



iSimangaliso: The restoration of Africa’s largest estuarine lake receives a boost

The historic restoration of the Lake St Lucia system is now making a visible difference to the landscape and nature. From the vantage point of the St Lucia Ski Boat Club and Estuary Boardwalk, the view across to Maphelane is dramatically different to that of several months ago, as the dredge spoil and other deposited material is steadily removed.



Then and now: the view from Lake St Lucia Estuary Boardwalk in early 2016 before dredge spoil removal began (above left), and at the end of December 2016 (right). “It is still early days and a lot more work is needed, yet nature’s healing has begun” says iSimangaliso CEO Andrew Zaloumis. “The removal of the first 96 842 cubic metres of material obstructing the natural course of the uMfolozi River has begun to reverse its negative impact on the hydrological and ecological functioning of the 350km² Lake St Lucia estuarine system. In February last year only 10% of the Lake’s surface area was covered by water. By November, with good inflows from the uMfolozi River, 90% of the Lake’s surface area was covered. Levels have been maintained and salinities remain low but we are not yet out of the woods.”

The World Bank has invested additional funds to restore Africa’s largest estuarine lake and on the 5th January 2017, the iSimangaliso Wetland Park Authority signed two new contracts valued at R23.41 million each with T&T Marine (Pty) Ltd and Scribante Africa Mining (Pty) Ltd respectively. Both contracts will run until the end of June 2017 and are for the loading, hauling, tipping and disposal of material obstructing the natural flow of the uMfolozi River in the mouth area of the Lake St Lucia Estuary. “This brings the total value of iSimangaliso’s Lake St Lucia restoration project to R62 million,” says iSimangaliso Business Director Terri Castis.



Shaking hands at the contract signing are: Left to Right: Mike Udal – Project Engineer, MBB Consulting Engineers; Mario Beccaro – Scribante Africa Mining (Pty) Ltd; Andrew Zaloumis – CEO iSimangaliso Wetland Park Authority; Richard Tucker – T&T Marine (Pty) Ltd; Terri Castis – Business Director, iSimangaliso Wetland Park Authority.

These contracts are additional to the contract with Cyclone Engineering signed on 9th January 2016 for the removal of 100 000m³ of dredge spoil. The work initially progressed slower than anticipated due to technical problems associated with, inter alia, the drought brought on by the lowest rainfall levels in 65 years. The original method of dredge removal using slurry pumps was subsequently augmented by a conveyor belt and truck system to accelerate the rate of production. It is yielding very good results. In addition to the slurry pumping, the extra plant – which included six automated dump trucks (ADT) with a 13-ton load capacity, two bulldozers and three excavators – began operations on the rehabilitation site during November 2016 and by close of business shortly before Christmas day, had made a positive visible difference. Cyclone Engineering has received a contract extension for R5 million, in addition to their current contract of R10 million. This will take their work and the completion of Phase A to the end of January 2017, so there will be three contractors on site in January, and two from February to June 2017 to complete Phase B.



“This is South Africa’s largest and ecologically most significant wetland rehabilitation project. The appointment of two new contractors will expedite this work, improve efficiencies and optimise the use of the available funds enabling the removal of a further 1.1 million cubic metres of material obstructing the flow of the uMfolozi River,” says Zaloumis.



Superimposed on the image above are Phase A and B of the project to remove material. Phase A will be completed in the next few weeks. Phase B has started and will be completed by the two new contractors.

Water levels in the Lake St Lucia system have increased dramatically on the back of the recent rains which resulted in strong flows from the uMfolozi River into Lake St Lucia. Ninety percent of the Lake's surface area is now covered and the Lake is once again a single body of water no longer compartmentalised, and joined via the Narrows to the mouth. While the probe readings and Landsat images below confirm that water levels reached at the end of November have been maintained, January looks equally promising. The following 2017 rainfall figures were recorded by 8th January:

Kosi Bay – 69mm, uMkhuze – 27mm, False Bay – 51mm, Charters Creek – 57.5mm, St Lucia Estuary – 90mm and Mission Rocks – 72mm.



