



Infrastructure Sustainability Rating Scheme – driving outcomes across the full life cycle

Dr Kerry Griffiths, NZAIA Conference 2022

An aerial photograph of a winding asphalt road that follows the curve of a rugged coastline. The road is dark grey with white dashed lines. To the left of the road is the dark, choppy sea. To the right is a steep, rocky hillside covered in patches of green vegetation and brown earth. The road curves from the top left towards the bottom right of the frame.

Workshop Aim

Communicate the practical implementation of the IS Rating Tool in planning, design and construction and operations.

Share real-life examples of how rating tool use has driven sustainability outcomes and share future tool developments.

Aspects to be discussed and explored:

- Assessment framework principles and indicators of performance
- Rating tool impacts and outcomes across infrastructure phases
- The impact of action (or inaction) in the planning phase
- The role of the IS Rating Scheme in driving industry change.



Who is aware of the
Infrastructure
Sustainability Council
or the IS Rating or...?



Our Purpose

Ensuring all infrastructure delivers cultural, social, environmental and economic benefits

Strategic Goals:

- Leadership | Kaitiakitanga
- Thriving Industry | Kotahitanga
- Market Transformation | Hurihanga
- Organisational Health | Manaakitanga



OUR STRATEGY

Embed sustainability into Australian and Aotearoa New Zealand infrastructure decision-making by:

Inspiring the infrastructure sector to be energised, skilled and connected

Building and maintaining tools that make it easy to compare and improve sustainability performance

Creating positive pressure for sustainable infrastructure to be 'the norm'

About the ISC

Our strategic goals



Leadership

We drive global best practice in infrastructure.



Thriving Industry

We enable the industry to connect and collaborate.



Market Transformation

We advocate for change that supports the industry to rapidly transition.



Organisational Health

We are a purpose-led, inclusive and high performing organisation.

Existing Members

More than 200 organisations committed to accelerating sustainability through collaboration and contribution

Contractors



Delivery Agencies



Government, Policy & Regulation



Consultants



Existing Members

Suppliers



Operators



NFP/Industry Association/SME



Infrastructure Sustainability

Drivers for action

Infrastructure Sustainability

Sustainability

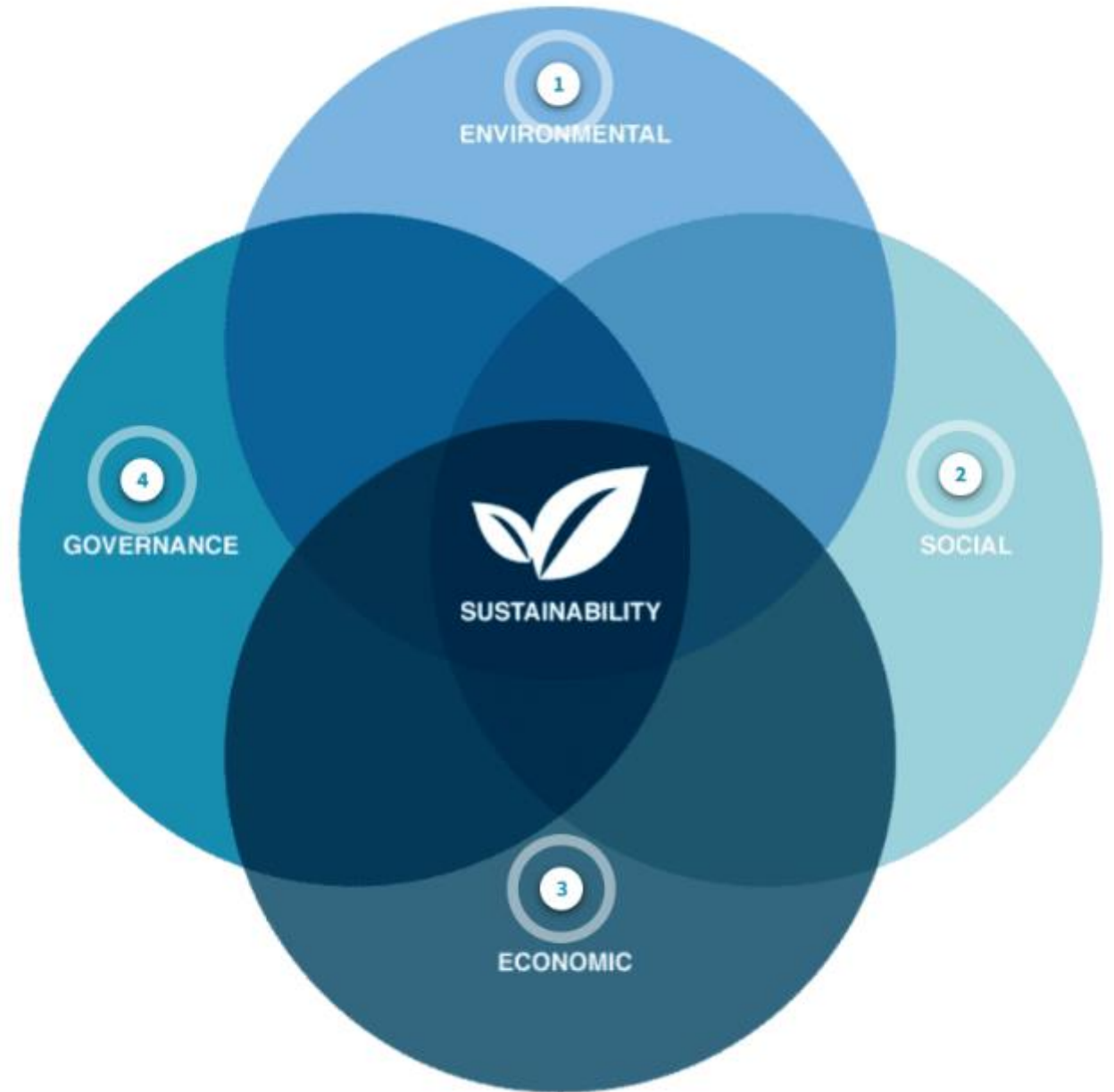
Based on the Brundtland definition as it is known:

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Also thought of as a quadruple bottom line.

Infrastructure Sustainability

Infrastructure that is designed, constructed and operated to optimise environmental, social and economic outcomes of the long term.



Sustainability Mindset



Drivers for Change

Discussion points

- Do you experience a stronger focus on asset creation or asset impact?
- What are the drivers for change in the context you work in?



A Broader Outcomes Focus

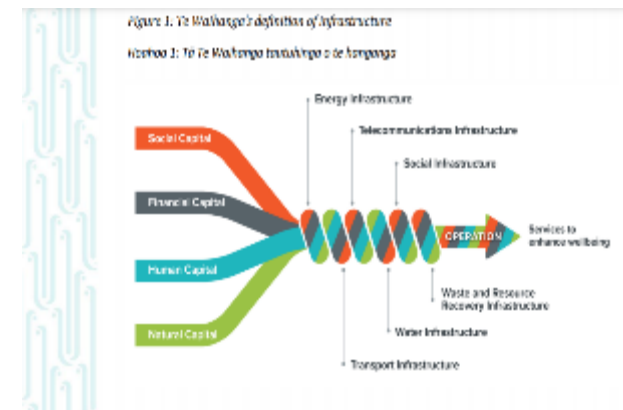
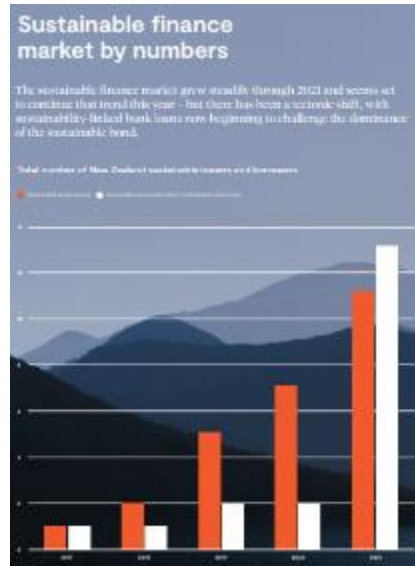
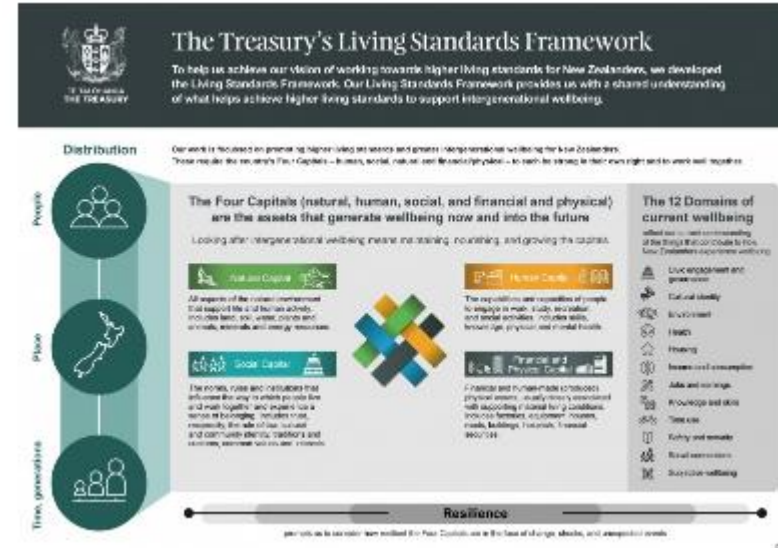
Sustainability Rating Scheme Policy

