



ASX RELEASE

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ASX: TSL

SCOPING STUDY MANNAR HEAVY MINERAL PROJECT

- Economically robust dredge mining project identified on 8km by 1km high grade zone.
- The initial project is focused on a small area of the total project mineral resource estimate identified to date.
- The initial scoping study has highlighted an NPV_{10%} of A\$545 million (EBITDA, 10% discount rate) based on a Stage one 4 Mtpa dredging operation scenario over 20 years.
- Project provides a Stage one IRR of 52%.
- Potential for capital pay back within 2 years.
- Revenue to operating cost ratio of 2.75 is highly competitive with other ilmenite feedstock producers globally.
- The high grade zone of 82 million tonnes at 6.03% Total Heavy Minerals (at a 3% THM lower cut off) is an ideal stage one zone for the project with further areas to be considered from within the total current project mineral resource estimate of 187 million tonnes at 5.3% THM (3% lower cut off) or 318 million tonnes at 4.17% THM (2% lower cut off)¹.
- The resources are exposed at surface with no barren overburden.
- CAPEX estimated at A\$122 million .
- Second and possibly third dredge expansion opportunities exist over and above the first stage 4Mtpa project and indicate further studies into expanded processing capacities are clearly warranted.
- The project mineral resources remain partially open at depth and laterally.
- As the area of operation moves year by year rehabilitation will progressively develop plantation agriculture and natural vegetation protection zones that will be owned and operated by local communities providing substantial and sustainable socio-economic benefits in addition to the those directly associated with the operation.

Titanium Sands, Managing Director, Dr James Searle commented:
“The scoping study based on an initial project scenario of 4 million tonnes per annum mining rate over 20 years has indicated an economically robust project which gives TSL the confidence to examine in more definitive studies 8Mt and even 12Mt per annum production rates over 20+ years of project life.”

CAUTIONARY STATEMENTS ON THE SCOPING STUDY

The Scoping Study referred to in this announcement is a technical and economic investigation of the viability of the Mannar Island heavy Mineral Sand Project. Under the JORC Code (2012) Clause 38, a scoping study is referred to as “an order of magnitude technical and economic study”. It is based on low accuracy technical and economic assessments, (+/- 35% accuracy) and is insufficient to support estimation of Ore Reserves or to provide assurance of an economic development case at this stage, or to provide certainty that the conclusions of the Study will be realised. Notwithstanding many components of this study, such as plant design, capital cost, processing operating cost may be more accurate than +/- 35%. The Production Target referred to in this presentation is based on JORC Resources which are approximately 74% Indicated and 26% Inferred. There is a low level of geological confidence associated with inferred mineral resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised. The stated production target is based on the company’s current expectations of future results or events and should not be solely relied upon by investors when making investment decisions. Further evaluation work and appropriate studies are required to establish sufficient confidence that this target will be met.

The mine plan is for a dredge operation that progresses along a continuous zone 10km long and up to 1.5km wide. The mineral resources within this zone do not contain areas of significant internal waste and the mining envelope will be contained within the mineral resources envelope consequently there will be no dilution from barren material inside or outside the resource envelope. There is no clear grade trend along the zone to be mined and consequently the anticipated feed grade will approximate the grade of the modelled mineral resources.

To achieve the outcomes indicated in this study capital expenditure in the order of A\$122 million is likely to be required comprising approximately \$66.54m in pre-production capital expenditure and approximately \$55.46m in working capital and financing charges. Investors should note that there is no certainty that TSL will be able to raise funding when needed. It is also possible funding may only be available on terms that may be dilutive to or otherwise effect the value of TSL’s shares. It is also possible the TSL could pursue other value realisation strategies such as a joint venture of the Mannar Project or other options yet to be identified. If it does, this could materially reduce the Company’s proportionate ownership of the Project. Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the Scoping Study. At this time there are no capital funding arrangements in place.

OVERVIEW

The Mannar Island Heavy Mineral Sands Project in Northwest Sri Lanka is 100% controlled by Titanium Sands Ltd (Figures 1 and 2). The project is an ilmenite feedstock project with minor credits from other mineral components. The high quality ilmenite product is expected to find a ready market with titanium slag and sulphate route pigment producers in the Middle East, Korea, India, China and elsewhere.

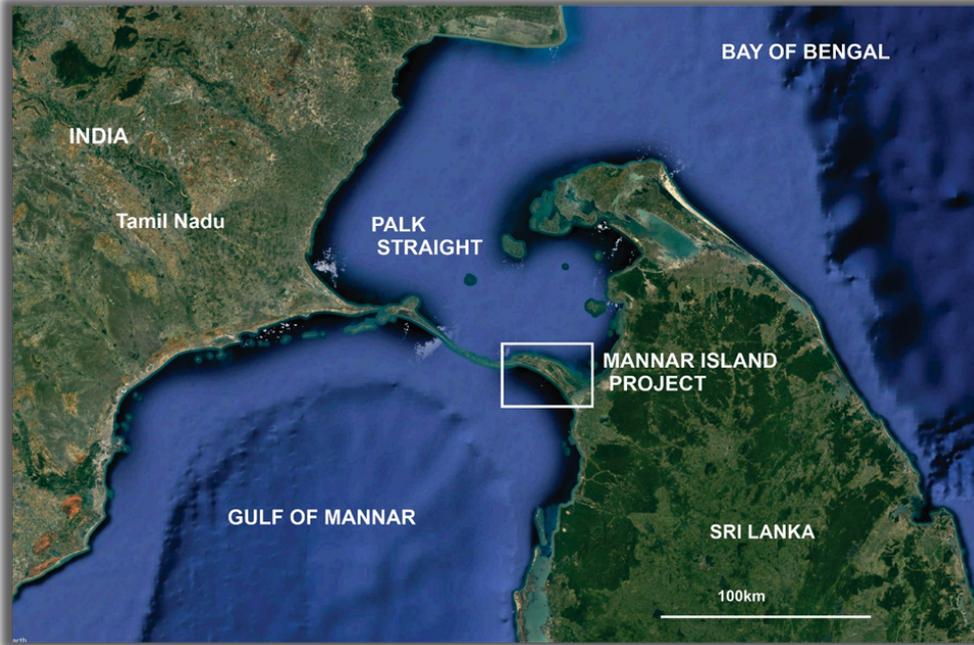


Figure 1 Location of the Mannar Island Heavy Mineral Sand Project, northwest Sri Lanka.

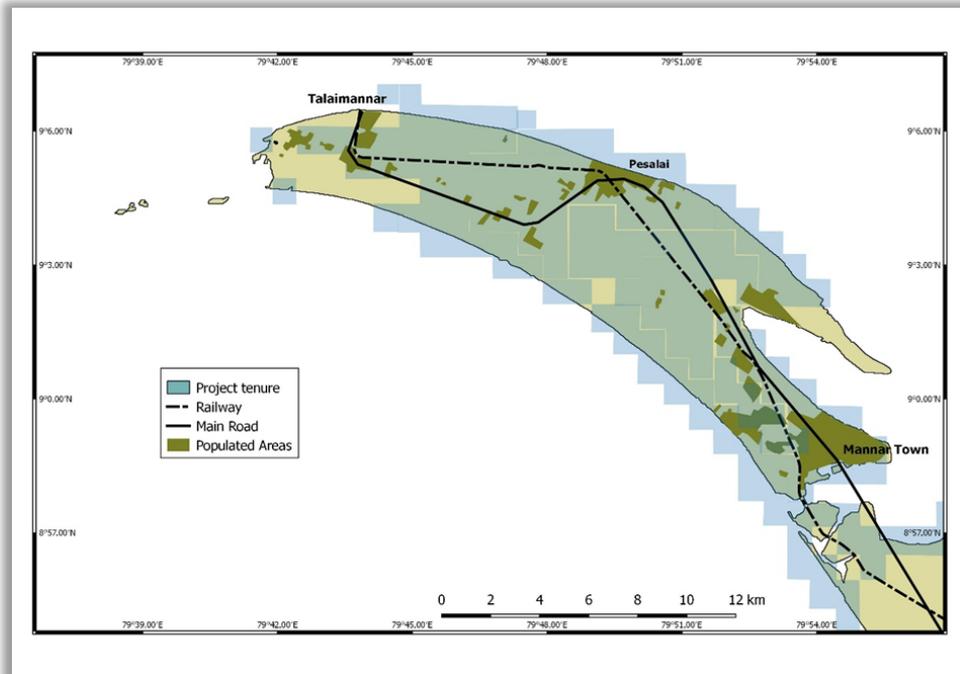


Figure 2 Mannar Island Project Tenure.

Titanium Sands Ltd completed the initial acquisition of the Mannar Island Project in December 2018 and made a further acquisition of adjacent tenure in March 2020. The scoping study has sought to demonstrate the technical and commercial viability of the project..

The scoping study project scenario was selected on a project format with a modest capital hurdle but of sufficient scale and project life that its products would be attractive to potential offtake partners. Consequently the study was based on a single dredge continuously mining a zone measuring 10km by 1km wide zone at rate of 4 million tonnes per annum over a period of 20 years. This zone contains 82million tonnes at 6.03% THM on a lower grade cut-off grade of 3% (Table 1) out of the total current mineral resource estimate of 187 million tonnes at 5.36%THM on a 3% THM lower cut off (Table 2). The mineral resources subject to this scoping study scenario therefore represent 44% of the total mineral resource estimates for the project at lower cut off of 3%. Material parameters and modifying factors used in the scoping study are contained in Table 1.

The scoping study has indicated that this project scenario is economically robust and consequently subsequent more definitive studies could also examine the feasibility of second or even third dredges and expanded processing capacities to potentially exploit capital and operational efficiencies.

Development of the project and its schedule for development are dependent on a number of factors. The project needs to receive regulatory approval from Sri Lankan regulators and will include submission of an Environmental Impact Assessment, granting of a mining licenses and licenses for the transport and export of mineral products, and securing of land access . Finance for the project would need to be secured and at this time there is no certainty as to the form this financing would take or its effect on dilution of existing shareholders. Development based solely on the project scenario presented in this scoping study with one dredge mining at a rate of 4 Mtpa could commence construction in 2024 subject to regulatory approvals, financing, market conditions and other factors and be operating in 2025. If further studies indicate a second or third dredge and expanded production are viable, then development and first production would probably take longer. Alternatively further studies may indicate the optimal project configuration is for a much longer (40 year +) project life and different cut off grades.