2nd Feb 2016 (above left) and 18th December 2016 Landsat images showing surface area of Lake St Lucia, once again a single body of water, no longer compartmentalised, and joined via the Narrows to the mouth. In February 2016, only 10% of the surface of the Lake was covered with water. The water that has flowed into the system from the uMfolozi River caused water levels in the Narrows to rise to its current level of 1.2m above mean sea level – the highest recorded in a very long time. The direct rainfall and flow from other rivers such as the uMkhuze, uMzinene, Hluhluwe and Nyalazi is also providing much needed relief to the northern sections of the Lake.



One of iSimangaliso's Lake St Lucia jetties in February and post November rains resulting largely from strong flows from the uMfolozi River.

As at November 2016 salinity levels throughout the system had dropped to below 5 parts per thousand (ppt) – sea water is around 35 ppt – with the freshest water found in the southern sections, where millions of litres poured in from the uMfolozi River. Real-time data from iSimangaliso's probes confirm that water levels and low salinities are being maintained.

Derek Stretch, Professor of Hydraulics & Environmental Fluid Mechanics School of Engineering, University of KwaZulu-Natal, confirms that the work to remove the dredge spoil is significant: "It enables us to reverse some of the negative impacts of decades of dumping dredge spoil in that area and facilitates the more natural functioning of the Lake St Lucia Estuary."

Prof Stretch was one of the researchers providing scientific information which led to the change in the management strategy of the Lake St Lucia system. Other specialists involved in the project include Professor Gerrit Basson (a civil engineer responsible for the hydrodynamic mouth and water level modeling at Stellenbosch University), Andre Gorgens (Aurecon), Dr Barry Clark (Anchor Consulting), Professor Ticky Forbes (estuarine and inshore marine specialist) and Nicolette Forbes (estuarine ecologist).

A large body of research work now underpins iSimangaliso's restoration project funded by the World Bank's Global Environment Facility. For decades it was believed that silt was the biggest risk to the system. Prof Stretch's work challenged this – silt is an issue, but the critical issue is fresh water and the uMfolozi River's ability to act as the powerhouse that drives the natural process of the mouth.

"While the first part of the restoration work is underway, we are very likely in a sediment accumulation phase," says Stretch. "We are still in a drought and the Estuary mouth is still closed to the sea. This is however only the short-term view, because once we enter a period with more rainfall, floods and tidal flushing associated with an open mouth will result in a net loss of silt from the Estuary."

Background Information

For several decades, dredge spoil had been artificially deposited in the natural course of the uMfolozi River in an attempt to limit its inflows into Lake St Lucia Estuary in the belief that it would protect the Estuary from silt. This significantly reduced freshwater to Lake St Lucia from the uMfolozi River. The uMfolozi is the largest of the five main rivers entering the system and accounts for some 60% of the freshwater inflows into Lake St Lucia's system. It is also the powerhouse that drives the natural process of the mouth; limiting inflows and significantly narrowing the river course by artificial means also affected this process.

The impacts of the 2002-2012 drought on fauna and flora demanded that this management strategy be interrogated by iSimangaliso. A multi-disciplinary research team was contracted to find a practical and implementable solution to the hydrological problems facing the Lake St Lucia system.

The results of the scientific research strongly recommended that the uMfolozi should be allowed to pursue its natural path into the Estuary. This necessitated the removal of dredge spoil so that the uMfolozi could once again take its rightful place as the contributor of the major part of the Lake's fresh water.

For more information visit www.isimangaliso.com and download the document "*Lake St Lucia: Understanding the problem and finding the solution*".

iSimangaliso's rehabilitation solution is funded by the Global Environment Facility through the World Bank. The rehabilitation site remains closed to the public due to the movement of machinery and excavations.

For Park information, visit www.isimangaliso.com, contact info@isimangaliso.com or call +27 35 590 1633. Follow us on [Twitter](#), [Instagram](#), [Facebook](#) and [Youtube](#), or visit our website at www.isimangaliso.com.

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