Waka Kotahi Requirements

- All capital projects over \$15mil capital value are required to consider the merits of ISCA, and become certified if suited
- All projects over \$100mil are required to complete ISCA certification unless:
 - Alignment with objectives and benefits demonstrates impracticality; and
 - The objectives of relevant environmental and sustainability policies can be agreed
- Projects part-funded by Waka Kotahi will have to assess the merits of ISCA and align with sustainability policies
- Any project not required to complete certification will be required to follow the principles of *Taitū Te Taiāo* and other relevant sustainability policies and demonstrate how these have been achieved.



THE GLOBAL GOALS For Sustainable Development



ANZ Traction and Mandating

The most progressive government agencies, state-owned entities and private asset owners mandate IS based on capex thresholds ranging from \$2m to \$100m.

Location	Agency	Mandating thresholds / requirements
NZ	Waka Kotahi New Zealand Transport Agency	All capital works projects >\$15m
	City Rail Link Ltd	ALL projects in program
NSW	<i>Dept of Planning Industry Environment</i>	ALL Critical state significant infrastructure
	Transport for NSW	ALL projects >\$50m, High risk projects <\$50m
	Sydney Metro	ALL project in program
	Queanbeyan Palerang Regional Council	ALL projects >\$2m
QLD	State Infrastructure Plan	ALL projects >\$100m
	Transport and Main Roads	ALL projects >\$100m
	<i>Dept State Development, Infrastructure Local Government and Planning</i>	Stage 3: Detailed Business Case & Infrastructure Strategy
WA	Main Roads WA	ALL projects >\$100m
	Office of Major Transport Infrastructure Delivery	Metronet program
	Infrastructure Western Australia	Infrastructure Strategy <i>all infrastructure over \$50m</i>
ACT	State policy	ALL project > 10m
SA	Dept of Infrastructure and Transport	ALL projects >\$100m
VIC	Major Roads Projects Victoria	ALL projects >\$100m
	Level Crossings Removal Authority	ALL projects in program
	Rail Projects Victoria	ALL projects in Melbourne Metro program
	North East Link Project	All projects in program
	City of Casey	Capital works projects
NT	Department of Infrastructure Planning and Logistics	Infrastructure Strategy
AU	Transurban	All capital works projects >\$100m

Assessment principles & performance indicators



The IS Rating Scheme

- Developed by industry for industry
- Since 2012
- 4 step Rating Process
- Whole of life approach
- All infrastructure types
- 3rd party verification
- Innovation
- Reputation

IS Rating Scheme - intent

“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.”

Rating Scheme Traction Across ANZ

330+

Registrations

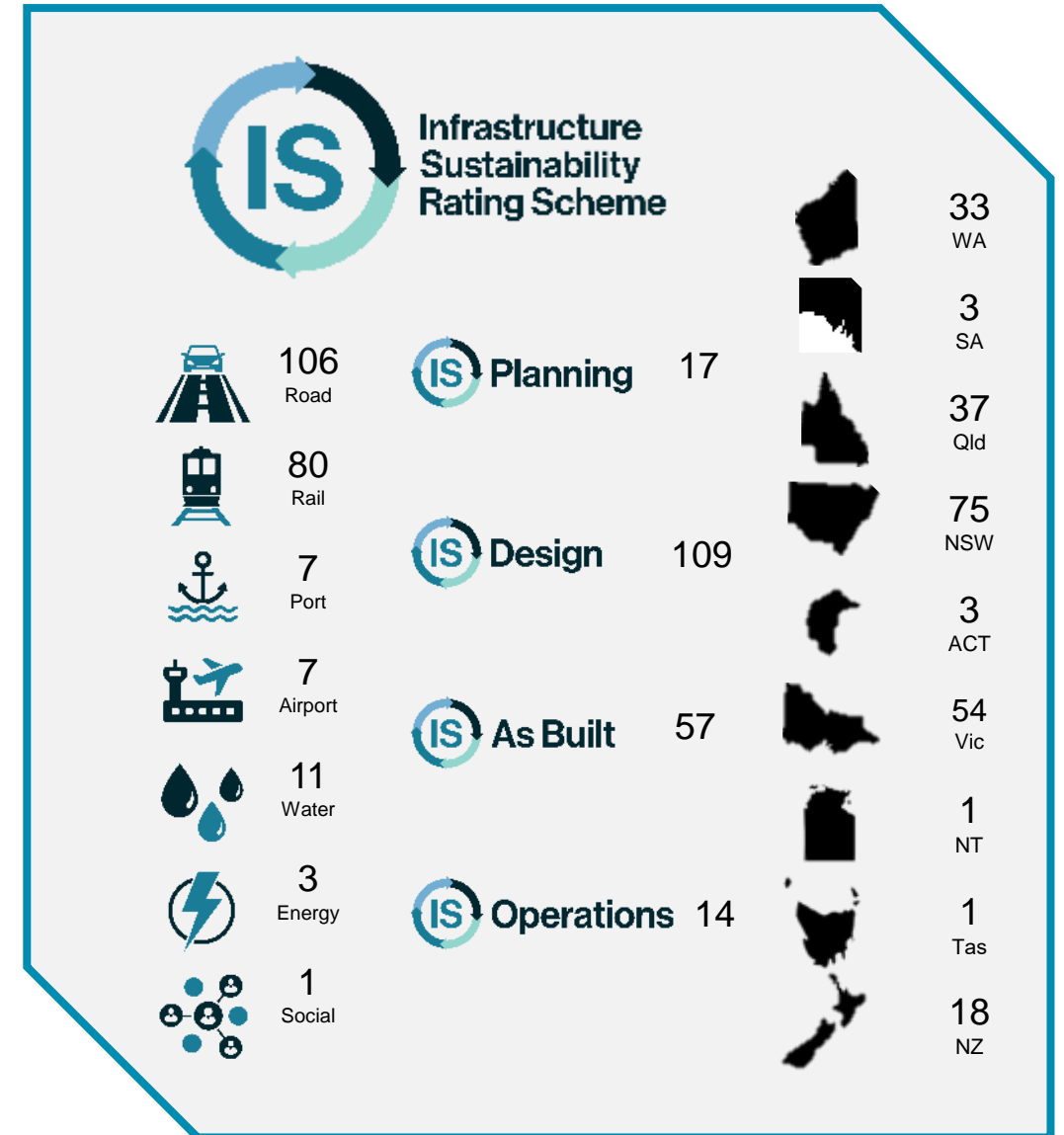
\$217B

Capex

NZ Ratings

\$7.9b

18 Ratings



Quadruple bottom line metrics

Themes



Categories



UN SDG's



Global Leadership

The most comprehensive and rigorous assessment process



[Link to paper](#)

