

# #SmartDarwin

Our Smart City Strategy

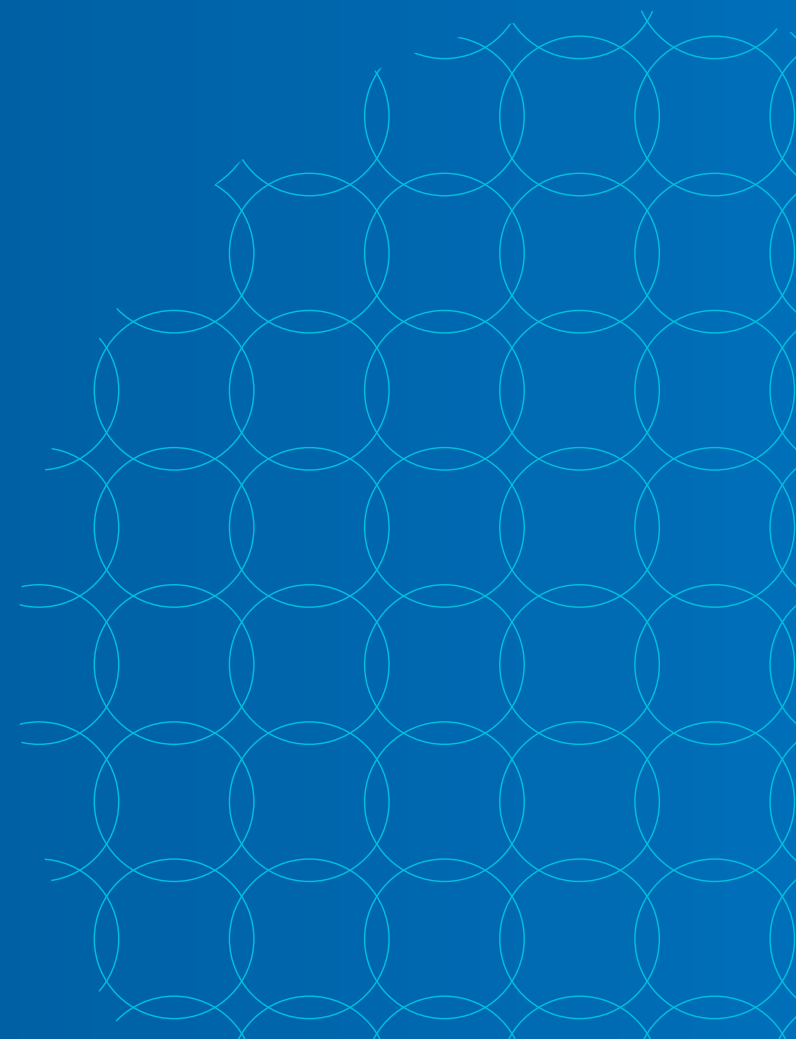




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# Darwin Today

As the capital of Northern Australia and as a modern and transforming city, Darwin is perfectly positioned to lead Australia's economic and diplomatic engagement in South East Asia.

Home of the Larrakia people, the traditional owners of the land, and more than 60 nationalities, Darwin is strengthened by its cultural diversity. Around 84,346 people (ERP, 2017) choose to call City of Darwin home for its distinct tropical climate and unbeatable lifestyle. As a burgeoning capital city, services and amenities are complimented by modern social and economic infrastructure ensuring the city remains an attractive and viable destination to live, work, study, do business, invest or visit.

With an abundance of natural and built assets such as stunning foreshore areas, a modern waterfront and a variety of entertainment and recreational offerings including restaurants, bars, retailers, a wave pool and water park - there is no shortage of options for residents and visitors to enjoy the city for business and pleasure. Darwin's strong sense of community further enhances the city's liveability and locals and visitors are spoilt for choice with the region boasting a number of local markets, sporting, arts, food and cultural events and festivals.

In terms of economic performance, Darwin's economy has remained relatively stable, largely attributable to the defence, tourism and the mining sectors. Despite the region experiencing a softening of growth, the future outlook is positive as Darwin's proximity to the world's largest emerging markets further cements its economic positioning as a global city of choice for businesses to operate and expand their international market position.

