

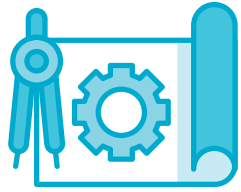


ACCELERATING SUSTAINABILITY IN  
INFRASTRUCTURE THROUGH COLLABORATION

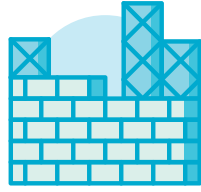
# Impacts Report

2019

# Our Projects All certified projects to December 2018



20 Certified Design Projects





23 Certified As Built Projects



93 Highest score



\$27.9Bn  
Total Rated Capex

STATE	NUMBER OF PROJECTS	RATED CAPEX / RESIDENT (A\$)*	COMMENDED	EXCELLENT	LEADING	HIGHEST SCORE
NSW	12	\$1,795	4	2	6 	92
VIC	11	\$667	1	6	4	86
WA	8	\$1,781	3	4	1	93 
QLD	5	\$450		5		72.4
NZ	4	\$107		2	2	80.7
ACT	2	\$2,163	1	1		73.7
SA	1	\$515			1	76

# Innovations\*\* Certified As Built and Operations projects

23 As Built | 4 Operations

Total number of innovations recorded in each territory



5 World first



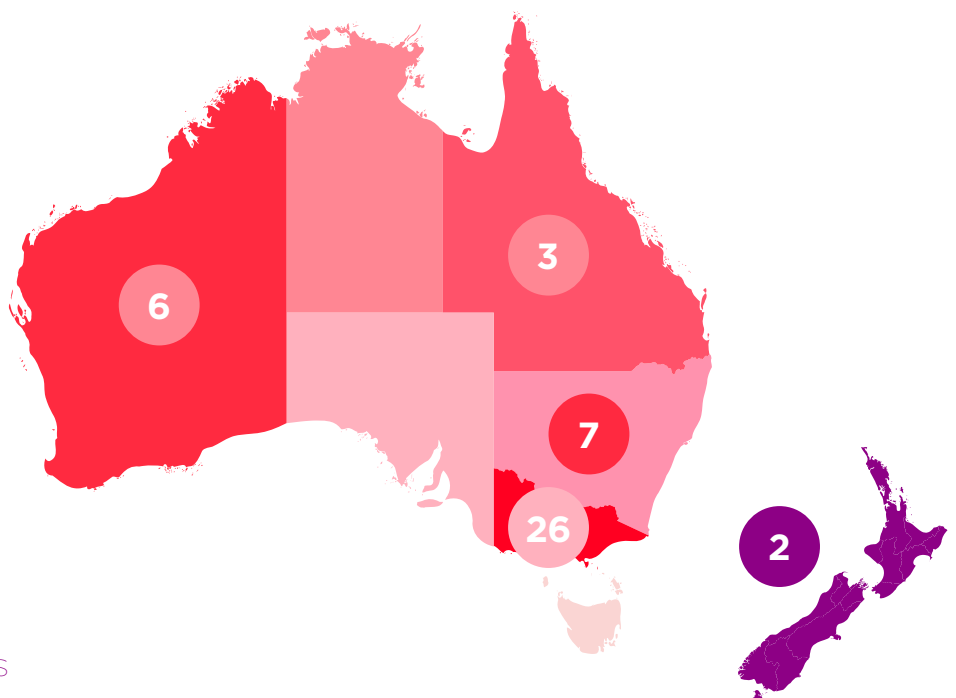
23 National first



16 State first



44 Total innovations



\* Australia population figures from Australian Bureau of Statistics (ABS) - at end of September 2018

\* NZ population figure - from Stats NZ, end of September 2018 (estimated)

\*\* As verified through the IS Rating process innovation credit





# Sustainable Development Goals

Infrastructure Sustainability Rating Scheme Version 2.0 (ISv2.0) integrates with 15 of the 17 SDGs

Governance	Economic	Environmental	Social
<b>3</b> GOOD HEALTH AND WELL-BEING 	<b>3</b> GOOD HEALTH AND WELL-BEING 	<b>3</b> GOOD HEALTH AND WELL-BEING 	<b>3</b> GOOD HEALTH AND WELL-BEING 
<b>4</b> QUALITY EDUCATION 	<b>4</b> QUALITY EDUCATION 	<b>4</b> QUALITY EDUCATION 	<b>4</b> QUALITY EDUCATION 
<b>5</b> GENDER EQUALITY 	<b>5</b> GENDER EQUALITY 	<b>5</b> GENDER EQUALITY 	<b>5</b> GENDER EQUALITY 
<b>6</b> CLEAN WATER AND SANITATION 	<b>6</b> CLEAN WATER AND SANITATION 	<b>6</b> CLEAN WATER AND SANITATION 	<b>6</b> CLEAN WATER AND SANITATION 
<b>7</b> AFFORDABLE AND CLEAN ENERGY 	<b>7</b> AFFORDABLE AND CLEAN ENERGY 	<b>7</b> AFFORDABLE AND CLEAN ENERGY 	<b>7</b> AFFORDABLE AND CLEAN ENERGY 
<b>8</b> DECENT WORK AND ECONOMIC GROWTH 	<b>8</b> DECENT WORK AND ECONOMIC GROWTH 	<b>8</b> DECENT WORK AND ECONOMIC GROWTH 	<b>8</b> DECENT WORK AND ECONOMIC GROWTH 
<b>9</b> INDUSTRY, INNOVATION AND INFRASTRUCTURE 	<b>9</b> INDUSTRY, INNOVATION AND INFRASTRUCTURE 	<b>9</b> INDUSTRY, INNOVATION AND INFRASTRUCTURE 	<b>9</b> INDUSTRY, INNOVATION AND INFRASTRUCTURE 
<b>10</b> REDUCED INEQUALITIES 	<b>10</b> REDUCED INEQUALITIES 	<b>10</b> REDUCED INEQUALITIES 	<b>10</b> REDUCED INEQUALITIES 
<b>11</b> SUSTAINABLE CITIES AND COMMUNITIES 	<b>11</b> SUSTAINABLE CITIES AND COMMUNITIES 	<b>11</b> SUSTAINABLE CITIES AND COMMUNITIES 	<b>11</b> SUSTAINABLE CITIES AND COMMUNITIES 
<b>12</b> RESPONSIBLE CONSUMPTION AND PRODUCTION 	<b>12</b> RESPONSIBLE CONSUMPTION AND PRODUCTION 	<b>12</b> RESPONSIBLE CONSUMPTION AND PRODUCTION 	<b>12</b> RESPONSIBLE CONSUMPTION AND PRODUCTION 
<b>13</b> CLIMATE ACTION 	<b>13</b> CLIMATE ACTION 	<b>13</b> CLIMATE ACTION 	<b>13</b> CLIMATE ACTION 
<b>14</b> LIFE BELOW WATER 	<b>14</b> LIFE BELOW WATER 	<b>14</b> LIFE BELOW WATER 	<b>14</b> LIFE BELOW WATER 
<b>15</b> LIFE ON LAND 	<b>15</b> LIFE ON LAND 	<b>15</b> LIFE ON LAND 	<b>15</b> LIFE ON LAND 
<b>16</b> PEACE, JUSTICE AND STRONG INSTITUTIONS 	<b>16</b> PEACE, JUSTICE AND STRONG INSTITUTIONS 	<b>16</b> PEACE, JUSTICE AND STRONG INSTITUTIONS 	<b>16</b> PEACE, JUSTICE AND STRONG INSTITUTIONS 
<b>17</b> PARTNERSHIPS FOR THE GOALS 	<b>17</b> PARTNERSHIPS FOR THE GOALS 	<b>17</b> PARTNERSHIPS FOR THE GOALS 	<b>17</b> PARTNERSHIPS FOR THE GOALS 

# Reducing our Footprint

Impact from all certified As Built projects to December 2018<sup>^</sup>

## Lifecycle impacts



**2.2 million**

Total avoided emissions (tCO<sub>2</sub>e)



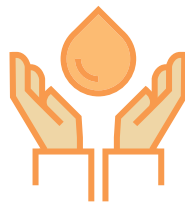
**\$76.1 million\***

Total value of avoided CO<sub>2</sub> emissions



**Energy**

18% reduction



**Water**

31% reduction



**Materials**

29% reduction

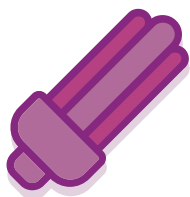
Impact	Energy	Water	Materials
Base case	9.61m tCO <sub>2</sub> e	14.23m kL	1.65m tCO <sub>2</sub> e
Certified As Built	7.84m tCO <sub>2</sub> e	9.76m kL	1.17m tCO <sub>2</sub> e

## Construction Impact

## Operating Impact\*\*

Annual impact reduction

**Energy**

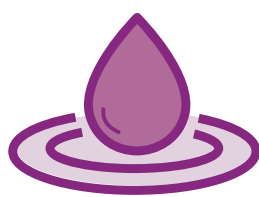


**1%** CO<sub>2</sub> reduction

155 tCO<sub>2</sub>e avoided per average project<sup>++</sup>

Equivalent to 150,000kWh<sup>+</sup> of electricity with indicative value of A\$45,000<sup>\*\*\*</sup>

**Water**

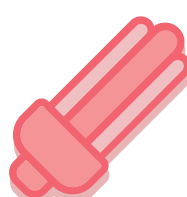


**17%** Potable water reduction

17,260 kL water avoided per average project<sup>++</sup>

Indicative value of A\$56,000<sup>\*\*</sup>

**Energy**



**24%** CO<sub>2</sub> reduction

880 tCO<sub>2</sub>e avoided per average project<sup>++</sup>

Equivalent to 913,200 kWh<sup>+</sup> of electricity with indicative value of A\$274,000<sup>\*\*\*</sup>

**Water**



**34%** Potable water reduction

2,360 kL water avoided per average project<sup>++</sup>

Indicative value of A\$7,750<sup>\*\*\*</sup>

<sup>^</sup> Data from 23 certified projects

<sup>\*</sup> Based on market value per tCO<sub>2</sub>e, EU ETS, 1st February 2019

<sup>+</sup> Based on indirect emissions factor for the NEM, 2017 Australian National Greenhouse Accounts

<sup>\*\*\*</sup> Indicative national retail price of A\$0.30 per kWh

<sup>^^</sup> Indicative national retail price of \$3.28 / kL - from Australian Bureau of Statistics' Water Account, 2016-17

