ASX RELEASE

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TSL RESOURCE UPGRADED TO INDICATED CATEGORY AS PROJECT CONTINUES TO EXPAND

- Resources for the Mannar Island Project now stand at a total of 90.03Mt at 6.60% Total Heavy Mineral of which 57.68Mt at 6.06%THM is on tenure already held by the Company and 32.35Mt at 7.56%THM is on tenure to be acquired subject to shareholder approval. [1]
- Of the total resource 66% is now in the higher definition indicated resource category.
- Visual logging of heavy minerals in the 473 hole Reverse Circulation drilling program completed in December 2019 indicates there is substantial potential for depth extensions below and adjacent to this resource reported here. [2]

Titanium Sands, Managing Director, Dr James Searle commented:
"Translation of over 66% of the Mannar Island Mineral Resource into the better defined Indicated Mineral Resource category is a major step forward for the Mannar Island Project and a sound basis for further multiple increases in the quality resource base".

Titanium Sands Ltd ("the Company", ASX: TSL) is pleased to announce an updated Inferred and Indicated Mineral Resource at its Mannar Island Project in Sri Lanka of 90.03Mt at 6.60% heavy minerals (Table 1) (Figure 1). The resource has been upgraded so that 66% is now in the Indicated category. Of this total resource 57.68Mt at 6.06%THM is on tenure already held by the Company and 32.95Mt at 7.56%THM is on tenure to be acquired subject to shareholder approval [1].

The resource has been defined by 3,421 auger holes drilled from surface to the water table at depths of 1 to 3m. The resource is therefore a surface exposed sheet with no overburden. The heavy mineral suite is dominated by ilmenite and leucoxene with minor but valuable rutile and zircon components. Garnet is also present as a significant component of the valuable heavy mineral assemblage but at this stage has not yet been incorporated into the resource model.

The distribution of the resource domains across a large part of the 26km long and 5km wide Mannar sand island is illustrated in Figure 2. Current Mineral Resources drilling have only been drilled and modelled down to the water table. The heavy mineral sequences are exposed at surface and there is essentially no overburden on the resource.

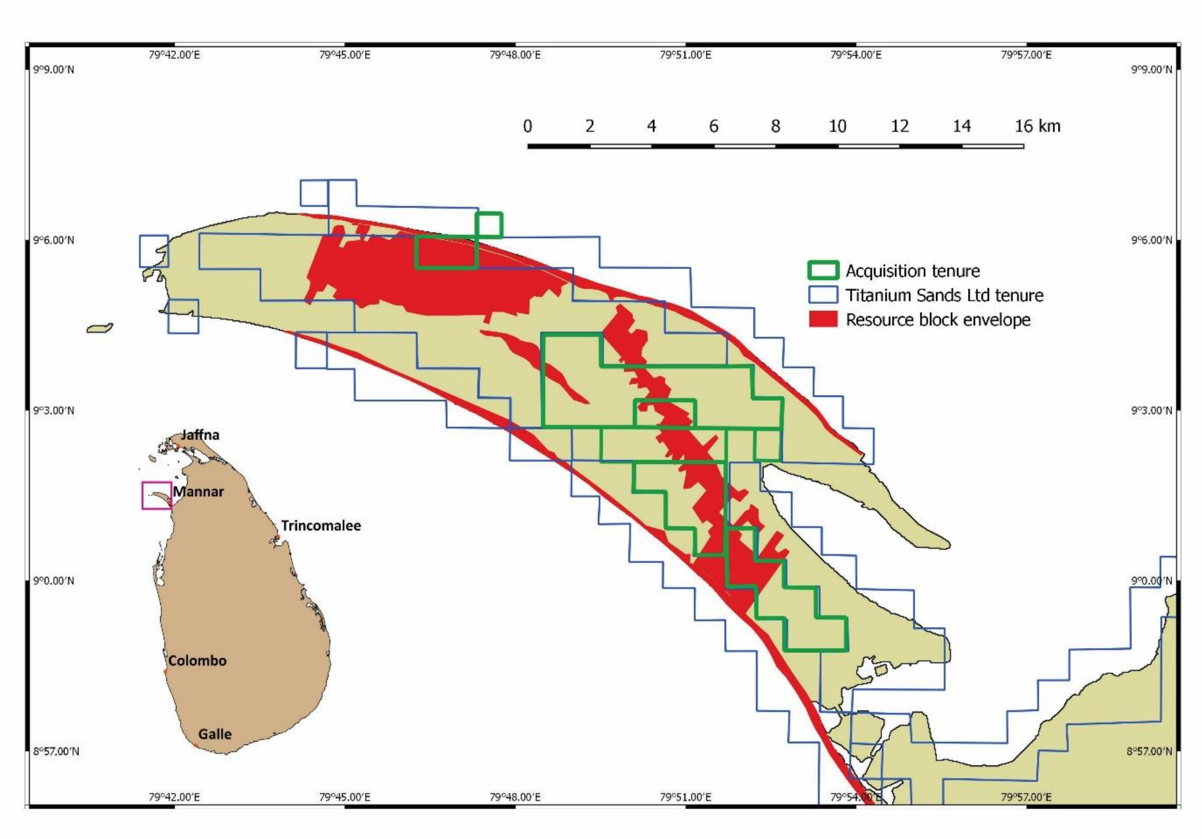

Figure 1 Mannar Island Project location and resource blocks

This extensive surface exposed resource is underlain by at least 10m of unconsolidated sands below the water table, this presents an opportunity to continue to building a substantially larger Mannar Project resource. The 473-hole reverse circulation (RC) drilling program completed in December 2019 was focussed largely on the sequences under the surface resource [2]. Visual logging indicates there is widespread concentration of heavy minerals up to 10m thick below the water table and the surface resources. Samples from this drilling are currently being analysed from these RC aircore holes and those that have tested deeper sediment sequences and results will become available over the next 6 weeks.

Area	Res Class	Domain	Licence	Volume (Mm^3)	Tonnes (M)	Thm %	Silt %	Oversize %	Ilm %	Leu %	Rut %	Zir %
1	Indicated	1	**EL182**	5.29	9.32	4.88	1.38	9.12	2.32	0.38	0.12	0.11
			EL370	13.04	22.95	4.03	0.51	2.02	1.79	0.33	0.10	0.08
			Sub Total	18.34	32.27	4.27	0.76	4.07	1.94	0.34	0.10	0.09
		2	**EL180**	0.69	1.21	4.48	0.62	8.78	1.41	0.28	0.08	0.07
			EL370	2.62	4.55	7.20	0.89	25.24	3.21	1.06	0.11	0.15
			EL372	0.35	0.60	10.15	1.03	22.12	4.71	0.85	0.12	0.16
			Sub Total	3.66	6.36	6.96	0.85	21.82	3.01	0.89	0.11	0.14
		Sub Total		**21.99**	**38.63**	**4.72**	**0.78**	**6.99**	**2.12**	**0.43**	**0.10**	**0.10**
	Inferred	1	**EL182**	0.19	0.34	4.00	1.01	5.38	1.93	0.30	0.10	0.10
			EL370	0.82	1.43	3.88	0.47	1.86	1.66	0.32	0.10	0.09
			Sub Total	1.01	1.77	3.91	0.57	2.53	1.71	0.32	0.10	0.09
		2	**EL180**	0.99	1.72	4.61	1.04	9.39	1.57	0.29	0.09	0.09
			EL182	0.07	0.12	3.43	4.31	24.21	1.67	0.62	0.06	0.09
			EL370	0.71	1.24	4.91	1.28	20.81	2.36	0.83	0.08	0.12
			EL372	1.47	2.56	8.53	2.62	27.09	3.77	0.65	0.11	0.15
			Sub Total	3.24	5.64	6.43	1.88	20.24	2.74	0.58	0.10	0.13
		3	**EL370**	0.91	1.59	3.52	0.42	0.70	1.68	0.32	0.10	0.08
			Sub Total	0.91	1.59	3.52	0.42	0.70	1.68	0.32	0.10	0.08
		5	**EL182**	2.90	5.07	12.62	2.15	6.92	6.35	0.88	0.28	0.30
			EL370	0.13	0.22	7.92	1.67	14.18	4.06	0.71	0.16	0.20
			EL371	0.14	0.25	12.08	2.71	1.22	5.56	1.11	0.31	0.24
			Sub Total	3.16	5.54	12.41	2.16	6.95	6.23	0.88	0.28	0.29
		6	**EL180**	2.48	4.34	11.15	3.17	11.10	5.78	0.85	0.14	0.21
			EL370	0.03	0.06	23.81	5.43	8.66	13.89	1.42	0.29	0.49
			EL371	0.06	0.11	3.35	0.14	0.28	0.74	0.15	0.08	0.04
			Sub Total	2.57	4.50	11.12	3.13	10.80	5.76	0.84	0.14	0.21
		Sub Total		**10.90**	**19.05**	**8.80**	**2.01**	**10.86**	**4.29**	**0.68**	**0.16**	**0.19**
	Sub Total			**32.89**	**57.68**	**6.06**	**1.18**	**8.27**	**2.83**	**0.51**	**0.12**	**0.13**
2	Indicated	1	**EL352**	2.02	3.56	3.83	0.54	3.27	1.93	0.28	0.09	0.09
			Sub Total	2.02	3.56	3.83	0.54	3.27	1.93	0.28	0.09	0.09
		2	**EL327**	2.84	4.94	9.35	0.71	21.57	5.28	0.70	0.12	0.20
			EL328	5.58	9.71	8.47	0.72	19.44	4.02	0.66	0.11	0.15
			EL351	1.74	3.03	8.48	0.77	24.80	4.26	0.83	0.12	0.14
			EL352	1.15	2.00	5.33	0.63	12.66	1.97	0.31	0.07	0.07
			Sub Total	11.32	19.69	8.37	0.72	20.11	4.16	0.66	0.11	0.15
		Sub Total		**13.34**	**23.25**	**7.68**	**0.69**	**17.53**	**3.82**	**0.60**	**0.11**	**0.14**
	Inferred	1	**EL352**	0.06	0.10	2.86	0.48	5.20	1.28	0.19	0.07	0.06
			Sub Total	0.06	0.10	2.86	0.48	5.20	1.28	0.19	0.07	0.06
		2	**EL327**	0.11	0.20	13.19	0.59	9.23	7.07	0.96	0.19	0.27
			EL328	1.32	2.30	4.51	0.71	11.44	1.73	0.31	0.06	0.07
			EL351	0.12	0.21	14.09	0.87	22.09	8.44	0.88	0.17	0.22
			EL352	3.30	5.74	8.19	0.76	20.11	2.92	0.54	0.11	0.13
			Sub Total	4.86	8.45	7.46	0.74	17.55	2.83	0.50	0.10	0.12
		3	**EL351**	0.32	0.55	5.11	0.46	0.79	2.14	0.58	0.16	0.12
			Sub Total	0.32	0.55	5.11	0.46	0.79	2.14	0.58	0.16	0.12
		Sub Total		**5.23**	**9.10**	**7.27**	**0.72**	**16.40**	**2.77**	**0.50**	**0.11**	**0.12**
	Sub Total			**18.57**	**32.35**	**7.56**	**0.70**	**17.21**	**3.53**	**0.57**	**0.11**	**0.13**
Grand Total				**51.45**	**90.03**	**6.60**	**1.01**	**11.48**	**3.08**	**0.54**	**0.12**	**0.13**