## Preparing for the next wave of prosperity

To ensure the city's attributes and emerging opportunities are capitalised on, City of Darwin has developed #SmartDarwin - its first Smart City Strategy - to drive a new wave of prosperity that is supported by 21st century approaches to business, governance and community development.

#SmartDarwin provides a framework for governments, industries and the community to overcome today's challenges whilst leveraging tomorrow's opportunities, ensuring the city is prepared for a digitally and data-enabled future.

#SmartDarwin will also enable City of Darwin to focus on improving service delivery to the community by increasing the quality of life for all residents, protecting the natural environment and ensuring that opportunities to succeed are ubiquitous across the community. This strategy draws from other strategic documents and incorporates key priority areas, including:

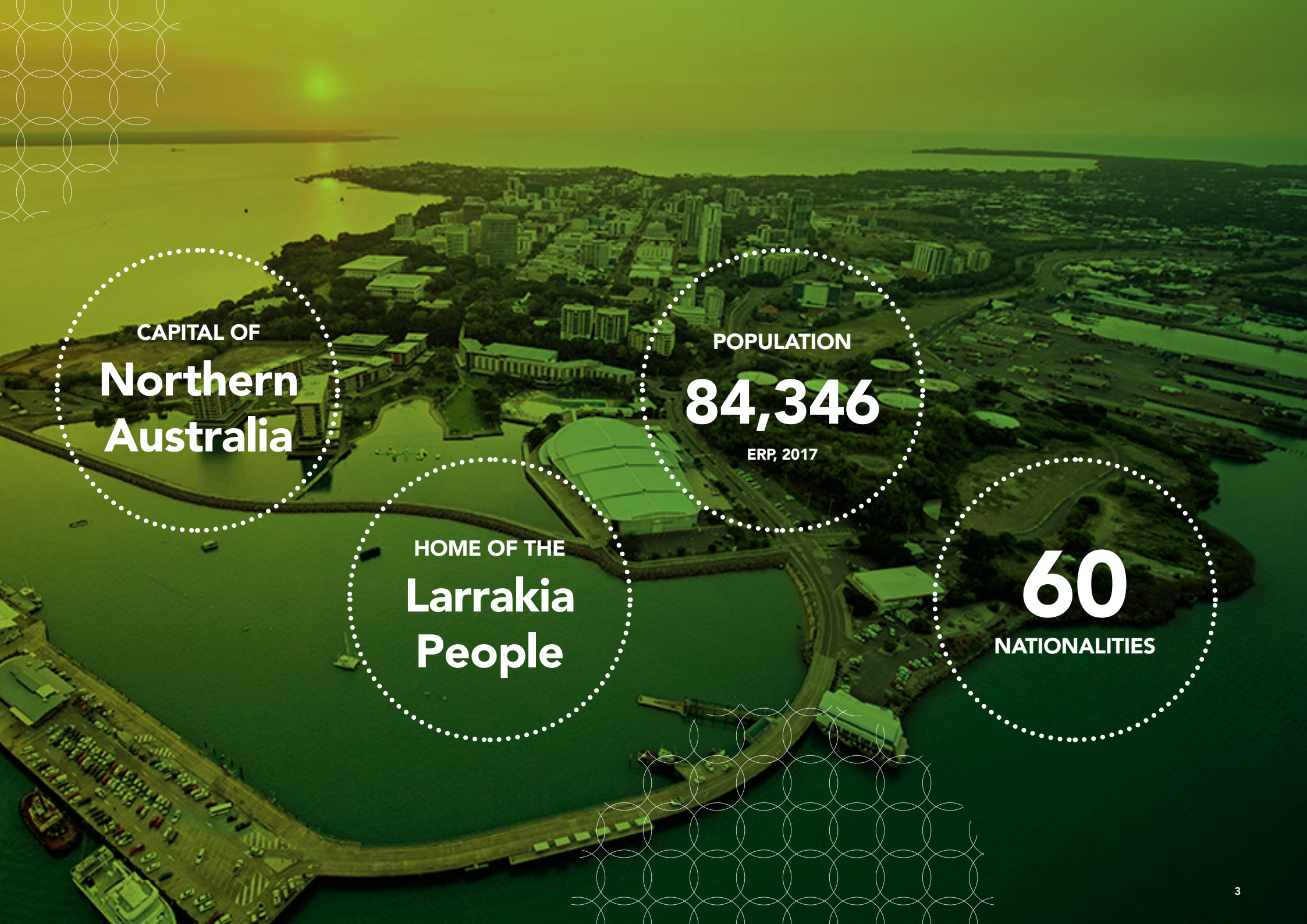
- Attracting investment and stimulating sustainable economic development in the city.
- Enhancing community engagement and participation in the city's development.
- Developing a digitally enabled city that enables local businesses to grow and attract new residents.
- Improving data-driven, evidence-based decision making by council to enhance transparency.
- Balancing the demand on natural resources ensuring the natural environment is protected.
- Improving operational efficiencies and management of council's infrastructure and assets.
- Leveraging grants and external funding to ensure ratepayer dollars go further.
- Addressing social inclusion and cultural diversity, enabling community and economic participation.
- Enhancing liveability through innovative environmental and urban greening and cooling practices.
- Enhancing resilience to natural disasters and other events.