<sup>\*\*</sup> Includes modelled data

<sup>++</sup> Average project with capex of A\$200m



# Circular Economy Impacts

From the 9 As Built projects certified in 2018

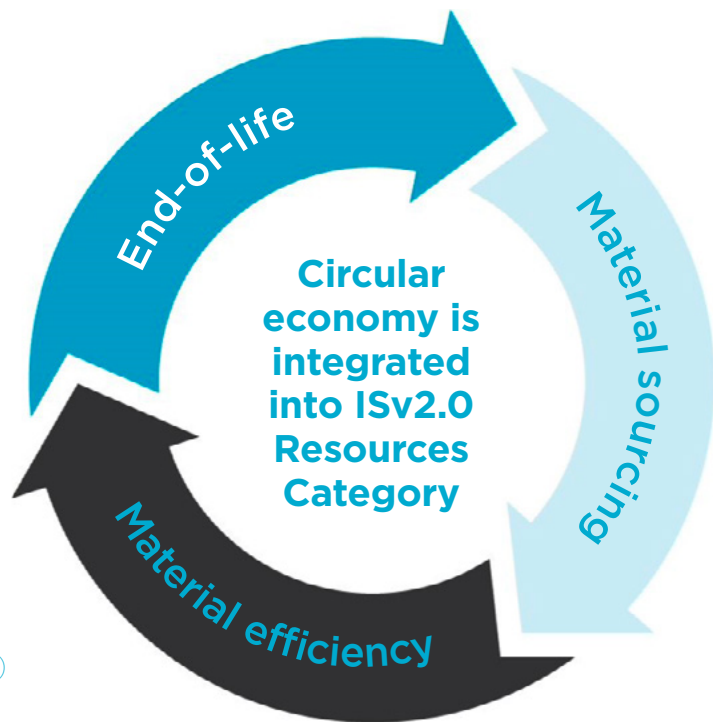


80% of waste diverted from landfill



16.4%

reduction in material use (615,374 t)



## Material sourcing

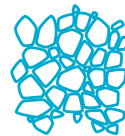
Over 12,000 t of building materials with sustainability labels (EPDs\*\*\* or certification)



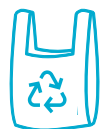
3% recycled asphalt (RAP) content



29% SCM\* content in concrete

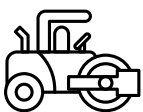


4% recycled aggregate



10% recycled plastic

## Material efficiency



12% reduction in asphalt use\*



15% reduction in concrete use\*



19% reduction in aggregate use\*



14% reduction in metal use\*



8% reduction in plastic use\*

## End-of-life



C&D\*\*\* + Office Waste

97% (over 150,000 t) sent for further processing\*\*

\$14.4m in landfill levies avoided\*



Spoil

84% of spoil re-used (on or off-site)

Over 1.6m t



Hazardous waste

34% of material sent for further treatment\*\*

+ Materials reduction figures calculated using verified project base cases  
\* Based on 2017/18 rates, by state  
\*\*\* Environmental product declaration

\*\* National C&D landfill diversion rate is 67 % (National Waste Report 2018)  
++ Including asbestos-containing materials  
^ Supplementary Cementitious Material  
^^ Construction and Demolition

Our purpose is to accelerate sustainability in infrastructure. This is achieved through partnerships with our broad base of members and stakeholders, as system and sector-wide change is only possible through collaboration.

**Your success is  
our success.**

# Contents

<b>ISCA</b>   A Joint Message from our Chair and CEO	8
A Message From Western Australia's Transport Minister	14
<b>Lendlease</b>   Creating Better Places; Leaving Lasting Legacies	16
<b>ISCA</b>   Our Digital Future	20
<b>TransPod</b>   The TransPod Hyperloop Development: 2019 and Beyond	23
<b>ISCA</b>   2018 Infrastructure Sustainability Champions	26
<b>Western Program Alliance</b>   Better Together	30
<b>ISCA</b>   Playing a Key Role in Australian Infrastructure Achieving Net Zero Emissions	35
<b>Holcim</b>   ViroDecs™ - a First for Ready-Mix Concrete In Australia	38
<b>Infrabuild</b>   Contributing to the Creation of Sustainable Infrastructure	44
<b>Cardno</b>   Meeting the Resourcing Challenge	48
<b>ISCA</b>   ISupply	51
<b>Watercare</b>   Building the Central Interceptor	54
<b>Hydropoint</b>   Delivering Renewable Drinking Water Across Australia	58



# A Joint Message from our Chair and CEO



ISCA CEO, Ainsley Simpson (left), former ISCA Chair, David Singleton (centre), ISCA Chair, Alison Rowe (right)

Accelerating sustainability in infrastructure. Our purpose is achieved through partnerships with our broad base of members and stakeholders, as system and sector-wide change is only possible through collaboration. **Your success is our success.**

## Our Impact

Over the course of 2018, we aligned our strategy across the quadruple bottom-line and with the UN Sustainable Development Goals (SDGs); for **people, planet and prosperity**.

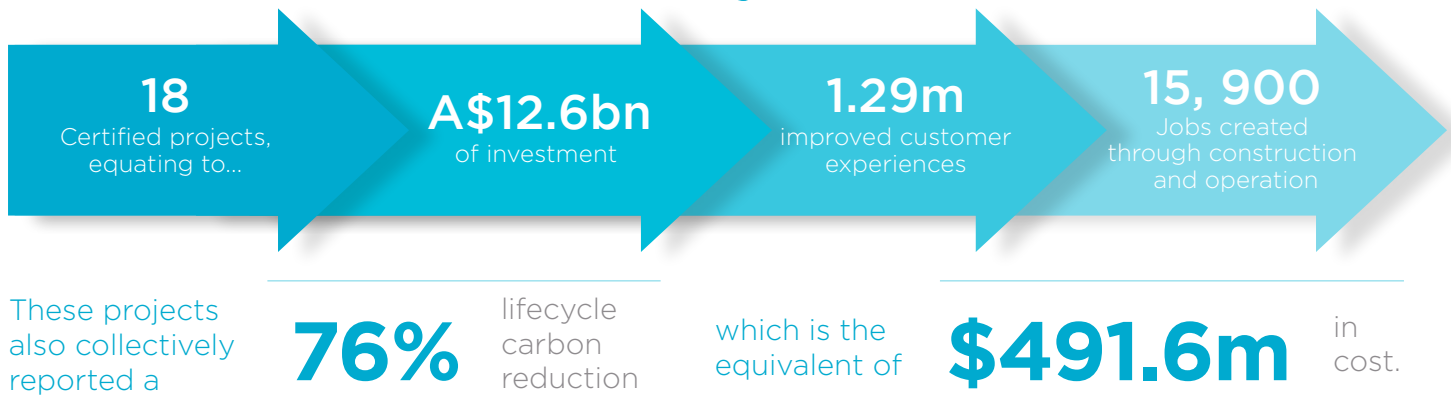
Our impact is best demonstrated in the positive outcomes which infrastructure enables; made possible because sustainability is a priority that is being measured and managed against credible benchmarks. Over the past 12 months, 18 certified projects equating to \$12.6bn of investment have created

1.29 million improved customer experiences<sup>1</sup> through daily services provided. Workforce outcomes included at least 15,900 jobs created through construction and operation. These projects also collectively reported a 76% lifecycle carbon reduction (14.27m tCO<sub>2</sub>e), which can be represented as the equivalent of \$491.6m in cost<sup>2</sup>. The total extent of natural ecosystem enhancement through these projects spanned 51 ha.

<sup>1</sup> This number includes daily traffic volume (roads), number of passengers (rail), number of visitors (social/ski), number of households powered (energy).

<sup>2</sup> Based on market value per tCO<sub>2</sub>e, EU ETS, 1st February 2019

# In the 2018 calendar year



## PROSPERITY

### GOVERNANCE



#### Industry contribution to UN SDG's

A significant milestone in 2018 was the launch of **ISv2.0**, the next evolution in the IS Rating Scheme. Developed by industry for industry, the scheme is now more clearly aligned with the quadruple bottom line. New categories have been introduced including **resilience, workforce sustainability** and importantly, **the economic theme**. This shift underpins our industry's collective progress and reflects the current drivers of change. The many different **pathways to transition** to ISv2.0 are being shared across ANZ, as each infrastructure asset is different and requires individual consideration.

We have also aligned the scheme with the **UN SDGs**. Projects will now be clear on how their assets are contributing to the global goals. Moreover, National Government perspectives can be informed by a more accurate data set that demonstrates the considerable contribution that the infrastructure sector is making to our progress across ANZ.

### ECONOMIC



#### Improved whole-of-life outcomes

In launching ISv2.0, an additional lens is applied ensuring that the legacy of our infrastructure decision making extends beneficially well beyond our lifetime; enabling vibrant, resilient and connected cities and regions well into the future.

Western Australia are genuine leaders with the first three **planning ratings to register all from** this bold and determined state. **Main Roads WA** were first with Bunbury Outer Ring Road; the **Landcorp** Ocean Reef Marina and **Westport** followed in close succession.

While each of these teams is at a different stage in shaping their infrastructure, they have shared positive feedback in how the IS Rating Scheme will support more effective and efficient planning, design and delivery. This is because the key **non-financial metrics**, which are inherently **embedded throughout the process**, are being aligned with relevant decision-making frameworks. This is particularly valuable for public infrastructure, which is subject to independent assessment and review by Infrastructure Australia and other state **i-bodies**.

Whole-of-life outcomes and continuous improvement are greatly valued by investors who are future focussed, and operate outside of election cycles. To address the needs of these stakeholders, ISCA and **GRESB** executed an MOU creating the basis for coordination, alignment and mutual recognition between the GRESB Infrastructure Assessment and the IS Rating Scheme.

## PLANET

### ENVIRONMENT



#### Reduced carbon and greater investment in climate-resilient infrastructure

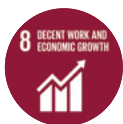
We made great progress supporting state government with their specific local challenges. We collaborated with **EPA Victoria** to develop guidance notes on **spoil management and night time construction noise**. These documents are a framework of current best practice designed to drive and accommodate innovative methods and new approaches. The frameworks are anchored by IS principles, helping to **bridge regulatory gaps** which have created challenges for infrastructure projects in Victoria.

The **Queensland Government** is focussed on a low carbon, clean growth economy, and is working closely with business and industry, local councils and regional communities to understand, adapt and transition. The Queensland **Climate Change Response** comprises a collection of strategies which were mapped against the IS Rating Scheme. This process identified 86 synergies and opportunities, and determined that IS provides an **implementation framework** to support inter-agency commitment to deliver on and credibly measure progress on climate action.

Further from home, our team shared the positive impact that sustainability performance measurement drives at the **Green Growth Forum in Rwanda** and at a **collaborative roundtable** regarding construction waste in **India**. These discussions focussed on how IS supports benefits realisation and tangible quadruple bottom line returns.