Table 1 Indicated and Inferred Mineral Resources based on a 2% total heavy mineral lower cut off for Mannar Island Project. Note Area 1 constitutes the existing Company tenure and Area 2 constitutes the acquisition tenure subject to shareholder approval on the 21st of February 2020

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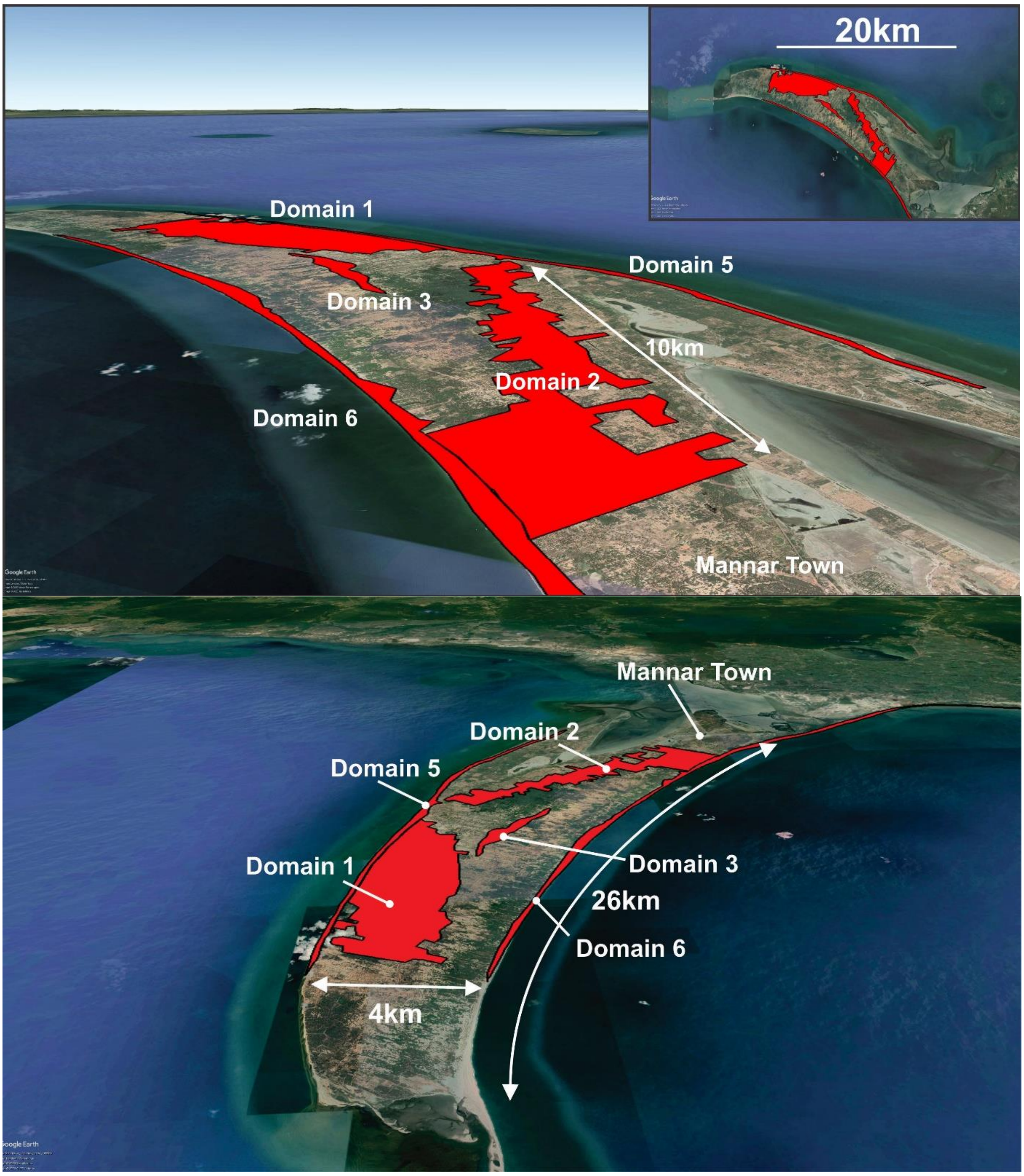

Figure 2 Resource block envelope and location of domains referred to in Table 1 above.

MANNAR ISLAND PROJECT MINERAL RESOURCE ESTIMATE

The Mineral Resource Estimation (MRE) was undertaken by Kobus Badenhorst and Geo Activ Pty Ltd, a geological consultant registered with the South African Council for Natural Scientific Professions ('SACNASP') and Bernhard Siebrits a geological consultant also registered with SACNASP and a Member of the Australian Institute of Mining and Metallurgy (MAusIMM)(see Competent Persons Statement). Appendix 2 contains the technical memorandum detailing the mineral resource estimate. The Mineral Resource Estimate has been summarised here by Dr James Searle (MAusIMM) (see Competent Persons Statement). Tables 2 and 3 summarise the inferred and indicated Mineral Resources with no lower cut off total heavy mineral (THM) grades and with a 2% THM lower cut off respectively. A 2% lower cut off is considered appropriate for this Inferred Mineral Resource Estimation in that it maintains satisfactory continuity of the resource zone and as far as can be determined at this early project stage is not likely to be inconsistent with the economics of mining and treatment of shallow, surface exposed high grade, low silt mineral sand deposits in general. Appendix 1 contains Sections 1 and 2 in full compliance with the JORC 2012 requirements and which are also summarised in the text below.

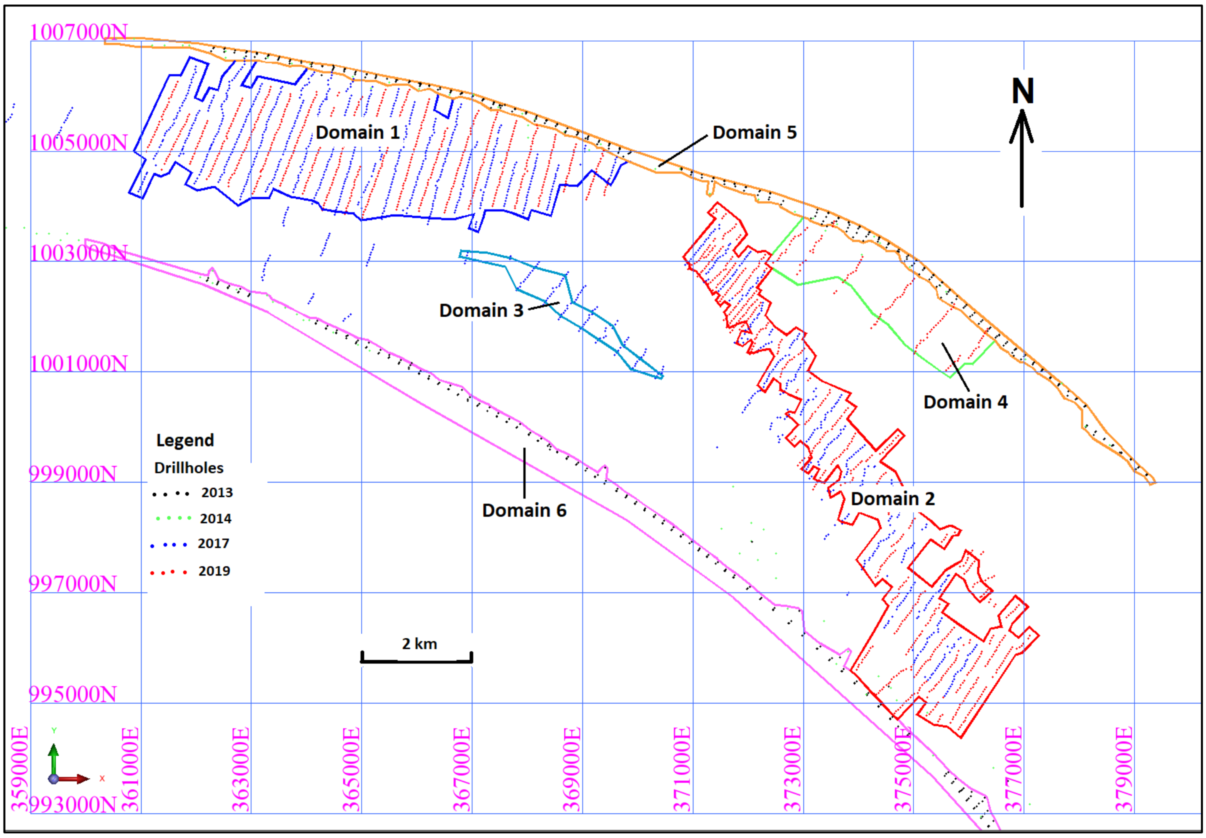

Figure 3 Plan location of the shallow drill hole campaigns and domains on Mannar. Note: Domain 4 is an exploration target.

