PILOT APPLICATION OF THE INFRASTRUCTURE SUSTAINABILITY RATING TOOL TO LOCAL COUNCIL ROAD MANAGEMENT

Stage 1

ACELG Australian Centre of Excellence for Local Government

IPWEA INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALASIA

ISCA Infrastructure Sustainability Council of Australia

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Preface

One of the most important objectives of the Australian Centre of Excellence for Local Government (ACELG) is to encourage innovation and best practice across local government. One area where this has proven challenging is in assisting local government to become more sustainable. Until recently it has not been possible to benchmark sustainability performance and measure improvements over time. To that end the Infrastructure Sustainability Council of Australia (ISCA) has developed its Infrastructure Sustainability (IS) rating tool, but this has not yet been extensively trialled on the rating of sustainable operation of existing infrastructure assets.

The project reported in this document piloted application of the IS rating tool to one of local government's major functions: the management of its local roads assets. The initial stage of the project just completed (Stage 1) proposed modifications to the current IS rating tool (version 1) to make it more suitable (customised) for rating local roads management, rated the roads management of four local councils, enabled general observations to be made about areas of sustainability strength and weakness, and identified issues with the tool yet to be resolved and opportunities for the tool to be improved.

The project has highlighted a general lack of key sustainability performance data (i.e. for managing local road assets) – a gap that currently limits widespread use of the customised rating tool. But recommendations to redress this deficit have been made and work on it is already underway.

This report, *Pilot Application of the Infrastructure Sustainability Rating Tool to Local Council Road Management – Stage 1*, documents the process followed and draws initial observations about the current sustainability of local roads management. It draws heavily upon the practical knowledge of the four councils that participated in the project. The report is intended to provide a sound platform for subsequent work. In that sense the report is more of a milestone than a destination reached.

We feel that this report is a useful resource for those working in local roads management and those who oversee their work. It is hoped that it will encourage other local councils to participate in further stages of the project and to look out for the self- assessment tool being developed in the project's next stage.

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Executive Summary

There is a global trend towards developing and applying rating schemes in order to encourage improvements in sustainability. This was initially the case for buildings, but more recently also for infrastructure. The Infrastructure Sustainability Council of Australia (ISCA) has developed its Infrastructure Sustainability (IS) rating tool to assess the sustainability of both new infrastructure projects, and the operation/ maintenance of existing infrastructure assets. The rating tool was developed and trialled on new infrastructure design and construction projects, but up until recently had only undergone limited testing on the operation of existing infrastructure assets.

Roads are the largest asset class of most local councils, and managing road assets is a major council function. This makes road sustainability a key asset issue, as even minor improvements in sustainability could potentially lead to large cumulative gains.

The objective of this Stage 1 project was to test the application of the ISCA IS rating tool v1 to existing infrastructure operations, in this case the management of local council road assets. Road asset management was taken to include all road operations, maintenance, refurbishment and minor construction within the road corridors, but not major upgrades or new road construction.

The project involved three rating workshops at each of the two pilot councils (Redland in Queensland and Launceston in Tasmania). Between the workshops, extensive changes to the rating tool were proposed to facilitate its use specifically for the purpose of rating roads management. The 'customised' rating tool was then tested at subsequent workshops at two other local councils (Brisbane and Logan in Queensland). The tool performed satisfactorily, with the overall rating scores being similar to those obtained at the two pilot councils. However there was a sense amongst those participating that the 'customised' rating tool was not yet as useful as it should be. A number of outstanding issues and opportunities for future enhancements and fine-tuning of the customised tool were identified for redressing at a later stage. The road assets management of all four councils was rated during the project. They scored just above or just below the 'Commended' scoring range (i.e. the second lowest quartile). Readily-implemented actions were identified for all the councils which, if implemented, would double their rating scores. Those actions were detailed in separate confidential reports sent to the four councils at the end of Stage 1.

The study found that general use of the 'customised' rating tool is currently limited by the lack (at most local councils) of key sustainability performance data (e.g. on resource use) for managing road assets and specific sustainability-drivers.

It has therefore been decided in Stage 2 to develop a simple 'pre-rating' tool or guideline that local councils can use to identify the highest priority actions. This tool will make the councils' roads management more sustainable, whilst also obtaining the data and information needed to prepare for the application of a 'customised' IS rating tool in the future.

1 Introduction

1.1 Reasons for project

Roads are the largest assets class of many local councils, with road management their largest operational activity. 84% (by length) of all of Australia's roads are maintained by Australia's 565 local councils. The total value of Australia's local council infrastructure in 2010 was $187 billion (ABS customised report, 2011) with the total value of local roads likely to be in excess of $100 billion. As a result, even small improvements in the sustainability of council road maintenance programs can result in enormous benefits. However, until now the lack of a suitable tool to quantify sustainability has been a major impediment – you can't manage something that you can't measure. Assessing sustainability across its many dimensions is necessary in order to drive improvements.

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

1.2 Partners

The project described in this paper required close collaboration between ISCA and the Institute of Public Works Engineering Australasia (IPWEA), along with the support of and participation of two pilot councils and the two 'confirmation' councils, as well as financial support from the Australian Centre of Excellence for Local Government (ACELG).

IPWEA's name reflects the new direction in which the organisation is embarking. Increasingly, engineers are working as part of multi-disciplinary teams, rather than working in isolation within traditionally structured departments. Public works and services for all levels of government are being provided increasingly by consultants; contractors; suppliers of goods, services and machinery; as well as those directly employed by government. Membership in IPWEA's network of over 12,000 public works professionals is drawn from the wide range of professions involved in public works and services: engineers, technicians, public works directors, contractors, consultants, managers and strategic planners. For more details visit www.ipwea.org.

The ISCA is a member-based, not-for-profit industry-initiated organisation established in 2009. It has over 50 member organisations that employ more than 70,000 people. Its membership includes many leading contractors, consultants, investors, local councils and government agencies. For more details visit www.isca.org.

1.3 Goals

The project involved IPWEA's National Sustainability Director, as Project Manager, working alongside staff of the pilot local councils to trial the rating tool and negotiate with ISCA's Technical Director on proposed

changes to facilitate operational use of the rating tool. Due to time and resource constraints the tool customisation based on feedback from the pilot councils was completed as far as practicable in this Stage 1 project, with the finalisation work to be undertaken in Stage 2, when funding allows.

The ultimate long-term goals of this project are to:

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

When Stage 3 of the project is completed, it is expected that the customised rating tool will be made widely available for use by local councils. The rating tool can then be used by councils at regular intervals to drive sustainability improvements in managing its assets.

The more immediate goals for Stage 1 were to:

- customise the IS rating tool so that it can be used to assess the sustainability performance of local council roads management
- help the pilot councils self-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 principles to apply when setting fees for the verification and certification of ratings of local council roads management though the customised IS rating tool
- make recommendations to ISCA and IPWEA about follow-on work.

1.4 Deliverables

The key deliverable of Stage 1 of the project is a version of the IS rating tool that has been customised to facilitate its use for rating local council road management activities. A second deliverable is this Stage 1 project report. Whilst this report focusses on the pilot rating of local council road management activities, one of its recommendations foreshadows further customising the rating tool so that it is also applicable to rating the management of other types of council assets. Separate reports are being provided to the two pilot councils and the two 'confirmation' councils on the rating results for their road management and opportunities for improvement.

The project partners will then consider the report and decide upon the next stage of the project.

2 Background

This chapter introduces ISCA and the other project partners. It notes other sustainability rating schemes, briefly describes the IS Rating Tool, and then introduces the rating process and the footprint concept used to assess lifecycle impacts. The two pilot councils are also introduced.

2.1 Sustainability rating schemes

There is a global trend towards developing and applying rating schemes in order to encourage improvements in sustainability, initially for buildings, but now also for infrastructure.

The Green Buildings Council of Australia's Green Star rating scheme (Australian Green Buildings Council 2014) started in 2003 and has now rated the design and construction of over 600 commercial buildings. Also in Australia, the National Australian Built Environment Rating System (NABERS) (NSW Office of Environment and Heritage 2014) is widely used and accepted for rating the sustainability of the operation of commercial buildings. Similar rating schemes for rating buildings include Leadership in Energy and Environmental Design (LEED) (US Green Building Council 2014) in the US, and the Building Research Establishment Environmental Assessment Methodology (BREEAM) (BRE Global 2014) in the UK and elsewhere.

The first national rating scheme for infrastructure was the Civil Engineering Environmental Quality Assessment and Award Scheme (CEEQUAL) (CEEQUAL Limited 2012) 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 (Institute for Sustainable Infrastructure 2014); Pearl in Abu Dhabi (Abu Dhabi Urban Planning Council 2010); Invest for highways, also in the US (United States Department of Transportation – Federal Highway Administration); and ISCA's IS rating tool in Australia (Infrastructure Sustainability Council of Australia 2013a).

2.2 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 four dimensions ('quadruple bottom line') of economic, environment, social and governance criteria. The types of infrastructure covered by the rating scheme broadly include transport, water, energy and communications. The overall scheme comprises the IS rating tool, an assessment process, plus related education and training programs.

The IS rating tool is currently available as a general tool intended to rate a wide range of infrastructure types and phases. Some other rating tools are available as customised versions to facilitate the rating of particular asset types. For example, the Green Buildings Council of Australia's Green Star rating scheme has rating tools specific to educational, healthcare, industrial, apartment, office and retail buildings, with tools for communities, public buildings and even convention centres under

development. The Green Star tools will be combined into one on-line Green Star rating tool in the future.

Key benefits of the IS rating scheme include:

- provision of a common national language for sustainability in infrastructure
- support for consistent application and evaluation of sustainability in tendering processes
- scoping whole-of-life sustainability risks for projects and assets, enabling smarter solutions that reduce risks and costs
- fostering resource efficiency and waste reduction, reducing costs
- encouraging innovation and continuous improvement
- building an organisation's credentials and reputation in its approach to sustainability in infrastructure. (Infrastructure Sustainability Council of Australia 2013b)

Version 1 of the IS rating tool comprises six themes, 15 categories (between one and four per theme), and 51 credits (between one and eight per category). ISCA also intends to develop additional 'economic' and 'workforce' themes as soon as funding allows. The hierarchy of themes, categories and credits in the IS rating tool (v1.0) is shown in Table 1.

Table 1: IS rating tool (v1.0) themes, categories and credits

Themes	Categories	Credits
Management & Governance	Management Systems	Man-1 Sustainability leadership and commitment
		Man-2 Management system accreditation
		Man-3 Risk and opportunity management
		Man-4 Organisational structure, roles and responsibilities
		Man-5 Inspection and auditing
		Man-6 Reporting and review
		Man-7 Knowledge sharing
		Man-8 Decision making
	Procurement & Purchasing	Pro-1 Commitment to sustainable procurement
		Pro-2 Identification of suppliers
		Pro-3 Supplier evaluation and contract award
		Pro-4 Managing supplier performance
	Climate Change Adaptation	Cli-1 Climate change risk assessment
		Cli-2 Adaptation options
Using Resources	Energy & Carbon	Ene-1 Energy and carbon monitoring and reduction
		Ene-2 Energy and carbon reduction opportunities
		Ene-3 Renewable energy
	Water	Wat-1 Water use monitoring and reduction
		Wat-2 Water saving opportunities

Themes	Categories	Credits
		Wat-3 Replace potable water
	Materials	Mat-1 Materials lifecycle impact measurement and reduction
		Mat-2 Environmentally labelled products and supply chains
Emissions, Pollution & Waste	Discharges to Air, Land & Water	Dis-1 Receiving water quality
		Dis-2 Noise
		Dis-3 Vibration
		Dis-4 Air quality
		Dis-5 Light pollution
	Land	Lan-1 Previous land use
		Lan-2 Conservation of on-site resources
		Lan-3 Contamination and remediation
		Lan-4 Flooding design
	Waste	Was-1 Waste management
		Was-2 Diversion from landfill
		Was-3 Deconstruction/disassembly/adaptability
Ecology	Ecology	Eco-1 Ecologically sensitive sites
		Eco-2 Ecological value
		Eco-3 Biodiversity enhancement
		Eco-4 Habitat connectivity
People & Place	Community Health, Well-being & Safety	Hea-1 Community health and wellbeing
		Hea-2 Crime prevention
		Hea-3 Community and user safety
	Heritage	Her-1 Heritage assessment and management
		Her-2 Monitoring of heritage
	Stakeholder Participation	Sta-1 Stakeholder engagement strategy
		Sta-2 Level of engagement
		Sta-3 Effective communication
		Sta-4 Addressing community concerns
	Urban & Landscape Design	Urb-1 Site and context analysis
		Urb-2 Site planning
		Urb-3 Urban design
		Urb-4 Implementation
Innovation	Innovation	Inn-1 Innovation strategies and technologies

The IS rating tool was developed between 2010 and 2011 by authors expert in the various topics covered. In mid to late 2011 the draft rating tool was trialed on 14 infrastructure projects/assets across Australia. A national survey was conducted in late 2011 to help determine the theme

and category weights. The rating tool was launched by the Federal Infrastructure Minister at Parliament House in Canberra in February 2012. Since then over 275 IS accredited professionals have been trained and the first infrastructure projects are now being subjected to the formal rating process, with the first rating being completed in April 2013. During the pilot phase the rating tool had only undergone limited trials to assess the sustainability performance of existing infrastructure operations.

