECT  
DRILLING  
Clear strategy  
resulted in  
significant  
resource  
upgrade  
throughout  
2019.

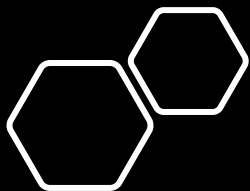


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Outline of mineral resource zones defined in 2019





Mannar Island  
resource has  
increased 774%  
since December  
2018

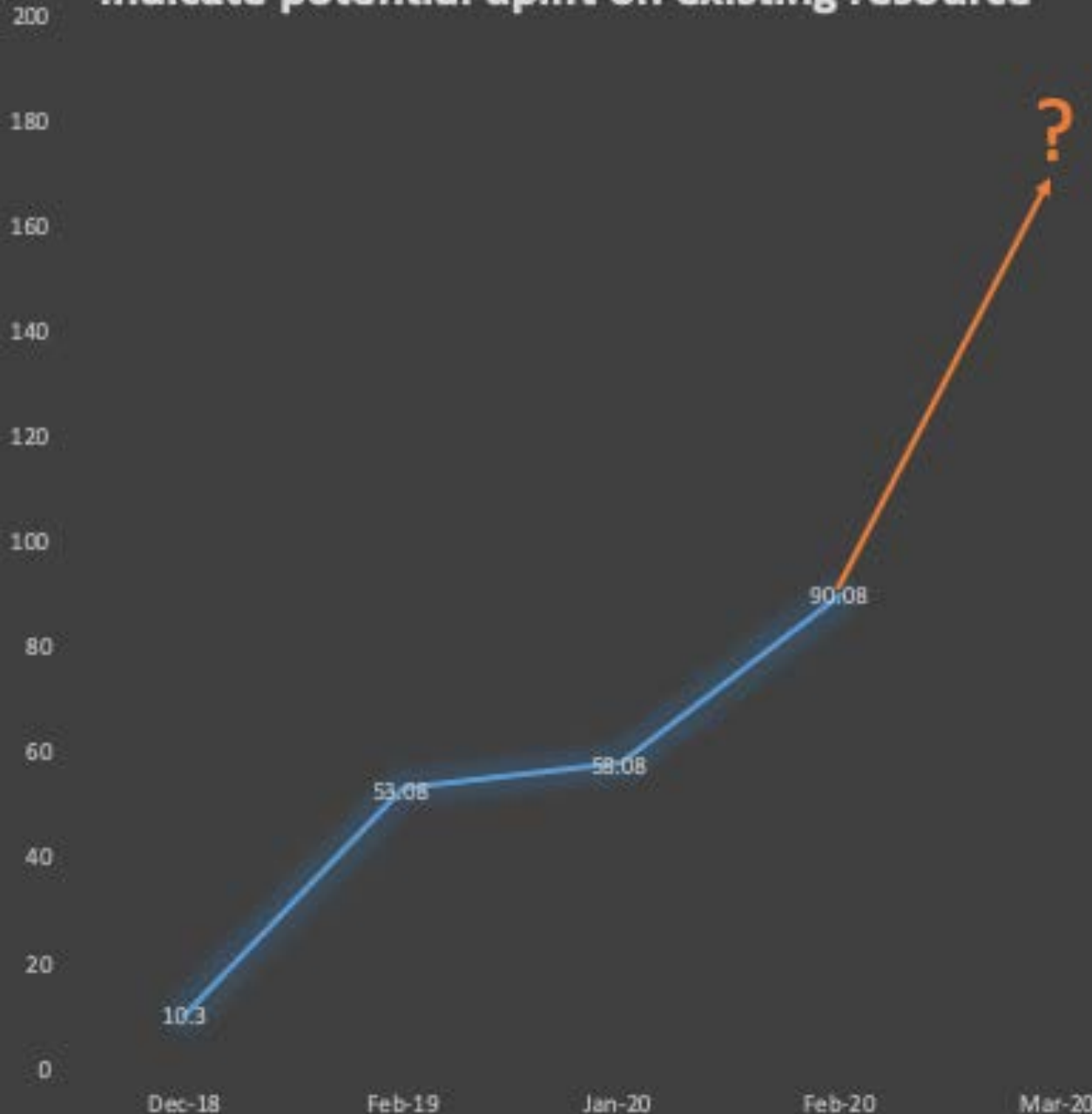
(Including acquisition target).





