Improving the productivity & liveability of industry & communities through sustainability in infrastructure

Antony Sprigg
CEO

October 2017
A growing local to global community of practise through

ISCA
ISCA’s Mandate

**Ratings**
- Ratings
- Support/Advisory
- IS Supply

**Knowledge**
- Training
- Professional Accreditation

**Community**
- Membership
- Awards
- Events
- Advocacy
Sharing of leading practices

- Guidelines
- Thought leadership
- Education and training
- Case Studies
- Working Groups

Community of practice
Sustainable infrastructure through

INFRASTRUCTURE SUSTAINABILITY AND THE IS SCHEME
What is Infrastructure Sustainability?

*Sustainable infrastructure* (Brookings Institution article 2016) is socially, economically and environmentally sustainable.

*Infrastructure sustainability* (IS Technical Manual),” ... infrastructure that is planned, designed, constructed and operated to optimise environmental, societal and economic outcomes over the long term”. 
## IS Themes & Categories

<table>
<thead>
<tr>
<th>Themes</th>
<th>Categories</th>
<th>Gov</th>
<th>Ecom</th>
<th>Env</th>
<th>Soc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management and Governance</td>
<td>Management Systems</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Procurement and Purchasing</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Climate Change Adaptation</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Using Resources</td>
<td>Energy and Carbon</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Water</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Materials</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Emissions, Pollution and</td>
<td>Discharges to Air, Land and Water</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Waste</td>
<td>Land</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Waste</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Ecology</td>
<td>Ecology</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>People and Place</td>
<td>Community Health, Well-being and</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Safety</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Heritage</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Stakeholder Participation</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Urban and Landscape Design</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Innovation</td>
<td>Innovation</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>
Benchmarking

Compliance

<table>
<thead>
<tr>
<th>Business as Usual</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement</td>
<td>No net impact</td>
<td>Restoration &amp; Enhancement</td>
<td></td>
</tr>
<tr>
<td>Identifying initiatives</td>
<td>Implementing Initiatives</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
IS Rating Levels

- 25-49 points
- 50-74 points
- 75-100 points

The total score is calculated with points from a total across 44 or 47 different topic areas “credits”
IS relative to asset lifecycle

- Development need
- Pre-Feasibility
- Feasibility
- Concept / tender design
- Detailed Design
- Construction
- Handover

Ability to influence procurement, materials and waste over the project cycle.
IS rating scheme update

VERSION 2.0
## Scheme intent and design principles

<table>
<thead>
<tr>
<th>Scheme Intent</th>
<th>Design Principles</th>
</tr>
</thead>
</table>
| “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.” | 1. Beyond compliance  
2. Does not reward minimum standards  
3. Measures outcomes first then processes and inputs  
4. Globally applicable with local adaptations  
5. Quantitative where possible  
6. Material to achieving intent  
7. Evidence-based  
8. Scalable  
9. Considers each phase in the infrastructure life cycle |
Aligning with global sustainability frameworks

- Processes will be reviewed to bring them in alignment with international standards such as ISEAL and ISO 9001
- Aligning to GRI Aspects, UNGC Principles, Sustainable Development Goals and assist in the implementation of PRI for infrastructure investment
## IS v2.0

<table>
<thead>
<tr>
<th>Governance</th>
<th>Economic</th>
<th>Environment</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context</td>
<td>Business Case</td>
<td>Energy &amp; Carbon</td>
<td>Stakeholder engagement</td>
</tr>
<tr>
<td>Leadership</td>
<td>Benefits</td>
<td>Natural Hazards</td>
<td>Community legacy</td>
</tr>
<tr>
<td>Sustainable</td>
<td>Realisation</td>
<td>Green Infrastructure</td>
<td>Heritage</td>
</tr>
<tr>
<td>Procurement</td>
<td></td>
<td>Pollution</td>
<td>Workforce</td>
</tr>
<tr>
<td>Resilience</td>
<td></td>
<td>Resource Recovery</td>
<td>Cultural Consideration</td>
</tr>
<tr>
<td>Innovation</td>
<td></td>
<td>Water</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Materials</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ecology</td>
<td></td>
</tr>
</tbody>
</table>

