

Smart Waverley Strategy 2023



WAVERLEY
COUNCIL





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EXECUTIVE SUMMARY

The *Smart Waverley Strategy 2023* is designed to transition Waverley as a community and organisation, into the future of smart technology. The strategy specifically delivers a program of actions focused on identified themes.

The strategy links a range of necessary elements to better position Waverley for a digital future. The program of actions capture

three elements of Smart Cities at Waverley. Firstly, they include initiatives that have already been delivered but require integration of systems or data. Secondly, initiatives planned in the Waverley Community Strategic Plan and other adopted strategies. Thirdly, it encompasses new initiatives that align with a range of community needs from education and sustainability to online services and transport.



A SMARTER WAVERLEY COMMUNITY

Smart technology interacts with our lives every single day. From our personal lives with smart phones, watches and other wearable devices, to our homes with smart TVs, appliances and lighting. It also extends into our public spaces with public Wi-Fi, ticketless parking, real time traffic updates, smart street lighting and more.¹ The smart technology we have access to now, gives us a glimpse into a future of countless new opportunities for how we might live and manage all the aspects of our lives.

A Smart City relies on the integration of smart technology. It represents a step forward for the entire community, creating a more seamless experience with access to information, enhanced service delivery for customers and staff, management efficiencies through the linkage of systems, physical improvements to public spaces, and even job growth in relation to innovation.

Initiatives relating to smart technology are being implemented across Australia, in public spaces and the private domain by a range of partnerships involving community, government and private partners all with a single focus of making life easier and more connected. As outlined in the Federal Government Smart Cities Plan (2016), smart technology for the community will lead to better utilisation of infrastructure, energy efficiency, service delivery improvements, and better benchmarking of community performance.²

Waverley is already in a strong position, having delivered a range of specific Smart City related projects. Waverley Council recognises the future is increasingly digital and are committed to meeting the needs of our community.



¹ Drumm, J White, N, Swiegers (2017) *Smart everything smart everywhere*, Mobile Consumer Survey 2017, The Australian cut, Deloitte Australia

² Department of Infrastructure, Regional Development and Cities (2016) *Smart cities plan*, Australian Government

SMART WAVERLEY 2023

Online Services

- Accessible from a smartphone
- Live streaming Council meetings
- Digitisation of library resources
- Venue bookings

Customer Service Portal

One stop shop of online services and information

Street Parking (IoT)

Real time information on parking availability, mobile payments and digital parking permits

Mobility as a Service

Integrated local transport solutions

Public Safety

CCTV in major public spaces

Public Wi-Fi

Across beaches and commercial centres

3D Model

Exploring Waverley built and natural environment in 3D

Digital Literacy

Education support for schools, residents, businesses (minority groups)

Improved Emergency Response

Beach locations

Public Carparks (IoT)

- Ticketless parking and real time information on availability
- Digital signage

Electric Vehicle Charging Stations

Public Waste (IoT)

Smart bins

Stormwater Harvesting (IoT)

Pollution and monitoring of public spaces



Open / Shared data

Data made available to community and linked to data portals of other government agencies



Digital Infrastructure

- Fibre optic network
- Cloud services
- NBN
- LoRaWAN (IoT)
- Data platform and dashboard



Waste Management System (IoT)

Integrated system for all waste services



Innovation

Explore development of an innovation hub / precinct
Host hackathons



Sustainability (IoT)

Solar panels, energy and water monitoring technology



Multi-function poles (IoT)

Smart street lighting



Visitor Information Centre (IoT)

Digital solutions for visitor information



Community Assets

Integrated system to manage all assets

NOTE: IoT refers to Internet of Things - refer to glossary

VISION & PRINCIPLES

Smarter and more connected

In 2023, our vision for Waverley is of a smarter, more connected community. Both Council and the community will be using more smart technology that will encourage and enable greater inclusiveness and collaboration. It will help promote innovation and facilitate openness through sharing of information.

The community will have greater access to information through more advanced digital systems, enabling greater accountability and transparency. Resources and usage will be measured in real-time leading to more sustainable and efficient management.

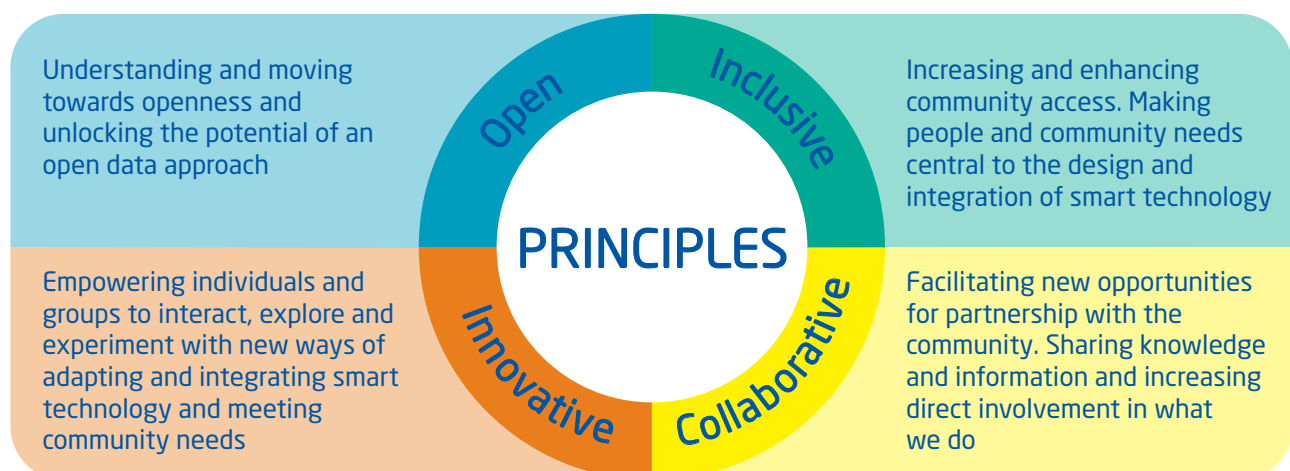
Our vision communicates our mind-set for the future, embedding smart principles and practices with smart technology across Waverley, to deliver tangible community outcomes.

