Mannar Island Can be Mined Responsibly and to Sri Lanka's Benefit

An article published on the Roar Media platform on 19 February 2021, titled Mineral Mining In Mannar Island May Put Bird Paradise At Risk (https://roar.media/english/life/reports/mineral-mining-mannar-bird-paradise) raised concerns that proposed heavy mineral sand extraction on Mannar Island could put the Vankali Sanctuary, a RAMSAR status wetland between the Island and the adjacent mainland, at risk.

Mannar Island is joined to the adjacent mainland coast by road, rail and power infrastructure and a series of sandy shoals and tidal flats. The sandy shoals and tidal flats form the 48.39km^2 Vankali Sanctuary Wetland, an important part of migratory bird pathways referred to as the Central Asian Flyway. Accordingly, Titanium Sands wishes to state that none of the current exploration venues (or any future mining operations planned by the Company) will affect the flight pathway of migratory birds as they travel over these areas.

Plans for the Mannar Island Mineral Sands project are at an early exploration and conceptual stage and comprehensive environmental studies are still underway, but it is already clear from the available information that the concerns are unfounded.

Globally, mining for mineral sands is a relatively low impact operation. Water used in the primary concentration of heavy minerals by simple gravity processes is recycled and there are no toxic chemicals that are discharged to the environment. Mineral sands mining is considered to have a fairly low impact on the environment compared to some other forms of mining.

The process doesn't involve chemical separation of minerals such as in gold mining or digging vast open-cut pits such as with coal. Noise at 100m from the plant is around 61 decibels (dB); at 200m with vegetation attenuation, noise would be well below 50dB. For comparison a quiet street is 60dB. Therefore, noise emissions from such activity are unlikely to impinge on nearby residential areas and overhead bird flight paths.

Subject to the conclusion of future EIA studies, there is currently no clear threat to the Vankali Sanctuary or the broader island from the proposed heavy mineral sand project. The project as currently conceived is located in the middle of the island, between 6 and 14km from the sanctuary. In contrast, the Mannar Urban Council area of 1,411 hectares with 25,000 people is immediately adjacent to the Vankali Sanctuary, posing the inevitable environmental threats associated with urban human activity.

If developed, the mineral sands project will bring major positive social, economic and environmental benefits to an area which desperately needs economic impetus of this nature to slowly revert to conditions similar to rest of the country, if not better. These benefits are expected to include the generation of over 200 hectares of sustainable commercial plantation agriculture and natural

vegetation protection barriers as mining areas are progressively rehabilitated. The attached PDF file 'South Western Australia - 60 Years of Heavy Mineral Sand Production Compatible With Nature Reserves, Tourism, High Value Agriculture and Population Growth', provides an overview of how mineral sand operations can co-exist with environmental reserves and high value agriculture because the environmental impacts are manageable, particularly water management.

The progression of the project still requires detailed investigations to identify the portions of the resource that are economically, technically and environmentally viable to develop into a heavy mineral recovery operation. This process requires time, deployment of modern technologies and the expenditure of millions of US dollars and there is no guarantee that the outcome will be positive.

Information from the detailed studies will form the basis for public consultations and submissions to the Sri Lankan Government under the country's Environmental Protection Act when an application is made for mining. Core to the submissions and public comment is the preparation of a comprehensive Environmental Impact Assessment (EIA), which Titanium Sands is yet to undertake. This exercise however is not a prerequisite for present exploration activities.

The mineral sands exploration process is very transitory, involving a 63mm hole being drilled in less than an hour. As the drill string is retrieved the hole simply collapses; nothing is left in the ground and there is zero impact. The term 'drilling' in this instance is a bit misleading as it implies big machinery and casing and deep holes that remain open. The drilling at Mannar, like elsewhere in sandy sequences, is really just quick probing to recover a few kilograms of sample sand. Similar techniques are used in environmental surveys to test soils.

The Australian stock exchange-listed company that I represent as Managing Director, Titanium Sands Limited, has been providing investment funds and technical support to several Sri Lankan companies to investigate the viability of recovering heavy mineral sand, principally ilmenite, from Mannar Island.

To be developed, a heavy mineral recovery operation requires not only environmental and regulatory approval but also the willingness of international investors to risk considerable funds, which can often exceed US$ 100 Million.