OPERATIONAL PARAMETERS			Comments
Modelled stage 1 Mine Life	20	years	
Material mined	4,000,000	tonne	Single dredge operation scenario
Grade	6.03	%THM	Domain 2-8 MRE ASX announcement 15th March 2023 ¹
Lower cut off grade	3	%THM	Domain 2-8 MRE ASX announcement 15th March 2023 ¹
Oversize +1mm	21	%	Domain 2-8 MRE ASX announcement 15th March 2023 ¹
Slime/silt -45mic.	1.64	%	Domain 2-8 MRE ASX announcement 15th March 2023 ¹
In situ density	1.74		Domain 2-8 MRE ASX announcement 15th March 2023 ¹
Dilution factors	0	%	See pages 13 and 14
Dredge rate	600	tph	Rated performance
Dredge availability	90	%	Industry experience
Dredge sweeping	12	%	Industry experience
Screen Input	600	tph	Rated performance
WSP availability	85	%	Industry experience
MSP input of HMC	241,200	tpa	Calculated
MSP availability	95	%	Industry experience
Product transport to port	175	km	Road transport on sealed roads
Overall recovery			
Ilmenite	90.3	%	Scoping study level metallurgical testwork
Leucoxene	81.0	%	Scoping study level metallurgical testwork
Zircon	57.0	%	Scoping study level metallurgical testwork
Garnet	54.0	%	Scoping study level metallurgical testwork
Products			
Ilmenite + Leucoxene	117,100	tpa	Calculated
Rutile	2,921	tpa	Calculated
Zircon	2,970	tpa	Calculated
Garnet	16,200	tpa	Calculated
Exchange rates			
LKR to A\$	218		March 20, 2023 https://www.xe.com/currencyconverter/
US\$ to A\$	0.67		March 20, 2023 https://www.xe.com/currencyconverter/
Eur to \$A	0.62		March 20, 2023 https://www.xe.com/currencyconverter/
Revenue FOB basis			
Ilmenite	635	A\$/t	Benchmarked against equivalent product confidential market intel March 2023.
Rutile	3,380	A\$/t	Benchmarked against equivalent product confidential market intel March 2023.
Zircon	3,207	A\$/t	Benchmarked against equivalent product confidential market intel March 2023.
Garnet	433	A\$/t	Benchmarked against equivalent product confidential market intel March 2023.
Royalties			
Vendor Royalty	5	%	Gross revenue
Government Royalty	9	%	Gross revenue Published rates
Government Export levies			
Ilmenite	13.13	A\$/t	Published rates
Rutile	17.60	A\$/t	Published rates
Zircon	4.38	A\$/t	Published rates
Garnet	17.33	A\$/t	Published rates

Table 1 Material parameters and modifying factors for this scoping study.

SUMMARY OF SCOPING STUDY

Geological Model

Mannar Island is a Holocene sand island formed over the last 8,000 to 6,000 years after seas ceased rising rapidly from their Pleistocene low stand of 20,000 years before present. Mannar Island has formed as a sand island prograding westward across Palk Strait over a Pleistocene/Holocene unconformity surface of Pleistocene to Miocene limestones and terrestrial clays to form a sequence of nearshore sands, beach, and dune sands 12 to 14m thick (Figure 4). Accumulation of Holocene sediment into the accreting axis of Mannar Island has been driven by alternating monsoon driven longshore and nearshore transport.

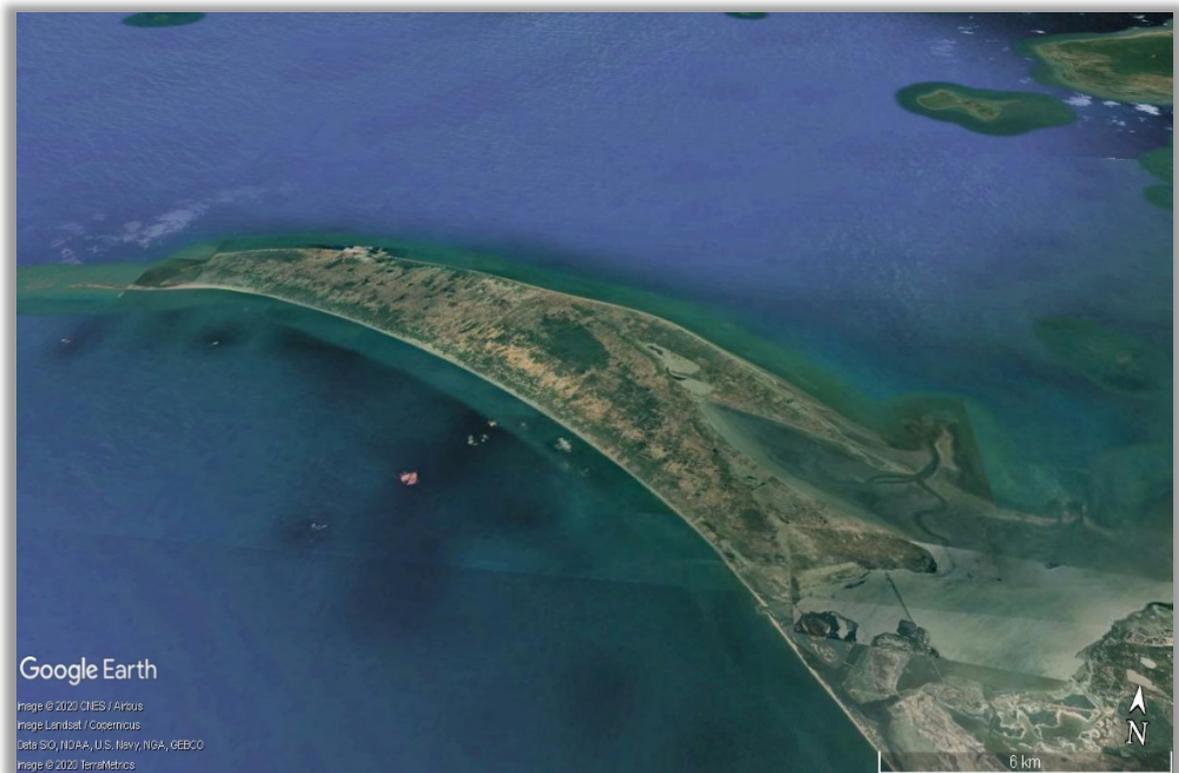


Figure 4 Mannar Island is a 26km long by up to 6km wide sand island that has developed in multiple stages over the last 8,000 to 6,000 years.

Over geologic time scales the rivers draining Precambrian igneous and metamorphic complexes of central Sri Lanka have transported heavy mineral bearing sands to the coast where they have been deposited in riverine outwash plains and coastal sedimentary sequences of Miocene, Pleistocene and Holocene-Modern age (Figure 5).

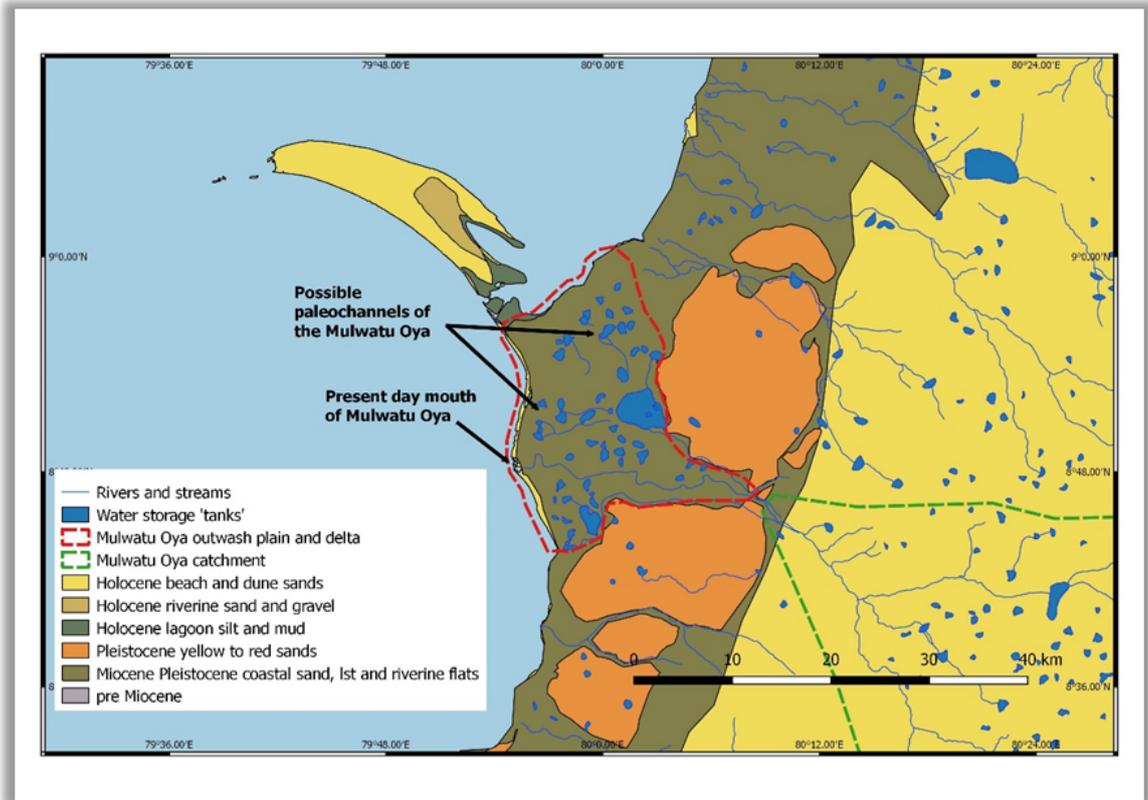


Figure 5 Mannar Island geological setting.

Multiple phases of coastal reworking and re-deposition of the older coastal deposits has tended to concentrate the heavy minerals. As the sands were transported and re-deposited lighter sediment grains were winnowed out and heavy minerals concentrated. Winnowing and concentration occurred in the shallow nearshore, along the beach and by wind deflation along the back beach areas. The balance between sediment supply and heavy mineral concentration across the shoreface from the nearshore, the beach and back beach areas tended to form extensive zones of heavy mineral concentration rather than just narrow shoreline strands. Consequently continuous zones of heavy mineral concentration up to 3km wide , 10km long and 10 to 12m thick have been formed. This exceptional continuity of heavy mineral concentration means no significant zones of barren material within the interpreted resource block model. In addition there is essentially no barren sand overburden on the heavy mineral sand resources.

Resource Base

The current mineral resource estimate for the Mannar Island Heavy Mineral Sand Project was reported in full in the **ASX Announcement of the 15th of March 2023¹** and is shown in Tables 2-5 below.