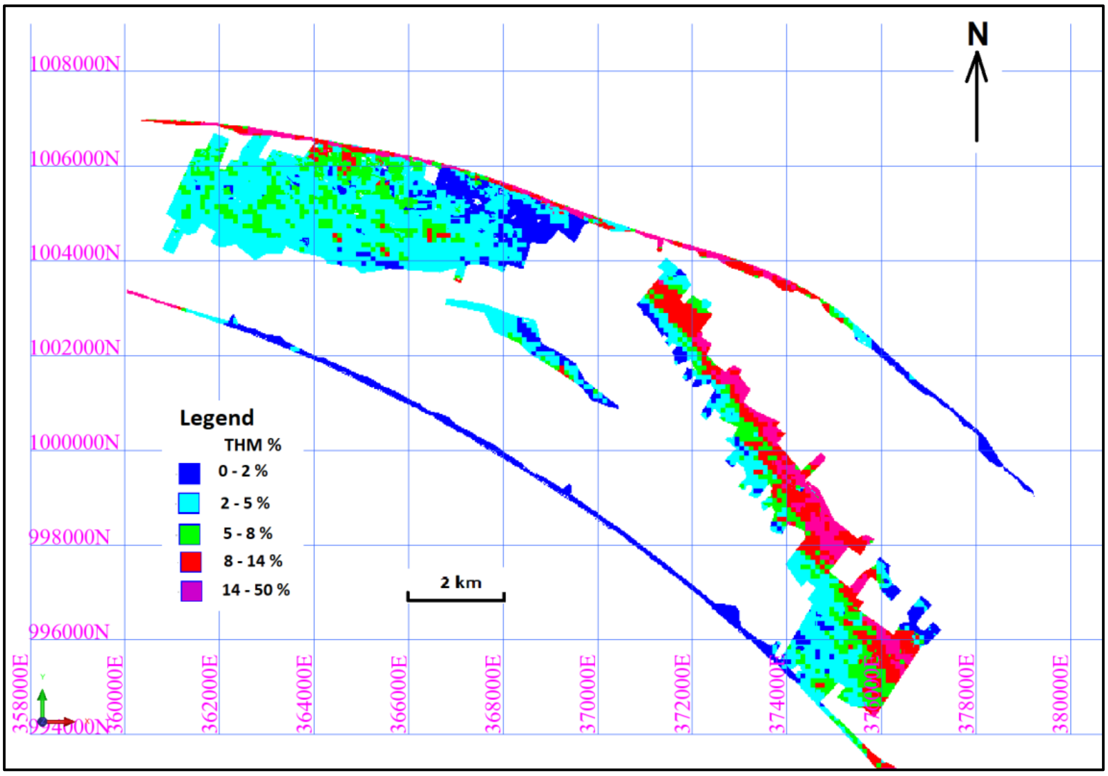

Figure 4 Inferred and Indicated Mineral Resource grade blocks.

Res Class	Domain	Volume (Mm³)	Tonnes (M)	THM %	Silt %	Oversize %	Ilm %	Leu %	Rut %	Zir %
Indicated	1	28.53	50.21	3.36	0.70	5.86	1.53	0.26	0.08	0.07
	2	17.90	31.14	6.93	0.73	23.19	3.32	0.62	0.09	0.13
Sub Total		**46.42**	**81.35**	**4.73**	**0.71**	**12.49**	**2.22**	**0.40**	**0.09**	**0.09**
Inferred	1	1.84	3.24	2.67	0.61	4.56	1.17	0.21	0.07	0.06
	2	10.57	18.40	5.70	1.41	23.74	2.27	0.43	0.08	0.10
	3	1.66	2.90	3.28	0.47	0.72	1.50	0.32	0.09	0.08
	5	3.81	6.66	10.43	2.50	7.14	5.21	0.74	0.23	0.24
	6	4.60	8.05	6.54	3.19	10.28	3.28	0.49	0.08	0.12
Sub Total		**22.47**	**39.24**	**6.25**	**1.82**	**14.88**	**2.83**	**0.47**	**0.11**	**0.12**
Grand Total		**68.90**	**120.59**	**5.22**	**1.07**	**13.27**	**2.42**	**0.42**	**0.09**	**0.10**

Table 2 Inferred and Indicated Mineral Resource estimations for the entire Mannar Island Project with no lower cut off applied. Reproduced from the Technical Memorandum contained in Appendix 2.

Notes to table:

- Mineral assemblage is reported as in situ weight percentage of the resource.
- Appropriate rounding of the numbers has been applied.

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**

Table 3 Inferred and Indicated Mineral Resource estimations for the entire Mannar Island Project with a 2%THM lower cut off applied. Reproduced from the Technical Memorandum contained in Appendix 2.

Notes to table:

- Mineral assemblage is reported as in situ weight percentage of the resource.
- Appropriate rounding of the numbers has been applied.

Geological Model

The Mineral Resource estimate is underpinned by a clear geological model. Mannar Island is a 26km long by 5km wide Holocene (less than 12,000 years BP) sand island. The Mannar Island Holocene stratigraphy is at least 112m thick and consists of repeated sequences of nearshore, beach and dune facies sands with minor lenses of lagoonal and embayment silts and muds. Development of the island over the Holocene period has been driven by the seasonally opposing transport trends from north and the south localising sedimentary accumulation on a southeast to northwest axis extending out into the waters of Palk Strait that separate Sri Lanka from India. The source of the Mannar Island sediments and the entrained heavy minerals has been the reworking and redeposition of older Pleistocene (2.6 million to 12,000 years BP) river and coastal sand bodies on the adjacent mainland coast.

In addition to the heavy minerals the accumulating Holocene sands of Mannar Island are dominated by quartz and garnet sand grains. Carbonate materials are a minor component. The Holocene sequences drilled to date at Mannar Island are essentially unconsolidated with only minor very local patches of light carbonate cementation. Further out into Palk Strait the modern to Holocene sediments have increasing amounts of carbonate and cemented limestone and coral reef shoals.

Concentration of the heavy mineral component in the Mannar Island stratigraphy has been by selective shallow water current transport, beach and near beach facies wave and current action and wind winnowing in the overlying dune and beach ridges (Figure 5). The combination of all three concentration mechanisms has resulted in very broad (2km to 3km wide) and continuous (over more than 26km long by up to 5km wide) area of heavy mineral accumulation (Figure 2).

Figure 5 Wind sorting and concentration of heavy minerals (dark grey) in beach ridges on the modern coast of Mannar island.

The shallow resource drilling down to the water table at 1m to 3m below land surface has intersected heavy mineral concentrations in the near beach, beach and overlying beach ridge and dune sands. While other beach and dune sequences deposited at lower past sea levels will occur below the present water table, deeper parts of the Holocene sequence will be more dominated by finer sands and heavy minerals concentrated and deposited in shallow water.

However reverse circulation drilling up to 10m below the water table and 12m below surface carried out in 2019 has indicated that the surface beach and dune heavy mineral deposits are underlain by 10m+ thick lower beach and nearshore sands that also contain significant concentrations of heavy minerals.

Resource Drilling and Sampling

Resource drilling for this Mineral Resource estimate is based on 3,421 (Figure 3) of which 2,961 holes returned intercepts with values 2% to 54% Total Heavy Minerals. Drilling was carried out using 75mm diameter handheld shell augers. Drill holes were terminated at the water table to ensure only accurate sample intervals and full recovery of samples. All drill holes were logged and sampled at 0.5m intervals down hole.

Drilling was carried out in three phases. Firstly, on lines 800m apart with drill hole separations of 50m, secondly on the intervening 400m lines also at 50m hole spacings, and thirdly on line spacings of 200m. Drill line were oriented perpendicular to the general strike of the mineralised zone and consequently across the interpreted paleo-shoreline orientations.

This form of drilling (shell auger) is limited to dry material above the water table with a majority of the analysed drill holes ended in mineralisation in excess of 2% THM. This indicates that there is significant potential for resource extensions below the water table. The sand sequences containing the heavy mineral concentrations had very low silt contents (generally <1%).

Figure 6 twin hole drilling under supervision by GeoActiv (Pty) Ltd.

Independent consultant GeoActiv (Pty)Ltd conducted a QA/QC due diligence twin hole drilling program of nominally 1 in 20 of the drill holes. The holes were drilled in the same location as the original drilling using the same drilling techniques and sampling protocols.

Laboratory and Mineralogical Analyses

Desliming (-45micron) and oversize(>1mm) removal was done with % silt and % oversize recorded in a project laboratory on Mannar Island. GeoActiv examined the facilities and procedures and reported them as satisfactory. The samples were then sent for THM analysis by heavy media separation (TBE) to a laboratory in Cape Town South Africa, Scientific Services Ltd a DEKRA certified geological laboratory (Deutscher Kraftfahrzeug-Überwachungs-Verein e.V.).

Scientific Services also prepared composite samples from 5% of the sample population for CARPCO (magnetic mineral separation) and XRF (x-ray fluorescence) analysis .

The CARPCO mineralogical separations were then analysed by a mineralogist using XRD (X-ray diffraction), SEM (scanning electron microscopy) and EDX (X-ray dispersive) analysis and optical microscopy.

The mineralogical analysis found the dominant heavy mineral was ilmenite, with lesser amounts of leucoxene, rutile and zircon. Almandine garnet was also noted in significant quantities but was not included at this stage in the MRE modelling.

Resource Estimation Methodology

SURPAC software was used to develop a block model with block sizes of 100m (X) x 100m (Y)x 2m (Z) and minimum sub blocking of 25m x 25m x 0.5m. The block model was constrained by the DTM (Digital Terran Model) of the land surface and the domain areas defined by THM content. Grade interpolation for all the variables (THM, silt, oversize) and the XRF data of composite data of the CARPCO magnetic separations (CI_yield, MO_yield, NM_yield, CI_TiO_2, MO_TiO_2, NM_TiO_2 and NM_ZrO_2) was by inverse distance to the power of 3. The minerals (ilmenite, leucoxene, rutile and zircon) were converted from the chemistry to mineralogy with calculated attributes with the ratios determined by the mineralogical analysis. Relative densities determined by field measurements were applied to the mineralised zones.

Block model validations included visual validations on section of input drill hole data and the block model (Figure 11), average grade conformance of global averages between composite input data (drill holes) with the block model output. Composite and estimated grade distributions were also compared (Figure 12).

