In the current climate of economic restraint, councils need to focus every dollar to get the best ‘bang for buck’. This means understanding the consumption of the asset base and prioritising road assets for maintenance, rehabilitation or reconstruction based on sound engineering and innovative principles.

Road networks are typically passive assets that tend to fail completely over the longer-term, however with intermittent maintenance, road life can be extended. Effective maintenance and rehabilitation can help reduce failure, yet it is vital to understand when the best time to carry out these works is. Long-term pavement performance monitoring, life cycle cost analysis and recycling of existing material wherever possible, are key to successfully moving forward.

To help councils plan for future road network liabilities, GHD has developed a condition survey tool that can assist in prioritising pavement programs ready for detailed investigation work. The results assist in budget planning for short-term and long-term financial commitments necessary to maintain the pavement network.

A condition survey is the first logical step in understanding the true consumption of the assets and GHD has successfully completed many surveys for councils both in Tasmania and interstate. By utilising an experienced pavement consultant together with the condition assessment tool, a true understanding of the different distress modes of failure within the pavement can be determined. This, coupled with the analysis of the data, can provide the following information:

- Prioritisation of pavement sections for rehabilitation or reconstruction;
- Highlight dominant failure modes including structural and functional distresses;
- Identification of preservation needs and selection of rehabilitation projects;
- New construction and rehabilitation design and construction techniques; and
- A data base for long-term pavement performance.

All new construction, reconstruction and rehabilitation projects should employ economic evaluation to determine the most cost-effective method and timing. Using life-cycle cost analysis, we can identify the best value scenarios and select the lowest life cycle cost that satisfies the performance objective. This helps in planning and budgeting needs for the long-term by facilitating better investment decisions.

Data collected from pavement condition surveys over a number of years is used to calculate the rate of deterioration and remaining service life of different pavement sections. Councils can also evaluate the performance of different maintenance and rehabilitation options used for the network. This helps in deciding maintenance, rehabilitation and reconstruction thresholds required for optimum potential service life. The analysis leads to effective estimation of the life cycle cost.

Based on the condition survey and life cycle cost analysis, different pavement treatment options can be selected. In-situ recycling of pavement material is an innovative and cost effective rehabilitation option. For granular pavement with thin bituminous surfacing (which is the most common pavement configuration in roads), in-situ recycling of the existing base/sub-base can be carried out by modification or stabilisation with appropriate additives such as lime, cement, emulsion, foamed bitumen or other proprietary products.

The advantages of recycling road material include:

- Reduction in costs of construction;
- Conservation of aggregate and binders;
- Preservation of the existing pavement geometry;
- Lower impact on the environment than new construction; and the
- Reduction in user delay compared to new construction.

By using the above techniques, councils are able to assess long-term pavement maintenance and rehabilitation options to provide effective financial management by determining the most cost-effective solutions for sustaining the road network. 

For more information, please contact Andrew Sneesby, Principal Asset Management Consultant, at andrew.sneesby@ghd.com, or visit www.ghd.com.
National Report Investigates the State of Australian Roads

A new national report launched by the Australian Local Government Association (ALGA) to measure the standard of community roads and infrastructure estimates that 12% of Local Government transport assets are in poor, or very poor condition.

The National State of the Assets Report 2012, unveiled at the National Local Roads and Transport Congress held during November in Hobart, is the first of its kind. It was prepared to assess how local infrastructure is faring, whether community needs are being met and if current levels of expenditure are adequate.

The report builds on research commissioned by ALGA in 2010 which indicated that current levels of federal expenditure would need to increase by an average of $1.2 billion per year to avoid deterioration of the local road network. In 2006, the results of a study undertaken by PricewaterhouseCoopers found that the potential aggregate backlog for all 560 Australian local councils was approximately $14.6 billion, with an annual sustainable funding gap of $1.1 billion.

In the latest study to inform the National Assets Report, 55 councils contributed data about the quality, functionality and capacity of roads and bridges infrastructure. Key findings suggest that the current state of sealed roads presents the greatest challenge to councils, with more than $2 billion in value being regarded as poor or very poor in respect to quality and capacity.

The report demonstrates the continued need for federal programs such as Roads to Recovery (R2R), which provide councils with additional funding each year to maintain local roads. After strong advocacy from Local Government, the Commonwealth this year announced that it would extend the program from 2014 to 2019.

ALGA President, Felicity-ann Lewis says while councils appreciate the assistance through R2R, more needs to be done address an estimated funding shortfall for local roads of $1.2 billion annually. “Local roads make up more than 80% of the nation’s road system and are maintained by councils. Without adequate support, we will struggle to maintain local roads to the standards necessary to ensure transport safety.”


Get cracking!

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New Fleet Management Tools Online

The Institute of Public Works and Engineering (IPWEA) have designed new, online plant and vehicle management tools to ensure that fleet management practitioners are following best practice, and delivering the best-value outcome, saving valuable time in the process.

The online tools, which have been strongly received by workshop participants around the country, include the Light Fleet Selection Model, the Whole-of-life Cost Calculator, the Optimum Replacement Calculator and the Tender Analysis Template.

The Light Fleet Selection Model is designed to save fleet managers time and money providing an ‘apples-with-apples’ comparison on a range of vehicles that meet the purchaser’s selection criteria. The model contains a database comprising the vehicle models most commonly used in government organisations and prices are structured using manufacturers’ current Local Government fleet pricing.