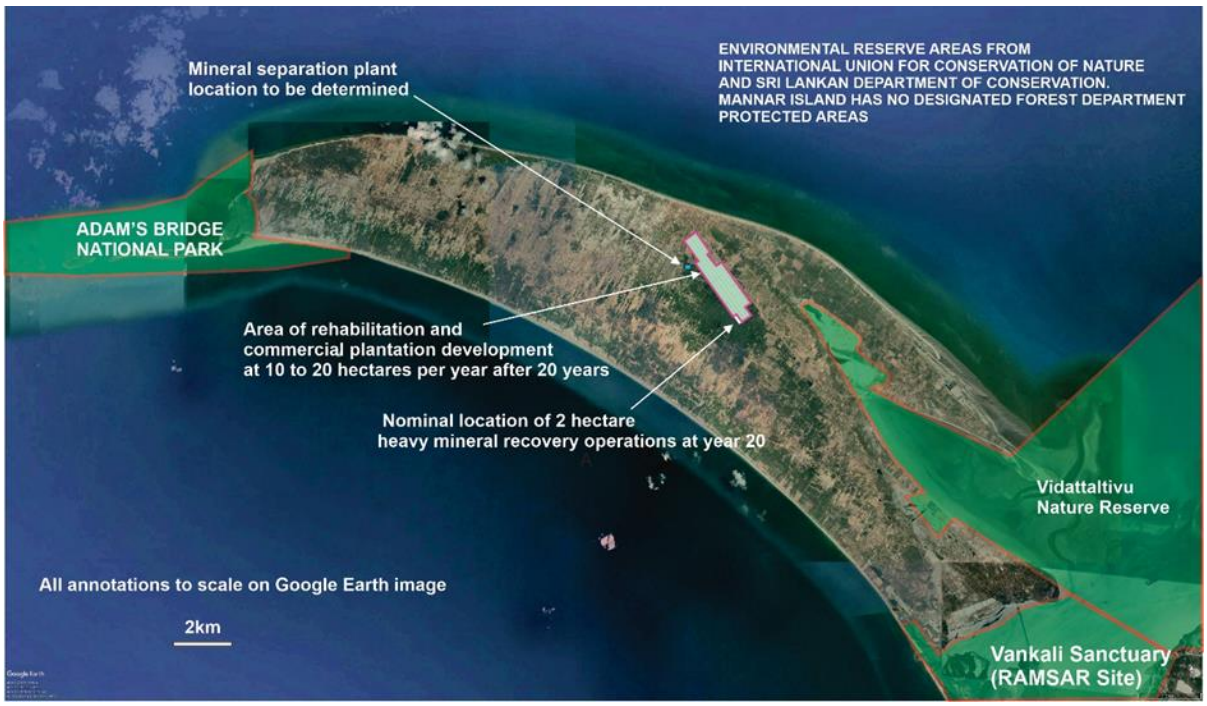
The Mannar Island project has progressed to the point where it is possible to begin focusing in on studying an area in the interior of Mannar Island, 2 - 3km from the shoreline and appropriately distanced from and avoiding areas of habitation, existing agriculture and ecological significance. Google Earth imagery clearly shows large areas of the interior of Mannar Island that are currently not being formally cultivated.

The detailed studies of this area will build on the early stage scoping study completed in June 2020. The scoping study produced a project concept that would see the recovery of the 4 - 5% of heavy mineral contained in the host sand and the immediate return of the remaining 95 - 96% of the material to the ground. With engineering material disruption (swell factor), the level of the rehabilitated land surface will be the same as before or slightly more elevated due to engineering swell factors.

As the material is returned to the ground, the soils and organics collected are respread in preparation for planting of coconut, cashew nut and potentially other commercial crops. This would also be accompanied by the establishment of protection corridors of natural vegetation. The mix and

design of plantings are to be determined by Sri Lankan experts in the establishment of arid zone plantation agriculture. Details will evolve as the component studies progress.

At any one time in the project's life, the area of heavy mineral extraction would be around 2 - 3 hectares, (which represents only 0.0015 - 0.002% of the extent of the island's 13,000 hectares). Over the course of each year of operation, the area would naturally expand, and there would be a commensurate area of rehabilitation, plantation and natural vegetation protection corridors. Over the lifespan of the project this would generate over 200 hectares of sustainable plantation agriculture developed at no cost to landowners and employing increasing numbers of agricultural workers.



The Mannar Island Heavy Mineral Project after 20 years, small active project area and the 200 hectares developed sustainable plantation agriculture.

The economic benefits to the local communities go beyond direct employment. The exact size of the workforce will be determined by the detailed technical studies, but it is clear that direct employment will be in excess of 200 persons and more than 300 if the rehabilitation and plantation development teams are included. The majority of these jobs would be skilled and paid accordingly. Maximising local work force participation will be best supported by long-term, job-specific training. There is also major potential for indirect employment with local businesses that would supply services to the project. Employment studies in many locations around the world where mining operations have been developed show a strong multiplier effect in indirect job creation.

The macroeconomic benefits that a project such as this could bring to Sri Lanka include inbound investment, increased export revenue and government income from tax and royalties. Mannar Island mineral sands alone could potentially double the country's total non-gemstone exports, making a significant contribution to the national balance of payments.

Over the past nine months, social media posts and associated mainstream media reports have predicted catastrophic environmental and social impacts from the Mannar Island Heavy Mineral

Project. Unfortunately, these have not been based on information that is available and evolving as the project progresses.

The COVID-19 global pandemic has impacted negatively on normal means of communication in all aspects of our lives, not the least the complex stakeholder engagements required for a project of such national significance. While this situation has made it potentially easier for factually deficient or outdated information to be disseminated, it need not necessarily be so.

Titanium Sands welcomes the opportunity to engage with stakeholders and interested groups that wish to comment or ask questions about factual matters on the project, either directly or through internet forums. We look forward to a post-pandemic era where special interest forums can be held physically, rather than through virtual means.

Titanium Sands acknowledges that the Vankali Sanctuary is too important to be threatened by inappropriate development or encroachment from population pressures and inadequate environmental protection. By the same token, the Mannar Island Heavy Mineral Project represents an opportunity to revitalise part of the country ravaged by decades of civil war. It is possible that both interests can be managed responsibly and that is our goal.

Further information on Titanium Sands and specific information on the project in relation to the Sri Lankan social media posts can be found at www.titaniumsands.com.au or by directly contacting info@titaniumsands.com.au

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This response has been prepared by James Searle, Managing Director of Titanium Sands Ltd. He holds Honours Degrees in Science and a PhD in marine geology and the evolution of recent to modern coastal environments. His research publications include papers on eustatic versus tectonic sea level changes and coastal geomorphology as a framework for optimal management and development decisions. He has over 35 years' experience in environmental consulting, project exploration and development globally.