Figure 7: Assessment Verification Requirements and Result Aggregation

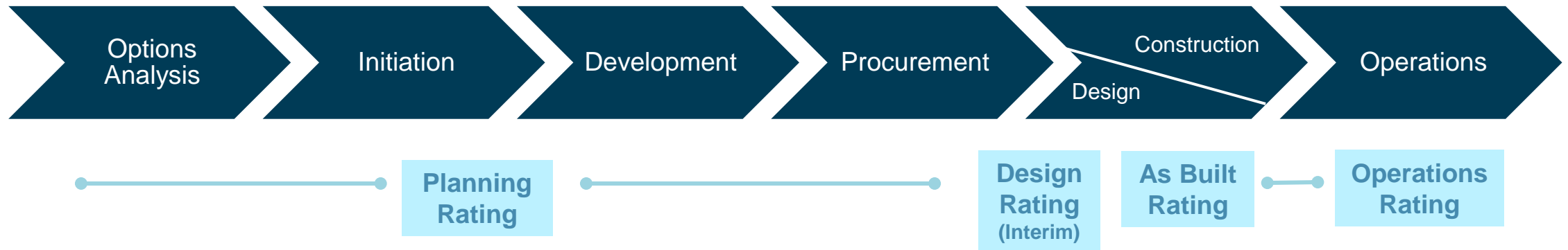


"the most comprehensive and rigorous assessment process"

"public procurement practices are a key success factor"
highlighting the global leadership across Australia and Aotearoa New Zealand

The IS Rating Scheme

- Assess the **sustainability performance** of infrastructure
- Whole of life consideration



4-Step Rating Process



Certification

Each infrastructure asset is awarded with a certification according to points achieved - as per the bands below.

- Maximum total number of 110 points
- Evidence is required for each credit criterion
- Independent third-party assurance
- Total points achieved determine the final award category



Performance Benchmarks

Within each category, IS credits reward projects that verifiably perform beyond business as usual

Pla-2 Urban and Landscape Design

Intent

To create infrastructure that has been influenced by the local context, fits its setting, and meets the needs of the people that will use it, while preserving and enhancing scenic, aesthetic, cultural, community and environmental resources and values.

Criteria

Table G1 Pla-2 Design criteria summary

Level 1	Level 2	Level 3
DL1.1 An urban and landscape design plan has been developed and design options implemented. AND DL1.2 The maintenance arrangements for the project's urban and landscape design components have been reviewed.	The requirements for Level 1 have been achieved. AND DL2.1 An urban and landscape design statement has been prepared. AND DL2.2 The urban and landscape design plan and statement have been independently reviewed at key stages throughout the design.	The requirements for Level 2 have been achieved. AND DL3.1 Net improvement in two identified urban and landscape outcome areas.

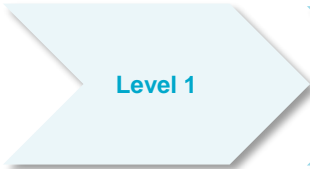
EXAMPLE

Compliance



Business
as Usual

Beyond Compliance



Measure &
Improve



No recurring / net
impact



Restoration &
Enhancement

Credit Focus: Leadership & Management*

Intent: Create a sustainability culture and governance throughout the organisation and thus a holistic approach to sustainability.

Lea-1 Integrating Sustainability	<ul style="list-style-type: none">• To embed the project's sustainability commitment, objectives and targets into governance and continuous improvement processes,• and to publicly commit to and report on progress.
Lea-2 Risks and Opportunities	<ul style="list-style-type: none">• To identify, assess and manage key sustainability risks and opportunities relevant to the project context and meaningful to affected stakeholders.
Lea-3 Knowledge Sharing	<ul style="list-style-type: none">• New or updated knowledge on issues and outcomes important to infrastructure sustainability is shared between projects and more widely within industry

Integrating Sustainability (Lea-1)

Intent: To embed the project's sustainability commitment, objectives and targets into governance and continuous improvement processes, and to publicly commit to and report on progress

Level 1	Level 2	Level 3
DL1.1 Sustainability objectives, targets, responsibilities and a reporting framework have been developed (or reviewed and updated).	The requirements for Level 1 have been achieved.	The requirements for Level 2 have been achieved.
AND	AND	AND
DL1.2 A sustainability management plan has been developed for design and construction.	DL2.1 Sustainability objectives and targets have been reviewed with key external stakeholders and include their input.	DL3.1 Public reporting of sustainability performance includes contribution to the UN SDGs.
	AND	AND
	DL2.2 Sustainability targets are publicly stated and performance against these targets is publicly reported.	DL3.2 Sustainability performance reporting has been independently reviewed by a suitably qualified professional.

Energy efficiency & carbon reduction (Ene-1)

Intent: To reduce energy use and carbon emissions across the infrastructure lifecycle and drive towards net zero carbon

Criteria

Table En1 **Ene-1** Design criteria summary

Level 0 – 3 on a sliding scale

DL1.1 Modelling of energy use and carbon emissions for capital and operational carbon has been completed.

AND

DL1.2 Energy and carbon emissions reduction opportunities have been investigated across the infrastructure life cycle and included in design and construction planning.

AND

DL1.3 Modelling demonstrates a reduction in energy use and carbon emissions for capital and operational carbon compared to the Base Case. For reductions from >0% up to 30%, fractions of levels may be achieved on a sliding scale.

Table En2 **Ene-1** As Built criteria summary

Level 0 – 3 on a sliding scale

ABL1.1 Energy and carbon emissions reduction opportunities identified in the construction phase have been assessed and feasible options identified.

AND

ABL1.2 Monitoring of energy use and carbon emissions has been undertaken during the construction period and the energy and carbon model has been updated.

AND

ABL1.3 Monitoring and modelling have demonstrated a reduction in carbon emissions for capital and operational carbon compared to the Base Case. For reductions >0% up to 30%, fractions of levels may be achieved on a sliding scale.

AND

ABL1.4 Handover documentation related to operational energy and carbon reductions have been provided to the operator.

Ecology

Intent: To identify, protect and enhance ecological value

Table En43 **Eco-1** Design criteria summary

Level 1	Level 2	Level 3
<p>DL1.1 The ecological impacts and opportunities of the infrastructure project have been assessed and quantified.</p> <p>AND</p> <p>DL1.2 Measures to avoid, minimise and remedy impacts on ecological features and values have been identified and incorporated into design.</p> <p>AND</p> <p>DL1.3 Management plans have been prepared to ensure the ecological outcomes of the infrastructure project are achieved.</p> <p>AND</p> <p>DL1.4 The ecological values of the site (post-development) are modelled and result in no quantifiable loss when compared to its pre-development state (like for like land-based offsets allowed).</p>	<p>The requirements for Level 1 have been achieved.</p> <p>AND</p> <p>DL2.1 The ecological values of the site (post-development) are modelled and result in a quantifiable net ecological gain when compared to its pre-development state (like for like land-based offsets allowed).</p>	<p>The requirements for Level 1 have been achieved.</p> <p>AND</p> <p>DL3.1 The ecological values of the site (post-development) are modelled and result in a quantifiable net ecological gain when compared to its pre-development state (like for like land-based offsets allowed; 50% project-led restoration required).</p>

Stakeholder Engagement Strategy (Sta-1)

Intent: To design and implement a stakeholder engagement strategy which recognises key stakeholder and community values, interests and concerns, and promotes inclusive, participatory approaches

Table S1 Sta-1 Design criteria summary

Level 1	Level 2	Level 3
DL1.1 Stakeholder engagement strategy has been developed (or reviewed and updated).	The requirements for Level 1 have been achieved.	The requirements for Level 2 have been achieved.
AND	AND	AND
DL1.2 Strategy is informed by local context and stakeholder characteristics.	DL2.1 A plan for Indigenous People of the Land participation has been developed and implemented with them.	DL3.1 The draft strategy was reviewed with key external stakeholders and their input reflected in the final strategy.
AND	AND	AND
DL1.3 Stakeholder engagement strategy has been integrated into project governance and been implemented.	DL2.2 Stakeholder engagement progress is reviewed and used to update the strategy.	DL3.2 Stakeholder engagement activities, implementation schedule, and feedback and complaints processes have been made public.

Materiality Assessment

Materiality assessment ensures the most material / important credits receive the highest weighting in the project assessment.

