

ILLAWARRA SHOALHAVEN

SMART REGION STRATEGY

ENDORSED JUNE 2018





Image: Lorraine Brown and Narelle Thomas, Heritage of the Blue Edge

We acknowledge the people of the many Traditional Countries and language groups of New South Wales. We also acknowledge the wisdom and knowledge of Elders who have passed, those of today and tomorrow, and pay respect to Aboriginal communities of the land.

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THE ILLAWARRA SHOALHAVEN REGION

The Illawarra Shoalhaven is a richly unique and diverse region undergoing significant change. As the third largest regional economy in NSW, the Illawarra Shoalhaven contributes \$12.7 billion to NSW annually.

With over 50% of the Illawarra Shoalhaven's workforce having achieved tertiary education, the region's economy is transitioning away from its historical dependency on traditional manufacturing and mining to a focus on knowledge-intensive industries attracting global talent and investment.

By **2036**

the region's population is expected to reach approximately

472,000

representing a **17%**

increase
from **2016**

REGIONAL GROWTH AREAS



Freight
& Logistics



Advanced
Manufacturing



Healthcare &
Social Services



Education



Defence



Tourism



A REGION REINVENTED

Gateway to the world

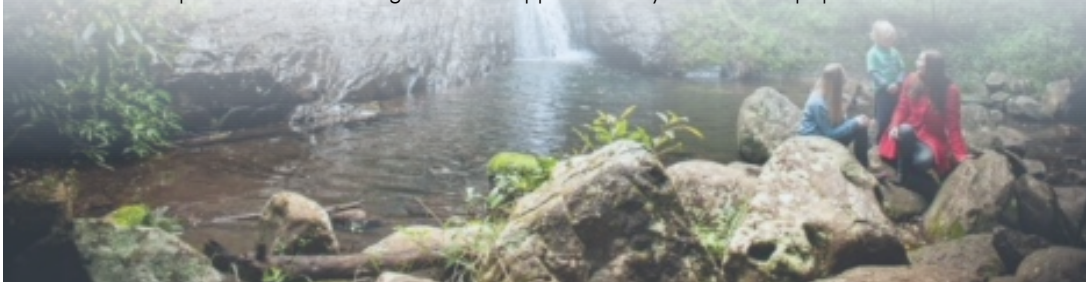
Increased access to major domestic and global markets is supporting the region's economic diversification. Port Kembla, as NSW's primary hub for motor vehicle imports and bulk grain exports, is a major international trade gateway for the region. Connectivity to metropolitan Sydney and Sydney airport is also a key driver for the region's growth and the slated improvements in transport infrastructure, coupled with the projected expansion of Western Sydney accompanying the development of Badger's Creek international airport, will open up further opportunities.

Innovation ecosystem

The Illawarra Shoalhaven has developed a strong reputation for innovation. The University of Wollongong, which is ranked in the top 2% of universities globally, has developed leading capabilities in areas such as ICT, next generation manufacturing and engineering, and is proactively preparing the region's students with the skills required for the jobs of the future. The University's Innovation Campus provides an anchor for the region's innovation ecosystem, connecting local and international businesses with world-leading research and test-bed opportunities.

Natural beauty & lifestyle

The natural beauty of the Illawarra Shoalhaven's landscape has been consistently identified as a key draw card for the region. Steeped in heritage, the land retains strong cultural significance for the Aboriginal communities of the region. Protecting the region's environmental sustainability is not only essential to preserve its cultural and lifestyle value, but also because the region comprises the water catchment that provides the drinking water for approximately 60% of the population of NSW.



Despite these strengths, the region faces a number of significant challenges:



High Youth Unemployment

In 2011, 39.5% of people who were unemployed across the Illawarra Shoalhaven region were between 15-24 years of age, compared to the NSW average of 21.6%.

Ageing Population

The region's 65+ population is predicted to almost double from 46,000 in 2011 to 82,500 in 2036, significantly increasing the demand for healthcare and aged care services.

Inclusive Mobility

Mobility to major metropolitan areas is experienced unevenly across the region. 13% of the region's workforce commutes to Sydney for work and, while Sydney's proximity to the region's northern area is seen as a key strength and magnet for talent, long commute times are a key challenge for the southern area of the region.