**Major updates**

**New categories**
New categories

Economic theme

• To reward decisions that consider the full triple bottom line
  – Valuing externalities
  – Risk and uncertainty
  – Equity
  – Financial sustainability
  – Transparency
  – Benefits realisation
New categories

Workforce sustainability
• Diversity and inclusion
• Employing minority groups
• Workplace culture
• Education and training
• Workforce planning
New categories

Resilience
• Working with 100 resilience cities to understand infrastructure’s role in city resilience

Green infrastructure
• Rewarding the consideration and incorporation of green infrastructure such as WSUD, green roofs and walls, water recycling, landscaping features etc
Industry traction of the IS rating scheme

IS TRACTION
Traction Australia & New Zealand

Registrations: 109
Projects / Assets: 62
Certifications: 36
Capital Value: $79.1 billion
Capital Value: $16.0 billion
## Registrations by asset type

<table>
<thead>
<tr>
<th>Complete</th>
<th>Active</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 ([$13.4 billion])</td>
<td>24 ([$30.8 billion])</td>
</tr>
<tr>
<td>ROAD</td>
<td></td>
</tr>
<tr>
<td>13 ([$8.9 billion])</td>
<td>26 ([$51.2 billion])</td>
</tr>
<tr>
<td>RAIL</td>
<td></td>
</tr>
<tr>
<td>5 ([$1.2 billion])</td>
<td>0 (-)</td>
</tr>
<tr>
<td>PORT</td>
<td></td>
</tr>
<tr>
<td>1 (-)</td>
<td>2 ($0.2 billion)</td>
</tr>
<tr>
<td>AIRPORT</td>
<td></td>
</tr>
<tr>
<td>7 ([$0.4 billion])</td>
<td>4 ($0.4 billion)</td>
</tr>
<tr>
<td>WATER</td>
<td></td>
</tr>
<tr>
<td>0 (-)</td>
<td>2 ($0.2 billion)</td>
</tr>
<tr>
<td>ENERGY</td>
<td></td>
</tr>
<tr>
<td>1 (-)</td>
<td>2 (-)</td>
</tr>
<tr>
<td>OPEN SPACE</td>
<td></td>
</tr>
<tr>
<td>2 ([$8.6 billion])</td>
<td>4 ($1.1 billion)</td>
</tr>
<tr>
<td>CONFIDENTIAL</td>
<td></td>
</tr>
</tbody>
</table>
IS rating

CASE STUDIES
Whitsundays STP Upgrades

Proserpine and Cannonvale sewage treatment plants in North Queensland were upgraded 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, noise and odour.
Asset Performance

Efficiency Gains

- >$1 million saved through implementation of sustainability initiatives
- 400% return on investment
- Total saved in construction = $1.1M
- Total annual operational savings = $182,000

Industry transformation

- World first use of innovative nitrogen effluent removal technology (Parallel Nitrification and De Nitrification)
- First certified IS rating
Sustainability Outcomes

• 305 MWh electricity saved over operational life – thus a 14% reduction equating to $75,000 saving/year
• Ecological value enhanced through >5,000 m² of regenerated native habitat and 1,000 m² of wetland
• Carbon saved over infrastructure lifecycle (tCO2e): 20,510
• Water saved over infrastructure lifecycle (ML): 2,966
• Materials lifecycle impact reduction (Ecopoints): 5,578
• Materials lifecycle impact reduction (tCO2e): 3,149
Gateway WA

Major upgrade of the road network surrounding Perth Airport, and the freight and industrial hubs of Kewdale and Forrestfield.

