

# Representing IPWEA members' interests

## The Roads & Transport Directorate represents members' interests in a variety of forums, including:

- National Asset Management Strategy (NAMS) meetings
- IPWEA (NSW) Road Safety Panel
- the Street Openings Conference
- Roads and Maritime Services (RMS) reviews, including:
  - Road Maintenance Council Contracts (RMCC) Review Committee
  - natural disaster arrangements
  - State Road Asset Maintenance Responsibilities

- Transport for NSW Level Crossing Working Group
- other Transport for NSW consultative meetings.

## The Directorate makes presentations to a variety of audiences, including:

- Each of the 13 IPWEA (NSW) Regional Group Forums
- the NSW Local Roads Congress
- a number of IPWEA Group Meetings
- AITPM Regional Forums
- waste association groups covering the use of recycled crushed glass in civil construction.

## Other activities include:

- holding the NSW Local Roads Congress
- submissions to other levels of government on behalf of members
- representing local government to both state and federal governments
- publishing documentation to assist public works practitioners in their activities. [C](#)



Roads, bridges and road safety are critical issues for local communities.



Institute of  
Public Works  
Engineering  
Australia  
(NSW Division)



# IPWEA (NSW) ROADS & TRANSPORT DIRECTORATE

**The Roads & Transport Directorate is a joint undertaking between Local Government NSW and IPWEA (NSW). The Directorate commenced operations in October 2004.**

**The Directorate was set up to meet the following objectives:**

## **Assisting members in discharging their road management roles:**

- Effectively
- In accordance with current legal obligations
- Using the most recent technical practices
- Applying consistent and cost effective asset management

## **Assisting:**

- IPWEA (NSW)
- Local Government NSW
- Individual Councils
- Directorate members

## **In lobbying:**

- For a higher priority to be placed on road infrastructure provision and maintenance
- For a more equitable share of resources and funding

## **Providing for:**

- IPWEA members and
- The Local Government Industry
  - A powerful technical and research resource on transport issues at Regional, State and National level.

**Can we  
help you?  
Contact us  
at:**

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# Sustainable cities for the next century

By the Hon. Greg Hunt MP, Minister for the Environment

With his first ministry, Prime Minister Malcolm Turnbull created a Minister for Cities – the first time such a role has existed. The cities portfolio has also been brought into the Prime Minister’s own department, to coordinate and drive cities policy from the centre of government, led by the Hon. Angus Taylor MP, Assistant Minister for Cities and Digital Transformation.

The cities agenda is one that depends on coordination across various portfolios, including my own, and collaboration across all levels of government.

Australia’s cities consistently appear at the very top of international rankings. The cities agenda is about ensuring that our cities remain among the world’s best.

Australia’s cities generate around three-quarters of Australia’s total economic activity. They are where most Australians live. Access to jobs, affordable housing, transport, and a clean and healthy environment are essential.

Our cities, however, are facing challenges. Despite their strong position, they face a number of challenges if they are to meet the needs of growing communities and a transitioning economy.

Population growth, urbanisation and the associated increases in transport demand and energy consumption require a coordinated and long-term response.

## A long-term vision for Australia’s cities

The Infrastructure Sustainability Council of Australia (ISCA) has demonstrated a firm commitment to promoting well-planned infrastructure that meets Australia’s long-term needs, underpins

national productivity and strengthens environmental outcomes.

I applaud ISCA’s efforts in this area, and I am pleased to be able to outline the Turnbull Government’s commitment to delivering a positive legacy for future generations.

The Commonwealth will work with other levels of government, the private sector and the Australian community to develop a cohesive and collaborative long-term vision for our cities. This includes developing bilateral principle-based agreements with states and territories to improve urban areas.

The government is already looking at how it can use strategic environmental assessments that can support long-term planning and investment.

The strategic assessment of Melbourne’s urban growth boundary will significantly reduce the costs to local businesses over 30 years by avoiding the need for individual assessments. It has secured nearly \$1 billion in environmental offsets. We are also undertaking a strategic assessment for the Perth and Peel regions in Western Australia.

The Commonwealth’s approach to delivering the Western Sydney



Population growth, urbanisation and the associated increases in transport demand and energy consumption require a coordinated and long-term response

Airport reflects our commitment to integrated and long-term planning for the economic and social benefit of the community as a whole.

This integrated approach has seen the Commonwealth invest \$3.6 billion with the New South Wales Government in road infrastructure around the Western Sydney Airport. These investments will underpin the development of Western

*Green cities – cities with high levels of trees, foliage and green spaces – improve air quality by absorbing some types of airborne pollutants. They also reduce soil erosion, minimise water run-off and limit the amount of particulate matter entering our waterways*

Sydney University’s knowledge precinct, and support the creation of jobs nearer to people’s homes and communities.

**Sustainable infrastructure**

Transport corridors invariably affect the layout of cities and, in turn, economic activity. Decisions taken about our road network in the 1950s and 1960s continue to influence the shape of our cities. Likewise, the long-term and integrated planning undertaken today will deliver positive outcomes for generations to come.

The government has committed a record \$50 billion to transport infrastructure that will significantly alleviate that pressure; however, we still have more to do.

Infrastructure Australia’s 2015 Australian Infrastructure Audit estimated that, if no action is taken, congestion costs to the Australian economy will almost quadruple to \$53.3 billion per year between 2011 and 2031.

All levels of government are facing significant budget constraints. It will simply not be possible to accommodate rapid growth in major capital cities by relying on traditional public funding models alone.

Minister for Major Projects, Territories and Local Government, the Hon. Paul Fletcher MP, is looking at sustainable and innovative funding models that will unlock infrastructure investment in cities around the world.

Earlier this year, to coincide with the release of the 15-year Australian Infrastructure Plan by Infrastructure

Australia, Minister Fletcher issued ‘Principles for Innovative Financing’.

This sets out key principles that we will apply in engaging with state governments, and in assessing infrastructure project proposals.

In particular, these principles will be tools for assessing the sustainability of infrastructure, including the extent to which technology solutions are used to optimise the capacity of existing and new infrastructure.

These principles are about delivering high-quality transport investments that provide value for money for the Australian public; that improve economic productivity, sustainability and quality of life; and that secure urban planning and cities policy outcomes.

**Cleaner and greener cities**

Our quality of life depends on the livability of our cities.

Alongside world-class infrastructure, the success of our cities depends on maintaining excellent amenity and attractive natural environments.

Green cities – cities with high levels of trees, foliage and green spaces – improve air quality by absorbing some types of airborne pollutants. They also reduce soil erosion, minimise water run-off and limit the amount of particulate matter entering our waterways.

We have already made significant progress in improving the livability of

cities through the recent National Clean Air Agreement, which was endorsed by state environment ministers in December 2015 – more than six months ahead of schedule.

Air temperature in cities is a number of degrees higher than in surrounding areas due to the heat-absorbing properties of dark-coloured roads and other surfaces, as well as the effect of urban canyons trapping hot air.

Extreme heat places the most vulnerable people in our cities – including the very young and very old – at high risk, and contributes to a number of deaths each year.

An effective way to reduce the severity of the urban heat island effect is to increase the greenery in our cities. Greener cities tend to be healthier cities. Increasing urban canopy coverage decreases heat, which improves health and quality of life. People living in large cities can be especially susceptible to the effects of extreme heat.

The Commonwealth will work with Australian cities to set decade-by-decade goals out to 2050 for increased overall tree coverage. We will also look at building rooftops with green cover, which both improve amenity and can, as Singapore has shown, improve quality of life as well as operational efficiency.

I have also recently announced plans to expand the National Carbon Offset Standard to include the certification of carbon-neutral cities and precincts under the Carbon Neutral Program.

The Barangaroo Delivery Authority has announced its intention for Barangaroo to become carbon neutral. I look forward to working with them in this endeavour.

The government is investing to improve the uptake of energy-efficiency, renewable, battery-storage and low-emissions technologies in our cities.

Through the Office of Climate Change and Renewables Innovation, the government is coordinating support for renewable and low-emissions technologies across Australia.

The Renewable Energy Target (RET) will require the same amount of large-scale renewable energy to be built in the next five years as has been built over the past 15 years.

More than 1.4 million households, small businesses and community organisations across Australia have installed solar panels. More than 900,000 have invested in solar hot water systems. Australia has the highest proportion of households with solar panels in the world, at around 15 per cent. The next largest is Belgium at around 7.5 per cent, and then Germany at 3.7 per cent. This makes Australia a very attractive place for the uptake of battery storage technologies.

We are seeing significant new investment in large-scale renewables, including the 550-megawatt-capacity Bulli Creek Solar Farm in Queensland, the 350-megawatt Gannawarra Solar Farm in Victoria, the 240-megawatt Ararat Wind Farm in Victoria, and the 240-megawatt Cattle Hill Wind Farm in Tasmania.

Improving the emissions from Australia's vehicles can reduce air pollution in our cities, reduce greenhouse gas emissions and lower costs for consumers. Analysis suggests that introducing fuel economy standards could reduce the cost for an average consumer over the lifetime ownership of a car by up to \$8500.



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The government has established a vehicle emissions forum to look at options to reduce CO<sub>2</sub> and noxious vehicle emissions in Australian cities.

Buildings are estimated to account for around one-quarter of Australia's greenhouse gas emissions, mainly through electricity and gas use. Improving the efficiency of Australia's building fleet can lower costs for households and businesses, reduce fuel use, and lower greenhouse gas emissions.

In December 2015, Australian energy ministers released a National Energy Productivity Plan with new measures to improve energy efficiency. Work is being progressed over the next 12 months to improve energy use in buildings, including making information and incentives available to building owners and residents, and assessing materials that buildings are constructed with, appliances used within the buildings, and the use of buildings by owners and residents.

Further opportunities exist in areas such as improving urban water systems, managing stormwater, addressing ocean outfall and improving energy efficiency in our cities.

### Housing affordability and accessibility

The issue of housing affordability and accessibility is connected to infrastructure investment.

As our jobs have centralised, much of our new housing stock has sprawled outwards. As John Daley of the Grattan Institute has pointed out, most new jobs are created within 10 kilometres of our central business districts, but much of our new housing stock is being built more than 20 kilometres away. This trend undermines the livability and productivity of our cities, increasing commute times and adding to congestion.

There are three broad ways to improve connections between housing and employment:

1. Increase the number of jobs in residential areas, so that residents can access employment without travelling as far. This option is perhaps best exemplified in the '20 minute city' model in Melbourne, where planners have proposed to change the mix of land uses in the city's suburbs so that residents can access jobs, schools, shops and leisure facilities within 20 minutes of their homes.



The Barangaroo Delivery Authority intends for Barangaroo to become carbon neutral

2. Increase the supply of housing in areas of high job density, so that more people can live close to where they work. This option has been found, through a number of academic studies, to be an effective way to increase a city's accessibility while building on the agglomeration forces that benefit the city's economy.
3. Improve the transport connections between areas of housing growth and areas of employment growth, so that workers can access their jobs more quickly and efficiently. This has been the primary way that Australian governments have historically sought to increase city accessibility.