Climate Change & Natural Hazards

The Illawarra Shoalhaven's topography and coastal proximity render it vulnerable to major natural disasters, especially flooding, which are increasingly exacerbated by climate change. Under the condition of Probable Maximum Flood (PMF), the total number of flood affected residential properties in the Illawarra Shoalhaven is 16,048. The table below displays the break-down of these properties by LGA.

LGA	No. Flood Affected Residential Properties (PMF)
Kiama	50
Shellharbour	2,949
Shoalhaven	3,385
Wollongong	9,664

In NSW the average annual damage from flooding in coastal and inland urban centres is estimated at \$200 million. The average annual damage from flooding in the Wollongong LGA alone is estimated at over \$30 million. This means that the Wollongong LGA represents 15% of NSW's total economic flood risk, while supporting only 2.5% of the state's population. The Illawarra Shoalhaven's unique environment requires a unique response.



WHY WE NEED A SMART REGION

There has never been a better time for the Illawarra Shoalhaven to harness the digital revolution to build on its unique strengths, address its challenges, counter outdated perceptions and advance a future-focused regional identity.

The Illawarra Shoalhaven Joint Organisation together with the region's four Councils and two RDAs have recognised the significant opportunities that can be reaped by joining forces to embark on a journey to become a Smart Region. Facing increasing citizen expectations and constrained budgets, all four Councils are seeking to leverage Smart technology such as the Internet of Things sensors and digital connectivity to address pressing challenges, compete on national and global stages, and ultimately deliver a superior experience for citizens and visitors alike.

This is the promise of a Smart Illawarra Shoalhaven Region



A Smart Region integrates digital technology into its physical landscape and operating systems to unlock its collective intelligence and enable the creation of a thriving, sustainable and inclusive place

THE OPPORTUNITY



An innovative & collaborative ecosystem



An inclusive, engaged & safe community



A magnet for talent & investment



A sustainable, liveable and loved place



From 'Smart Bins', to autonomous vehicles, connected street furniture and more, cities around the world are leveraging the digital revolution to improve liveability, sustainability, economic prospects and quality of life outcomes for citizens and visitors alike





SMART REGIONS BEGIN WITH A SMART STRATEGY

The Purpose:

The region's four Councils have come together to develop an Illawarra Shoalhaven Smart Region Vision and strategy.

This Illawarra Shoalhaven Smart Region strategy will:

- Drive a long-term, scalable approach to Smart transformation which builds on the region's unique strengths, addresses its pressing challenges and unlocks new opportunities.
- Unite the Illawarra Shoalhaven's diverse stakeholders in the common pursuit of challenging outdated perceptions of the region by advancing a future-focused regional identity. This identity marries the region's stunning natural assets and rich heritage with its future-focused culture of innovation and creativity.
- Capitalise on the region's unique mix of government, industry, world-class academic institutions and entrepreneurs to develop the region as a 'petri-dish' for Smart innovation that can be replicated and scaled across other parts of NSW and Australia
- Spur the sharing of resources, experience, data and learnings across the region's Councils, academic institutions, business and community in order to drive a collaborative, rather than competitive approach to Smart development.

While the strategy provides an overarching vision and direction for the region, its success depends on localisation, with each Council tailoring the strategy to meet its unique context and requirements.

The Process:

The Illawarra Shoalhaven Smart Region strategy is the result of a co-creation process involving over 30 representatives across Government, academia, industry and community. A range of activities was undertaken to engage with stakeholders in order to understand the region's unique strengths, challenges and opportunities, build a shared vision and crowdsource ideas and initiatives to co-create a Smart Region.

The Smart Region Strategy does not seek to start from a blank slate nor replace the work already underway. Rather, this strategy builds on and complements the many other initiatives already supporting the future development of the Illawarra Shoalhaven region.

In order to ensure the strategy delivers impact, a continuous collaborative process of learning, iterating and improving is required. This strategy is therefore a living document that will evolve as the region evolves.