## Assay Results

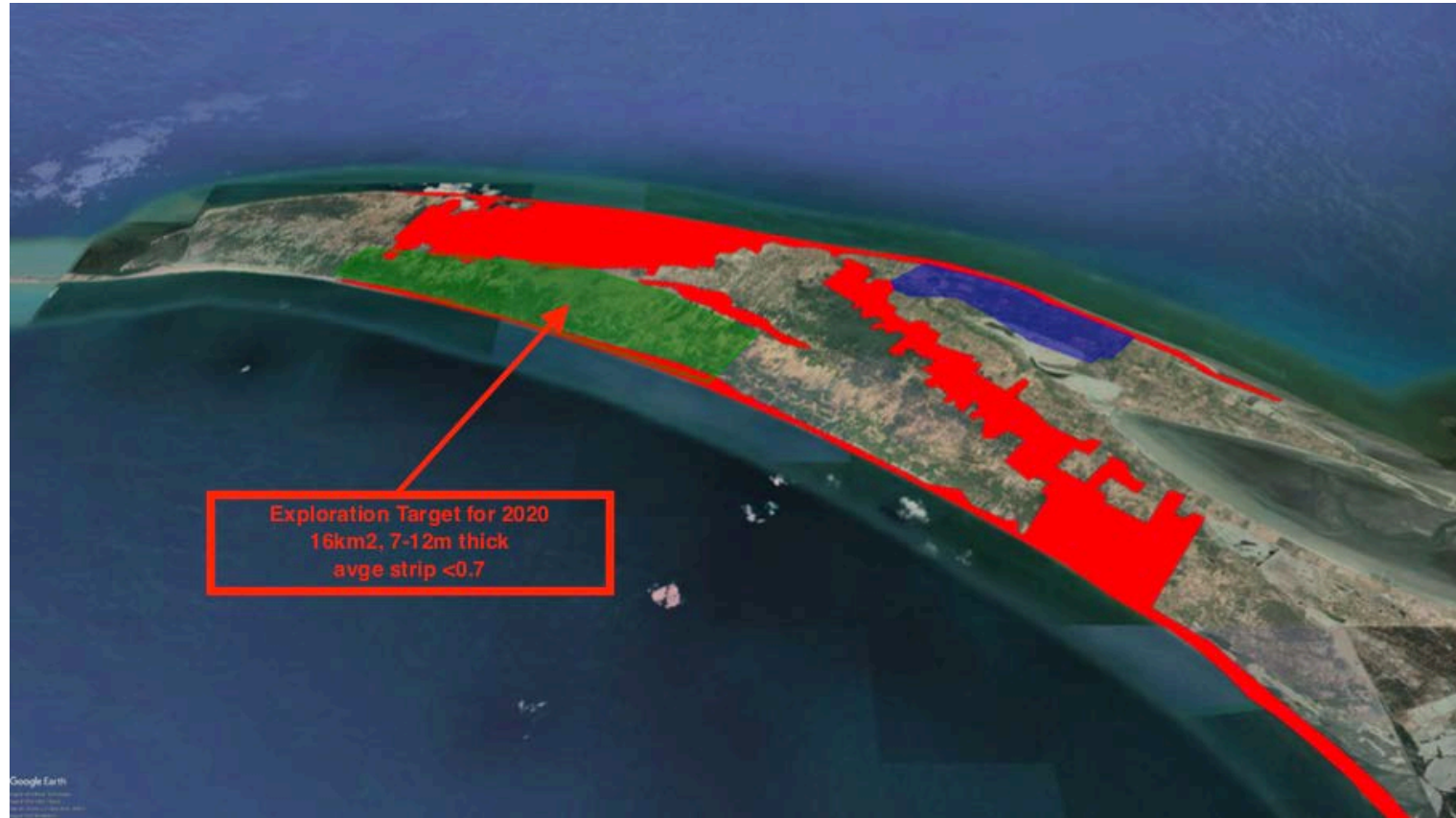
indicate potential uplift on existing resource



RC Aircore depth drilling underneath existing resource indicates widespread heavy mineral concentration down to at least 12m below surface. The depth extension represents an exploration target which based on assay results received\* **could grow the project multiple times.**