**\$10M**

**SWITCHING  
ON DARWIN  
INVESTMENT**



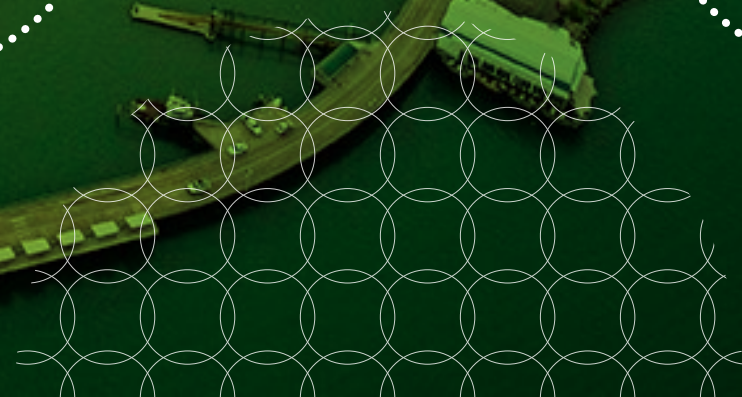


CAPITAL OF  
**Northern  
Australia**

POPULATION  
**84,346**  
ERP, 2017

HOME OF THE  
**Larrakia  
People**

**60**  
NATIONALITIES





# The Current Opportunity

The Darwin City Deal provides an unprecedented opportunity to leverage the city's geographic position, economic strengths and proximity to South East Asia.

As the capital of Northern Australia, Darwin is recognised nationally as being a strategic hub offering abundant potential for trade, investment and economic opportunities due to its proximity to South East Asia.

The city's untapped potential and economic opportunities have been recognised by both the Australian and Northern Territory Governments and this has resulted in an unprecedented commitment to City of Darwin through the announcement of a City Deal.

The Darwin City Deal is further complimented by additional funding commitments totalling half a billion dollars' worth of investment over the next decade. This is the most significant large-scale commitment the city has ever seen.

This commitment will catapult the city's transformation into a smart, liveable, productive and sustainable, 21st century global city equipped with economic and social infrastructure that is second to none.

## What is a City Deal?

The Darwin City Deal is valued at \$200m and is a joint initiative between the Australian Government, the Northern Territory Government and City of Darwin. The deal builds on the city's strengths and delivers transformational investment to revitalise the city centre and enhance Darwin as an attractive destination to live, work, study, do business, invest and visit.

It is opportune for City of Darwin to leverage this funding to its fullest extent, in collaboration with the Northern Territory and Australian Governments as well as strategic partners including Charles Darwin University, CSIRO, the Darwin Innovation Hub and key industry bodies.

The Darwin City Deal includes the \$10m Switching on Darwin project funding from the Smart Cities and Suburbs Program, of which City of Darwin was awarded \$5m by the Australian Government, matched by \$2.5m from the Northern Territory Government and \$2.5m by City of Darwin. This funding enables the first phase of #SmartDarwin to be realised through the deployment of innovative technologies over the coming months (to May 2019) and marks the beginning of Darwin's Smart City journey.





