



# Proposed remedial actions for water logging in low lying areas after the structural intervention to control excess inflow of seawater into Koggala Lagoon

## Sustainable Lagoons and Livelihoods Project

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**PRACTICAL ACTION**  
Technology challenging poverty



1. Orientation of the last 50 m length of the old groyne and the last 25 m length of the recently constructed groyne were changed in order to enhance the formation of natural sand bar at the lagoon mouth. Re-orientation of the old groyne together with the construction of the new section have been successful in recreating the sand bar at the lagoon mouth, thus water exchange through the lagoon mouth takes place again as it was before construction of the groyne in 1991.
2. After the above-mentioned structural modifications of the groyne, the salinity levels of the lagoon water have decreased to a considerable level and ecology of the lagoon has been dramatically improved. This would push the brackish water condition that is presently prevalent in the lagoon to a more freshwater dominated system, which was the condition before 1991.
3. Present opening of the lagoon mouth is approximately a 20 m wide so that the flood water can discharge into the sea without raising the present flood levels in the upstream areas of lagoon. However, any obstructions to flow would cause stagnation of water in the upstream that causes temporary inundation of riparian land.
4. As a consequence of past developments and modifications that have taken place at the mouth of the Lagoon, some areas upstream of the lagoon experience frequent inundation during rainy seasons when the lagoon water levels would not recede quickly (Figure 1) that has badly affected the agriculture, particularly paddy cultivation.
5. At present, lagoon water levels remain high and would not recede quickly due to the obstruction and resistance to the flow caused by the newly modified outlet which is narrower and shallower than the previous outlet. Before its construction, it has been predicted that the new outlet modification can cause about a 200 mm water level rise along the periphery of the lagoon during extreme rain events.
6. The transition from brackish water to freshwater conditions in the lagoon water has caused less salinity in lagoon waters which has promoted heavy growth of aquatic plants along the canals and the periphery of the lagoon. These aquatic plants, especially sedges and reed varieties, offer higher resistance to the flow along the drainage paths of the paddy fields and also heavy obstruction to flow while blocking narrow canals and streams. When the resistance to the flow is high, water levels in the upstream areas should rise in order to push the water down the canal.
7. Crop failures due to high salinity and water logging in some of these paddy fields for a long time may now see only the water logging as an issue as salinity is no longer a problem.
8. Technical solution for this water logging issue should be an attempt based on facilitating the water levels in the drainage canals to drop quickly with the falling tide.
9. While restoring the outlet to the previous condition is always a solution, removing obstructions for the flow close to the paddy fields can also be a viable option, which can be cost effective and long lasting. Drainage canals can be cleared of plants and

other debris that might be obstructing the flow.

flow. Possibilities of removing unnecessary structures can be explored (Figure 2).

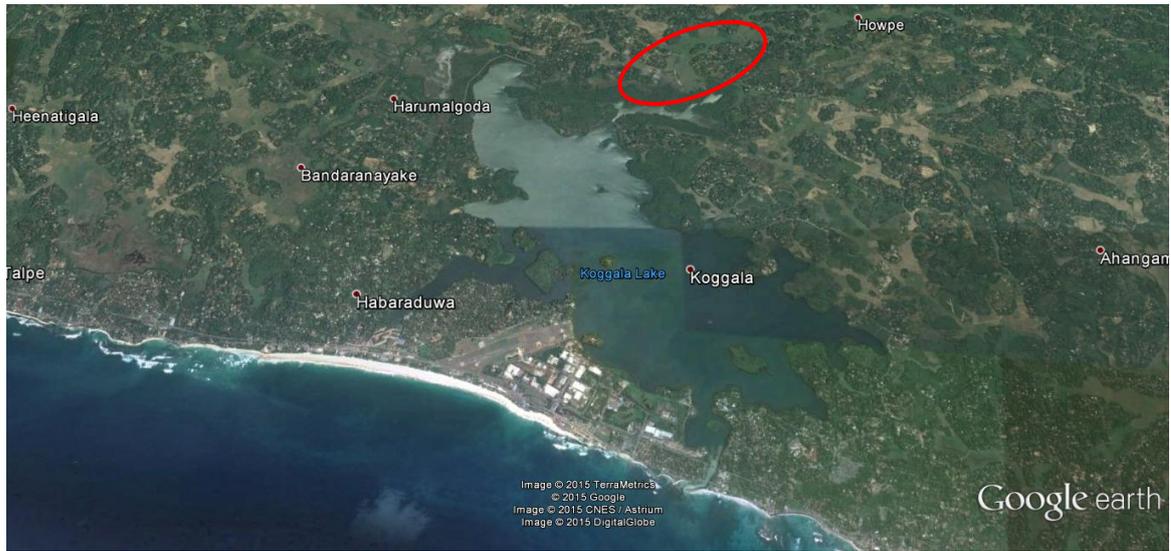


Figure 1. Water logged area in the Koggala Lagoon



Figure 2. Enlarged area (N 06 00 859; E 080 20 628) to show the two water canals that can be cleared to increase the flow.

10. Submerged structures at the bridge and if there are gates that also can offer some resistance even though they are kept in open position. If the flow at these structures is relatively high during the falling tide, then that is an indication of an obstruction to the

11. The other options available may include growing rice varieties that tolerate water logging and changing cropping calendar to avoid high water levels in the lagoon.

12. Protecting the paddy fields using dikes and pumping out drainage water is technically feasible but may not be an economical solution.