- **Tailors** the tool to the project
- Identify project specific **risks** and **opportunities**
- Reflects stakeholders' priority topics
- Allow to use IS ratings across a variety of assets types

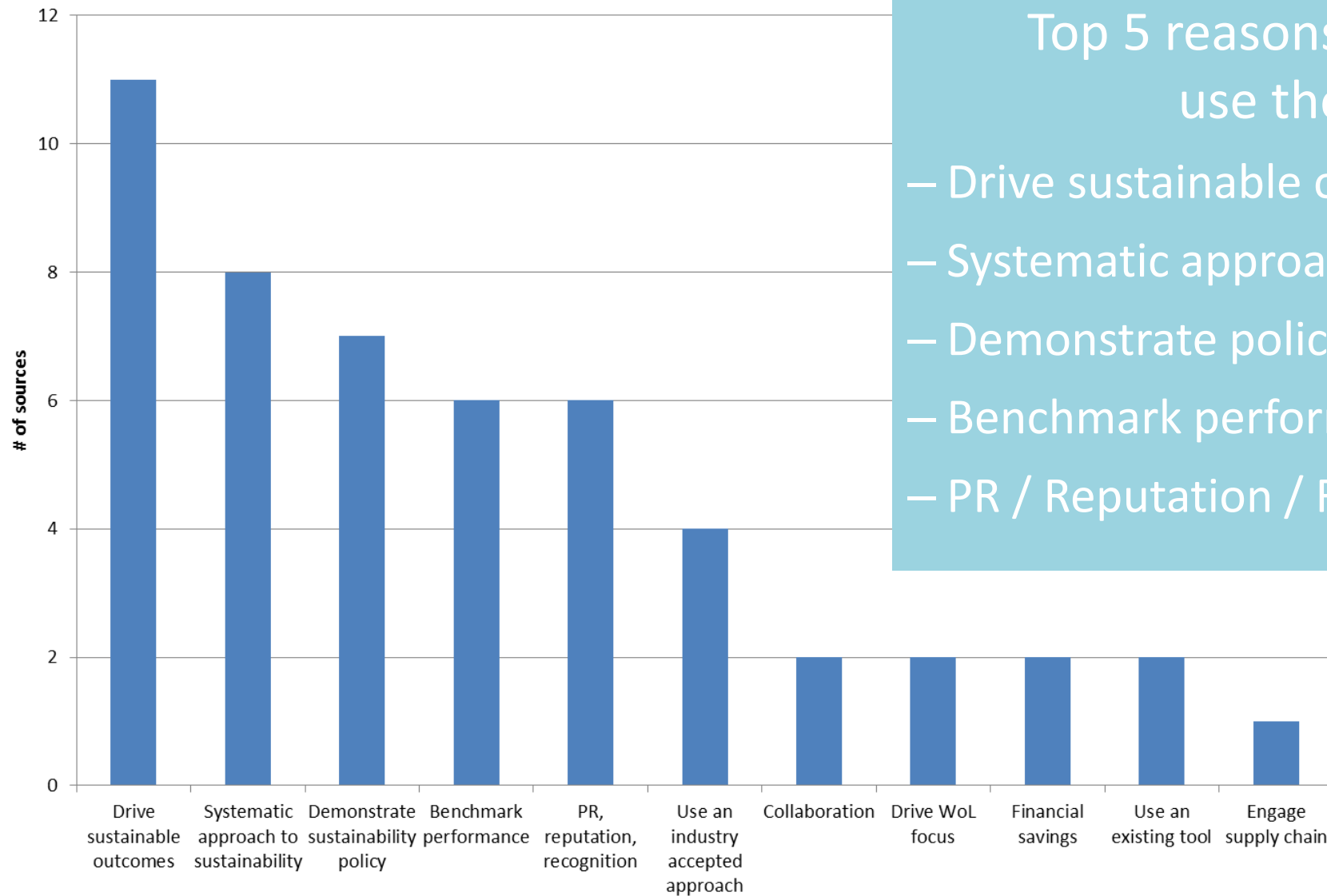
Category	Weighting		
	Default	Final	Change
Pla	4.2	5	+ 0.8
Lea	8.1	7.0	- 1.1
Spr	7.2	5	-2.2
Res	8.8	6.8	-2
Inn	10	10	0
Ecn	4.5	6	+1.5
Ene	10.1	13.4	+3.3
Env	8.5	8.2	- 0.3
Rso	14.8	12.5	- 2.3
Wat	8.1	11	+ 2.9
Eco	6.3	10.1	+ 3.7
Sta	6.3	5	-1.3
Leg	2	2	0
Her	2.3	2.4	+ 0.1
Wfs	8.3	5.2	- 3.1



Why might
organisations or
projects get an IS
rating?



Objectives for Tool Use (infrastructure owners)

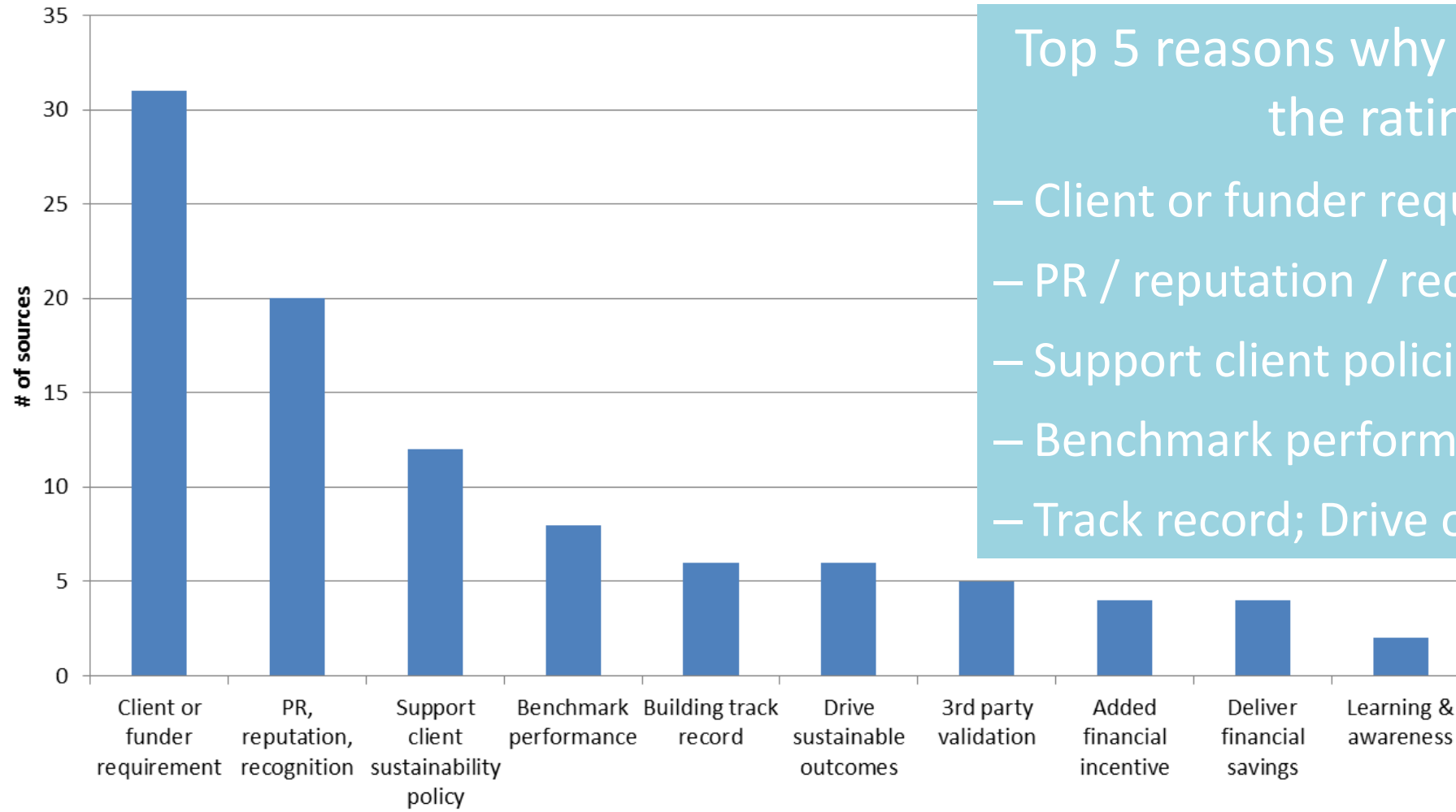


Top 5 reasons why organisations use the rating tools

- Drive sustainable outcomes
- Systematic approach
- Demonstrate policy
- Benchmark performance
- PR / Reputation / Recognition

Griffiths, K. 2019. "Sustainability and Infrastructure – The Role of Rating Tools in Driving Sustainable Outcomes."