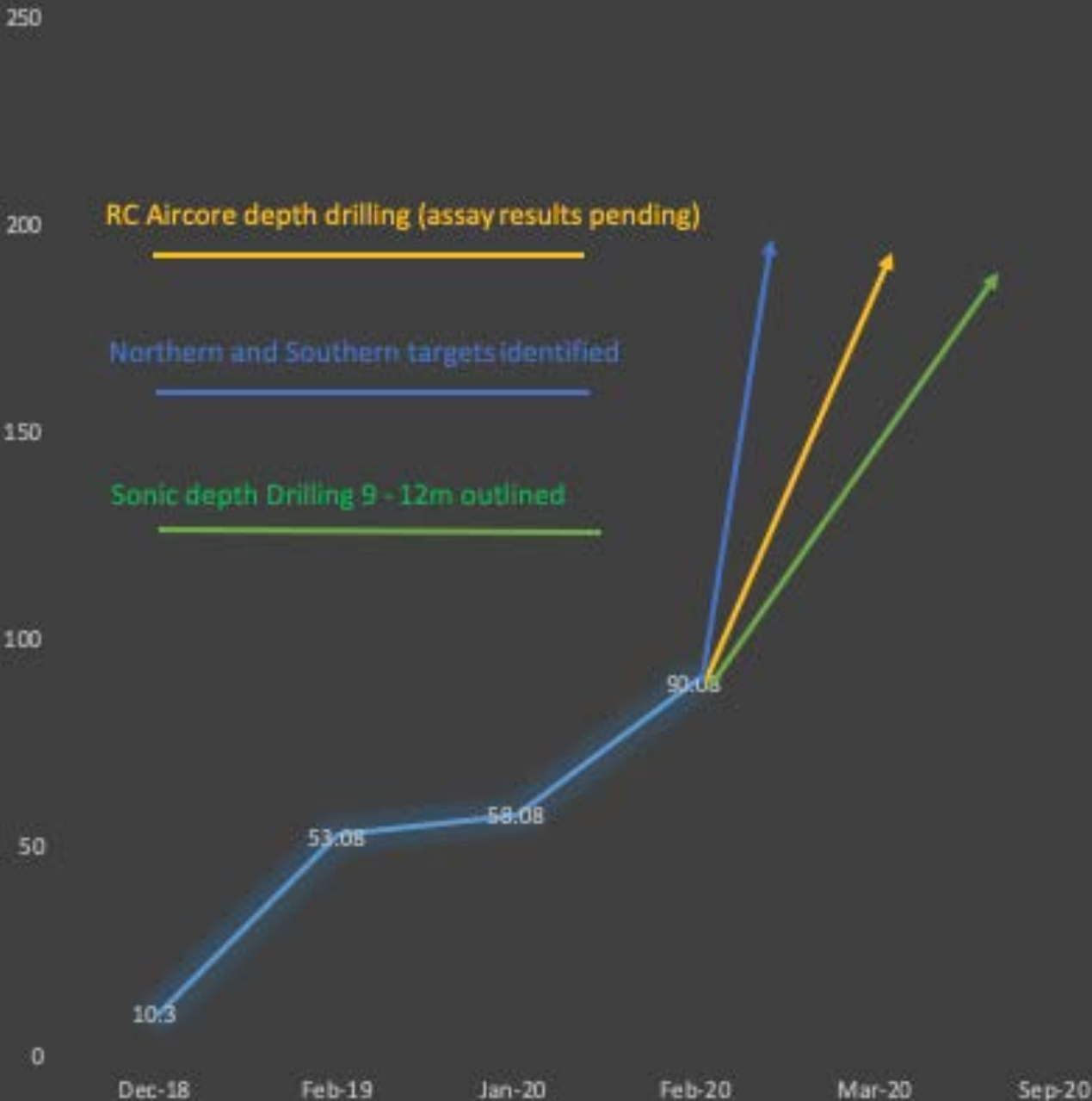
\* <https://www.asx.com.au/asxpdf/20200205/pdf/44dv0t2q7xdty0.pdf>

Further exploration target adjacent to existing mineral resource shows great potential for increased HMS deposits.