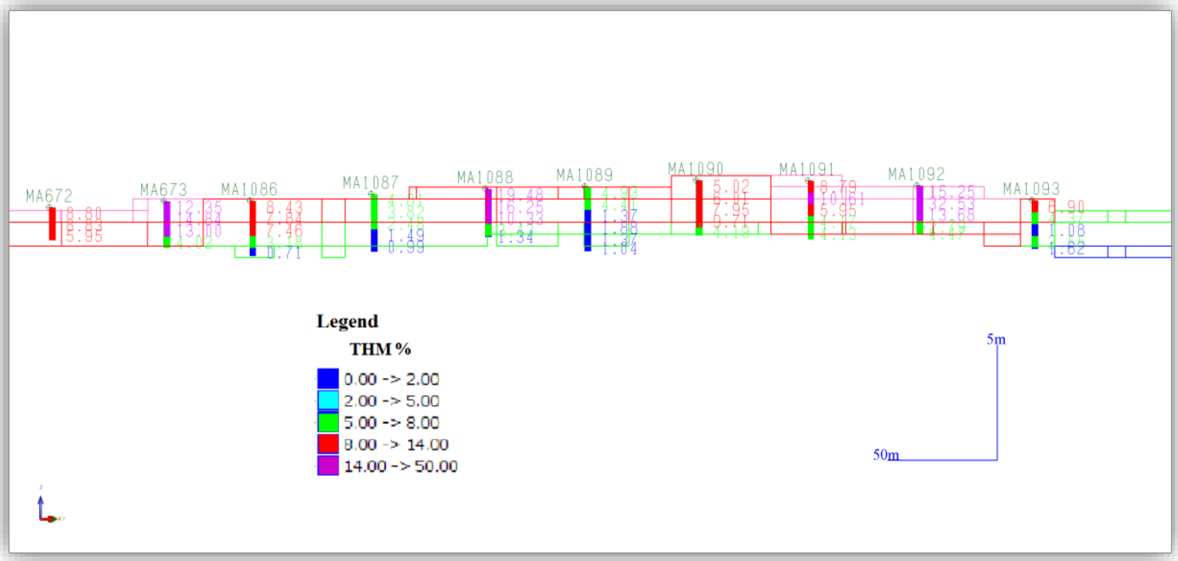

Figure 7 Section showing the input drill hole values of the THM % correlate well with the block model estimates. Vertical exaggerations 10X.

Resource Estimation

Estimation into the block model was done by inverse distance to the power of 3 (ID^3). Estimation parameters (search ellipsoid and ranges) used for Domains 1, 2, 5 and 6 was derived from updated variography for the THM %, Silt % and Oversize %. The Domain 1 estimation parameters was used for Domain 3. The THM % estimation parameters per domain were used for the estimation of the magnetic separation data for their respective domain.

Resource Reporting and Selection of Resource Lower Cut Off for reporting

The Mineral Resource statement table above (Table 2 and 3) are for no lower cut off grade and a 2% Total Heavy Mineral lower cut off grade. A 2% lower cut off is considered appropriate for this Inferred and Indicated Mineral Resource Estimation in that it maintains satisfactory continuity of the resource zone and as far as can be determined at this early project stage is not likely to be inconsistent with the economics of mining and treatment of shallow, surface exposed high grade, low silt mineral sand deposits in general.

However as the project progresses further studies of mining and treatment options will provide better analysis of mining and treatment economics. While the 2% lower cut off is considered conservative for a Inferred and Indicated mineral resource estimation more precise and potentially variable lower and higher cut offs may have to be applied in different parts of the resource to ensure optimal economic optimisation of the resource and access to some areas where there may be localised costs for movement of infrastructure. At this stage of the project definition the use of a lower cut off of 2% is considered consistent in material respects with the requirement of the JORC code sec20 that requires mineral resources to have reasonable prospects for eventual economic exploitation.

Resource Classification

The resource classification was primarily based on the drillhole density, the flagged blocks with the estimation passes 1 to 3 for the THM % and magnetic separation data (CI Yield %) (Figure 8). Infill drilling in areas that are likely to form the core of the project has enabled these large and continuous areas to be upgrade from the Inferred to Indicated resource category.

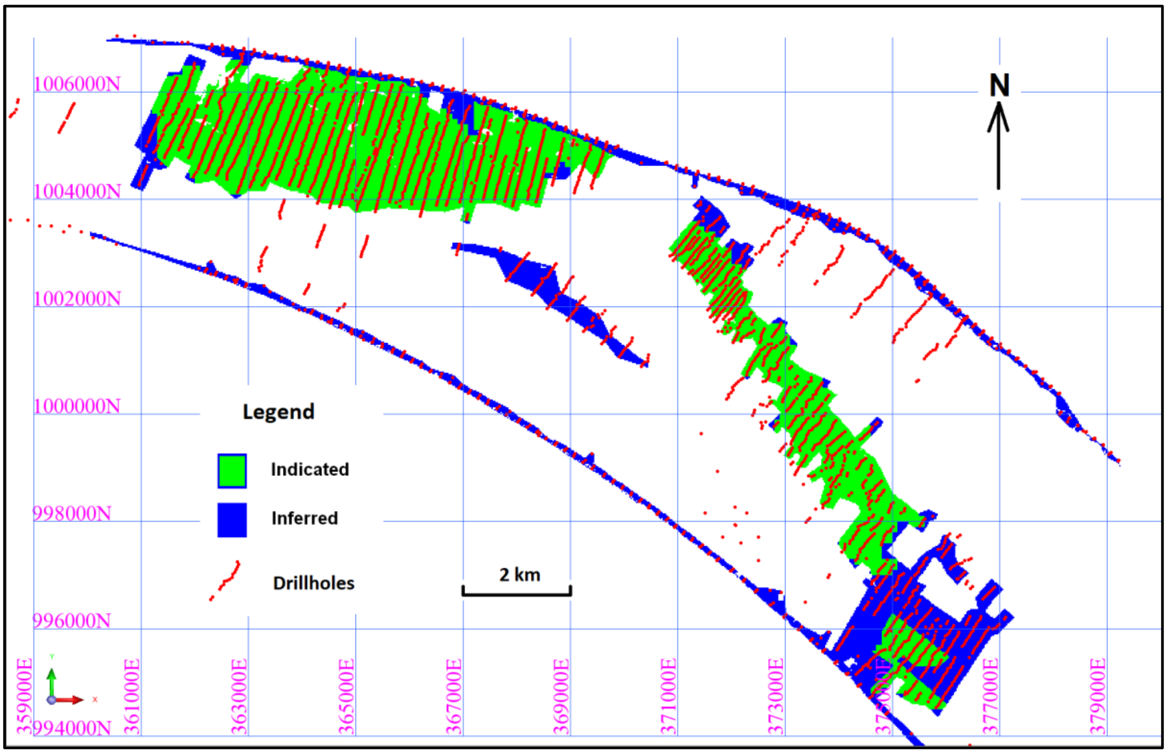

Figure 8 Distribution of Inferred and Indicated mineral resources.

ONGOING EXPLORATION AND RESOURCE POTENTIAL FOR THE MANNAR ISLAND PROJECT

As the current Mineral Resource are based on drilling only down to the water table there is the potential to greatly expand the scale of the project by drilling underneath the surface exposed shallow mineralisation. As reported to the ASX [2] a 473 hole reverse circulation drilling program was completed in mid December 2019. The drilling sought to test a further 10m beneath most of the current surface exposed Mineral Resource. The drilling also tested several areas outside the previous shallow drilling. Figure 9 shows the current Mineral Resource areas, the shallow auger drilling, and the location of the RC aircore drill holes.

The RC drill holes were drilled to a nominal depth of 12m below surface (due to available drill rods) which in most places is about 9 to 10m below the bottom of the shallow resource drilling. The majority of the RC aircore drill holes intersected unconsolidated sands with significant heavy mineral concentration visible in visual logging. Samples from the RC aircore drilling have been consigned to a mineral sands laboratory in South Africa. Results are expected to be received progressively over the next 6 weeks.

In Figure 10 the schematic cross sections indicate the enormous resource upside potential that the RC aircore drilling has so far indicated. Much of the shallow resource being reported in the announcement is underlain by up to 10m of unconsolidated sands with significant amounts of heavy minerals. The laboratory results will confirm if and how much of this material can constitute additional resources.

The RC aircore drilling also indicates that there is additional potential adjacent to the current Mineral Mesource (the two areas shown in green in Figure 9) to substantially enlarge the project resource base multiple times. Limited hand auger and RC aircore drilling in the area adjacent to the NE coast, shown on the right of the CD section in Figure 10 indicates mineralisation from surface to at least 12m in places. The AB section in Figure 10 shows that over 3km of the width of the surface mineralisation is underlain by up to 10m of heavy mineral bearing sands.

The deeper mineralisation is finer grain but still with relatively low levels of silt and clay. It is importantly also unconsolidated. While the visual logging indicates significant heavy mineral concentration over much of the area RC aircore drilled laboratory results will determine how much is up to resource grade. A substantive increase in project resources based on deeper sands below the water table could change the focus of the project from a small high-grade project to a very long life super low-cost dredging project ranking amongst the world's larger deposits.

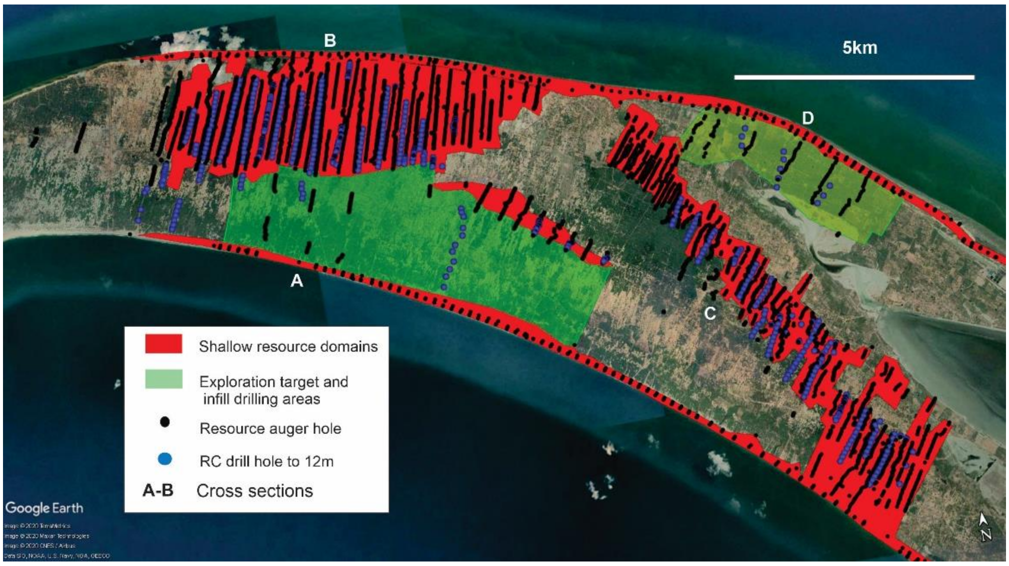

Figure 9 Mineral Resource block envelope, all shallow auger drilling and RC holes drilled up to mid-December 2019.

