Pilot Application of the Infrastructure Sustainability Rating Tool to Council Road Management

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Abstract: Sustainable development requires infrastructure to be durable, minimise reliance on non-renewable resources, provide maximum benefits to society and the environment and contribute to prosperity in the long term. ISCA developed its infrastructure sustainability (IS) rating tool to assess the sustainability of both new projects and the operation of existing assets. The tool drives improved sustainability performance of infrastructure across all infrastructure sectors and all stages of the infrastructure lifecycle. The tool was piloted extensively on new projects and is now being taken up enthusiastically by industry to rate sustainability performance. During piloting, the rating tool had only undergone limited trials on infrastructure operations so ISCA and IPWEA undertook a pilot trial on the road management activities of two local councils. This paper describes the outcomes of the trial, actions that can be taken to make road management more sustainable and the next steps to progress use of the tool.

Key words: Sustainability; Infrastructure; Rating; Councils; Roads; Asset management

I. Introduction

Sustainable development requires infrastructure able to deliver sustainability outcomes. Infrastructure should be able to provide its intended services over its lifetime, efficiently and reliably, place minimum reliance on non-renewable resources, provide maximum benefits to society and the environment and contribute to, rather than endanger, national prosperity in the long term.

Roads are the largest assets class of many local types of council, with road management their largest operational activity. 84% (by length) of all of Australia's roads are maintained by Australia's 560 local councils with a value exceeding \$100 Billion.

The IS (Infrastructure Sustainability) Rating Tool was developed by the Infrastructure Sustainability Council of Australia (ISCA) to drive improvements in the lifecycle sustainability of Australia's infrastructure. Prior to this project the IS rating tool had only undergone limited

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<http://dx.doi.org/10.14453/isngi2013.proc.46>

trials on infrastructure operations, so ISCA was keen to see the tool further trialled on existing infrastructure assets.

This project was a joint initiative of ISCA and the Institute of Public Works Engineering Australia (IPWEA), along with support of and participation by the several pilot councils and financial support from the Australian Centre of Excellence for Local Government (ACELG). Two councils were selected to pilot the tool – Redland City Council on Moreton Bay, southeast of Brisbane; and Launceston City Council in northern Tasmania. Confirmation trials are also being undertaken with Brisbane and Logan City Councils.

The project involved IPWEA and ISCA staff working alongside staff of two local councils to apply the rating tool and propose modifications to facilitate use of the rating tool for council road management.

The ultimate long-term goals are to:

- customise the IS rating tool so that it can be used to rate the operation and maintenance of existing infrastructure
- demonstrate the practicality and benefits of applying the customised rating tool to local council road management
- promote use of the rating tool by local councils to drive sustainability improvements in asset management.

The more immediate goals of this project were to:

- propose modifications to the IS rating tool so that it can be used to assess the sustainability performance of local council roads management.
- help the pilot councils assess the sustainability of their road management activities and identify ways these can be improved.
- draw general conclusions about the sustainability of local council road management, what councils can do to improve their sustainability performance and what IPWEA can do to support councils in that regard.
- make recommendations to ISCA about follow-on work in subsequent stages.

II. Sustainability Rating Schemes

There is a global trend towards using rating schemes to drive improvements in sustainability, initially for buildings, but now for infrastructure. One of the first rating schemes for infrastructure was ‘CEEQUAL’ in the UK, which started in 2003 and has to date rated more than 150 infrastructure projects. More recent infrastructure rating schemes include the Institute for Sustainable Infrastructure’s ‘Envision’ in the US; ‘INVEST’ for highways, also in the US, and of course ISCA’s ‘IS’ Rating Tool in Australia.

III. IS rating scheme

The IS rating scheme is Australia's first and only national sustainability rating scheme for infrastructure. It is a voluntary scheme that aims to assess sustainability performance across the quadruple bottom line of economic, environment, social and governance criteria. The types of infrastructure covered by the rating scheme include transport, water, energy and communications. Key benefits of the IS rating scheme are:

- provides a common national language for sustainability in infrastructure.
- supports consistent application and evaluation of sustainability in tendering processes.
- scopes whole-of-life sustainability risks for projects and assets, enabling smarter solutions that reduce risks and costs.
- fosters resource efficiency and waste reduction, reducing costs.
- encourages innovation and continuous improvement.
- builds an organisation's credentials and reputation in its approach to sustainability in infrastructure.

The IS Rating Tool has six themes, 15 categories and 51 credits. ISCA also intends to develop additional 'Economic' and 'Workforce' themes in the future. The current themes and categories are shown in Table 1. The IS rating tool was developed between 2009 and 2011 and launched in February 2012. Since then the first new infrastructure projects are now (early to mid-2013) being subject to the formal rating process with the first two ratings certified in April and May 2013. Note however that until now the rating tool had only undergone limited trials to assess the sustainability performance of existing infrastructure operations.

