

Digital by Default

Increasing productivity and
delivering better outcomes from
our infrastructure investment

June 2023



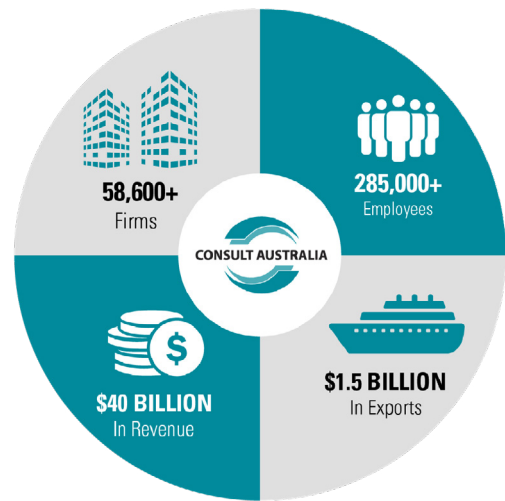
GREEN PAPER

About Us

Consult Australia is the industry association representing consulting businesses in design, advisory and engineering.

For more than 70 years, we have championed the full spectrum of the sector. Our members, ranging from Australia's most innovative small and medium sized firms to global corporations, deliver the solutions to the nation's most complex challenges helping shape, create and sustain our built and natural environment.

Our vision is for a thriving, competitive consulting industry that supports a prosperous economy and better outcomes for our members' clients including for governments and the communities they serve.



Collaborators for change

This Green Paper embodies a collaborative approach to drive leadership and action. Thanks to our steering group that has developed this paper in collaboration with Consult Australia including:



Acknowledgement of Country

We acknowledge the Traditional Custodians of the land on which we work and live, which includes the lands of the Gadigal, Kaurua, Kulin, Turrbal and Wurundjeri people.

We pay our respect to Elders past and present.

Consult Australia is determined to be an action driver, and this paper is that call to action.

The conversation about the transformative power of digital technologies is one held in every boardroom and on every construction site in the country. This paper is not a contribution to the business case for digital technologies and a 'digital by default' mindset – because this business case is well established.

As Australian governments invest billions in infrastructure, we must not waste the once-in-a-generation opportunity to accelerate our industry's digital transformation. At stake is our economic productivity and net zero emissions targets, our talent pipeline and our international competitiveness. But up for grabs is greater productivity and better value for money, more sustainable and resilient infrastructure and better outcomes for people and the communities we serve.

We seek your perspectives to shape our recommendations to the Australian Government.

We have identified several core recommendations to drive change, support innovation and realise a world-leading position. Our recommendations build on best practice already being delivered across the country and provide a roadmap for collaboration. Some states are already exemplars of best practice and this process will allow us to amplify their approaches.

We all know, instinctively, that Australia is too small to compete internationally through a patchwork of differing state and territory approaches. We must use federation as a source of competitive advantage, not as an excuse for fragmentation. As we consider data sharing, security, privacy and access, a nationally coordinated approach can help us to leverage existing best practice to accelerate digital transformation.

With the strong support of our members, Consult Australia is proud to take a leadership role in shaping the future of infrastructure.

We believe there is no organisation better placed to champion digital by default as we represent the people and organisations engaged in projects from the earliest stages, and that hold digital assets rarely used to their full potential. The recommendations and principles outlined in this paper provide a roadmap to achieve a common industry goal.

I encourage all stakeholders to walk alongside us as we take the lead on digital by default.

Jonathan Cartledge
*Chief Executive
Consult Australia*

An all-win no-lose opportunity

...the sheer scale of growth in demand for skills and resources to support infrastructure delivery is likely to exceed normal capacity increases in the market. Given the difficulties in quickly increasing construction labour and capital inputs to meet demand, productivity improvements offer a critical opportunity to minimising capacity and capability risks, improving outcomes, enhancing industry sustainability, and lowering infrastructure costs.

– Infrastructure Australia, Infrastructure Market Capacity 2022 Report

Record levels of spending on infrastructure and construction projects drives economic growth and can realise a better standard of living for communities across Australia. Leveraging the value of our infrastructure investments is an imperative when other parts of the economy are in stress.