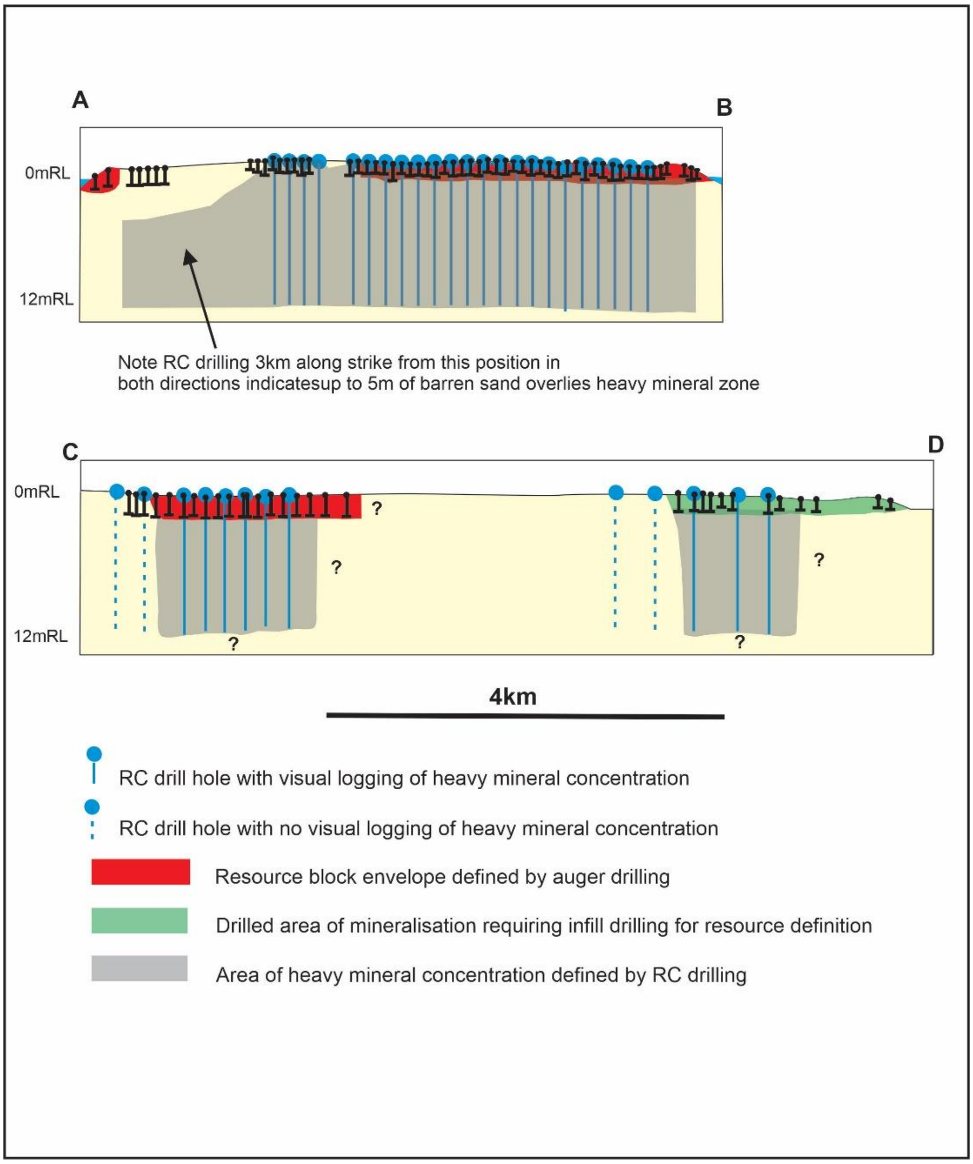

Figure 10 Schematic cross sections across the Mannar Island, section locations on Figure 9

OVERVIEW OF THE MANNAR ISLAND HEAVY MINERAL SAND PROJECT

The Mannar Island Heavy Mineral Sands Project is located in the dry north west of Sri Lanka. Mannar Island is a 26 km long by 5 km wide sand island joined to the Sri Lankan mainland by a 3 km road and rail causeway (Figure 1).

Sri Lanka is a stable democratic nation of ~21m people. The country is very supportive of foreign investment and has a favourable tax regime. Power, rail and road infrastructure extends across the country and Mannar Island. The Government is actively enhancing infrastructure in many locations including the North West where Mannar Island is located (Figures 11 and 12).

Regionally Sri Lanka is ideally situated for product export to all parts of Asia including China. 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 (north east coast) and Colombo.

Figure 11 Rail track on Mannar Island that connects to the mainland network.

Figure 12 Road and power infrastructure leading to Mannar Island

Figure 13 RC aircore tractor mounted drilling rig owned and operated by Titanium Sands Ltd.

Ends-

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

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COMPLIANCE STATEMENTS

Competent Persons Statements

Except where indicated, exploration results above 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 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.

The Mineral Resources estimation reported above has been summarised by Dr James Searle. The Mineral Resources Estimate and related QA/QC investigations have been undertaken by 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 consent to the inclusion in this report of the matters based on his information in the form and context in which it appears.

Appendix 1 contains tables of detailing compliance with the JORC 2012 requirements for reporting of Mineral Resources. This information has been compiled in relation to the Mineral Resource Estimation summarised above by Mr Badenhorst and Mr Siebrits and reviewed by Dr Searle.

References to ASX Announcements included in this report:

1 *Released to the ASX 20/1/2020 “Shareholder Vote on Acquisition Confirmed for 21 February 2020”.*
2 *Released to the ASX 20/12/2020 “Company Update”.*

These announcements are available to be view on the Company’s website www.titaniumsands.com.au

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 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. 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 further exploration will result in additional Mineral Resources.

Appendix 1

COMPLIANCE WITH THE JORC CODE ASSESSMENT CRITERIA

The compliance information contained below is in specific reference to the Mineral Resource Estimation (MRE) for the Mannar Island Project presented here was undertaken by Kobus Badenhorst of Geo Activ Pty Ltd a geological consultant registered with the South African Council for Natural Scientific Professions ('SACNASP') and Bernhard Siebrits a geological consultant also registered with SACNASP and a Member of the Australian Institute of Mining and Metallurgy MAusIMM). Dr James Searle of Titanium Sands Ltd has also reviewed this information (see Competent Persons Statement).

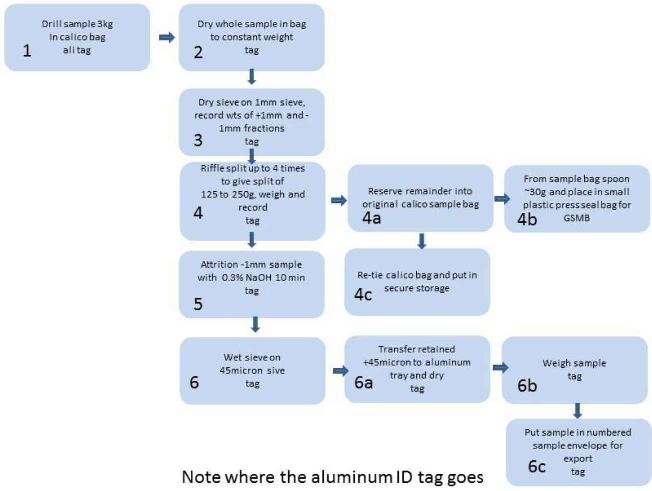
The JORC Code (2012) describes a number of criteria, which must be addressed in the Public Report of Mineral Resource estimates for significant projects. These criteria provide a means of assessing whether or not parts of or the entire data inventory used in the estimate are adequate for that purpose. The resource estimate stated in this document was based on the criteria set out in Table 1 of that Code. These criteria are discussed in the table below.

JORC Code Assessment Criteria	**Comments**
Section 1	**Sampling techniques and data**
Sampling Techniques *Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.* *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* *Aspects of the determination of mineralisation that are Material to the Public Report. In cases where 'industry standard' work has been done this would be*	A Dormer hand-auger was used for auger drilling. The bucket was designed to be able to do 0.5 m samples per drill run. Sampling was therefore done on 0.5 m intervals, unless penetration problems caused incomplete samples at the end of holes. Where some minor penetration problems were experienced, smaller sample runs were done. The full sample from the auger bucket was collected in a calico sample bag and assigned an Alpha numerical sample number. All samples were transported to the site office / Prep Lab sample prep facility in Pesalai on Mannar Island. The Prep Lab received samples up to c 2.4 kg in weight / sample. All samples from the drilling program were prepped, even samples perceived to be low grade. Reference / residual samples for samples sent to the analytical laboratory are safely stored at the site office. Permits for the export of the samples were sourced in Sri Lanka. On receipt of the permits the samples were couriered via air freight to Johannesburg where clearance took place for the samples. They were then air freighted to Cape Town where a representative from the laboratory, Scientific Services CC, collected the samples.

JORC Code Assessment Criteria	Comments
relatively simple (e.g. 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases, more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information.	
Drilling Techniques	
Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc.), and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).	A Dormer hand-auger was used for auger drilling. The bucket has a diameter of 75 mm. The auger bucket was designed to drill 0.5 m samples per drill run. Larger samples would have become too heavy and would have resulted in sample falling out of the bucket. One-meter drill rod extensions were used, with sufficient extensions on site to drill to 9 m. The deepest auger holes drilled were MA176 and MA302, both drilled to 6.00 m.
Drill Sample Recovery	
Method of recording and assessing core and chip sample recoveries and results assessed. *Measures taken to maximise sample recovery and ensure representative nature of the samples.* *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	Detailed measurements were done during drilling prior to and after the removal of the drill bucket during drilling. This was to ensure that there were no collapses of the sidewalls. Re-drilling took place where this was not the case, or the hole and sampling stopped where sample recovery or hole collapse became a problem. Recoveries were estimated and recorded for each 0.5 m drill interval. The sample recovery or penetration problems were purely linked to the shallow water table.

JORC Code Assessment Criteria	Comments
Logging	
Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies. *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc), photography.* *The total length and percentage of the relevant intersections logged.*	Each sample was geologically logged for mineral composition, grain size, sorting, visual silt %, induration, and a rough visual estimate of the dark heavy mineral % component. Paper log information was transferred every night to an Excel spread sheet.
Sub-Sampling Techniques and Sample Preparation	
If core, whether cut or sawn and whether quarter, half or all core taken. *If non-core, whether riffled, tube sampled, rotary split, etc, and whether sampled wet or dry.* *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* *Measures taken to ensure that the sampling is representative of the in-situ material collected, including for instance results for field duplicate/second-half sampling.* *Whether sample sizes are appropriate to the grain size*	The Prep Lab will receives samples up to c 2.4 kg in weight / sample that have to be dried, sieved on a 1 mm aperture vibrating sieve, the +1mm and -1mm fractions weighed, then the –1 mm fraction riffle split to a sub-sample of c 125-250 g and the remaining material retained in storage. The 125-250 g sample is weighed then undergoes rotary light attritioning in a 0.3-0.5% NaOH solution. The subsample will then be wet sieved on a 45-micron vibrating sieve with retained +45-micron material being dried then weighed and packaged for export. A duplicate sample was riffled from every 20th sample, i.e. 5% of the total. The riffler was thoroughly cleaned after each sample.