OUR VISION

“The Illawarra Shoalhaven Smart Region will be a collaborative, innovative region that leverages digital and emerging technologies to both preserve its unique landscape and heritage, and unlock opportunities to create a thriving, sustainable and inclusive place, now and for the future.”

Collaboration

Our region has a history of and strong reputation for collaboration, manifested in the establishment and formalisation of the Illawarra Shoalhaven Joint Organisation (ISJO). Building on this foundation, collaboration across the region’s Councils is a cornerstone of the Smart Region strategy.

United by a shared vision, each Council forms a critical node in the regional network, sharing experience, data and resources. This networked collaboration enables each Council to combine shared learnings with its unique local strengths in order to achieve its full potential, both internally by optimising its organisational operations and externally by delivering maximal benefit for its citizens. However, Councils cannot realise the Smart Region vision in isolation. Successful delivery depends on collaboration with the region’s many stakeholders, across industry, academia and the community, all of whom have a critical role to play in shaping the Smart Region.

Innovation

While technology is fundamentally changing the ways cities and regions understand, analyse and make decisions, technology alone is not a silver bullet. We are committed to leveraging technology to unlock the value of our region’s human capital. To this end, we will proactively foster a culture of innovation in which businesses, start-ups, academia and community are encouraged to experiment. We will provide safe to fail environments for the piloting and refining of innovations and will enable the scaling of successful initiatives.

Crucially, we will position citizens as key participants in the innovation process, from identifying challenges to be solved to testing and co-creating solutions in order to ensure that solutions address real problems and meet genuine needs.

Execution

This strategy is a living document intended to guide action, not lie dormant on a shelf. It is the responsibility of each and every one of the stakeholders of the Illawarra Shoalhaven to take ownership of the strategy and its execution.

This requires the region’s Councils to both lead by example in initiating Smart projects and also take on an enabling role, unlocking the region’s human capital and supporting stakeholders to leverage the region’s physical and digital assets. And it requires stakeholders to adopt the high-level components of the strategy and localise them according to the unique strengths, challenges and opportunities of each area of the region.

The collection and analysis of regional data is key to successful execution, enabling projects to be monitored and evaluated, and ultimately expanded, modified or aborted.

The Smart Region vision embodies the key ambitions and ideas that emerged during the engagement process. The delivery of the Illawarra Shoalhaven’s Smart Region vision requires the sustained commitment of the region’s spectrum of stakeholders to a delivery approach comprising three fundamental tenets.



"This is an exciting time for the Illawarra Shoalhaven – we are embracing the digital revolution to develop a world-leading Smart Region that promotes and enhances the vibrancy of our economy, the sustainability of our environment and the richness of our community and lifestyle"