This is why we need to provide certainty and clarity to the industries that underpin the delivery of infrastructure. Historically, the adoption of digital technology tools has been slow. Decades of data insights – and the productivity improvements that come with those data insights – have been lost.

This slow growth has been highlighted by several landmark studies over many years, most recently by [Infrastructure Australia in its Infrastructure Market Capacity Report in 2022](#), which notes that construction sector multifactor productivity has stagnated for 30 years.

As Australia faces global economic uncertainty, it is time for urgent action.

We know that digital technologies, information management and the smarter use of data can revolutionise the way infrastructure is planned, designed, delivered and operated. However, the infrastructure and construction industry has been slow to realise this potential.

Collaborative leadership between government and industry is critical. Government, as regulators, owners, funders and beneficiaries of public infrastructure, has a crucial role to play in driving the transition towards a “digital by default” approach. This means moving away from the current “digital by exception” mindset, and embracing new technologies and digital practices from design, through procurement, construction, handover and maintenance to improve outcomes and boost productivity.

The recommendations are now well-evidenced and compelling; but we need the leadership to drive action. This starts with a focus on policies that support the development of digital skills and complement core professional competencies. Setting common standards and approaches is also essential to ensure that data and information sources are shared, reused, structured, open and valued, and that the single-purpose creation and procurement of information and data is replaced with a collaborative approach.

The benefits of embracing digital technologies and data tools in infrastructure and construction are clear. A digital-first

approach will enable better infrastructure design, improve the delivery of services to end-users, and lead to significant productivity gains for governments. Furthermore, it will enable infrastructure to be designed, delivered, operated and maintained at a lower cost.

With record infrastructure investment now underway, a digital by default approach can be a catalyst to unlock vastly improved economic growth and community outcomes.



Digital by Default: a snapshot

THE CHALLENGE

Australia has the potential to be a world leader in digital technologies and data tools in infrastructure and construction, but without holistic planning and implementation of cutting-edge technology, our efforts will continue to be disjointed. The challenges of a joined-up approach are considerable but are not insurmountable.

THE URGENCY

We have a rare opportunity to consider not just what we deliver, but how we deliver this infrastructure to leave a legacy and shape Australia for the next generation.

THE DIVIDEND

A digital by default approach across infrastructure and construction will act as an enabler for policy priorities across government delivering better value for money outcomes, supporting pathways to net zero, leveraging infrastructure as a productivity lever, supporting better social outcomes and preparing for the future of work, and a future made in Australia.

THE PLAN

OFFICE FOR
DIGITAL BY DEFAULT
IN INFRASTRUCTURE

ESTABLISH
FOUR STREAMS

ESTABLISH
RESOURCES & FORUMS
UNDER THE STREAMS

The challenge

Australia has the potential to be a world leader in digital technologies and data tools in infrastructure and construction, but without holistic planning and implementation of cutting-edge technology, our efforts will continue to be disjointed.

National coordination is vital to accelerate social and economic progress, deliver transport and communication connectivity, support strategic regional development, enhance creativity and culture, and realise a competitive position alongside our global counterparts.

For business, a digital by default approach will provide greater certainty and confidence to deliver more innovative solutions for clients, invest in staff capability and skills, manage risk and leverage existing intellectual property and capability.

The challenges to a joined-up approach are considerable but are not insurmountable.

Trailing behind, not trail-blazing

According to the IMD World Competitiveness Center, an independent university institute that measures the capacity and readiness of economies to use digital technologies, Australia ranks 14th of 63 analysed jurisdictions. Our nation trails Denmark, USA, Sweden, Singapore, Switzerland, Netherlands, Finland, Korea Republic, Hong Kong, Canada, Taiwan, Norway and the UAE.

Market confidence

We know, for smaller firms, a more certain and consistent policy environment is critical, without which they do not have the confidence to make the investments required and support a digital by default approach.

Profitless boom?

