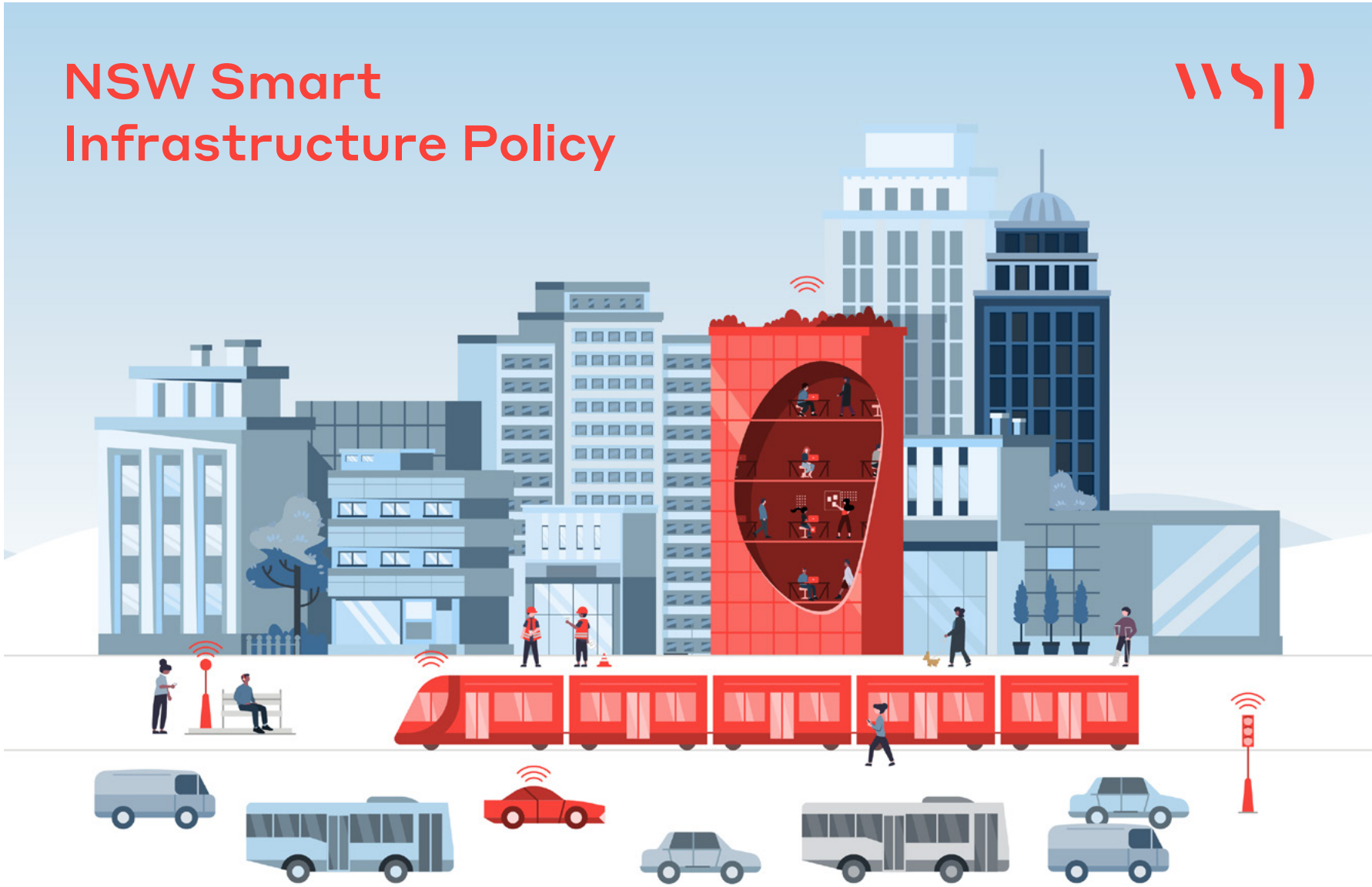
2021

NSW Smart Infrastructure Policy



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White Paper

Introduction

In response to the State Infrastructure Strategy (SIS)—a 20-year infrastructure investment plan—the NSW Government's Smart Infrastructure Policy sets out the minimum requirements for smart technology to be embedded in all new and upgraded infrastructure from July 2020 onwards.

