Title

Effectiveness of calibrated HDM-4 models for predicting the condition of surfaced roads over the long term

Authors

Mervyn G Henderson
Program Manager, Metropolitan Region, Assets & Operations Division, Department of Transport and Main Roads,
183 Wharf Street, Spring Hill, Brisbane, Queensland, Australia 4000.
Email: Mervyn.G.Henderson@tmr.qld.gov.au

André van der Gryp
Department of Transport and Public Works, Western Cape Provincial Administration,
P.O. Box 2603, Cape Town, 8000
Email: avdgryp@pgwc.gov.za

Ileen Wolmarans
Associate, Road Asset Management, Aurecon,
Aurecon Centre, 1040 Burnett Street, Hatfield, Tshwane, South Africa 0083
Email: Ileen.Wolmarans@af.aurecongroup.com

Brief Description

The Western Cape Roads Infrastructure Branch uses life-cycle cost analysis, HDM-4 Pavement Performance Models and dTIMS™ CT optimisation software to prepare the biannual report "A Preservation Report for the Western Cape Roads Infrastructure Branch". This report predicts the impact of preservation measures on the performance of the road network and explores the impact off different funding scenarios on network condition. If decision-makers are to rely on the report for resource allocation and as a basis for justifying funds for the preservation of the network, a high degree of confidence in the predictions of network condition over the long term is necessary.

Over a 15 year period the Branch has monitored 37 test sections representing a range of pavement structures, climates, traffic and subgrades. The results of this exercise were used to calibrate the HDM-4 prediction models.

A test was run was done in dTIMS™ CT using 1996 historical data and the HDM-4 prediction models to predict the condition of the Western Cape surfaced road network after 10 years to 2006, taking into account maintenance and rehabilitation activities.

The calibrated HDM-4 models predicted deterioration of the surfaced roads over 10 years accurately to within 10 percent of the real, measured deterioration.

The excellent outcome of this analysis provides a high degree of confidence for predicting the long term condition of surfaced roads in the Western Cape. This greatly enhances and gives confidence in forward planning of maintenance and rehabilitation activities and provides the information for making the case for adequate levels of funding to address these activities.