With skills shortages high and pipeline projects continuing to grow, resourcing and costs are ever important considerations. However, as demonstrated in this paper, digital investment will reap greater rewards in the future, while boosting productivity today.

All talk, no action

Hundreds of papers have been written to encourage Australia's construction industry to embrace digital technologies over the last decade. While pockets of world-leading practices have emerged, innovation remains primarily siloed, impacting our productivity as a nation.

Inertia

We need a national approach to support digitalisation, and government clients require industry insight to minimise the cost of specifying processes which industry is not yet capable of delivering. Digital champions can address the inertia by leading, rather than following, on digital uptake.

Fragmentation

Australian policy reform is disjointed by design and is a consequence of our federal system.

To overcome this, we support the creation of a federally funded office to draw together government departments and agencies, industry bodies and academia to lead this digital transformation for our built environment across all tiers of government.

What other challenges do you think may prevent us from achieving digital by default?

Scan the QR code to provide your feedback



The urgency

In FY 2019 alone, the opportunity cost – that is, the potential foregone construction output from a 30-year period of relatively weak productivity performance – was roughly \$35 billion. Two years later, the opportunity cost has blown out to \$47 billion. To put the size of this loss into context, the \$47 billion figure for FY2021 alone dwarfs the cost of some of Australia’s largest infrastructure projects currently.

– Australian Constructors Association, [Disrupt or Die](#) (2022)

The Australian Government maintains a commitment to a \$120 billion [10-year rolling infrastructure pipeline](#). This significant investment is felt across the built environment with significant skills shortages, rising costs of materials and supplies, and salary increases reflecting the competition for talent. The resources available, both in terms of our people power and materials, is far exceeded by the demand. It does not appear that pipelines will slow as we look forward to huge projects such as the hosting of the Brisbane 2032 Olympic and Paralympic Games.

While proposals for a five-to-ten-year plan have been put forward by counterparts and colleagues, we are calling for action now, recognising the dual triggers above of high demand, low supply, as well as the negative impacts to productivity if digital uptake is not prioritised in the immediate future.

We have a rare opportunity to consider not just what we deliver, but how we deliver this infrastructure to leave a legacy and shape Australia for the next generation.

Thinking out loud...

What do we want our legacy to be? Will it be the satisfaction of having delivered projects on time and budget? Will it be contributing to the broader social and environmental benefits that come with that? Or do we want to also reflect on a decade of contributing to a sustainable and prosperous industry with the best skills, world leading projects and a global reputation for digital excellence?

Will we have captured the Olympic-sized opportunity to catalyse change, drive economic growth, and build new skills, knowledge, and services we can export to the rest of the world?

Or, when we reflect on the legacy of what will be a once-in-a-generation infrastructure investment, will we ignore a half-a-trillion dollars in lost productivity?

Do you agree we need urgent action to create a national approach to realise digital by default? Why?

Scan the QR code to provide your feedback



The dividend

A digital by default approach across infrastructure and construction will act as an enabler for policy priorities across government:

- delivering better value for money outcomes
- supporting pathways to net zero
- leveraging infrastructure as a productivity lever
- supporting better social outcomes
- preparing for the future of work, and a future made in Australia.

Delivering better value for money

In 2017, the Australian Construction Industry Forum and Australasian Procurement and Construction Council put forward a [BIM Knowledge and Skills Framework](#). This noted the value for money that adoption of Building Information

Modelling (BIM) could deliver as just one element of a digital by default approach. At the time the potential for financial savings through the use of BIM was estimated at 15-20% per project which is significant noting that the 2016-17 estimated construction spend in Australia was \$207 billion. Even with the more conservative 15% productivity improvement driven by BIM, there would have been a \$31 billion saving. These findings continue to drive the work of the Australasian BIM Advisory Board (ABAB) as it supports a more integrated approach between government, industry and researchers for the consistent adoption of BIM in Australia.

At a project level, the 2016 Report on the [Inquiry into the Role of Smart ICT in the Design and Planning of Infrastructure](#) was also compelling.