2.3 Rating assessments

For each credit there are up to four possible benchmark levels of performance: no level, level 1, level 2 and level 3. Benchmarks for levels 1, 2 and 3 reflect increasing levels of performance above business as usual.

Some of the credits have benchmarks that express performance in terms of *outcomes*; for example 'over 90% of the volume of inert waste diverted from landfill'. But the benchmarks for many of the credits express the required performance in terms of acceptable *processes*; such as having conducted a climate change risk assessment. In some cases, this is a necessary interim approach until measurable outcomes are developed.

As well as the benchmark descriptions, within the tool examples are provided of what would be considered as acceptable forms of evidence to demonstrate achievement of each level.

Two of the credits require the use of spread sheet 'calculators'. These are used to compute changes in impacts and resource usage over the asset's life.

If they are not applicable, credits may be 'scoped out' for rating some of the asset's phases – 'design', 'as-built' or 'operation'. Credits may also be 'scoped out' if they can be verified as non-applicable. In such cases the weights for scoped-out credits are automatically redistributed to the remaining credits in that category in order to maintain the original inter-category weightings.

The assessment process involves measuring the performance of the asset/project against the benchmarks for each credit and recording the corresponding level (0, 1, 2 or 3) in the rating tool's scorecard. When all the credits have been assessed and the scores entered, the scores are weighted and summed to get overall score on a 105 point scale. In a formal assessment process, ratings are certified at the following levels based on overall score:

- Commended (25-49)
- Excellent (50-74)
- Leading (75-105).

2.4 Rating process

The following rating types are offered:

- *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 results in a certified rating and involves the steps set out in Table 2 (Institute for Public Works Engineering Australia 2011). Part of this project involves recommending to the ISCA principles for setting appropriate and affordable fees for formal operational ratings for local councils.

Table 2: Steps in the formal IS rating process

No.	Step
1	Proponent registers project with ISCA for rating and pays fees
2	Proponent and ISCA case manager engage in a kick-off workshop to establish scope, timing and reference design
3	A project team led by an IS accredited professional undertake self-assessment
4	The proponent collects and records details of documents and other evidence that justify the level claimed for each credit
5	Proponent submits rating application
6	Independent verification by ISCA
7	ISCA board certifies the rating
8	ISCA issues and promotes rating.

An informal rating process might typically only involve steps 2 and 3 and does not lead to a certified rating. The rating workshop and any follow up should be facilitated by an IS accredited professional to ensure correct interpretations, consist scoring, and rigour. However, in an informal rating no evidence is sought or produced and there is no independent verification or public certification. An organisation can use the results of an informal rating internally to identify and implement sustainability improvements, but the rating results cannot be used publicly without formal certification from ISCA. For the projects outlined in this paper, the rating process was informal.

2.5 Pilot councils

Through the IPWEA website, which is accessed by public works professionals in 565 local councils throughout Australia, councils were invited to nominate their participation in the pilot application of the rating tool to council road maintenance programs. The applications were assessed and two councils selected – Redland City Council on Moreton Bay, southeast of Brisbane; and Launceston City Council in northern Tasmania. Both are medium sized councils with a mix of urban and rural roads. Memoranda of understanding between IPWEA, ISCA and each council were prepared and signed to demonstrate good faith and commitment.

2.5.1 Launceston City Council

Launceston City Council has 67,000 residents and is the centre of a region of around 90,000 people. Council's area covers 1,405 square kilometres. Key challenges facing the council include low population growth (0.7% pa),

an ageing population, and projected greater numbers of large commercial vehicles on local roads. Highways and major arterial roads in the Launceston local government area are managed by the Tasmanian Government through its Department of Infrastructure, Energy and Resources.

Launceston City Council is responsible for 660 km of roads – 370 km of urban and 369 km of rural. 30% of Council's roads are gravel. Council has 591 km of footpaths, 660 km of kerbs and channels, 9,200 gully pits, 92 bridges and large culverts, plus other road assets such as roundabouts and retaining walls. The total replacement value of Council's road assets is $547M. In 2011/12 Council spent $5.4M on road operations (including street lighting electricity) and $3.7M on road maintenance. $5.2M was spent on renewals and $1.7M on new roads or upgrading.

Road maintenance and operations are undertaken together. Council's Project Management group deals with any work requiring design – mainly upgrades and new work. All large jobs go out to tender, even when replacing like with like. Council uses IPWEA's NAMS.PLUS to write its infrastructure asset management plans. Council conducts a community satisfaction survey each year that includes questions about satisfaction with local roads, pedestrian areas and traffic flow.

2.5.2 Redland City Council

Redland City is spread along the southern coast of Moreton Bay in southeast Queensland, covering 537 square kilometres. In contrast to Launceston, Redland is part of one of the fastest growing areas in Australia. Its estimated population in 2011 was 138,700: more than four times the number of residents it had as a rural community 30 years earlier. An increasing proportion of these new residents are retirees from the southern states of Australia. Although most of the population resides in the main urban centres on the mainland, over 6,000 people live on islands in the Moreton Bay region that are also part of the City.

Redland Council faces some unique challenges in managing its road network, including legacy issues on the Moreton Bay islands. As the smallest council in southeast Queensland, Redland Council's development standards are often dictated by the standards of the larger surrounding councils. Highways and major arterial roads are controlled by the Queensland Government through its Department of Transport and Main Roads. Council has many unsealed roads. Most council roads are chip sealed and there is asphalt in urban areas. The total length of roads under Council's control is 1,157 km. Council reseals 33 km and rehabilitates 1 km of road per year.

At both these pilot councils road operations include street lighting. At Redland City, except in the Cleveland CBD, street lights are installed and maintained by the energy retailer Energex, but power and maintenance for street lighting is paid for by Council at a cost of about $2.5M per year. In Launceston, street lights are maintained by Aurora Energy at a cost to Council this year of $2.7M.

2.6 Footprints for operational ratings of local roads

'Footprints' are quantified impacts of project activities. The IS rating tool uses footprints to measure sustainability performance in the areas of energy and carbon, water, and materials.

The rating tool was primarily trialled on new infrastructure projects that are planned, designed, constructed and then operated. Such projects are created at a particular time and at a particular location within clearly defined project boundaries. In addition, new infrastructure projects have approved design plans – concept, design and then as-built – and the expected social and environmental impacts of the completed asset over its life will typically have been assessed and documented in order to obtain the necessary project approvals/ permits. Those projected impacts provide a reference or baseline footprint for the completed infrastructure asset's social and environmental impacts, against which its future (measured and/or projected) impacts can be compared.

The rating tool's technical manual states that, for the *operational* rating of an infrastructure asset, the reference footprint is the asset's modelled resource usage (i.e. energy, water or materials) over its lifetime operation (Infrastructure Sustainability Council of Australia 2013b). The actual footprint is the asset's measured (to date) operational and modelled (future, over rest of its life) operational resource usage or ecological impact. Both footprints are based on the asset's *as-built* design.

A local council's road network differs from new infrastructure projects. At most councils the annual expenditure on road operations, maintenance and renewals outweighs the spending on new road construction. Moreover, their local road network will usually be widely distributed, built incrementally at different times to different standards, and perhaps previously approved without the detailed environmental assessments now commonly required. In this project it was therefore not immediately apparent how the resource usage reference footprints could be determined for this type of asset. Unfortunately the lack of the required data at the two pilot councils and the two 'confirmation' councils precluded testing the practicality of the 'footprints' concept during Stage 1 of this project. This was identified as a task to be addressed in Stage 2 of the project.

3 Methodology

In this chapter the project's methodology is briefly outlined, the scope of the rating is discussed, the need to align the scope with how the council operates is emphasised, and the implications of slightly different scopes and resources between councils are noted.

3.1 Project Phases

As shown in Figure 1, the project's Stage 1 methodology involved 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.

There were three self-assessment iterations at each pilot council, with the rating tool revised and refined after each rating assessment. The customisation of the rating tool was then finalised. Following that step, the customised rating tool was tested by undertaking two confirmation rating workshops at two other local councils[1].

Prior to the initial rating workshops the IPWEA's Project Manager attended and passed the IS foundation training course to become an IS accredited professional and so qualified to undertake ratings assessments.

3.2 Scope

The scope of the ratings was initially restricted to local council road operation and maintenance. However it was quickly realised that the term 'maintenance' has a specific meaning in road asset management and is unduly limiting for the purposes of rating. The aim was to have a scope broad enough to provide opportunities for local councils to enhance the sustainability of their road networks. Furthermore, restricting the scope of the rating to particular activities creates potential boundary problems because the differences between the activities (and hence what is in scope and what is out of scope) are often quite subtle. To aid discussion the hierarchy of road management activities presented in Table 3 was developed.

It was therefore decided to expand the ratings scope to include renewals, these being works to replace existing assets with assets of equivalent capacity or performance capability (Institute for Public Works Engineering Australia 2011). However, roads are often renewed to higher (current) standards and the opportunity is often taken to effect minor improvements, creating uncertainty about when a renewal becomes an upgrade.

This demonstrated the inherent difficulties of setting a boundary for rating on the basis of activities, rather than physical assets alone. It was recognised that, because this was an *operation* rating, not a *design* or *as-*

[1] The rating workshops at Brisbane City Council and Logan City Council were intended to 'confirm' the usability of the customised rating tool. The word 'confirmation' is used to distinguish those workshops from the earlier pilot application workshops.

built rating, the scope should exclude major upgrades and new road construction projects. These works are generally large enough to warrant their own sustainability rating as new infrastructure projects.

Figure 1: Project flow chart

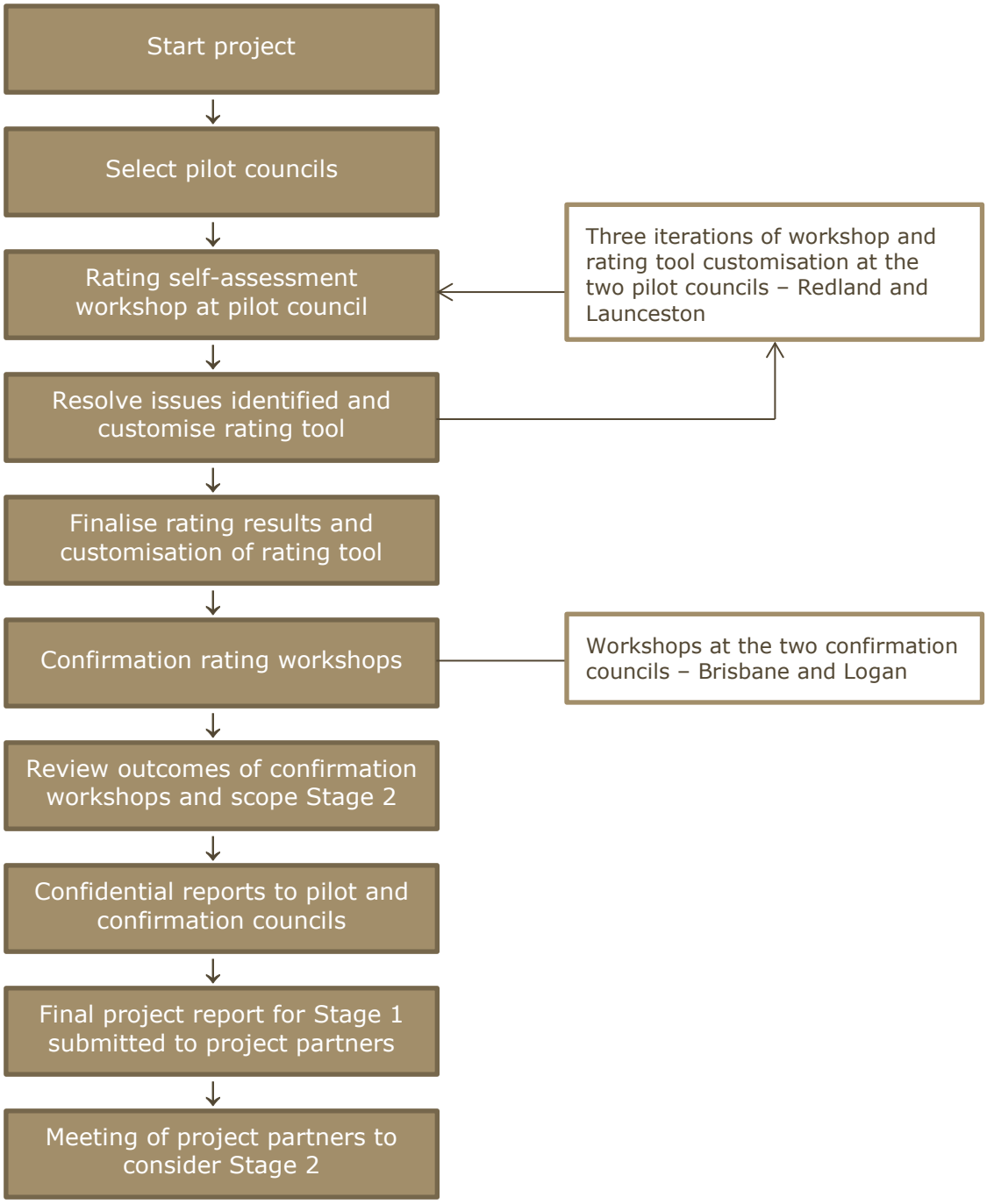

Table 3: Council road management activities

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
	Minor upgrade	Any time	Yes	Partial
Upgrade	Reconstruction	End of useful life	Yes	Partial
	Major upgrade	End of useful life	Yes	Yes
New constructio	Construction	Any time	Yes	Yes

Accordingly the scope limit was set to include minor upgrades and reconstruction, but exclude major road upgrades and new construction. (The excluded activities and tasks are highlighted in grey in Table 3.) The scope was thus called 'local road management' and was 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.*

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 covers assets and facilities such as:

- pavement and shoulder repairs
- bridges, tunnels, culverts and drains
- gutters and kerbs
- footpaths, street furniture, bus shelters and 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.