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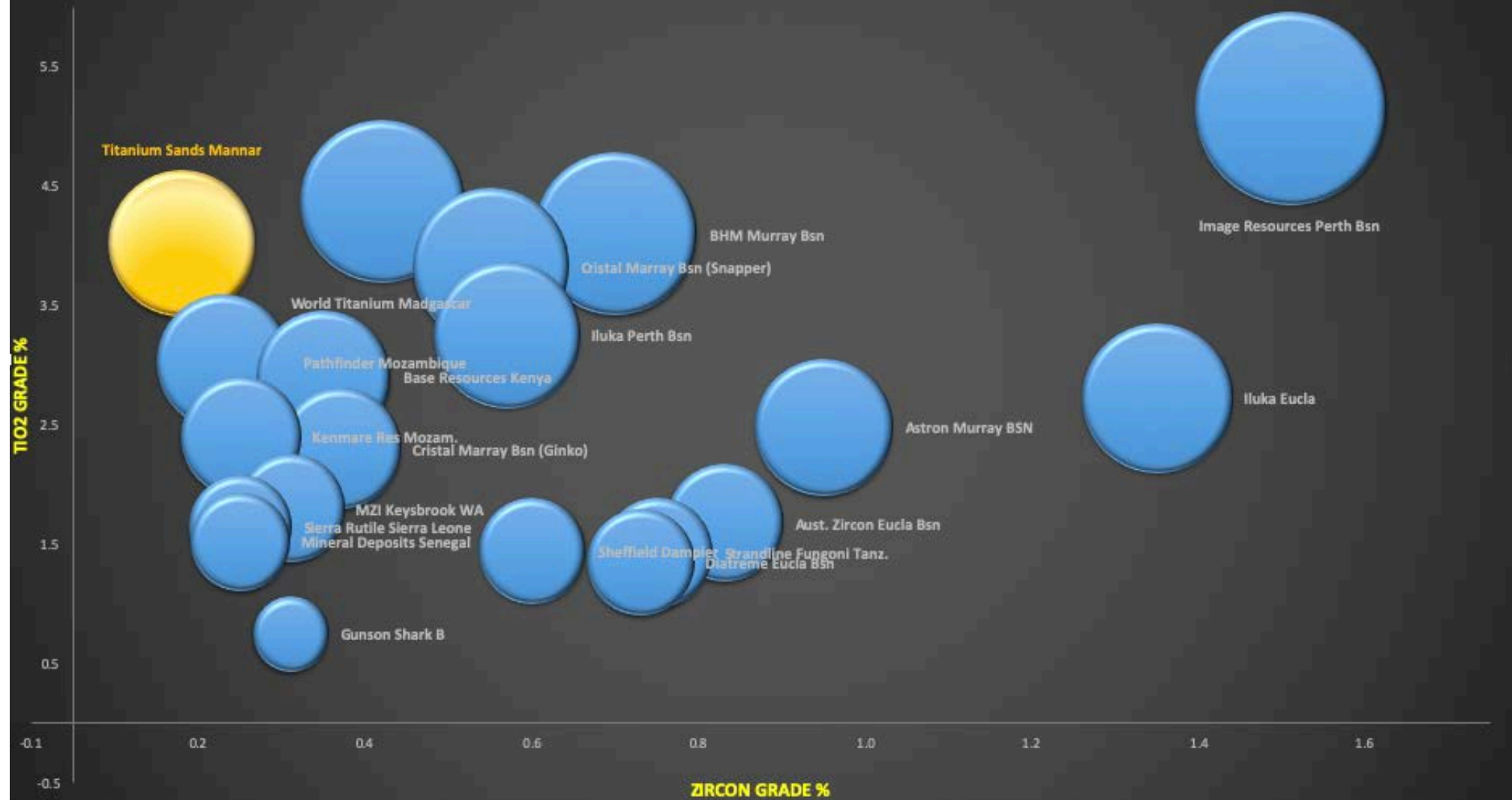
## TSL Exploration Targets



Mannar Island project  
poised to expand to  
world class deposit.