The Treasurer's taxation system review will give consideration to the effect of property taxes on Australia's housing supply and demand. The government also announced in early January the establishment of a working group to investigate innovative ways to improve the availability of affordable housing, to work with the states to implement the suggestions offered.

The challenge of housing affordability is greater in New South Wales than in any other state. Within 15 years, Sydney's population of close to six million will require up to 664,000 new homes and 689,000 new jobs. The Baird Government is taking a proactive approach, recently announcing \$1.1 billion to establish a Social and Affordable Housing Fund, which will

deliver an additional 3000 social and affordable homes in its first phase.

### Conclusion

The success of the government's cities agenda depends on the active and constructive engagement of all levels of government, business and the community.

I strongly encourage ISCA and its members to engage in this conversation, and to put forward their ideas as part of the consultation process.

Through collaboration, the Australian Government will ensure that our cities thrive as centres of commerce, infrastructure, innovation, the arts, science and development. **C**

# IS technical update

## Sustainability successes

A number of projects pursuing IS ratings have succeeded in generating sustainable outcomes in pursuit of achieving their IS ratings. In this article, we explore some of these exemplary projects/asset initiatives.

The Department of Planning Transport and Infrastructure South Australia (DPTI SA) included a requirement to pursue an IS rating in the Torrens Road to River Torrens contract (T2T). Feedback from the tenderers indicated that the approach ensured that the IS rating scheme was at the forefront of the bid

teams' minds during the procurement phase. This was evident in the high level of assessment, and the high-quality submissions received.

The Sydney Metro Northwest Tunnels and Station Civil Works' CPB John Holland Dragados team reduced emissions by 24 per cent through initiatives including the use of B5 blended fuel, hybrid excavators, fuel-efficient training and awareness programs, design optimisation and reduced electricity consumption. Closed-loop recirculation networks reduced water use by 37 per cent from the reference footprint.

Panuku Development Auckland achieved an excellent rating for its Madden and Pakenham Road upgrade project, which has \$13 million in capital value and is part of the broader Wynyard Quarter development. The company was delighted to have achieved high scores across a number of themes, and believes that this demonstrates that the systems and processes in place in the organisation strongly align with the full range of outcomes being promoted through the IS rating scheme.

Auckland Airport successfully used the IS rating scheme to benchmark its operations and identify initiatives for ongoing sustainability improvements to the airport.



Auckland Airport has used the IS rating scheme to aid in its sustainability goals



Wynyard Walk

“Since the launch of the IS scheme in the middle of 2012, to 31 December 2015, there have been 62 IS rating registrations, equating to more than \$60 billion in project/asset value. Of these registrations, 14 have been certified”

Downer used the IS rating scheme to demonstrate the sustainability operating performance of the Yarra Park Recycled Water Treatment Facility (RWTF) to the asset owner.

**IS rating scheme traction**

Since the launch of the IS scheme in the middle of 2012, to 31 December 2015, there have been 62 IS rating registrations, equating to more than \$60 billion in project/asset value. Of these registrations, 14 have been certified. The projects/assets that achieved a certified IS rating in 2015 are listed below.

- The Wynyard Walk project (a new pedestrian walkway connecting the Sydney CBD with the Barangaroo precinct), delivered by TJHD on behalf of Transport for NSW, was certified with a ‘Commended’ IS Design rating.
- Auckland Airport was awarded with a ‘Commended’ IS Operation Pilot rating.
- The Madden and Pakenham road upgrade project in Auckland’s waterfront precinct, delivered by Panuku Development Auckland, was awarded with an ‘Excellent’ IS Design rating while piloting the IS rating scheme in New Zealand.
- The Yarra Park RWTF was awarded to Downer, achieving an Australian-first ‘Excellent’ IS Operation Pilot rating.
- The Transport for NSW Sydney Metro Northwest project’s tunnel builders, TJHD, were awarded a ‘Leading’ IS Design rating.
- The Transport for NSW Sydney Metro Northwest project’s skytrain builders, Impregilo Salini Joint Venture (ISJV), were also awarded with a ‘Leading’ IS Design rating.



“The take-up has been greatest in New South Wales, with a total of 25 registrations, seven of which have been certified. New South Wales is followed by Western Australia with 14 registered and three certified ratings, then Victoria with six registrations and one certified rating, Queensland with five registrations and three certified ratings, South Australia with four registrations and one certified rating, New Zealand with four registrations and two certified ratings, and finally the Australian Capital Territory, with two registrations and one certified rating”

In line with the logic that to achieve greater sustainability outcomes, the issues need to be considered early, we are pleased to see that four IS ratings have completed their planning phase registrations.

There were 44 active IS registrations as of 31 December 2015, comprising two confidential, 12 Planning, 19 Design, six As Built and five Operation. The asset classes represented by these IS registrants include road, rail, ports, airports, water and general council civil works.

The take-up has been greatest in New South Wales, with a total of 25 registrations, seven of which have been certified. New South Wales is followed by Western Australia, with 14 registered and three certified ratings; then Victoria, with six registrations and one certified rating; Queensland, with five registrations and three certified ratings; South Australia, with four registrations and one certified rating; New Zealand, with four registrations and two certified ratings; and finally the Australian Capital Territory, with two registrations and one certified rating.

#### IS rating scheme development

ISCA is planning to release a series of updates to the IS rating scheme throughout 2016. It is intended that these will be phased releases as developments are completed, culminating in IS version 2 being finalised for release in early 2017. Indicative timing of the respective updates is listed below.


#### 2016

- IS Materials Calculator v1.2.
- IS v1.2. Address lessons learnt and feedback to date in the context of enhancing the value and revising the evidence requirements of some credits. This will serve as a stepping stone towards version 2.0, which will be a more significant update.
- IS Weighting Assessment. A process to adjust rating scheme weightings based on material issues will be released along with IS version 1.2, and is intended for use with all updated versions.
- The IS Project Planning Guidelines are intended to provide those involved in infrastructure planning with guidance on how the IS rating scheme can support the planning

process from project initiation through to procurement.

- IS Operation v1. The IS Operation rating scheme will be updated from a pilot scheme to version 1, and released for operating assets to improve sustainability performance. Development of IS Operation ratings has benefited from feedback from IS Operation Pilot ratings, the IS Streamlining Project and industry consultation workshops.

#### 2017

- Thanks to seed funding from the Federal Department of Infrastructure and Regional Development, the Federal Department of Employment, and the NSW Office of Environment and Heritage, ISCA has been able to commence the consultation and scoping for the additional themes and categories, as well as commence the comprehensive technical review and update of the current IS scheme categories and credits. Provided that the remaining funding is secured in 2016, then the full review, consultation and research and development of IS version 2 should be completed by 2017. 

# Sustainable infrastructure for a brighter future

Sustainability is a necessity, not an add-on

In a world with a shifting climate, increasing urbanisation and a loss of biodiversity, it has never been more vital for people to apply their skills and energy to positive, sustainable developments.

Sustainability and climate resilience are the challenges of our time; however, a prosperous future for all is attainable – we can make a difference. Sustainability comprises a dynamic and complex interplay of elements and systems, and for this reason, it is crucial that sustainability is approached as a necessity to our growing communities, and our future world.

Aurecon recognises the need to balance economic growth with social development and the protection of the environment, while furthering the capacity of the company and its stakeholders to survive, adapt and grow in an evolving world. Through its Sustainability Policy, Aurecon is committed to making a real contribution to the sustainability challenge.

The company's commitment is reflected in its number of specialist professionals with skills in sustainability, including nine Infrastructure Sustainability Accredited Professionals, three professionals accredited by Sustainable Transport Professionals, four Green Star Communities accredited professionals, and many other sustainability accredited professionals throughout the business.

Aurecon is working on a number of sustainable infrastructure projects around the world, and is continually looking for opportunities in sustainability – not only to improve its clients' sustainability standing, but also to improve its own skills.

Aurecon is dedicated to continuous learning and knowledge sharing, both within its organisation and externally. Aurecon employee Ashley Stevenson has undertaken the role of Chairperson of



Melbourne Metro – Rail Tunnel Concept Design

the ISCA Sustainability in Design Working Group – an undertaking that will see value added to the IS rating scheme, and to the industry as a whole.

The company is not only looking at the implementation of sustainability at an organisation level – it is also focused on delivering sustainability within a wide range of infrastructure projects around the world. Aurecon is continually working with clients to create sustainable and resilient infrastructure to support sustainable futures for our cities.

Undoubtedly, it is recognised that urbanisation is one of the world's biggest challenges, and we are living in the century of the city. Approximately 60 million people move into cities every year. That's more than one million people arriving every week into a city somewhere in the world, each with an expectation of access to better jobs, better education, better health care and a better quality of life.

To meet these future challenges, Aurecon works with multiple stakeholders to help shape sustainable urbanisation through influential city projects such as the Melbourne Metro Project. Since the

project's inception in 2009, Aurecon, as part of the Technical Advisory team, has helped to integrate sustainability into the concept design of the business case in 2010 for the Department of Transport (now Public Transport Victoria). Through its work on this project, and many others, the company continues to provide leading sustainability in design technical advisory to the project. Aurecon's Technical Director for Sustainable Urbanisation, Phil Roös, is helping to set new best practice outcomes in integrating sustainability and climate change adaptation solutions for this project.

City-shaping transport projects are one of the key ingredients for creating smart cities, which is a global trend for the world's cities to strive for sustainable development and resilience. This includes primary areas of improvement such as mobility and transport, energy and sustainability, governance and health, safety and security, and green and physical infrastructure. As a global provider of multidisciplinary technical solutions, Aurecon is at the forefront of providing specific tailored technical services for future smart and sustainable cities. **C**

# Fuelling thought leadership to drive sustainability

**D**owner's brand message, 'Relationships creating success', highlights the company's commitment to building and sustaining relationships.

Downer believes that a key enabler to creating success is thought leadership, and this forms one of the key pillars that underpins the business.

'Thought leadership is about embracing innovation and having the tenacity to turn inspiration and ideas into reality, which then becomes the new standard,' says Sergio Cinerari, CEO of Downer Infrastructure Services.

'Thought leadership comes alive by employing the best people and having the courage to challenge the status quo – it keeps us at the forefront of our industry when it comes to sustainability.'

Downer invests in its people through a range of initiatives, including a group-wide customised mentoring program, and an ongoing focus on engagement and development.

Thought leadership is a key theme of Downer's customised leadership development programs, which were rolled out to more than 300 frontline supervisors and middle leaders across Australia and New Zealand in 2015.

A number of programs that encourage innovation are run annually, including Downer's inaugural 'Future Box' innovation competition that saw 286 submissions received last year from across the group.