## Realising the benefits

The first phase of commitments under the Darwin City Deal incorporates a range of investments in hard and soft infrastructure. To ensure these projects deliver direct benefits to Darwin residents, they will be designed and developed incorporating the following guiding principles:

- **Advance Darwin's digital economy.**  
For example: Delivering the first phase of enabling-infrastructure for #SmartDarwin.
- **Boost the visitor economy.**  
For example: Collaborating with the private sector to develop a cohesive vision to ensure Darwin is an attractive destination to our global visitors and local community.
- **Integrate city-wide planning.**  
For example: Supporting the development of precincts and spaces under the City Deal, including connectivity between precincts.
- **Support the local workforce.**  
For example: Addressing skills shortages, creating specific new digital economy jobs and skills, and providing opportunities for Indigenous workers and businesses.
- **Develop deeper connections to Larrakia Culture.**  
For example: Showcasing and celebrating Larrakia Culture and developing innovative ways to share this with visitors to Darwin.

These guiding principles are crucial to the success of the Darwin City Deal projects and have been incorporated in the #SmartDarwin Strategy and Implementation Roadmap.

## Cornerstone Infrastructure Projects

The Darwin City Deal announcement included a range of priority infrastructure projects considered to be of strategic importance to the city's future development. These are also considered as fundamental enablers of the #SmartDarwin Strategy, and are summarised below:

**Advance Darwin's digital and data capabilities** through the delivery of enabling technologies and infrastructure that underpin #SmartDarwin. The delivery of smart lighting, microclimate sensors, Wi-Fi, CCTV and other Internet of Things devices that are all connected to a smart city platform and open data hub that will advance Darwin's capabilities as a leading tropical city in the South East Asia region.

**An iconic new education and civic precinct** will be developed to attract students to live, study and work in Darwin's CBD. The establishment of a campus within the heart of the city will contribute to revitalising and activating the city and will provide new opportunities for retailers and service providers. It will also cement Darwin as a centre of excellence for both research and international education in Northern Australia.

**Upgrade and revitalise State Square** to transform public spaces into vibrant, safe and attractive areas that encourage recreational activities, gatherings and events, and bring people into the city centre.

**Establish a new art gallery** in State Square that becomes a premier tourist product for Darwin.

**Cool and green the city** through innovative heat mitigation measures, including the 55 metre Cavenagh Street shade structure and establishing an Urban Living Lab that integrates smart city technologies, heat mitigation and energy efficiency.

**Activate and connect the harbour foreshore** by supporting the redevelopment of the former Naval Fuel Installation at Stokes Hill and of Frances Bay in order to unlock the areas' potential.

# The #SmartDarwin Strategy

## Our Vision

As the capital of Northern Australia, Darwin is a smart, liveable, productive and sustainable global city and Australia's gateway to South East Asia. Through data-driven decisions, people-oriented design and increased public participation, City of Darwin is a destination of choice for businesses, investors, workers, visitors and residents.





## Strategic Pillars

This purpose of the #SmartDarwin Strategy is to guide how City of Darwin collaborates with the community, business, key stakeholders and all levels of government to achieve our smart city vision. The enabling pillars of the #SmartDarwin Strategy are:

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**Developing  
and connecting  
vibrant, safe,  
strategic precincts**



**Building a  
resilient and  
productive  
economy**



**Enabling  
sustainable  
and smart  
environmental  
management**



**Creating inclusive,  
smart, healthy,  
liveable communities  
that attract new  
residents**



**Delivering  
an agile,  
innovative and  
collaborative city  
government**



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# Our Future is Now

Each of the #SmartDarwin pillars are defined by a goal towards 2021. The achievement of these goals will be enabled through the realisation of a number of key objectives. City of Darwin will also develop a complimentary Implementation Roadmap to guide the city's activities and contribute to the realisation of the #SmartDarwin Strategy.



## Developing and connecting vibrant, safe, strategic precincts

### 2021 GOAL:

Darwin has identified and prioritised investment in strategic central precincts that are well-connected and offer a unique and safe experience for residents, workers and visitors.

### THE CURRENT CONTEXT:

City of Darwin boasts an array of experiences and amenities complemented by modern, state-of-the-art public infrastructure that enhances the city's liveability and attractiveness to do business and invest. However, like most growing cities, Darwin has also experienced the challenges associated with managing growth and this has resulted in a greater prevalence of anti-social behavioural issues.