There is much evidence, particularly from the UK as to the potential for monetary savings (often quoted as 15-20 per cent per project for buildings), more reliable time estimates, improved client and stakeholder satisfaction and reduced risk of variation and legal disputes caused through misunderstandings and different interpretations, particularly of design intent. The reduction of variation from planned time, cost and quality may well be even greater in the delivery of infrastructure than in buildings because over-runs of schedule and budget are so typical. The benefits of BIM are well summarised by the UK High Speed 2 (HS2) rail program. Note that these savings are only in CAPEX; it is expected that overall 33 per cent could be unlocked over the whole life cycle of the asset. Also, the costs of doing nothing will leave Australia at the mercy of more far thinking and innovative economies.

– Inquiry into the Role of Smart ICT in the Design and Planning of Infrastructure (2016)

A net zero future

In the 2021 [A Net Zero Future: Delivered Through Our Infrastructure Pipeline](#)

Consult Australia and our industry partners outlined the important role digitalisation will play in meeting our net zero goals. Case studies illustrated the market demand for emission management to be incorporated into digital design processes. The practical implementation of a net zero vision is achievable with advancements in digital design methods, standards and technologies.

The application of digitalisation throughout the project lifecycle – from design and through construction, into handover and maintenance – is critical to reduce whole-of-life emissions.

Modern methods of construction, themselves dependent on effective digital models, increase efficiency, productivity and minimise emissions through the construction process.

For asset owners, effective handover of digital models and asset information enables effective monitoring and maintenance and can inform future decisions about how and when to refurbish or decommission.

Leveraging digital as a productivity lever

[Infrastructure Australia](#) notes that implementing best technology practices could result in a productivity improvement up to 15% and more than 5% in cost efficiencies. Additionally, 'digitally rehearsing' our infrastructure projects before they are built (using, for example, digital twins) can avoid cost blowouts, optimise service level performance and more.

Delivering better social outcomes

Instituting data sharing and exchange practices, as well as using data analytics, can result in more planned digital connectivity between government and the private sector. This can help address the digital divide in the nation and strengthen our ability to deliver better social outcomes.

ClimateWorks Australia estimates the construction and operation of physical infrastructure assets for transport, energy, water, waste and communications directly contributes to 15% of Australia's annual emissions, while these assets influence an additional 55% of annual emissions through the activities they enable.

– Infrastructure Sustainability Council, ClimateWorks and ASBEC, [Reshaping Infrastructure for a Net Zero Future \(2020\)](#)

How can we leverage digital as a productivity lever? How can digital deliver better social outcomes from our investment?

Scan the QR code to provide your feedback





Future of work and skills made in Australia

Digital by default can bolster the efficiency of current work practices, as well as increase the range of jobs available within the Australian market. Harnessing digital by default now can help to cement our position as a world leader for global talent, local talent, job growth and productivity. However, we urgently need to invest in digital skills training.

37 new skills have emerged in relevant public infrastructure job advertisements since 2016. Of these, 27 appear exclusively or overwhelmingly in the public sector, the majority being digital skills.

– [Infrastructure Australia, Infrastructure Market Capacity 2022 Report](#)

Recommendations for reform have been articulated. Now is the time for action. Infrastructure Australia’s [Delivering Outcomes \(2022\)](#) has undertaken significant work in this space highlighting the need for a common framework. Clear communication of the capability requirements to the industry helps build the digital literacy across the infrastructure sector. Standardising best practice ensures all contributors are moving in the same direction. As a result, it enables focused investments and better transferability of skills across the sector.

The Australian Government’s support for a [Digital and Tech Skills Compact](#) between government, unions and technology employers is a great place for digital skills frameworks to commence.

Standards Australia, in its recently released [Digital Twin White Paper](#), also identified the need for a national skills and competency framework to support the marketplace and enhance Australia’s capability. Ensuring that Australia progresses this framework is an important step forward to support greater productivity, while remaining competitive in the global digital twin skills market.

Leveraging existing best practice

We are eager to assist the Australian Government to leverage existing best practices demonstrated across the states and territories of Australia, as well as international examples. Below we identify a list of great initiatives and welcome feedback to shape some detailed examples.