5 interchanges. 165 lane km. 12 bridges. 3 bath structures.
Asset Performance

Efficiency Gains
• $4 million invested in sustainability
• $8 million saved from sustainability investment
• 32,000m$^3$ diverted from landfill costing $1.3$ million and saving $6$ million

Risk Management
• Local Aboriginal committee engaged to come up with how the urban design could enhance the heritage for the area.

Industry transformation
• The largest infrastructure project ever undertaken by Main Roads Western Australia.
• LED street lights – first in WA
• Roe/Berkshire interchange design – first in Australia
Sustainability Outcomes

• Reduced usage high-energy virgin materials
• 10% reduction in asphalt
• Approximately $6 million and 2,300 tonnes of CO$_2$e saved.
• Preserved virgin resources and reduced landfill.
• Reduced import material by approximately 21%
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.
Asset Performance

Risk Management
• Identified key risk areas: Ecology, Community Participation, Waste

Governance
• Asset owner benchmarking current airport assets to establish objectives and targets for on-going maintenance and operations
• Informing the sustainability strategy and road map for new 10 year airport master plan

Industry transformation
• Sustainability strategy and road map for 10 year master plan
Webb Dock Automotive Terminal

Webb Dock Automotive Terminal is located in the Port of Melbourne and facilitates the Import, Export and storage of automotive vehicles, heavy machinery & other miscellaneous items. The facility will accommodate over 6000 vehicles in phase 1, rising to over 12000 for phase 2.
Asset Performance

Efficiency Gains

• Construction site office & amenities were powered using a Remote Area Power System [RAPS] for the construction phase of the project. The pioneering system utilises batteries, solar panels and a biodiesel generator coordinated by a central automated system. Generators were run ~8 hrs a day (BAU 24 hrs) reducing the project’s costs and greenhouse gas emission profile.

• LED used for majority of building & facility lighting saving over 40% in energy consumption and reducing maintenance costs.

Risk Management

• LED lighting improved picture quality in CCTV security system.

Governance

• Owner & contractor commitments regarding sustainability were built into the project contract and publically stated online

• Early engagement with suppliers and subcontractors.

Industry transformation

• Learnings and sustainability initiatives were shared within and outside of the project
Recognising business performance

ISUPPLY
Step 1: Join
Become an ISCA member

Step 2: Training
At least 1 employee is trained

Step 3: Submit
Submit a claim for a service or product
ISCA Supplier Directory

Directory includes:

- Supplier profile
- Products and services included in ISCA tools
- Associated sustainability benefits
- Links to:
  - Evidence
  - IS supplier contact
IS International rating tool v1.0 (Pilot)

IS INTERNATIONAL
The need for a global infrastructure sustainability rating scheme

Over the period leading to 2032, the world will require about $90 trillion in new infrastructure – most of it in developing and middle-income countries.

Provides the nexus between ‘infrastructure sustainability and ‘sustainable infrastructure’ and can be utilised by sovereigns, donors, multi-laterals, institutional investors, funding agencies and project delivery partners to measure, and achieve, long term improved asset performance across the quadruple bottom line.
Development Process

Jun-16
Initial Review

Jan-17
IS International Development

Jul-17
Peer Review and Stakeholder Review Workshops

Aug-17
Finalise IS International

Sep-17
Release for Piloting and Launch
**IS International Features**

**An adjustment** based on IS v1.2 Design and As Built

**Flexible**, using materiality principals, and can be applied to any region or Country, and can easily be adapted for the local context

Robust and maintains the IS rating scheme **core principles** (third party assured, beyond BAU, evidence based etc.)

Support **local capability in infrastructure sustainability** and provide the support/training to facilitate best for asset outcomes

Aligns with the **UN Sustainable Development Goals**

Easy to use and **cost effective** while still demonstrating leadership in infrastructure sustainability
SUMMARY & CLOSE
Sustainability is good business practice

• Get connected in the industry – Join ISUPPLY
  – Contact us info@isca.org.au
• Register for a rating
• Become and IS accredited professional
QUESTIONS?

Thank you