

## **EFFECTS OF USING RECLAIMED ASPHALT AND/OR LOWER TEMPERATURE ASPHALT ON AVAILABILITY OF ROAD NETWORK**

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### *ABSTRACT*

The use of reclaimed asphalt, secondary component materials and/or additives and lower temperature asphalt are being increasingly used in order to improve the sustainability of asphalt production. The use of reclaimed asphalt reduces the need for virgin materials whilst lower temperature asphalts have reduced CO<sub>2</sub> emissions, increased sustainability, improved working conditions for construction and maintenance crews, reduced noise level on the work sites, extended paving season and provided financial benefits from lower production and transport costs. However, there is uncertainty about the ageing and durability performance of these technologies because there is limited information available on their long-term performance. Changes in durability will affect the availability of the road network for highway authorities. CEDR commissioned a European project to assess these uncertainties. A site trial was commissioned on one of the Irelands busiest motorways (M3), comprising stone mastic asphalt mixtures containing varying proportions of the reclaimed asphalt with some using warm mix technology. The site has been monitored regularly over a full calendar year for the material performance. A suite of laboratory tests have been undertaken concentrating on the combined effect of ageing and moisture damage on the performance of asphalt mixtures on the site trial. The findings have been used to develop life-cycle analysis models to customise them for the effect of using alternative component materials on the availability of the network and their overall financial and environmental cost, both initial and whole-life. The costs identified are both direct (of the construction and maintenance) and indirect (on society in general, such as congestion). The paper describes the model and the assurance that can be given to the assumptions made within the model from the research findings. Comparative sensibility studies are included.