## PEOPLE

### SOCIAL



#### Empowerment of the infrastructure value chain

As every incremental step serves as progress toward better intergenerational outcomes; we have become more intentional in communicating and celebrating the many steps being taken across ANZ. This year we reached over 1750 people through our **networking and thought leadership events**; and welcomed a further 259 **IS Accredited Professionals** to our community of practice.

Together with Platinum Partners Transport for NSW, our **Annual Infrastructure Sustainability Conference** brought together the brightest minds from across ANZ along with key leaders from Crossrail [UK] and TransPod [Canada]. We congratulated the infrastructure industry for an even better year of sustainability successes at our **Annual Infrastructure Sustainability Gala Awards** and celebrated with award winners: Rebecca Miller (Individual Leadership), Laura Pritchard (Emerging Young Leader), Main Roads WA (Organisational Leadership), Level Crossings Removal Authority (Innovation and Impact Award), Metro Tunnel Early Works Team (Outstanding Achievement: Design) and Bayswater Project Team (Outstanding Achievement: As Built).

We hosted the **inaugural NZ Summit**, supported by many of our founding members in NZ. This enabled us to pay tribute to their commitment as well as connect with Mana Whenua and many new stakeholders. Importantly, we worked with partners like the Supply Chain Sustainability School to raise awareness about sustainability and also the imminent **Modern Slavery legislation**.

We completed building the **ISupply Directory**, creating a marketplace which connects teams looking to deliver better outcomes, with products and services that can help accelerate sustainability in infrastructure.



## Our Sustainability

### ..... Board

In November, we appointed energy sector leader, and seasoned executive Alison Rowe as Chair of the Board, bidding farewell to the formidable and long-serving Chair, David Singleton AM. We also said farewell to several Board Directors who have been steadfast advocates, some since our earliest days; Jayne Whitney (Chief Strategy Officer, John Holland), David Kinniburgh (Market Leader Transportation – Northern Hemisphere, GHD); Menno Henneveld (Principal, Menno Henneveld Consulting / Advisor, Laing O'Rourke) and Leisel Moorehead (Partner, QIC). Each brought incredible value over the terms they served, and we look forward to their continued friendship. We also welcomed Member Director Matthew Brennan from asset owner and operating member, Transurban.

### ..... Team

It was a year of virtuous change, the kind that can be challenging at times, but that is genuinely uplifting. We established an office in Melbourne and have now settled into a wonderful new space in Sydney, fitting for our team to grow and flourish. We bid farewell to Antony Sprigg after nearly five years as CEO, a period of dedication and investment in the tremendous advancement of sustainability in infrastructure as well as ISCA's operational growth. Ainsley Simpson took the helm and will lead ISCA into what can only be

described as a transformative future. Having swiftly restructured the organisation to be even more outcomes focussed, there were many opportunities for the existing team to take on new challenges in exciting new roles. We also were incredibly fortunate to have partnered with the Lendlease Foundation, through a 6-month secondment of one of Lendlease Engineering's finest sustainability professionals, Jaclyn Fathers, a mutually beneficial and powerfully positive experience all round.

### ..... Sustainability

ISCA directly contributes to 15 of the 17 UN **Sustainable Development Goals**. The two areas where we need to do more are SDG 1 (No Poverty) and SDG 2 (Zero Hunger). Rather than token gifts for the many speakers and thought leaders who support us through the year at events, their generosity is now acknowledged through contributions made to **local charities or social enterprises** whose purpose is actively addressing inequality. Last year, we supported Love Soup, Fitted For Work, Indigenous Literacy Foundation, The Exodus Foundation and Foodbank WA.

Through all our networking and thought leadership events, we exceeded our **equitable influence** target with 51% of all speakers in 2018 being female.

We also made more determined choices which reduced our organisational **carbon footprint by 32%**, and **offset 100%** of our operational emissions through

a Tasmanian native forest protection project administered by South Pole.

## Our outlook

The infrastructure sector is transforming to deliver even better outcomes for all communities, consumers and commuters. Infrastructure is planned, designed, built and operated to serve and enable over the long term. ISCA's purpose is clear and so is our role. Like infrastructure, we need to enable and empower sustainability, and accelerate through collaboration.

In line with the UN SDGs, we plan to leave no one behind. We will work across the value chain of transport, utility and social infrastructure to scale our tools and make sustainability a reality for all projects and assets.

This includes operational assets, minor capital upgrades as well as mega capital programs. All the while, we will become even more efficient in demonstrating the value created by measuring what matters. We will elevate our influence so that decisions are made earlier by those with the leverage of policy, planning and procurement; igniting action that delivers outcomes with impact.

Our strategy ensures that ISCA is a trusted assurance partner across the infrastructure lifecycle, a reliable data and knowledge source and a collaborative advocate for leading the emerging culture of sustainability in infrastructure. •

Alison Rowe | Chair  
Ainsley Simpson | CEO

# Watercare's Central Interceptor

## A new wastewater tunnel for Auckland

We're making our waterways in Central Auckland cleaner by **building a wastewater tunnel, creating a better environment.**

We're building it to...

- ✓ reduce overflows
- ✓ provide for population growth
- ✓ reduce risks to the environment

# ISCA

Watercare is proud to register this as our first project with ISCA, targeting an as-built rating of 'excellent'

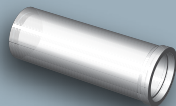


Project build



2019 to 2025

13 kilometres



longest  
wastewater  
tunnel in NZ

4.5m



high enough  
to fit a giraffe

Storage  
capacity  
200,000m<sup>3</sup>

Find out more

[www.centralinterceptor.co.nz](http://www.centralinterceptor.co.nz)

[CIProject@water.co.nz](mailto:CIProject@water.co.nz)

Central Interceptor

**Watercare**  
An Auckland Council Organisation

# Helping Auckland become the world's most liveable city

We've been supporting this vision by combining our water engineering, sustainability and digital expertise to deliver safeswim on our smart infrastructure platform Moata. This application, with more than 350,000 users, provides water quality predictions for over 100 of the regions' beaches. This allows Auckland Council and Watercare to better understand the performance and sustainability of their network infrastructure while giving agency to the community.

[Search Mott MacDonald Moata](#)



# we've got your back.

Infrastructure is the backbone of our economy.  
We'll help you build it sustainably.

Life Cycle Assessment • EPDs • Materiality • Circular Economy • Supply Chain

image courtesy City Rail Link Ltd (cityrailink.govt.nz)



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# WA: Leading the Way in Sustainability



## A Message from Western Australia's Transport Minister, Rita Saffioti

Western Australia (WA) has an important role in infrastructure sustainability (IS) with a number of key IS projects across the Transport portfolio currently engaged in the IS Rating Scheme.

Main Roads Western Australia's commitment to sustainability is demonstrated through the long list of major infrastructure projects it is prepared to adopt the Infrastructure Sustainability rating tool for and backing this up through achieving outstanding results for the benefit of all Western Australians.

Being recognised nationally by winning the Organisational Leadership in Infrastructure Sustainability Award in both 2014 and again in 2018 further reinforces this contribution.

Main Roads' Northlink team has achieved the highest IS rating to date. This rating recognises its dedication to put sustainability first. The State Government places a high value on delivering services with care for the environment and its communities. Northlink's use of life cycle assessments to inform decision-making, use of recycled



Leo Coci, Executive Director Infrastructure Delivery at Main Roads Western Australia, accepting the Organisational Leadership award at the 2018 IS Awards



asphalt pavement, innovative materials, and integration of energy efficient lighting and a solar PV installation clearly demonstrates this.

The Department of Transport (DoT) is assisting to progress the current Ocean Reef Marina development. LandCorp is leading the development and is working with ISCA, with assistance from DoT, to prepare an IS rating for the planning phase of this project.

Stage 1 of the Westport project which is tasked to deliver an integrated plan to meet the future freight and logistics needs for Perth and WA's South West involved collating information about the supply chain capability and potential infrastructure options. A core objective of Stage 1 was to identify and prioritise governance, economic, social and environmental sustainability values that would be impacted by the Westport Strategy.

In Stage 2 of the Westport project, assessment criteria has been considered based on the sustainability values identified in Stage 1 and the extent to which the strategy can impact the United Nations Sustainable Development Goals. While some sustainability criteria are challenging to quantify or monetise, their inclusion is required by Westport to ensure the final strategy will deliver long-term net-positive sustainability outcomes for WA.

At the 2018 ISCA State Conference, the Public Transport Authority (PTA) and its project partner, Salini-Impregilo-NRW JV celebrated the achievement of an Excellent IS Design Rating on the Forrestfield-Airport Link (FAL) project. The rating acknowledges PTA's commitment to embedding integrated sustainability principles across the life of the project through design, procurement and construction.

Embedding sustainability values and ethics has been

key to achieving sustainability objectives. All individuals and companies involved in the FAL project are committed to developing and building the asset in the most sustainable way possible. Some of the outcomes achieved include:

- Minimising water consumption during construction by 25% through onsite recycling of water and use of intelligent water monitoring;
- Minimising energy use and production of greenhouse gases;
- Sustainable sourcing of materials, including the use of recycled materials in the concrete mix;
- A strong focus on interpretation and enhancement of heritage values; and
- A strong commitment to sustainable procurement, including collaboration with key suppliers on sustainability innovations.





# Creating Better Places; Leaving Lasting Legacies

**Lendlease Engineering is committed to not only delivering safe and sustainable infrastructure, but the creation of positive social legacies through our projects.**

One of the best things about our industry is our contribution to society. We have the privilege of working all over Australia and have seen first-hand the difference that the infrastructure we build makes – connecting people to work, school, their friends and family. At Lendlease, we believe it's not just through the end-product where we can make a difference, it is through the delivery of our projects where we can have a positive social legacy and be part of building a better tomorrow.





The Australian Government's investment in infrastructure has presented an industry wide opportunity to invest in providing education, training and employment pathways for under-represented groups within our industry such as Aboriginal and Torres Strait Islander people, refugees and asylum seekers.

The most recent Closing the Gap report stipulates that unemployment rates amongst Aboriginal and Torres Strait Islander people was 2.7 times higher than their non-Indigenous counterparts, which has been relatively consistent with statistics collected over a decade ago indicating significant barriers to employment.

Similarly, CareerSeekers (a not-for-profit organisation supporting refugee and asylum seeker re-settlement in Australia) noted that a lack of local experience and training has been a significant barrier

to employment for the 2500 tertiary qualified humanitarian entrants (a large portion of whom have an engineering and construction background) who have resettled in Australia over the last 5 years.