Australian Initiatives

- Australian BIM Advisory Board
- BrisBIM
- Building 4.0 CRC
- Committee for Brisbane Regional Data Community Framework
- Cross River Rail
- Digital Twin Partnership
- Digital Twin in practice
- Digital Twin Victoria
- Future Cities CRC
- IoT Policy
- NSW Government Smart Infrastructure Policy
- Resilient Sydney Data Sharing
- Schools Infrastructure NSW
- SEQ Digital Twin Business Case
- Southern Ports
- Western Sydney University Centre for Smart Modern Construction (c4SMC)

Global Initiatives

- Centre for Digital Built Britain
- Digital Twin Hub (Australia/NZ)
- Singapore Smart Nation Authority

What Australian and global initiatives do you think highlight existing best practice?

Scan the QR code to provide your feedback



Proposed action plan

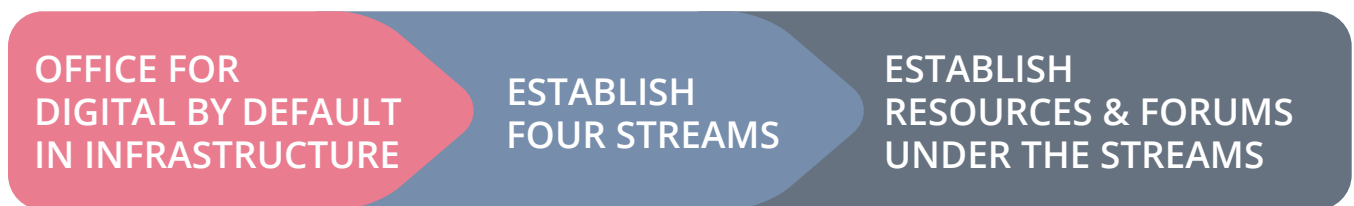
Digital by default essentials

To support the transition to digital by default, Consult Australia backs the calls by other bodies, including Infrastructure Australia, for the Australian Government to play a leading role in being a catalyst for infrastructure's digital transition. Guided by the essentials below, the first step is to celebrate and scale-up best practice and co-ordinate existing leadership. The government can drive policy to build capability and procurement that supports innovation.

The essentials:

- A common national approach to information frameworks and requirements applied across infrastructure assets
- Projects and programs recognising information as an asset that informs effective insights-driven action and investment throughout the project lifecycle
- All major contributors to infrastructure delivery have clear digital transformation strategies
- All infrastructure projects and programs to identify minimum critical data sets for design, construct and operate phases (and for carbon emissions tracking of infrastructure projects and adopt digital twins)
- Programs adopting development and procurement approaches that enable innovative infrastructure solutions and collaborative delivery models.

The steps towards the realisation of these essentials are outlined in the proposed action plan.



Establish the office for digital by default in infrastructure

Consult Australia supports the call from the 2021 Australian Infrastructure Plan for the establishment of an Office for Digital by Default in Infrastructure.

The Office for Digital by Default in Infrastructure can transform the way we plan, build, maintain, and use our social and economic infrastructure, to create a future in which people and nature can flourish for generations. It will bring together the best and brightest, across the public and private sectors, to support digital transformation of our built environment. Much can be taken from the UK's Vision for the built environment.

Value

When it comes to extracting value from our infrastructure, research by the [World Economic Forum](#) tells us that the *existing* infrastructure plays the bigger part in this picture. That is, the quality of the services delivered to the economy, environment and society is determined by the 99.5% of the infrastructure that already exists versus the 0.5% constructed annually. Given this, we should be investing in ways of improving the old, rather than inventing the new. Digital by default is a means to do this.

Leadership

The Office for Digital by Default in Infrastructure can provide the visionary leadership to connect, coordinate and convene activities across industry, academia, and policy (federal, state and territory), linking the elements of smart places (see Bee Smart City, [Smart City Indicators](#)) to deliver real change.