-- Councillor Gordon Bradbery AM, Chairman of ISJO



OUR
REGION

THE
WHY

ABOUT
THIS STRATEGY

SMART
REGION VISION

ENABLING OUR
STRATEGY

SMART
PILLARS

LOOKING
TO THE FUTURE

ACKNOWLEDGEMENTS

BRINGING THE STRATEGY TO LIFE





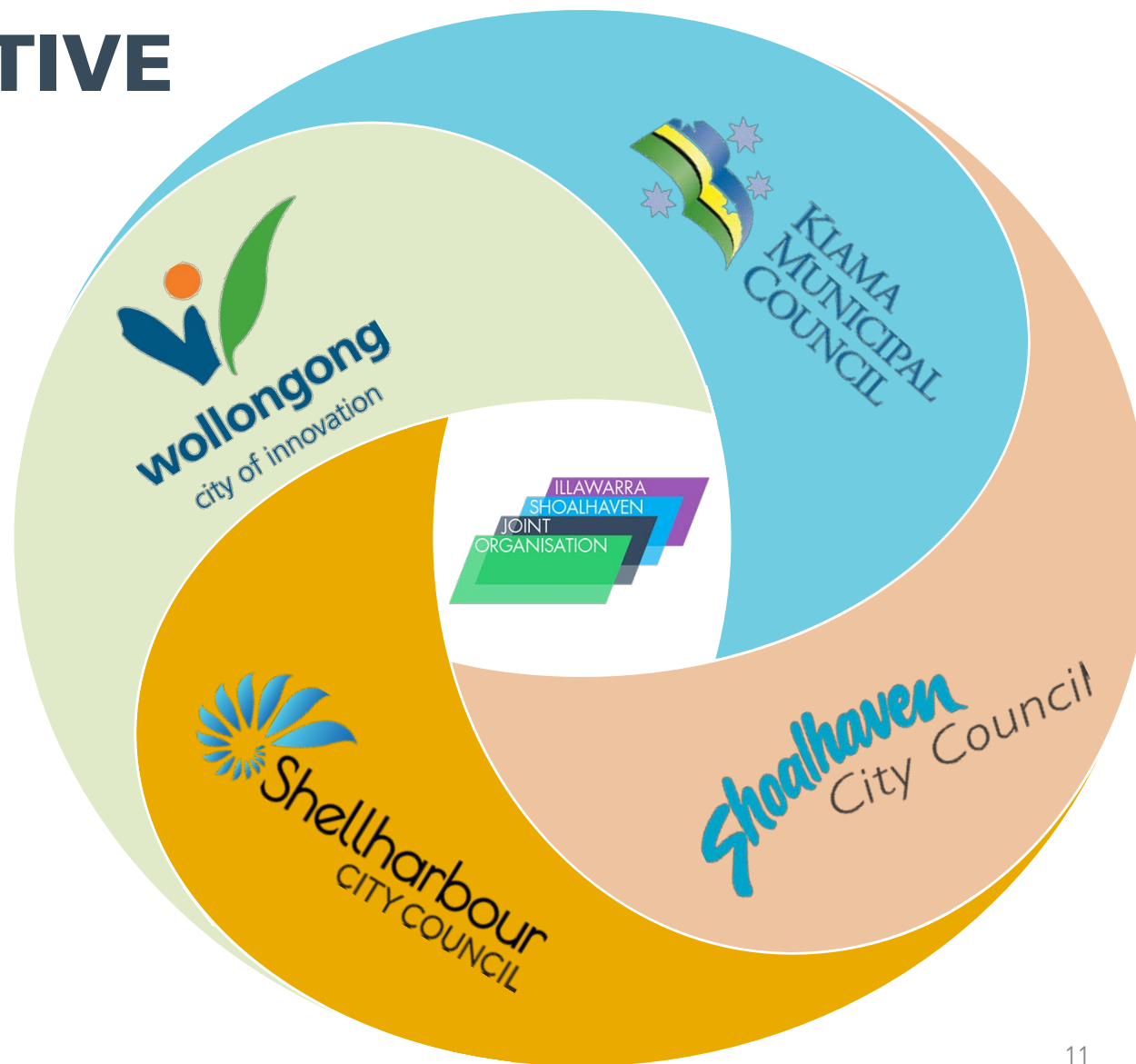
STRONG, COLLABORATIVE LEADERSHIP

Smart Region Governance

The development of our Smart Region requires sustained and collaborative leadership across the Illawarra Shoalhaven's four Councils and two RDAs. Building on the region's long-established collaborative structures and modes of operation, a Smart Region governance framework is required at two levels (based on the best-practice BSI Standard for a Smart City Framework):

- 1. Strategic governance level:** Anchored by ISJO, the Councils will work collaboratively and, together with the RDAs, will ensure continuous strategic alignment of vision, priorities and projects across the region. A Reference Group comprising key industry, research and community representatives will be developed to work in close collaboration with ISJO, the Councils and the RDAs in order to ensure the Strategy remains relevant and inclusive of the voices of the region's diverse stakeholders.
- 2. Delivery governance level:** Each Council will be responsible for localising the high level vision and objectives within the Smart Region Strategy to make them relevant for each specific local government area in order to drive action. There will be a clear focus on accountability across the Councils for monitoring progress and ensuring transparency by publishing updates on performance and delivery.

Each Council will act as a champion and ambassador for driving the Strategy, fostering support and empowering stakeholders across the region to collaboratively unlock the opportunities of a Smart Region.