In recent years, Downer's people have been responsible for a range of innovations relating to sustainability. This includes Downer's world-first 99-per-cent-recycled asphalt demonstration that pioneered the use of waste items such as toner from used printer cartridges, and tyres that would typically be stockpiled or sent to landfill.



Yarra Park Recycled Water Treatment Facility

*'Thought leadership comes alive by employing the best people and having the courage to challenge the status quo – it keeps us at the forefront of our industry when it comes to sustainability'*


**Sergio Cinerari, CEO of Downer Infrastructure Services**

This thought leadership has seen Downer become the first company in Australia to be awarded an Infrastructure Sustainability (IS) rating, and the only company to have been awarded IS Design, As Built and Operations ratings – all rated 'Excellent'.

'Collaborative partners like ISCA enable us to put that thought leadership into practice through piloting new IS rating schemes that help us continue developing our leadership in sustainable outcomes,' says Ricky Bridge, Downer Group General Manager, Environment Operations.

Other recent recognition includes Downer being the first company in the Southern Hemisphere to be recognised with the new ISO 55001 Accredited Certification for Asset Management for the Yarra Park Recycled Water Treatment Facility (pictured), a Melbourne Cricket Club-owned facility that was designed, built and is currently operated by Downer.

'As much as achieving our recent ISO accreditation is further endorsement of our credibility and leadership in effectively, efficiently and sustainably managing assets on behalf of our customers, what's even more important is to recognise that our business activities have an impact on the community and the environments in which we operate,' Bridge adds.

'Enduring and collaborative relationships with our partners enable us to bring thought leadership to life in the work we do. It's all about relationships creating success.' 

**About Downer**  
Downer EDI Limited (Downer) is a leading provider of services to customers in markets including transport services, rail, mining, utilities services, technology and communications services, and engineering, construction and maintenance. We build strong relationships of trust with our customers, truly understanding and predicting their needs and bringing them world-leading insights and solutions. Downer employs about 20,000 people across more than 200 sites and projects, mostly in Australia and New Zealand, but also in the Asia-Pacific region, South America and Southern Africa. For more on Downer, visit [www.downergroup.com](http://www.downergroup.com).

It's the trusted relationships we build with our customers, colleagues and communities that allow us to create and sustain our modern environment.

### Industry Leaders

First IS Design Rating



First IS As Built Rating



First IS Operation Rating



**Downer**  
Relationships creating success

[www.downergroup.com](http://www.downergroup.com)

*Image: To continue expanding our Low Carbon Asphalt Products, Downer partnered with the City of Boroondara in Victoria to set a new benchmark with a world-first 99% recycled asphalt demonstration that pioneered the use of waste items such as glass, toner from printer cartridges and used tyres that would typically be stockpiled or sent to landfill.*

# IS rating scheme developments

Since 2012, when the IS rating scheme was first released, the industry has progressed and developed its understanding of, and commitment to, infrastructure sustainability. The trend over the last three years has resulted in the average IS rating score increase from 41.51 in 2013 to 55.05 in 2015, supporting the notion that the industry is getting better at embedding sustainability in planning, design, construction and operation.

The industry should be proud of this achievement, and ISCA's role is to support the industry in achieving infrastructure sustainability. To do this, the IS rating scheme needs to stay relevant and reflect industry best practice, which is why ISCA is updating the scheme. Version 2 of the IS rating scheme (IS v2) will re-benchmark and review all credits, as well as developing new themes covering the social and economic elements of sustainability, making the new scheme a true quadruple-bottom-line assessment.

IS version 2, however, will be about more than just ratings. The industry has said that it wants more information-sharing, better ways to benchmark, and a reduced evidence burden through the rating process. The scheme needs to be applicable to all infrastructure types and sizes, and applicable throughout the infrastructure life cycle. The value of the scheme also needs to be better defined and communicated to the infrastructure community.

IS version 2 will introduce social and economic themes, will facilitate better information-sharing, and will be applicable to all infrastructure asset classes and sizes, for all stages in the infrastructure life cycle.

The development of IS version 2 will be broken into three phases:

- IS version 1.2, which will include any updates that can be incorporated immediately
- the IS Operation rating, which will update the scheme language and requirements so that it is relevant to operators
- IS version 2, where holistic updates and fundamental changes will be incorporated.

## IS version 1.2

ISCA continually updates the IS rating scheme to align with evolving industry best practice, to respond to feedback, and to incorporate new innovations and trends into the industry.

In October/November 2015, ISCA reviewed the current scheme against the design principles and scheme intent, as

well as considering feedback received through the rating process to produce a list of recommendations for updates to the scheme.

The proposed adjustments to the scheme were released for stakeholder consultation in December 2015/January 2016, for final release in May 2016.

IS version 1.2 addresses issues that can be immediately incorporated, rather than waiting for the development of IS version 2.

In addition, a weighting assessment will be created to distribute points based on an assessment of key sustainability areas for specific asset circumstances. This process will focus projects and assets towards the sustainability issues where the most impact can be made.

A summary of the adjustments incorporated into IS version 1.2 is provided below:

- Weighting assessment. The current method of using preset weighting and exception scope-outs has been replaced with a compulsory materiality assessment that focuses sustainability activity on initiatives that are most relevant for each project/asset.
- Credits consolidated. Some credits have been consolidated, resulting in a reduction from 52 credits to 44 credits.
- Small projects. Modifications have been incorporated to make the IS rating scheme more user-friendly for small projects. Customised credit requirements and guidance has been incorporated into 16 of the 44 credits specifically for small projects.
- Step vs. scaled benchmarks. The benchmarking of some credits has

*IS version 2 will introduce social and economic themes, will facilitate better information sharing, and will be applicable to all infrastructure asset classes and sizes, for all stages in the infrastructure life cycle*

been changed from a step scale to a linear scale, enabling the reward of all improvements, not just those that result in a project/asset surpassing the next hurdle.

- Innovation points increased. The amount of innovation bonus points has increased from five points to 10 points.
- Rulings incorporated. Rulings from the current version of the scheme have been incorporated into the credits of the new scheme.
- Manage, review and audit flexibility. Greater flexibility

has been incorporated into 10 credits’ manage, review and audit requirements while maintaining the same level of rigour.

- Materials Calculator v1.2. The ISCA Materials Technical Working Group identified a number of improvements to the IS Materials Calculator that have been incorporated into v1.2, thanks to the generous sponsorship of start2see. They include more than doubling the number of materials available; the addition of multiple transport modes for relevant materials; the

addition of simple tools that allow default and custom ready-mixed and precast concrete mixes to be formulated and analysed; the addition of unit conversions for relevant materials; the incorporation of a revised methodology for environmental impact to be calculated (from EcoPoints to IS EnviroPoints); and a revision of the source of materials environmental impact data.

### IS Operation rating

The IS rating scheme has been piloted on eight operating assets over the past 1.5 years. In July 2016, the finalised IS Operation rating will be released, and will provide operators with a third-party assessed framework to incorporate sustainability into their operating processes.

ISCA has been collecting feedback from registered and certified ratings, the member working groups, and other general stakeholders in the industry. From this feedback, it was identified that some of the credits in the IS rating scheme may benefit from revision to better fit operations and associated activities.

The IS Operation rating will be a component of the IS rating scheme; however, it will have a specific Technical Manual and Scorecard.

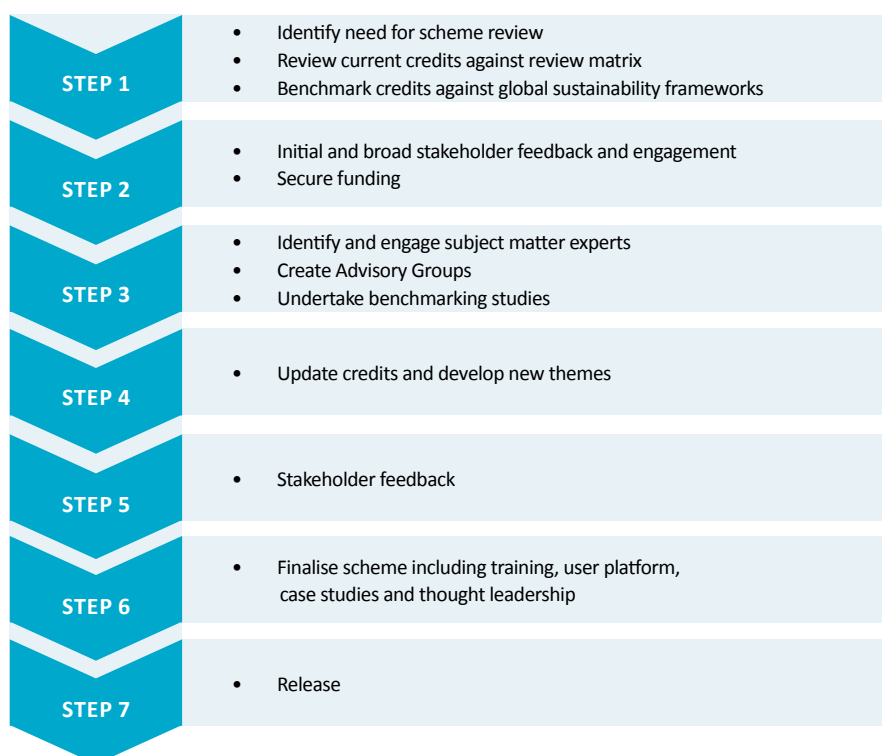
The IS Operation rating will align with the Asset Management Standard ISO 55001 to provide operators with a framework for incorporating sustainability into their asset management.

Assets piloting the scheme say that the IS Operation rating provides a benchmark of the sustainability performance of their assets, as well as a framework for achieving sustainability, and that it helps to identify efficiencies.

**TABLE 1. SUMMARY OF THE PROPOSED ADAPTATION OF THE EXISTING SCHEME FOR THE OPERATION**

CONTENT	PROPOSED ADAPTATION
Technical Manual	Technical Manual will be rewritten to reflect the requirements to improve sustainability in operation and maintenance.
Credits	Some credits will be adjusted and reworded to be more relevant to the operating phase in the infrastructure lifecycle.

**TABLE 2. SUMMARY OF THE VERSION 2 DEVELOPMENT PROCESS**



A summary of the proposed adaptation of the existing scheme for the Operation rating is provided in Table 1.

### IS version 2

Version 2 of the IS rating scheme will holistically review the effectiveness of Version 1. Over the three years since the release of Version 1, ISCA has piloted new processes, sorted industry feedback and seen the industry evolve. Through feedback and industry engagement, ISCA has acknowledged that the current version of IS requires an update to align the scheme to current industry standard practices, incorporate new themes and make the rating process more streamlined.

### Version 2 development process

A summary of the Version 2 development process is outlined in Table 2.