The wider scope of the rating means that there will be opportunities for local councils to demonstrate sustainability enhancements across a greater range of activities in the course of managing their local roads network.

3.3 Implications of scope for use of the rating tool

An important point about the scope of the ratings assessment is that, notwithstanding the above discussion, the scope should align with how councils generally do business. This will help ensure that the scope of 'roads management' makes sense to the council staff involved in the rating. It will also facilitate the rating process by, for example, making it

easier to capture or extract data on energy, water and materials usage, and waste generated by roads management.

Aligning the scope for the rating with the operational demarcations employed by council could use one or more of the following bases:

- road operations, maintenance and renewals (i.e. road management) is carried out by council's works depot and day labour, but new road construction work is undertaken by external contractors
- recurrent funding pays for road operations, maintenance, renewals and minor upgrades (i.e. roads management), but capital funding pays for new road construction
- one section of council is responsible for roads management and another section is responsible for the design and construction of new road projects.

It is intended that the rating tool will primarily be used at different times by a council to help drive sustainability improvements through its capacity to show:

- whether, overall, its road management is becoming more sustainable over time
- whether past changes made to its roads management have resulted in measurable sustainability improvements
- which aspects of its roads management most need improving.

It is also worth recognising that many of the credits have benchmarks that relate to processes, rather than outcomes, and this project found that the processes followed for roads management were generally processes applied consistently across all of council's activities. This means that the rating of roads management activities across process-based credits also reflects the sustainability of broader council operations.

4 Ratings and outcomes

This chapter summarises the two rounds of pilot rating workshops and issues raised as a result of those workshops, both generally and with regard to specific 'credit' metrics. It also outlines the changes made to the original rating tool to customise it for rating local council roads management. The key results of the pilot ratings, and general opportunities for sustainability improvement furnished from the pilot rating exercises are presented. Finally, the chapter describes the two confirmation rating workshops and discusses their results and the issues raised.

4.1 Pilot rating assessments

The ISCA Technical Director (Rick Walters) and the IPWEA Project Manager visited each council in late January 2013 for the kick-off workshop and initial self-assessment. The kick-off workshop was an opportunity 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. At both councils the relevant director or group manager attended the introductory session. The key managers and senior officers responsible for local roads management then participated in the subsequent rating self-assessment workshops.

Although the council staff who participated in the workshops were very knowledgeable about roads management, they sometimes struggled to rate the credits that required knowledge of the council's policies and procedures in more general areas (e.g. management, governance, procurement, ecology, heritage and stakeholder engagement). Had they been present, council staff specialising in those fields would have been better qualified to assess performance in those credits. This highlights the need for future rating workshops to have a broader cross section of council staff, even if the specialist staff only stay whilst the credits covering their area of expertise are assessed.

The pilot rating workshops also showed the need for a skilled and qualified facilitator, preferably an IS accredited professional, to help ensure correct interpretations are made, the scoring is consistent, and there is a degree of rigour in qualifying evidence that a particular credit level has been satisfied.

In this important respect the Operational ratings, such as the pilot rating of this project, differ from the Design ratings and the As-built ratings in which the project team is encouraged to self-assess the new infrastructure project that they are designing and/or constructing. This difference suggests that the customised rating tool should include specific guidance on how the rating tool is to be used.

Each theme, category and credit in the rating tool was assessed in turn, and the scores recorded in the rating tool's scorecard. Council staff were asked to identify evidence to justify the score claimed for each credit but, unlike the formal assessments, the evidentiary documents were not produced or examined.

Some credits were identified as likely to not be applicable. For these pilot trials, such credits could either be scoped out (if deemed not applicable for that council) or proposed to be permanently removed from the tool for the operational rating of local roads (if deemed not applicable for all councils). For some credits, questions were asked that could not be answered at the workshops because the council staff present did not have the required knowledge of council activities outside their own department or section, or they required access to council reports that were not available at the workshops. These were noted for follow up action after the workshop.

It was quickly apparent that the current rating tool, having been developed and trialled primarily on new infrastructure projects, would require modifications to make it suitable for rating the operation of local council roads.

After each rating assessment workshop IPWEA discussed and resolved with ISCA various issues and rating tool changes that had been proposed during the pilot assessments. The updated tool, customised for rating local roads, was then used in the subsequent assessments. Further, but fewer, issues and changes were addressed and resolved after the second and third assessments.

The second round of assessments was conducted in late March 2013 and the third and final assessments in late April 2013. At the final assessment at Redland Council, road maintenance staff were joined by their council colleagues responsible for procurement and landscape design, who were able to provide specialist inputs for assessing those credits.

This pilot application project was unable to test the 'footprints' concept used by the rating tool to quantify changes in life cycle impacts because the necessary data were unavailable. A staff member at Launceston City Council tried to apply the rating tool's Ecological Calculator to Council's road corridor network using GIS-derived areas based on the most recent data available, but earlier information needed to compute changes in ecological values was not available. Similarly, annual quantities of the main types of materials used in roads management were unavailable at both pilot councils, so the rating tool's Materials Calculator could not be applied

4.2 Issues raised

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

The general issues identified included:

- The benchmarks of some credits, which had all been developed and trialled primarily on the design and construction of new infrastructure, had to be re-interpreted to make sense for rating the operation of existing infrastructure
- Whether operational ratings, such as this one, could be self-assessed or require facilitation by an IS accredited professional

- Application of the *reference* and *actual footprints* concept, especially in the midst of uncertainty about the time period over which they are analysed and the likely unavailability of the required information. Ultimately the lack of the required data precluded this being tested.
- The desire for inclusion of economic/ finance and workforce themes in the rating tool.
- Ease and/or practicality of implementing sustainability improvements.

An economic/ finance theme is needed because its absence may cause the tool to encourage changes that improve social, environmental and/or governance outcomes of the asset operation without due regard to economic/ financial performance, a core component of quadruple bottom line reporting.

Some of the general issues were resolved in the course of customising the tool for roads management, but many remain outstanding, to be addressed in a subsequent stage (Stage 3) of this project.

The issues specific to particular categories or credits include:

- the lack of resource usage and other sustainability data pertaining to local council roads management for credits with performance or outcome-based benchmarks (e.g. energy, water, materials, waste) at all four councils involved in this pilot project
- the lack of 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 paid for by local councils, but managed by energy distribution companies
- the credit that rewards actions to facilitate asset deconstruction/ disassembly/ adaptability at the end of its life is not so meaningful for roads because they are almost always renewed indefinitely.

An example of a specific target is the target for credit Wat-3, which requires that potable water usage be reduced by more than 50%. However, both pilot councils only use non-potable water on rural roads and use potable water on urban roads because non-potable water is more practicable (i.e. readily accessed) in urban areas. So neither council is ever likely to meet the potable water usage target.

Street lighting provides a good example of how the rating tool can drive sustainability improvements. Level 3 of the energy and greenhouse gas (GHG) emission credit requires that energy use and GHG emissions be reduced by more than 25% compared to the reference footprint. Such a target can be readily achieved by local councils (assuming the co-operation of their energy distribution company) because:

- street lighting is generally the single largest source of GHG emissions from local councils, typically accounting for 30% to 60% of their total GHG emissions (Ironbark Sustainability 2011)

- most energy used on roads management is electricity for street lighting
- replacing existing lights when they fail with more energy efficient lights can achieve energy savings of 20% to 70% (Ironbark Sustainability 2011)
- at least two Victorian councils have already made savings of about 35% through replacement of lights with more efficient technology.

There are approximately 2.28 million street lighting lamps in service in Australia, with around 33% on main roads and 67% on local roads. The annual cost of public lighting in Australia exceeds $250 million (Ironbark Sustainability 2011). Moving quickly to more energy efficient street lighting is clearly one of the first things that local councils could do to make their roads management more sustainable.

As part of the customisation of the rating tool for roads management, the targets for reducing energy use and GHG emissions in the energy credit were adjusted to reflect the savings now possible using the latest street lighting technologies: 35% for Level 2 and 65% for Level 3. These savings were obtained from the many responses received to an open inquiry posted in April 2013 on the IPWEA's Community of Practice on Sustainability.

4.3 Customisation of the rating tool

Over the course of this project the IS rating tool (v1.0) was 'customised' specifically for rating the sustainability of local council roads management. In doing so the tool was greatly simplified, with the number of credits reduced from 52 to a maximum of 33. Additionally, up to eight of the remaining credits may be scoped out if they are shown to be not applicable to a particular council.

In short, the main changes made to the rating tool included:

- removing credits that are not applicable to road management
- combining several credits within a category into one, where appropriate
- simplifying targets and making them more roads-specific
- re-interpreting the disassembly credit as encouraging a minimisation of rework by facilitating future upgrades
- making consistent the requirements for the credits that rely upon changes in footprints (i.e. energy, water, materials and ecology)
- making the requirements for inspections and audits more consistent.

The customised rating tool provides for the full range of activities within the adopted scope (see section3.2). However, some of the credits may be 'scoped out' if they are found to be not applicable for that council. For example, the heritage credit was scoped out in the ratings assessment for the rapidly growing Redland City in southeast Queensland, but retained in the assessment for Launceston City, which was founded in 1804.

The IS rating tool customised with proposed modifications for local council road management still has six themes and 15 categories, but far fewer

credits. Its hierarchy of themes, categories and credits is shown Table 4. Note that credit numbers were not adjusted when some credits in that category were removed. The eight credits with a superscript asterisk (*) may be 'scoped out' if sound reasons can be presented that they are not applicable for the subject council. The credits denoted with a superscript hash ([#]) have benchmarks at least partly based on measurable sustainability *performance* or *outcomes* (rather than acceptable *processes*), whilst credits with two hashes ([##]) have benchmarks entirely based on measurable sustainability *performance* or *outcomes*.

The scorecard of the rating tool, incorporating proposed modifications resulting from changes made during the course of the pilot application, is presented in Appendix A of this report.

Table 4: Customised rating tool themes, categories and credits

Themes	Categories	Credits
Management & Governance	Management Systems	Man-1 Sustainability leadership and commitment
		Man-3 Risk and opportunity management
		Man-4 Organisational structure, roles and responsibilities
		Man-5 Inspection and auditing
		Man-6 Reporting and review
		Man-7 Knowledge sharing
		Man-8 Decision making
	Procurement & Purchasing	Pro-1 Commitment to sustainable procurement
		Pro-2 Identification of suppliers
		Pro-3 Supplier evaluation and contract award
		Pro-4 Managing supplier performance
	Climate Change Adaptation	Cli-1 Climate change risk assessment
		Cli-2 Adaptation options*
Using Resources	Energy & Carbon	Ene-1 Energy and carbon monitoring and reduction [#]
	Water	Wat-1 Water use monitoring and reduction [#]
	Materials	Mat-1 Materials lifecycle impact measurement & reduction [#]
Emissions, Pollution & Waste	Discharges to Air, Land & Water	Dis-1 Receiving water quality [#]
		Dis-2 Noise and vibration*
		Dis-4 Air quality*
		Dis-5 Light pollution*
	Land	Lan-2 Conservation of on-site resources [#]
		Lan-4 Flooding design*
	Waste	Was-1 Waste management
		Was-2 Diversion from landfill [##]
		Was-3 Deconstruction/ adaptability/ planning for upgrades [#]

Themes	Categories	Credits
Ecology	Ecology	Eco-1 Ecologically sensitive sites protection*
		Eco-2 Ecological value enhancement*#
People & Place	Community Health, Wellbeing & Safety	Hea-3 Community and user safety
	Heritage	Her-1 Heritage assessment and management*
	Stakeholder Participation	Sta-1 Stakeholder engagement strategy
		Sta-4 Addressing community concerns #
	Urban & Landscape Design	Urb-4 Implementation
Innovation	Innovation	Inn-1 Innovation strategies and technologies ##

Note: * credit may be scoped out if not applicable locally.

credits with benchmarks at least partly (#) or entirely (##) based on measurable performance or outcomes.