In order for the city's strategic precincts to reach their full potential as vibrant safe places to visit, City of Darwin and key partners will seek to address old problems with new solutions underpinned by smart technologies, data and innovation.

### OUR KEY OBJECTIVES:

**Lead the Dialogue:** Embed the #SmartDarwin Strategy in future strategic planning for the city and in the development of strategic precincts.

**Collaborate & Integrate:** Deploy smart city solutions in collaboration with industry partners and the community across strategic precincts.

**Revitalise & Reactivate:** Enhance precinct usability, safety and amenity to enable increased visitation through mobility and walkability.

**Grow & Develop:** Attract new developments and investment across strategic precincts to increase social and commercial activity.



## Building a resilient and productive economy

### 2021 GOAL:

Darwin has cemented its economic position as the capital of Northern Australia. Darwin businesses and industry are leveraging the city's proximity to South East Asia and the diversified employment mix.

### THE CURRENT CONTEXT:

City of Darwin has prospered from an era of strong economic growth however, over recent years, this has slowed due to an over reliance on the resource sector. It is critical that the city diversifies its economic base particularly as the global economy shifts towards the fourth industrial revolution (Industry 4.0). This next wave of change is characterised by the adoption of transformative technologies to connect the physical world with the digital world. For City of Darwin to reach its full potential as Northern Australia's capital and in order to leverage the opportunities emerging from Industry 4.0, it is imperative that businesses and industry adopt and develop emerging technical capabilities as well as secure access to talent and investment.

### OUR KEY OBJECTIVES:

**Capability & Capacity:** Develop digital technology and data capabilities in business and industry to leverage market opportunities and create jobs.

**Diversify & Commercialise:** Develop smart supply chain capability and Smart Sector Plans to develop new market opportunities and grow the economy.

**Smart Infrastructure:** Embed smart design and technologies in new and existing enabling infrastructure and asset development to ensure capabilities support future uses and underpin economic growth.



## Enabling sustainable and smart environmental management

### 2021 GOAL:

Darwin has enhanced its climate resiliency and developed a robust approach to climate adaptation and response to natural disasters through the use of smart technologies.

### THE CURRENT CONTEXT:

Darwin has first-hand experience of the impacts of climate change and the significant threats that are posed to the city's built and natural environments as a result of natural disasters. City of Darwin is committed to finding practical and effective ways to monitor, mitigate and minimise the impacts of climate change. This will be greatly enabled through the use of more sophisticated technology, data, research and innovation.

Furthermore, City of Darwin recognises the importance of developing an urban environment that mitigates the extreme weather conditions experienced by the tropical city in order to improve look, feel and practical use of the city.

### OUR KEY OBJECTIVES:

**Clean & Green:** Transform City of Darwin into a cool, clean, green, livable tropical city.

**Climate Change:** Address climate change through the use of emerging technologies and better use of data.

**Disaster & Resilience:** Build greater disaster response capabilities and enhance resiliency to major threats.



## Creating inclusive, smart, healthy, liveable communities that attract new residents

### 2021 GOAL:

Darwin has become a region of choice offering residents of all demographics and diverse cultural backgrounds a quality lifestyle and a variety of opportunities to participate and thrive in society and the local economy.

### THE CURRENT CONTEXT:

Darwin is a city filled with history and cultural diversity and City of Darwin ultimately strives to enhance the lives of residents who choose to call the city home. To be a globally recognised smart, tropical and liveable city, City of Darwin understands it has an important role to play in improving the opportunities for the community to participate more broadly in the economy and society.

In order to sustain and support future prosperity, Darwin must attract new residents and skills and ensure the city provides the amenity, support and services desired by those it is seeking to attract.

### OUR KEY OBJECTIVES:

**Education & Training:** Develop a talent pool equipped with the skills and capabilities for the future of work and the path of entrepreneurship.

**Activate & Accelerate:** Foster the local start-up and entrepreneurial eco-system to drive grass-roots engagement in #SmartDarwin and enhance opportunities to grow ideas into businesses.

**Human-Centred Design & Engagement:** Adopt a human-centred approach to designing and delivering social services and engagement opportunities and enable residents to regularly participate in collaborative decision making.