There are five broad development areas of IS version 2:

#### Scheme governance

To facilitate a better balance between sustainability outcomes and the effort

*“The scheme update and development process has a strong focus on industry collaboration and utilises member expertise to create a scheme owned and developed by the industry, for the industry”*

needed to meet the requirements of the scheme, IS version 2 will be developed with outcomes in mind.

IS version 2 will review all current credits against ISCA’s design principles and

scheme intent. The review will attempt to reduce the evidence burden wherever possible, and ensure that there is a better balance between effort and reward.

**TABLE 3. MEMBERS OF THE ECONOMIC ADVISORY GROUP (EAG)**

NAME	ROLE, ORGANISATION
Joshua Bishop	Economist, WWF Australia
David Jackson	Treasury, Queensland
Corey Dykstra	Manager Financial Evaluation, WA Water Corporation
Greg Garrett	Project Director, John Holland
Dr Mark Harvey	Research Manager, Regulatory Reform and Investment Analysis, Department of Infrastructure and Regional Development
Saori Peguicha	Project Manager, Pacific Partnerships
Sarah Tasic	Senior Planning Sustainability Consultant, Arup
Nicole Boyd	Development Manager, ISCA

**TABLE 4. DRAFT CREDIT TOPIC AREAS DEVELOPED BY THE EAG**

CATEGORY	CREDIT	CREDIT AIMS
Financial	Whole of life costing	To reward long-term thinking, most efficient financial outcomes, and transparency in financial planning
	Sustainable financial management	To reward long-term thinking and to ensure that adequate funding for the project has been allocated for maintenance and operation
Economic	Cost-benefit analysis	To reward long-term thinking, most efficient economic outcomes, and transparency in economic appraisal
	Non-monetised impacts	To reward completeness in identification of non-monetised impacts
	Critical natural capital	To reward recognition of irreplaceable assets and subsequent adaptation of projects
	Equity and distributional impacts	To reward the consideration of equity and distributional impacts
Decision-making	Benefits realisation planning	To reward accountability in cost-benefit analysis and the identification and implementation of post-project corrective actions
	Strategic planning	To reward the selection of the ‘right’ project

*Version 2 will introduce a smarter user platform for ratings and information sharing*

IS version 2 will be developed according to ISEAL’s codes of good practice, and will better align with global sustainability frameworks.

**Research, consultation and development of credits**

The definition of sustainability, as well as how the industry has implemented sustainability, has evolved since 2012 when the scheme was first developed. To ensure that the IS rating scheme is useful, relevant and up to date with local and global best practices, the scheme is updated every three to five years. The scheme update and development process has a strong focus on industry collaboration, and uses member expertise to create a scheme owned and developed by the industry, for the industry.

All existing credits will be reviewed against the design principles, and will incorporate industry feedback to ensure that the IS rating scheme focuses on promoting the best sustainability outcomes for infrastructure projects and assets.

New categories, such as workforce sustainability, social procurement, ethical supply chains, decision-making, financial assessment and economic appraisal, will be developed to broaden the scope of the scheme and create a true quadruple-bottom-line assessment.

**Overview of new themes**

There are two new themes: Economic and Social, both at different stages of development. An overview of the draft topic areas covered under each theme is outlined here. Note: these topic areas will likely evolve through the development process.

**Economic theme**

The Economic Advisory Group (EAG) has been established with the members shown in Table 3.

The draft credit topic areas have been developed by the EAG and are described

in Table 4. Please note that these may evolve during the development process.

**Social theme**

A workshop was held in February 2016 with industry procurement, human resources and sustainability experts to identify challenges and opportunities in achieving social sustainability. Advisory groups will be established over the coming months.

The draft credit topic areas for the Social theme are outlined in Table 5. Please note that these topic areas are in concept phase and will likely change during the development process.

**TABLE 5. DRAFT CREDIT TOPIC AREAS FOR THE SOCIAL THEME**

CATEGORY	TOPIC AREA
Social procurement	Procurement through social enterprises
	Procurement through Indigenous businesses
	Local employment
	Engaging long-term unemployed
Workforce sustainability	Wellbeing
	Equity
	Indigenous employment
	Education and training
Ethical procurement	Supply-chain risk assessment
	Ethical procurement action plan

**TABLE 6. TIME FRAMES AND KEY CONTACTS**

DEVELOPMENT	TIME FRAME	KEY CONTACTS
IS v1.2	Released May 2016	Jess Cairns, Case Manager
IS Operation rating	Released June 2016	Kirsty Bauer, Case Manager
IS v2	New theme developments: throughout 2016 Credit review and updates: throughout 2016 Released 2017	Nicole Boyd, Development Manager



### Information, knowledge-sharing and case studies

Project and asset managers will say that sharing case studies and best practices, as well as being able to benchmark and compare projects and assets, is a key driver for using the IS rating scheme.

Version 2 will focus on developing a scheme that is about more than just ratings. It will capture information through the rating process that can be shared and used by the industry.

Case studies are continuously requested, as they provide valuable examples of how projects and assets have incorporated sustainability into their projects, and the benefits of doing so. They are a key method for gathering and sharing knowledge, and

will be generated through the process of updating and developing credits.

In addition, thought-leadership articles will be generated as outcomes from research and development processes to further educate the industry on emerging issues and sustainability trends.

### User platform

The industry has said that it wants a more streamlined assessment process when providing evidence and getting verification feedback.

Version 2 will introduce a smarter user platform for ratings and information sharing.

A smart platform enables smart features to be developed, such as real-time feedback based on previous

assessments, instant upload of evidence such as photos and videos from a smart device, and a smooth and streamlined process to manage the whole rating process.

### Education and training

Education and training is an important element of the IS rating scheme. The IS Accredited Professional (ISAP) program is highly regarded within the industry, and provides students with a detailed understanding of the scheme, often giving them a competitive advantage.

Each time the scheme is updated, training needs to be developed and adjusted to reflect the improvements. The training and education program will require ongoing development to reflect the changes to version 2. [C](#)

The scheme's intent is: 'To advance infrastructure sustainability by providing guidance for designers, builders, owners, operators and investors to make decisions that optimise the environmental, social and economic outcomes of infrastructure.'

'To achieve this through an evidence-based assessment and verification scheme and the sharing of leading practices.'

ISCA's nine design principles are those that each credit will align to. The design principles are outlined below:

- 1. Beyond compliance**  
A credit should not reward compliance activities, as these activities are already managed by law and regulation.
- 2. Does not reward minimum standards**  
A credit should not reward

business-as-usual practices or minimum standards.

- 3. Measure outcomes first, then processes and inputs**  
Credits should reward outcomes rather than processes and inputs. When outcomes cannot be reasonably measured (such as when the outcomes are too far in the future), then processes and inputs can be used as a proxy.
- 4. Globally applicable with local adaptations**  
A credit should be applicable globally, and not be overly specific to a particular region. Local adaptations may be required to consider local nuances.
- 5. Quantitative where possible**  
To support the ability to make comparisons, benchmark, aggregate and identify trends, credits should attempt to capture quantitative information whenever possible.

- 6. Material to achieving intent**  
Each credit should be material to achieving the intent to ensure the maximum sustainability outcomes for the effort required.
- 7. Evidence-based**  
Each credit must be developed on the basis of evidence and scientific reasoning, and use and reference industry accepted methodologies.
- 8. Scalable (to different sizes and types of projects and assets)**  
A credit should be applicable to different project types and sizes, with some adaptations if required.
- 9. Consider each phase in the infrastructure life cycle**  
A credit should consider any changes in language or requirements for each phase in the infrastructure life cycle.

# Are we there yet? Integrated place delivery and transport infrastructure

By Cara Westerman, Associate Director and Rachel Seal, Associate, Hames Sharley

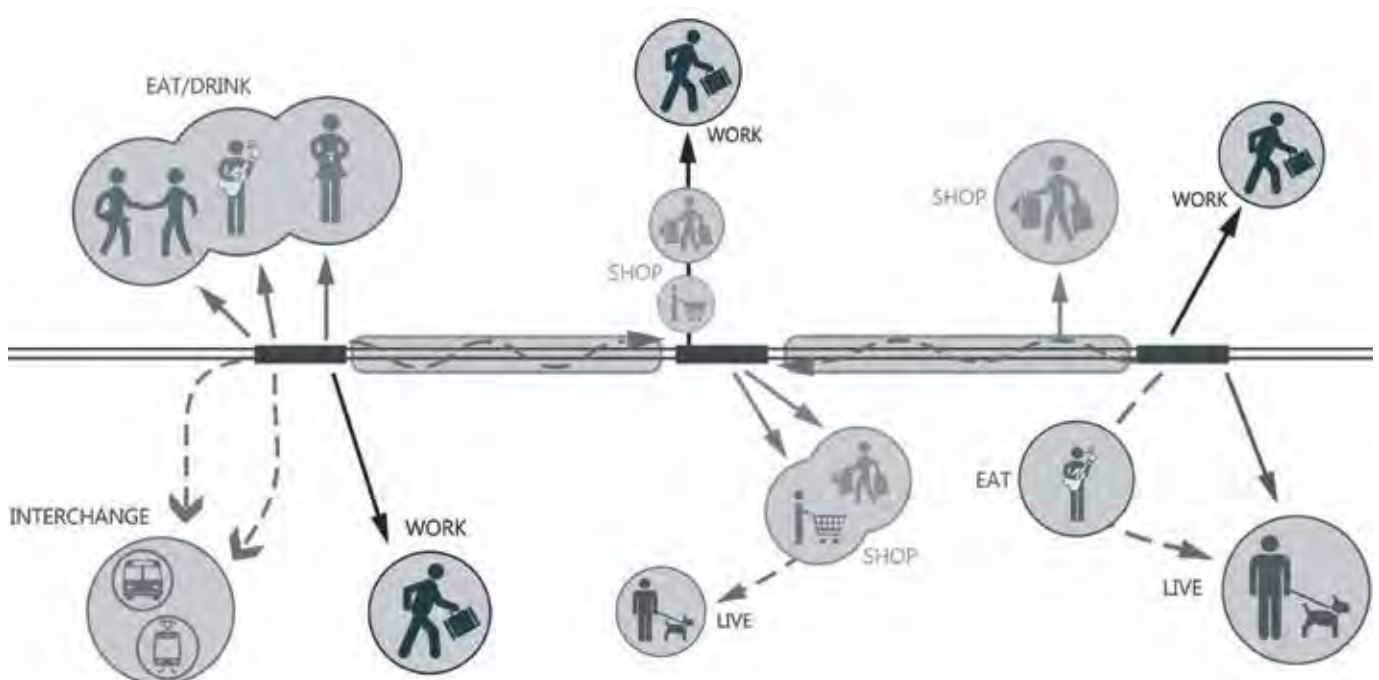
Our experience of cities and places is increasingly influenced by transport infrastructure. Our viewpoint is shifting from the window of the car as motorists, to the finer grain of the street as pedestrians accessing public transport. Integration of transport infrastructure is crucial in fostering a successful and interactive urban realm. Understanding how people move through, and interact with, the place is essential to ensuring its success, and the sustainability of the infrastructure.