GUIDING PRINCIPLES



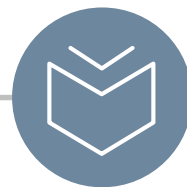
Citizen Centric

We will create a Smart Region inclusive of all our citizens and co-created by our citizens. Our citizens are at the heart of our journey to become a Smart Region.



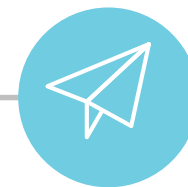
Collaborative

We will work together to unlock the collective intelligence of our region for the benefit of everyone.



Open

We will operate openly to make our region more accessible, interoperable and transparent.



Agile

We will embrace a learning by doing approach, fostering a safe to fail environment for experimentation. Our strategy is flexible and will evolve as our region evolves.



Secure

We will adopt a 'security by design' approach, ensuring that privacy and security controls are incorporated into the region's Smart planning from the beginning.



The Smart Region strategy is structured around six pillars, formed through the engagement process as being the key drivers for the region's Smart transformation.

A high-level objective has been developed for each of the pillars, with a set of priorities and enablers as detailed in the following pages of the strategy.

A Smart Region **lighthouse project** has been identified under each pillar, some already underway while others still in their planning phase, providing the opportunity to learn by doing and apply insights gained to future projects.

While each pillar represents a separate focus area, the success of the strategy is dependent on an integrated approach, and the five guiding principles underpinning our strategy serve as the threads weaving the fabric of pillars together.





SMART ECONOMY

Objective: A region with a vibrant, diversified economy that invests in strategic growth industries, promotes the development of skills for the jobs of the future and fosters an innovative ecosystem in order to attract and retain talent and investment.

Grow the region's innovation ecosystem and enable local businesses to take advantage of the digital revolution

- Build the digital capacity of local businesses through dedicated programs, enabling them to build new products, reach global markets, effectively engage with customers and reduce operating costs.
- Establish an Illawarra Shoalhaven Innovation Network for businesses and entrepreneurs to connect and share resources and experience
- Extend Smart technology networks across the region enabling local businesses to access and analyse data to increase productivity and efficiency, as well as develop new innovations

Challenge outdated perceptions by branding the Illawarra Shoalhaven as a Smart and innovative region in order to retain and attract talent and investment

- Leverage national and global partnerships to promote the region on the international stage
- Participate in international Smart City/Region alliances and networks to showcase the region's strengths and drawcards

Address youth unemployment and develop skills for the jobs of the future

- Building on the successful collaboration of the Illawarra Youth Employment Strategy, work with the region's schools, TAFE and the University to develop an integrated approach to support students transition through the education system and obtain high value jobs
- Develop 'digital gateway' courses to retrain and reskill those seeking to change career paths
- Promote the region's strong capabilities for developing skills for the jobs of the future
- Identify specialised programs to connect young entrepreneurs with venture capital and business growth opportunities

Lighthouse Project: Smart Work Hubs

The establishment of Smart Work Hubs in strategic locations across the region has been identified as an opportunity to boost the economy, both during the stakeholder engagement process for this Strategy and in several of the Councils' strategic planning documents. Equipped with the necessary connectivity and technology, such hubs could enable the region to harness its highly educated and skilled workforce and increase local employment by enabling workers to remain in the region during the week.

Smart Work Hubs could significantly enhance productivity by reducing the need for long commutes and could also foster new innovation ecosystems. The NSW Government 'Smart Work Hubs' report identified a range of benefits in addition to growing local economies that can be realised from developing Smart Work Hubs for workers, employers and communities, including improved health and wellbeing, reduced traffic congestion, improved quality of life and enhanced sense of community.





SMART ENVIRONMENT

Objective: A region that leverages technology and data to preserve its unique environment and build resilience to natural disasters.