4.4 Pilot rating results

It should be noted that both councils had not taken any specific actions to address credits in the IS rating tool in the lead up to, or during the pilot application.

The final rating assessments scored both councils' road management activities just above or below the bottom of 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 top of the Commended range or bottom of the Excellent range (50-74). Furthermore, pilot application of the rating tool facilitated identification of a number of other achievable improvements in several areas that could be implemented over the next few years.

In the main these potential actions would satisfy the tool's Level 1 benchmarks for several credits. Some of these early sustainability improvement actions are listed below:

- ensure council's sustainability commitment is 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 protection measures
- 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 community complaints about adverse impacts from roads management activities
- develop comprehensive amenity and landscape management plans for the roads network, and then undertake roads management in accordance with those plans and regularly monitor for compliance.

Soon after their rating workshop each pilot council was sent an electronic copy of the rating tool scorecard for their council's roads management program to check that it agrees with the recollection of council officers who participated in the workshop. Each pilot council was also sent a table listing the initial actions (referred to above) that, if undertaken, would measurably improve the sustainability of council's road management as measured by the rating tool. Then, at the end of the project, more comprehensive and detailed advice was provided to both pilot councils in separate confidential reports.

4.5 Confirmation rating workshops

Following completion of the three rating workshops at the two pilot councils, and final 'fine-tuning' of the customised rating tool, it was decided to test the practicability of the customised tool by conducting 'confirmation' rating workshops at two different local councils. Based on expressions of interest received, Brisbane City Council and Logan City Council in southeast Queensland were selected for the confirmation ratings.

Brisbane City Council
Brisbane City Council is the largest local government body in Australia. It serves a population of over one million, covers an area of 1,367 square kilometres, has 5,600 km of paved roads, 760 km of bikeways and transit lanes, and its road assets have a replacement value of $3.7 billion. Council operates two quarries, two asphalt plants and a recycling facility. Most of its road works are undertaken in-house and Council has considerable specialist skills and resources in this field.

Logan City Council
Logan City Council is located south west of the Brisbane City Council area and west of the Gold Coast City Council area. 293,000 people live in Logan City's urban and rural areas. It is the fifth largest council by population in Queensland and the sixth largest in Australia. Council has 2,136 km of roads, of which only 85 km are unsealed. Its roads assets have a replacement value of approximately $1.2 billion.

The workshop at Brisbane City Council was held on 7 August 2013. The workshop at Logan City Council was held on 27 Augusts 2013. The format of the two confirmation workshops was similar to the pilot rating workshops. ISCA's Technical Director (Rick Walters) and the IPWEA Project Manager participated in both confirmation workshops.

The customised rating tool performed satisfactorily. The overall rating scores obtained were broadly similar to those obtained at the two pilot councils. However, several issues worthy of consideration were identified. There was also a sense amongst those participating that the customised rating tool is not yet as useful as it should be. The key issues appear to be that some of the credits:

(a) have performance-based benchmarks that require resource usage data for council roads management that few, if any, local councils have

(b) have process-based benchmarks that rate council-wide policies and processes, rather than those specific to roads management, with which the council roads management personnel at the workshop were unfamiliar

(c) use language that (whilst appropriate for new infrastructure projects) does not relate well to roads management

(d) are not very relevant or useful for roads management specifically

(e) have benchmarks that do not allow for alternative ways to achieve the desired goal

(f) invariably generate the same score (indicating that this is business as usual) and so do not help distinguish between good and better sustainability performance

(g) have unrealistically high weights due to the removal or scoping out of so many credits during the customisation process (at least 19 and possibly up to 27 out of 52) and the automatic reallocation of weights to the remaining credit(s) in that category

(h) the 'footprints' concept for quantifying actual and/ or projected changes to life cycle impacts was not tested due to the lack of the required data at the pilot and 'confirmation' councils.

It was also noted that the customised rating tool currently fails to recognise the central importance of having a roads asset management plan and, as stated earlier, it lacks financial/ economic and workforce themes. It is hard to imagine having a highly sustainable roads management program without a roads asset management plan. Furthermore, if and when a financial/ economic theme is added to the IS rating tool, its targets should be based on financial sustainability indicators that can only come from a properly established asset management plan. Clearly, adequate future funding is a critical requirement for a sustainable roads management program so a financial/ economic theme would be beneficial.

To test the practicability of the 'footprints' concept for assessing changes in life cycle impacts, pilot trials of the energy and carbon, water, materials

and ecology credits in the customised rating tool should be undertaken in a subsequent stage of the project, and any necessary refinements made to the benchmarks.

The issues identified have informed the scoping of follow-on work that should be undertaken in subsequent stages of this project. This proposed work is outlined in the following chapter.

As was done after the final pilot rating workshops, each confirmation council was sent an electronic copy of the rating tool scorecard for their council's roads management program and a table listing the initial actions that would improve the sustainability of council's road management. Then, at the end of the current stage of the project, more comprehensive confidential reports were sent to both 'confirmation' councils.

The most significant observation from the two 'confirmation' workshops was that, even if all other issues associated with the current version of the customised rating tool are resolved, the lack of resource usage and other sustainability data specific to roads management (e.g. energy, water, materials and waste) at most local councils may limit the rating tool's usefulness.

4.6 Review of rating results

Without identifying individual councils that participated, it is insightful to review the four sets of rating results– from the two pilot and two 'confirmation' councils – for similarities and differences. Note that these results were all based on use of the final version of the customised rating tool. These are reviewed by rating tool categories in Table 5.

Table 5: Review of rating results by category

Categories	Relative weight	Remarks
Management Systems	10.5%	The seven credits in this category assess the local council's management and governance processes, systems and policies that support more sustainable roads management. The weights for each credit varied markedly, with Man-7 (Knowledge sharing) and Man-8 (Decision-making) having the high category weightings: 20% and 30%, respectively. Arguably these may not be the most important credits. Council staff at several workshops lacked sufficient knowledge to rate credits in this category. The councils' scores for this category ranged from 20% to 50% of the maximum possible. Not surprisingly, the highest scoring council scored well for Man-7 and Man-8. Overall, this category has many opportunities for changes that would strengthen sustainability capability across all council assets and services.

Categories	Relative weight	Remarks
Procurement & Purchasing	5%	The four credits in this category assess the local council's products and services procurement processes, systems and policies that support more sustainable roads management. All the credits have the same weight. Council staff at several workshops lacked sufficient knowledge to rate credits in this category. Only one council had a staff member from its procurement section present and that council scored the highest of the four councils for this category. The councils' scores for this category ranged from 0% to 60% of the maximum possible. Overall, scores declined from commitment to sustainable procurement (Pro-1) through to managing supplier performance (Pro-4).
Climate Change Adaptation	5%	The first credit in this category rates how thoroughly council has assessed climate change risks to its road network. If medium or higher priority risks to road assets were identified, the second credit rates the implementation of adaptation measures to treat those risks. All four councils had undertaken at least a basic climate change risk assessment, but they apparently found no medium or higher priority risks to road assets. All had the same score for this category – 33% of the maximum possible. Only one council had someone at the ratings workshop familiar with the risk assessment undertaken by council.
Energy & Carbon	10.5%	The single credit in this category assesses whether council has monitored its energy usage and greenhouse gas (GHG) emissions associated with roads management, and investigated all feasible and cost justifiable opportunities to effect reductions. Several councils had an overall council energy and GHG footprint, but none had one for roads management alone. Accordingly, all councils scored 0% for this category. Street lighting is by far the largest contributor to all council's energy and GHG footprints and so provides the greatest opportunities for savings.
Water	7%	The single credit in this category assesses whether council has monitored its potable and non-potable water usage on roads management, and investigated all feasible and cost justifiable opportunities to effect reductions. At the time of the rating workshops all councils felt that the amounts of water used on roads management were modest and the cost and availability of water was not of concern. No council knew how much water it used on roads management. Accordingly, all councils scored 0% for this category.

Categories	Relative weight	Remarks
Materials	7%	The single credit in this category assesses whether council has monitored the amounts and main types of materials used on roads management, and investigated all feasible and cost justifiable opportunities to effect reductions in environmental impact. The main types of material used on roads management are aggregate/ crushed stone, concrete and bitumen. Although all councils have records that could be accessed, at the time of the rating workshops no council knew the volume of materials used on roads management. Accordingly, all councils scored 0% for this category.
Discharges to Air, Land & Water	10.5%	The four credits in this category assess the adequacy of measures being taken by council to minimise water, noise and vibration (considered together), and air and light pollution, and to monitor, audit and resolve the complaints received. The weight for the water pollution credit is higher than for the others. The councils' scores for this category ranged from 22% to 44% of the maximum possible. The councils that scored highest have a regional water quality monitoring program aimed at protecting an important water body. All councils felt that their existing practices for dealing with noise, vibration, air and light pollution, whilst important, are adequate and routine monitoring and auditing are not warranted. All the councils scored exactly the same for the noise, air and light pollution credits, but had markedly different scores for the water pollution credit.
Land	7%	The two retained credits in this category assess, firstly, conservation and on-site re-use of top soils and other mineral resources, and secondly, consideration of possible upstream and downstream flooding impacts when undertaking minor road works across a floodway. The latter credit has a weighting one-third higher, and because it has only one performance level, councils with rural unsealed roads able to say that they consider flooding impacts scored highly. The councils' scores for this category ranged from 29% to 87% of the maximum possible. All councils were able to show that most soil resources are re-used on site and most had the same score for that credit.

Categories	Relative weight	Remarks
Waste	7%	The first credit in this category assesses whether council has monitored the amounts and types of waste generated by its roads management, and investigated all feasible and cost justifiable opportunities to effect reductions. The second credit relates to achieving or bettering percentage targets for landfill diversion. The third credit assesses whether the design of minor roads works considers and makes provisions to facilitate future reconstruction or upgrading of the road asset. The weights for the three credits decrease in the ratio 3, 2 and 1. The councils' scores for this category ranged from 0% to 33% of the maximum possible. Although all councils have records that could be accessed, at the time of the rating workshops no council knew how much waste and what types were generated by roads management. Despite that, most of the councils felt that they achieve at least the first level targets for waste diversion and that they make provision in minor road works for future reconstruction or upgrades.
Ecology	10.5%	The first credit in this category assesses whether council regularly maps recognised ecologically sensitive sites adjacent to the road network and then implements appropriate measures to protect such sites during nearby road works. The second credit, with a weighting one-third higher, assesses whether measures are routinely implemented during road works to protect or enhance ecological values or habitat connectivity in and around road reserves. Most of the councils had mapped ecologically sensitive sites along their road network, often many years earlier, but most could not point to specific practices to protect such sites during road works. The councils' scores for this category ranged from 0% to 33% of the maximum possible. Councils with roads through many areas of native vegetation had more opportunity to score better in this category.
Community Health, Wellbeing & Safety	5%	There were two credits assessed for this category during the two pilot rating workshops. The first credit assessed whether council designs minor road corridor works to minimise the potential for crime. Both pilot councils indicated that they did. That credit was dropped for the two confirmation workshops because this is business as usual. The second credit assessed whether council undertakes community and user safety audits and involves stakeholders in safety aspects of the design of minor road works. One council said this credit was fully satisfied, two said partially, and one said not at all. The councils' scores for this category ranged from 23% to 50% of the maximum possible.

Categories	Relative weight	Remarks
Heritage	5%	The single retained credit for this category assesses whether council regularly surveys all significant heritage items associated with its road network, implements appropriate and risk-based measures to minimise adverse impacts, and monitors such impacts regularly. Two of the four councils said they had no road heritage items and so this category was scoped out for them. The other two councils' scores for this category were 33% and 100% of the maximum possible.
Stakeholder Participation	5%	The first of the two retained credits in this category assess the level of stakeholder engagement when council prepares its road assets management plan. The second credit assesses whether council has a formal process for handling road-related stakeholder complaints and has achieved the target percentages of the community that believe their concerns have been considered and addressed. The councils' scores for this category ranged from 16% to 50% of the maximum possible. Two councils have a stakeholder consultation process, but the other two councils do not, feeling that roads maintenance is a matter for engineering judgement and process and not argument with stakeholders. All councils have formal complaint handling procedures, but could not point to any survey results showing the percentage of the community satisfied.
Urban & Landscape Design	5%	The only retained credit of this category assesses whether council complies with existing comprehensive amenity and landscape management plans when undertaking roads management activities. Such comprehensive plans exist only for a few high profile precincts, although some councils have standard designs and standards for their roads corridors. This led to different interpretations of what is required to satisfy the performance levels. Depending upon the interpretations adopted, the councils' scores for this category ranged from 0% (do not have any comprehensive plans) to 70% (have comprehensive plans for two town centres) of the maximum possible.
Innovation	5%*	This single credit category assesses any pioneering initiatives in sustainable design, process or advocacy with respect to roads management. The three performance levels relate to whether the innovation is a regional, state or national 'first'. Two councils considered that they had achieved state-level 'firsts', whilst another claimed a regional 'first'. The councils' scores for this category ranged from 0% to 67% of the maximum possible.