Hames Sharley's master plan of the North Perth Town Centre for the City of Vincent considered the location and

design of a future light rail station. The existing conditions and character of the place were analysed to determine how the infrastructure would transform the place that surrounded it, and how that place would adapt. The physical and experiential identity of the place, and its amenity, economy and stakeholders were vital considerations at the early planning stages.

Community consultation and identification of challenges and opportunities enabled Hames Sharley to propose a place that anchors the transport infrastructure, and realises greater efficiency and effectiveness of the asset and the place.

The process of integrated place delivery optimises the economic and social value of transport infrastructure investment beyond the ride itself. Hames Sharley is an award-winning design practice that offers multidisciplinary place delivery with specialist services in strategic planning, demography, architecture and urban design. This includes an integrated approach to economic analysis, environmental engineering and way finding. Hames Sharley is committed to creating places that engage and activate the 'local', and inspire and delight people well into the future. [C](#)



# IS rating scheme statistics

The following is a summary of IS rating scheme registration and project/asset statistics. This information is for IS rating scheme data dating from 2012 to 2015.

**Total IS registrations**



**Total IS projects/assets from the launch of the scheme in 2012 until December**



**IS project/asset capital value**

**\$60.6 billion**

## IS rating scheme active registrations

**Active IS registrations**



**Active IS registration by rating type**

IS Operation	5
IS Design	19
IS As Built	6
Planning	12
Confidential	2

**Active IS registration by asset type**

Road		23
Rail		11
Port		3
Airport		2
Water		3

## IS rating scheme completed registrations

**Completed IS registrations**



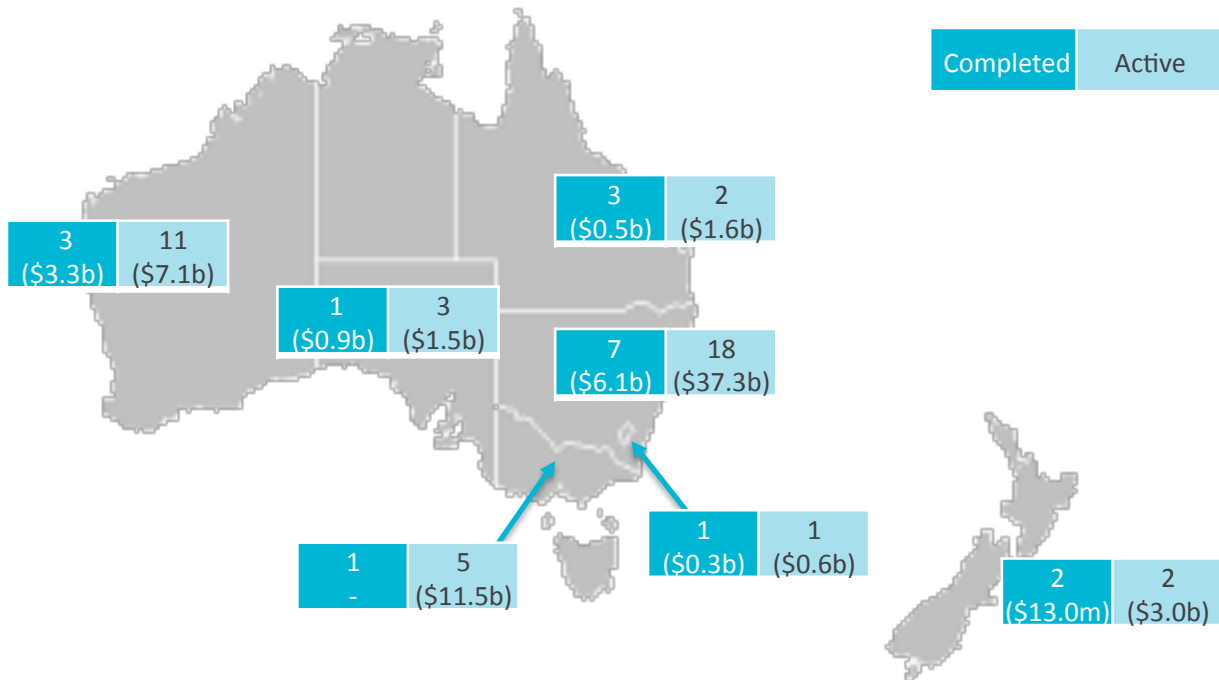
**Completed IS registration by rating type**

IS Operation	2
IS Design	7
IS As Built	5
Planning	4

**Completed IS registration by asset type**

Road		6
Rail		6
Port		0
Airport		1
Water		5

### IS rating scheme registrations by project/asset location

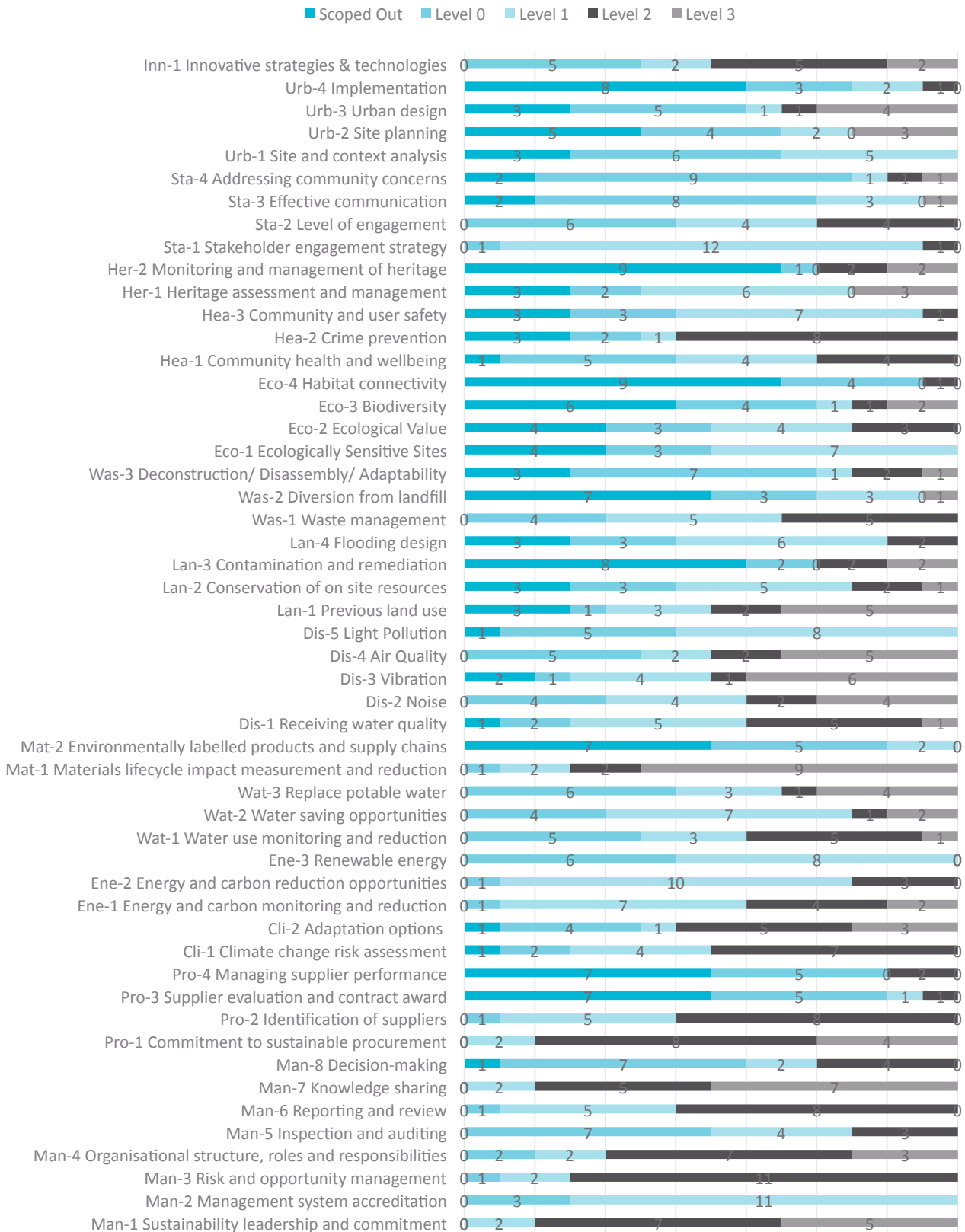


### IS rating scheme certified ratings by project/asset

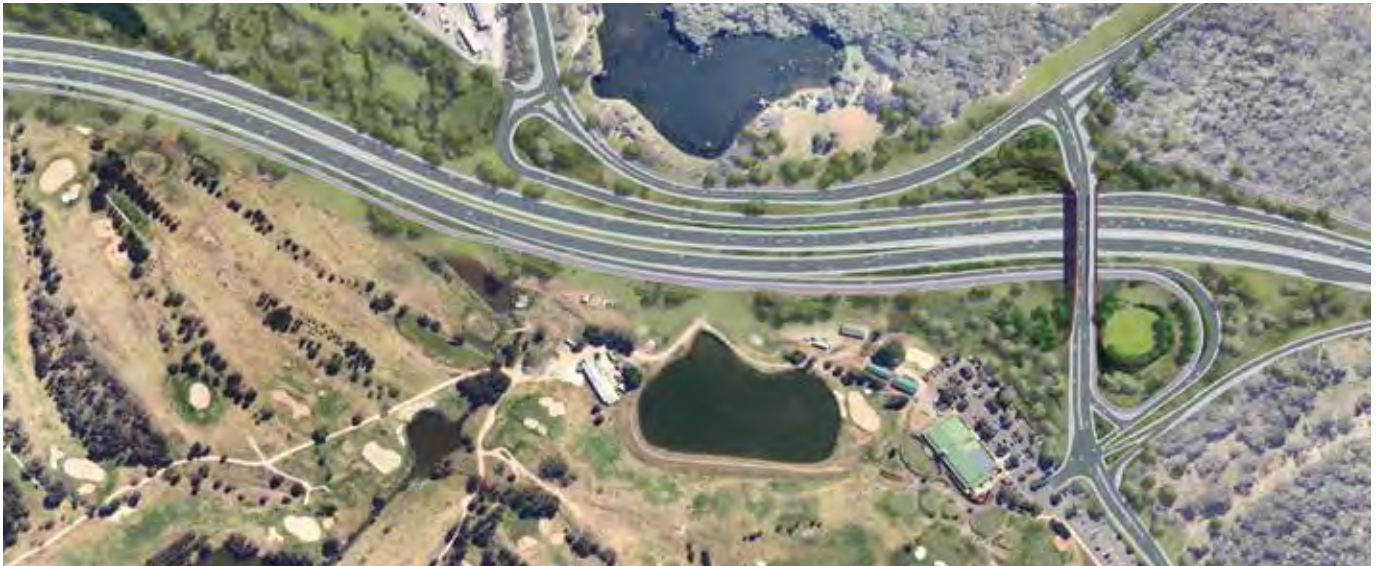
Project/Asset	Capital Value	Design	As Built	Operations
Wynyard Walk (NSW)	\$256 million		-	-
Googong Water Treatment Plant Chemical Facility Upgrade (NSW)	\$9 million		-	-
Whitsundays STP Upgrades (QLD)	\$45 million			-
Gateway WA Perth Airport & Freight Access (WA)	\$1 billion		-	-
Great Eastern Highway Upgrade (WA)	\$300 million	-		-
Enlarged Cotter Dam (ACT)	\$300 million	-		-
North West Rail Link Early Works (NSW)	\$80 million	-		-
Gold Coast Light Rail (QLD)	\$437 million	-		-
Sydney Metro Northwest – Tunnel and Station Civil Works (NSW)	\$1,150 million		-	-
Sydney Metro Northwest – Surface and Viaduct Civil Works (NSW)	\$340 million		-	-
Auckland Airport (NZ)	-	-	-	
Madden and Pakenham Streets upgrade (NZ)	\$13 million		-	-
Yarra Park Water Recycling Facility (VIC)	-	-	-	

### IS rating scheme performance by credit

This information includes IS rating scheme data from fourteen (14) certified IS ratings (all certified ratings from the launch of the scheme in 2012 until December 2015). These ratings all used version 1.0 of the IS rating scheme.