It responds to the range of issues and opportunities identified after extensive consultation undertaken with the community and summarised in the Waverley Community Strategic Plan Engagement Report 2018.

This strategy attempts to link solutions that aim to address issues that range in scale and complexity under 11 themes. Some of these issues include things like further improving our environmental sustainability, reducing transport and parking congestion, better maintenance of our assets, improving availability of venues and supporting start-ups, local jobs and innovation.

PRINCIPLES

Our Smart Cities approach follows four guiding principles that will remain in place throughout the life of the strategy.



ABOUT SMART CITIES

Smart Cities is simply about using smart technology and concepts to create new approaches to community challenges. It aims to improve the life of a community socially, environmentally and economically.

Smart Cities extends across a range of areas that Council manages. These include social services, environment, health, energy, public safety, waste management, transport and mobility and the local economy.³ The reach of Smart Cities is broad, however we are mindful that integrating smart solutions should be targeted where outcomes address specific local challenges, and is economically feasible.

The principles of Smart Cities are based on the integration of our physical and digital environment. It uses smart technology and data to deliver more seamless access to services and information, sustainable ways of managing community assets and public spaces, along with a greater level of inclusion and transparency for the community.

Data is integral to a successful Smart City. It helps us better understand and appropriately respond by increasing efficiency and sustainability of resources and services.

There is a need for local government to adapt and lead through digital change to meet community needs as expectations grow in a maturing digital society. The principles of smart cities provide a leading way forward.⁴

The success of integrating a Smart Cities approach relies on local governments leading in collaboration with the community, other government agencies, relevant private sector organisations and research institutions.

There is no one size fits all approach, as every community has different needs and challenges. Our approach to Smart Cities in Waverley is therefore specific and tailored, making the need for an agreed strategy even more important.



³ Smart Cities Council of Australia and New Zealand (2015) *Smart Cities Readiness Guide*, Sydney Australia

⁴ Department for Business Innovation and Skills (2013) *Smart Cities Background Paper*, UK Government, London United Kingdom

WHY A SMART CITY STRATEGY IS REQUIRED

In the last decade, thousands of innovative Smart City solutions have been delivered around the world. They have created more efficient, liveable and integrated urban communities.⁵ The growing number of examples to learn from and adopt best practice have provided Council with a comprehensive base to explore ideas, solutions and understand their application to Waverley.

Internationally, there are countless other communities that have demonstrated the benefit of Smart City solutions including Amsterdam, Barcelona, Copenhagen, London, Chicago and New York. They represent leading cities and offer options to share and replicate specific approaches. Singapore, represents an award winning example that is emerging as a leader in applying Smart City solutions.⁶ They address their own challenges and take advantage of new opportunities and innovations to improve them. They have delivered an array of projects that include the adoption of smart grid technologies, Wi-Fi access points, apps, connected traffic solutions, and smart video surveillance.

In Australia, all levels of government are moving towards greater digital integration. Leading examples of strategic frameworks and Smart City initiatives have been delivered by other Australian local governments. For example we have seen City of Melbourne, Sunshine Coast, Ipswich, Newcastle, and Adelaide City Councils develop their own Smart City strategies and programs, delivering a range of projects that have gained industry wide recognition, and in some cases, received national or international awards, for example Melbourne City and Newcastle City.⁷ These case studies offer important local examples and learnings for Waverley Council to ensure delivery of tangible outcomes in an Australian context.

Priorities have been established nationally in a Smart Cities Plan and multiple federal funding grants. In NSW, the state government has begun delivering smart, on-demand services accessible online 24/7.

⁵ Dixon, B (2016) Churchill Fellowship Report: *Building the Digital City: the People, the Smarts, the Buzz*, The Winston Churchill Memorial Trust of Australia

⁶ Hynes, C (November 2017) *Article: Singapore Ranks as World's No.2 Smart city*, Forbes

⁷ *Article: Melbourne Wins Intelligent Community Award*, June 2017, Smart Cities World, London UK

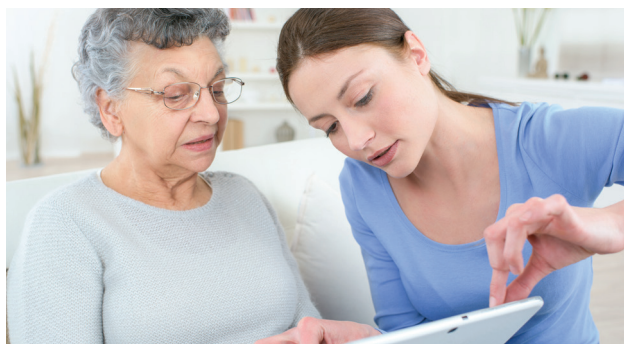
For Waverley, transitioning towards a smarter community using Smart City principles will:

- Improve delivery of community services
- Enhance community engagement
- Improve data-driven decision making through greater access to real-time information
- Provide for safer communities
- Make our infrastructure more resilient and sustainable
- Stimulate economic activity
- Improve the efficiency of Council operations

The *Smart Waverley Strategy 2023* represents our framework outlining Council's role in implementing actions and delivering projects over the next four years. It is based on the eleven priorities identified in the *Community Strategic Plan*.

