Evaluating the Environmental Impacts of Constructing the Central Expressway, Sri Lanka

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The purpose of this study was to analyze the environmental impacts caused by four 10 km-long sections between Rilloluwa to Rangallepola of the Central Expressway. Three monitoring sessions (baseline, 1st and 2nd periodic monitoring) conducted once in every three months. The impacts were evaluated in terms of air quality, water quality, noise and vibration. All parameters were evaluated with respect to local and international standards. Air quality results indicated that PM_{10} and $PM_{2.5}$ values at one location exceeded the maximum permissible levels of 100 µg/m^3 and 50 µg/m^3, respectively during all three monitoring sessions. The air quality in terms of CO, O_3, SO_2 and NO_2 levels at all locations were within the limit of ambient air quality standards during all three monitoring sessions. The water quality was tested at four different locations of the Kuda Oya, which flows along the construction site. The pH level revealed that it was not suitable for human consumption although fish and other aquatic life were not affected by the pH fluctuations. Turbidity has gradually increased in all monitoring locations and the highest turbidity level was observed in the 2nd periodic monitoring session conducted during major earthwork activities. Results showed that the total coliform count at all monitoring locations exceeded the maximum permissible levels for public water supply (3 colonies/100 ml) as well as individual or small community supply (10 colonies/100 ml). During the 1st periodic monitoring conducted at all four locations, Dissolved Oxygen levels were below the minimum permissible level for fish and other aquatic life (5 mg/l), thus water is not suitable for many types of aquatic organisms. However, BOD levels remained low in all locations and were below the maximum permissible level (4 mg/L) stipulated for fish and other aquatic life. Noise levels were tested at four project locations within Narammala and Alawwa Pradeshiya Sabha areas. Noise levels exceeded the maximum permissible levels (55 dBA - day time) specified for rural residential areas except for two locations during baseline monitoring and one location during the second periodic monitoring. Vibration levels tested at four different locations were well below the maximum permissible levels. It can be concluded that Rilloluwa to Rangallepola area has been affected by construction of the Central Expressway in terms of air quality and water quality as compared to the baseline monitoring data. However, environmental impacts arising from the construction projects can be controlled by maintaining a proper mitigation plan.

Keywords: Environmental monitoring, Air quality, Water quality, Noise