The Whole-of-life Cost Calculator is used to create a foundation for preparing operating and maintenance budgets, calculating internal hire rates for full cost recovery, and enable fleet managers to conduct a buy/hire analysis.

The Optimum Replacement Calculator identifies the effective life of the item for use in whole-of-life costs calculations and internal charge-out rates to ensure full plant cost recovery. The optimum replacement timing for a vehicle or an item of plant is calculated to best estimate the optimum time, in either kilometres or engine hours, and time to achieve the lowest average annual cost during the life of the machine.

The Tender Analysis Template provides weighted-criteria analysis for a best-value purchase decision. The process is simple: select the assessment criteria and apply the weightings to suit the item to be purchased, enter the scores and receive a total score for each item tendered. The highest score is recommended subject to meeting all compliance requirements.

The IPWEA is running free, live online ‘How To’ sessions on the new tools. For more information, please visit www.ipwea.org.au/fleet, contact Ross Moody at rmoody@ipwea.org.au, or phone 0417 955 394.

The Safer Roads: Non-Urban Road Network Strategy aims to reduce the number of crashes and improve the safety of our 100km/h roads, where more than 40% of serious injury and fatal crashes are occurring.

The Department of Infrastructure, Energy and Resources is working with councils to assess which sealed non-urban roads in Tasmania can be posted at 100km/h and which roads should be lowered to 90km/h.

Implementing this strategy could result in 100 fewer Tasmanians being killed or seriously injured over the next 6 years.

For further information, visit www.saferroads.tas.gov.au email saferroads@dier.tas.gov.au or call 6233 2630.
Local councils have taken up the opportunity to find out more about the State Government’s bid to reduce the number of crashes on 100km/h non-urban roads in Tasmania.

More than 40 percent of serious casualties are on Tasmania’s 100km/h non-urban road network, and we know that safer speeds do save lives, so it is important that action is taken.

In an Australian first, the State Government has announced a Safer Roads strategy to reduce the number of crashes on non-urban roads in Tasmania. The Tasmanian Safer Roads: Non-Urban Road Network Strategy identifies the need to balance infrastructure treatments and speed management.

Improving the safety infrastructure of roads can have a significant impact in reducing crash risk, and where an infrastructure response is not possible, speed management is used to reduce risk.

Tasmania has about 11,000 km of non-urban roads. New Tasmanian criteria have been developed to assess whether roads can safely maintain a 100km/h speed limit.

Sealed roads, or sections of roads, assessed against the criteria that have more protective features will have a higher speed limit. Roads that do not fulfill the criteria will have the speed limit reduced to 90km/h. All gravel roads will have the speed limit reduced to 80km/h.

The State Government is working with local councils and their communities to determine whether there are local roads which would meet the standard necessary to retain a 100km/h speed limit.

A series of regional information sessions were held in October to brief General Managers and other local government technical staff.

During November, further information sessions were conducted for Mayors and elected representatives. Councils now have until 14 December to nominate any roads, or sections of roads, which they believe meet the criteria for 100km/h roads.

Results of the preliminary assessments, together with the rationale behind the recommendations, will then be presented back to local councils early next year.

This work will be undertaken prior to any final decision on which roads will continue to have a 100km/h speed limit and which will be reduced to 90 km/h.

More than 100 people over the next six years will be spared serious injury or death when the non-urban speed limit is reduced to 90km/h on those roads that do not meet the Tasmanian criteria.

A preliminary assessment of the State road network by DIER shows most high-volume, strategic roads will retain the 100km/h speed limit.

The Government will also replace ‘end speed limit’ signs and end public confusion about the signs’ meaning.

The new signs will show the speed limit and that road conditions are changeable so motorists are cautious and drive at a safe speed to match the road and weather conditions.

Implementation will include changes to current laws, assessment of State and local government roads, a major education campaign and installation of new signs.

We want to make sure the community understands these changes and will be launching a major public education campaign.

For information and regular updates on the new changes under the Tasmanian Safer Roads: Non-Urban Road Network Strategy go to www.saferroads.tas.gov.au
Since 1950, Australia has experienced 168 earthquakes above magnitude 5.0 and in 2011, there were 82 events recorded at magnitude 3.0 or above. Seismologists at Geoscience Australia have now developed a series of maps that will provide new information on which areas of Australia are susceptible to earthquakes.

The National Earthquake Hazard Map of Australia has been developed following detailed examination of past earthquakes in Australia and estimate the likelihood of a particular area experiencing strong ground shaking from earthquakes.

The Minister for Resources and Energy, Martin Ferguson AM MP said it is this strong ground shaking, rather than simply the magnitude of an earthquake, that endangers people, buildings and infrastructure. “Although these maps do not enable us to predict earthquakes, they will allow engineers and planners to design and locate buildings and infrastructure so as to better protect our communities,” he said.

The information is intended for incorporation into Australia’s building code, a step which would support engineers to design structures to better withstand the likely ground shaking that will be experienced at a particular location. The underlying models and datasets, which have been made publicly available, can be used by emergency managers, regional and urban planners, and researchers to undertake more detailed analysis.

“For example, dam operators can use this information to minimise the likelihood of the major flooding that could result if a dam were severely damaged by an earthquake,” Minister Ferguson said. “The regular occurrence of earthquakes underlines the important role that the National Earthquake Hazard Map of Australia plays in improving planning to mitigate the impact of earthquakes.”