Drivers for Tool Use (experienced users)



Top 5 reasons why project teams use the rating tools

- Client or funder requirement
- PR / reputation / recognition
- Support client policies
- Benchmark performance
- Track record; Drive outcomes

Griffiths, K. 2019. "Sustainability and Infrastructure – The Role of Rating Tools in Driving Sustainable Outcomes."

Summary

- ✓ All types of infrastructure assets
- ✓ Whole asset life cycle
- ✓ Third party assured infrastructure specific rating
- ✓ Standardised benchmarks and measurement – for all jurisdictions
- ✓ Drives sustainability into decision making – quadruple bottom line
- ✓ Data for ESG performance and reporting (Environment, social, economic, economic)
- ✓ Builds industry capability to drive and deliver measurable sustainability outcomes
- ✓ Supports continuous improvement and broader impact (moving the goal posts industry-wide and across the supply chain)



Westpac/ NZ Government Innovation Fund

The Westpac/NZ Government Fund supports the accelerated digital development of IS Essentials (projects under \$100m CapEx) and the tailoring of the tool to the NZ market



Westpac NZ Government
**INNOVATION
FUND**

Rating tools impacts & outcomes

Scott Point - Hobsonville



City Rail Link: Leading performance

Sustainability is one of CRL's five overarching objectives.

It is an exemplar project with all three packages driving sustainability outcomes using the IS Rating Scheme.

The process the CRL has undertaken to partner with Mana Whenua to embed cultural values into an industry recognised sustainability framework has been acknowledged as a 'world first' innovation.



The sustainability performance data and embedded practices have underpinned several other notable recognitions including:

2018 Deloitte Energy Excellence Award for Large Energy User Initiative of the Year

2018, Sustainable Business Network Supreme Award - the NZI Transforming New Zealand Award.

2022, Building Nations Decarbonisation Award

CRL has elevated the status of sustainability. I consider it wise that CRL chose to seek Maori expertise to help guide and strengthen them in their understanding and knowledge about kaitiakitanga

– Hero Potini (representing **Ngāti Tamaoho**).

I appreciate the discussions, the sharing of views and the awesome learnings that we receive, sustainability being one such topic

– Zaelene Butler (representing **Ngāi Tai ki Tāmaki**)

I'm excited about sustainability and social outcomes and look forward to CRL having a better understating of tikanga

– Jay Te Whare (representing **Ngāti Paoa**)

CRL: Progressive Employment Program

CRL's initial Progressive Employment Program¹ provided six rangatahi (youth) the opportunity to work on the project while being provided mentoring, pastoral care and training.

CRL's initial programme was resoundingly successful, with five of the six interns offered employment².

The scheme has continued to be implemented within the Link Alliance main works.



¹ <https://www.cityraillink.co.nz/news-january-2020/latest-sustainability-report-out-now>

² <https://www.isca.org.au/News-and-Media/What-Does-Embracing-Diversity-in-Aotearoa-Look-Lik?viewmode=0>



Environment in numbers 2021*



2,212

ground and building
movement monitoring
points installed



423

environmental site
inspections completed



19

noise and vibration
monitors installed

7

air quality
monitors installed



>25

stormwater catch
pits protected

5

water treatment
plants installed



66

environmental
management
plans approved



121

piezometers installed



Sustainability in numbers 2021*

10,112
tonnes of waste



diverted from landfill¹

9 rangatahi



graduated the Progressive
Employment Programme



1,854m³

of water captured and
reused on site

4,093

truckloads
of concrete



effectively removed from the
project's carbon footprint by
replacing cement with fly-ash

9 schools



toured CRL as part of the
Link Alliance Education
Engagement Programme



2,451
tonnes

of waste reused

11,886

page views



of the Link Alliance Future
Journeys virtual field trip

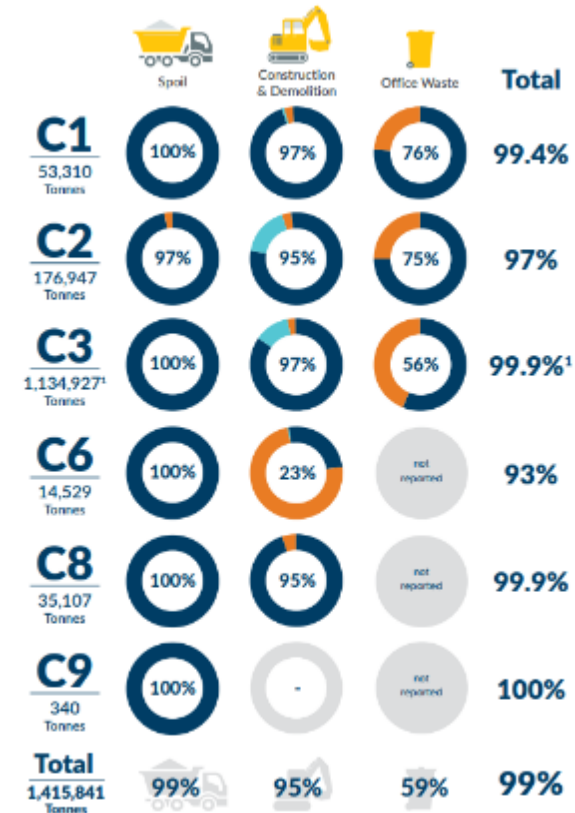
5% of Link
Alliance spend



to Māori & Pasifika-owned
sub-contractors & suppliers

Waste diversion figures across CRL contracts

Figures shown are from the start of construction to the end of 2021



¹Excludes contaminated materials

IMPACT

Our 2022 Impact Report highlights the value creation of IS ratings



Lifecycle material emissions avoided 16%	Operating energy emissions avoided 37%	Lifecycle energy emissions avoided 27%
Projects that used materials with sustainability credentials 70%	Resources diverted from landfill 6.4M tonnes	Waste diverted from landfill 96%
Reduction in asphalt from base case 8%	Reduction in concrete from base case 140,272 tn	Operating water use avoided 25%
Innovation: 41 Regional First 30 National First 4 World First	Certifications: 1 Leading 27 Design 19 As Built	Social Credits: 88% certified projects completed stakeholder engagement strategies 80% certified projects undertook heritage assessment and management



