



# Assessment of water quality and consumer acceptability and willingness to consume reverse osmosis water: A case study on Delft water supply scheme, Sri Lanka

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**Abstract:** Delft Island is located in Palk Strait in the northern region of Sri Lanka. The main problem in this region is the lack of drinking water. Drinking water needs are covered by supplying reverse osmosis (RO) treated water by the National Water Supply and Drainage Board (NWSDB). The physical, chemical and bacteriological quality of the water has a direct impact on health and affects consumer acceptance. Hence this study was conducted to assess the quality of drinking water produced by RO systems and assess the consumer acceptability and willingness to consume RO water in Delft Island. The RO water samples were collected monthly for the period from January 2019 to May 2022 for water quality analysis. A questionnaire survey was carried out to understand consumer acceptance. Random sampling was done among people who consume RO water supplied by NWSDB. The colour and turbidity of the RO water is complying with Sri Lanka Standards (SLS). Total coliform and *E. coli* were not detected in any samples. Raw water with a highest level of total dissolved solids (TDS) increases the osmotic pressure of raw water. As a result, the percentage of rejection of RO membrane declines at a constant operating pressure that leads to an increased level of TDS, chloride and electrical conductivity in the treated water and these parameters were above the maximum permissible level of SLS during dry season. It was found that 96% of the respondents like RO water as it is supplied by NWSDB whereas 80% of the respondents have overall satisfaction with RO water. It can be concluded that physical, microbiological, and chemical parameters except total hardness, total alkalinity, chloride and TDS are complying with SLS 614:2013 and consumers accept the RO water for consumption.

**Keywords:** Consumer acceptability and willingness, RO treated water, Total dissolved solid