A foundational element of the Smart Places Strategy, this policy is a key enabler for the development of world-class modern infrastructure, smart communities, and technological innovation that will improve the way people live, work and play across NSW.

Victor Dominello, Customer Service Minister for NSW believes the dual strategy approach will improve the quality of life for NSW residents and deliver an economic boost during the COVID-19 recovery phase.

He says, "Data and precision modelling is just as important as bricks and mortar. Information is power and technology should be embedded in every major infrastructure project."

Our Response to the Policy

WSP welcomes the Smart Infrastructure Policy as it provides the stimulus required to reinvigorate thinking in the construction sector.

"We believe that the Smart Infrastructure Policy heralds a new era in the way we look at infrastructure projects, especially the implementation of new technologies as part of an integrated solution within the overall project lifecycle," explains Henry Okraglik, Global Director – Digital, WSP. "It will help the industry view infrastructure projects as a piece in the wider puzzle and with a focus on utilising data, it will provide better outcomes during and post construction, including operational and lifecycle cost savings."

"Significantly, the policy takes two critical steps in highlighting the role of technology in infrastructure projects."

"Firstly, the policy breaks down the importance of considering hardware, software and data not as individual elements but as part of a collective solution. Secondly, it covers the importance of capturing, normalising, sharing and securing the data that is produced so that it can be used seamlessly in a wide range of systems and use cases."

"While they may seem trivial, technology and data harmonisation on large infrastructure projects require a shift in our mindset, and the implementation of various specialist skills to produce a truly integrated solution. These two critical steps forward provide the state with the ability to ensure infrastructure projects are delivered to meet both physical and digital requirements, enabling truly connected and smart places, big and small."

What is the Impact of This Policy?

In the past five years, we have seen the delivery of excellent initiatives in the smart city space. Yet, stakeholders developing infrastructure have only recently started considering what smart means both in terms of project delivery and outcomes. This is due to technological innovation and change management being driven by vendors as opposed to being part of the DNA of projects from the onset. The lack of planning and systems integration results in an inability to communicate or share data in real-time.

"The release of the Smart Infrastructure Policy by the NSW Government essentially transforms an infrastructure development into a large-scale technology project," says Roneel Singh, Director of Technology Systems, WSP.

He adds, "It involves embedding sensors and communications technology in infrastructure and using them to capture, store and provide data that can be used in decision making. This technology first approach will improve the efficiency, sustainability and services of infrastructure assets."

"One challenge we will face is data management and sovereignty, particularly in the operational phase of projects. The government has outlined that it will develop a data protection policy over the next 12 months to guide how data is collected, stored and managed. It will also develop standards around technology solutions."

Fundamental to the successful implementation of this policy will be a collaborative approach between infrastructure asset owners, developers and operators. This alignment will see the establishment of an integrated team that can harmoniously bring together hardware, software, data collection, management and security into the overall system.

What Does 'Smart Infrastructure' Mean?

The definition of Smart Infrastructure can vary between a digitally represented or digitally connected asset and it can be as simple or as complex as needed.

A simple solution can include water sensors in a park analysing data against weather forecasts to determine the optimum time for sprinklers to turn on. Such solutions help keep the grass green and minimise water waste.

Solutions increase in complexity when more is required. A major public transport interchange for example, can be digitally represented through 3D models which are then integrated into an asset management solution. This helps optimise the management and maintenance of the asset, and thereby improves the ability to maximise the asset's return on investment. Integrating data associated with an asset's properties, conditions and performance can unlock value to owners and operators.

How Can WSP Add Value to Your Project?

WSP commends the NSW Government for the introduction of the Smart Infrastructure Policy. It mandates that 'Smart Infrastructure' will be an integral consideration of all major projects from the time of inception, and not as an afterthought or as an add-on to projects. This will greatly enhance both the immediate and ongoing benefits of the 'smarts' in our infrastructure projects for all stakeholders in our communities.