Quadruple bottom line metrics

Themes



Categories



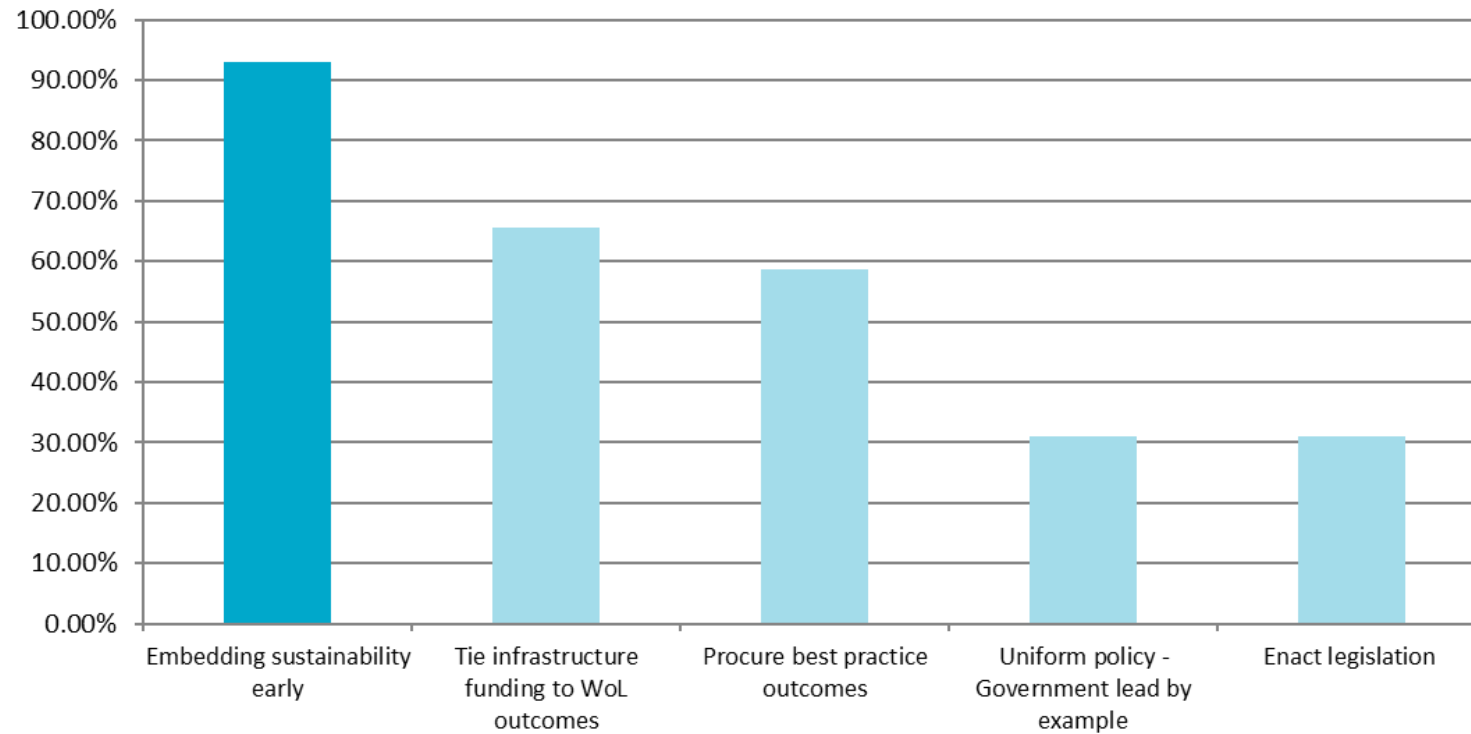
UN SDG's



Impact of action in the planning phase

ISC Member survey

Opportunities for ensuring all infrastructure delivers cultural, social, environmental and economic benefits



Respondents reinforced the need to **embed sustainability from the earliest possible stage** as the most effective solution to avoid diminishing returns and maximise benefits realisation

Value of embedding sustainability early



Using IS Planning



Brings **SDG awareness**



Provides a road map – A ‘**how to**’
guide to embedding
sustainability



Campaigns for **proponent**
ownership in directing
outcomes

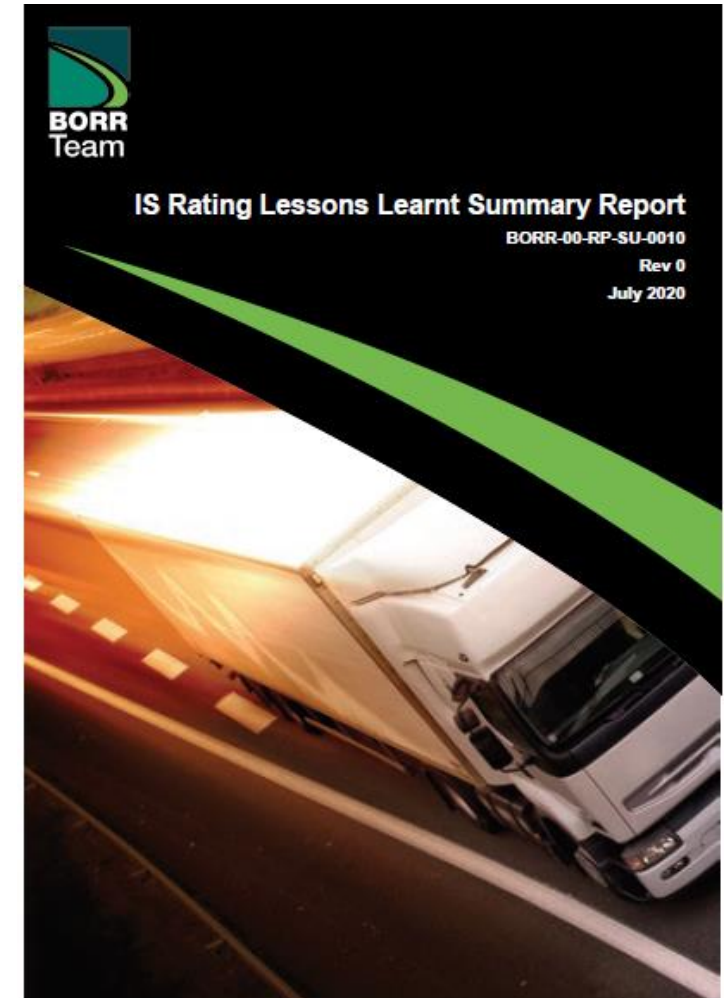


Awareness of **importance**
of sustainability action as
the **scope is being**
developed

Bunbury Outer Ring Road

BORR is a 27 kilometre section of highway that will connect Forrest Highway to Bussell Highway in Western Australia's southwest region

- First project registered for an IS v2.0 Planning rating.
- The Project Team targeted a Bronze rating but delivered a Silver Planning rating
- The team went beyond a business-as-usual approach to implement sustainable initiatives.

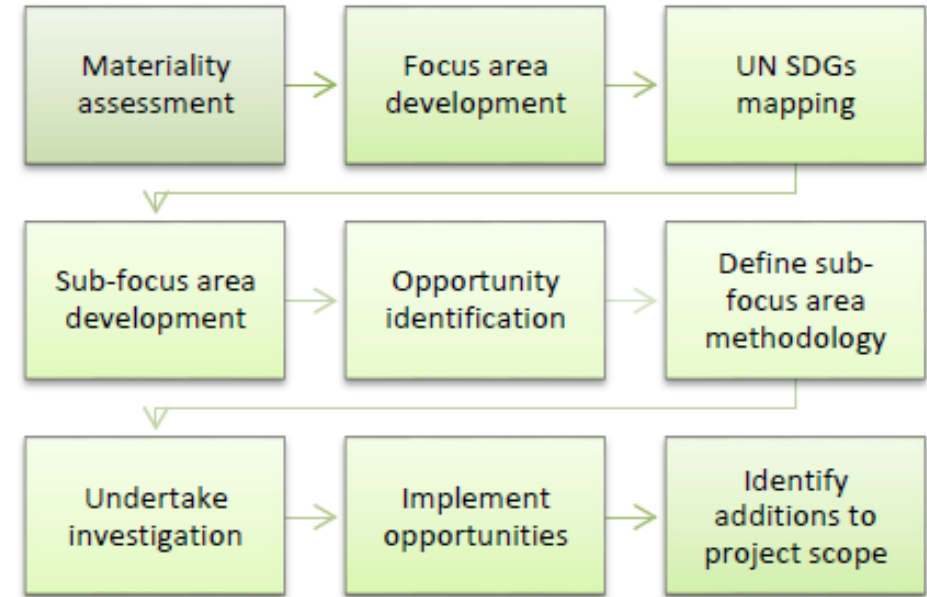


BORR – Planning Rating

Governance Theme: Leadership Credits (Lea-1, Lea-2)

Lesson 1: SMART targets were difficult to provide for the Planning phase (i.e. setting numerical targets).

Lesson 2: Opportunity identification on BORR was based on the sustainability focus areas which provided direction and ensured no significant opportunity areas were missed.