Note: * Total of weights is 105 because Innovation is an extra 5%, as per the original rating tool.

5 Proposed future work

As noted earlier, it was always intended that the work described in this report would be Stage 1 and that one or more subsequent stages would be required before a 'customised' rating tool was ready to be made available for use by local councils to rate their roads management programs. This chapter describes the further development work proposed to be undertaken. It also considers the possible future wider use of the customised rating tool and addresses the principles that ISCA might apply when setting fees for the verification and certification of operational ratings.

5.1 Proposed Stage 2

As this project neared its conclusion it became apparent that, even if all of its outstanding issues and shortcomings were resolved, the 'customised' rating tool would not be immediately useful for most councils because the key sustainability performance data that the tool requires are generally not available.

Recognising this, the project stakeholder organisations decided that, instead of proceeding immediately to address the tool's outstanding issues and shortcomings by undertaking the tool development tasks listed in Table 6, it would be better to develop a simple 'pre-rating' self-assessment tool to help councils select the five or ten highest priority actions they can take to make their roads management more sustainable. It is proposed that this tool be called the PASS – Priority Actions for Sustainability Selector.

It is felt that PASS will be of immediate benefit by:

- encouraging and enabling local councils to start on their journey towards more sustainable roads management
- making early use of insights and observations from the pilot applicant project
- demonstrating to councils the value of collecting data on resource usage
- providing the resource usage data (for roads management at least) so that councils are then able to apply the customised rating tool to drive further sustainability improvements, and
- helping to promote sustainability within local councils.

Subject to funding, it is intended to develop PASS in the first half of 2014 and to launch it at IPWEA's Sustainability in Public Works conference in July 2014.

A further stakeholders' meeting will then be held to decide whether, and how, the proposed Stage 3 tool development tasks should be undertaken.

5.2 Proposed Stage 3 tasks

Arising from the outcomes of the pilot and confirmation rating workshops outlined in Section 4.5, the proposed development tasks for the

'customised' rating tool are listed in Table 6. The tasks are listed in their suggested order, with an indication of the relative amount of effort involved and whether each is considered essential or desirable. The required work would constitute Stage 3 of this project, but would be reviewed based on the success and findings of Stage 2.

Table 6: Proposed Stage 3 tool development work

Order	Work task	Relative effort and criticality of task	
1	Further refine the customised rating tool to address the issues listed in section 4.5 and detailed in Table D1 in Appendix D	moderate	essential
2	Through discussion and agreement with ISCA, develop and test, then maintain an ongoing program to promote, facilitate and support use of the customised rating tool by local councils and its ongoing refinement	moderate	essential
3	Draft supplementary additional guidance for the IS technical manual to support use of the customised rating tool	high	essential
4	Launch and promote the rating tool package through printed materials and training workshops	moderate	essential
5	Test the practicality of the 'footprints' concept for assessing changes in life cycle impacts by undertaking pilot trials of the energy and carbon, water, materials, and ecology credits in the customised rating tool, and refine the benchmarks if necessary	high	desirable
6	Insert into the customised rating tool a new asset management credit that uses the local council's maturity score from the Asset Management Maturity Model (AMMM) in NAMS.PLUS2 and test this with the rating results from the two pilot councils and the two 'confirmation' councils	moderate	desirable
7	Include a new financial/ economic theme in the customised rating tool and test its practicality on a range of councils	moderate	desirable
8	Review the category and credit weights to avoid unreasonable weightings	moderate	desirable
9	Further customise the rating tool so that it can rate the sustainability of the management of all main types of local council infrastructure assets, not just roads	moderate	desirable

Order	Work task	Relative effort and criticality of task	
10	Decide whether or not to incorporate the customised rating tool in NAMS.PLUS as a separate (and optional) sustainability module, or to at least align with the NAMS.PLUS framework and, if yes: (a) revise the credit benchmarks so that they apply to all the main types of local council infrastructure, (b) reformat the benchmarks and levels to mirror those of the AMMM, and (c) test this with the rating results from the two pilot councils and the two 'confirmation' councils	high	optional

Descriptions and brief discussions on several of these proposed tasks are presented in Appendix B.

5.3 Likely future wider use

Provided that the current general lack of sustainability performance data can be addressed over time, and its outstanding issues and shortcomings are resolved, the 'customised' rating tool could be made widely available to all local councils around Australia and New Zealand to rate the sustainability of how they manage their road (and possibly all other main types of) assets. This could happen either informally, with assistance from IPWEA through its IS Accredited Professional, or formally under the ISCA-managed process set out in Table 3. In either case it is apparent from the pilot application project that an experienced external workshop facilitator would be required to provide suitable advice and expertise, drive the rating process, and encourage impartiality and consistency. Over time and with more widespread use it is expected that a customised rating tool would be updated – especially the benchmarks – as councils start to achieve ratings and therefore measure their performance. Updating of rating tools every few years is a common approach to ensure that they remain current and continue to encourage higher performance.

5.4 Operational rating fees

One of the goals of Stage 1 of this project was to make recommendations to ISCA about principles to apply when setting fees for the verification and certification of operational ratings. A more detailed discussion on this topic can be found in Appendix C. Only the key conclusions are presented here.

Although this pilot rating assessment was only an informal process, organisations that manage roads could undertake the formal process set out in Table 2 leading to independent verification, certification by the ISCA Board, and promotion of the rating awarded. Part of that formal process involves the payment of rating fees to ISCA to cover the costs of their activities. ISCA has set a schedule of rating fees for design and as-built ratings, but not yet for operational ratings.

It had been envisaged that recommendations to ISCA on operation rating fees could be framed on the basis of estimates of the time and costs involved in this Stage 1 project. However, it turned out that most of the

project's time and costs were spent on customising the rating tool, rather than rating the two councils' roads management.

Now that that work has been effectively completed, ISCA could set a rating fee based only on its estimated direct costs. But if a formal operation rating was sought for different types of infrastructure, ISCA would have to allow for the likely considerable costs of customising the rating tool for the operation of that type of infrastructure. This may be possible in the future based on a sensible streamlined version of the current IS rating process.

6 Conclusions

Although it was developed to rate the sustainability of a wide range of infrastructure types and rating types (design, as-built and operation), until now the ISCA IS rating tool had not been extensively trialled on the operation rating of existing infrastructure assets. The objective of this Stage 1 project was therefore to test the application of the IS rating tool (v1.0) to infrastructure operations. Local council road asset management was selected as the subject of the trial because roads are the largest asset class of most local councils and managing road assets is a major council function. Road management included all road operations, maintenance, refurbishment and minor construction within road corridors; but not major upgrades or new road construction.

During the project three rating workshops were conducted at each of the two pilot councils (Redland in Queensland and Launceston in Tasmania). Between the workshops, extensive changes to the rating tool were proposed to facilitate its use for rating roads management. The 'customised' rating tool was then tested at workshops at two other local councils (Brisbane and Logan in Queensland). The tool performed satisfactorily. However, there was a sense amongst those participating that the 'customised' rating tool was not yet as useful as it should be. A number of outstanding issues and opportunities for future enhancements and fine-tuning of the customised rating tool were identified, with the required tool development tasks to be addressed in a subsequent stage.

The pilot ratings resulted in the road assets management of all four councils scoring just above or below the 'Commended' range. Readily-implemented actions were identified for all the councils which, if implemented, would double their rating scores. Those actions were detailed in separate confidential reports sent to the four councils at the end of the current stage of the project.

Unfortunately, even if all of its outstanding issues are resolved, and the opportunities realised, the customised rating tool would not be immediately useful for most councils because the sustainability performance data and specific sustainability-enabling processes that the tool requires are not widely available. Consequently, the project stakeholders decided that, instead of proceeding immediately to undertake the proposed tool development tasks, it would be better in Stage 2 to develop a simple pre-rating self-assessment tool, based on learnings from the pilot application project. The tool would help councils identify and then implement the five or ten highest priority actions that will make the council's roads management more sustainable, whilst also obtaining the data and information needed to apply the customised rating tool in the future.

Subject to funding, the pre-rating tool, proposed to be called the Priority Actions for Sustainability Selector (PASS), is targeted for completion by mid-2014 and launch at IPWEA's Sustainability in Public Works conference in July 2014. A further stakeholders' meeting will then be held to decide whether and how the proposed tool development tasks should proceed in Stage 3 of the project.

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Appendix A: IS rating tool customised for assessing local council roads management

Table 7: IS rating tool customised for assessing local council roads management

THEME: **Management & Governance**					
CATEGORY: **Management Systems**					
			Benchmarks		
Ref	Title	Aim	Level 1	Level 2	Level 3
Man-1	Sustainability leadership and commitment	To reward commitment to sustainability.	There are commitments to mitigating negative environmental, social and economic impacts. AND These commitments are embedded into sustainability objectives and/or targets.	The requirements for Level 1 are achieved AND The sustainability objectives and/or targets are reflected in project contracts.	The requirements for Level 2 are achieved AND The sustainability commitments go beyond mitigating negative impacts to restorative actions (i.e. net positive benefits for society and the environment). AND The sustainability commitments are publicly stated. AND For operation, there is a commitment to continuous improvement in sustainability performance.
Man-3	Risk and opportunity management	To reward the assessment of sustainability risks and opportunities to inform project management.	Environmental, social and economic risks are assessed. AND The risk assessment is updated at least annually.	The requirements for Level 1 are achieved. AND Environmental, social and economic opportunities are also assessed.	Not applicable
Man-4	Organisational structure, roles and responsibilities	To reward the allocation of responsibility for sustainability appropriately.	A member(s) of the project senior management team has central responsibility for managing sustainability.	The requirements for Level 1 are achieved. AND A principal participant in the project team is an IS Accredited Professional whose role is to provide sustainability advice.	The requirements for Level 2 are achieved. AND An independent sustainability professional is engaged to monitor and review sustainability performance.

THEME: **Management & Governance**					
CATEGORY: **Management Systems**					
			Benchmarks		
Ref	Title	Aim	Level 1	Level 2	Level 3
Man-5	Inspection and auditing	To reward regular inspection of on-site performance and auditing of the management system.	Internal environmental and safety inspections of site management are conducted in accordance with an inspection and audit regime specified in the roads asset management plan AND Internal and external environmental and safety audits of site management are conducted in accordance with an inspection and audit regime specified in the roads asset management plan.	Internal sustainability inspections of site management are conducted in accordance with an inspection and audit regime specified in the roads asset management plan AND Internal and external sustainability audits of site management are conducted in accordance with an inspection and audit regime specified in the roads asset management plan.	Not applicable
Man-6	Reporting and review	To reward regular, comprehensive and transparent sustainability reporting and review.	Sustainability performance is reported at least annually to senior management. AND The sustainability report includes sustainability objectives and/or targets and identifies areas for improvement. AND Sustainability performance is reviewed formally at least annually by senior management.	The requirements for Level 1 are achieved. AND Improvements and/or changes have been made to the management system or the project/asset as a result of management review.	The requirements for Level 2 are achieved. AND Sustainability performance is reported at least quarterly to senior management. AND Sustainability performance is reported annually publicly. AND Management review incorporates community participation.

THEME: **Management & Governance**					
CATEGORY: **Management Systems**					
			Benchmarks		
Ref	Title	Aim	Level 1	Level 2	Level 3
Man-7	Knowledge sharing	To reward sustainability knowledge-sharing initiatives.	There is a knowledge sharing process in place that encourages sharing of sustainability knowledge across the project. AND The knowledge sharing process is applied to share sustainability knowledge generated within the project.	The requirements for Level 1 are achieved. AND Sustainability knowledge sharing initiatives extend beyond project boundaries to parent organisations and/or other key stakeholders. AND The knowledge sharing process is applied to share sustainability knowledge from outside the project onto the project.	The requirements for Level 2 are achieved. AND Sustainability knowledge sharing initiatives extend beyond project and key stakeholder boundaries to the wider industry. AND Sustainability knowledge sharing includes 'mistakes' as well as 'good practices'.
Man-8	Decision-making	To reward incorporating sustainability aspects into decision making.	For significant issues, decision making is characterised by considering options including business as usual and proven approaches taken in comparable situations. AND Evaluating options primarily on the basis of financial aspects but considering environmental, social and economic aspects qualitatively through risk assessment, constraint analysis or other non-scored means. AND Evaluating options based on the forecast useful life of infrastructure asset.	For significant issues, decision making is characterised by considering options including business as usual and proven approaches taken in comparable situations. AND Evaluating options by considering environmental, social and economic aspects through the use of multi-criteria analysis or other scored means. AND Evaluating options based on the forecast useful life of infrastructure asset.	For significant issues, decision making is characterised by considering options including business as usual, non-asset, technical limits and an option that specifically aim to address sustainability aspects. AND Evaluating options by considering environmental, social and economic aspects through incorporating their value into cost-benefit analysis or other quantified means. AND Evaluating options based on the forecast useful life of infrastructure asset and using social rates of return for discounting.