WSP is well positioned to provide thought leadership and valuable day-to-day smart infrastructure engineering design and implementation services across a broad range of engineering specialties. To date, we have developed and fostered our own internal smart infrastructure, digital engineering, location insights, data analytics and software engineering teams. WSP have experience across a range of smart city and smart infrastructure projects. We believe that this depth of digital design and implementation expertise, deployed across our multi-disciplinary firm, uniquely positions us to assist our clients across the complete project and asset lifecycle.

Smart Infrastructure Project Example

The Online Community Portal

A recent example of WSP's Smart Infrastructure expertise applied from the earliest conceptual phases of a project, is our Online Community Portal which provides multilevel Stakeholder Communications and Environmental Planning across the lifecycle:

- Early-stage planning studies, 3D project presentations, and social forums.
- Environmental monitoring across background data assessments, early works, construction, and post construction.

The Online Community Portal was recently deployed for TfNSW to play a key role in the public exhibition of the Environmental Impact Statement (EIS) for Sydney Metro – Western Sydney Airport. An innovative addition to the traditional EIS exhibition, the Online Community Portal formed an important part of the overall communication strategy by delivering information to the community in a digital space, free of physical interaction.

"The Digital Portal was a great community engagement tool for the EIS exhibition of the project. The virtual drop-in session, interactive map and videos with our subject matter experts was a great way to engage with the community when face-to-face engagement is currently prohibited,"

ANNE POWER, Director Project Communication, Sydney Metro – Western Sydney Airport

For more information on the Online Community Portal, please click here.

