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The Impact of Reducing Road Traffic Speed in London on Noise Levels: A Comparative Study of Field Measurement and Theoretical Calculation

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Abstract : The continuing growth in road traffic and the resultant impact on the level of pollution and safety especially in urban areas have led local and national authorities to reduce traffic speed and flow in major towns and cities. Various boroughs of London have recently reduced the in-city speed limit from 30mph to 20mph mainly to calm traffic, improve safety and reduce noise and vibration. This paper reports the detailed field measurements using noise sensor and analyser and the corresponding theoretical calculations and analysis of the noise levels on a number of roads in the central London Borough of Camden where speed limit was reduced from 30mph to 20mph in all roads except the major routes of the 'Transport for London (TfL)'. The measurements, which included the key noise levels and scales at residential streets and main roads, were conducted during weekdays and weekends normal and rush hours. The theoretical calculations were done according to the UK procedure 'Calculation of Road Traffic Noise 1988' and with conversion to the European L-day, L-evening, L-night, and L-den and other important levels. The current study also includes comparable data and analysis from previously measured noise in the Borough of Camden and other boroughs of central London. Classified traffic flow and speed on the roads concerned were observed and used in the calculation part of the study. Relevant data and description of the weather condition are reported. The paper also reports a field survey in the form of face-to-face interview questionnaires, which was carried out in parallel with the field measurement of noise, in order to ascertain the opinions and views of local residents and workers in the reduced speed zones of 20mph. The main findings are that the reduction in speed had reduced the noise pollution on the studied zones and that the measured and calculated noise levels for each speed zone are closely matched. Among the other findings was that of the field survey of the opinions and views of the local residents and workers in the reduced speed 20mph zones who supported the scheme and felt that it had improved the quality of life in their areas giving a sense of calmness and safety particularly for families with children, the elderly, and encouraged pedestrians and cyclists. The key conclusions are that lowering the speed limit in built-up areas would not just reduce the number of serious accidents but it would also reduce the noise pollution and promote clean modes of transport particularly walking and cycling. The details of the site observations and the corresponding calculations together with critical comparative analysis and relevant conclusions will be reported in the full version of the paper.

Keywords : noise calculation, noise field measurement, road traffic noise, speed limit in london, survey of people satisfaction
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