The river Kelani is the principal source of drinking water for the Colombo City. By the years 2020 water has to be extracted at the rate of 930,000m^2 per day (10.8 m^3/s),but this amount cannot be extracted due to salinity intrusion. The average flow available at Ambatale during the months of February and March which are the worst is 25.0 m^3/s and about 90 m^3/s has to be used to push the salinity wedge away from the intake in order to extract.

One of the proposal is to enhance the quality of the base flow in Kelani Ganga is to construct a salinity barrier across the river, just stream of Ambatale water intake. The paper highlights the conceptual design parameters and its hydrological impacts on the environment which were considered during the design.

Among those impacts, changes in the river morphology and consequence of flooding are the most important. This study was done by setting a numerical model in hydrodynamics and simulation of the model was done for several years to understand the change to the sediment regime. After studying this aspect, hydrodynamic simulation was done to understand flooding. This was done on evolved river bed which has to be expected after the construction of the barrier, then high water levels were compared without and with the barrier to understand the impacts. The model was also simulated during the low flow period to understand its impact on land drainage.