THEME: **Management & Governance**					
CATEGORY: **Procurement & Purchasing**					
			Benchmarks		
Ref	Title	Aim	Level 1	Level 2	Level 3
Pro-1	Commitment to sustainable procurement	To reward commitment to sustainable procurement.	There is a commitment to require environmental aspects to be considered in the procurement process.	Requirements of Level 1 are achieved AND The commitment also requires social and economic aspects to be considered in the procurement process.	Requirements of Level 2 are achieved AND The sustainable procurement commitments are publicly stated. AND Sustainable procurement commitments are embedded into sustainability objectives and/or targets.
Pro-2	Identification of suppliers	To reward the identification of suitable suppliers and the incorporation of sustainability criteria in the engagement process.	Potential suppliers requested to provide details of their environmental policy and its implementation.	Potential suppliers requested to provide details of their sustainability policy and its implementation.	Requirements for Level 2 are achieved AND Forward commitment procurement is used to help stimulate innovation in relation to sustainability through the procurement process. AND Engagement with potential suppliers is undertaken to explain sustainability requirements and expectations, and their importance in the bid process in more detail.
Pro-3	Supplier evaluation and contract award	To reward the consideration of sustainability in evaluation and contract documentation.	Supplier evaluation considers sustainability aspects through use of qualitative criteria.	Supplier evaluation considers sustainability aspects through use of multi-criteria analysis or other scored means. AND Supplier contracts incorporate sustainability objectives and/or targets.	Requirements for Level 2 are achieved. AND Suppliers are audited to: - verify claims made in the tender documentation; - identify areas of key risk (environmental, social, and economic); and - identify areas for improvement which need to be considered for possible inclusion in the contract negotiations and terms.
Pro-4	Managing supplier performance	To reward the adoption of measures to ensure long-term implementation of sustainability initiatives for the duration of contracts.	Suppliers have sustainability objectives and/or targets.	Requirements for Level 1 are achieved. AND Supplier sustainability performance is monitored for the duration of contracts, against objectives and/or targets. AND Poor sustainability performance or non-compliance is actively managed.	Requirements for Level 2 are achieved. AND Contract managers work with suppliers to identify any emerging or new sustainability opportunities. AND Success is recognised and encouraged.

THEME: **Management & Governance**					
CATEGORY: **Climate Change Adaptation**					
			Benchmarks		
Ref	Title	Aim	Level 1	Level 2	Level 3
Cli-1	Climate change risk assessment	To reward the assessment of climate change risks.	A readily available climate change projection is identified and adopted for the asset region over the forecast useful life of the asset. AND Direct climate change risks to the asset over the forecast useful life are identified and assessed.	The requirements of Level 1 are achieved. AND A number of readily available climate change projections are identified and adopted for the asset region over the forecast useful life of the asset. AND The climate change risk assessment also considered indirect climate change risks to the asset. AND A multi-disciplinary team participated in identifying climate change risks and issues.	The requirements of Level 2 are achieved. AND An appropriate model was used to obtain site specific projections OR justification can be provided for why site-specific modelling was not required. AND The climate change risk assessment also considered flow on climate change risks to and from the asset that have regional or whole of infrastructure system implications. AND Modelling is undertaken to characterise the likely impacts of the projected climate change for all High and Extreme priority climate change risks. AND A comprehensive set of affected external stakeholders participated in identifying climate change risks and issues.
Cli-2	Adaptation measures	To reward the assessment and implementation of climate change adaptation measures.	Climate change risks to the road network, along with adaptation options to treat those risks, are considered in road asset management and planning AND Adaptation options to treat all extreme and high priority climate change risks (if any) are identified and assessed for implementation AND Adaptation measures to treat all extreme and high priority climate change risks (If any) are implemented AND After treatment there are no extreme priority residual climate change risks.	All the requirements of Level 1 are achieved AND Adaptation options to treat all medium priority climate change risks are identified and assessed for implementation AND Adaptation measures to treat all medium priority climate change risks are either implemented or programmed for implementation at an appropriate future time.	All the requirements of Level 2 are achieved. AND The optimal scale and timing of options is addressed (which may be triggered when a specific climate threshold is imminent). AND After treatment there are no high priority residual climate change risks.

THEME: **Using Resources**					
CATEGORY: **Energy & Carbon**					
			Benchmarks		
Ref	Title	Aim	Level 1	Level 2	Level 3
Ene-1	Energy and carbon monitoring and reduction	To reward monitoring and minimising of energy use and GHG emissions.	Energy use and GHG emissions (Scope 1 and 2, and land clearing) per km of road over at least the past two years are monitored and reported on AND Opportunities to reduce energy use and GHG emissions from Scope 1 and 2 and land clearing are investigated and all feasible and cost justifiable measures identified.	Energy use and GHG emissions (Scope 1 and 2, and land clearing) per km of road over a ten year period are monitored and modelled, and compared to a reference footprint AND Monitoring and modelling demonstrates either a reduction of GHG emissions by >35% below the reference footprint, for Scope 1, Scope 2 and land clearing OR that the footprint of the asset is close to best practice industry benchmarks AND Monitoring and modelling of energy use and GHG emissions is subject to an internal audit and publicly reported at least annually AND All feasible opportunities with a financial payback period of four years or less are implemented.	The requirements for Level 2 are achieved. AND Monitoring and modelling demonstrates either a reduction of GHG emissions by >65% below the reference footprint, for Scope 1, Scope 2 and land clearing OR that the footprint of the asset is close to best practice industry benchmarks AND Monitoring and modelling of energy use and GHG emissions are subject to an external audit and publicly reported at least every five years AND At least one opportunity with a financial payback period of more than four years is implemented.

THEME: **Using Resources**					
CATEGORY: **Water**					
			Benchmarks		
Ref	Title	Aim	Level 1	Level 2	Level 3
Wat-1	Water use monitoring and reduction	To reward monitoring and minimising water use as much as possible.	Potable and non-potable water use over at least the past two years are monitored and reported on AND Opportunities to reduce potable water usage are investigated and all feasible and cost justifiable measures identified.	The requirements for Level 1 are achieved. AND Potable and non-potable water usage over a ten year period are monitored and modelled, and compared to a reference footprint AND Monitoring and modelling demonstrates a reduction of potable water usage by >50% below the reference footprint or it is justified that the potable water footprint is close to best practice industry benchmark AND Monitoring and modelling of potable and non-potable water use is subject to an internal audit and publicly reported at least annually.	The requirements for Level 2 are achieved AND Monitoring and modelling demonstrates no potable water use, except for drinking, or justify why this is not economically or environmentally feasible OR that the potable water footprint is close to best practice industry benchmarks AND Monitoring and modelling of potable and non-potable water use are subject to an external audit and publicly reported at least every five years.

THEME: **Using Resources**					
CATEGORY: **Materials**					
			Benchmarks		
Ref	Title	Aim	Level 1	Level 2	Level 3
Mat-1	Materials lifecycle impact measurement and reduction	To reward design and practice that reduces lifecycle environmental impacts of materials.	Materials use over at least the past two years are monitored and reported on AND Opportunities to reduce materials use are investigated and all feasible and cost justifiable measures identified.	The requirements for Level 1 are achieved. AND Materials use over a ten year period are monitored and modelled, and compared to a reference footprint AND Monitoring and modelling of materials use during road maintenance and construction are subject to an internal audit and publicly reported at least annually AND All feasible opportunities with a financial payback period of four years or less are implemented.	The requirements for Level 1 are achieved. AND Monitoring and modelling demonstrates a significant reduction in materials use compared to the reference footprint OR that the materials usage footprint is close to best practice industry benchmarks AND Monitoring and modelling of materials use during road maintenance and construction are subject to an external audit and publicly reported at least every five years AND At least one opportunity with a financial payback period of more than four years is implemented AND At least one material/product has an acceptable environmental label

THEME: **Emissions, Pollution & Waste**					
CATEGORY: **Discharges to Air, Land & Water**					
			Benchmarks		
Ref	Title	Aim	Level 1	Level 2	Level 3
Dis-1	Receiving water quality	To reward the management of impacts on local receiving water quality.	Current best practice measures are implemented to protect the receiving water environment from pollutants washed off roads during both construction and operations/ maintenance AND Internal inspections of all water quality protection measures at least weekly for maintenance and construction measures, and at least monthly for operational measures, plus after every heavy rainfall event.	The requirements for Level 1 are achieved. AND Monitoring of the water quality in the receiving water environment is undertaken to detect elevated concentrations of pollutants mainly sourced from roads	The requirements for Level 2 are achieved. AND Targeted water quality monitoring is carried out regularly to locate road pollutant 'hot spots' AND Water quality protection measures are implemented and maintained to treat the most important road pollutant 'hot spots' AND Water quality monitoring of the receiving water environment demonstrates a significant reduction in the concentrations of road-sourced pollutants.
Dis-2	Noise and vibration	To reward the management of noise and vibration impacts.	Current best practice measures are implemented to mitigate noise and vibration during construction and maintenance. AND All complaints about noise and vibration are promptly responded to and resolved.	The requirements for Level 1 are achieved. AND Monitoring of noise and vibration is undertaken at appropriate intervals and in response to complaints during construction and maintenance AND Monitoring and modelling demonstrates no recurring or major exceedances of noise and vibration goals AND Monitoring of noise and vibration during road maintenance and construction is subject to an internal audit and publicly reported at least every two years.	The requirements for Level 2 are achieved AND Monitoring and modelling demonstrates no exceedances of noise and vibration goals AND Monitoring of noise and vibration during road maintenance and construction is subject to an external audit and publicly reported at least every five years
Dis-4	Air quality	To reward management of air quality impacts.	Current best practice measures are implemented to minimise adverse impacts to local air quality during construction and operations AND All complaints about air quality are promptly responded to and resolved.	The requirements for Level 1 are achieved AND Monitoring of air emissions and/or air quality is undertaken at appropriate intervals and in response to complaints during construction and operations AND Monitoring of air emissions and/or air quality during road maintenance and construction is subject to an internal audit and publicly reported at least every two years.	The requirements for Level 2 are achieved AND Monitoring of air emissions and/or air quality during road maintenance and construction is subject to an external audit and publicly reported at least every five years.

THEME: **Emissions, Pollution & Waste**					
CATEGORY: **Discharges to Air, Land & Water**					
			Benchmarks		
Ref	Title	Aim	Level 1	Level 2	Level 3
Dis-5	Light pollution	To reward prevention of light spill.	Current best practice measures are implemented to prevent light spill during construction and operations AND All complaints about light pollution are promptly responded to and resolved.	The requirements for Level 1 are achieved AND Monitoring of all street lighting for compliance with AS4282 “Control of the Obtrusive Effects of Outdoor Lighting” and AS1158 "Road Lighting" AND Monitoring of light pollution during road operation is subject to an internal audit and publicly reported at least every two years.	The requirements for Level 2 are achieved AND All street lighting complies with AS4282 “Control of the Obtrusive Effects of Outdoor Lighting” and AS1158 "Road Lighting".

THEME: **Emissions, Pollution & Waste**					
CATEGORY: **Land**					
			Benchmarks		
Ref	Title	Aim	Level 1	Level 2	Level 3
Lan-2	Conservation of on-site resources	To reward conservation and restoration of soil resources.	Conservation of topsoils, subsoil, and conservation or use of on-site mineral resources has been considered.	The requirements for Level 1 are achieved. AND All subsoil and topsoil impacted by the construction works is separated and protected from degradation, erosion or mixing with fill or waste; AND 95% of all topsoil (by volume) retains its productivity and is beneficially re-used on or nearby to the project or asset.	The requirements for Level 2 are achieved. AND Opportunities to improve topsoil productivity of previously disturbed areas have been identified and incorporated into the project.
Lan-4	Flooding design	To reward designing for flood events.	Where road work (i.e. renewal or minor upgrading or construction) is undertaken across a floodway, its design has been checked to ensure that the road works do not increase flooding (peak levels, flow or velocity) on upstream or downstream properties.	Not applicable	Not applicable

THEME: **Emissions, Pollution & Waste**					
CATEGORY: **Waste**					
			Benchmarks		
Ref	Title	Aim	Level 1	Level 2	Level 3
Was-1	Waste management	To reward sustainable waste management plans and practices.	Waste quantities and types have been measured and reported at least quarterly AND Measures to minimise waste have been identified and implemented. The measures must apply the waste hierarchy - avoidance, reduction, reuse and recycling.	The requirements for Level 1 are achieved. AND Internal auditing of waste management has been undertaken at least annually, including tracking of major wastes to their final destinations.	The requirements for Level 2 are achieved. AND External auditing of waste management has been undertaken at least every five years, including tracking of major wastes to their final destinations.
Was-2	Diversion from landfill	To reward diversion of spoil, inert, non-hazardous and office waste from landfill.	All of the following targets for landfill diversion have been achieved or bettered: 90 to <95% by volume or weight of spoil AND 80 to <90% by volume or weight of inert and non-hazardous waste.	All of the following targets for landfill diversion have been achieved or bettered: 95 to 99.9% by volume or weight of spoil AND 90 to 99% by volume or weight of inert and non-hazardous waste.	The requirements for Level 2 are achieved. AND Demonstrate highest level of reuse or recycling for each of the major waste streams.
Was-3	De-construction/ Adaptability/ Planning for upgrades	To reward design and planning for upgrading or deconstruction of infrastructure in the future.	Before its construction, consideration is given to how a new road asset will be reconstructed or upgraded, when that becomes necessary.	The requirements for Level 1 are achieved. AND >90% by value of materials, components or pre-fabricated units used can be retained or re-used when the road asset is upgraded or easily separated on disassembly/ deconstruction into material types suitable for recycling or reuse.	The requirements for Level 2 are achieved. AND All materials, components or pre-fabricated units used can be retained or re-used when the road asset is upgraded or easily separated on disassembly/ deconstruction into material types suitable AND Demonstrate highest level of reuse or recycling for each of the major waste streams.