“We can’t overlook the importance of the real human benefits that smart cities have. Connected communities, municipal services and processes have a powerful impact on a citizen’s quality of life.”

Windsor Holden, Head of forecasting and consultancy, Juniper Research



ROLE OF WAVERLEY

Local Government is key to delivering Smart City strategies and initiatives.⁸ There is a responsibility for maintaining strategic overview and delivering a range of services that respond to the physical, social and economic needs of a diverse community.^{9 10}

KEY ROLES OF GOVERNMENT IN A SMART CITY



LEAD

The *Smart Waverley Strategy 2023* takes into consideration the Waverley Community Strategic Plan 2018-2029 that outlines the role of Council in delivering the community vision. We have translated key core community needs into actions that require, or would benefit from, the integration of smart technology.

There are two strategic aspects that require consideration by Council, both of which are linked. They are characterised as **internal** organisational actions and resulting projects and **external** community outcomes. Internal aspects focus on policy, governance,

procurement, digital software solutions, interoperable systems, data management and delivery and staff resourcing. The external community outcomes focus on physical infrastructure, engagement, partnerships, online service delivery, digital community programs and other new digital opportunities for the community.

COORDINATE

The integration of Smart City principles requires the collaboration and commitment of a number of internal and external stakeholders. Council is required to effectively coordinate a program of actions and resulting projects, suppliers, providers, and budgets to ensure successful transition to a Smart City.

DELIVER

The complexity of delivering digital solutions means a partnership approach is essential to rely upon a range of knowledge areas and experts. Waverley leads delivery with support from other local government areas and agencies, industry and research institutions.¹¹

The process of integrating established networks into a digitally connected (Smart City) system requires a whole of government approach to embed the model across multiple disciplines.

⁸ Nugroho, L Achmad, K et al (February 2018) *Smart city readiness based on smart city council's readiness framework* International Journal of Electrical and Computer Engineering 8(1):271-279

⁹ Dixon, B (2016) Churchill Fellowship Report: *Building the Digital City: the People, the Smarts, the Buzz*, The Winston Churchill Memorial Trust of Australia

¹⁰ Di Maio A, Howard, R Archer, G September 2015 *Introducing Gartner Digital Government Maturity Model*, Gartner

¹¹ Dept for Business Innovation and Skills (October 2013) *Smart Cities Background Paper*, UK Government, London UK