The mineral resource estimate was based on drilling data down to the maximum depth of reliable sampling generally 8 to 10m below surface (Figures 7-12). However all holes were logged to the maximum 12m depth and concentrations of heavy minerals were observed in nearly all holes to their termination depth (Figure 8).

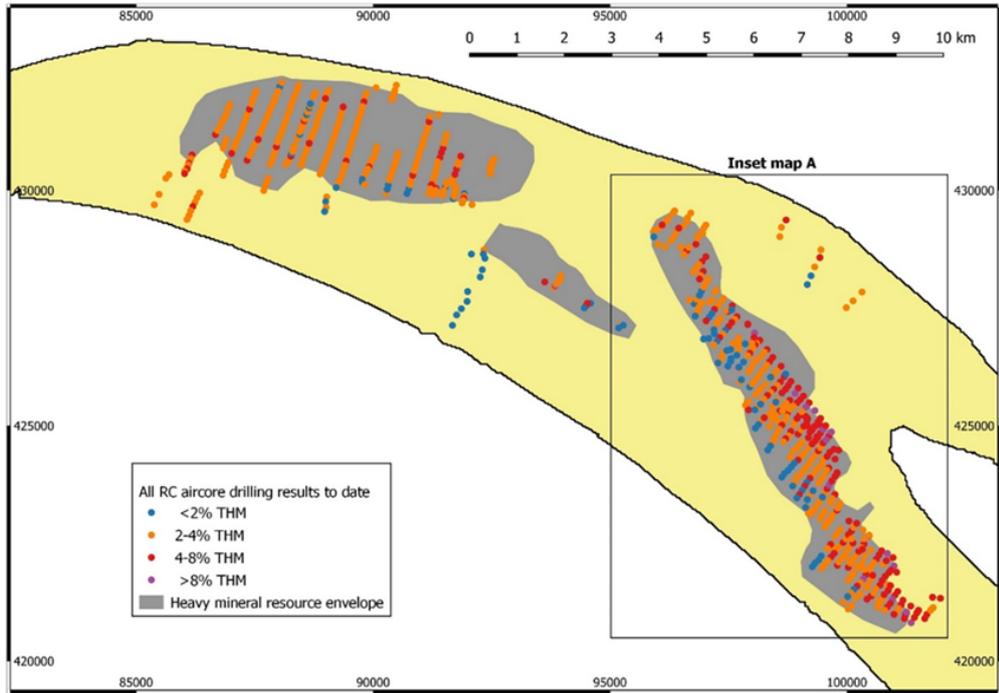


Figure 6 All RC aircore drilling results for the Mannar Heavy Minerals Project. Inset map A shows the Domain 2 and 8 zones which forms the basis for this scoping study scenario.

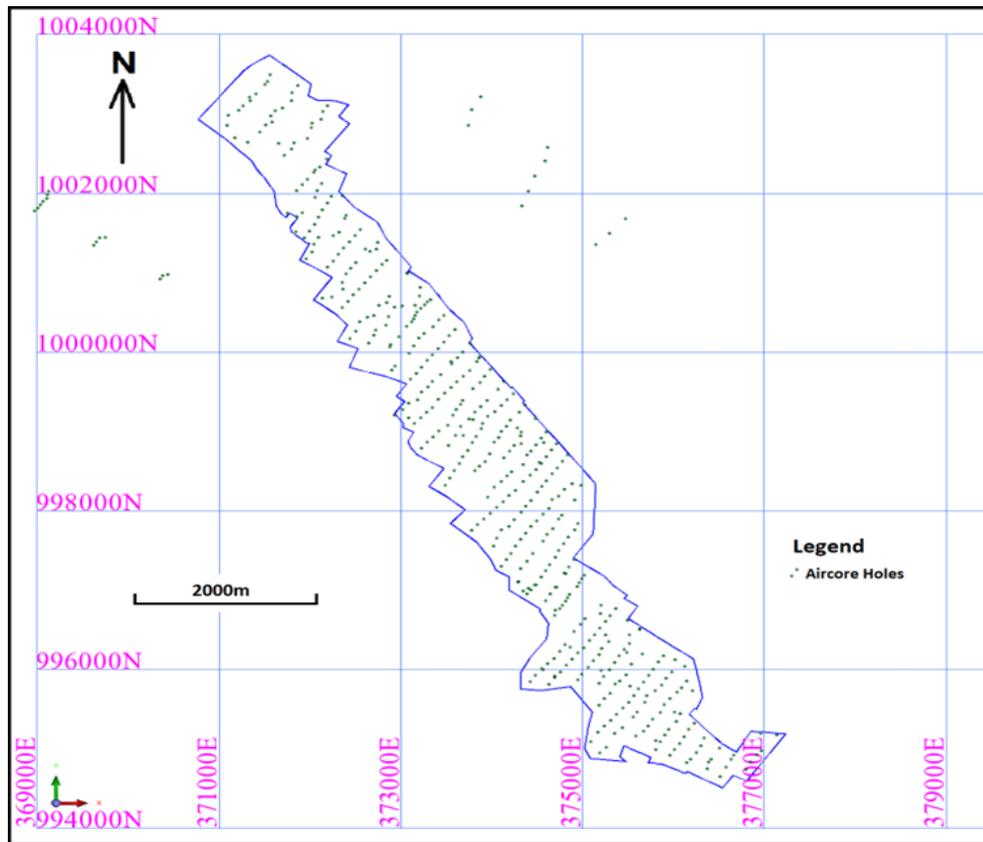


Figure 7 Domain 2 and 8 all RC aircore drilling to date.

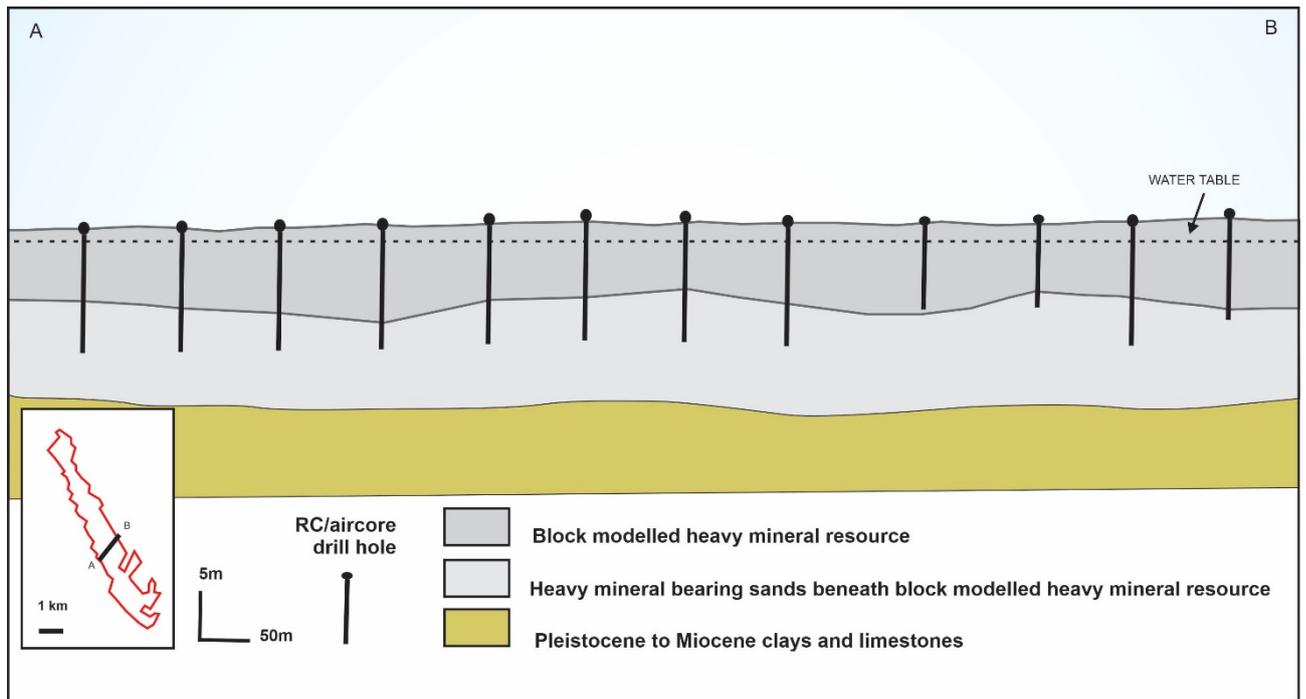


Figure 8 Schematic cross section of the Domains 2 and 8 grade block model and underlying stratigraphy.

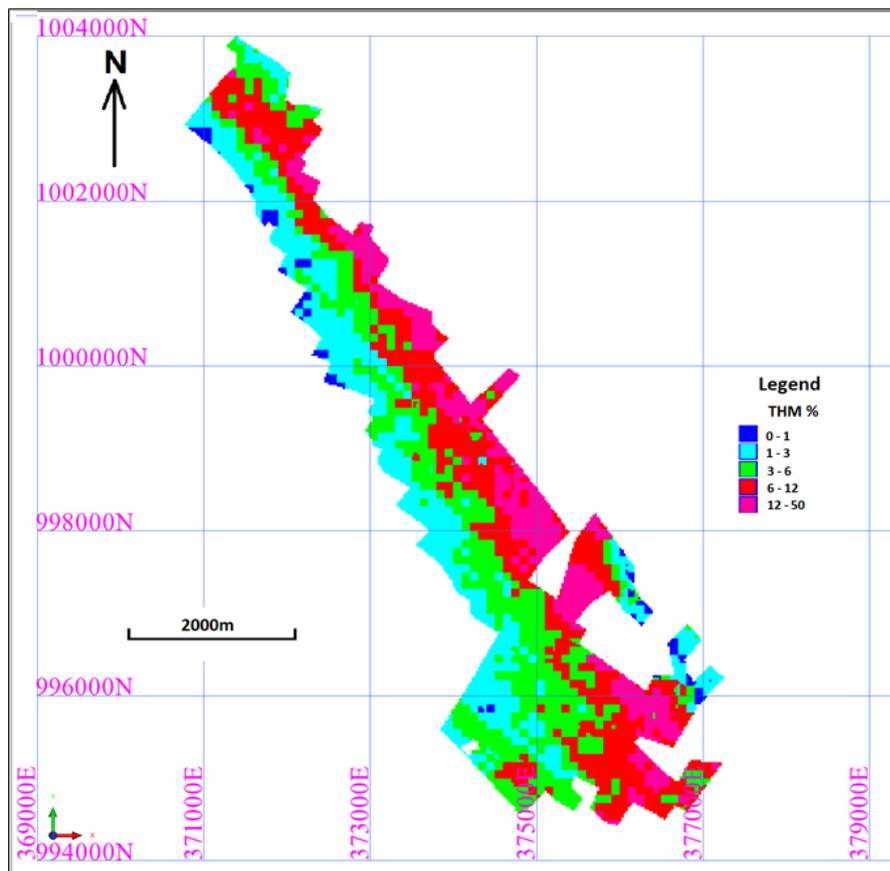


Figure 9 Domain 2 grade blocks showing excellent continuity trends along the mineralisation zone.