THEME: **Ecology**					
CATEGORY: **Ecology**					
			Benchmarks		
Ref	Title	Aim	Level 1	Level 2	Level 3
Eco-1	Ecologically sensitive sites	To reward management of ecologically sensitive sites.	A survey or mapping of ecologically sensitive sites adjoining, or potentially impacted by, council roads has been undertaken by a qualified ecological expert and this is reviewed and field check at least every ten years AND Where the asset, including land used for temporary works, includes, uses or potentially may impact, land that has been identified as ecologically sensitive, effective and appropriate policies, procedures and measures are implemented.	The requirements for Level 1 are achieved. AND Procedures and measures to protect ecologically sensitive sites potentially impacted by road and road corridor management activities are subject to an internal audit at least every two years.	The requirements for Level 1 are achieved. AND Procedures and measures to protect ecologically sensitive sites potentially impacted by road and road corridor management activities are subject to an external audit at least every five years.
Eco-2	Ecological value	To reward maintenance or enhancement of ecological value.	As a result of measures implemented to protect or enhance ecological values or habitat connectivity in and around road reserves there is no net change in ecological value of the road network based on the Ecology Calculator.	The requirements for Level 1 are achieved. AND Ecological Calculator modelling demonstrates either a significant improvement in ecological values over the past ten years OR that the EV of the asset is close to best practice industry benchmarks.	Not applicable

THEME: **People & Place**					
CATEGORY: **Community Health, Wellbeing & Safety**					
			Benchmarks		
Ref	Title	Aim	Level 1	Level 2	Level 3
Hea-3	Community and user safety	To reward design and practice that enhances community and user safety.	An appropriate and risk-based program of community and user safety audits is undertaken.	The requirements for level 1 are achieved. AND Key stakeholders are involved in the design process in regard to community and user safety. AND Community and user perceptions of safety surveys are undertaken and concerns have been considered and addressed	Not applicable

THEME: **People & Place**					
CATEGORY: **Heritage**					
			Benchmarks		
Ref	Title	Aim	Level 1	Level 2	Level 3
Her-1	Heritage assessment and management	To reward the development of baseline assessment of heritage and predictions against which improvements can be measured.	Surveys of all existing significant heritage items associated with the road network have been undertaken and reviewed every five years AND Appropriate and risk-based measures to minimise adverse impacts to heritage have been identified and implemented AND Appropriate and risk-based monitoring of heritage is undertaken at appropriate intervals.	The requirements for Level 1 are achieved AND Community and key stakeholders have participated in the heritage surveys AND Heritage values beyond those listed in government registers have been identified, considered and addressed AND Appropriately qualified/experienced persons oversee heritage management.	The requirements for Level 2 are achieved. AND Opportunities have been identified to enhance heritage values and these have been implemented. AND Monitoring demonstrates enhancements to heritage.

THEME: **People & Place**					
CATEGORY: **Stakeholder Participation**					
			Benchmarks		
Ref	Title	Aim	Level 1	Level 2	Level 3
Sta-1	Stakeholder consultation on Roads Asset Management Plan	To reward effective stakeholder and community engagement in development of the Roads Asset Management Plan	A stakeholder engagement strategy is developed as part of preparing council's Road Assets Management Plan AND The level of community participation in development of the Asset Management Plan is at least 'consult' or higher on the IAP2 spectrum.	The requirements for Level 1 are achieved. AND The level of community participation regarding the Asset Management Plan is at least 'involve' or higher on the IAP2 spectrum.	The requirements for Level 2 are achieved. AND The level of community participation regarding the Asset Management Plan is at least 'collaborate' or higher on the IAP2 spectrum. .
Sta-4	Addressing community concerns during road construction, maintenance and operations	To reward proper consideration and addressing of community concerns	Formal policy and procedures are in place to handle community and stakeholder complaints about road construction, maintenance and operational impacts AND All road-related complaints received are promptly responded to and resolved. .	The requirements for Level 1 are achieved. AND 65 to 80% of the community believe their concerns have been considered and addressed.	The requirements for Level 2 are achieved. AND >80% of the community believe their concerns have been considered and addressed.

THEME: **People & Place**					
CATEGORY: **Urban & Landscape Design**					
			Benchmarks		
Ref	Title	Aim	Level 1	Level 2	Level 3
Urb-4	Implementation	To reward development and compliance with an amenity and landscape management plan	Work undertaken is in accordance with a comprehensive amenity and landscape management plan AND Amenity and landscape condition is regularly monitored during the operation phase.	The requirements for Level 1 are achieved AND Monitoring demonstrates that amenity and landscape condition is maintained AND The operating asset is internally audited for compliance with the amenity and landscape management plan and finds a high degree of compliance.	The requirements for Level 1 are achieved. AND Monitoring demonstrates that amenity and landscape condition is enhanced AND The operating asset is externally audited for compliance with the amenity and landscape management plan and finds a high degree of compliance.

THEME: **Innovation**					
CATEGORY: **Innovation**					
			Benchmarks		
Ref	Title	Aim	Level 1	Level 2	Level 3
Inn-1	Innovative strategies & technologies	To reward pioneering initiatives in sustainable design, process or advocacy.	An innovation initiative is developed where: - The initiative is a technology or process that is considered a 'first' in that area or region; OR - The project substantially contributes to the broader market transformation towards sustainable development in that area or region. OR - An initiative viably addresses a sustainability issue outside of the current scope of the IS rating tool.	An innovation initiative is developed where: - The initiative is a technology or process that is considered a 'first' in that state or territory OR - The initiative substantially contributes to the broader market transformation towards sustainable development in that state or territory.	An innovation initiative is developed where: - The initiative is a technology or process that is considered a 'first' in Australia or the world; OR - The initiative substantially contributes to the broader market transformation towards sustainable development in Australia or the world.

APPENDIX B: Proposed Stage 3 tasks

The proposed Stage 3 tasks were listed in Table 6 in the main body of this report, along with the relative effort and criticality of each proposed task. Descriptions and brief discussions on several of the proposed tasks are presented below.

B.1 Additional guidance – Task 3

The IS Technical Manual provides additional guidance for each credit (Infrastructure Sustainability Council of Australia, 2013b). This helps users of the rating tool by providing the bases for the benchmarks, elaboration on the requirements, and examples of what would be acceptable evidence to demonstrate that a particular level has been achieved. The current Technical Manual will require supplementation because the customised rating tool has made many changes to the original rating tool's benchmarks. For some credits these changes are minor, but for others the changes are more substantial.

Accordingly, before the customised rating tool can be made available for use by local councils, it will be necessary to draft supplementary additional guidance. This is Task 3 of Stage 3. Some matters requiring additional guidance were identified during the three rounds of rating assessment workshops, but a rigorous review is likely to identify further matters on which guidance is required.

The supplementary additional guidance should address matters such as:

- where some of the original tool's credits have been removed or merged
- explanations of where credits may be scoped out
- changes made to some wording and/ or targets to make the credits more specific
- the bases of altered targets
- re-interpreted credits
- rationale behind the required frequencies of inspections and audits
- explanations of newly introduced terms and expressions
- specific guidance around how the operation rating applies to road management activities
- sources of further information to inform the self-assessments.

Preparation of the supplementary additional guidance is not part of Stage 1 of this project. Because it is required before the customised rating tool can be made available for general use, this work will need to be undertaken during Stage 3.

B.2 Adding a new asset management credit – Task 6

As was noted in the body of the report, a noticeable shortcoming of the IS rating tool, and also the customised rating tool, is the lack of a credit that rewards the development and use of an asset management plan for, in

this case, roads. It is therefore proposed to insert a new asset management credit into the customised rating tool.

Having and using an asset management plan is considered vital for the sustainable management of all assets. Recognition of this has led to a proposal that, as Task 6 of Stage 3 of the project, the customised rating tool should reference the asset management Maturity Model (AMMM) in the widely-used NAMS.PLUS2 asset management package.

The AMMM is based on a series of questions that have been developed around nationally-endorsed asset management maturity competencies. The questions were framed to assess where a council is on the asset management maturity curve and to evaluate progress towards *core* maturity in asset management and financial planning. The AMMM aims to drive improvements in council practices, specifically in asset management. It specifies a series of performance levels for each criterion (called an element in AMMM); each is scored, then the individual scores are aggregated to provide an overall score of the organisation's asset management maturity. Because asset management is not explicitly addressed by the IS rating tool and the AMMM only assesses asset management processes, there is no overlap or duplication between the two.

NAMS.PLUS2 is based on the *International Infrastructure Management Manual 2011* (Institute for Public Works Engineering Australia, 2011), and includes a suite of online templates, tools and guided pathways supported by a training program to assist organisations to implement asset management planning. NAMS.PLUS2 is suitable for all councils and organisations that provide services from infrastructure.

The explanatory material notes that the NAMS.PLUS Maturity Model is designed in accordance with the National Assessment Framework (NAF) that was developed to assist local councils across Australia determine progress in implementing the Local Government and Planning Ministers' Council Local Government Financial Sustainability Nationally Consistent Frameworks (LGPMC Financial Sustainability Frameworks). The relevant Frameworks are Framework 2 and Framework 3 (Local Government and Planning Ministers' Council, 2009a, 2009b).

- The NAMS.PLUS Maturity Model assessment uses a series of questions that have been developed around asset management maturity competencies linked to the ten key elements of the LGPMC Financial Sustainability Frameworks. The questions have been agreed to by stakeholders to facilitate a nationally consistent evaluation of implementation. An example of the Maturity Model assessment for one element – levels of service – is provided in Table B2 in this Appendix. Key attributes of the model are that it:
- is designed around the asset management journey of a council
- assesses where a council is on the asset management maturity curve
- evaluates progress towards *core* maturity in asset management and financial planning

- provides specific reporting to individual councils, and aggregated reporting at a regional, state and national level.

The NAF provides a series of questions relating to the ten elements of the LGPMC Financial Sustainability Frameworks. Asset management strategy and planning have been broken into two elements (to make 11) due to their significance. The resulting 11 elements are listed in Table B1 against the aim or objective of that element.

The NAMS.PLUS Maturity Model develops two maturity assessments:

- a maturity score from 0 – 5, with 3.0 being core maturity assessment and 5.0 advanced maturity
- a maturity assessment for the National Assessment Framework with three ratings against each of the 11 elements of the LGPMC Financial Sustainability Frameworks:
    - meets requirements – the council's asset management and financial practices meet the requirements of the LGPMC Financial Sustainability Frameworks, or any departures are not material or high risk – denoted ☐
    - partially meets requirements – the council's asset management and financial practices meet the requirements of the LGPMC Financial Sustainability Frameworks except for certain material and high risk exceptions – denoted ☐
    - not substantially progressed – the council's asset management and financial practices have not substantially progressed (0 – 50%) towards meeting the requirements of the LGPMC Financial Sustainability Frameworks – denoted ☐.

Table 8: NAMS.PLUS Maturity Model elements and their aims

Maturity Model elements	Aim of element
Strategic longer-term plan	To reward having adopted and use a strategic longer-term plan
Budget	To reward preparing an annual budget
Annual report	To reward publishing an annual report
Asset management policy	To reward adopting an asset management policy
Asset management strategy	To reward adopting an asset management strategy
Asset management plans	To reward adopting an asset management plan

Maturity Model elements	Aim of element
Governances and management	To reward having good management practices linking asset management to service delivery
Levels of service	To reward having a defined process for determining current and target levels of service and costs
Data and systems	To reward having the data and systems to perform asset management activities
Skills and processes	To reward having the data and systems knowledge to perform asset data management activities
Evaluation	To reward having a process to evaluate progress and use of resources in implementation of the National Frameworks.