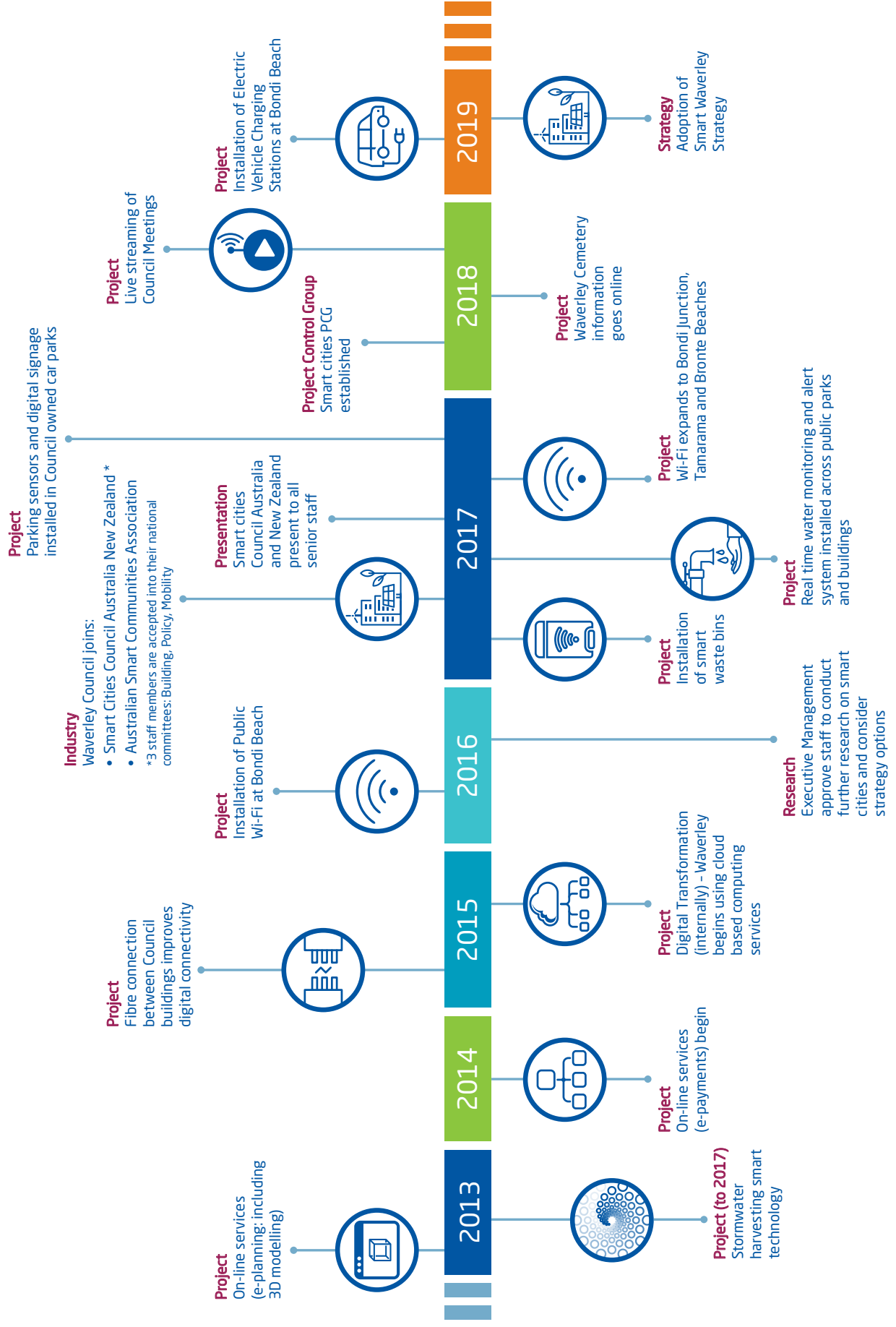
SMART CITIES AT WAVERLEY

Waverley began transitioning towards becoming a smarter, more connected community prior to 2015. This eventuated through a number of individual projects that related to the Smart Cities principles and focused on improving community infrastructure or services. This theme naturally continued

into many more projects that stretched into environmental sustainability and expansion of public Wi-Fi. Council also recognised that in order to move forward more effectively, Waverley required a single strategy to link these projects, and ensure their integration consistently reflect Smart Cities principles.



TIMELINE OF SMART CITIES AT WAVERLEY



KEY SMART CITY PROJECTS DELIVERED

Outlined below is a snapshot of projects related to Smart City principles and standards that Council has already delivered.



SMART SOLAR BINS

Waverley has upgraded waste infrastructure with the installation of smart solar bins at Bondi Beach and now Bondi Junction. Using Internet of Things (IoT) smart technology, the bins are able to store over five times more waste than normal bins. Council is automatically notified when bins are approaching or at capacity and requiring collection.



PUBLIC WI-FI

Waverley's public Wi-Fi was launched and made available 24/7 to locals and visitors at Bondi Junction and Bondi, Bronte and Tamarama beaches. Unnamed data collected from Wi-Fi has helped us understand pedestrian movement and given us the power to undertake evidence based decision making with greater accuracy.



ENERGY, WATER AND CO₂ MONITORING

Council has established new energy, water, fuel consumption, and CO₂ monitoring and reporting software to track Council buildings resource efficiency, and progress towards achieving our CO₂ reduction targets. The software collects and monitors energy/ water data for our buildings (including solar generation from PV systems), electricity from street lighting, as well as fuel consumption from our fleet vehicles.



LIVE STREAMING COUNCIL MEETINGS

Waverley Council is committed to open, transparent and accountable decision making. The community can now access live streaming of Council meetings and published recordings of meetings on Council's website.

Our positive track record for using new smart technology to deliver community needs means we have already embraced Smart Cities. This strategy seeks to embed the learnings from these experiences and extends our intention towards identified gaps to ensure we continue to consistently move forward.



OPPORTUNITIES

Council has explored how smart technology can help deliver commitments outlined in the Waverley Community Strategic Plan and associated strategies. Smart technology will continue to feature prominently in our future as we identify and deliver projects that support positive community outcomes.

Opportunities

- Integrated and proactive delivery of established services
- Improving the way we engage with the community
- New strategic partnerships focused on analysing shared data
- More sustainable financial and environmental monitoring and use of resources
- Improved monitoring and reporting of our Council assets, facilities and open spaces
- Increase transparency and access to information
- Evidence based (data driven) decision making
- Improve transport options with real time information
- Educating and upskilling our community with evolving smart technology



SMART WAVERLEY FRAMEWORK

The *Smart Waverley Strategy 2023* outlines our strategic direction over the next 4 years. It establishes a stronger foundation for our community to continue transitioning towards a smarter digital future. It is based on an adaption of international best practise models for delivering Smart Cities.¹² The strategy connects current and future trends with community needs and digital solutions that provide improvements in the way Council manages and delivers services.^{13 14}

Smart technology is constantly evolving. We intend to remain flexible by meeting future needs and adopting smart technology where feasible. The program of actions outlined in this strategy are high level so that Council can respond to the pace of change with agility.

DEVELOPMENT OF THE FRAMEWORK

There are multiple ways to approach Smart Cities and there is no one-size-fits-all model. Solutions are always evolving. We have designed our strategy around six priorities to

provide a structured way for Council to deliver projects and outlines how they are related. We have adopted established standards already in use across United Kingdom, other European Union nations and the United States.^{15 16 17}

The actions Council will deliver from this strategy capture three elements of smart cities:

- Initiatives that Council has already delivered yet require further digital integration
- Initiatives planned however not yet delivered
- New innovative initiatives that align future trends with our community needs.

The Waverley Community Strategic Plan 2018-2029 was developed with extensive community consultation. It clearly outlines the needs of the community that we are committed to delivering over the next decade. The *Smart Waverley Strategy 2023* is built on the 11 priorities identified in the Community Strategic Plan.¹⁸ The program of actions have been grouped beneath six priorities that collectively deliver a *Smart Waverley* vision – a smarter and connected community.