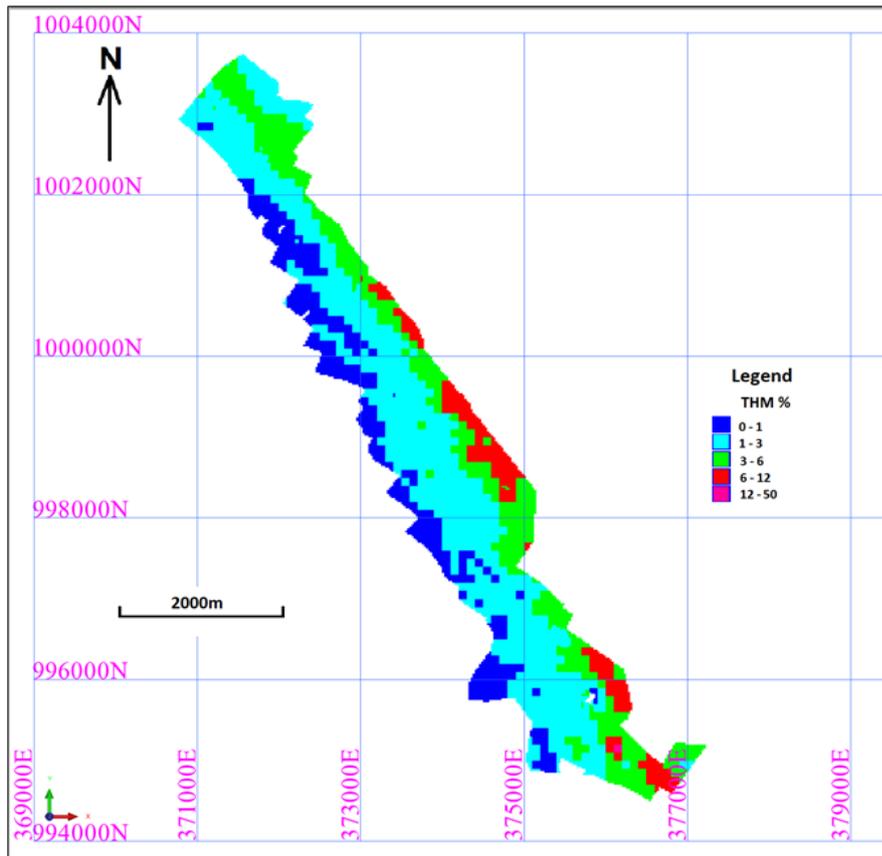


Figure 10 Similarly Domain 8 grade blocks also showing excellent continuity trends along the mineralisation zone.

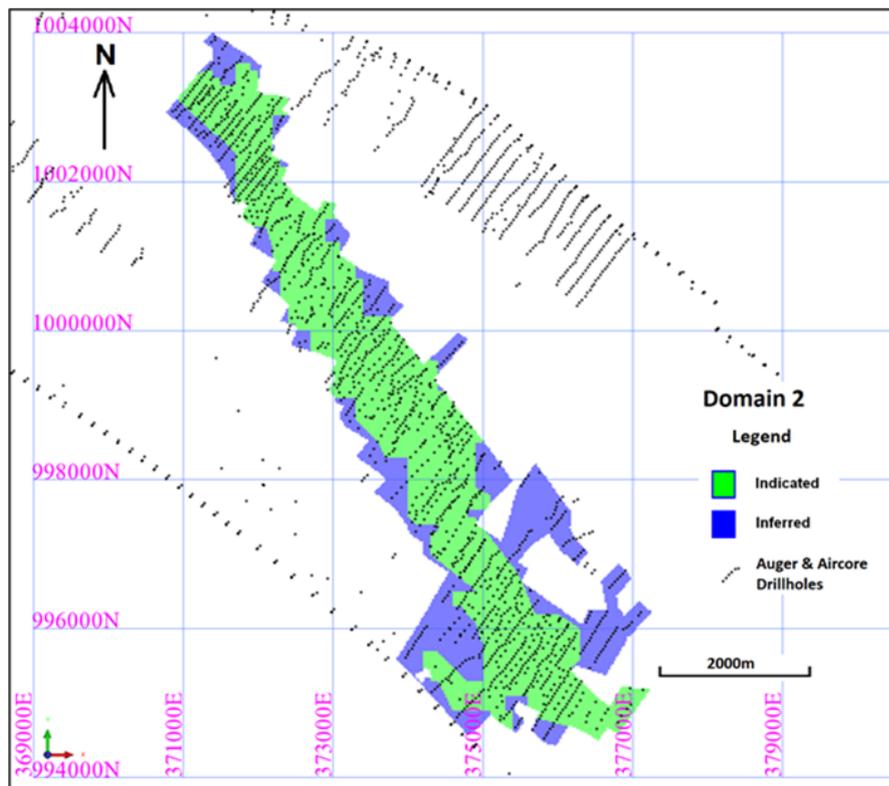


Figure 11 Domain 2 continuity of indicated mineralisation along the mineralization zone.

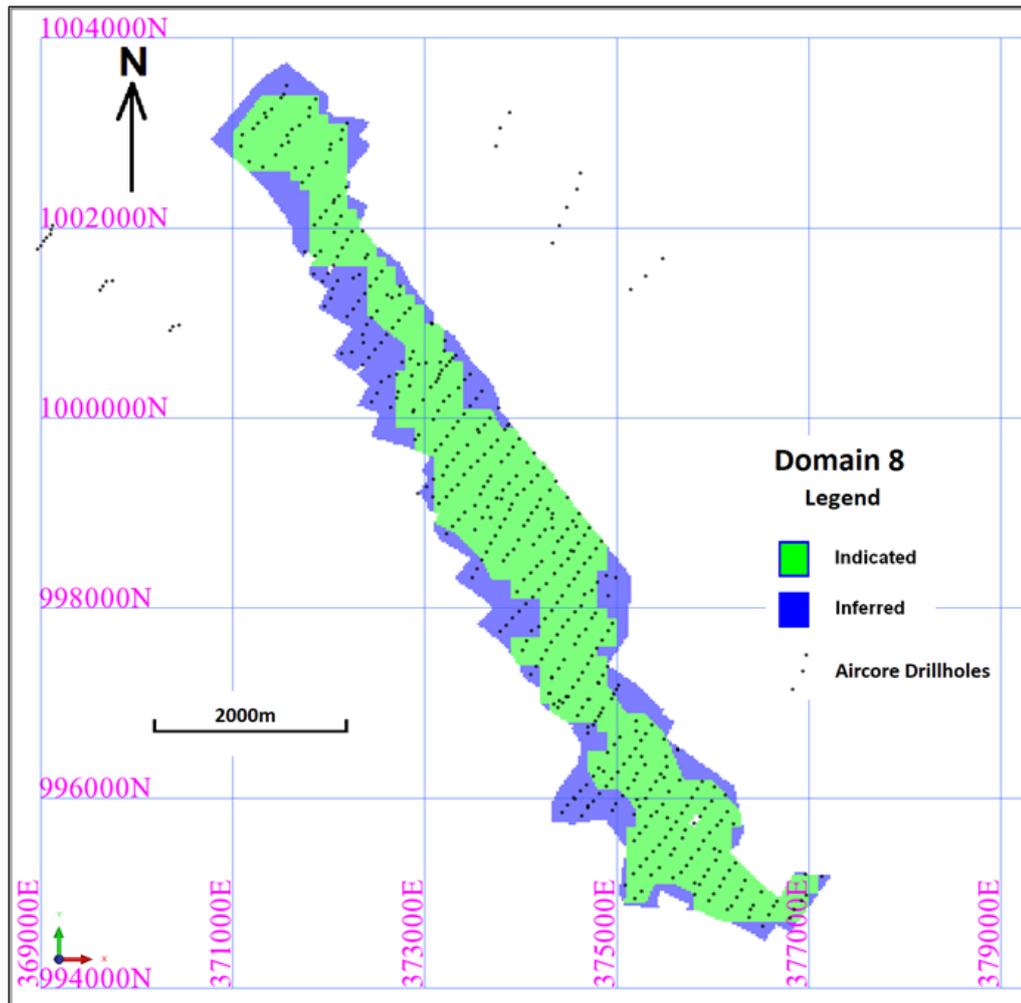


Figure 12 Domain 8 continuity of indicated mineralisation along the mineralization zone.

Resource Category	Volume (Mm ³)	Tonnes (M)	Thm %	Silt %	Ovz %	Ilm %	Leu %	Rut %	Zir %	Gar %
Indicated	35.0	61.1	5.78	1.62	20.70	2.64	0.48	0.09	0.12	0.73
Inferred	12.0	21.0	6.78	1.71	22.59	3.27	0.53	0.10	0.14	0.82
Total	47.0	82.0	6.03	1.64	21.18	2.80	0.49	0.09	0.13	0.75

Table 2 Domain 2 and 8 mineral resource estimate at 3% THM lower cut off that form the basis of the scoping study scenario (extracted from the full JORC 2012 compliant report contained in ASX Announcement of the 15th of March 2023¹)

Resource Category	Volume (Mm ³)	Tonnes (M)	Thm %	Silt %	Ovz %	Ilm %	Leu %	Rut %	Zir %	Gar %
Indicated	50.7	88.7	5.45	1.39	15.54	2.48	0.44	0.10	0.11	0.58
Inferred	56.2	98.4	5.27	1.26	15.50	2.48	0.40	0.11	0.13	0.41
Total	106.9	187.0	5.36	1.32	15.52	2.48	0.42	0.10	0.12	0.49

Table 3 Project total mineral resource estimate all Domains at 3% THM lower cut off that form (extracted from the full JORC 2012 compliant report contained in ASX Announcement of the 15th of March 2023¹)

Resource Category	Volume (Mm ³)	Tonnes (M)	Thm %	Silt %	Ovz %	Ilm %	Leu %	Rut %	Zir %	Gar %
Indicated	62.4	109.1	4.32	2.04	23.05	1.92	0.35	0.07	0.09	0.53
Inferred	20.9	36.5	4.93	2.13	24.97	2.31	0.39	0.08	0.11	0.58
Total	83.3	145.6	4.48	2.07	23.53	2.02	0.36	0.07	0.10	0.54