The Office for Digital by Default in Infrastructure can help tackle the grand challenges of our time – climate crisis, loss of biodiversity, social inequality and more. The Office can address these challenges in the context of a global economic crisis and a marked lack of time, as we have just six years remaining if we are to keep warming below 1.5 degrees Celsius (according to the [IPCC](#)). The time for action is now.

Funding

It is proposed that the Office administer a Digital Infrastructure Innovation Scheme offering matched funding to states and territories and update national federal funding guidelines for the assessment and prioritisation of projects that meet and/or exceed the minimum requirements in the National Digital by Default Handbook (see Stream 2 below). Consult Australia understands that there are existing practices or proposals that could be drawn upon to develop this concept (for example, Committee for Brisbane Data Leadership Accelerator Fund).

We have identified four streams of activity that we believe should be undertaken by the Office for Digital by Default in Infrastructure and each stream has key resources and forums as outlined below.



PHASE 1

OFFICE FOR DIGITAL BY DEFAULT IN INFRASTRUCTURE

PHASE 2

LEADERSHIP & ENGAGEMENT

STANDARDS & GUIDANCE

POLICY & RESEARCH

TRANSFORMATION PROJECTS

PHASE 3

STREAM 1

Digital by Default State & Territory Leadership Advisory Council

Digital by Default Industry Advisory Council

Digital Asset Champions Network

Community & skills engagement

STREAM 2

Digital by Default Handbook

Digital Asset Champions

Knowledge sharing

STREAM 3

National Infrastructure Data Exchange

Data-driven policy advice, public policy processes

Fellowship program

National IoT strategy

Collaboration labs & hubs

Net Zero Cities Program

STREAM 4

National digital twin program

Intelligent Infrastructure Innovation Scheme

Establish the four streams of activity and associated initiatives

STREAM 1: LEADERSHIP & ENGAGEMENT

This stream establishes a national digital leadership group, the National Digital Infrastructure Network, comprised of government, industry and academia, tasked with supporting the Office through a government nominee (minister or sponsor).

National Digital Infrastructure Network

The National Digital Infrastructure Network will provide a coordinated approach to digital by default, removing the current siloed approach and bringing together the best work and experts in the field.

Additionally, the National Digital Infrastructure Network will be the:

- ▶ interface for global and domestic knowledge exchange
- ▶ face of digital transformation in Australia as an advocate and ambassador
- ▶ body to form and implement community engagement programs.

Sitting below this national body will be four Leadership & Engagement forums that we proposed be introduced in **phase 3**:

- ▶ **Digital by Default State & Territory Leadership Advisory Council** tasked with:
 - facilitating two-way exchange of knowledge to enable public-private sector collaboration across the Australian jurisdictions
 - coordinating and implementing smart infrastructure policies in each state and territory that are positioned to leverage national guidance
 - identifying opportunities to coordinate information management and data sharing to create interoperability for state and territory digital twins.
- ▶ **Digital by Default Industry Advisory Council** tasked with:
 - identifying priority projects for potential funding using case implementation
 - informing other cross department investments that can promote digital by default.
- ▶ **Digital Asset Champions Network** comprised of:
 - champions selected from the private sector who have undertaken accredited training in accordance with the Digital by Default Handbook (see Stream 2) and appointed to all federally funded projects.
- ▶ **Community and skills engagement**
 - engagement with teachers and learners
 - forums for future workforce discussion.

STREAM 2: STANDARDS & GUIDANCE

This stream is tasked with developing and sharing nationally consistent standards and guidance in collaboration with Standards Australia, industry and government.

Resources and roles that fall under this stream in **phase 3** include:

Digital by Default Handbook

The Digital by Default Handbook will provide best practice information management on digital tools and solutions such as BIM, GIS, IoT and digital twins, digital engineering, asset management, and others consistent with national guidance developed with consideration of both international and domestic best practice.

Standards are a fundamental tool for every project from inception to completion and performance management.

All federally funded projects will be encouraged to adopt best practice information management in accordance with the Digital by Default Handbook.