¹² Giffinger, R *The Smart Cities Model*, European Smart Cities Department of Spatial Development, Infrastructure and Environmental Planning, Vienna University of Technology, Vienna, Austria

¹³ Arico S, Srinivasan V (2012) *Enabling Australia's Digital Future* CSIRO, Brisbane, Australia

¹⁴ Global Agenda on the Future of Cities (October 2015) Top Ten Urban Innovations - Global Agenda Council on the Future of Cities, World Economic Forum, Geneva Switzerland

¹⁵ Department of Business Innovation and Skills (2013) *Smart city framework – Guide to establishing strategies for smart cities and communities* London, UK Government

¹⁶ Smart Cities Council of Australia and New Zealand (2015) *Smart Cities Readiness Guide*, Brisbane Australia

¹⁷ Giffinger, R *The Smart Cities Model*, European Smart Cities Department of Spatial Development, Infrastructure and Environmental Planning, Vienna University of Technology, Vienna, Austria - PAS / Smart Cities Council

¹⁸ Waverley Council (2018) *Waverley Community Strategic Plan 2018-2029* Sydney, Australia

Figure: Development of the Smart Waverley 2023 Framework



Sources: Waverley Council, Smart Cities Council of Australian and New Zealand

DELIVERY

Where specific actions have already been scoped into defined projects, this strategy serves as a guide to ensure Smart Cities principles, technical standards and guidelines are integrated. Individual actions that remain as concepts and yet to be formed into formal projects will be included in future updates to our delivery plans.

All technical information relating to technology and contained in this report will be reviewed annually or as required through a dedicated implementation plan. This ensures the evolving nature of smart city solutions and technology being considered, remain future ready and continues to address the community issues as intended.

STRATEGY PROGRESS

Each project outlined in the strategy will have measures to determine success. We will be measuring nine areas to evaluate the success of this strategy. They include:

- **Strategic clarity**
(clear vision, strong business cases, results orientated)
- **Leadership**
(sustained support, leadership skills, collaborative governance)
- **Community focus**
(people centric design and delivery, community empowerment)
- **Stakeholder engagement**
(communication partners, engagement with other Smart Cities or communities)
- **Skills**
(skills mapping and integration)

- **Partnership**
(smart supplier selection, supplier integration)
- **Achievable delivery**
(phased delivery, continual improvement, risk management)
- **Future-proofing**
(interoperability, web centric delivery, agility, shared services, support and maintenance)
- **Benefit realisation**
(mapping, tracking and delivery)

Source: Department for Business Innovation and Skills PAS 181.2014

PROJECT PROGRESS

The diverse range of identified actions mean that a series of unique projects will be scoped with its own business case and measures.



PRIORITIES

Six key priority areas form the foundation of the *Smart Waverley Strategy 2023*. Collectively, these priorities will deliver a vision of a smart connected Waverley based on our four key principles of being inclusive, collaborative, innovative and open.

The priorities outline a program of 32 actions that collectively define the direction of Smart Cities for Council over the next four years.

The priorities remain focused on building the right infrastructure for long-term capacity in an increasingly digital future. We will prioritise delivery of actions based on those fundamental to established community outcomes and service delivery. We will also focus on integrating new innovative smart solutions where practicable, to meet the needs of our community. It builds on Council's strengths of having proven delivery of similar projects.

Smart Waverley 2023 Strategic Framework



PEOPLE

EDUCATION SERVICE DELIVERY

People are at the heart of Smart Cities. Council is working to ensure the community is able to keep pace with smart technology while remaining inclusive. This includes Council offering and supporting digital literacy programs in partnership with educational institutions so everyone has the opportunity to learn in an evolving digital environment. We intend to engage with schools, minority groups and the elderly, to encourage and assist in learning opportunities. We also want to ensure our local cultural identity continues to be communicated in a digital way.

Online services have grown rapidly in the last decade with access to personal smart devices. This has placed pressure on governments and private organisations to migrate services online and offer 24 hours, 7 days a week access. We have successfully migrated some services online, with others planned for the future. Our online service portal will allow the community to have access to customised information and services that they require.

OUTCOMES

- Greater digital literacy programs for residents and businesses including minority groups.
- Waverley residents can access online services through a single service portal.
- Migration of services online including parking permits, booking venues, submission of development applications, etc.
- Make relevant information to the community more accessible digitally including spatial mapping and data.



ENVIRONMENT

SUSTAINABILITY WASTE MANAGEMENT

Our natural environment is the living heartbeat of our community and protecting its future remains a priority. We will expand our already successful digital sensors (IoT devices) to enable monitoring and evaluation of our environment with real time data. This includes our solar energy, street lighting, waste management, stormwater harvesting, and water leak detection systems, to reduce pollution and improve water quality. The speed of information enables more insight and faster response times to manage our assets, services and natural environment.

Waste management is a primary focus for Waverley, integrating all aspects of private and public waste services including illegal dumping. New and existing data will be integrated to our single data platform and made open and machine readable. The community can access up-to-date information, as well as making waste bookings online.

OUTCOMES

- Increase sustainable energy use with installation of smart lighting.
- Improve energy sources on our assets with battery storage and solar panels.
- Digital monitoring of stormwater infrastructure and expand the use of water saving monitoring across parks, beaches and facilities.
- Increase information online by mapping our tree canopy cover.
- Improve our waste services with a waste management system that integrates public, private and illegal waste.
- Retrofit existing waste bins in public spaces with smart sensors to monitor usage.



GOVERNANCE

DIGITAL INFRASTRUCTURE POLICY & RESOURCING DATA

Good governance ensures Council maintains a strategic overview of community needs and provides a coordinated approach to delivery. Delivery and ongoing management of Smart Cities requires a range of digital solutions (infrastructure, hardware and software) to be integrated providing the foundation for all other Smart Cities solutions. Council will focus on combining digital infrastructure managed by cloud based services. For example, a data management platform will link all our sensors (IoT devices) and systems to collect data, filter, and make it open to the community.