Table 4 Domain 2 and 8 mineral resource estimate at 2% THM lower cut off that form the basis of the scoping study scenario (extracted from the full JORC 2012 compliant report contained in ASX Announcement of the 15th of March 2023¹)

Resource Category	Volume (Mm ³)	Tonnes (M)	Thm %	Silt %	Ovz %	Ilm %	Leu %	Rut %	Zir %	Gar %
Indicated	83.3	145.7	4.28	1.76	18.41	1.90	0.35	0.08	0.09	0.44
Inferred	98.5	172.3	4.07	1.31	16.37	1.87	0.31	0.08	0.10	0.30
Total	181.7	318.0	4.17	1.52	17.30	1.88	0.33	0.08	0.10	0.37

Table 5 Project total mineral resource estimate all Domains at 2% THM lower cut off that form (extracted from the full JORC 2012 compliant report contained in ASX Announcement of the 15th of March 2023¹)

Production Schedule

Production Schedule

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6 to 20	Total
Indicated (74%)							
HMS Tonnes	2,960,000	2,960,000	2,960,000	2,960,000	2,960,000	44,400,000	59,200,000
Ilm A\$/t	\$ 635	\$ 635	\$ 635	\$ 635	\$ 635	\$ 635	\$ 635
Total Ilm t	86,587	86,587	86,587	86,587	86,587	1,298,811	1,731,748
Rut A\$/t	\$ 3,380	\$ 3,380	\$ 3,380	\$ 3,380	\$ 3,380	\$ 3,380	\$ 3,380
Total Rut t	2,154	2,154	2,154	2,154	2,154	32,312	43,083
Zir A\$/t	\$ 3,207	\$ 3,207	\$ 3,207	\$ 3,207	\$ 3,207	\$ 3,207	\$ 3,207
Total Zir t	2,198	2,198	2,198	2,198	2,198	32,967	43,956
Gar A\$/t	\$ 433	\$ 433	\$ 433	\$ 433	\$ 433	\$ 433	\$ 433
Total Gar t	11,990	11,990	11,990	11,990	11,990	179,853	239,804
Total t	102,930	102,930	102,930	102,930	102,930	1,543,943	2,058,591
Inferred (26%)							
HMS Tonnes	1,040,000	1,040,000	1,040,000	1,040,000	1,040,000	15,600,000	20,800,000
Ilm A\$/t	\$ 635	\$ 635	\$ 635	\$ 635	\$ 635	\$ 635	\$ 635
Total Ilm t	30,423	30,423	30,423	30,423	30,423	456,339	608,452
Rut A\$/t	\$ 3,380	\$ 3,380	\$ 3,380	\$ 3,380	\$ 3,380	\$ 3,380	\$ 3,380
Total Rut t	757	757	757	757	757	11,353	15,137
Zir A\$/t	\$ 3,207	\$ 3,207	\$ 3,207	\$ 3,207	\$ 3,207	\$ 3,207	\$ 3,207
Total Zir t	772	772	772	772	772	11,583	15,444
Gar A\$/t	\$ 433	\$ 433	\$ 433	\$ 433	\$ 433	\$ 433	\$ 433
Total Gar t	4,213	4,213	4,213	4,213	4,213	63,192	84,256
Total t	36,164	36,164	36,164	36,164	36,164	542,467	723,289
Total HMS	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	60,000,000	80,000,000
HMS A\$/t Product (Avg)	723.87	723.87	723.87	723.87	723.87	723.87	723.87
HMS Production	139,094	139,094	139,094	139,094	139,094	2,086,410	2,781,880
% Indicated	74%	74%	74%	74%	74%	74%	74%
Total FCF (Pre Tax AUD'000)	\$ (62,278)	\$ 1,740	\$ 65,758	\$ 129,776	\$ 193,794	\$ 960,270	\$ 1,289,060
Cumulative CF	-4.83%	-4.70%	0.40%	10.47%	25.51%	100.00%	

Table 6 Mannar Production Schedule

The 3% lower cut off resource delivers the optimal production economics for the scoping study scenario of a 20 year dredging operation at an annual rate of 4 million tonnes per annum at an average grade of 6.03% Total Heavy Mineral. As shown in Table 1 indicated resources constitute 74% of the resources forming the basis of the scoping study scenario. While inferred resources constitute only 26% . The distribution of indicated resources wholly contained within an envelope of inferred mineralisation as shown in Figures 11 and 12 would permit annual production over the 20 year production period to be composed of 74% indicated resources and 26% inferred at the average grade indicated . The economic or technical viability of the project is not at any time dependent on inferred resources. It should however be noted that there is a low level of geological confidence associated with inferred mineral resources and there is no certainty that that resource definition work will result in further indicated mineral resources or that the production target itself will be realised.

The mineral resources for the 4Mta at an average grade of 6.03%THM production rate over 20 years are comprised of indicated resources of 74% and inferred resources of 26%, and no other inferred resources or exploration targets and as such provide a reasonable basis for the forward looking production statements in compliance with ASX Listing rule 15.16.3 regarding the basis for a forward looking production statement.

Metallurgy

Test work was undertaken by a specialist metallurgical laboratory¹¹ on composites of heavy minerals produced by heavy media separations in the analytical laboratory. The aim of the test work was to characterise the mineral products that could be produced by standard processing techniques such as gravity, magnetic and electrostatic separation processes. This test work also gave indications of mineral recoveries that could be expected for the mineral products. This work while sufficient for a scoping study cannot be regarded as optimised. The mineral species identified in magnetic separations of composite drilling samples are shown in Figure 13.

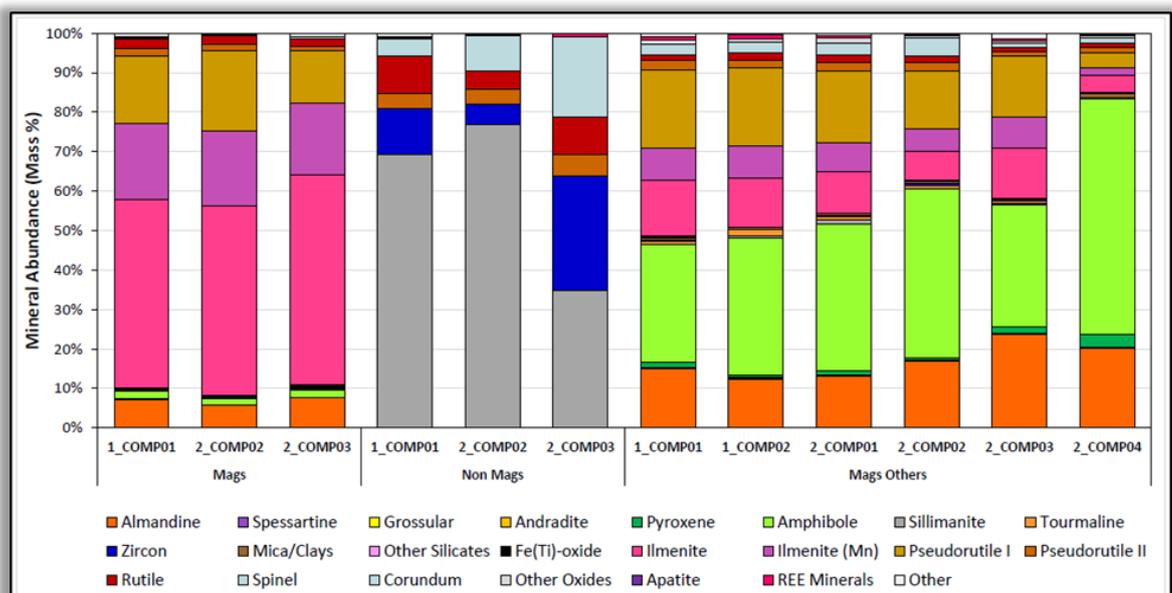


Figure 13 Valuable and gangue minerals in magnetic separations of the composite heavy mineral composite samples.

The potentially saleable products that were able to be separated during test work were:

- Ilmenite (including Hi Ti, leucoxene, and pseudorutile).
- Rutile
- Zircon
- Garnet

Mining

As shown in Figures 6-12 the Mannar island heavy mineral resources are contained in near continuous bodies from 2-3m above the water table down to around 10m below the water table. Drilling has shown there is little or no induration and the “slimes” (<45 micron) component consists mainly of quartz and carbonate silt particles and are 1-2% of the mineral resources. This makes dredge mining the most suitable option. The project concept for the scoping study is for a dredge mining down to 10m below the level of the dredge pond. The design of the dredge head has not yet been determined but is likely to be either a ‘rose cone’ design or a bucket wheel.

The dredge will feed a floating wet concentration plant (WCP). The primary concentrate would then be feed a centrally located mineral separation plant (MSP). The dredge will advance along the continuous 10km long and up to 1km wide zone (Figure 6-12) that the scoping study scenario is based on.

Limitations and assumptions on the dredge mining sequence considered appropriate for this level of scoping study were :

- Dredging limited to the base of the resource block model at 8 to 10m and to be progressed as a single continuous zone along the length of the modelled Domains 2 and 8 resources .
- No material dilution by barren material of the resource during dredging due to the following factors –
 - No overburden.
 - No significant barren material blocks within the anticipated +3%THM defined dredge zones.
 - The anticipated +3%THM defined dredging zone wholly contained within an envelope of +2%THM resource.
- No attempt has been made to schedule either the grade or category of resources on the basis that there are no material grade trends or in distribution of indicated (74%) and inferred (26%) resources along the length of the resource domains to be dredged (Figures 8-12).
- Scheduling of grade and resource categories over the anticipated dredging production life requires definition of mining reserves and is not meaningful for indicated and inferred category resources and in this instance is unlikely to have a material influence.