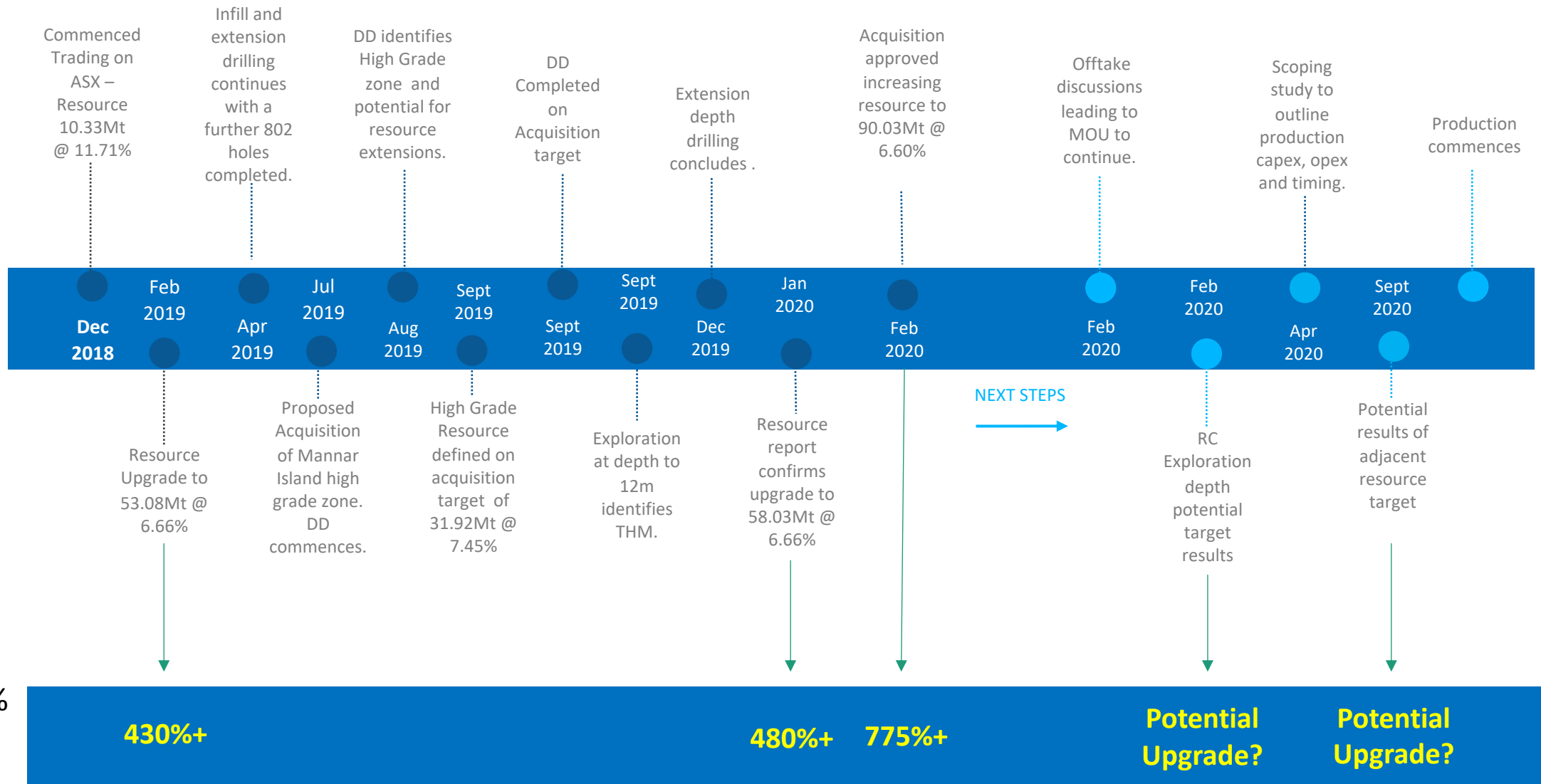
## HIGH GRADE MINERAL SANDS PROJECTS GLOBALLY



Note:

1. Bubble size represents reported VHM% for each project.
2. Only projects with VHM% greater than 1% shown.
3. Data compiled by TSL from public sources with assistance from CPS Capital analysts.

# MILESTONES



Resource %  
Increase  
(Since Dec 18)



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## Strong Team – Aligned vision

- Experienced Board and Management
- Track record of delivering outstanding exploration and expansion results
- Quality outsourced hands on consultants at Mannar Island
- Full time on site Geo throughout exploration
- Analysis and lab results provided by world renowned South African Laboratory.
- The board has extensive mining, law and capital market experience.



# HEAVY MINERAL PROJECT – SRI LANKA MEETS ALL THE CRITERIA

## Primed for Rapid Development



### High Grades

- Grades of high quality ilmenite amongst the highest in the world for a substantial deposit.
- Rutile and zircon minor but valuable components of the product suite.



### Simple Operation

- Estimated low cost expansion drilling given surface mineralization.
- Very low slimes content (1-2%) will assist processing.



### Stable Location

- Mining friendly jurisdiction.
- Politically stable economy.
- Established railway, port, road and power infrastructure .



### Strong Demand Fundamentals

- Discussing demand with a number of off take partners



# PROJECT HIGHLIGHTS

## High Grade JORC Resource

- Combined JORC indicated/inferred resource of 90.03Mt\* @ 6.60% THM from low cost drilling program.

## Clear strategy to further upgrade resource

- RC Air Core drilling target results pending. Based on Assay results as announced, total deposit anticipated to grow multiple times.

## Ongoing exploration potential

- Potential southern and northern zones identified, adjacent to existing resource as well as sonic drilling potential below RC zones.

## Scoping Study Underway

- Road to production to be highlighted in scoping study, paving way for low cost dredge mining production on Mannar Island.

## Attractive Mining Jurisdiction and offtake partners

- Sri Lanka forms part of China's 'One Belt, One Road' trade route.
- Discussions ongoing and to continue with a number of end users and partners from around the world.

\* On completion of BAL acquisition.



# CONTACTS



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LTD



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