In addition to our commitment to positively influence gender diversity within our industry, Lendlease is committed to support the employment of Aboriginal and Torres Strait Islander people and refugee and asylum seeker workers through living the values of our Elevated Reconciliation Action Plan and our ongoing partnership with CareerTrackers and CareerSeekers.


Recognising that organisation culture plays a critical role to diversity within the workplace, Lendlease employees regularly partake in unconscious bias and cultural awareness training through online and face-to-face training sessions. As of May 2019, 5400 existing Lendlease

employees have completed cultural awareness training with all new employees required to undertake cultural awareness training as part of their corporate induction.

Through this training and education, we are confident that we will continue to create culturally inclusive workplaces where diversity is embraced and business thrives.

Aboriginal and Torres Strait Islander employment within our Engineering Business is at 2.3% which is tracking well against our 3% RAP target and does not include employment attributed through our supply chain partners. Lendlease's partnership with CareerTrackers helps support young Indigenous graduates in career development across our Building, Engineering, Property and Group Services





In 2018, Lendlease was the first construction contractor to establish a 3-year partnership with CareerSeekers, paving the way for over 100 refugee and asylum seekers to undertake internship opportunities within the business.

businesses. Since 2011, we have placed 105 CareerTracker interns; 20 have secured full-time employment with Lendlease, and placed a strong emphasis on those students in the STEM Entry Program, especially Engineering.

At the same time, requirements to deliver large scale infrastructure projects requires a workforce that already possesses strong technical capabilities and qualifications. Many humanitarian visa holders in Australia are highly skilled, with degrees and professional experience in their home countries. By accessing this talent pool, we provide

valuable onsite experiences, leadership development opportunities and offer skilled volunteering opportunities to our people to increase retention.

In 2018, Lendlease was the first construction contractor to establish a 3-year partnership with CareerSeekers, paving the way for over 100 refugee and asylum seekers to undertake internship opportunities within the business. Our partnership with CareerSeekers is a natural evolution of our strategy to attract new entrants to the industry and follows our ongoing partnership with CareerTrackers.

Over the last two years collaborating with CareerSeekers, 67 interns have supported our projects with 82% of eligible participants securing ongoing employment beyond their internship.

We are proud of the impact we are driving within our projects and the opportunity we are providing for our people to contribute to our business and build themselves a better future.

Hala Nader from our Environment and Sustainability team exemplifies this experience.





## CAREER PROFILE

# Hala Nader

Environment and Sustainability Coordinator

Hala Nader is a CareerSeekers Intern who commenced with Lendlease Engineering in April 2018 after completing her 12-week internship. Originally from Syria, she left in 2015 due to the war and went to Iraq. After two and half years in Iraq, Hala and her family applied for humanitarian visas to Australia to escape the rising conflict in Iraq.

Hala and her husband and young daughter arrived in Australia in April 2017 ready to commence their new lives. Hala who has a degree in Civil Engineering with environmental background, joined the Environment and Sustainability team at our Level Crossing Removal – Caulfield to Dandenong Project in Melbourne where she added immense value

and was a key member of the sustainability team. She has since commenced on the Level Crossing Removal – Southern Program Alliance Project to continue her career growth and onsite construction experiences.

Hala's enthusiasm and continued quest to learn and grow in her career, and new country, acts as a symbol for the CareerSeekers program and the barriers it is breaking down. •



# ISCA's Digital Future

## **ISCA is embarking on a digital transformation making it easier to create impact**

Change is one of our values and consistent and incremental improvement is always underway at ISCA. This ensures ISCA's growth so we are proactive in meeting industry's rapidly changing needs.

From small things big things grow, and last year we launched a new website. Through 2019, we are improving our backend to be smarter and more integrated. With this kind of journey, sometimes the changes aren't immediately

visible, but you will soon begin to experience more reliable and efficient ways to connect with us. The user experience for registering for ratings, exploring the rating project directory, booking to attend events and training as well as maximising your membership will be greatly improved.

The next step in our digital transformation is a big one, as it involves the IS Rating process. This needs to be an incremental change journey rather than a disruptive one, and horizons of work are being scoped up to deliver the digital transformation of our rating process.



## Horizon 1: Bringing the materials calculator online

The materials calculator will extend to be a more comprehensive environmental footprinting tool encompassing Water, Waste, Energy and Materials (WWEM). As always, development will occur with the industry and will standardise the way water, waste, energy and materials data is collected and collated. It will aim to streamline the data collection process for ratings as well as provide useful datasets for future comparisons within and between portfolios of assets, as well as projects.

This will be the first of the IS tools which goes live as part of ISCA's Digital Rating Platform. Comparative analysis, consistency and continuity will be the primary benefits; allowing organisations to compare their projects' impacts and transfer data between rating phases.

Commencing in 2019, the development program will largely depend on the extent of industry engagement and feedback.

To contribute through user-testing and help create a product fit for purpose, register your interest on our website.

## Horizon 2: Digital Rating Platform

No more paper forms, no more SharePoint!

The Digital Rating Platform is envisaged to be a closed 'rating ecosystem' where all rating-related interactions happen.

This approach will build industry's capability through knowledge sharing, enable efficiencies and greater instant access to rating resourcing and support.

Data, knowledge capture and information sharing will be key outcome components of the platform's functionality, designed to reduce the learning curve for new rating partners and giving experienced project teams opportunities to go further faster by learning from each other.

The platform also means that we need to consider changing how ISCA administers the rating process and how we support our ratings partners. Your feedback is helping shape our objectives, and while these are evolving, this is what we have heard as opportunities:

- increase consistency of advice and verification commentary,
- reduce the time required to submit evidence,
- increase the turnaround time for verification as often teams are demobilising
- develop and allow access to more tools, templates and frameworks.

It is anticipated that the Digital Rating Platform will become fully functional over the next 2-5 years, dependent on funding and industry feedback. ISCA is in the process of identifying grants and funding for this project, please share your input or advice in this regard directly with Nicole Boyd, GM: Infrastructure Innovation, [nboyd@isca.org.au](mailto:nboyd@isca.org.au), who is leading these exciting developments. •





## Building sustainable outcomes for our communities and customers.

We focus on delivering innovative options such as our lower carbon products ENVISIA® concrete and WarmPave™ asphalt, a host of recycled and recovered materials for construction and the incorporation of alternative fuels in our manufacturing process. We are continually striving to present sustainable solutions for our changing world.

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## Supporting all things # Sustainable

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make  
everyday  
better.

## Sustainability is at the core of everything we do!



Sustainability is fundamental to the long term success of our clients and communities.

From using digital technologies for more efficient designs, recycling waste products within roads, re-purposing demolition materials and working with Mana Whenua to ensure a legacy for the future, we are always looking for new and more sustainable ways of doing business.



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LAING O'ROURKE

## Laing O'Rourke Engineering the future

As we strive to achieve our mission to become the recognised leader for innovation and excellence in the construction industry, we are committed to delivering long term sustainability outcomes that enrich the communities in which we work in.



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ENGINEERING THE FUTURE



# The TransPod Hyperloop Development: 2019 and Beyond

**Tube transportation, more commonly known as “hyperloop”, is no longer a technology that needs introduction.**

The press, some politicians, and stakeholders have shifted from referring to it as conceptual technology of the future to describing it as a system under development that will be available quite soon.



TRANSPD





*Author: Thierry Boitier, Director of Procurement and Business Development, TransPod*

Six companies are officially working on the technology, but only one decided to take a bold holistic approach from the ground up, based on physics, engineering, operations, and profitability. Let's take a closer look at TransPod and our plans for 2019 and beyond.

Our focus is in four areas. The first one is quite obvious: R&D. The second one, business development, done at an early stage, will secure the profitability of the company. Third, and it may surprise some people, we are already working on a regulatory framework to anticipate future needs and to design a system that can be operated in any country. Finally, education is definitely unusual in this type of business, but we will show you why it is a major pillar of our work.

## **R&D and Engineering**

The core of our activities is the development of the technology. From the beginning, TransPod

has had a pretty clear view of the overall design of the system, using a holistic approach and starting off on a blank page, on which the first line to be written was "How should we design an efficient, fast, and affordable transportation system, using tube transportation as an overall concept?"

While each of TransPod's subsystems is being developed with various partners, we are securing patents for our intellectual property (IP), and we are building our first testing infrastructure – a 2.4km-long half-scale test track near Limoges in France. This site will allow us to test each subsystem, then the overall prototypes, operations, safety systems, etc. This is for 2019.

Beyond 2019, we are designing and planning the second test track: a 10km-long tube, at scale, that will be part of a future commercial corridor. Indeed, in order to avoid sunk costs, it is crucial that we collaborate with the local authorities, and make sure that they would be on board with the construction of the full

line if the tests are successful. As you can imagine, the choice of the site for this track is strategic, and it could very much be in Australia. We are currently considering the line that would link Sydney to Melbourne for example.

## **Business Development**

Even though the TransPod system is not marketable yet, we chose to strengthen the value proposition of the company by selling business impact cases and preliminary studies for our partners and politicians, on the application of a TransPod transportation system in their regions. We are also working on marketing the TransPod subsystems for side applications.

In 2019, we have published the results of a preliminary study regarding the implementation of a TransPod factory and a TransPod line in Thailand, as well as a paper describing a methodology to identify high-potential hyperloop corridors.

Beyond 2019, we will pursue our prospection, including in Australia, for the full commercial



lines, and start selling custom-designed subcomponents to the self-driving automotive, aerospace, and railway industries.

## Regulations

Tube transportation does not yet exist. As such, regulations don't exist either.

In 2018, we partnered with three European hyperloop companies and knocked on the door of the European Transportation Commission to collaborate on drafting the regulatory framework for this new mode of transportation. We started this activity very early for two reasons:

- To anticipate the commercialization of the system and avoid losing time because of a lack of regulations; and,
- To ensure our product is compliant. Designing the product at the same time as we work on the regulation is the best strategy to ensure such compliance.

We are collaborating with the European Union, which decided to take the lead. In 2019 and beyond, we will include the Canadian authorities, as well as others, in the loop.

## Education

Last, but far from least, TransPod started its educational mission long ago, and will pursue it beyond 2019. There is a lot of false information about tube

transportation in the media, due to a lack of thorough understanding of the ins and outs of the technology.

The best way to tackle this is through education and information dissemination at a large scale, so we will continue presenting our work in conferences, forums, and science fairs. Furthermore, we make our articles, publications, and our most recent feasibility study available to the public.

We also partner with student groups from universities in Canada, France, and Italy, on technical projects and feasibility studies. We will keep answering and offering one-to-one meetings with students who request for assistance to conduct their own projects and draft their reports, whether it's a literature review, a lecture, or a technical study.