Conserve the region's rich natural landscape and culturally-significant sites

- Leverage Smart technology and collect data to monitor in real-time key environmental challenges and their impacts, including climate change, pollution, air quality and biodiversity loss
- Raise awareness by sharing environmental monitoring data with the community
- Monitor the condition of culturally-significant sites through Smart technology in order to identify degradation or damage and alert the relevant authority

Bolster the resilience of the region and the effectiveness of emergency management

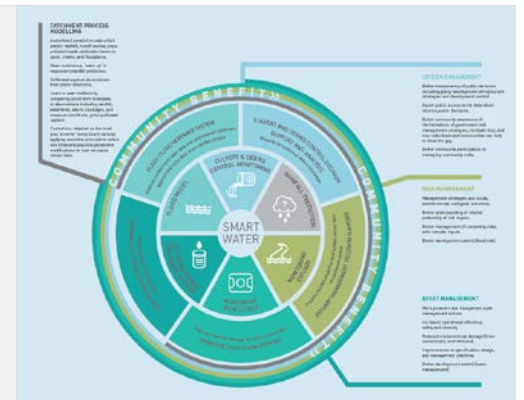
- Use predictive analytics to anticipate the occurrence of floods and other natural disasters
- Connect emergency services systems with monitoring systems to enable more effective response times and actions
- Broadcast real-time weather updates to enable the community to prepare for and respond to natural disasters

Embed Smart environmental technology as part of all new regional development

- Collaboratively develop standards for the integration of Smart environmental management into all new developments
- Connect with cities and regions around the world experiencing similar environmental challenges and learn from their standards and projects

Lighthouse Project: Integrated Smart Water Management System

The Region is prone to regular and devastating flash floods due to its unique natural and urban environment. Plans are in train for a Smart Water Management System to be deployed across the region. Underpinned by an Internet of Things network, the system is intended to integrate a suite of capabilities enabling more effective and efficient monitoring of the region's water management challenges and planning for and responding to significant rainfall events and natural disasters. For example, applying predictive analytics to data collected from smart sensors installed across the catchments, the system will predict rainfall impacts to support better decision-making to protect the region's sensitive estuaries, as well as inform proactive management of public assets affected by heavy rainfall, including culverts, street gutters pipes and sportsfields. The system will also comprise a flash flood warning component to predict the likelihood and impact of flash floods, enabling the region's residents and emergency services to anticipate, prepare and protect themselves against natural disasters. The Smart Water Management System will serve to bolster the Illawarra Shoalhaven's resilience and help to future-proof the region in the face of increasing natural disasters.





SMART MOBILITY

Objective: A region with the physical and digital infrastructure to enable efficient, multi-modal transportation across the region and to major metropolitan centres, and which invests in future mobility.

Support multi-modal transportation across the region

- Leverage emerging technology to capture real-time data on the region's transport networks and patterns of congestion
- Use real-time transport data to develop and support the uptake of Mobility-as-a-Service solutions

Provide alternatives to long distance commuting

- Support telecommuting by providing the space, connectivity and technology required by workers across the region
- Collaborate to develop and advocate for improved teleworking employment policies

Promote research and investment in the future of transport

- Work collaboratively with research partners, transport providers and technology vendors to explore opportunities for testing new mobility technologies in the region
- Enable use of the region as a test-bed for the development of new mobility technology

Lighthouse Project: Driverless Shuttle Bus

Kiama's CBD has been proposed as an opportune site for the early adoption of an autonomous shuttle service. A lack of mobility options has been identified as a challenge for Kiama and a driverless shuttle presents the opportunity to improve Kiama's liveability and the citizen and visitor experience. A 4km circuit loop has been proposed for the shuttle linking tourist attractions, such as Blowhole Point, with the Kiama railway station, as well as key community facilities, including the Leisure Centre and Library.

The shuttle is also seen as an opportunity to address the challenge of inclusive mobility, particularly in the face of Kiama's increasingly aging population, by offering a new mobility option to connect aged care facilities, including the site of the new Centre for Aged Care Excellence. Kiama Council representatives tested the driverless shuttle bus being trialed by the NSW Government in Sydney and are hoping to extend the trial to the Kiama CBD.





SMART LIVING

Objective: A region that leverages technology to improve its liveability, amenity and experience.