We will also partner with innovators to support data analytics that moves Council into a new era of evidence based decision making and problem solving. To support this, we will need better policies and procedures about how we collect, standardise, manage, and share data.

OUTCOMES

- Improve service delivery to the community by integrating Council's core systems.
- Improve transparency and decision making by increasing the range of information shared publicly.
- Better understand the needs of our community through improved engagement tools and the use of analytics.
- Improve digital accessibility by expanding our public Wi-Fi network.
- Collaborate to share Waverley data via NSW and Australian Government open data portals.
- Adopting new policies relating to procurement, open data, and standardisation of digital information.
- Using data for analytics to support real time evidence based decision making.
- Plan for the future with funding mechanisms for delivering future Smart Cities projects.



LIVING

PUBLIC SPACES COMMUNITY ASSETS

We aspire to make the daily lives of our community members easier with Council services that are more seamless. We will focus on how Council can use smart technology to manage public spaces and community facilities, to make them more accessible and safer for everyone to use. The actions will ensure the community is integrated with the physical and digital worlds. Our insights from the data generated will enable better planning in the future and ensure Waverley remains a great place to live, work and play.

OUTCOMES

- Better manage our resources by integrating sensor technology in sports fields and open spaces.
- Improve access to information with digital solutions installed in our Visitor Information Centre and key public locations.
- Improve safety and security of public spaces with CCTV and emergency response systems at beachside locations.
- Expand our 3D digital model of Waverley's natural and built environment.
- Improve our approach to asset management by implementing an integrated asset management system.



ECONOMY

INNOVATION PROMOTION

Waverley is home to one of the highest concentrations of small business registrations relative to residents. Smart technology and data platforms offer new opportunities to support local innovation, and establish an opportunity to enable the creation of an innovation hub or precinct in Bondi Junction / Bondi Beach. There are also innovation and entrepreneurship opportunities for local businesses to enter hackathon events to support new insights or problem solving of community issues.

OUTCOMES

- Support existing local businesses in an evolving digital landscape through education.
- Support the development of start-ups via an innovation hub or precinct.
- Better understand our community by collaborating with external innovators to analyse local data through hackathons.
- Market Waverley as an innovative area and seek local, national and global partners to help us deliver commitments using smart technology and concepts.



MOBILITY

TRANSPORT PARKING

Parking and mobility concerns continue to be a priority for our community.

Our economy is transforming into a larger sharing economy with an increasing number of bike and car sharing options now competing with rates of car ownership.¹⁸ With the variety of travel options available, it is imperative that real time information is available to users at the click of their phone in order to make informed decisions about the most efficient mode of travel.

Smart technology can offer integrated transport solutions across Waverley. For example, sustainable, safe and interconnected transportation systems can encompass buses, trains, cars, cyclists and pedestrians using one or more modes of transport. Smart technology can prioritise clean and often non-motorised options. Relevant and real-time information can be accessed by the public in order to save time and improve commuting efficiency, save costs, and reduce carbon footprint. Mobility system users might also provide their own real-time data or contribute to long-term planning.

OUTCOMES

- Make parking in car parks easier by upgrading public car parks with ticketless parking, real-time information and digital signage.
- Make on-street parking easier by enabling mobile payments.
- Offer a variety of integrated transport options using real time data to improve accessibility otherwise known as Mobility as a Service.



PROGRAM OF ACTIONS

A program of actions specific for Waverley are detailed in this section. These actions represent a high level summary with further scoping of projects to follow.

PEOPLE

	Action	Status	Budget
Education			
1.1.1	Support education and upskilling through programs and events including: <ul style="list-style-type: none"> community digital literacy programs for (residents, businesses, schools and minority groups) with support from universities and non-government organisations. [CSP 1.1.1] [CSP 1.1.2] facilitation of networking opportunities to promote shared learnings for local businesses. [CSP 4.1.1] explore and increase the amount of educational resources available to staff in subject areas such as data, analytics, digital privacy, design thinking, customer centric design, IoT and more. convey Waverley's existing cultural identity through new digital platforms and innovations. [4.3.2] 	Planned	Allocated
		Planned	Allocated
		Unplanned	Unallocated
		Planned	Allocated
Service Delivery			
1.2.1	Improve online service delivery by implementing a new Customer Relationship Management System that integrates Council services with a customer centric service portal. [CSP 10.1.1, 10.3.1, 10.3.2, 10.3.3]	Planned	Allocated
1.2.2	Increase the amount of data shared with the community and organisation via: <ul style="list-style-type: none"> establishment of a Council dashboard that visualizes key data in easy to read formats. data analytics that supports a better understanding of Council's customers to support smarter community engagement. [CSP 11.1.2] 	Unplanned	Unallocated
		Planned	Unallocated
1.2.3	Improve community access to online services by migrating a range of paper based processes including: <ul style="list-style-type: none"> parking permit applications and approvals. booking service for community venues and open spaces. unified ticketing system for events held by Council. library services, including access to digitisation of library documents and images. submission of Development Applications (including heritage applications) and trial new innovations that could further streamline the lodgement/assessment process. Digitisation of common workflows such as e-forms for increased operational efficiencies (internally and externally). [CSP 5.1.3, 6.3.2, 10.3.2, 10.3.3, 11.2.2]	Planned	Allocated
		Unplanned	Unallocated
		Unplanned	Unallocated
		Unplanned	Unallocated
		Delivered / delivering	Allocated
		Planned	Allocated