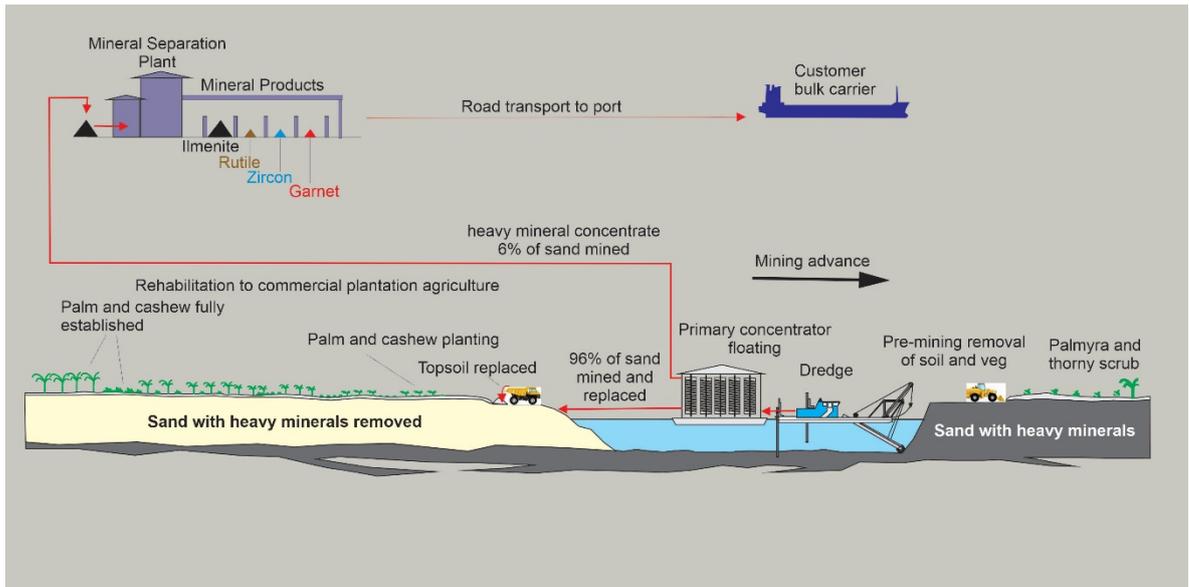


Figure 14 Schematic representation of the project operational scenario.

Sand tails will be discharged from the WCP to the dredge pond void to re-establish a landform for progressive rehabilitation. Fines from the WCP will be pumped through a thickener with water being immediately returned to the dredge pond and the fines being utilised in the rehabilitation process. The rehabilitation concept at this time is based on the progressive establishment of sustainable palm and cashew nut plantation agriculture as well as areas of natural vegetation in protective barriers (Figure 15) as the operation progresses as an integral part of the project over its entire life and not as a post operational rehabilitation.. The developing sustainable agriculture while established by the operation will as it matures to commercial production be owned and operated by local communities and participating private landowners..

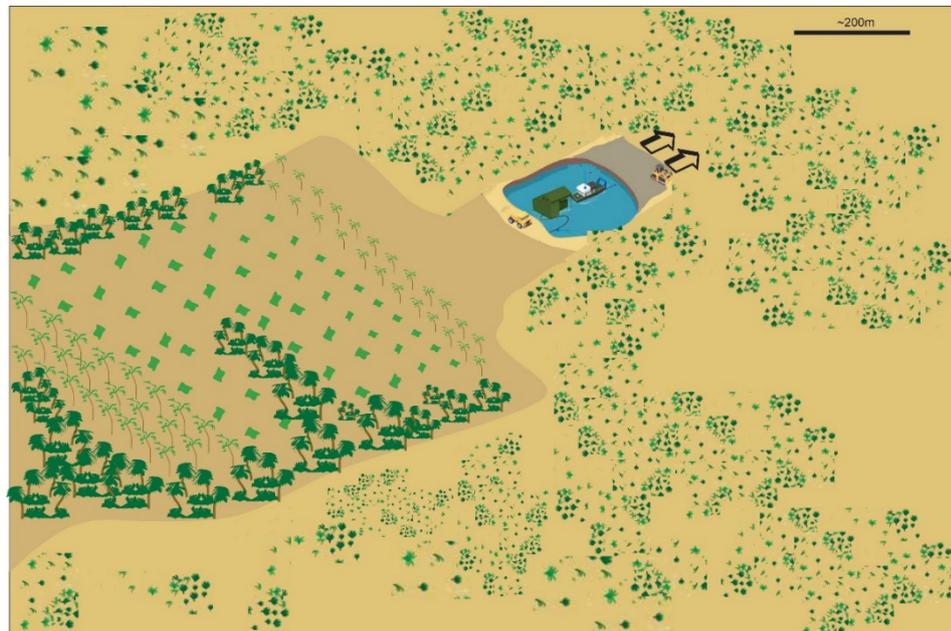


Figure 15 Schematic representation of dredge pond migration, surface regeneration and development of sustainable plantation agriculture and natural revegetation protection barriers.

Processing

The initial processing will involve wet concentration plant (WCP) with initial screening of trash materials and oversize particles and then gravity spirals to produce a heavy mineral concentrate. The heavy mineral concentrate will then pass into a mineral separation plant (MSP). Based on the metallurgical test work a conceptual process flow sheet for the MSP was developed project (Figure 17).

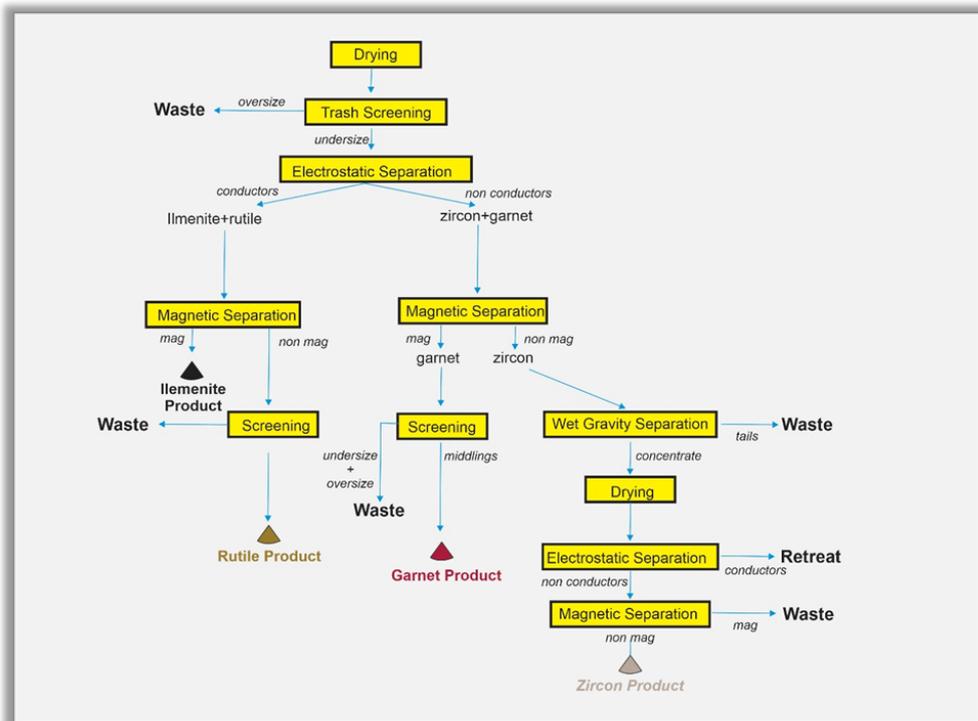


Figure 16 Mannar Island Project conceptual process flow sheet.

The processing flow sheet concepts for the WCP and MSP were then used by Mineral Technologies Pty Ltd (MT)^{3,8} to provide engineering services to develop conceptual flow sheets further and capital cost estimates for the WCP and MSP processing plants to an accuracy suitable for inclusion in a scoping level study.

Product Prices and Markets

A quality and market reviews^{4,5} of the project's mineral products were commissioned from TZ Minerals International Pty Ltd, a leading global consultancy group in mineral sands markets. Their advice was updated in May 2020.

The ilmenite product was judged a high quality product with potential end users in the titanium slag and sulphate route pigment producers. The other mineral products (rutile, zircon, and garnet) were also considered likely to find ready markets.

Based on pricing trends and benchmarks to current prices (April 2023) of equivalent quality mineral products, the product prices adopted for the Scoping Study were:

Ilmenite and Leucoxene	635	A\$/t
Rutile	3,380	A\$/t

Zircon	3,207	A\$/t
Garnet	433	A\$/t

Table 7 Benchmarked product prices used in this scoping study.^{4,5,6,7}

Pricing indications, supply and demand conditions for the mineral products while based partly on long term price and consumption data are predictions and must be regarded as such and actual prices and market volumes will vary.

Capital Estimates

The A\$122 million cost of the capital (CAPEX) items has been estimated in line with the +/- 30-35% accuracy considered reasonable for a mining project scoping study Table 8 below :

Dredge		\$/A'000
	Dredge	5,970
	200m Floating pontoons, discharge Pipe, HV Cable	551
	Work Barge	643
	Dredge Anchors	11
WCP		
	WCP & Thickener	54,756
	200m Floating Pontoons, discharge Pipe, HV Cable	661
	WCP Anchors	220
	HV Cable	22
	Field Office, Ablutions, Cribroom, Workshop	55
	Electrical HV Line & Stepdown Transformer	770
	Piping (Tails, HMC, Slime, Return Water)	343
	Process Water Bore, pump & pipe	550
Field		
	Cat IT38, bucket, jib, pallet forks	275
	2 x Cat D6 Swamp Dozer	770
	30t Excavator, (Cat330)	275
	HMC tip truck	62
	Franna 25t crane	165
	Pipe Welder	33
	4x4 LV (4)	246
	Maintenance Truck	62
	Welder/Gen Set	28
	Air Compressor	6
	Cherry Picker	55
	Fire Trailer	11
	Total	66,539
MSP		\$/A'000
	MSP	48,512
	Field Office, Ablutions, Cribroom, Workshop, Storage shed	220
	Electrical HV Line & Stepdown Transformer	770
	Process Water Bore, pump & pipe	550
Field		
	Cat IT38, bucket, jib, pallet forks	275
	4x4 LV (9)	554
	4x4 Ambulance/Rescue Vehicle	220
	Bobcat	33
	30 seat Bus	88
	All terrain Fork Lift (3t)	99
	Total	51,321
OTHER CAPITALISED ITEMS		
	First fills	55
	Commissioning and insurance spares	330
	Working CAPEX	1,179
	Commissioning	1,502
	Pre-construction earthworks	821
	Closure administration	550
	Total	4,436
Total CAPEX		122,297

Table 8 CAPEX estimates.

In total 96% of the CAPEX items in Table 8 are from and independent commissioned engineering concept design and costing reports and indicative published pricing from suppliers/manufacturers. The remaining minor items are based on equivalent operations and estimates³.

Pre-construction earthworks are for the initial construction of the mining void for the establishment of the dredge and trailing floating WCP. There is also provision for a concrete pad at the MSP for handling of the mineral products.