<table>
<tr><th>JORC Code Assessment Criteria</th><th>Comments</th></tr>
<tr><td>of the material being sampled.</td><td></td></tr>
<tr><td>Quality of Assay Data and Laboratory Tests

The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.
For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.
Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.</td><td>The initial drying (at between 80 to 105 degrees C via gas oven), de-sliming and oversize removal was conducted at the site Prep Facility on Mannar Island. The procedures are shown below.


Analytical work on the tetrabromoethane (TBE) based THM determination and subsequent magnetic separation work was done by Scientific Services C.C., Cape Town. XRF work was done on the fractions of the magnetic separation samples
The determination of THM % sample concentrate using TBE at a specific gravity (SG) of 2.95, are as follows:
TBE is placed into the glass flask up to the indicated mark.
Place approximate 1 scoop of sample into the flask.
Wash down the sides of the flask and impeller with TBE to ensure all material is in the TBE.
Run the mixer for about 10 seconds.
Wash down again to ensure no material is ‘hung’.
Run the impeller mixer repeatable in 10 second bursts until sure that all heavies have been liberated.
Allow to stand for 5-10 minutes or until no more material cascades to bottom.
Once the discharge pipe is clear of suspended material release the tube to allow the concentrate to be captured in the filter paper. Store this labelled filter paper.
Process any remaining sample as above ensuring no concentrate is lost.</td></tr>
</table>

JORC Code Assessment Criteria	Comments
	Finally flush out the floats by opening the tube and allowing the floats to fall into filter paper – allow this to stand capturing all the TBE which will be reused at a later stage. Wash all concentrates and floats thoroughly with acetone to reclaim as much TBE as possible. After the concentrate filter is acetone rinsed and dried, transfer the concentrate very carefully into a bag by opening the filter paper ensuring nothing is lost. Place the floats into the waste drums unless specified by the client to do otherwise. Check the SG of the TBE with the density tracers provided and re-use as appropriate.
Verification of Sampling and Assaying	
The verification of significant intersections by either independent or alternative company personnel. *The use of twinned holes.* *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* *Discuss any adjustment to assay data.*	Kobus Badenhorst did twin and test holes on c 5% of the drilling done during the program. QAQC of all the work done was performed by Bernhard Siebrits of GeoActiv.
Location of Data Points	Data and work were done in UTM, WGS84. A handheld Garmin GPS was used for the positioning and final position of the auger holes. The X and Y coordinates were collected and entered into the project spreadsheet. The handheld GPS Z data were found to be very inaccurate. Consequently a GeoEye satellite based Digital Terrain Model (DTM) study that covers the entire Mannar Island was done in 2015, the data interpretation and manipulation for the areas covered by the resource update was done by a highly qualified land surveyor during 20117. The X and Y coordinates of the drill holes was used to elevate the drill holes to the DTM surface prior to resource modelling taking place. This will supply significantly more accurate Z data as the DTM is based on 13 Differential GPS derived points.
Accuracy and quality of surveys used to locate drill holes (collar and downhole surveys), trenches, mine workings and other locations used in Mineral Resource estimation. *Specification of the grid system used.* *Quality and adequacy of topographic control.*	
Data Spacing and Distribution	

JORC Code Assessment Criteria	Comments
Data spacing for reporting of Exploration Results. Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied. Whether sample compositing has been applied.	The drilling program for the updated resource was conducted at 400m inter-drill line spacing, with 50m inter-drill hole spacing on the lines.
Orientation of Data in Relation to Geological Structure	Drilling took place in fences perpendicular to the interpreted strike of the mineralized ore bodies, this was confirmed during modelling.
Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type. If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.	
Sample Security	All sampling, prep and packing work took place under supervision of a site geologist. A representative from the Analytical laboratory, Scientific Services CC, collected the samples from the airport in Cape Town, South Africa.
The measures taken to ensure sample security.	
Audits and Reviews	A Prep Facility (on Mannar Island) and laboratory audit at Scientific Services in Cape Town was conducted by Kobus Badenhorst and Bernhard Siebrits of GeoActiv.
The results of any audits or reviews of sampling techniques and data.	
Section 2	**Reporting of exploration results**
Mineral Tenement and Land Tenure Status	Bright Angel is the legal and beneficial owner of all of the fully paid ordinary shares in the capital of these Sri Lankan

JORC Code Assessment Criteria	**Comments**
*Type, reference name/***number***, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings. The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	corporate entities Rotim Investment Holdings (Pvt) Ltd; Sanur Asia Investments (Pvt) Rotim Investments in turn holds 99% of the issued capital of Orion Minerals (Pvt) Ltd a Sri Lankan entity that holds two licenses (EL327 and EL328); Sanur Asia Investments hold 100% of the issued capital of Sanur Minerals (Pvt) Ltd another Sri Lankan entity that holds the other two exploration licenses (EL351 and EL352).
Exploration Done by Other Parties	Work post 2015 was all conducted by Srinel staff, supervised by TSL (James Searle).
Acknowledgment and appraisal of exploration by other parties.	
Geology	There is general consensus that the heavy minerals in Sri Lanka were derived from Precambrian (Proterozoic) high-grade metamorphic rocks that account for more than ninety percent of the island. These crystalline basement units are subdivided into 3 major litho-tectonic subdivisions, namely the Highland, Wanni and Vijayan Complexes. The heavy minerals ilmenite, rutile, zircon, sillimanite and garnet commonly occur in the coastal sands. Mineralisation is high in the tidal, beach and berm areas, with significant inland mineralisation proven on Mannar Island.
Deposit type, geological setting and style of mineralisation.	
Drill hole information	Drill hole information used in this resource update has previously been reported in full to the ASX (15th of July 2019 including Drill hole identification, Collar locations. Dip, all holes vertical. Down hole length and intercept depth Hole length
Data Aggregation Methods	Weighted averages of intercept length and grade were used. No cut off grades were applied to drill hole data.

JORC Code Assessment Criteria	Comments
	Cut off grades were only applied to the block model of the mineralised zone.
Relationship between mineralisation widths and intercept lengths	Mineralisation a horizontal blanket, drill holes all vertical.
Diagrams	Drill hole diagrams, and sections included with scale and locations.
Balanced reporting	All drill hole results reported
Other substantive exploration data	None
Further work	As stated, further drilling will target depth and lateral extensions to the modelled mineralisation.
Section 3	**Estimation and reporting of Mineral Resources**
Database Integrity *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.* *Data validation procedures used.*	The data was captured in Excel spreadsheets. GeoActiv performed validation checks on all the data and analyses before it was used in modelling.
Site Visits *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* *If no site visits have been undertaken indicate why this is the case.*	One of the Competent Persons, Kobus Badenhorst, visited the exploration sites during the auger drilling phase in 2017.
Geological Interpretation *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.* *Nature of the data used and of any assumptions made.* *The effect, if any, of alternative interpretations on Mineral Resource estimation. The use of*	All the drill hole intersections with the THM above 1% were considered as the mineralisation envelope from surface to the end of holes. The domain boundaries of the mineral sand resource were extended to half the drill line spacings. The current drill spacing provides sufficient degree of confidence in the interpretation and continuity of grade for an Inferred Mineral Resource.

JORC Code Assessment Criteria	Comments
geology in guiding and controlling Mineral Resource estimation. *The factors affecting continuity both of grade and geology.*	
Dimensions	
The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.	The Inferred Resource was divided into 3 Domains, due to different locations. The extents of the mineralisation were within **Domain 1**: 7,500 m x 2,500 m x 2 m, **Domain 2**: 9,500 m x 1,000 m x 2m and **Domain 3**: 4,000 m x 400 m x 2m.
Estimation and Modelling Techniques	
The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters, and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used. *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* *The assumptions made regarding recovery of by-products.*	The block sizes that were created were100 m X 100 m X 2 m and with minimum sub blocking of 25 m X 25 m X 0.5 m. Inverse distance to the power of 3 was used for *in situ* grade interpolation for all the variables. (THM, silt, oversize and the XRF data of composite data of the CARPCO magnetic separations (CI_yield, MO_yield, NM_yield, CI_TiO_2, MO_TiO_2, NM_TiO_2 and NM_ZrO_2). The general aspects of the estimation were as follows: • The variogram ranges of the THM % were used for all the variables in the respective domains 1 and 2 and for domain 3 the ranges of domain 1 was used; • A minimum of 3 samples and a maximum of 15 samples were used for all inverse distance runs, except for the third pass when a minimum of 2 samples and a maximum of 15 samples were used; • Pass 1: search radii set to 268 m for the major and 2 m for the vertical for domain 1 and 3 and search radii set to 325 m for the major and 2 m for the vertical for domain 2; • Pass 2: search radii set to 402 m for the major and 3 m for the vertical for domain 1 and 3 and search radii set to 488 m for the major and 3 m for the vertical for domain 2; • Pass 3: search radii set to 1000 m for the major and 10 m for the vertical for all three domains; • Block discretisation was set to 4(X) by 4(Y) by 4(Z); • An octant search estimation method was used with the maximum of 3 adjacent empty octants in pass 1, a maximum of 5 adjacent empty octants in pass 2 and a maximum of 7 adjacent empty octants in pass 3; and

JORC Code Assessment Criteria	Comments
Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation). *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* *Any assumptions behind modelling of selective mining units.* *Any assumptions about correlation between variables.* *Description of how the geological interpretation was used to control the resource estimates.* *Discussion of basis for using or not using grade cutting or capping.* *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	• No sample limits per drill hole were applied. The mineral associations for ilmenite (ilm), leucoxene (leu), rutile (rut) and zircon (zir) were calculated with an expression as a calculated attribute in the block model with the ratios determined by the mineralogical analysis. The model was validated visually and statistically. The result of the validation shows that the interpolation has performed as expected and the model was a reasonable representation of the data used and the estimation method applied.
Moisture	
Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.	All tonnages were based on dry basis, volume measurements converted to tonnes using a dry bulk density of 1.76 for domain 1, 1.74 for domain 2 and 1.75 for domain 3.
Cut-off Parameters	
The basis of the adopted cut-off grade(s) or quality parameters applied.	The tabulated resources are based on a no cut-off basis, but also using lower cut-off grades of 2%THM. At a 2% lower cut off the resource zones still shows satisfactory continuity and as far as can be judged at this early project stage not likely to be inconsistent with the prevailing range of economics of mining and treatment of high grade, surface exposed low slime mineral sands deposits in general.

