

Bulletin Paper for Submission to CAPSA11

Title

Improving the Productivity and Performance of Queensland's Roads

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Brief Description

In April 2007, the Council of Australian Governments (COAG) set out an agenda for road infrastructure pricing reform to unlock more productivity from the road network and deliver more efficient pricing (user charges) and investment. COAG is the peak intergovernmental forum in Australia, comprising the Prime Minister, State Premiers, Territory Chief Ministers and the President of the Australian Local Government Association. COAG has outlined significant national freight productivity and economic expectations that will challenge both the freight industry and road and bridge infrastructure. From a road authority perspective, 'sweating the pavements and bridges' will require new approaches to maintenance and rehabilitation investment and improvements to the underpinning engineering technologies if safety and adequate infrastructure performance is to be reliably managed and delivered into the future. By undertaking targeted research and development, Queensland Department of Transport and Main Roads (TMR), in collaboration with other Australian state road and transport authorities, is taking urgent steps in response to COAG's intention to implement its Road Reform Program as soon as possible.

\$30m over a 10-12 year period is required for economic studies and technical research and development and is focussed on the performance of road pavements and bridges under increased loading.

The Queensland 33,500 km state owned road network exhibits a wide range of physical and performance characteristics. Arguably the Queensland road network is one of the most susceptible to damage from higher mass limits in Australia. Its vulnerability is also regularly tested by cyclonic and flooding events, such as cyclone Yasi that hit northern Queensland on 3 February 2011, when widespread damage occurs and road closures, followed by periods of load limiting become necessary to allow pavements to regain strength as they dry out. The management of this dynamic situation is an ongoing challenge to asset managers in TMR that will be addressed by targeted research and development.

TMR's current pavement asset management tools and experience is inadequate to make reliable performance predictions of the impacts of increased axle loads on existing pavements. These pavements were mostly designed to old and now outdated standards and have been in service well beyond originally contemplated design lives.

Currently, new pavements are being designed for axle load increases, but indications are that these are quite possibly too conservative. Design and analysis methods are founded on simple and unproven extrapolations of this outdated research. Such an unsophisticated approach could be producing designs ranging from very low to high risk according to a range of factors most critical for performance in the range of climatic, materials and loading scenarios.

New technologies, developed through accelerated testing, monitoring and modelling, and increased technical capability are required to develop new, improved, rational, reliable and defensible policies, road freight strategies, network access management decisions, asset management and investment decisions and technical standards, systems, processes and methodologies.

The purpose of the research is to deliver knowledge and performance models that will

- inform TMR's priority freight strategies and its network access management business decisions over the next 20 years,
- provide the knowledge and information necessary for more confident prediction of road performance and deterioration to ensure best economic returns from on-going and appropriate investment across the road network,
- provide understanding of the real capacity of pavements and structures and their potential to deliver freight productivity gains to be shared with asset owners via user-payment principles; and,
- provide the knowledge and rehabilitation options for appropriate intervention at identified locations and at the right time to optimise whole of life costs across the road network.

A TMR Technology Strategy will be developed to underpin the research program, connecting it to corporate goals, and provide long term direction and guidance for choosing and prioritising of research projects.