The Australian landscape and economy make this country a prime choice for the TransPod system. We conducted some early prospection in 2019. Beyond 2019, we will focus on the potential of doing R&D, conducting feasibility studies, drafting a regulatory framework, and building academic partnerships for ultra-high-speed travel "Down Under". We expect that the positive economic, environmental, and social benefits will significantly impact Australia's position in the world. •



# 2018 Infrastructure Sustainability Champions

At ISCA's Annual Awards in October, six awards were handed out to the projects, organisations and individuals whom best demonstrated sustainability leadership in Australasia. Of the 33 award submissions, a record to date, the following achieved IS Awards.



2018 Infrastructure  
Sustainability  
**Outstanding  
Achievement  
Award: Design**

## Winner: Metro Tunnel Early Works

Metro Tunnel Early Works (MTEW) achieved a 'Leading' IS v1.1 Design rating with a score of 82. Despite being the first program rating in Victoria, MTEW was highly ambitious, and highlighted many challenges that were not previously encountered in the rating process.

Given that the package of works is part of the biggest infrastructure project within Melbourne to date, a substantial amount of stakeholder and supplier engagement was undertaken, enabling the project to achieve top levels for all 'Stakeholder Participation' and 'Procurement and purchasing' credits.

As a part of a wider program, the project was responsible for managing heritage throughout the course of works and, ensuring any heritage items are handed over for interpretation and monitoring. Rail Projects Victoria and the project team undertook a substantial amount of stakeholder engagement to ensure heritage (both European and Indigenous) concerns were met, enabling it to achieve a top credit score.

Other examples of exemplary performance were a 26.2% reduction of total IS EnviroPoints through major materials reductions, and a 39.08% reduction of total GHG from the base case footprint.

From the beginning, the Bayswater Level Crossing Removal Project demonstrated a high commitment to sustainability, echoing the key message that “this project is ‘not just a grade separation’ rather, it’s a project that’s going to ‘enrich, support and enhance the community and Bayswater Activity Area.’”



2018 Infrastructure  
Sustainability  
**Outstanding  
Achievement  
Award: As Built**

### Winner: Bayswater Level Crossing Removal Project

The Bayswater Level Crossing Removal Project achieved a ‘Leading’ ISV1.1 As Built rating with a score of 86. From the beginning, the project demonstrated a high commitment to sustainability, echoing the key message that “this project is ‘not just a grade separation’ rather, it’s a project that’s going to ‘enrich, support and enhance the community and Bayswater Activity Area.’”

The project’s management systems were well established, enabling the team to consider and address community and stakeholder issues and opportunities effectively. Baseline studies and plans were developed during preliminary stages of the project that enabled the development of realistic and achievable measures to address priority issues for community health and wellbeing. Additionally, consultation with local community and heritage groups was undertaken early in project development, allowing heritage values to be well maintained during construction and allowed for the creation of a large mural piece that united 3 different Aboriginal groups.

Other highlights included; a 44% reduction in energy use, a 53% reduction in carbon emissions and a 32% reduction in potable water use over the infrastructure life cycle; a 31% reduction in material lifecycle impacts; 7135 tonnes of waste diverted from landfill; and detailed mitigation measures introduced to manage water discharge during operation.





2018 Infrastructure  
Sustainability  
**Emerging Young  
Individual  
Leadership Award**

**Winner: Laura Pritchard, Sydney Metro**

Laura is the Sydney Metro City & Southwest Sustainability Officer, responsible for ensuring sustainability practices are integrated into the design and construction of the Sydenham metro upgrade and new Barangaroo Station.

Laura has driven initiatives such as: developing partnerships with social enterprises, low carbon concrete, and is part of the monthly Sydenham metro upgrade sustainability Leadership Committee.

Through Laura's insight and thoughtful long-term approach to infrastructure sustainability, she has helped Sydney Metro set new benchmarks and milestones. These achievements have resulted in positive sustainability outcomes for not only Sydney Metro but also wider government, industry and the wider community.



2018 Infrastructure  
Sustainability  
**Organisational  
Leadership Award**

**Winner: Main Roads Western Australia**

Main Roads Western Australia's (MRWA) formal sustainability policy 'Keep WA Moving', in effect since 2006, makes a commitment to "develop a sustainable transport network that meets social, economic and environmental needs", and has the aspiration "to provide world class outcomes for the customer through a safe, reliable and sustainable road-based transport system".

MRWA were the first organisation to register for an IS Version 2.0 (ISv2.0) Planning rating in 2018, with a further five upcoming projects set to undergo ISv2.0 planning ratings.

Other examples of Main Roads leadership and contribution to advancing sustainability include: 16 projects with a combined value of approximately \$3.5B have IS obligations, and NorthLink WA Southern Section achieved a leading design rating of 93, the highest ever in WA and the highest score for a design project in Australia.



2018 Infrastructure  
Sustainability  
**Innovation and Impact  
Leadership Award**

### **Winner: Level Crossing Removal Authority (LXRA)**

This was awarded for LXRA's Victorian Government led initiative Training for the Future (TFTF) – a suite of employment programs which target disadvantaged and marginalised cohorts.

In its first 18 months of delivery, the TFTF program resulted in 82 people from marginalised and disadvantaged backgrounds having gained employment, internship and cadetship opportunities as a direct result of the TFTF inclusion and capability programs.

Other highlights and achievements from the TFTF program include; LXRA projects have spent \$31.5 million with social benefit suppliers and aboriginal businesses, and investments in aboriginal businesses and employment through LXRA's program of works has resulted in the removal of level crossings with 367,617 aboriginal employment hours.



2018 Infrastructure  
Sustainability  
**Individual  
Leadership Award**

### **Winner: Rebecca Miller, AECOM**

Rebecca is a Director with AECOM's Sustainability and Resilience Practice based in Brisbane.

Throughout her career Rebecca has worked to advocate for sustainable and resilient infrastructure across a diverse range of projects. Most recently this has included working with clients including ARTC, Bega Valley Shire Council, Transport for NSW (TfNSW), Parkes Shire Council, Level Crossing Removal Program (LXRP), Landcom, Sydney Metro, and Parramatta Light Rail, to pursue key sustainability and resilience objectives.

Prior to relocating to Brisbane at the end of 2018, her work with Transport for NSW helped shape and influence their sustainability requirements for new projects and has helped lift the benchmark internally to support TfNSW's commitment to sustainability best practice. Rebecca was instrumental in the development of the ISv2.0 Resilience Category.



# Better Together

## The construction industry is ripe for disruption.

McKinsey and Company findings from June 2016<sup>1</sup> highlight that globally there has been a lack of productivity improvements in the construction industry over the last 20 years and the construction industry is the slowest to adopt new processes and technology (after farming and hunting industries).

Could these metrics also be an indicator for the challenges sustainability professionals face implementing sustainability improvements on construction projects?



Improving our approach to sustainability meets LXRP's strategic objective to "create a knowledge and learning framework that drives continuous improvement and leaves a legacy for future projects."

## Creating a step change

The Level Crossing Removal Project (LXRP) was established by the Victorian Government to oversee the largest rail infrastructure project in the state's history - the removal of 75 dangerous level crossings across metropolitan Melbourne by 2025. Work is well underway, with 29 level crossings removed to date, 27 additional or upgraded train stations completed, many kilometres of new track laid, and other rail improvements made.

LXRP have used a 'Program Alliance' model to mobilise the state's construction industry.

Each Alliance, brings together a contractor, designer(s) and network operator(s) for the design and delivery of multiple projects. Each Alliance has a series of key performance indicators, with the potential for the allocation of additional projects based on their performance.

One performance metric is sharing knowledge across the different alliances, supporting LXRP's strategic objective to "create a knowledge and learning framework that drives continuous improvement and leaves a legacy

for future projects".

This is driving collaboration between construction industry businesses that would normally be in fierce competition.

With a client focused on continuous improvement, a clear and strong pipeline of work, and a competitive yet collaborative environment, there is a unique opportunity to reverse the global trend in low productivity improvements, and harness new and emerging sustainability practices and technologies in the traditionally risk averse construction industry.

Needless to say, sustainability professionals involved are salivating at the opportunity!

One such program alliance is the Western Program Alliance (WPA) comprising LXRP, McConnell Dowell (MCD), Mott MacDonald, Arup, Metro Trains Melbourne (MTM), and V/line. Projects completed by the Alliance include the Kororoit Creek Road (KCR) and Abbots Road (ABR) Level Crossing Removal Projects, that were awarded an 'excellent' IS design rating v1.2. Currently the WPA are working on the Aviation Road LXRP as well as the Wyndham Vale Stabling Yard.

WPA is developing both technology and non-technology approaches to improving productivity, efficiency and sustainability outcomes.

## Adopt > Adapt > Invent

As part of its continuous improvement strategy, WPA encourage a culture of learning from others, utilising the Adopt > Adapt > Invent principle to fast-track their delivery works. The principle can be applied to any aspect of projects and reminds us to use what has successfully been done before to avoid 'reinventing the wheel'. For example, direct adoption of a sustainability improvement technology or process from a previous package of work on a new site practically eliminates the effort required in design, planning and approvals. In turn, this also allows for fast-tracking sustainability uptake on projects. Where an initiative cannot be directly adopted, the team adapt it to accommodate site specific constraints, with Invention being the last resort. This aligns with the IS rating tool that rewards uptake of sustainability initiatives between projects.

<sup>1</sup> <https://www.mckinsey.com/industries/capital-projects-and-infrastructure/our-insights/imagining-constructions-digital-future>

## ..... Adopt

WPA have adopted various 'Lean' principles and tools as relevant to their works – including visual reporting and process mapping to find efficiencies and improve productivity. These learnings have been shared with other alliances and when adopted contribute to productivity gains across the entire LXP program of works.

Capitalising on the unique project pipeline situation, numerous 'Kaizen' events have been held to improve key industry processes. A Kaizen (Japanese word for 'change for better') event brings together representation from all

stakeholders involved in a process.

The key steps undertaken are as follows:

- Map current state process noting problems and opportunities.
- Map future state process and selected top improvements for success.
- Develop proposal for changes
- Get endorsement from leadership team for proposed improvements.

The result is an agreed, understood and improved process that reduces 'waste', and

a plan that is then executed to change from the current process. WPA have led Kaizen events for:

- the design process (Photo 1) – leading to a reduced design review timeframe i.e. from concept design to issued for construction drawings.
- Systems Engineering and Safety Assurance (SESA) process.
- Additional Work Package (AWP) development process.
- Opportunities exist to map the activities and evidence requirements for achieving the equally challenging IS rating process in a more efficient method.



