



321/C

Water quality impacts of expressway development
Case study: Outer circular highway (Kerawalapitiya-Kadawatha section)

M.K.S.P. Fernando and B.C.L. Athapattu*

The Open University of Sri Lanka

Construction activities have historically been identified as a major source of pollutants to natural water resources, such as rivers, lakes, streams and ground water sources such as dug wells, as well as to the ambient air. As urbanization proceeds, new highways are constructed for transportation and development, and stream ecosystems within highway corridors are susceptible to impact from construction activities. Pollutants originating from construction activities, added to adjacent water bodies and soil through both point and non-point sources, result in the storm water runoff leading to physical, chemical and biological degradation of surface water quality and ground water quality. The Outer Circular Highway Package III (OCH-NS II) is to be constructed as a four-lane dual carriageway facility with provision for eventual expansion to six lanes. OCH-NS II is the final segment of the three segments of the Outer Circular Highway, which links the Southern Expressway to the Colombo-Katunayake Expressway, commencing at the Kottawa Interchange, which is the northern end of the Southern Expressway (STDP) and terminating at the Kerawalapitiya Interchange. The study was based on the surface and ground water quality monitoring at selected locations throughout the Expressway trace during the construction phase. The water quality sampling was carried out on a monthly basis from six selected sampling locations and tested for seven water quality parameters. Baseline survey for water quality was conducted before commencement of construction works and all the collected samples were tested for pH, EC, TSS, DO, BOD, Lead (Pb) and Zinc (Zn) in accordance to the standard testing procedures. The results revealed that most of the observed data are within the threshold level proposed by the Central Environmental Authority (CEA). TSS and EC can be identified as most varied parameters among the all however, TSS, EC, Pb and Zn also varied in several locations. The level of variation exceeded 50%. Rainfall and work progress are positively correlated with most key water quality parameters. This study recommends that suitable and effective mitigation techniques and construction methods should be applied to prevent extra erosion during the construction activities. The precautions suggested in EIA must be applied within the practical manner.

Keywords: Water quality, Urban development, Outer circular highway, EIA, Lead, Zinc

E-mail: bcliiv@ou.ac.lk