Digital Asset Champions

All federally funded projects will be encouraged to appoint a Digital Asset Champion to sit on the Digital Asset Champions Network. Each Digital Asset Champion will be accountable for quality digital asset management.

Knowledge sharing

Communication of best practice case studies and learnings will be shared through the Digital by Default Handbook and Digital Asset Champions. This will provide an opportunity to coordinate information management and data sharing to create interoperability for state and territory digital twins.

STREAM 3: POLICY & RESEARCH

This stream involves coordinating and implementing smart infrastructure policies in each state and territory that are positioned to leverage the National Digital by Default Handbook. This stream should support industry research and development, share best practice, identify opportunities to scale-up to deliver digital by default, and apply leading digital solutions across the infrastructure pipeline.

Underpinning this stream are the following initiatives that are to be introduced in **phase 3**:

- ▶ **National Infrastructure Data Exchange**: where all federally funded projects offer collaboration opportunities based on problem solving and information sharing to enable better-informed decision making.
- ▶ **Data-driven policy advice, public policy processes**
- ▶ **Collaboration labs and hubs**
- ▶ **Fellowship program**
- ▶ **National IoT strategy**
- ▶ **Net Zero Cities Program**

STREAM 4: TRANSFORMATION PROJECTS

This stream is tasked with leading the proposed national critical infrastructure digital twin program as part of a focus on transformation projects to deliver real results. It is envisioned that this stream will supplement the investments already made by governments, to focus on building and securing a connected data environment and minimum data sets for a National Critical Infrastructure Digital Twin.

This stream will involve collaboration of both public and private sector to help set the digital foundations and enable better data-led decision making for nationally significant infrastructure.

Phase 3 of this stream will introduce:

- ▶ **The National Digital Twin Program**

It is proposed that this phase draw on knowledge from the Standards Australia [Digital Twin White Paper](#).

- ▶ **Intelligent Infrastructure Innovation Scheme**

Do you think the plan is realistic? What would you keep, add or change? How can industry and government support effective systems integration?
Scan the QR code to provide your feedback



Next steps

Consult Australia, with our collaboration partners, has developed this Green Paper to solicit feedback on how to increase productivity and deliver better outcomes from our infrastructure investment.

As we champion this Green Paper across the industry, we invite your feedback to strengthen the solutions we have identified, celebrate good practice and consider how we lead together. We will be accepting feedback until **18 August 2023**.

If you would like to share your views, we would like to hear them. Contact us to share your thoughts and be part of the solution.

Following the consultation period, we will move to finalise proposals in a White Paper. This paper, which we will release later in 2023, will support policy makers, infrastructure owners, delivery agencies and the broader industry as, together, we look to ensure Australia's infrastructure sector is digital by default.

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Photo credits

Cover image top: Indara – Tower.

Cover image bottom: Aurecon Group – *Environment Effects Statement SRL East Melbourne Australia*. The Suburban Rail Loop Authority has prepared a digital Suburban Rail Loop East Environment Effects Statement to provide better access to information and data for everyone.

P2: 'Safe Passage', an artwork by Wiradjuri woman Kimberly Back depicts the movement of people between watering holes on country. The tracks were created by our ancestors and have been used for thousands of years. They provide guidance and safe passage through harsh terrain.

P3: Courtesy of Bentley Systems – Digital Twin London.

P4-5 & 15: Aurecon Group – *Allianz Stadium, Sydney Australia*. Aurecon created bespoke digital engineering scripts to process design checks, complete complex structural analysis and accelerate the review process. Image courtesy of Damien Ford Photography.

P6 & 9: Courtesy of Bentley Systems – Digital Cities, Fort Lauderdale.

P11: Indara – Blacktown.

P12: iStock.

P14: Arcadis Australia Pacific – *Woodside Drone Methane Survey*. Methane drone survey conducted this year. This important piece of work will enable Woodside to detect, localise and mitigate methane emissions and forms a component of our decarbonisation activities. This scope of work is one of the first of its kind in Australia.

P18: Courtesy of Bentley Systems – Digital Cities, Amsterdam.

P19: Indara – Paddington Skatepark, Brisbane.