Design Kaizen - mapping the current process

## ..... Adapt

### Case Study – U-Trough

An alternative bridge design which allows trains to travel within a concrete super-structure (U-Trough) was developed by an LXP-wide joint design group and adopted on the Mernda rail extension project

that was delivered as part of the LXP, then adapted to the given site constraints on WPA. After completing both ABR and KCR level crossing removal projects, the team shared the design, methodology and cost

information with the North East Program Alliance, who were able to use this for their next package. This bridge design reduces operational energy and noise impacts as the train travels within the structure.



## Case Study - Recycled glass sand

This is a by-product from the regular glass recycling process, a waste and an alternative to quarried virgin sand. Small glass particles are crushed to a 5mm minus size, suitable for bedding material for combined rail services conduits and drainage applications while also offering safety benefits of reduced silica content versus traditional quarried sand at a reduced cost. McConnell Dowell previously successfully used glass sand on a VicRoads project at Breakwater and understanding it had been successfully used on Melbourne Water projects for drainage bedding, were confident in using the product. WPA worked with MTM on a risk assessment process for use of Glass Sand resulting in a formal 'type approval' being issued by MTM which makes future use of the product in rail environments easier.

Through knowledge sharing by WPA with the other LXP program alliances, the material was subsequently used by the North West Program Alliance at their High Street Level Crossing Removal Project.

**1200 t**  
of recycled Glass Sand  
installed to date by WPA.

## ..... Invent

With various leaders within both the WPA and LXP embracing a positive mindset to change, inventing new ways to use technology has been made easier. A partnership between LXP, WPA and McConnell Dowell has resulted in a pilot program, being a digital platform or backbone of a data ecosystem that utilises IOT devices for reviewing, analysing and improving efficiencies on construction projects in real time. Data is obtained from machinery and equipment with sensors allowing review of the efficiency of its use on site. This can have triple-bottom-line sustainability benefits, for example, to enable review of site layouts to minimise vehicle use and fuel consumption, safer sites by reducing plant and people interactions, while also reducing associated costs from reduced time of equipment on site.

WPA are embracing the unique collaborative and knowledge-based alliance model to show how new technology and practices can be adopted, adapted and invented; improving and fast tracking sustainable outcomes. •



Launch of the pilot program at "The Hive" LXP offices





**InfraBuild** (formerly LIBERTY OneSteel):  
our commitment to a more sustainable future  
is demonstrated by our partnership with  
ISCA and its ISv2.0 rating tool, our product  
development and the publication of our  
Environmental Product Declarations.

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# ISCA to Play Key Role in Australian Infrastructure Achieving Net Zero Emissions

**Australia is currently not on track to meet its Paris carbon emissions reduction targets by 2030.**

Under the Paris agreement, Australia's aim is to reduce emissions by 26-28 per cent of 2005 levels.

The Paris emissions reduction targets were set in 2015 and are the first ever legally binding global climate requirements. The agreement binds almost 200 signatory countries, including Australia, to an action plan to keep global warming below 2 degrees Celsius.



**In relation to Australia's infrastructure, a preliminary review of emissions data suggests the construction, maintenance, operation and use of infrastructure in Australia potentially contributes 12 per cent of the country's emissions.**



According to the United Nations, global efforts need to be tripled by 2030, noting their 2018 Emissions Gap Report showed that global emissions have hit a historic high and are showing no signs of slowing down.

For developed countries like Australia, a 2-degree trajectory is generally accepted as requiring net zero emissions by 2050, while the pursuit of a 1.5-degree limit requires

an earlier date and a more ambitious decarbonisation effort. In Australia, the property, construction and infrastructure sectors are major carbon emitters. The property sector has already responded proactively with approaches to reducing emissions associated with the built environment. Several leading property companies have already committed to zero net carbon emissions across their portfolios by 2030. The Clean Energy Finance Corporation has invested more than \$1 billion over six years in its commitment to driving the property sector towards net zero carbon

buildings. Built to Perform – An Industry Led Pathway to Zero Carbon Ready Building Code by the Australian Sustainable Built Environment Council (ASBEC) and ClimateWorks Australia, has showed a forward pathway for stronger energy standards in the National Construction Code, in addition to providing much needed regulatory certainty for industry. Outcomes could include reducing household energy bills by up to \$900 each year, contributing to \$29 billion in reduced energy bills and 78 million tonnes of cumulative emissions savings across the economy by 2050.

This contributed to COAG Energy Council committing to a Trajectory for Low Energy and was followed by the Building Ministers Forum referring the Australian Building Codes Board for further advice on any changes to the trajectory to ensure delivery is in collaboration with industry.

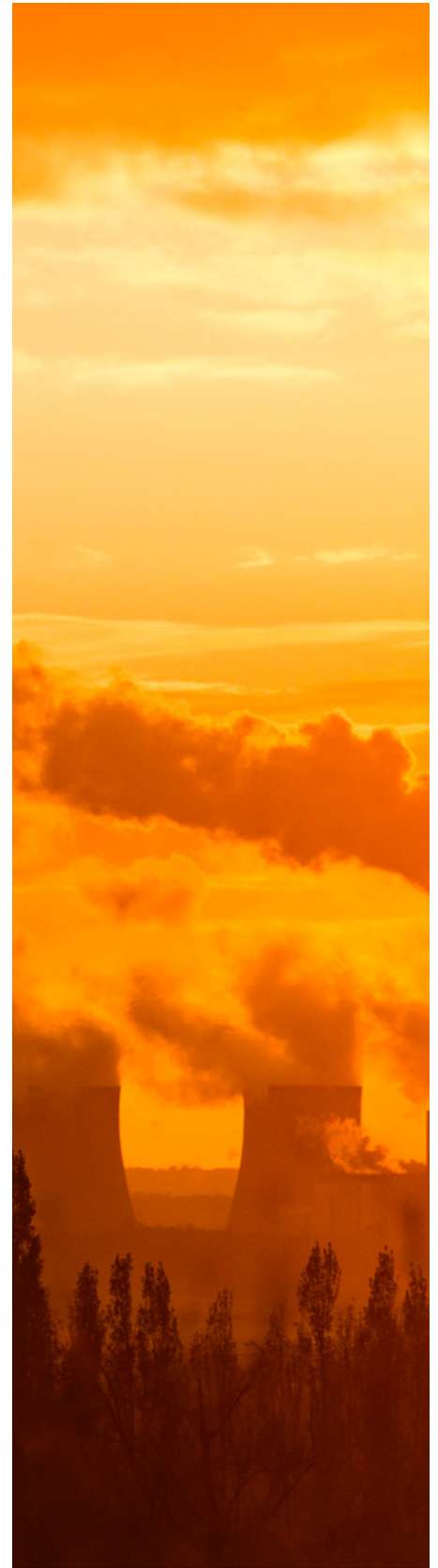
In relation to Australia's infrastructure, a preliminary review of emissions data suggests the construction, maintenance, operation and use of infrastructure in Australia potentially contributes 12 per cent of the country's emissions. Infrastructure is also a key enabler of economic activity that itself produces significant emissions, in sectors such as transport and energy. Given the long life of infrastructure assets, embedding net zero emissions principles in infrastructure today future proofs its value in a zero-carbon future.

In response, ISCA is partnering with the Australian Sustainable Built Environment Council (ASBEC) and ClimateWorks Australia to explore decarbonisation pathways to achieve a net zero emissions infrastructure, using proven research methodology.

The outcomes from this project will form the policy and technical basis for future action needed by government, asset owners, industry/professional bodies, investors and other key stakeholders in developing and applying specific policies and practices affecting the planning, design, construction and operation of infrastructure in Australia. Additional work may also be undertaken to translate this work for use at state, regional and local planning levels. This will help ensure the widest possible application and benefits from the project and maximise its impact on achieving significant carbon reductions, and Australia achieving its global commitments.

The infrastructure carbon trajectory project will occur in two steps, the first being a research step including engagement with key stakeholders to identify and explore key questions and issues facing the infrastructure sector. The second step is the mapping of pathways that can take the many sectors of the infrastructure industry to net zero emissions.

To be successful in both steps, we need the infrastructure value chain to get involved; actively contribute and be responsive in the call to climate action. We look forward to the wide reaching collaboration that will come from this major endeavour in the coming months. •



**For further information, contact Paul Davies  
at ISCA: [pdavies@isca.org.au](mailto:pdavies@isca.org.au).**



A nighttime photograph of a city street. In the foreground, a road with a metal guardrail shows long, vibrant red light trails from a car's taillights. The background features several multi-story buildings, some with lit windows, and streetlights that create bright starburst effects. The overall scene is dark, with the primary light sources being the artificial city lights.

# Virodec<sup>TM</sup> - a First for Ready- Mix Concrete In Australia

**Holcim's ViroDecs<sup>TM</sup> will support designers and developers to drive improvement in sustainable procurement and materials selection in infrastructure and building construction projects.**

All around the world, the expectation for governments and organisations to provide enhanced transparency and disclosure of environmental impacts, such as greenhouse gas (GHG) emissions, has been growing. This follows the landmark COP 21 Paris Agreement in 2015 in which all nations agreed to ambitiously pursue efforts to combat climate change and its effects.



In conjunction with the Paris Agreement's objectives, LafargeHolcim has set targets to reduce net specific carbon dioxide equivalent (CO<sub>2</sub>e) emissions by 40% per tonne of cementitious materials (vs. 1990) and to help customers avoid 10 million tonnes of CO<sub>2</sub>e release from buildings and infrastructure each year.



At the same time, the global demand for construction materials is also growing due to worldwide population growth and an increase in urbanisation. In fact, concrete is the second most used commodity in the world behind water.

This clearly demonstrates both the essential need for construction materials now and in the future, as well as the necessity for the construction materials industry to be a leading part of the solution addressing climate change.

As a member of LafargeHolcim, the global leader in building materials and solutions, Holcim is part of a global response to these challenges through the LafargeHolcim 2030 Sustainable Development Plan (2030 Plan).

The 2030 Plan aims to generate one third of net sales from sustainable products and solutions, supported by four fields of action – climate, circular economy, water, and nature – in order to improve quality of life for communities and employees.

In conjunction with the Paris Agreement's objectives, LafargeHolcim has set targets to reduce net specific carbon dioxide equivalent (CO<sub>2</sub>e) emissions by 40% per tonne of cementitious materials (vs. 1990) and to help customers avoid 10 million tonnes of CO<sub>2</sub>e release from buildings and infrastructure each year. Supply of low-carbon materials and solutions is the key to reduce the carbon intensity of the ready-mix concrete.