# Lendlease provides new gateway for sustainability



‘Companies must start justifying their worth to society, with greater emphasis placed on environmental and social impact rather than straight economics.’

It was 42 years ago that Lendlease founder Dick Dusseldorp said those words, and it’s a vision that Lendlease continues to embrace and execute.

This year, the company is setting the bar even higher on the \$1.162 billion Gateway Upgrade North project in Queensland.

Lendlease’s project team is working towards achieving an IS rating of ‘Excellent’ – this is the first major road project of this size in Queensland to seek an IS rating.

Gateway Upgrade North Project Director Gerry van der Wal said that the project team is excited about incorporating sustainability considerations and outcomes across the project’s entire life cycle.

‘I’m extremely proud of the target we’ve set for ourselves. The Gateway Upgrade North project is one of Queensland’s biggest road projects, and this represents the first time a project of this size and scale has aimed for a target as high as ours.’

‘To gain the Excellent rating, we will be putting in place project protocols and management strategies to help us understand and mitigate issues such as environmental risks to the wetlands, noise and vibration, traffic and cultural heritage.’

‘Indigenous engagement, and supporting local procurement and employment, will be other key areas of focus. It’s extremely important for us to work with the local community to leave a positive legacy.’

‘We’ve started strong and already changed our procurement practices, simply by engaging in the IS process from the outset.’

‘Going forward, my focus will be on integrating the IS focus into the project culture, so it becomes business as usual for all of us.’

Lendlease will prioritise achieving higher scores in the following key categories of the IS rating scheme:

- management systems
- materials
- discharge to air, land and water
- ecology
- community health, wellbeing and safety
- heritage.

## The Gateway Upgrade North project includes:

- upgrading 11.3 kilometres of the Gateway Motorway from four to six lanes between Nudgee and Bracken Ridge
- reconfiguring the Nudgee interchange, including a new Nudgee Road overpass and a relocated extended northbound on-ramp
- widening the Deagon Deviation between Depot Road and Bracken Ridge Road to provide two lanes in each direction
- modifications to the Bicentennial Road interchange, including extended on- and off-ramps
- construction of off-road cycle/ pedestrian facilities
- installing intelligent transport systems, including variable message and speed signs, and traffic monitoring.

# Auckland Airport

Auckland Airport is the key gateway into New Zealand. It handles 14.5 million passengers each year, and includes international and domestic terminals.

<b>REGISTRANT:</b>	Auckland Airport
<b>IS RATING SCORE:</b>	32
<b>LOCATION:</b>	Auckland, New Zealand
<b>OPERATION COSTS:</b>	\$110 million per annum
<b>CERTIFIED DATE:</b>	October 2015



**ASSET TYPE:** Airport

## HIGHLIGHTS

- Auckland Airport decided to pursue an IS rating to understand current operations compared with international best practice, and to close the gap during future developments.
- Since 2007, Auckland Airport has committed a full-time resource to embedding sustainable business practice, and produced its first sustainability policy and five-year action plan in 2008. Auckland Airport General Manager Airport Development and Delivery Graham Matthews says, ‘Auckland Airport is the key gateway into New Zealand, and as such recognises the important role it plays providing the first and last impressions of New Zealand for the majority of international visitors’. He continues, ‘Auckland Airport is now embedding its third policy and plan, taking a long-term view to infrastructure development and operation’. Following the release of its masterplan in 2014, Auckland Airport reviewed its sustainability program using the IS rating scheme as a benchmark, and became the first IS rating operational pilot.
- Auckland Airport was rewarded for its innovative waste reduction initiatives in compliance with Ministry for Primary Industries (MPI) biosecurity requirements. Normal waste disposal practice is to classify all cabin waste as quarantine waste, and compulsorily send it to landfill; however, Auckland Airport worked closely with waste contractors and developed a unique transitional waste recovery facility to segregate and sort cabin waste, resulting in the diversion of some cabin waste from landfill. The development process facilitated further engagement with airlines, to investigate waste avoidance through potentially changing in-flight product specifications.
- Auckland Airport’s management systems were rewarded for integrating responsibility for sustainability into their senior management team; engaging an independent professional to monitor and review sustainability performance; and implementing performance improvements through a sustainability strategy, as well as sharing sustainability knowledge internally, within the industry and with sustainability professionals.

# Enlarged Cotter Dam

The Enlarged Cotter Dam has been built downstream of the pre-existing dam to increase the Cotter Reservoir’s capacity from four gigalitres to 76 gigalitres. The Enlarged Cotter Dam forms part of Icon Water’s (previously ACTEW Water) continued response to ensuring a secure water supply for the Australian Capital Territory, and to address drought, climate change and variability.

<b>REGISTRANT:</b>	Icon Water
<b>IS RATING SCORE:</b>	40.9
<b>LOCATION:</b>	Cotter Dam, Australian Capital Territory
<b>OPERATION COSTS:</b>	\$299 million
<b>CERTIFIED DATE:</b>	January 2013



**ASSET TYPE:** Water

## HIGHLIGHTS

- Achieved level 3 for Man-7 Decision Making; incorporated good management systems; incentivised sustainability through KPIs; identified and assessed risks and opportunities; identified sustainability opportunities, and tied them to KRAs and KPIs; and developed YouTube videos to share sustainability knowledge with the public.
- One-hundred per cent of potable water use was replaced by non-potable water. UV technology was used to treat dam water to supply drinking water for site workers and offices.
- Through choosing optimised design materials, the project achieved a significant reduction in the life cycle environmental impact of materials use, reducing embodied carbon emissions by 23 per cent (36,954 tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e)) and Ecopoints by 28 per cent (61,502 Ecopoints). This was primarily achieved through increasing fly ash content in concrete, and sourcing aggregates from on site.
- For all ‘environmental’ discharges issues, baseline studies have been completed, impacts have been monitored and measured, and finally, management measures have been implemented.
- An education program was developed for the Australian Capital Territory school curriculum, which included sustainability themes such as environment, engineering, Indigenous and European heritage, sustainability and water supply.
- Partnerships with key stakeholders were formed through the project, including Representative Aboriginal Organisations (RAOs); Australian Capital Territory Heritage unit; Icon Water; Bulk Water Alliance (BWA); and Parks, Conservation and Lands. The Cotter Dam Discovery Trail was developed to provide ongoing local promotion and enhancement of project-related European and Aboriginal heritage values. RAOs participated in the field survey program and salvage field work.
- Key stakeholders included Lendlease, John Holland Group and GHD.



# Gateway WA

The largest infrastructure project ever undertaken by Main Roads Western Australia, Gateway WA is a billion-dollar project involving a major upgrade to the road network surrounding Perth Airport, and the freight and industrial hubs of Kewdale and Forrestfield. ‘Pursuing an IS rating for Gateway WA is an important way that the Alliance Partners can demonstrate their commitment to, and the implementation of, sustainability on projects,’ says Nick Combe, Alliance Director at Gateway WA Alliance.

<b>REGISTRANT:</b>	Main Roads WA	
<b>IS RATING SCORE:</b>	50.6	
<b>LOCATION:</b>	Perth, Western Australia	
<b>OPERATION COSTS:</b>	\$1 billion	
<b>CERTIFIED DATE:</b>	April 2013	
<b>ASSET TYPE:</b>		Road

## HIGHLIGHTS

- Integrated an excellent decision-making process that considers sustainability aspects.
- Publicly stated commitments to sustainability and restorative actions.
- Undertook sustainability knowledge-sharing initiatives with the wider industry.
- Requested suppliers to address sustainability, environmental aspects and apprenticeships.
- Sourced water for construction entirely from approved groundwater extraction.
- Reduced material life cycle environmental impact by 58 per cent through negotiated airport requirements to allow an altered design that reduced the depth of excavation for some sections of the road; used C600 binders that reduced the quantity of asphalt by 10 per cent and updated pavement specs; and worked with the Public Health Advisory Committee to lift a veto on the use of recycled materials because of concern over asbestos contamination. This allowed significant use of crushed recycled rock and waste quarry materials (sand replacement). Materials life cycle impact was reduced by 825,793 Ecopoints and 21,509 tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e).
- Considered crime prevention through environmental design (CPTED) throughout the design phase, including application on seven pedestrian underpasses that are being constructed as part of the project. Principles have been applied to reduce blind corners and provide end-to-end visibility.
- Implemented a comprehensive and thorough stakeholder engagement strategy. Stakeholder participation on negotiable issues was undertaken at an ‘involve’ level. The project team work involved a number of stakeholders, and its consultation groups – in particular, the Community Liaison and Freight and Road User Groups (including Kewdale Business Group) – on a range of key aspects of project development and design.
- Developed an urban and landscape design plan and applied strategies to the Australian Urban Design Protocol, which includes design principles for people (livability) and design principles for place (productivity and sustainability). Plans were independently reviewed by the Western Australian Office of the Government Architect.
- LED lighting for highway roads is being implemented, which is a first for Australia. This saves 1400 tCO<sub>2</sub>e over the asset’s life cycle.

# Gold Coast Light Rail

The project relates to the development of a light rail system that passes through the key activity centres of Southport, Surfers Paradise and Broadbeach. The 13-kilometre Stage One corridor, and any future stages, promises to significantly improve the livability of the Gold Coast by improving accessibility while reducing the effects of the congestion that comes with a rapidly growing city. It is one of the most important pieces of transport infrastructure ever undertaken on the Gold Coast.