## Delivering an agile, innovative and collaborative Council

### 2021 GOAL:

City of Darwin collaborates with the community, business, academia and government, and leverages smart technologies to deliver efficient services and strategic economic leadership for the benefit of the city.

### THE CURRENT CONTEXT:

The role of city governments is transforming around the world and residents and ratepayers are demanding more personalised and efficient services. There is also a distinct shift towards adopting 'open government' practices and platforms to build trust in the systems, policies and processes of government.

As City of Darwin embarks on its smart city journey, it is important the city's strategy, operational frameworks and information technology systems are enablers to the city government becoming a responsive, data-driven and collaborative service provider.

### OUR KEY OBJECTIVES:

**Transformative Leadership:** Develop a digitally connected city that benefits residents, workers, visitors, businesses, key stakeholders and governments.

**Civic Innovation:** Position Darwin as a global leader in tropical smart cities and public-sector innovation.

**Open Government:** Enhance transparency through greater access to information on city government performance and decision making and assess the real time economic impacts of the annual capital works program and other major projects delivered by City of Darwin.

**Smart Systems & Asset Management:** Improve whole-of-life costing and asset management and maintenance planning through data and analytics.

**Strategic Partnerships:** Develop and strengthen national and international smart city relationships to accelerate outcomes for Darwin through greater collaboration and sharing of knowledge and best practice.



# Making Our City Smarter

## ROLL-OUT PHASE 1 (2018-2019)

City of Darwin is currently rolling out our first phase of technology and infrastructure. This first wave of enabling technology and infrastructure will support our transition to a data-driven, people-oriented city that values and enables collaboration, innovation and participation. It is just the first step in our journey towards our #SmartDarwin Strategy.

Phase 1 roll-out will build our base capacity to collect, store, analyse and use big data. It provides the community, businesses, researchers and government agencies with greater access to open-data.

### 1. Smart Street Lighting

Sensor enabled intelligent street lighting enables public spaces to be lit when necessary, delivering cost savings and safety benefits to the community.

### 2. Public Wi-Fi and Analytics

Provides the community and visitors with public internet access and enhanced information availability.

### 3. CCTV

Cameras that monitor the local areas events, increasing community safety and enabling statistical analysis.

### 4. Video Analytics

Captured video is significantly enhanced when coupled with analytical tools that provide insights. Recognition of objects, vehicles, number plates, faces and motion can be analysed to form a view of events taking place in the city for community safety and statistical and planning purposes.

### 5. Parking

Parking sensors that track and identify parking availability will make locating a park easier.

### 6. Environmental and Noise Sensors

Sensors monitoring the local environment will provide improved weather warnings and information on the impacts of a changing climate.

### 7. Smart City Platform

A data platform that provides easy to understand and analyse information provided transparently to the community allowing informed decision making.

### 8. Open Data Platform

A publicly available web portal that provides an extensive range of datasets unique to Darwin. This will enable the community and the private sector to drive innovation by solving challenges or accessing new opportunities.

### 9. Microclimate Sensors

System of smart sensors will provide data to and inform better decision making by council.

### 10. Location Insights

Location Insights derived from mobile phone signals can be used at festivals or events to manage crowds, analyse people movement patterns and detect abnormal occurrences.

## EMERGING OPPORTUNITIES

The focus beyond the first phase roll-out will be on open-innovation and how ubiquitous access to digital technologies and data can enable new value to be created by disrupting old business and governance models.

### 11. Water and Wastewater Monitoring

Water quality and water network monitoring will contribute to improved environmental outcomes, efficiency gains and cost reductions.

### 12. Leak Detection

Automated water leak detection in water pipes will help reduce maintenance response time and cost.

### 13. Device Proximity Detection

Monitors the location of communications devices for analytics such as foot traffic to provide data in decision making and urban planning.

### 14. Waste Management Sensors

Automated leak and gas detection will increase community safety and comfort.



(2019-2021)

The opportunities to use new data to solve old problems are endless and City of Darwin will pursue a range of these. The scope however of many may be beyond our core business and this will in turn create new opportunities for researcher and industry.

Collaboration and partnerships will be key to realising the benefits of the Phase 1 roll-out in the short to medium term.