ENVIRONMENT

	Action	Status	Budget
Sustainability			
2.1.1	Increase sustainability by integrating smart technology across infrastructure via: <ul style="list-style-type: none"> • installation of multi-function poles (with smart lighting) along Campbell Parade and Bondi Junction cycleway. • plan for expansion of multi-function poles to other parts of the Waverley Local Government Area. [CSP 6.2.2, 8.1.1] • electric vehicle charging stations at Bondi Beach and Bondi Junction car parks. [CSP 8.1.2] • map and install smart technology to monitor environmental conditions such as temperature, air quality, water quality, etc. 	Planned	Allocated
		Planned	Allocated
		Delivered / delivering	Allocated
		Unplanned	Unallocated
2.1.2	Improve water monitoring and efficiency via smart sensor technology: <ul style="list-style-type: none"> • maintain and increase stormwater infrastructure at Bronte, Tamarama and Bondi beaches. [CSP 8.2.1] • expand the use of water saving devices and practices across parks, beaches and facilities. [CSP 8.2.2] 	Delivered / delivering	Allocated
		Delivered / delivering	Allocated
2.1.3	Assess feasibility to integrate solar canopy with battery storage smart technology at Councils Alexandria Industrial Facility. [CSP 8.1.2]	Planned	Allocated
2.1.4	Improve access to information by mapping tree canopy cover across Waverley (as part of the East City District Plan) and make available online via 3D model. [CSP 8.3.3]	Planned	Unallocated
Waste Management			
2.2.1	Implement a unified Waste Management System across Waverley (public, private and illegal) using a single platform. Key elements will include: [CSP 9.2.2] <ul style="list-style-type: none"> • RFID tags to monitor household waste. [CSP 9.1.1] • waste management booking system. [CSP 9.2.2] 	Planned	Allocated
		Planned	Allocated
2.2.2	Create service waste efficiencies by retrofitting existing public waste bins with smart sensors for data and analysis. [CSP 9.3.1]	Planned	Allocated

GOVERNANCE

	Action	Status	Budget
Digital Infrastructure (includes digital tools and systems)			
3.1.1	Integrate systems and digital infrastructure (cloud services, digital networks and tools) to deliver better services with: <ul style="list-style-type: none"> • data platform – integrates and holds a variety of sources, analyses and shares data securely. • sensors and assets – integration of all data to facilitate real-time monitoring, reporting and data analytics for access by Council and the community. • security – appropriate architecture to protect community data and IT assets. • cloud services – continue expansion of Council systems to improve delivery of community services. • expand the digital infrastructure platform across the necessary areas that support online services and IoT. • LoRaWAN – (Long Range Wide Area Network) – Install or extend an established network across the LGA for both private and public use. [CSP 11.1.1] • public Wi-Fi Network – expansion across remaining commercial areas where viable. [11.1.2] • business intelligence tools – accessible dashboards and reporting for each business unit to respond to community enquiries. [CSP 10.3.3] 	Unplanned	Unallocated
		Unplanned	Unallocated
		Unplanned	Unallocated
		Delivered / delivering	Allocated
		Unplanned	None required
		Delivered / delivering	Unallocated
		Unplanned	Unallocated
		Unplanned	Unallocated
Data			
3.2.1	Share more Council information by identifying and digitising relevant Council data and making it accessible to the community. [CSP 10.3.3]	Planned	Unallocated
3.2.2	Support the sharing of relevant data via established NSW and Australian Government open data portals. [CSP 11.1.2]	Planned	Unallocated
3.2.3	Increase the collaboration on data analysis between Government and Non-Government organisations by establishing data sharing agreements with key Council stakeholders and delivery partners. [CSP 11.1.2]	Planned	Unallocated
Policy and Resourcing			
3.3.1	Support the continued delivery of smart city solutions across the organisation that include: <ul style="list-style-type: none"> • incorporation of digital inclusion principles across all smart technology installations and digital platforms. • develop a process (and guidelines) that all smart city projects can utilise in relation to data integration. • adopt a data governance framework that identifies what and how data will be stored, protected and shared. [CSP 11.1.2] • adopt guidelines that outlines terminology for smart cities and smart technology based on industry best practice. 	Unplanned	None Required
		Unplanned	None Required
		Planned	Unallocated
		Unplanned	None Required

GOVERNANCE *continued*

	Action	Status	Budget
3.3.2	Facilitate greater efficiency and transparency of project delivery by updating procurement policies to reflect pilot projects relating to new digital technologies.	Unplanned	None Required
3.3.3	Work with neighbouring Councils and other government agencies to develop consistent guidelines and standards around smart city solutions to enable greater collaboration on projects.	Unplanned	None Required
3.3.4	Support the long-term success of digital transformation as a community and organisation by creating new roles for smart cities, including: <ul style="list-style-type: none"> • coordinator to manage implementation of the Smart Waverley Strategy. • data analysts to support sharing and analysis of data with Council and the community. 	Unplanned Unplanned	Unallocated Unallocated
3.3.5	Promote a holistic approach to delivery via the establishment of an advisory / working group comprising of key staff to guide implementation, develop and review business cases, relevant policies and protocols.	Unplanned	None Required