JORC Code Assessment Criteria	Comments
Mining Factors or Assumptions	
Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.	No assumptions were made regarding possible mining methods as this is premature at this stage of the project.
Metallurgical Factors or Assumptions	
The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.	The analytical results and mineralogical analyses could be the basis for the metallurgical extraction methods. The metallurgical characteristics of the resources reported here have yet to be investigated.

JORC Code Assessment Criteria	Comments
Environmental Factors or Assumptions	
Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.	Environmental investigations are premature at this early stage of the project other than to note that GeoActiv has not investigated and was not aware of any issues that would prevent the eventual economic extraction of the project and similarly Titanium Sands Ltd.
Bulk Density	
Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples. *The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences*	The Relative Density (RD) or specific gravity was determined by digging pits of roughly 0.8m by 0.8m by 0.5m deep at 55 locations throughout the drilling area, then accurately weighing the sand and determining the volume of the holes by inserting and accurately measuring the volume of water inserted in the pits (after using a very thin lining in the pits). The *in situ* mineral sand was weighed and the moisture content determined to derive at a dry density. RD measurements of between 1.74 of 1.76 were calculated and used in different domain areas for the Mannar deposit.

JORC Code Assessment Criteria	Comments
between rock and alteration zones within the deposit. *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*	
Classification	
The basis for the classification of the Mineral Resources into varying confidence categories. *Whether appropriate account has been taken of all relevant factors, i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data.* *Whether the result appropriately reflects the Competent Person(s)' view of the deposit.*	Resources were classified in accordance with the Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC, 2012). The classification of Mineral Resources was completed by GeoActiv based on the geological confidence criteria, drill spacing, quality of drilling, sampling information, grade continuity and confidence in estimation of heavy mineral content and mineral assemblage. The high variances in the THM %, oversize % and the silt % resulted in a lower confidence on the estimates. All the Mineral Resources has been classified as Inferred.
Audits or Reviews	
The results of any audits or reviews of Mineral Resource estimates.	No independent reviews of the Mineral Resource estimate have been conducted to date. An in-company review by James Searle has taken place.
Discussion of Relative Accuracy/Confidence	
Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the	This is a global resource with no production data.

JORC Code Assessment Criteria	Comments
resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate. *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	

APPENDIX 2
Technical Memorandum from Bernhard Siebrits and GeoActive

TECHNICAL MEMORANDUM

DATE 23 January 2020

PROJECT No. 1912M01

TO Kobus Badenhorst
GeoActiv

CC

EMAIL jnb@geoactiv.co.za;
johan@geoactiv.co.za;
info@geoactiv.co.za

FROM Bernhard Siebrits
BS Geo Consulting Services

MANNAR UPDATE 2 - BLOCK MODELLING – SUMMARY RESULTS

1.0 INTRODUCTION

Mr Kobus Badenhorst from GeoActiv requested Bernhard Siebrits to update the block model of the Mannar Mineral Sand Resources for Titanium Sands Ltd. This memo is a summary of the Update 2 block model estimations and the detailed report will follow soon.

2.0 BACKGROUND

The Mannar Mineral Sand Resources was updated in 2018 for Area 1 (The Mineral Resource Estimation of Area 1 on the Mannar Mineral Sands, February 2019, GeoActiv) and Area 2 (Bright Angel Mineral Resource Estimation, August 2019, GeoActiv). Previously the two areas were estimated together, and the Mineral Sand Resources have been reported separately.

3.0 APPROACH

The 2018/19 auger drill hole data were imported into the previous database of Update 1 (Figure 1). The domains of the mineralised and drilled areas were adjusted according to the drill density and THM > 2%. The new floor wireframes were created from the end of hole depths for each domain within Surpac. The new extended block model was created within a sting file created as a boundary of the topographical DTM from the 2014/17 survey. All the attributes of Update 1 were added to the block model and the new floor wireframes were assigned within each domain. Composites of 0.5m were created in all the domains and these were used for all the estimations in their respective domain.

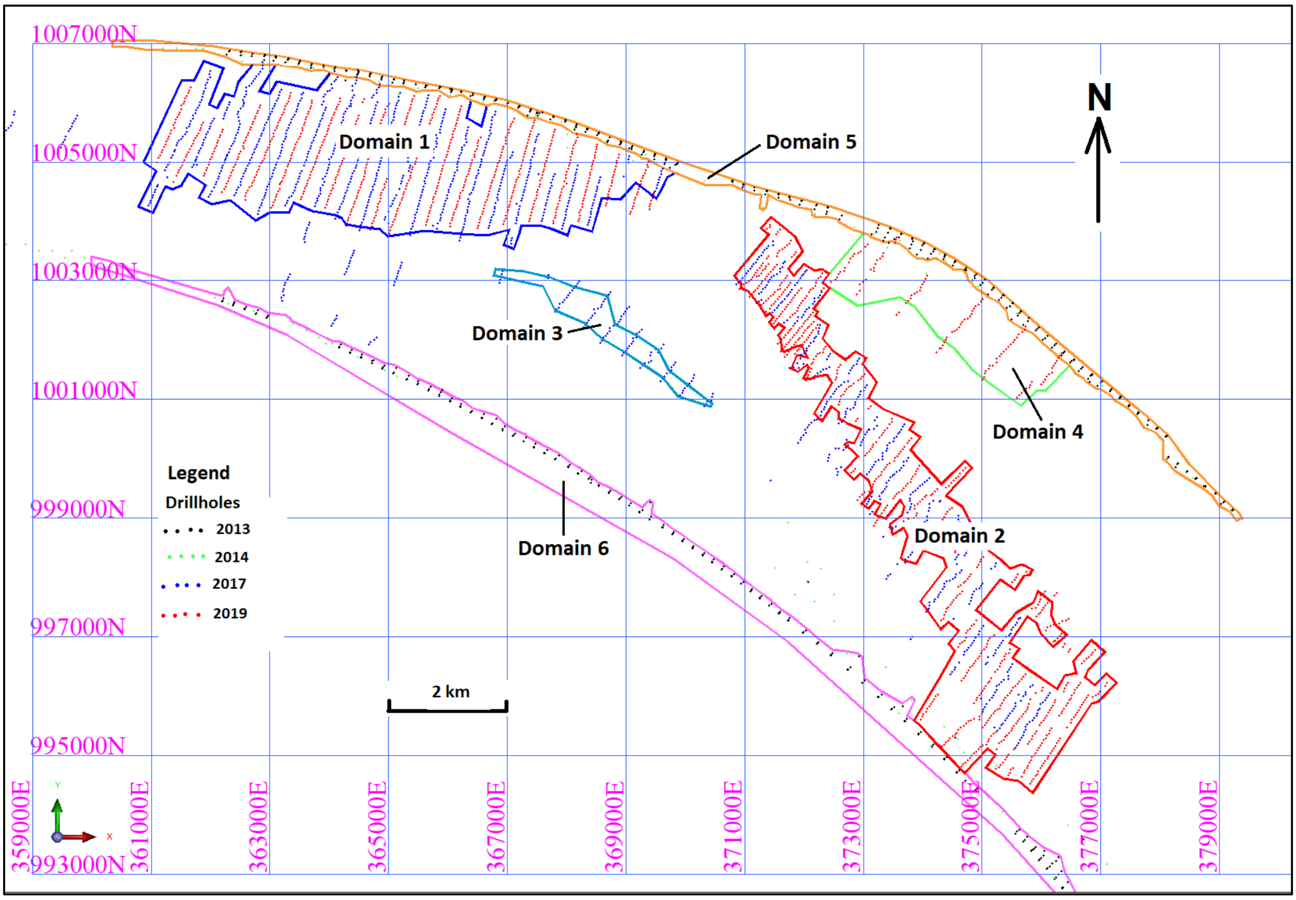


Figure 1. Plan location of the drill hole campaigns and domains on Mannar. Note: Domain 4 is an exploration target.

4.0 BASIC STATISTICS OF MANNAR DRILL HOLE DATA

The basic statistics of all the 0.5m composite drill hole data per domain are shown in the tables below.

Table 1. Basic statistics of the 0.5m composite samples of Domain 1.

Field	THM %	Silt %	Oversize %
Number	4850	4848	4848
Min	0.02	0.00	0.00
Max	48.94	27.20	78.01
Mean	3.20	0.64	5.67
Median	2.63	0.38	1.27
Variance	9.07	1.29	126.67
Std. Dev.	3.01	1.14	11.25
CV	0.94	1.77	1.98

Table 2. Basic statistics of the 0.5m composite samples of Domain 2.

Field	THM %	Silt %	Oversize %
Number	4669	4665	4665
Min	0.00	0.02	0.03
Max	49.98	14.28	92.68
Mean	6.15	0.90	24.81
Median	4.01	0.57	15.89
Variance	39.25	1.31	470.09
Std. Dev.	6.27	1.15	21.68
CV	1.02	1.28	0.87

Table 3. Basic statistics of the 0.5m composite samples of Domain 3.

Field	THM %	Silt %	Oversize %
Number	152	152	152
Min	0.07	0.00	0.03
Max	36.58	6.37	20.44
Mean	3.93	0.47	0.65
Median	2.38	0.39	0.32
Variance	34.94	0.34	3.26
Std. Dev.	5.91	0.58	1.80
CV	1.50	1.24	2.78

Table 4. Basic statistics of the 0.5m composite samples of Domain 5.

Field	THM %	Silt %	Oversize %
Number	572	128	128
Min	0.05	0.01	0.00
Max	71.80	10.00	40.39
Mean	10.15	2.36	6.74
Median	7.05	1.72	3.05
Variance	105.48	4.69	71.59
Std. Dev.	10.27	2.17	8.46
CV	1.01	0.92	1.26

Table 5. Basic statistics of the 0.5m composite samples of Domain 6.