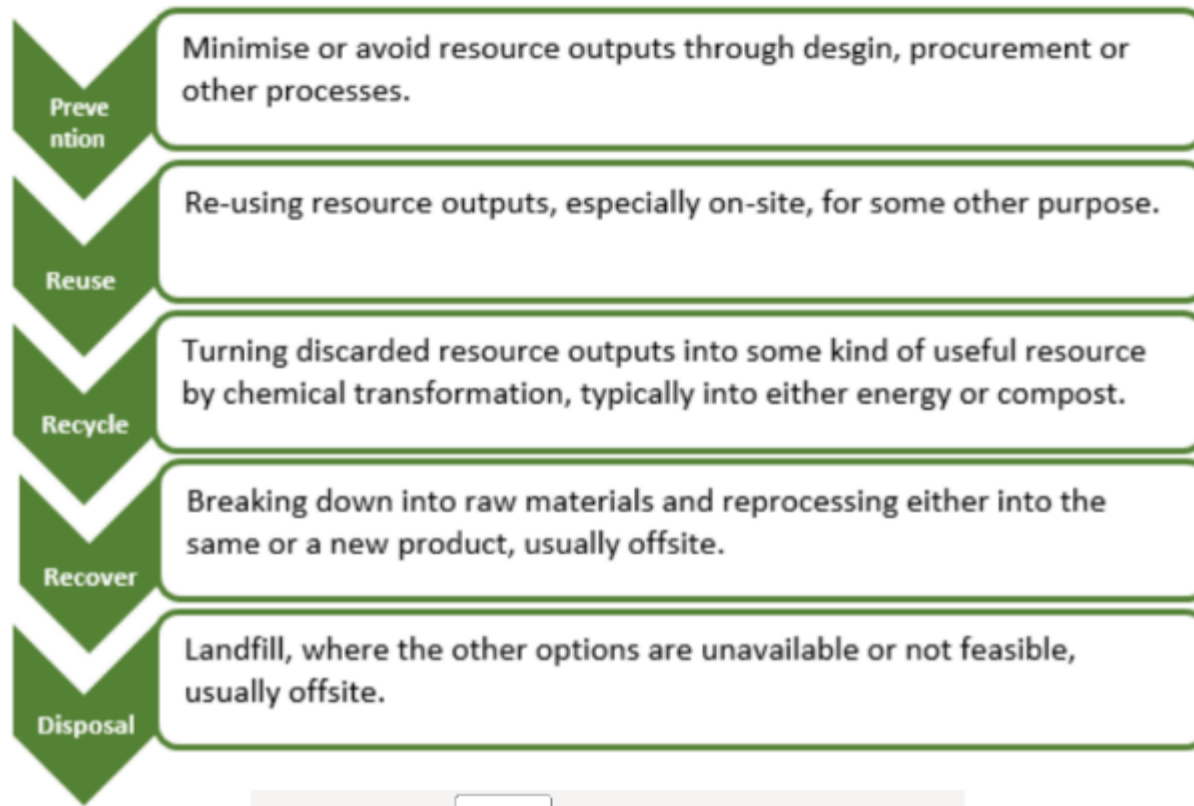
Summary of sustainability management process

As a result of thorough investigation, leadership and collaboration, >60 sustainability actions were recommended and included in the Project scope (for the D&AB tender).

Environment Theme: Resource Efficiency (Rso-1, Rso-6)

Lesson 1: *The resource efficiency workshop and development of a Resource Efficiency Strategy proved useful in identifying project specific targets and opportunities for the design, construction and operation phases.*

Lesson 2: *Assessing materials against embodied greenhouse gas emissions, rather than just volume or cost, challenged designers to consider opportunities to reduce net impacts.*



Environment Theme: Energy & Carbon (Ene-1 & Ene-2)

Lesson 1: *The highest emission contributor was from vehicles using the asset during operations. Limited actions from an infrastructure design perspective to achieve emission reductions from the vehicles using the built asset.*

Lesson 2: *Project street lighting was estimated to contribute 50% of operation and maintenance emissions (when excluding vehicle use). By investigating opportunities to reduce emissions in the Planning phase, significant benefits are anticipated to be realised, including:*

- Saving \$3.5M across the 7 interchanges on the BORR project for initial construction
- Saving \$35,000/annum operational costs
- Saving 160 tCO₂e- per year
- Reduced light pollution for residents in close proximity to the road
- Greater emphasis on street lighting at the northern and southern interchanges.



How the Planning Rating influenced project outcomes



- ✓ Awareness of the complexity of 'sustainability'
- ✓ Decision making framework – quadruple bottom line
- ✓ Encouraged sufficient data and information to inform opportunities and targets
- ✓ SMART targets developed for application during design, construction and operation
- ✓ With sufficient data opportunities were readily moved across to part of the project scope
- ✓ Team began to incorporate sustainability within the project scope, beyond relying significantly on the implementation of the IS D/AB

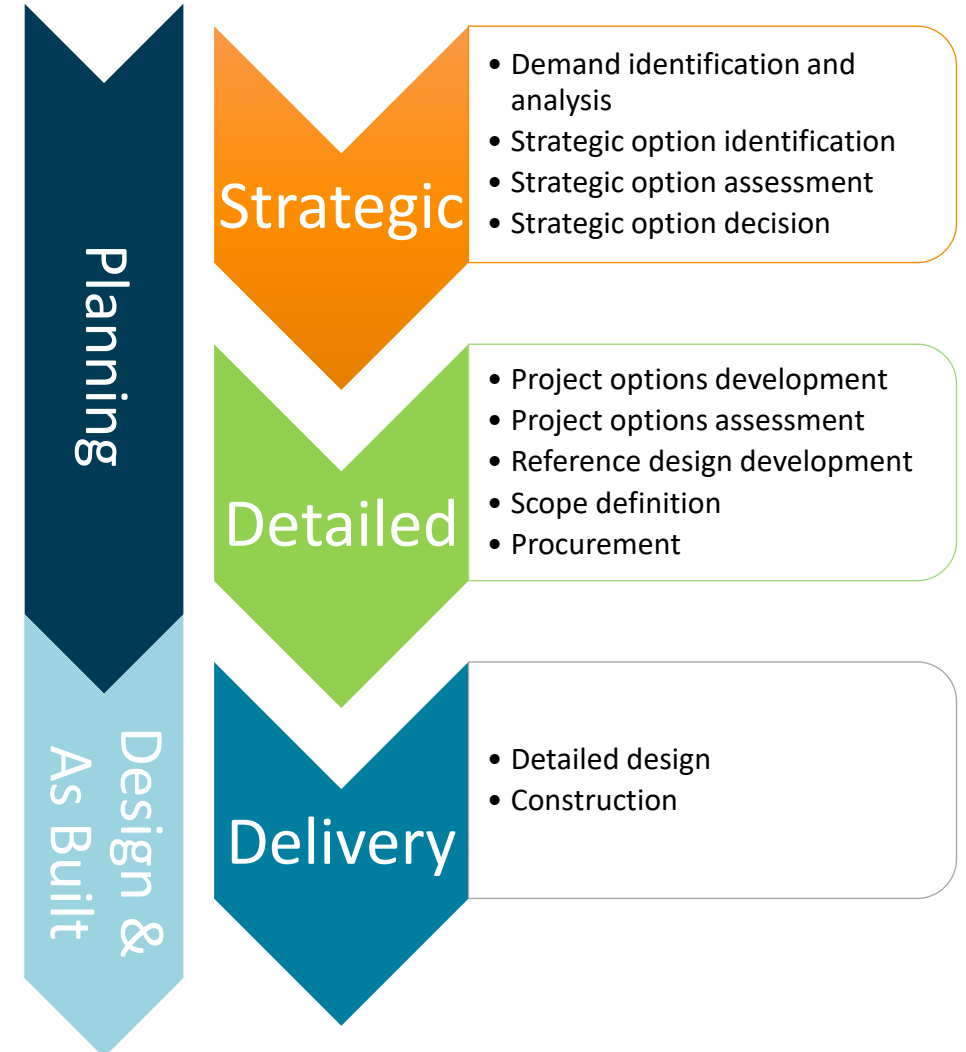
New Planning Rating Pathway – in development

Seeks to:

- Delineate between Strategic and Detailed phases
- Provide appropriate guidance for the two phases
- Provide a level of scalability depending on project size
- Maintain one Technical Manual

This approach:

- Allows users to define their own pathway in applying IS based on project timing and size
- While still providing the level of rigor to enable consistent verification and benchmarking