The following section outlines general (nonformatting) guidelines to follow. These guidelines are applicable to all authors (except as noted), and include information on the policies and practices relevant to the publication of your manuscript.

Themes	Categories
Management & Governance	Management Systems. Procurement & Purchasing. Climate Change Adaptation.
Using Resources	Energy & Carbon. Water. Materials.
Emissions, Pollution & Waste	Discharges to Air, Land & Water. Land. Waste.
Ecology	Ecology.
People & Place	Community Health, Well-being & Safety. Heritage. Stakeholder Participation. Urban & Landscape Design.
Innovation	Innovation.

Table 1. IS rating tool themes and categories.

IV. Rating Assessments

The assessment process involves determining the most appropriate level for each credit and recording this in the rating tool scorecard. Credits may be ‘scoped out’ if they are not applicable. When all the credits have been assessed, the scores are weighted and summed to produce an overall score on a 100 point scale. In a formal assessment process ratings are certified to the following overall rating levels:

- Commended (score of 25-49).
- Excellent (50-74).
- Leading (75-100).

V. Rating Process

The rating scheme currently offers three rating types:

- Design rating – at the end of its planning and design phase.
- As-built rating – at the end of its construction phase.
- Operation rating – after at least 24 months of operation, and then revalidated every five years.

The rating process can be undertaken formally or informally. The formal process involves the following steps:

- Registration
- Assessment
- Verification
- Certification

An informal rating process might typically only involve Assessment, with no ISCA input or guidance. An organization can use the results of an informal assessment internally to identify and implement sustainability improvements, but the rating results cannot be used publicly without the formal certification (including third party verification) from ISCA. The rating process for this project was informal.

VI. Methodology

As outlined above, the project’s Stage 1 methodology involved, broadly, applying the rating tool to assess the sustainability of the road management activities of the two ‘pilot’ local councils; proposing modifications to the rating tool to make it more suitable for that purpose and then drawing general and council-specific conclusions about how local councils can make their roads management more sustainable. Three assessment iterations were undertaken at each pilot council, with the rating tool revised and refined after each assessment. Subsequent confirmation assessments for two further councils were also undertaken.

VII. Scope

The scope was called ‘local road management’ and defined as the operation (i.e. on-going management) by council of its current road network within the road corridor or reserve, excluding major road upgrades and construction. This scope of the ratings aimed to be broad enough to provide opportunities for local councils to enhance the sustainability of their road networks, but excluding major upgrades and new road construction projects as these works are generally large enough to warrant their own sustainability rating as new infrastructure projects (Table 2 with the excluded activities and tasks highlighted in grey).

The phrase ‘road network within the road corridor or reserve’ means that the scope includes all operational and maintenance activities listed in the AUS-SPEC TECHguide (NATSPEC 2013), which includes:

- pavement and shoulder repairs
- bridges, tunnels, culverts, drains
- gutters and kerbs
- footpaths, street furniture, bus shelters, street landscaping
- street lighting
- traffic control – signs, traffic lights, guard rails
- grass mowing, weed control and tree management in the road reserves
- litter, graffiti and stormwater pollution controls
- road reserve emergency and storm damage response.

VIII. Pilot Rating Assessments

ISCA and IPWEA staff held kick-off workshops with each council in late January 2013 to resolve key issues, like boundaries and scope, but also to brief a wide range of council staff on the project and enlist the support of senior management. Each theme, category and credit in the rating tool was assessed in turn, and the scores recorded in the rating tool’s scorecard. Some credits were identified as likely to be not applicable. For these pilot trials, those credits could either be scoped out (if not applicable for that council) or proposed to be permanently removed from the tool for operational rating of local roads (if deemed not applicable for all councils).

Activity	Task	When?	Betterment?	New Asset?
Operations	Operations	On-going	No	No
Maintenance	Maintenance	On-going	No	No
Renewal	Renewal	End of useful life	No	No
	Rehabilitation	End of useful life	Maybe	No
Upgrade	Minor upgrade	Any time	Yes	Partial
	Reconstruction	End of useful life	Yes	Partial
	Major upgrade	End of useful life	Yes	Yes
New construction	Construction	Any time	Yes	Yes

Table 2. Council road management activities.

After each assessment workshop IPWEA and ISCA resolved various issues and updated the rating tool with changes that had been proposed during the assessments. The updated tool was then used in the subsequent assessments. Further, but fewer, issues and changes were addressed and resolved after the second and third assessments (in March and April 2013 respectively).

IX. Issues Raised

The pilot applications of the rating tool to the road management activities of the two councils raised a number of issues, both general and category or credit specific. The general issues identified included:

- interpretation was required to apply the rating tool benchmarks to the operations context given they had been trialled primarily on the design and construction of new infrastructure.
- the approach to comparing footprints to a baseline required a modified approach compared to that used for new infrastructure projects.