<b>REGISTRANT:</b>	McConnell Dowell
<b>IS RATING SCORE:</b>	64.4
<b>LOCATION:</b>	Gold Coast, Queensland
<b>OPERATION COSTS:</b>	\$437 million
<b>CERTIFIED DATE:</b>	August 2014



IS Case Study available on [isca.org.au](http://isca.org.au)

<b>ASSET TYPE:</b>	Rail
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## HIGHLIGHTS

- Winner of the 2014 IS Project/Asset Sustainability in Infrastructure Award.
- \$15 million saved through the implementation of sustainability initiatives.
- Queensland-first initiative to install a new track-switching system that makes the process easier and allows for reduced time, cost and disruption during maintenance on the track switches. Using this system, the switchblade can be replaced from the top of rail; therefore, there is no need to dig up the embedded concrete around the track switch to replace wearing parts.
- Particularly good examples of knowledge-sharing (toolbox talks, discussion forums, series of YouTube web episodes for use within the Australian Schools curriculum and including sustainability). Full scores for risk and opportunity management, inspection and auditing, and management system accreditation.
- Strong commitment to sustainable procurement. Consideration of sustainability during the identification and evaluation of suppliers. Suppliers' sustainability performance is monitored and managed throughout the delivery of their contracts.
- Water-saving opportunities were implemented, including water-efficient devices in permanent and temporary facilities, xeriscape landscaping, collection of rainfall from depot roof, recycled water in the wash plant, stormwater harvesting, and sourcing non-potable water for dust suppression and compaction activities.
- A 55 per cent improvement in embodied carbon based on a reference design and a significant reduction in materials life cycles were achieved through the design development phase and modified construction practices; re-use of materials on site; reduction in slab thickness for the track; the use of exchangeable switchblades and track curves; relining pipes that are of sufficient capacity for future demands; use of direction drilling/pipe jacking; and other less intrusive methods of installing pipes – equating to a reduction of 104,000 tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e) and 90,000 Ecopoints.
- The project footprint is primarily within an existing road corridor, and, as such, 87 per cent of the project land has been assessed as previously disturbed. Mapping confirmed that the total construction footprint was 647,353 square metres, of which 81,889 square metres was classified as undisturbed.
- Achieved very high diversion rates from landfill, including all spoil from the project either re-used on site or trucked off site to a recycling site for re-use or reprocessing. Achieved a 100 per cent recycling rate. The project achieved a recycling rate of 89.7 per cent across the board for inert and non-hazardous wastes.
- The project set a stretch target of recruiting 82.5 per cent of project personnel from the extended Gold Coast area (including Scenic Rim, Brisbane City, Redlands, Logan and Ipswich). The project also set a target of providing 188,000 hours of deemed training to green labour and upskilling of local workforce. This target included providing 50 traineeships, apprenticeships and/or cadetships (see Hea-1be).
- Regular surveys confirm that more than 96 per cent of project employees were recruited from within the extended Gold Coast area, with more than 80 per cent living within the Gold Coast City Council area.

# Googong Water Treatment Plant Chemical Facility Upgrade

This upgrade provides a new secure chemical unloading, bulk storage, handling and dosing facility to replace the pre-existing systems that have been fully decommissioned and removed. The new facility will reduce workplace safety risks and hazards, comply with dosing requirements for public water, improve treatment processes and capacity, provide sufficient system redundancy, and increase operational efficiency.

<b>REGISTRANT:</b>	Icon Water
<b>IS RATING SCORE:</b>	32.3
<b>LOCATION:</b>	Googong, New South Wales
<b>OPERATION COSTS:</b>	\$6 million
<b>CERTIFIED DATE:</b>	August 2014



<b>ASSET TYPE:</b>	Water
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## HIGHLIGHTS

- Clear commitments to mitigating negative environmental, social and economic impacts are present and embedded within KPI-based targets, which are also included in contractual arrangements.
- Good knowledge-sharing information and practices have been presented, including the use of a knowledge-sharing plan and three main delivery methods: written (reports, fact sheets and newsletters); spoken (conferences, lectures and workshops); and the internet (intranet and website).
- There is a strong commitment to considering sustainability within procurement, and strong evidence to show that environmental considerations are explored and assessed throughout procurement. Evidence includes: questionnaires (including prequal), evaluations, tender documents and contracts).
- A number of climate change projects were considered, the risk assessment considered indirect risks, and a multidisciplinary team participated in identifying climate change risk issues. Also, adaptation options to treat all extreme and high-priority climate change risks were implemented.
- Some good first steps were demonstrated in addressing the requirements for each of the energy and carbon credits. By meeting level 1 across all credits, it is shown that energy use has been monitored and reported on; opportunities to reduce energy have been identified, evaluated and implemented; and the use of renewable energy has been also been fully investigated.
- The project achieved a significant reduction in materials life cycle environmental impact of steel and concrete use through optimised design, which reduced steel and concrete use. The project achieved the following reductions: 275 tonnes of carbon dioxide equivalent (CO<sub>2</sub>e), 346 Ecopoints, 16 tonnes of steel and halving the use of crushed rock.
- The physical footprint of this building is entirely within the existing wastewater treatment plant facility; therefore, the project is being executed on land that is 100 per cent previously disturbed.
- Other key stakeholders included Tenix.

# Great Eastern Hwy Upgrade

A 4.2-kilometre section of the Great Eastern Highway between Kooyong Road and Tonkin Highway was widened from four to six lanes, with a number of ancillary improvements made, including central medians, upgraded intersections, on-road cycling facilities, bus priority lanes and continuous paths for pedestrians. The project was jointly funded by the Commonwealth’s Nation Building Program and the Government of Western Australia.

<b>REGISTRANT:</b>	Main Roads WA
<b>IS RATING SCORE:</b>	(confidential)
<b>LOCATION:</b>	Perth, Western Australia
<b>OPERATION COSTS:</b>	\$350 million
<b>CERTIFIED DATE:</b>	January 2013



IS Case Study available on [isca.org.au](http://isca.org.au)

<b>ASSET TYPE:</b>	Road
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## HIGHLIGHTS

- City East Alliance (MRWA, Leighton Contractors, GHD, NRW).
- Commitment to mitigating negative environmental, social and economic impacts; accredited management systems; thorough risk and opportunity assessment; clearly demonstrated knowledge-sharing; and a strong decision-making approach incorporating sustainability aspects.
- Opportunities to reduce water use were identified and implemented. Instead of using high-value potable water, the project installed groundwater bores and constructed a weir that, on completion, was handed to the local council to irrigate parks.
- Significant reduction in materials life cycle impacts through extensive use of recycled materials, reducing the use of non-renewable resources of limestone, sand and bitumen. The highway now has the largest use of recycled material on any Western Australian state road, with 43 per cent of imported material being recycled.
- More than 75 per cent of the land used for the project was previously disturbed.
- Thorough approach to heritage assessment and management. Monitoring overseen by appropriately qualified persons.
- Warm mix asphalt was used on the project, applying innovative foaming technology to mix the bitumen into the asphalt mix. This was a first for Western Australia, reducing energy use and greenhouse gas emissions.

# Madden and Pakenham Streets Upgrade

This project is located within Auckland’s newest waterfront area and urban community, Wynyard Quarter. The project includes a road upgrade of existing Madden Street and Pakenham Street West to support improved stormwater management, future development and street life.

<b>REGISTRANT:</b>	Panuku Development Auckland
<b>IS RATING SCORE:</b>	57
<b>LOCATION:</b>	Auckland, New Zealand
<b>OPERATION COSTS:</b>	\$13 million
<b>CERTIFIED DATE:</b>	October 2015



<b>ASSET TYPE:</b>	Road
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## HIGHLIGHTS

- The Madden and Pakenham Streets Upgrade project achieved perfect IS rating scores in the Urban and Landscape Design theme. Key design considerations followed the principles of: connecting waterfront precincts; providing continuous waterfront access; establishing diverse public spaces; promoting an active and working waterfront; creating appropriate building height, scale and form; facilitating a mix of uses and activities; and promoting sustainable transport and urbanism.
- The Madden and Pakenham Streets Upgrade project identified, through a multidisciplinary workshop, direct and indirect climate change risks and adaptation measures to treat all high and medium risks. This included major improvements to the stormwater treatment system, which is now designed to accommodate the one-in-100-year storm event and allow for an increase in rainfall of 17 per cent over the next 100 years due to the effects of climate change. A sea level rise of one metre is also incorporated into the design, as the reticulated systems all discharge to the harbour.
- The project team reduced construction carbon emissions by 27 per cent, and reduced its materials environmental footprint (Ecopoints) by 18 per cent. The material footprint reduction was enabled through narrow street design, mudcreting techniques used for in-situ management and containment of contaminated soil, increasing the design life and reducing the embodied energy of the carriageway by using concrete instead of asphalt.
- The project demonstrated leading management systems, with a member of the senior management team having central responsibility for managing sustainability, as well as publicly committing to ‘achieving international best practice by moving into the zero net energy/water/waste and restorative space’. Suppliers were requested to provide details of their sustainability policy and its implementation.
- According to the interim CEO of Panuku Development Auckland, John Dalzell, ‘The value to the organisation has been in having an independent body scrutinise how Panuku is delivering on its sustainability commitments. We believe that we have set a benchmark for other organisations in New Zealand to step up to’.

# Sydney Metro Northwest Early Works

The \$8.3 billion Sydney Metro Northwest is Australia’s biggest public transport project, and a priority infrastructure investment for the New South Wales Government. It is the first stage of Sydney Rapid Transit, the city’s new rapid transit railway network. Lendlease was Managing Contractor for Early Works on the Sydney Metro Northwest project, which was undertaken for Transport for NSW (TfNSW). Early Works activities included environmental investigations, demolition works, road and traffic adjustments, service relocations, and the provision of high-voltage power construction of the rail tunnel.

<b>REGISTRANT:</b>	Lendlease
<b>IS RATING SCORE:</b>	(confidential)
<b>LOCATION:</b>	Sydney, New South Wales
<b>OPERATION COSTS:</b>	\$80 million
<b>CERTIFIED DATE:</b>	August 2014



<b>ASSET TYPE:</b>	Rail
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## HIGHLIGHTS

- The project focus areas in relation to sustainability management and enhancement included procurement, waste management, heritage protection and stakeholder participation. A major highlight of the project was the discovery of the ruins of the colonial area White Hart Inn, located in the rail corridor. The Kellyville site has revealed numerous artefacts, and has now been permanently preserved, by adapting to the find and modifying the skyrail section of the project.
- First heavy rail IS rating.
- Lendlease has been proactive about sharing its lessons learnt and information related to sustainability on this project throughout its organisation. This has included in-house IS foundation training and presentations.
- The North West Rail Link (NWRL) Early Works staff has also participated in sustainability forums with the other NWRL package contractors, and TfNSW.
- Supplier evaluation included quantitative consideration of sustainability aspects. This was documented through supplier questionnaires and a transparent scoring sheet.
- Supplier performance has been managed through corrective action registers.
- Excellent waste management systems with good solid data presented.
- A great case study on the White Hart Inn – the remains of which were uncovered and documented during the works. This was probably the highlight of the project.
- The NWRL project and the Early Works package have implemented a thorough and comprehensive stakeholder engagement strategy. This included implementing measures to manage stakeholder concerns, and also an internal audit of the stakeholder engagement approach and outcomes.