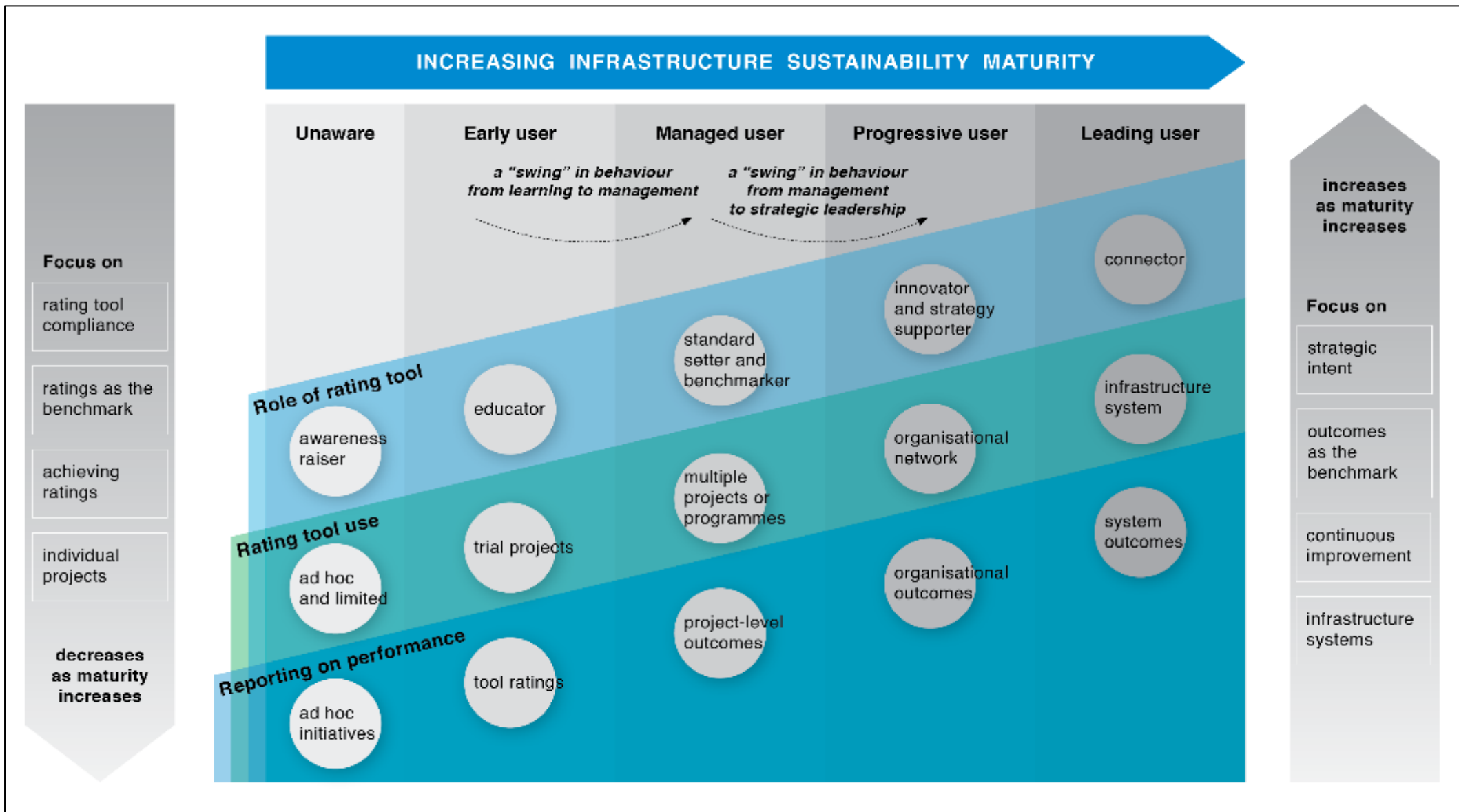


Driving industry change



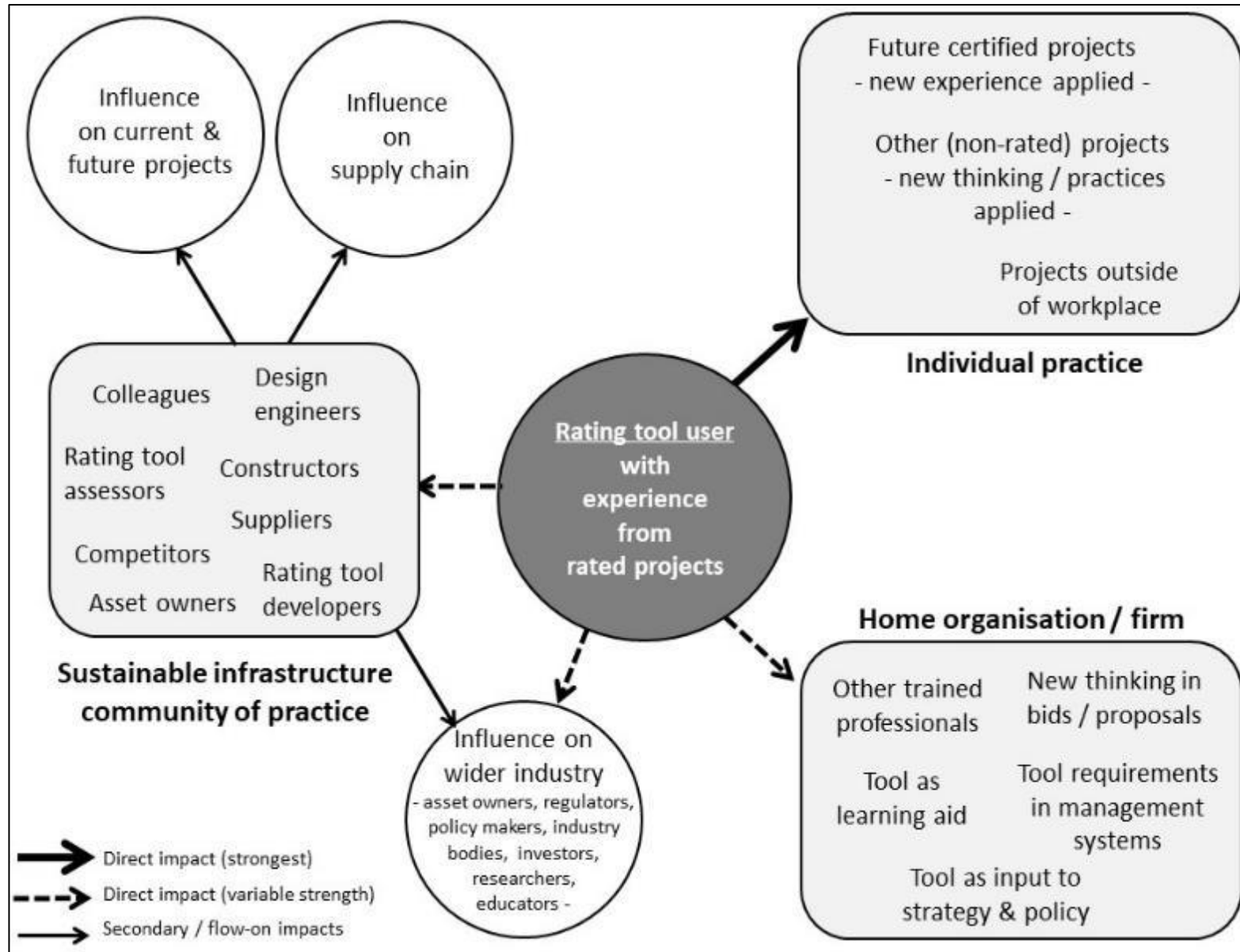
What is the potential impact of IS Ratings on the infrastructure industry more broadly?





Griffiths, K. 2019. "Sustainability and Infrastructure – The Role of Rating Tools in Driving Sustainable Outcomes."

Flow-on effects from rating tool use



Griffiths, K. 2019. "Sustainability and Infrastructure – The Role of Rating Tools in Driving Sustainable Outcomes."

ISC Capability building

The Infrastructure Sustainability Council delivers a diverse range of public and in house capability building offerings.

Whether you are exploring the **foundations of infrastructure sustainability**, or an experienced professional wanting to **upskill**, regularly scheduled **public offerings** provides individuals an opportunity to **network with other industry professionals** and make a positive contribution to advancing sustainability outcomes in infrastructure.

Organisations can strengthen their position in the market with **executives inspired to navigate through change** and a team empowered by **industry recognised accreditations**, professional development and leadership workshops.



Summary & Close

Benefits: Direct and Indirect

Direct Benefits

- Increased use of recycled materials and renewable resources
- **Lower greenhouse gas emissions**
- Reduced waste
- **Enhanced heritage and ecological outcomes**
- Reduced negative impacts on land, air, water, communities
- **More informed and involved stakeholders and community**

Indirect Benefits

- **Shift in industry understanding**
- New policies and practices supporting sustainability outcomes
- **Flow-on effects through supply chain**
- More resilient infrastructure
- Better relationships with client
- **Breaking down silos**



Engaging with the ISC



- Join the IS community
- Become an organisational member
- Undertake training
 - Accredited professional (ISAP)
 - Other
- Attend the next IS Connect conference – May 2023 in Tāmaki Makaurau
- Find out more: <https://www.iscouncil.org/>





Kia ora | Thank you

www.iscouncil.org

Kerry.griffiths@iscouncil.org