The issues specific to particular categories or credits included:

- the relevance of targets or requirements in the benchmarks for some credits that are not specific to road management.
- street lighting, which is typically the largest use of energy in roads management, is commonly paid for by local councils, but managed by energy distribution companies.
- the Was-3 credit that rewards actions to facilitate asset deconstruction/disassembly at the end of its life, is less meaningful for roads because they are almost always renewed indefinitely.

X. Proposed Modification to the IS Rating Tool

Over the course of this project, modifications were proposed to the original rating tool specifically for rating the sustainability of local council roads management. The proposed modifications greatly simplify the tool, with the number of credits reduced from 51 to 35.

The other main changes made were to:

- remove credits that are not applicable to road management.
- combine several credits within a category into one, where appropriate.
- simplify targets and make them more roads-specific.
- broaden the disassembly credit to also reward minimizing rework by facilitating future upgrades.
- make consistent the requirements for the credits that rely upon changes in footprints (i.e. Energy, Water, Materials and Ecology).
- make the requirements for inspections and audits consistent.

The customised rating tool provides for the full range of activities within the adopted scope.

XI. Assessment Results

Detailed advice will be provided to both pilot councils at the end of this project in a confidential briefing. The assessment identified a number of initial actions that local councils can implement to start to make their local roads management more sustainable. These early sustainability improvement actions include:

- ensure Council's Sustainability commitments are reflected in its sustainability targets, then in its contracts and procurement processes.
- ensure that a member of Council's senior management team is accountable for managing and regularly reporting on Council's sustainability performance, including that of its road management.
- explicitly consider sustainability criteria in goods and services procurement for road management.
- undertake an assessment of climate change risks to the roads network.
- monitor, compute and report on energy use and GHG emissions; potable and non-potable water usage; materials usage and waste quantities and types associated with roads management.
- investigate and identify all feasible and cost justifiable ways to reduce energy use and GHG emissions; potable and non-potable water usage; materials usage and waste.
- survey ecologically sensitive sites and heritage items along the road corridors and implement effective and appropriate measures to protect those sensitive sites and heritage items.
- regularly undertake an appropriate and risk-based program of community and user safety audits.
- engage with stakeholders (including the community) when preparing council's road assets management plan.
- implement a formal process for responding to and promptly resolving all community complaints about adverse impacts from roads management activities.
- develop comprehensive amenity and landscape management plans for the roads network, undertake roads management in accordance with those plans and regularly monitor for compliance.

The rating assessments scored both councils' road management activities at or below the Commended range (25-49). However readily-implementable actions, such as those listed above, were identified for both councils that, if carried out, would potentially increase their total scores into the Excellent range (50-74).

XII. Next Steps

At the time of writing, the rating tool was being refined through confirmation assessments at two further councils. It is hoped that a customised rating tool can be made available to other local councils around Australia to assess and rate the sustainability of their roads management activities. Over time, with more widespread use, it is expected that the customised rating tool

would be updated – especially the benchmarks – as what constitutes good sustainability practice becomes more clearly defined.

Furthermore, it is likely that with relatively minor further changes the tool could be customised to assess other types of local government assets with similar characteristics (e.g. stormwater/ drainage assets and open space, parks, garden and sporting fields).

XIII. Conclusions

Trial applications of the original rating tool to assess the road management activities of two local councils in different areas of Australia identified proposed modifications to the tool to make it more suitable to rate the operational phase of that type of infrastructure asset.

Use of the customised rating tool to informally assess the road management activities of the two pilot councils demonstrated its practicality and benefits. The outcomes will help the councils to identify ways that their road management can be made more sustainable. The outcomes will also help IPWEA draw general conclusions about the sustainability of local council road management, what councils can do to improve their sustainability performance and how IPWEA can support councils in this regard.

XIV. Recommendations

Follow-on actions could include:

- reviewing how the customised rating tool might be made available for use, promoted and maintained.
- drafting extra Additional Guidance on the customised rating tool for the Technical Manual
- proposing fees for formal operational rating assessments by local councils.
- developing an economic theme, possibly incorporating the three financial sustainability indicators described in the IPWEA's Practice Note 6 (IPWEA 2012).
- developing an ongoing program with IPWEA to encourage use of the customised rating tool by local councils and its further refinement.
- investigating opportunities to further pilot and modify the rating tool to facilitate assessing the sustainability of local council management of other assets.

Acknowledgements

Financial support for this project was provided by the Australian Centre of Excellence for Local Government. That support is gratefully acknowledged. Special thanks are also given to staff of the two pilot councils, Redland City Council and Launceston City Council and also Brisbane and Logan City Councils.

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