### 15. Energy Monitoring

Power consumption monitoring in public assets that indicates required changes and leads to reductions in consumption and cost.

### 16. Vehicle Fleet Communications

Location tracking and communication with publicly owned vehicles will enable theft protection and usage monitoring, leading to cost reductions.

### 17. Transport Optimisation

Automatic optimisation of traffic flows based on demand and events resulting in reduced travel times.

### 18. Inventory Monitoring

Automated tracking and analytics on public inventory through sensors and GPS will reduce both loss of items and cost.

### 19. Real-time Public Transport Updates

GPS based system for tracking and public reporting of public transport positioning in real time.

### 20. Smart Kiosks

Community facing digital stations that will provide information and enable interaction with council.

### 21. Community Innovation

A mobile app that enables easy access to information about events and locations around the city. Such an app will provide analytics to council such as visitor numbers and points of most interest to the community. Feedback can also be provided to council to enhance community experience.

### 22. Advanced Video Analytics

Advanced analysis of captured video will further improve safety, the efficiency of council services, and real-time responses to local events.

TRANSFORMATIVE OPPORTUNITIES (2021-BEYOND)

City of Darwin is recognised as an ambitious city, characterised by its willingness to challenge the status quo and create opportunities. While we focus on the opportunities of today, it is imperative that we keep a watchful eye on the trends of tomorrow.

To achieve our #SmartDarwin Strategy, we cannot be limited by our individual imagination. A truly smart city travels this journey together - as a collective - embracing change, uncovering opportunities, supporting entrepreneurship and taking risks.

What could lie beyond 2021 for City of Darwin?

### 23. Drone Delivery

Delivery of goods via autonomous drone will expedite delivery times and reduce costs.

### 24. Emergency Services Drone

Drones that act as first responders or support emergency services provision where humans are impractical.

### 25. Development Surveying Drone

Drones that survey development areas to enhance and accelerate the building application process.

### 26. Maintenance Drone

Drones that assist in providing maintenance services on public assets will reduce costs and increase efficiency of maintenance services.

### 27. Autonomous Vehicles

Self-driving vehicles to provide public services such as bus transport more efficiently.

### 28. Augmented Reality

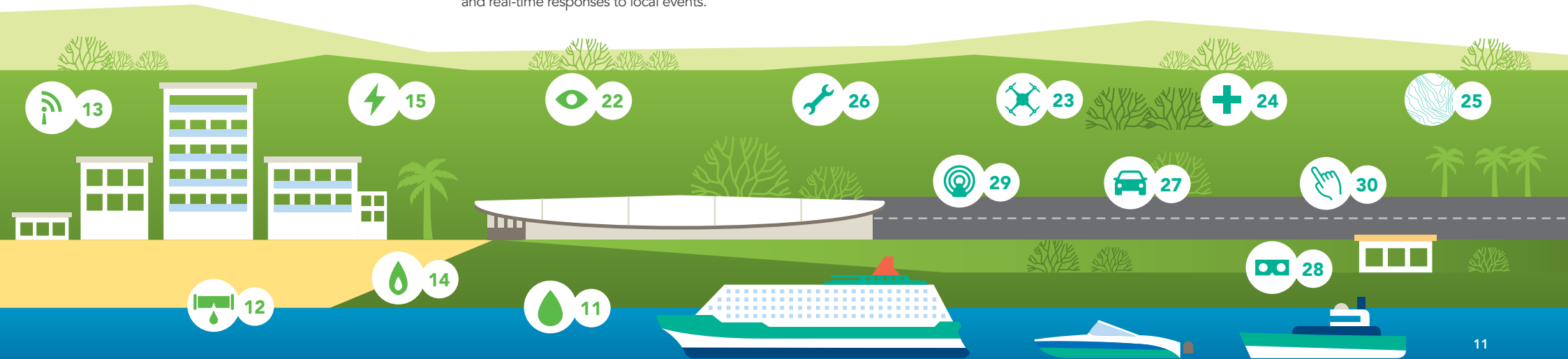
Headsets that provide additional information on the local area for tourists and council workers.

### 29. Road Condition Monitoring

Cameras and sensors that monitor roads for defects, automatically reporting to authorities for preventative maintenance.

### 30. Community App Development

A community targeted mobile application that provides information to the public on events and locations of interest.