Integrate Smart technology in the region's infrastructure in order to create a vibrant, safe and interesting public realm

- Leverage Smart technology to optimise the use and maintenance of community assets, including parks, streets, community buildings, bus/train stations and public bins
- Develop new technology-enabled infrastructure, e.g. region-wide public Wi-Fi network, way-finding, digital kiosks displaying notifications about upcoming events and information about the region's cultural heritage and environment
- Leverage Smart crime prevention technologies

Improve the region's health and wellbeing

- Expand the use of technology such as the 'Smart Independent Ageing' project in order to enable individuals and communities to take more control of their health and wellbeing and improve quality of life
- Continue and increase participation in national and international health and wellbeing initiatives, such as the Healthy Cities network and the Age Friendly Illawarra Alliance

Improve the effectiveness and efficiency of service delivery across Councils to improve the citizen and visitor experience of the region

- Develop digital, e-government Council platforms and channels to more effectively deliver services to citizens, including the capability to personalise systems for citizens' unique requirements to ensure equity of access
- Explore opportunities to leverage common digital platforms and systems across Councils to increase convenience for citizens and decrease operating costs for Councils

Lighthouse Project: Planned Health & Wellbeing Precinct, University of Wollongong's Innovation Campus

Plans are in place for the development of a health and wellbeing innovation precinct to be built as part of the University of Wollongong's Innovation Campus. The first stage of the project is projected to inject \$600 million in value to the region and is slated for completion in 2022.

It comprises the development of an integrated centre of excellence for healthy living, combining research and teaching, a community clinic, a residential aged care facility, independent retirement living units, a childcare centre and retail and commercial facilities. The precinct's plan is grounded in collaborative innovation in order to address key health and liveability challenges facing the region, including an aging population and the rising prevalence of diabetes, obesity and mental health issues.





SMART GOVERNANCE

Objective: A region underpinned by coordinated leadership and collaboration across its comprising Councils, academic institutions, industry and community enabling the sharing of resources, experience, data and learnings to drive innovation at scale.

Embed cross-Council, RDA and stakeholder collaboration in a governance framework to guide the Smart Region transformation

- Develop a Smart Region governance framework, anchored by ISJO
- Nominate a Smart Region 'champion' within each Council with the responsibility to advance the Smart Region strategy and work collaboratively with the other Councils' Smart Region champions
- Create a Reference Group as part of the governance framework comprising key industry, research and community representatives to work collaboratively with ISJO and the Councils

Share experience, learnings, resources and data across Councils

- Develop a central Smart Region platform to collate data from all four Councils and enable Councils to share experiences, learn from mistakes, scale successful initiatives and collaboratively develop new projects
- Develop a consistent regional approach to open data that promotes interoperability and transparency

Spur greater collaboration across the region's spectrum of stakeholders

- Develop digital platforms and channels for the region's stakeholders to share open data and resources
- Develop 'Regional Partnering' channels to promote opportunities to stakeholders for partnering on Smart projects

Lighthouse Project: Vision Illawarra

Vision Illawarra is a regional digital dashboard created to enable evidence-based planning and integrated development across the Illawarra. It brings together data providers (Sydney Water, Endeavour Energy and Remondis), tool developers (SMART and RIKS) and information users (NSW Department of Planning and Environment, the NSW Office of Environment and Heritage, Transport for NSW and Local Councils) to pool regularly updated demographic, economic and land use data for modelling and planning.

There is significant potential for the platform to be expanded across the Illawarra Shoalhaven to enable a dynamic, integrated approach to the Smart development of the region.





SMART COMMUNITY

Objective: A region that positions the citizen at the centre and fosters an inclusive, engaged community.

Increase social inclusion by leveraging technology to improve equity of access and participation

- Develop community digital programs to increase levels of digital literacy to mitigate the digital divide
- Explore and develop smart assistive technologies to enable all citizens and visitors to access and participate in the region
- Collaboratively create standards to embed digital inclusion as part of all Smart Region projects and initiatives

Increase community engagement through digital channels

- Develop digital communication channels, enabling Councils and ISJO to share news, plans and advertise events
- Enhance digital platforms and consultation tools for the community to contribute suggestions and share ideas

Empower citizens to co-create the region

- Develop a strategic approach to open data in order to enable the community to access and utilise regional data
- Engage early with school students to increase digital capability and skills for the jobs of the future
- Encourage the community to increase their use of innovation facilities, such as the University of Wollongong's Digital Living Lab and SMART IoT Hub, e.g. by building dedicated programs for different sectors of the community (school groups, the elderly) to visit and experiment with the technology