Here in Australia, we recognise our responsibility to contribute to global climate change targets and we have developed a roadmap and number of actions to direct our efforts. The first stage requires better understanding the environmental impact of our operations and products, and making this data readily available for analysis and feedback.

Holcim's ViroDecs™ range of ready-mix concrete represented by an Environmental Product Declaration (EPD) is one such initiative for Holcim, and a first in Australia.



## What is ViroDecs™ ?

A range of EPDs, under the ViroDecs™ brand name, which has been developed by Holcim in accordance with ISO and EN standards for Environmental Product Declarations and will be registered in 2019 under the Australasian EPD Programme. The initiative constitutes a major investment in comprehensively analysing and communicating to customers the embodied environmental impacts of Holcim's Readymix Concrete.

Data collected from across Holcim's Australian operations, including over 190 concrete batching plants and 65 quarries was fed into an ISO14044-compliant Life Cycle Assessment (LCA), by specialist practitioners, Edge Environment, and independently reviewed by an approved, third-party verifier.

The culmination of this work will be Holcim's ViroDecs™: verified documents that detail the "cradle to gate" environmental impacts of Holcim's Readymix Concrete.

The development of a concrete EPD is a critical "missing" piece to having all key infrastructure and building products represented by an EPD in Australia. Its publication will support designers and developers to drive improved sustainable procurement and materials selection in their projects.

Holcim's ViroDecs™ also has the potential to challenge views on environmental sustainability, by supporting the standardisation and transparency of environmental claims.

Holcim's ViroDecs™ will help shape the way the construction industry analyses the environmental impact of buildings and





infrastructure now and in the future. Advancing from generic environmental information to product, company and geographically-specific information will allow for deeper, broader and more customised analysis with greater confidence in the results.

Beyond providing greater transparency, Holcim's ViroDecs™ also provide a rigorous, science-based framework for driving environmental improvement throughout Holcim's sites and supply chains.

Holcim's ViroDecs™ can be directly taken up by a range of existing tools and rating schemes. The data can be imported into digital industry tools such as eTool - a web-based Life Cycle Design app for the built form used by ESD designers and developers and the IS Materials

Calculator, used to assess a project's embodied GHG emissions from materials use and their Mat-1 IS points. Holcim's

ViroDecs™ can also be used to gain points under the Mat-2 credit of the IS Rating Scheme and Credit 21 of the Green Star As Built rating scheme.

As a result, Holcim's ViroDecs™ will offer an advantage to customers wanting to be leaders in the sustainable infrastructure and building industry, however we hope it will lead the way for other concrete providers to follow suit, fostering a whole-of-life approach in the Australian construction materials industry.

For more information go to [www.holcim.com.au/virodec](http://www.holcim.com.au/virodec)s





# A sustainable Auckland together

Shaping Auckland's pathway to a zero-carbon, climate resilient future that's better for everyone.



## CityRailLink

### Leading the delivery of sustainable transport infrastructure in New Zealand

Sustainability has always been the cornerstone of our thinking.

We challenge ourselves and our contractors to think not only about cost and programme but resource efficiency, waste avoidance, upskilling our workforce and leaving a positive cultural legacy for Auckland.

It's that ongoing commitment – to deliver New Zealand's largest-ever transport project as sustainably as possible – that's seen us awarded New Zealand's only 'Leading' ISCA rating and the country's highest sustainability accolade.

Visit [www.CityRailLink.govt.nz](http://www.CityRailLink.govt.nz) to see how we're setting the benchmark for the construction industry.



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# ISCACONNECT

INFRASTRUCTURE SUSTAINABILITY

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## ANNUAL CONFERENCE

Abstract submissions open  
on the 17 July, 2019.



## ANNUAL AWARDS GALA DINNER

Awards submissions open  
on the 10 July, 2019.

## MELBOURNE CONVENTION AND EXHIBITION CENTRE

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Wednesday 16, October

Thursday 17, October

## CROWN MELBOURNE

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# Infrabuild: Contributing to the Creation of Sustainable Infrastructure

**Steel has a fundamental part to play in creating sustainable and long-lasting infrastructure that can unlock our congested cities.**

Australia is witnessing record levels of infrastructure development, with new airports, major roads, bridges, railways, metro and light rail projects, hospitals, sport stadia and schools all under construction or in advanced stages of planning.





InfraBuild (formerly LIBERTY OneSteel) actively supports and participates in the Infrastructure Sustainability Council of Australia's (ISCA) Infrastructure Sustainability (IS) Rating Scheme that provides sustainability performance ratings for many of these infrastructure projects, as well as other schemes designed to promote sustainable design and construction in the wider built environment.

The company is Australia's only integrated manufacturer and supplier of structural and reinforcing steel, including reinforcing bar and mesh, merchant bar, pipe and RHS, hot rolled structural, rod and wire products, enabling the construction of steel-framed buildings, buildings framed in concrete and nation-building infrastructure projects. It is also one of Australia's leading metals recycling businesses.

'Sustainability' is one of InfraBuild's core values and aligns with ISCA's core value of 'Improving the productivity and liveability of industry and communities through sustainability in infrastructure'.

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**Steel has an essential role to play in the circular economy because it aids sustainable procurement in the materials supply chain.**







InfraBuild's critical role in the mission to create a sustainable future for both industry and society is outlined in GFG's Sustainability Report 2018. The Report demonstrates GFG's innovative practices throughout its businesses. At the core of the plan is InfraBuild's GREENSTEEL Strategy, which focuses on promoting greater use of recycled materials, increasing the use of renewable energy and operating facilities close to key markets. InfraBuild produces approximately 1.2 Mtpa of steel using recycled steel and scrap metal.

InfraBuild's environmental management systems at all of its operations comply with International Standard ISO14001 and have achieved external certification. The company also provides global leadership on sustainability matters through its affiliation with worldsteel and has been a Climate Action Member through its reporting of CO2 data for over a decade.

## **Paving the way for a green future**

InfraBuild recently supported ISCA in the development and release of version 2.0 of the IS rating tool, which recognises and rewards initiatives that further social and economic sustainability in infrastructure projects. It is also a partner to ISCA's ISupply program, which connects sustainable products and services with projects and assets to help them achieve sustainability outcomes rewarded under the IS Rating Scheme.

Importantly, InfraBuild can help projects receive IS points by making available its pioneering Environmental Product Declarations (EPDs). These EPDs provide transparent information about the environmental impact of a product throughout its lifecycle and are recognised in the IS v2.0 rating tool and in the materials calculator.

InfraBuild works in close collaboration as a major supplier of building materials and services to Australia's biggest nation-building infrastructure projects. Many of these use sustainable materials to leave a positive and long-lasting environmental legacy, boosting their sustainability ratings through the use of InfraBuild products and services, supported by its EPDs.

Victoria's Caulfield to Dandenong (CTD) Level Crossing Removal project, part of Victoria's Level Crossing Removal Authority's (LXRA) program of removing 75 level crossings in metropolitan Melbourne, is one such example, earning an 'Excellent' IS sustainability rating. Approximately 4000 tonnes of prefabricated reinforcing steel was delivered to the CTD project by InfraBuild.

In 2018, the LXRA: Bayswater Alliance and Melbourne's Metro Tunnel (to which InfraBuild is supplying 250 steel reinforcement cages at five underground stations) were both recognised with ISCA Outstanding Achievement awards for their predicted energy reductions of 39% and 44%

respectively.

## **Steel and the circular economy**

Steel has an essential role to play in the circular economy because it aids sustainable procurement in the materials supply chain.

**Steel is infinitely recyclable – the most recycled building material by weight on the planet – making it the ideal building material to reuse or recycle at the end of a building's lifecycle or during a major transition in that building's lifecycle.**

InfraBuild actively promotes this thinking through its manufacturing of high-strength steel that is 'designed for deconstruction'. It recognises that dematerialisation (the use of less steel to achieve the same outcome) is a key part of making infrastructure more sustainable.

Together with its partners in construction, InfraBuild is committed to driving better sustainability outcomes for all of the major infrastructure projects currently underway in Australia – and those to come. •





# Meeting the Resourcing Challenge

**We're fortunate enough, as sustainability practitioners working in the infrastructure and construction industries, to now be witnessing a significant increase in the uptake of the IS Rating Scheme and desire for greater sustainability outcomes by project proponents on all manner of infrastructure projects across Australia and New Zealand.**





*By Nicole Neal, Cardno  
APAC Environment &  
Sustainability Director*

This is absolutely fantastic, as it means the industry is making and driving change with some real tangible sustainability outcomes, and changing the way people think and go about project delivery.

It also means there's an increasing call for sustainability professionals, including highly experienced practitioners with 15-20 years' experience, those just learning the ropes and setting off on their career journeys into sustainability, and pretty much everyone in between.

And this increasing call for sustainability professionals, whilst ultimately a great thing, also means that the industry is

struggling to keep up in terms of qualified and experienced sustainability practitioners.

### **Accreditation and Experience**

The Infrastructure Sustainability Accredited Professional (ISAP) accreditation is the first step in meeting this need for practitioners. It gives surety that a minimum level of understanding and competency exists amongst those involved in shaping, driving and developing sustainability outcomes on projects.

Again this is also absolutely fantastic, but it is just the first step in a journey. Experience is a must - a proven combination of the ability to communicate with different people at different levels, working in closely with

design teams, on-ground construction experience during project delivery, and the ability to have organisational credibility and influence decisions being made. And this is particularly important on the larger, more complex infrastructure projects we're seeing being delivered and planned for across Australia and New Zealand.

### **Why is this important?**

Well, the ability to understand, first hand, the operational and commercial realities and pressures of project delivery, coupled with appropriate communication skills, undoubtedly leads to greater effectiveness in influencing sustainability initiatives and outcomes on a project.

And these kinds of things, the requisite experience, come



through the fullness of time in working on and around construction and infrastructure delivery projects. However, that time is at a premium.

## Leverage the networks and mentoring

We obviously can't create experienced sustainability professionals at a click of the fingers. We have to be more sensible about the resources we have available to us, and think about how we use them in different ways.

We have a huge ISAP network out there, including a fair few of us who've been involved in a number of projects across various jurisdictions now. Those of us who've done a few laps of the sustainable infrastructure block are more than happy to help with questions and devising approaches to issues.

There are a number of us, myself included, who are mentoring, either formally or informally younger or less experienced sustainability practitioners. I can't speak for everyone, but I love to share and help with benefit of having been in their shoes and walked the difficult paths, and provide some insights, strategies, approaches and advice if needed.\* Leverage that

experience, reach out and get in touch.

## Co-opertition

I've written in the past on behalf of a former employee about the need for greater "co-opertition" – well, never has the time called for more co-opertition than now.

Co-opertition is the ability to be able to cooperate with those who would ordinarily be your competition.