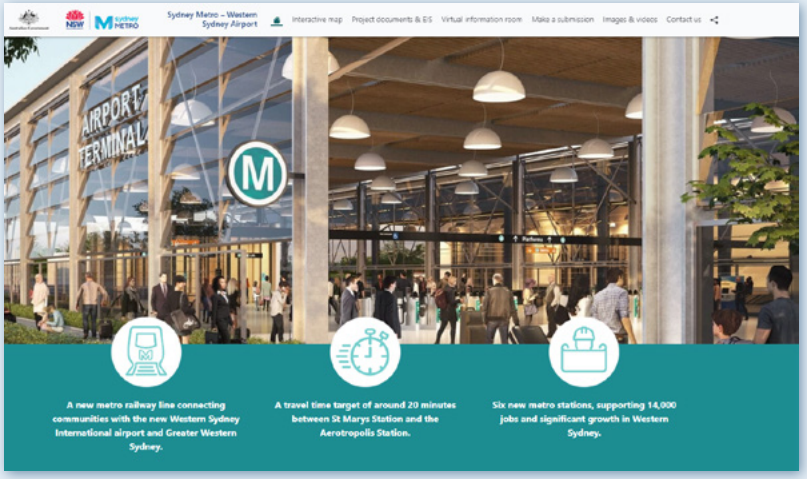

Figure 1: Online Community Portal TfNSW Interface

Figure 2: Online Community Portal TfNSW Virtual Consultation Room

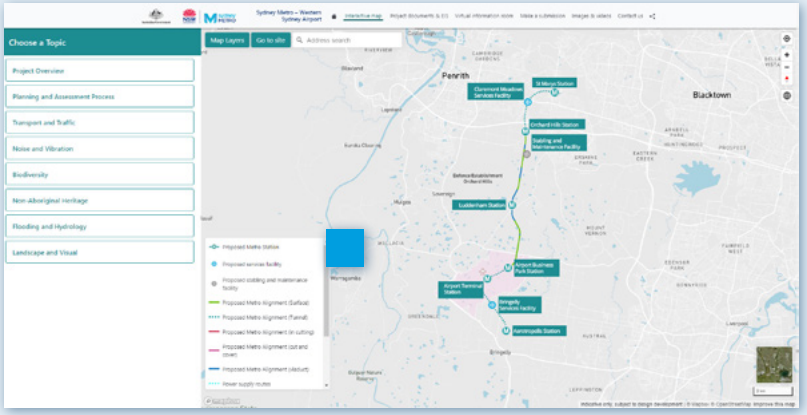

Figure 3: Online Community Portal TfNSW Interactive Maps

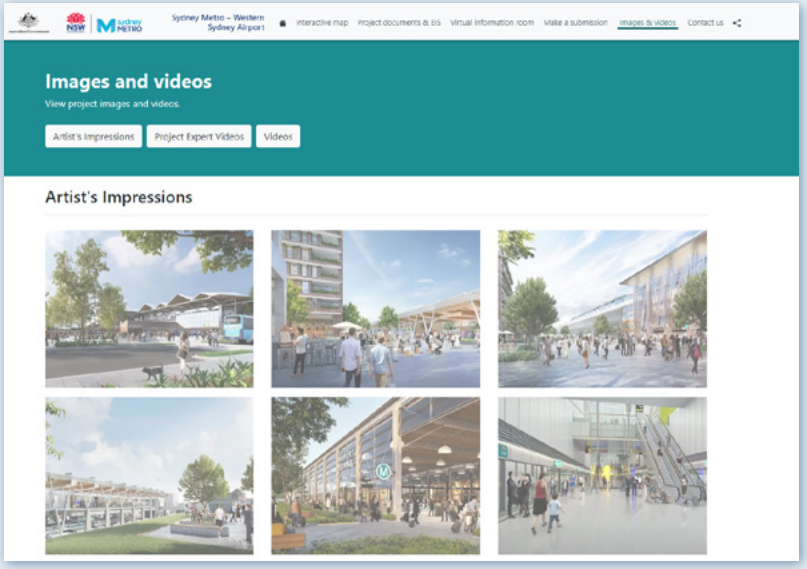

Figure 4: Online Community Portal TfNSW Image and Video Gallery

Smart Infrastructure Project Example

Melbourne Metro Tunnel Environmental Monitor

The Melbourne Metro Tunnel Environmental Monitor (MMTEM) is a key component of $10.9 billion Melbourne Metro Tunnel Project. The twin nine-kilometre tunnels will deliver a new dedicated pathway through the heart of the city for two of Melbourne's busiest rail lines, creating space for more trains to run across Melbourne's rail network.

MMTEM is an interlinked series of sensors, instruments and databases that capture and store an extensive range of data for use during the construction phase of the Melbourne Metro Project and beyond.

The key objectives of MMTEM are to:

- Provide a robust system of monitoring, inspecting and auditing environmental performance.
- Streamline environmental reporting.
- Assist construction management through real time feedback on environmental performance.
- Provide transparency and accountability for environmental performance during construction.
- Make the best use of data and information through research partnerships and a legacy system.

The key beneficiaries of this data include:

- Construction management – data provision about environmental impacts.
- Environment team – management of environmental impacts.
- MMRA – compliance reporting data.
- Researchers – through provision of open data about the city to inform planning and other research.
- Public – averaging and aggregating of data.

"We have provided the project team and stakeholders with a common data platform which has informed more proactive and collaborative engagement during delivery. Deployed with a distributed array of sensors, the Liveability Monitor (MMTEM) provides an evidence-base of objective data related to construction compliance and environmental controls. This has underpinned a transparent dialogue with stakeholders and the community through key construction activities, particularly in sensitive areas," Evan Brumley, Solution Architect – Digital.

At the conclusion of the project, a handover of the MMTEM data to stakeholders will provide foundational data for city planning, city management, and research insights well into the future.