Funding

To achieve the range of outcomes indicated in the Scoping Study, funding in the order of \$122m will likely be required, which includes all pre-production costs including pre-production capital requirement of approximately \$66.54m. The Company has formed the view that there is a reasonable basis to believe that requisite future funding for development of the Project will be available when required. The grounds on which this reasonable basis is established include:

- **The Project has strong technical and economic fundamentals which provides an attractive return on capital investment and generates robust cashflows based on market HMS pricing. This provides a strong platform to source the debt and equity funding required.**
- **Demand for HMS at the source is a significant driver for the Project, and the Company has been in discussions with both offtake and Strategic partners for a number of years as fully disclosed in various Company announcements over the same period. Potential offtake or Strategic partner discussions have been held with firms from India, United Arab Emirates, Japan, China and Sri Lanka. Preliminary discussions continue with these partners, and the release of the scoping study will provide the Project background the various partners have been seeking to advance discussions. These partners provide a further strong platform to source the debt and equity funding required.**
- **The Company is aware of a China based offtake / Joint Venture arrangement with another AIM listed HMS company in Sri Lanka where the partner will fund 100% of the Capex and guarantee 100% offtake for the project.**
- **The Company has received initial interest from various financial institutions and equity firms regarding financing for the project once the scoping study is released. This includes initial discussions with The World Bank who are eager to advance projects to assist the Sri Lankan economy. Preliminary discussions will continue.**
- **The Company has a strong track record of raising equity funds as and when required to further the exploration and evaluation of the Mannar Project.**
- **The Company has had initial discussions and will seek an appropriate corporate debt advisor in relation to the funding of the Mannar Project on release of the scoping study.**

Investors should note that there is no certainty that TSL will be able to raise funding when needed. It is also possible funding may only be available on terms that may be dilutive to or otherwise effect the value of TSL's shares.

Operating Cost Estimates

Operating costs (OPEX) were developed from detailed analysis of:

- **Power draw**

- Maintenance costs
- Manning and salaries
- Reagents and consumables
- Contract and services costs
- General expenses
- Sustaining capital expenditure.

OPEX ITEM GROUP	\$A'000/y	Comments
Dredging and related operations	2,925	Based on manufacturer data, operational availability and production rates
Maintenance	4,035	Based on capital cost of equipment items and industry experience on % rates for maintenance costs
Power	6,322	Published Ceylon Electricity Board tariffs and an itemised equipment power draw analysis
Salaries	520	Based on prevailing labour rates and a complete schedule for 106 staff positions
Reagents & Consumables	154	Individual item market pricing
Mobile Equipment	1,247	Based on a complete equipment schedule new and used equipment and individual market prices
Contract Expenses	4,972	Estimates and peer comparison of over 28 contracted expense items including lab analysis
General Expenses	514	Estimates and peer comparison of over 36 general expense items including training, transport, admin.
Total Annual Cost	20,690	

Table 9 OPEX estimates.

Current prices for inputs were based where possible on Sri Lankan information but also from analogous projects elsewhere. Operational parameters for mining and processing such as plant availability and maintenance costs were based on industry experience. Assumptions have been made that the availability of electrical power to the project will be possible from the Ceylon Electricity Board national grid at published commercial rates. Recent power transmission upgrades to link the Mannar Island 100Mw wind turbine project to the national grid have been recently completed. The total power draw was based on a comprehensive analysis of all electrical equipment.

Financial Analysis

The financial analysis of the project presented in Table 10 was based on the CAPEX, OPEX , operational parameters and revenues based on the material parameters and modifying factors contained in Table 1 and the following general criteria :

- A 20 year mining duration on Domains 2 and 8 of the mineral resource model.
- Product sales revenues on an FOB basis.
- Products exported via the Port of Trincomalee, 175km by sealed main road.

- No escalation of costs or revenues.
- No depreciation allowances.
- 100% sunk capital with no residual value.
- Provisions for progressive rehabilitation and land access costs.
- Sustaining capital is provided for in OPEX.
- There is no attempt to allocate OPEX separately to the mineral products.
- Pre-tax revenue.
- Government levies, Government royalties of 7% and vendor royalties of 5% are included.
- Exclusive of financing costs.
- Local project administration costs included.
- No corporate overheads only local administrative costs
- Sensitivity analysis based on + / -10% from the base case with contemporary costs and mineral sales prices.

Scoping Study Economic Evaluation Summary	
Stage 1 Mine Life	20 yrs
Tonnes Mined	80Mt
Rate	4Mtpa
Capex (Pre production)	A\$122M
Total Revenue	A\$2.0B
Total Opex (including royalties and levies)	A\$733M
Total nett revenue (EBITDA)	A\$1.28B
Annual nett revenue (EBITDA)	A\$64M
Annual OPEX (including royalties and levies)	A\$37M
Operating margin per tonne mined	\$16.00
Nett Revenue to cost ratio	2.75
NPV at 10% pa discount of revenue (EBITDA)	A\$545M
IRR (pre tax, no debt)	52%
Capital payback	<2yrs

Table 10 Economic Evaluation Summary.

Sensitivity Analysis

The Project's pre-tax NPV is most sensitive to changes in HMS pricing, while it is more resilient to changes in the operating costs, capital costs and discount rate as shown in the figure below.



Table 11 Project pre tax NPV analysis on the basis of the criteria listed above.

			Base Case	
HMS Pricing (AUD\$/t)		-20%		20%
Ilmenite		\$508	\$635	\$762
Rutile		\$2,704	\$3,380	\$4,056
Zircon		\$2,566	\$3,207	\$3,848
Garnet		\$346	\$433	\$520
NPV	\$m	397	545	693
IRR	%	38	52	67
Payback	Years	2.61	1.91	1.5
Annual EBITDA	\$m	46	64	81
LOM EBITDA	\$m	934	1280	1626
Revenue to Cost Ratio		2.38	2.75	3.06

Table 12 Scenario Analysis – HMS Price Assumptions

As summarised in Tables 5, 11, 12 the project is economically robust. The base case scenario of present input values for OPEX, Revenue and CAPEX returns a Net Present Value (NPV_{10%}) of A\$545M, and a revenue to cost ratio of 2.75, and an internal rate of return (IRR) of 52%. The corresponding values for +/- variations in OPEX, Revenue and Capital consistently return robust figures demonstrating the financial resilience of the project and a project upside.

Market Outlook, Depth and Competition

Indications are that the Mannar Island mineral products are of a quality that are likely to find ready markets around the world^{2,4}. The main ilmenite product would suit a number of titanium slag and sulphate route pigment producers. At the scale of the scoping study scenario the project would produce around 1.6% of the global ilmenite feedstock capacity estimated to be over 7 million tonnes for sulphate route pigment production by 2025^{6,8}. Global demand for pigment is predicted to grow at over 4%/yr. in the long term driven by a demand relationship closely correlated to per capita GDP⁸. If future more definitive studies support larger project scenarios involving a second or even third dredge operation with commensurately expanded processing capacity the project could become one of the larger TiO₂ feedstock producers internationally.

The revenue to cost ratio of 2.75 for the scoping study project scenario means the project would be into the top 10% of titanium feedstock producers revenue to cost curve⁶.

The scoping study results indicate that the project is not only economically robust and competitive, but also has the potential to be a substantial supplier to the global ilmenite feedstock trade.

Regulatory Framework and Approvals Processes

Regulatory approval for the project will require the submission of a comprehensive Environmental Impact Assessment (EIA). The EIA process is summarised in Figure 11. The required EIA will be comprehensive and address environmental, social, and economic impacts and benefits as well as on going management and monitoring plans. Part of the EIA process involves community consultations and a public review. An experienced and very well qualified Sri Lankan consultancy group have commenced the EIA process on behalf of Titanium Sands and will conduct or supervise the component environmental, economic and social impact studies. It is currently estimated that the EIA and related submissions for the project will be completed by late 2023.

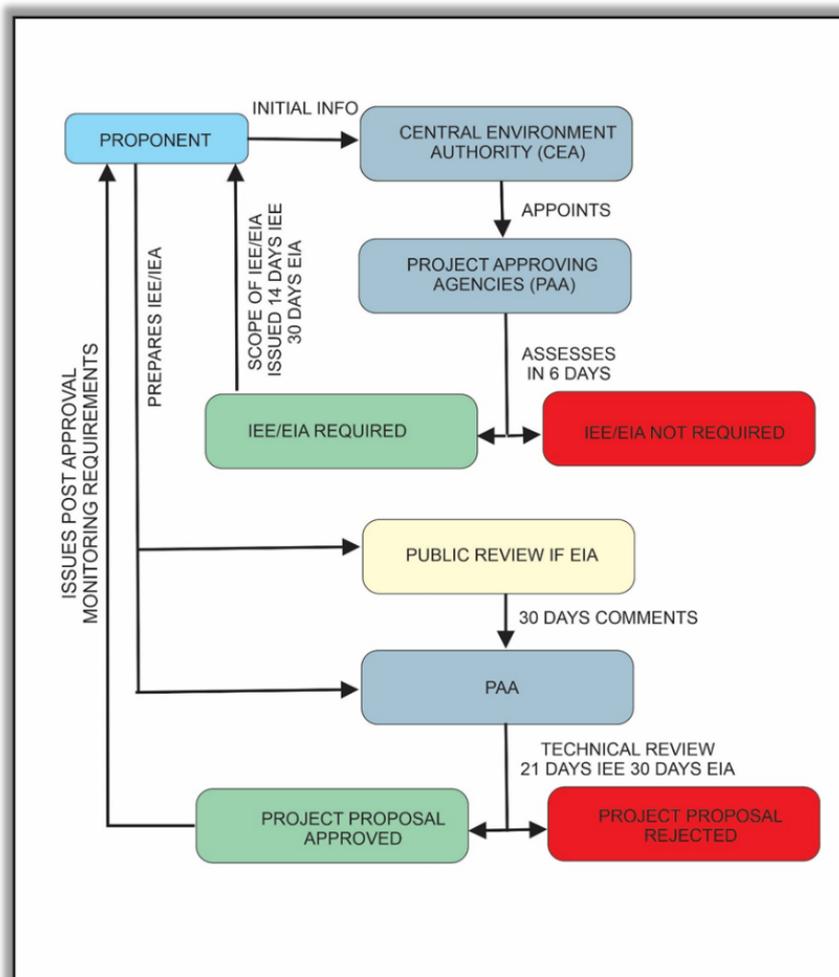


Figure 17 Environmental approval process under the Sri Lankan National Environment Act (NEA)

Other regulatory approvals include granting of mining licences under the Sri Lankan Mines Act, acting through the Geological Survey and Mines Bureau (GSMB). Mining rights are issued on application to the holders of exploration licences. The process for a mining right application is similar to the process of applying for an exploration licence but requires considerably more detail in the technical scope, environmental, economic, social impacts. The GSMB is again the issuing body but the other agencies are required to review the project information and require further evaluation.