In order to get the right people, into the right roles, on the right projects we need to be open, as an industry, to coming together – partnering, joint venturing, or otherwise blending teams to meet the needs of a particular project and set of outcomes. Partnering senior practitioners with more junior practitioners across differing organisations even – helping them walk a path that has been walked before.

## Consulting Experience and Capacity Building

Where consultants are being used on projects (and I say this in full awareness of being one myself at this stage in my career!) make sure they have got that mix of experience – the

design skills, the on-ground construction nous, and importantly that ability to communicate and really influence decision-making.

Here at Cardno, we have that mix of individuals in our team, with professionals that have been directly involved in numerous ISCA-registered and certified projects across Victoria, New South Wales, Queensland, Western Australia and New Zealand.

Whether involved as Independent Sustainability Professionals, reviewers, trusted advisors, or providing specialist technical input into an IS ratings, the Cardno team always aim to work with project delivery teams in an integrated fashion, helping to upskill all involved and build capacity in those teams irrespective of "home" organisation. •

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**\*Cardno's APAC Environment & Sustainability Director, Nicole Neal, is happy to be approached for mentoring.**

The background of the entire page is a photograph of a construction site at sunset. Several workers in high-visibility clothing and hard hats are visible. In the foreground, a worker in a yellow and orange high-visibility suit and a yellow hard hat is bent over, working on a structure. Other workers are standing in the background, silhouetted against the bright, low sun. The sky is a mix of orange and blue. There are some thin, curved blue lines overlaid on the upper part of the image.

# ISupply

[www.isupply.org.au](http://www.isupply.org.au)

A Directory Connecting  
Sustainable Products  
and Services with  
Infrastructure Projects

**The ISupply Directory gives procurement teams access to suppliers that can help a project or asset achieve sustainability outcomes rewarded under the IS Rating Scheme.**

The directory links products and services to IS credits, helping to identify suppliers that can meet project requirements.

You can search by the product or service you require, the phase your IS Rating is in (planning through to

as built), rating type (ISv1.2/v2.0), or by the IS credit you are trying to satisfy.

If you are an ISCA member, please get in touch to find out how you can list your product or service on the ISupply Directory.





Email: [rob.rouwette@start2see.com.au](mailto:rob.rouwette@start2see.com.au)



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# Building the Central Interceptor

**Sustainability successes and the challenges of adopting ISCA post-design.**

Watercare is building the Central Interceptor (CI) wastewater tunnel from Western Springs to Mangere and are targeting a design and as-built rating of “Excellent” for the project.

Puketutu Island



## The CI will be a 13 km long, 4.5 m diameter sewer running from Western Springs to the Mangere Wastewater Treatment Plant, collecting wastewater from central and west Auckland.

Auckland's wastewater network was built in the early 1900's. Since then, a lot has changed including population growth and densification, climate change projections, ageing assets, and efficiency improvements. The CI is being built to address these changes and to significantly reduce combined wastewater and stormwater overflows that currently occur in our local waterways as a result of the combined sewer system built alongside the earliest established areas of Auckland.



The CI will be a 13 km long, 4.5 m diameter sewer running from Western Springs to the Mangere Wastewater Treatment Plant, collecting wastewater from central and west Auckland. The project is based on three key sustainability outcomes:

### 1. Critical Asset Management

We are replacing ageing infrastructure that is reaching the end of its life. A consequence of not taking action to replace this infrastructure if it failed would be uncontrolled wastewater discharge into the Manukau Harbour

### 2. Capacity

Given the rapid increase in the Auckland population, waste-water infrastructure will reach capacity earlier than previously anticipated. A consequence of not taking action to increase the capacity of this infrastructure is dry weather overflows into the environment.

### 3. Wastewater overflow control

The current wastewater network overflows into some Central Auckland waterways during wet weather events. The CI and associated Western Isthmus Programme will reduce the average overflow volume in these areas by 80% resulting in improved ecological habitats

and better water quality for recreational purposes.

The 2008 Three Waters Strategic Plan introduced the first iteration of the CI which has been developed through vigorous optioneering, consenting, and design. During this process, infrastructure sustainability (IS) has emerged and evolved. The CI was designed with general sustainability in mind without an awareness of how IS could be implemented as ISCA was not well established in New Zealand at the time. The industry has now come much further in terms of defining and measuring sustainability outcomes in projects.

We have worked toward sustainability outcomes during detailed design which fit with IS principles. Some of the more significant successes include:

### Shaft removal at Kiwi Esplanade

During detailed design, opportunities were found to eliminate a 30 m deep, 7 m diameter drop shaft located in Mangere in response to local community concerns around noise disruption and disturbance to the native bird life during nesting, as the site is a critical bird roost location. This has significantly reduced construction materials, traffic volumes and reduced GHG emissions.







## Drop shaft design change

Through the detailed design phase, drop shafts at Keith Hay Park and Walmsley Park were modified from twin vortex and de-aeration shafts with a combined diameter of 12 m to single cascade drop shafts with a diameter of 3 m.

These changes were estimated to reduce excavation and associated spoil removal from these sites by 50%. Furthermore, the cascade drop shafts are specifically designed to have no operational or maintenance requirements for their lifetime.

## CI Tunnel Spoil to be part of the rehabilitation of Puketutu island

Puketutu Island, known as Te Motu a Hiaroa to Mana Whenua, is sacred to the people of Te Kawerau Maki, Te Waiohau and Waikato-Tainui. In the 1950s, the island was quarried for projects including the expansion of Auckland Airport. Thousands of tonnes of scoria and basalt were removed and the island's volcanic cones disappeared. Watercare is restoring the island by filling the former quarry with treated biosolids from the Mangere

Wastewater Treatment Plant. The spoil from the CI project will be used at Puketutu to contribute to re-contouring the land to replicate the scoria cones.

### Sustainability benefits of this initiative include:

- Reducing fuel demand and truck movements on main roads as Puketutu Island is a short drive from the Mangere shaft site, (where spoil from the southern portion of the tunnel will be removed).
- Contributing towards the restoration of a culturally significant site to its former state.
- Contributing to the long-term goal of Puketutu serving as a recreational reserve for everyone in Auckland to enjoy.

There are significant challenges associated with adopting an IS rating at a post-design phase, including:

- Reduced capacity to alter design limiting sustainability initiatives to temporary works and construction activities.
- Design being done independently of an IS rating resulting in various credits with specific requirements for the design phase being unachievable.
- Adapting to the IS tool which is still reasonably new in New

Zealand - we are building relationships through sharing knowledge and information with other projects such as the City Rail Link to understand resourcing requirements and how to best work with our industry.

Despite these challenges we have already seen the benefits of adopting ISCA, such as raising awareness around sustainable construction methodologies within the project team, building a sustainably focused culture when considering temporary design and value engineering,

challenging ourselves to do even the simple things differently, and looking at other outcomes that can be achieved through this project that would benefit the wider community.

Adopting the IS Rating Scheme in a post-design phase comes with challenges but through capturing the sustainability initiatives that were adopted during the design phase and focussing on what impacts can be reduced going forward, the CI aims for a sustainably built wastewater solution and an "Excellent" as-built rating. •



# Delivering Renewable Drinking Water Across Australia

**SOURCE is the worlds first and only Hydropanel, a technology that uses only sunlight and air to make pure mineralised drinking water for every person, every place.**

The World Health Organization estimates that 663 million people don't have access to clean drinking water, and this number is growing.

Founded in 2014 and based in Arizona, Zero Mass Water believes that drinking water is a fundamental human right, and is working to create a world where everyone, everywhere has convenient, reliable access to clean, beautiful drinking water.







With a large backing from, Breakthrough Energy Ventures, a coalition chaired by Bill Gates and boarded by Richard Branson and Jeff Bezos, SOURCE water is becoming the go-to drinking water solution for people and organisations in over 20 countries. With the help of HydroPoint, this solution is making its way into the Australian landscape.

What if you could drink perfect mineral water every day of your life without the cost, inconvenience and environmental impact of buying bottled water from the shops? What if we could source our own water without extracting water from aquifers or adding chemicals to it? What if the world's purest water isn't found on earth, it's found in the atmosphere above it?

What was once seen as drinking water of the future, SOURCE Hydropanel Technology is producing high-quality, renewable, off-grid drinking water for families and businesses across Australia, all from the comfort of people's homes and office spaces.

All water we drink or can get access to, at some point it fell out of the sky, soaked into the ground, got pumped and treated, and it was either put in a bottle or sent down a pipe. This SOURCE water is fundamentally different. It's a sort of digitisation

of water, in the sense that we can just show up and provide water anywhere, even during a drought.

"When the SOURCE Hydropanel was conceptualised, it was around this concept of—you're living in the 21st century with respect to the information. All of humanity's information is in this computer in your pocket. Solar panels allow electricity access globally, independent of infrastructure. And yet with water, we're living in the Roman era. We have to wait for this stuff to fall from the sky. We talk about droughts and lack of drinking water, which is insane. Could we imagine technology that would enable the same sort of independence as with solar, but do that with water?" Zero Mass Water's founder and CEO, Cody Friesen, a U.S scientist, whose previous company makes batteries serving as a power source in remote villages in four continents. Through a bunch of technology effort, that became SOURCE Hydropanels.

SOURCE Hydropanels have many layers, between materials, the architecture, the controls and the solar thermal and solar PV components working in cohesion, it is the world's and now, Australia's first truly off-grid drinking water. On top of that, this technology is so high-tech it enables drinking water transparency with the launch of its new sensor, SOURCE Informed. This allows

the Network Operating Center in Scottsdale, Arizona to monitor SOURCE water quality in over 20 countries across all five continents.

From individual homes in Berkeley Hills and New York to schools in Mexico, India, Kenya, Hospitals in Vanuatu, Syrian refugees in northern Lebanon, and now since early 2018 throughout urban and remote locations across Australia, in NSW, QLD, WA, SA, ACT & VIC. SOURCE is delivering clean, reliable, sustainable drinking water across a huge range, which is exactly what the company set out to achieve.

At HydroPoint, we are committed to advancing access to clean drinking water across the world in a fast, affordable, equitable, and scalable model. For many projects or communities trying to improve or extend bulk infrastructure solutions to smaller water needs, is usually cost-prohibitive, meaning budget or location limitations eliminate any long-term supply options for rural, peri-urban, and remote communities or infrastructure projects. SOURCE is the first decentralized, infrastructure-free drinking water solution that can be scaled for demand.

**For more information on SOURCE Hydropanels, call or visit [HydroPoint.com.au](https://HydroPoint.com.au) or call on 0420267676 for fastest response. •**





Image: Canberra Light Rail