LIVING

	Action	Status	Budget
Public Spaces			
4.1.1	Better manage, monitor and increase safety of our open spaces by integrating smart technology. [CSP 3.2.1]	Planned	Unallocated
4.1.2	Improve public access to information with: <ul style="list-style-type: none"> • investigate and deliver digital solutions to supply greater local information to visitors. [CSP 4.3.2] • explore opportunities to integrate digital signage on bus shelters. [CSP 4.3.2] 	Planned Planned	Unallocated Unallocated
4.1.3	Improve emergency response at beach locations through digital communication with key stakeholders. [CSP 10.3.1]	Planned	Unallocated
Community Assets			
4.2.1	Improve community's understanding of the area by expanding a public version of the 3D digital model of Waverley's natural and built environment. [CSP 5.3.2]	Planned	Unallocated
4.2.2	Improve management of assets through smart technology via the: <ul style="list-style-type: none"> • implementation of an integrated asset management system that monitors and plans all assets throughout their life cycle. [CSP 7.1.1] • integration of smart technology across Council assets to support monitoring, analysis and reporting and improved maintenance scheduling using predictive analytics. [CSP 7.1.1] 	Planned Planned	Allocated Unallocated

ECONOMY

	Action	Status	Budget
Innovation			
5.1.1	Support the growth of innovation jobs by establishing an Innovation Hub, that will aim to: <ul style="list-style-type: none"> • foster relationships with innovators at universities and professional networks to build on opportunities in smart technology, data analytics or innovative thinking that serve the local community. • Investigate partnership options to establish an area dedicated as a 'test bed' to trial new smart technology and ideas relating to local industry. [CSP 4.1.1] 	Unplanned	None required
5.1.2	Support a growth of innovation jobs via hackathon events bringing together community, innovators and suppliers to focus on a range of local issues.	Unplanned	Unallocated
5.1.3	Invest in the future delivery of smart technology and systems by identifying a funding model and establishing a dedicated Council fund.	Unplanned	Unallocated
Promotion			
5.2.1	Support growth in local jobs by marketing Waverley as innovative to attract investment and opportunities from local, national and global organisations and research institutions in relation to our progression as a future focused community.	Unplanned	Unallocated

MOBILITY

	Action	Status	Budget
Transport			
6.1.1	Improve transport options for the community by implementing integrated transport projects, a project using sensors to monitor parking, traffic and pedestrian flows and use. [CSP 6.1.2]	Planned	Unallocated
Parking			
6.2.1	Improve real-time information about parking using smart sensor technology: <ul style="list-style-type: none"> • across council car parks and link real-time occupancy information to digital signage, Council's website and parking app developers. [CSP 6.3.3] • explore expansion of parking sensor model from council car parks into public on-street parking. 	Delivered / delivering	Allocated
6.2.2	Introduce digital phone payments to all parking meters at Bondi Beach and Bronte Beach. Investigate options for scaling to other areas. [CSP 6.3.3]	Unplanned	Unallocated
6.2.3	Improve management of parking via: <ul style="list-style-type: none"> • introduction of number plate recognition smart technology. • ticketless parking for Council managed car parking stations. [CSP 6.3.3] • digital parking permits for residents. [CSP 6.3.2] • making real-time information available through digital signage to alert drivers of car park availability at Bondi Junction and the beaches. [CSP 6.3.3] 	Planned	Allocated
		Planned	Unallocated
		Planned	Unallocated
		Planned	Unallocated



GLOSSARY

There are several concepts and words used in this document that are new or that may be used in new or different ways. Some those concepts and ideas are explained below.

Hackathon

Hackathons originated from events where people work together on computer programming to “hack” or solve a challenge. The term has broadened to include events which seek to use disruption to find innovative solutions to a challenge that do not necessarily have a functional digital deliverable.

Mobility as a Service (MaaS)

Personalised transport options which use a range of transport choices and access to those choices, negating the need for a car.

Smart

Self-Monitoring, Analysis, and Reporting Technology - is the application of autonomous or semi-autonomous technology systems to achieve greater utilisation of resources, limiting or reducing per capita resource consumption to maintain or improve quality of life. SMART uses devices that can be controlled remotely and can operate in conjunction with other devices and communicate information to other smart devices.

Smart City

Effective integration of physical, digital and human systems in the built environment to deliver a sustainable, prosperous and inclusive future for its citizens.

Sustainability

The United Nations describes sustainable development as, *“meet(ing) the needs of the present without compromising the ability of future generations to meet their own needs”* (World Commission on Environment and Development, 1987). Sustainable development seeks to achieve, in a balanced manner, economic development, social development and environmental protection.

Data platform

Infrastructure (combination of hardware and software) that enables an organisation to collect, manage and share data from multiple sources. Software system based on open standards

Management information system

Information processing system that supports the decision-making of a community.

Internet of Things (IoT)

Describes where things (e.g. objects, environments, vehicles and clothing) have more and more information or data associated with them and may have the ability to sense, communicate, network and produce new information, becoming an integral part of the internet.

Interoperability

Ability of systems to provide services to and accept services from other systems and to use the services so exchanged to enable them to operate effectively together.

Cloud computing

Scalable IT services accessible via the internet for a potentially large number of external customers, providing facilities for the storing and use of data and information on facilities remote from local computing facilities.

Integrated

Combined and compatible operation of different city systems and exchange of data and information with the aim of achieving more effective outcomes with least resource input.

Digital inclusion

Provision of digital connectivity to communities, especially in deprived areas to achieve universal access to broadband connectivity.

ACRONYMS

AIF	Alexandria Integrated Facility (Waverley Council Depot)
CRM	Customer Relationship Management
IoT	Internet of Things
LGA	Local Government Area
RFID	Radio Frequency Identification

