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Diyawannawa canal network for passenger boat service: a case study on water quality of Kirulapone canal

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Currently the Kirulapone canal is under observation due to re-launch of the boat service as a solution for the peak traffic congestion in the Colombo Metropolitan area. It is one of the most polluted canal branches of Diyawannawa canal network due to the anthropogenic waste water disposal and storm water. The highly deteriorated water quality has become a dominant challenge to fulfill the above. The persecuted fragrance, eutrophication and unpleasant view are recognized as the pivotal barriers for the success of the transportation vision through this canal. The gradual renovation and maintenance of the canal network for boat passenger service would be beneficial to provide a reliable, time saving and a safe mode of public transportation system. The main objective of this study is to identify the most problematic water quality parameters and pollution sources of Kirulapone canal. The present protocol describes the pilot scale study on the canal water quality in the tributaries and Kirulapone canal to ameliorate the main canal to use as an alternative transportation route in the city of Colombo. Composite samples were collected monthly from the middle of the canal for testing water quality parameters such as nitrate and phosphate while data were obtained for pH, DO, temperature, salinity, EC and TDS from April to July 2016 for assessing present pollution status of the Kirulapone canal. During water sampling, stratification behaviour was studied by obtaining data such as DO, salinity, temperature and pH at different depths along the Wellawatta estuary. According to the test results DO, TDS, BOD and phosphate along the canal differed from stipulated values while pH, nitrate and salinity of the canal water were within the range introduced by the proposed water quality standards for inland waters by CEA. There was no salinity difference between top and bottom layers of canal water. Therefore, this study revealed that the Kirulapone canal water has low dissolved oxygen concentrations of limited nutrients such as N and P in selected tributaries. Hence water quality of Kirulapone canal need to be controlled through appropriate mitigatory measures before providing canal transportation. No stratification was observed at the downstream of the Kirulapone canal in the Wellawatta area.