The GSMB also issues the licences necessary for the transport and export of mineral products.

The GSMB also has an oversight and regulatory enforcement role in the conduct of mining operations.

The Sri Lankan Mines Act also contains provisions detailing land access and dealings with private landowners. Land access is subject to negotiated agreement with landowners that generally involves compensation for temporary or permanent loss of amenity, with provisions for legal consideration of the mineral tenure holder to explore for minerals. The Mannar Island Project mineral resource areas consist largely of undeveloped scrubland, naturally occurring palmyra palm woodlands of varying density and bare sand. However much of this area is still subject to

formal private and institutional land holdings and areas that could be regarded as subject to informal use by local communities as well as unalienated state lands. As part of the EIA process consultations and access agreements with both formal and informal landowners will be required.

There are also Sri Lankan investment facilitation Acts designed to encourage inbound investments. Through the Board of Investment (BOI) accepted projects can have access to preferential tax rates, accelerated depreciation, relief from import duties, free flow of currency transfers and other incentives.

Sri Lanka also has Bilateral Investment Promotion and Protection Treaties with 28 countries including Australia. It also has Agreements on avoiding double taxation with 44 countries including Australia and Mauritius.

OVERVIEW OF SRI LANKA

Sri Lanka is a democratic nation of ~21m people that has however experienced significant economic and political issues over the last two years. Deterioration of the national accounts due to a combination of the economic consequences of Covid-19, principally on the inbound tourism industry, and longer term national economic management issues led to significant inflation and drastic deterioration in the balance of payments. The resulting social and political disruptions combined with a drastic shortage of transport and other fuels further disrupted the national economy.

However in the 9 months since June 2022, a new interim multiparty government has resulted in some stabilisation in both the economic and political situation. This has enabled the government to engage with the International Monetary Fund and sovereign debt holders to try and negotiate a long term national economic plan for the country. The economic and political outlook for Sri Lanka is expected to steadily improve, particularly with continued recovery of the tourism industry and Government initiative to improve inbound investment from projects such as this one.

Regionally Sri Lanka is ideally situated for product export to all parts of Asia including China (Figure 19). It is situated on one of the Chinese belt and road maritime routes and as part of this a major new port has been developed at Hambantota. Other major ports are located at Trincomalee (Northeast coast) and Colombo (West Coast).

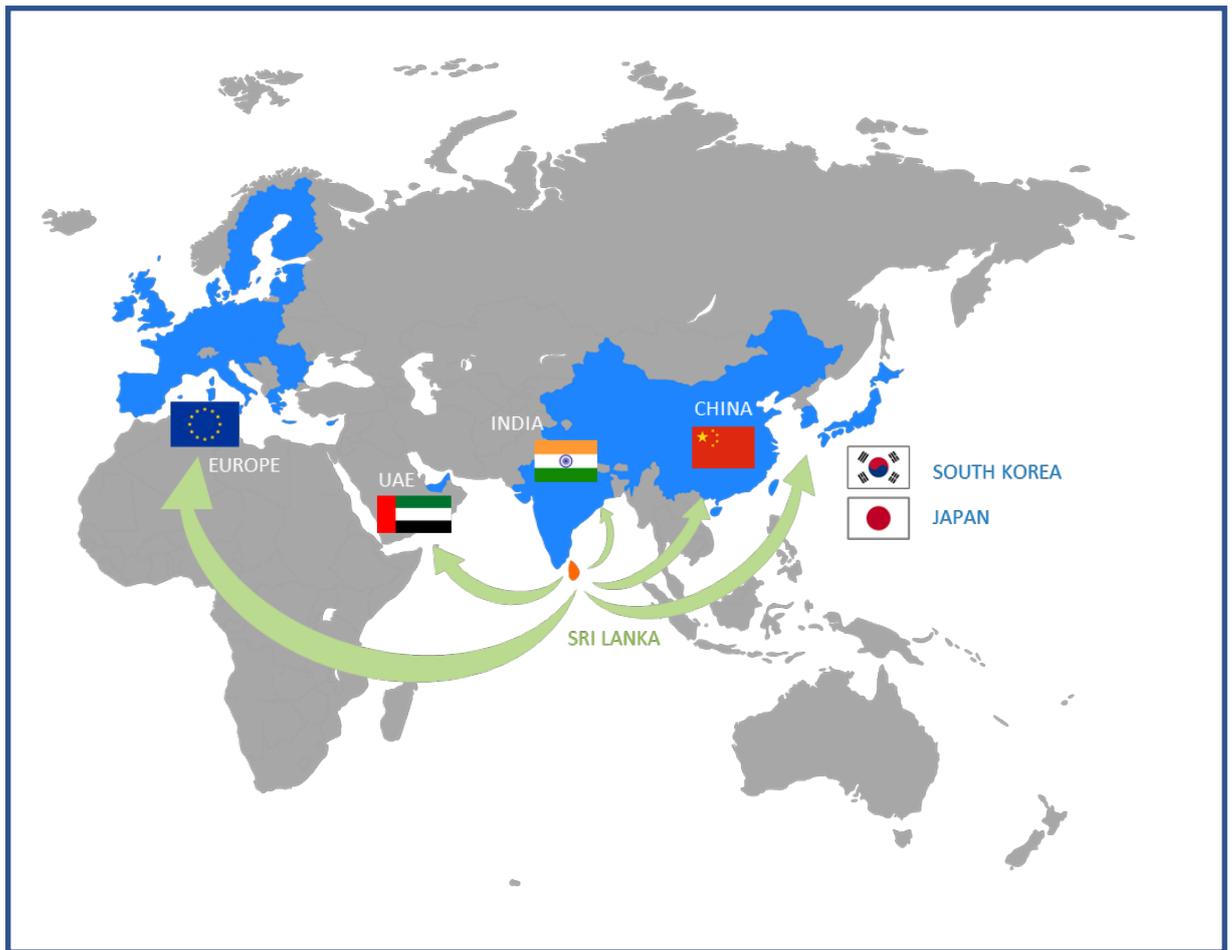


Figure 18 Sri Lanka is well situated to supply product into the global markets for ilmenite feedstock and other specialist heavy mineral markets.

Sri Lanka is well situated to supply heavy mineral to the global market. Sri Lanka has well developed trading relationships with Central and East Asia, the Middle East and Europe. It is also an integral part of China's "Belt and Road" initiatives, with enhanced port infrastructure development and increasing two way trade and investment.



Figure 12 Rail track on Mannar Island that connects to the mainland network.



Figure 13 Road and power infrastructure leading to Mannar Island

Ends-

The Board of Directors of Titanium Sands Ltd authorised this announcement to be given to ASX.

Further information contact:

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ADDITIONAL COMPLIANCE STATEMENTS

Competent Persons Statement this Announcement

The Mannar Island Scoping Study reported here has been compiled from source reports as indicated, exploration data and other information by James Searle BSc (hons), PhD, a Competent Person who is a Member of the Australian Institute of Mining and Metallurgy, with over 37 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.

Competent Persons Statement for previously reported Mineral Resource Estimate

This report includes information (Tables 2-5) that relates to Exploration Results and Mineral Resources prepared and first disclosed under JORC Code 2012. The information was extracted from the Company's previous ASX announcement as follows:

1 ASX Announcement 15th March 2023 : Updated resource Estimate- Mannar Heavy Mineral Project

This announcement is available to view on the Company's website www.titaniumsands.com.au

The summary Mineral Resource information and comments above in this scoping study announcement has been compiled by James Searle BSc (hons), PhD, a Competent Person who is a Member of the Australian Institute of Mining and Metallurgy, with over 40 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 Competent Persons responsible for the mineral resource estimate referred to in the above previous announcement specifically sampling process, geological interpretation (wireframe model), Mineral Resource estimation and classification of the Mannar Mineral Sand Deposits are Mr Kobus Badenhorst and Mr Bernhard Siebrits. Mr Kobus Badenhorst is a director of GeoActiv (Pty) Ltd. and is registered with the South African Council for Natural Scientific Professionals (SACNASP). Mr Siebrits is a consultant, registered with SACNASP and a Member of the Australasian Institute of Mining and Metallurgy. Mr Badenhorst and Mr Siebrits has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Persons as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Badenhorst and Mr Siebrits previously consented to the inclusion of the matters based on his information in the form 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 announcement and, in the case of estimates of the Company's 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 further 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.

Other Reports References

2 Allied Mineral laboratories 3/2019 : Titanium Sands Ltd Composite HM sample Characterisation Test Work.

3 Mineral Technologies Pty Ltd 21/4 /2023 : Titanium Sands Ltd Mannar Island project Sri Lanka, Scoping Study Report.(Revised).

4 TZMI 5/2019 : Product Quality Review, Titanium Sands. (Confidential).

5 TZMI 5/2020 : Pricing Update, Titanium Sands Ltd. (Confidential).

6 TZMI 2019 :Titanium Feedstock Producers Comparative Cost Study. (Confidential).

7 FerroAlloyNet.com : daily updated China import market analysis for ilmenite feedstocks and zircon (Confidential).

8 Adams, R., Informa Mineral Sands Perth 2019 : Mineral sands in an age of uncertainty and volatility.

Forward Looking Statements

This document may include forward-looking statements. Forward looking statements include, but are not limited to, statements concerning the Company's planned exploration program, future earnings, cash flow, costs and financial performance and other statements that are not historical facts. When used in this document, the words such as "could," "plan," "expect," "intend," "may", "potential," "should," "further" and similar expressions are forward-looking statements. Forward looking statements, opinions and estimates included in this announcement are based on assumptions and contingencies which are subject to change without notice, as are statements about market and industry trends, which are based on interpretations of current market conditions. Forward looking statements are provided as a general guide only and should not be relied on as a guarantee of future performance. Forward looking statements may be affected by a range of variables that could cause actual results to differ from estimated results and may cause the Company's actual performance and financial results in future periods to materially differ from any projections of future performance or results expressed or implied by such forward looking statements. These risks and uncertainties include but are not limited to liabilities inherent in mine development and production, geological, mining and processing technical problems, the inability to obtain the necessary mine licenses, permits and other regulatory approvals required in connection with mining and processing operations, changes in commodity prices and exchange rate and various events which could disrupt operations. Although the Company believes that its expectations reflected in these forward- looking statements are reasonable, such statements involve risks and uncertainties and no assurance can be given that the forward looking statements will prove to be correct.