Lighthouse Project: Digital Living Lab & LoRaWAN Network

The University of Wollongong and the SMART Infrastructure Facility have developed a Digital Living Lab as a test-bed for new Smart solutions for the Illawarra Shoalhaven. The Lab is open to business, start-ups, researchers and the community as a petri dish to experiment with innovations and technologies. The Lab is a powerful enabler for the community to be genuine partners in developing projects that meet real needs. The Lab is underpinned by an Internet of Things network called LoRaWAN which facilitates long range, low power, low cost connectivity between sensor-enabled 'things' and the Internet. The network has already been extended across Wollongong and, as a free and open-standards platform, has proven particularly attractive to startups, a number of which have already built successful businesses. Further extending the network could support startups and established companies to access data to boost productivity, reduce time to market and catalyse innovation. This network could also serve as a drawcard for talent and investment, resulting in economic growth for the region.





LOOKING TO THE FUTURE

This is a pivotal moment for the Illawarra Shoalhaven. The region has the opportunity to deliver a once-in-a-life time transformation and advance a future-focused regional identity.

Developing this strategy represents a significant first step forward in driving a collaborative approach to realising the Illawarra Shoalhaven's vision for a Smart Region.

Now is the time to unite as a community in order to bring this strategy to life.



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Astrolabe

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Healthy Cities Illawarra

Illawarra Local Aboriginal Land Council

Illawarra Shoalhaven Joint Organisation

I3net

ICTI

Illawarra Business Chamber

Internetrix

Kiama Municipal Council

NSW Department of Premier and Cabinet

Peoplecare Health Ltd

Shellharbour City Council

Shoalhaven City Council

RDA Illawarra

RDA Far South Coast

SMART Infrastructure Facility

University of Wollongong

Vennu Pty Ltd

Wollongong City Council

REFERENCES

Advantage Wollongong, 2018 'Wollongong Shared Services Prospectus'

Advantage Wollongong, 'Wollongong: A City Transformed': <http://www.advantagewollongong.com.au/assets/Uploads/Forge-magazine-Wollongong-a-city-transformed.pdf>

Australian Institute for Disaster Resilience, 2017, 'Australian Disaster Resilience Handbook Collection – Handbook 7: Managing the Floodplain: A Guide to Best Practice in Flood Risk Management in Australia'

BSI Standards Publication, 2014, PAS 181:2014, 'Smart City Framework – Guide to establishing strategies for smart cities and communities'

Garratt and Bucinskas, 2017, 'A flood risk assessment of the South East Region of NSW', *Floodplain Management Association Conference*, Newcastle, Poster Presentation

Illawarra Shoalhaven Joint Organisation, 2017, 'Illawarra Shoalhaven 360 Economic Outlook'

Illawarra Shoalhaven Joint Organisation Strategic Plan 2017-2020

Kiama Municipal Council Economic Development Strategy, 2014

NSW Government, 'Illawarra-Shoalhaven Region Overview': <https://www.nsw.gov.au/improving-nsw/regional-nsw/our-regions/illawarra-shoalhaven/#region-overview>

NSW Government, 2015, 'Illawarra Shoalhaven Regional Plan'

NSW Government, 2017, 'Smart work hubs: The benefits, potential demand and possible models'

RDA Illawarra, 2013, '#Illawarra Digital – A Regional Digital strategy for the Illawarra'

SES, 2018, 'Flood Hazard and Risk in NSW', Supporting Document to the NSW State Flood Plan

Shellharbour City Council Economic Development Strategy 2014-2018

Shoalhaven City Council Digital Economy Sector Strategy, 2012

SMART Infrastructure Facility: Stormwater Smart Wollongong; Digital Living Lab; Smart Independent Ageing; Information and Communications Technology; Infrastructure, Research and Training

University of Technology Sydney, 2016, 'Illawarra Youth Employment Strategy'

Wollongong City Council Information Management & Technology Strategy 2018-2020

Wollongong City Council Economic Development Strategy 2013-2023