Field	THM %	Silt %	Oversize %
Number	812	77	77
Min	0.02	0.07	0.04
Max	54.57	86.73	64.37
Mean	7.87	3.37	9.26
Median	4.58	1.23	3.96
Variance	89.75	99.79	159.48
Std. Dev.	9.47	9.99	12.63
CV	1.20	2.96	1.36

5.0 BLOCK MODEL

A block model with block sizes of 100m X 100m X 2m and minimum sub blocking of 25m X 25m X 0.5m was created within Surpac. The block model with the THM % estimations is displayed in Figure 2 below.

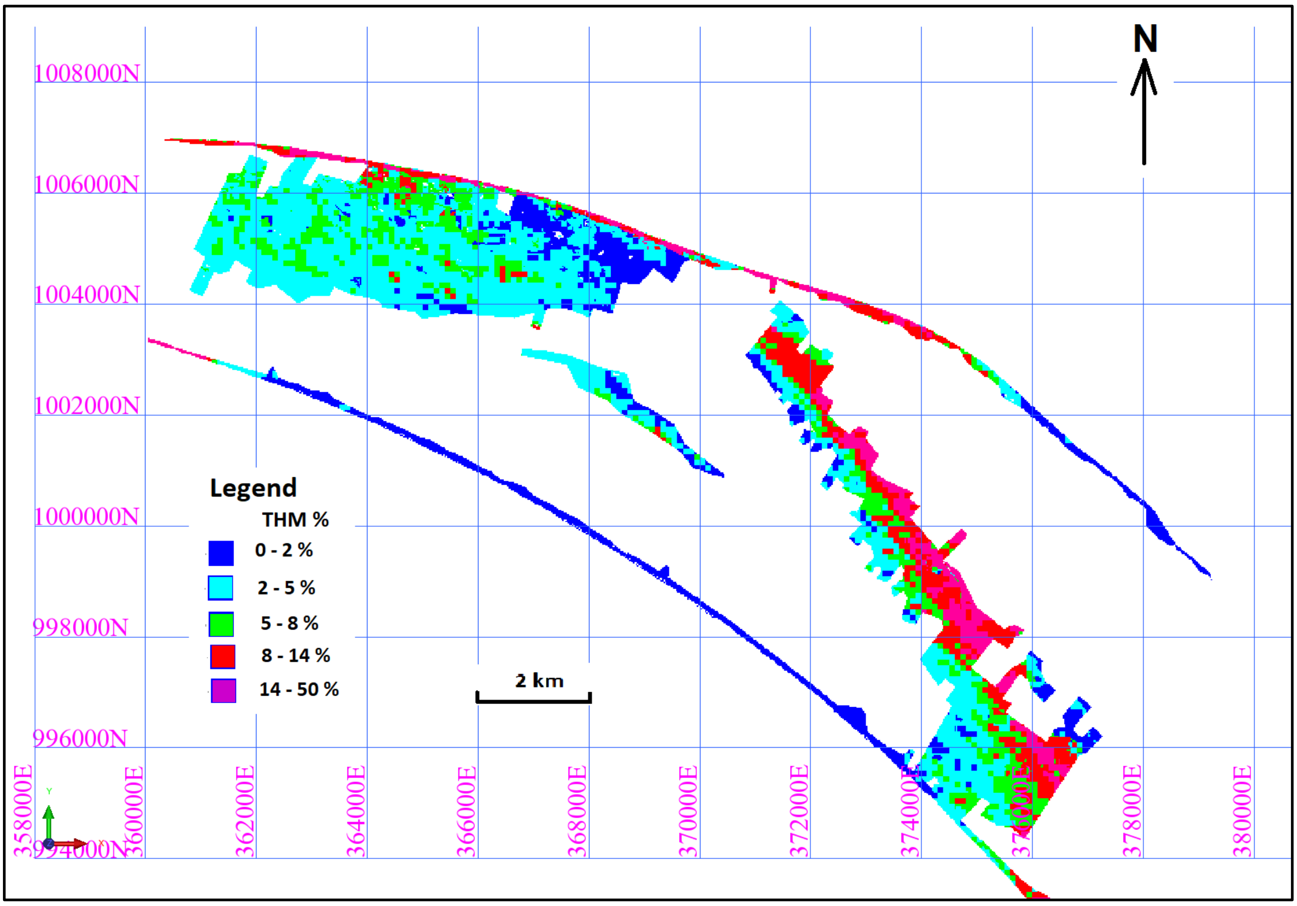


Figure 2. Block model with the THM % estimations.

6.0 RESOURCE ESTIMATION

Estimation into the block model was done by inverse distance to the power of 3 (ID³). Estimation parameters (search ellipsoid and ranges) used for Domains 1, 2, 5 and 6 was derived from updated variography for the THM %, Silt % and Oversize %. The Domain 1 estimation parameters was used for Domain 3. The THM % estimation parameters per domain were used for the estimation of the magnetic separation data for their respective domain.

7.0 RESOURCE CLASSIFACTION

The resource classification was primarily based on the drill hole density, the flagged blocks with the estimation passes 1 to 3 for the THM % and magnetic separation data (CI Yield %) (Figure 3).

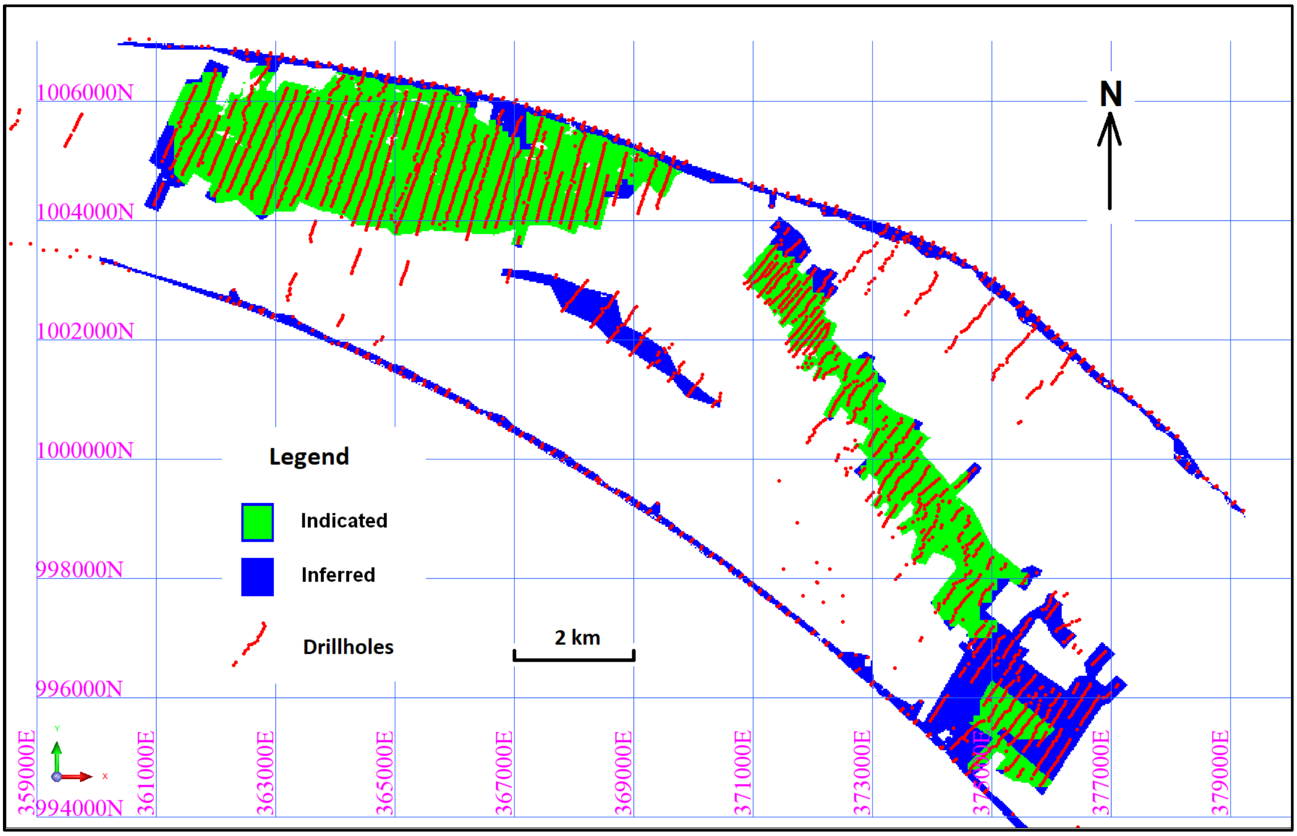


Figure 3. The resource classification in plan with the drill holes.

8.0 RESOURCE REPORTING

The Mineral Resource estimations reported from the block model without a cut-off and a 2% THM cut-off are shown below in Table 6 and Table 7 respectively for the different domains.

Table 6. The Mineral Resource estimations for the Mannar Domains without a cut-off.

Res Class	Domain	Volume (Mm^3)	Tonnes (M)	THM %	Silt %	Oversize %	Ilm %	Leu %	Rut %	Zir %
Indicated	1	28.53	50.21	3.36	0.70	5.86	1.53	0.26	0.08	0.07
	2	17.90	31.14	6.93	0.73	23.19	3.32	0.62	0.09	0.13
Sub Total		**46.42**	**81.35**	**4.73**	**0.71**	**12.49**	**2.22**	**0.40**	**0.09**	**0.09**
Inferred	1	1.84	3.24	2.67	0.61	4.56	1.17	0.21	0.07	0.06
	2	10.57	18.40	5.70	1.41	23.74	2.27	0.43	0.08	0.10
	3	1.66	2.90	3.28	0.47	0.72	1.50	0.32	0.09	0.08
	5	3.81	6.66	10.43	2.50	7.14	5.21	0.74	0.23	0.24
	6	4.60	8.05	6.54	3.19	10.28	3.28	0.49	0.08	0.12
Sub Total		**22.47**	**39.24**	**6.25**	**1.82**	**14.88**	**2.83**	**0.47**	**0.11**	**0.12**
Grand Total		**68.90**	**120.59**	**5.22**	**1.07**	**13.27**	**2.42**	**0.42**	**0.09**	**0.10**

Table 7. The Mineral Resource estimations for the Mannar Domains with a 2% THM cut-off.

Res Class	Domain	Volume (Mm^3)	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**

9.0 CONCLUSIONS AND RECOMMENDATIONS

With the majority of the drill hole data derived from shallow auger drilling and the bias to the higher end for the THM %, it is recommended that the areas be infill with aircore drilling. With a QAQC process also in place for the oversize for the infill drilling and more areas covered with magnetic separation data, a JORC compliance Mineral Resource with higher confidence categories can be declared.

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