The simplest way to link the two models – AMMM and NAMS.PLUS2 – would be to insert a new asset management credit in the customised IS rating tool, and then score the new credit using the local council's maturity score obtained by applying the AMMM. This would work in a similar fashion to the (separate) Materials Calculator used to determine the appropriate level in the rating tool's Mat-1 credit (materials lifecycle impact measurement and reduction), and the Ecology Calculator used to score the Eco-2 credit (ecological value maintenance or enhancement).

The original credit Man-2 (Management System Accreditation) was removed during the customisation, so that vacant slot could be used to accommodate a new asset management credit.

B.3 New financial theme – Task 7

With regard to the proposal to include a financial/ economic theme in the customised rating tool, John Howard from Jeff Roorda & Associates (a consultancy that has done considerable work on financial aspects of asset management) has advised that two of the financial indicators in the Australian Infrastructure Financial Management Guidelines (AIFMG) (Institute of Public Works Engineering Australia 2012b) (which some states require local councils to report against annually), and described in the IPWEA's *Practice Note 6, Long-term Financial Planning* (IPWEA 2012a) would be most suitable for use in a new financial/ economic theme. These are (a) the council's operating surplus ratio – which is the nationally consistent measure of a council's financial position; and (b) the asset renewal funding ratio (either of the council or any of its major asset classes, such as roads management) – a measure of the ability of the council to fund its projected future asset renewals/ replacements.

B.4 Other council infrastructure – Task 9

Although the rating tool has been customised in Stage 1 to rate the sustainability of local council roads management, it is proposed that in

Task 9 of Stage 3, with relatively minor changes, the tool can be further customised to also rate the other main types of local government assets, such as stormwater and drainage assets, and open spaces, parks, gardens and sporting fields. This would provide considerable additional value.

B.5 Incorporating the rating tool into NAMS.PLUS2 – Task 10

The AMMM and the IS rating tool have a similar purpose and format. Both are intended to drive improvements in council practices – in asset management and sustainable infrastructure (sustainable local roads management in the case of the customised rating tool), respectively. Both specify a series of performance levels for each criterion, each is scored, then the individual scores are aggregated to provide an overall index of asset management or sustainable infrastructure maturity.

If and when a financial/ economic theme is added to the IS rating tool, duplication will only be introduced if the financial/ economic theme's credits have process-based benchmarks. If the benchmarks are outcome-based, such as using values of key financial sustainability indicators set out in IPWEA's *Practice Note 6, Long-term Financial Planning* (Institute for Public Works Engineering Australia, 2012), there will be no duplication.

Having a mature asset management process (as indicated by a high AMMM score) supports sustainable infrastructure operation, but is not sufficient by itself, so having a new asset management credit (rather than a new category or theme) would give that attribute the appropriate weighting.

It will be noted that applying the AMMM to the infrastructure being rated, and then using the score to assess the asset management credit is similar to the existing arrangements under which:

- the (separate) Materials Calculator is used to determine the appropriate level in the rating tool's Mat-1 credit (materials lifecycle impact measurement and reduction)
- the (separate) Ecology Calculator is used to determine the appropriate level in the Eco-2 credit (ecological value maintenance or enhancement).

The main argument for including the customised rating tool in NAMS.PLUS (Task 10) is that it would facilitate and likely speed up its acceptance and use by local councils. Over 300 local councils around Australia already subscribe to and use NAMS.PLUS. It is therefore proposed that, as part of Stage 2 of this project, a decision be made on whether to include the customised rating tool in NAMS.PLUS and, if so, to then undertake the necessary work. Because NAMS.PLUS applies to all types of infrastructure, whereas at present the customised rating tool only applies to the management of local roads, as part of the incorporation process it would be very desirable to revise the credit benchmarks so that they apply to all the main types of local council infrastructure (i.e. storm water, drainage, flood protection, parks, gardens, sport fields) – Task 9 of Stage 3. That would considerably add to the appeal of the customised rating tool.

Table 9: Example of Maturity Model assessment for one element – levels of service

Question:		Does your Council have a defined process for determining current and target levels of service and costs?
Maturity Score	**Result**	**Characteristic**
5	○	Optimum life cycle costs known and supported by high levels of data, information and knowledge in all key areas. Political decisions informed by data, information and knowledge on trade-offs for economic, social, cultural and environmental consequences.
5	○	Documented feedback on long term cumulative impacts of decisions on service levels.
4	○	Council has undertaken the process of identifying the costs associated with each level of service, including the increased cost or decreased cost associated with increasing or decreasing each level of service respectively to assist in scenario modelling.
4	○	Target community levels of service are defined through community consultation, considering population and demographic change projections, trend analysis and customer feedback and requests.
4	◉	Council has a communication plan to communicate information on infrastructure service delivery issues and Councils management of these issues to external stakeholders,
4	●	The cost of maintenance and operational activities are reported against adopted levels of service.
4	●	Council, in conjunction with the community, regularly reviews its community levels of service and technical levels of service, to determine the financial impact of a change in service levels. If a change occurs this is then reflected into the Asset Management Plan and Long Term Financial Plan.
3	◉	Council has Service Plans for each of its services which have been developed in consultation with the community.
3	◉	Council has undertaken the process of defining, quantifying and documenting current community levels of service and technical levels of service, and costs of providing the current levels of service.
3	◉	Current and target levels of service (for both community levels of service and associated technical levels of service) are clearly defined in each Asset Management Plan.
3	●	Technical levels of service are incorporated into service agreements and/or maintenance, operational and capital renewal procedures.
2	●	Service levels in some areas - fragmented
1	●	Service levels are consequences of annual budget allocation and not defined.

APPENDIX C: Operational rating fees

One of the goals of Stage 1 of this project was to make recommendations to ISCA about principles to apply when setting fees for the verification and certification of operational ratings. This is elaborated in the MOU wherein it is stated that IPWEA will, amongst other things, estimate the time and costs involved in this Stage 1 project to support the estimation of fees for operational ratings.

As was stated in section 2.4 this pilot assessment was an informal process, but infrastructure developers or operators can undertake the formal process set out in Table 2 leading to independent verification, certification by the ISCA board, and promotion of the rating awarded. Part of that formal process involves the payment of rating fees to ISCA to cover their costs. ISCA has set a schedule of rating fees for design and as-built ratings, but not yet for operational ratings. The ISCA rating fees[2] vary with the capital value of the infrastructure project being rated and the rating type (i.e. design, as-built after design, or as-built only). The fees for ISCA members incorporate an approximately 20% discount compared to fees for non-members. As an example, for a project valued from $1M to $10M, the total fee for a non-member seeking a design rating was $26,000, and for as-built it was $33,000.

The operation of assets is a more incremental, low budget affair than designing and constructing new assets (projects). It is therefore anticipated that operation rating fees would need to be smaller, in general, than those for the design and as-built ratings.

As noted above, at the outset of this project it was envisaged that recommendations to ISCA on operation rating fees could be framed on the basis of estimates of the time and costs involved in this Stage 1 project. However, because of the extensive modifications proposed to be made to the original rating tool to facilitate its use for rating council roads management, and the need for three assessment workshops at the two pilot councils to test and fine-tune those changes, most of the project's time and costs were spent on customising the rating tool rather than rating the two councils' roads management.

When the rating tool has been fully customised for assessing a local council's roads management, ISCA could set a rating fee for such assessments based only on its estimated time input and hourly charge out rate, plus expenses and any margin for overheads and product development. Importantly, ISCA would not have to allow for tool customisation costs.

ISCA could similarly set a rating fee for assessing the management of other types of local council infrastructure. But this project does not provide a reliable basis for estimating what it would cost to pilot and customise the rating tool for rating those other types of infrastructure, because:

[2] See <http://www.isca.org.au/images/pdf/is_rating_process_and_fees.pdf>.

- time inputs by IPWEA and ISCA on this project were charged at cost, rather than commercial rates and some time was not charged
- the work was undertaken intermittently over seven months and involved a number of parties, which added to both time and cost
- doing something the first time invariably takes longer – this was one of the first applications of the rating tool to assess the operation of infrastructure, and the first time that the IS rating tool had been customised.

The total cost to IPWEA of this Stage 1 project (direct salary costs and travel costs, but excluding the six month lead-in and the project finalisation in July and August 2013) was approximately $35,000. The cost to ISCA was $10,000+. It is impossible to separate out the total cost of rating the roads management of the two pilot councils because that was so closely integrated with the tool customisation process

APPENDIX D: Proposed further refinements to the customised rating tool in Stage 3

Table 10: Proposed further refinements to the customised rating tool in Stage 3

Rating scores and recommended changes	Recommend changes to credits	Comments on customised tool credits
Man-1: Sustainability leadership and commitment		
Man-9: Asset management planning (proposed new credit)	Add new credit that rewards asset management planning for council roads and road assets and scores the credit on the basis of the maturity scores derived from the AMMM in NAMS.PLUS2	A proper asset management plan is vital for sustainable management of road assets. Use this deleted credit to insert a new credit that rewards the development and use of an asset management plan for road assets, with Level 2 and Level 3 for more advanced and comprehensive asset management plans.
Cli-2: Adaptation options	Scope out if no medium or higher risks	No council staff at any of the workshops was aware of the risks to road assets assessed as part of council's climate change risk assessment.
Ene-1: Energy and carbon monitoring and reduction	Accept council-wide estimates for Level 1 if rating tool is generalised to cover all main types of council infrastructure	No council had calculated the annual amounts of energy used and GHG emitted in managing its roads.
Wat-1: Water use monitoring and reduction	Scope out if quantities are minimal	No council had calculated the annual amounts of potable and non-potable water used in managing its roads.
Mat-1: Materials lifecycle impact measurement and reduction	Only required for 3-4 main types of materials	No council had calculated the annual amounts of main types of materials used on roads.
Dis-2: Noise and vibration	Delete these or, if not, make Level 1 the only level and reduce	For Dis-2 to 5, all councils felt that Level 1 was all that was warranted for roads management, i.e. applying best practice measures and promptly resolving complaints. Councils not doing so should
Dis-4: Air quality		

Rating scores and recommended changes	Recommend changes to credits	Comments on customised tool credits
Dis-5: Light pollution	weighting for these credits to reflect their lower importance	be penalised, but most responsible councils likely to be seeking sustainability ratings would achieve Level 1, so these credits do little to distinguish the good from the better performers.
Lan-2: Conservation of on-site resources	Retain, but reduce its weighting	Most (3 of 4) of the pilot and confirmation councils re-use virtually all soil on site to avoid transport and tipping fees. So this credit is unlikely to distinguish the good from the better performers.
Lan-3: Contamination and remediation	Scope out if no contaminated areas	
Lan-4: Flooding design	Delete credit	All councils claimed to do this, but the scale, and hence benefits, would be minimal given the scope of the rating.
Was-1: Waste management	Only require for 3-4 main types and annually	No council had calculated the quantities and types of waste generated by road management work annually, let alone quarterly.
Was-2: Diversion from landfill	Reword benchmarks to make easier to compute	Level 1 and Level 2 targets are percentage of spoil etc. diverted from landfill, but only weight of material sent to landfill is recorded. It is therefore difficult to calculate the percentage achieved.
Was-3: Deconstruction/ disassembly/ adaptability	Delete credit	Most (3 of 4) councils claim to do this, but scale, and hence benefits, would be minimal given the scope of the rating.
Eco-1: Ecologically sensitive sites	Scope out if no official ecologically sensitive sites	
Eco-2: Ecological value	Accept programs, instead of Ecological Calculator use, for Level 1	It has not been determined whether the Ecological Calculator can be meaningfully applied to a road network. If it were applied, the net change in ecological values from feasible works would be insignificant, so always 'no net loss'. Instead of the Ecological Calculator, it would be worth considering recording programs like weed control and tree planting that enhance ecological values.
Hea-3: Community and user safety	Provide additional technical guidance	The tool should provide additional technical guidance on what is an acceptable 'appropriate and risk-based program of community and user safety audits'.
Her-1: Heritage assessment and management	Scope out if no heritage road assets	
Sta-1: Stakeholder engagement strategy	Delete credit	Several councils felt that community consultation is unnecessary or warranted for developing an annual road maintenance works program.

Rating scores and recommended changes	Recommend changes to credits	Comments on customised tool credits
Sta-4: Addressing community concerns	Delete credit	Level 2 and Level 3 targets are based on the percentage of the community that believe their concerns have been addressed. This is relevant for a new project, but potentially less so in maintaining existing assets.
Urb-4: Implementation	Amend benchmarks as per comments	This credit assumes that landscape plans have been developed for all roads corridor networks. This is an unrealistic expectation. It would be best to accept standard drawings and vegetation maintenance schedules, instead of comprehensive landscape plans, but require monitoring and auditing to ensure that the intended condition and amenity of road corridors is being maintained.

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