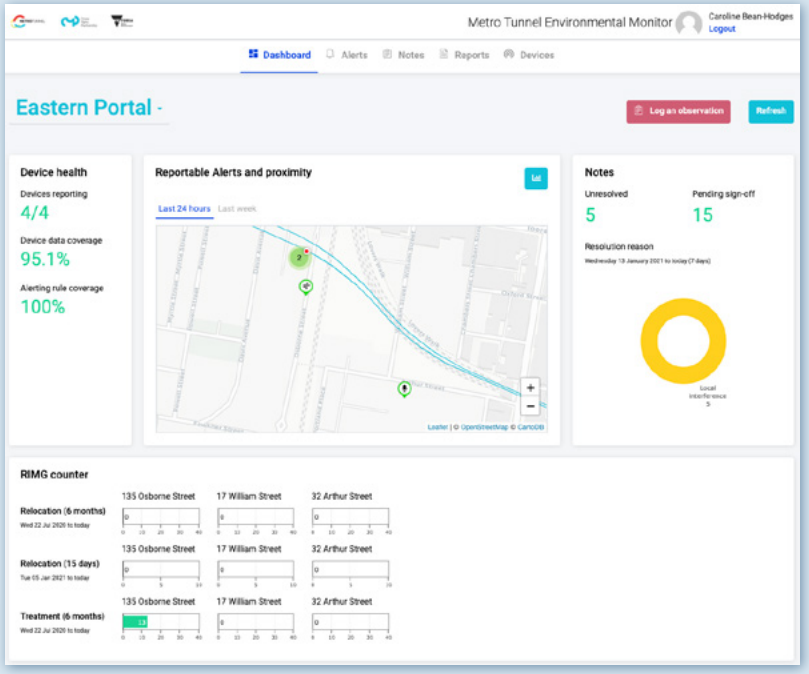

Figure 5: MMTEM Dashboard

Smart Infrastructure Project Example

Newcastle Smart City

The Newcastle Smart City Intelligent Data and Monitoring Platform ingests, integrates, consolidates and manages data from a wide range of IoT sensors, IoT devices, systems, and sources from not only the City but across the Region.

As transformative public and private investment gathered momentum, The City of Newcastle recognised it had a "a once-in-a-century moment to rethink our future as our city was physically being rebuilt," Dr Nathaniel Bavinton, Smart Cities Coordinator, The City of Newcastle.

"We've spent three years building the capabilities that are now making it possible for other parts of the business to benefit from smart city applications at a much more affordable cost. We are now able to reach out across the organisation and the community talking to people about their challenges and how the capabilities we've deployed can help."

The Newcastle Smart City Strategy (2017 – 2021) is a collaborative strategic planning document that will guide the City Council as it moves towards a smart and innovative future. This comprehensive smart city strategy will inform engagement and alignment with a wide range of stakeholders and partners.

WSP is implementing a key component of the strategy, the Smart City Intelligent Data Platform. The platform will support the following systems:

- Sensor network
- Intelligent roadways and smart parking
- Intelligent forecasting
- Autonomous vehicle shuttle
- Connected fleet
- E-Bikes
- Smart bus stops
- E-Transit hub trials
- Smart building retrofit
- Experimental data sandbox
- City dashboard and app

"The fundamental success criteria associated with the introduction of smart city data and information services will be the ability to decrease the barriers associated with the introduction of new Smart City Capabilities. This means it will need to be architected and implemented in a manner that simplifies the implementation of new services and decreases the associated costs," James Vidler, Manager Living Lab, The City of Newcastle.

For more information on the Newcastle Smart City Intelligent Platform, please click here.

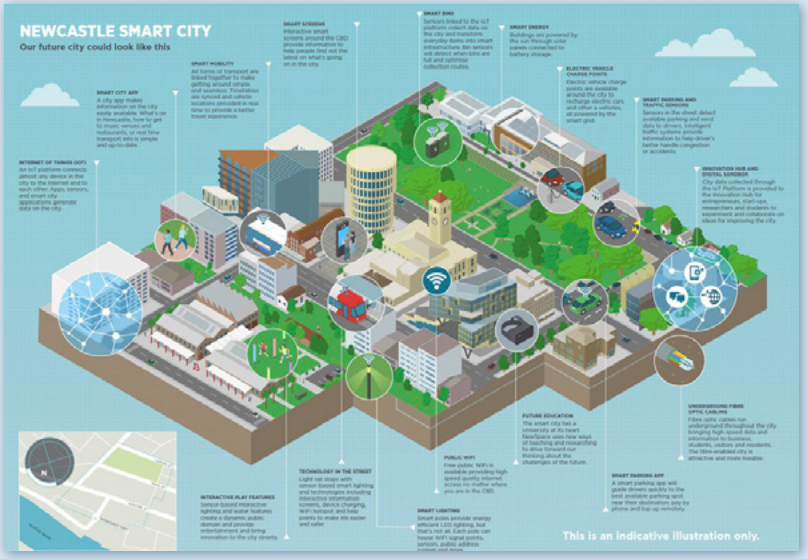

Figure 6: The Newcastle Smart City Strategy

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