# Sydney Metro Northwest Surface and Viaduct Civils

The \$8.3 billion Sydney Metro Northwest is Australia’s biggest public transport project, and is a priority infrastructure investment for the New South Wales Government. The \$340 million skytrain contract was awarded in December 2013 to the Impregilo-Salini joint venture. It includes a four-kilometre elevated skytrain viaduct between Bella Vista and Rouse Hill, as well as a 270-metre landmark cable-stayed rail bridge, similar in design to Sydney’s Anzac Bridge over Windsor Road, and a further two kilometres of associated surface civil construction works and railway embankments. Major construction began in November 2014.

<b>REGISTRANT:</b>	Impregilo-Salini joint venture
<b>IS RATING SCORE:</b>	78
<b>LOCATION:</b>	Sydney, New South Wales
<b>OPERATION COSTS:</b>	\$340 million
<b>CERTIFIED DATE:</b>	September 2015



<b>ASSET TYPE:</b>	Rail	
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## HIGHLIGHTS

- Impregilo-Salini joint venture (ISJV) demonstrated Australia-based market transformation through development of sustainability data collection and reporting software. This innovative software solution provides a sustainability management system for organisations to record data and measure the sustainability performance of civil engineering projects.
- ISJV reduced emissions by more than one-third through initiatives including the use of biofuels, design efficiencies and reduced electricity use.
- The ISJV design also enabled a potential nine per cent water saving over the life of the project, using water-reduction techniques such as water-free chemical concrete curing.
- Smart design has also modelled a 44 per cent emissions reduction, and a net Ecopoint reduction of 37 per cent. The package’s Deconstruction Plan also shows that 90 per cent of the value of all materials can potentially be recycled.
- Through the discovery of the White Hart Inn, a European heritage site discovered as part of the Early Works package, ISJV has been instrumental in its protection. ISJV implemented best practice heritage management measures, including minimising adverse impacts to heritage during construction; developing signage and interpretive materials describing heritage values; developing educational and community resources around heritage values; and developing partnerships with relevant stakeholders to utilise heritage places to promote local heritage values.
- ISJV has registered Sydney Metro Northwest project’s Surface and Viaduct Civils package for an IS As Built rating.

# Sydney Metro Northwest Tunnel and Station Civil Works

The \$8.3 billion Sydney Metro Northwest is Australia’s biggest public transport project and a priority infrastructure investment for the New South Wales Government. The \$1.15 billion tunnelling contract was awarded in June 2013. Tunnel builders CPB John Holland Dragados (CPBJHD) are delivering Australia’s longest railway tunnels – 15-kilometre twin tunnels between Bella Vista and Epping.

<b>REGISTRANT:</b>	CPB John Holland Dragados
<b>IS RATING SCORE:</b>	83
<b>LOCATION:</b>	Sydney, New South Wales
<b>OPERATION COSTS:</b>	\$1.15 billion
<b>CERTIFIED DATE:</b>	September 2015



<b>ASSET TYPE:</b>	Rail
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## HIGHLIGHTS

- The Sydney Metro Northwest Tunnel and Station Civil Works project was the winner of the IS Project/Asset Award at the 2015 Sustainability in Infrastructure Awards.
- The Sydney Metro Northwest is the first transport infrastructure project in Australian history to use four tunnel-boring machines on the one project. The first machine, Elizabeth, started tunnelling in early September 2014, four months ahead of schedule.
- The CPB John Holland Dragados (CPBJHD) team has excelled in sustainability management and systems, achieving maximum scores in five management systems credits: Sustainability leadership and commitment; Management system accreditation; Risk and opportunity management; Organisational structure roles and responsibilities; and Inspection and auditing.
- CPBJHD reduced emissions by 24 per cent through initiatives including the use of B5 blended fuel; hybrid excavators; fuel-efficiency training and awareness programs; design optimisation; and reduced electricity consumption. Closed-loop recirculation networks reduced water use by 37 per cent from the reference footprint.
- The CPBJHD design substituted more sustainable components; for example, in its high-strength concrete mix, enabling a 45 per cent reduction in Ecopoints for its materials score. The design also provided best practice flood immunity to protect station evacuations from the probable maximum flood event through a flood-management protocol, barriers, pumps and sumps.
- CPBJHD has also registered for an IS As Built rating.



# Whitsundays STP Upgrades

The upgrade of two treatment plants at Proserpine and Cannonvale are to serve growing communities, and meet the most stringent effluent discharge requirements to protect the Great Barrier Reef. They will also provide benefits to the local community by reducing sewage overflows, and improving noise and odour.

<b>REGISTRANT:</b>	Downer
<b>IS RATING SCORE:</b>	As Built: 56.4
<b>LOCATION:</b>	Whitsundays, Queensland
<b>OPERATION COSTS:</b>	\$45 million
<b>CERTIFIED DATE:</b>	Design: May 2013 As Built: August 2015



IS Case Study available on [isca.org.au](http://isca.org.au)

<b>ASSET TYPE:</b>	Water
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## HIGHLIGHTS

- First certified IS Design rating.
- First project/asset to achieve an IS Design rating and an IS As Built rating.
- More than \$1 million saved through the implementation of sustainability initiatives: \$1.1 million saved in construction; \$182,000 saved in operations per annum; and \$214,000 total additional costs. Return on investment is greater than 400 per cent.
- Knowledge-sharing clearly demonstrated.
- Strong commitment to, and application of, sustainable procurement, including local procurement – 61 per cent of total spend in the Whitsunday region, and 30 per cent of total spend in greater Queensland.
- Completed a thorough, formal climate change risk assessment, and implemented controls to reduce 22 ‘high’ or ‘very high’ risks to a ‘moderate’ or ‘low’ rating.
- 305 megawatt hours of electricity saved over operational life – thus a 14 per cent reduction, equating to \$75,000 in savings per year.
- Over the project’s life cycle, emissions of 20,510 tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e) were avoided.
- Use of B20 biodiesel, preventing the emissions of 272 tCO<sub>2</sub>e (cost-neutral).
- Water use was reduced by 15 per cent (2966 megalitres) over the life cycle, with associated cost benefits.
- Materials footprint reduced by 25 per cent: 5578 Ecopoint reduction; 3149 tCO<sub>2</sub>e reduction; 4200-tonne reduction in concrete use; 298-tonne reduction in steel use; eco-cement with 30 per cent fly-ash used; and asphalt eliminated from the design.
- Ecological value enhanced through more than 5000 square metres of regenerated native habitat and 1000 square metres of wetland. Biodiversity values have been improved by more than 200 per cent at both sites and, even allowing for significant attrition within the revegetation plots, an overall enhancement to the site for more than 20 per cent is achievable within a 30-year period.
- World-first trial of parallel nitrification and denitrification (PND) – this significantly improves nitrogen removal, is more compact, uses fewer construction materials and is more energy efficient.

# Wynyard Walk

Wynyard Walk is a new pedestrian walkway connecting the Sydney CBD with the Barangaroo precinct.

<b>REGISTRANT:</b>	Transport for NSW
<b>IS RATING SCORE:</b>	(confidential)
<b>LOCATION:</b>	Sydney, New South Wales
<b>OPERATION COSTS:</b>	\$154 million
<b>CERTIFIED DATE:</b>	August 2015



<b>ASSET TYPE:</b>	Road
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## HIGHLIGHTS

- The assessment process highlighted three areas where the Wynyard Walk team best demonstrated sustainable practices, which were management and governance, procurement, and climate change.
- This includes efficiency in management systems, sustainability reporting, procurement, climate change adaptation, risk assessment, baseline studies, modelling actual data, performance in resource use, and environmental and heritage impact assessments.
- Thiess built on a range of design- and construction-related environmental, stakeholder, community and engineering requirements nominated by Transport for NSW to achieve productivity efficiencies and minimise risks. These include minimising waste; reducing community impacts during construction; enhancing the user’s experience; optimising energy efficiencies; and improving sustainability outcomes for the project.
- Thiess Project Director Nicholas Kouvaris said that while there is much more work to be done, the IS Design rating certification marks an important milestone for the project. ‘Thiess is an active supporter of ISCA, and the commitment displayed by all those involved in achieving this rating is a credit to the project team and Transport for NSW. This sustainability focus will ensure that we deliver a lasting legacy for the people of Sydney.’
- Wynyard Walk is registered for an IS As Built rating.

# Yarra Park Recycled Water Treatment Facility

The Yarra Park Recycled Water Treatment Facility is capable of producing more than 600 kilolitres of recycled water per day. As one of the first of its type, the facility was built underground and out of public view, ensuring it did not take away valuable surface land use or impact the amenity of the park. This innovative proof-of-concept design substantially contributes to the broader water market transformation towards sustainable development.

<b>REGISTRANT:</b>	Downer
<b>IS RATING SCORE:</b>	55
<b>LOCATION:</b>	Melbourne, Victoria
<b>OPERATION COSTS:</b>	\$1 million per annum
<b>CERTIFIED DATE:</b>	October 2015



<b>ASSET TYPE:</b>	Water
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## HIGHLIGHTS

- The facility was awarded with an Australian-first ‘Excellent’ IS Operations Pilot rating.
- The plant is capable of producing more than 600 kilolitres of recycled water per day. As one of the first of its type, the facility was built underground and out of public view, ensuring that it did not take away valuable surface land use or affect the amenity of the park. This innovative proof-of-concept design substantially contributes to the broader water market transformation towards sustainable development.
- The team was recognised for its public commitment to sustainability in the Yarra Park Master Plan, its monthly measuring and reporting on sustainability performance to senior management, and its extensive knowledge-sharing, which had included the sharing of mistakes and development opportunities.
- Since the plant was commissioned, Downer has been able to gain water efficiencies of seven per cent during summer operations, and eight per cent during winter operations, and has been able to supply 99.99 per cent of potable water replacement demand. To date, the Yarra Park Recycled Water Treatment Facility has directly offset 291,818,800 litres of potable water.
- The team monitored energy use and greenhouse gas emissions during the two years that the plant has been in operation, enabling operational process improvements that have resulted in reduced energy consumption over the remaining 23 years of the asset’s operational life. In addition to this, substantial changes to chemical dosing, cleaning regimes and process philosophies have resulted in a reduction of 80 tonnes of chemicals, or 45 per cent of materials.