# Enabling Infrastructure & Technologies

City of Darwin is currently working with key industry partners to install a range of enabling-infrastructure and technologies that will kickstart the city's capabilities.



## Smart Street Lighting

Street lighting can have a major influence on both the appearance and ambience of a city. It can also affect when and how a space is accessed and how the space is used.

The provision of lighting can also bare a significant cost both from an energy consumption and infrastructure maintenance perspective.

The ability to control illumination i.e. brightness and timing through sensors can result in cost savings while maintaining the usability and safety of an area. The motion sensors can also provide key insights into when a space is most used through statistical analytics.



## Public Wi-Fi

Free public Wi-Fi is a drawcard for people using public spaces, especially for visitors and those with limited internet access.

The expansion of the existing free Wi-Fi network across the city will enable businesses to reach more potential customers and attract people to spend more time in the precincts. In addition to visitors, it also provides amenity to residents and workers.

The Wi-Fi network can also be used to inform users about local activities and upcoming events. It will link to an analytics portal which will provide valuable de-identified data that can be used to make better decision by governments and businesses.



## CCTV

CCTV is a very useful tool especially given the advanced capabilities in video analytics, artificial intelligence and machine learning.

Public safety and crime prevention are important to the Darwin community and a high priority of council and the government. The addition of more CCTV cameras in strategic locations across the city allow for both prevention and solving of crime.

Additionally, CCTV provides enhanced analytical capability through technologies such as number plate and facial recognition which could be used to understand how pedestrians use the CBD or analysing vehicle movements to make decisions about traffic management.



## Microclimate Sensors

Microclimate sensors and Internet of Thing (IoT) devices enable a range of data to be collected about the city such as rain, humidity, air quality and CO2 among others.

The data collected from these sensors and devices can be shared on Open Data platforms as a mechanism to drive innovation. It can be analysed to develop specific insights which can then be used by council, business, government, key stakeholders etc. to enhance understanding and ultimately lead to better decision making.

Microclimate sensors can be used to assess the impacts of heat mitigation or cooling and greening initiatives or provide improved weather warnings and real-time changes in the local climate.



## Parking Sensors

Easing traffic flows through the city, finding parking easily and creating streets that are walkable; all improve the overall function of a city.

The implementation of a parking sensor system will enable drivers to locate an available parking space via an indicator or app.

Traffic congestion should ease, and vehicle emissions should decrease as a result of being able to locate a parking spot within greater convenience.

Additionally, the ability to pay for parking and for council to monitor parking more efficiently and understand parking usage and demand at any given time, are added benefits.



## Smart City Platform

Each technical solution can produce and collect a broad range of data. Instead of each of these being monitored in isolation, the development of a Smart City Platform will enable the data to be aggregated in one spot and integrated.

The Smart City Platform is a centralised data platform that can analyse and visualise big data to inform and enhance decision making. This capability leads to more efficient design and delivery of products and services and improves governance.

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# Next Steps

City of Darwin cannot alone influence the future of the city however it acknowledges it has a significant role in leading #SmartDarwin along with a number of other key initiatives contained within the City Deal.

Collaboration between City of Darwin, the Northern Territory and Australian Governments and key stakeholders such as the Charles Darwin University will underpin the successful implementation of this strategy.

In order to progress #SmartDarwin, City of Darwin will:





# 8 Imagine the Potential



The tourism potential in City of Darwin will be greatly enhanced through #SmartDarwin and complements the industry's Turbocharging Tourism strategy. Greater access to data through smart technologies and innovative approaches to integrating digital technologies and analytics into visitor attraction and retention will enable existing operators to access new market opportunities and for new tourism products and services to emerge. It also enhances event experiences and the ability to promote indigenous culture and local sight-seeing offers.

**CASE STUDY:** The **Tasmanian Tourism Tracer** app allows tourists to use GPS mapping to track and share their journey across the state via Facebook or Instagram. This allows for the promotion of Tasmanian tourism while offering the tourist an in-app experience that is easy to use and gives them the information they require on the move. The app also allows the user to provide feedback on locations that they visit enabling tourism operators to improve future experiences in Tasmania.

The establishment of a Charles Darwin University campus within the CBD will greatly enhance the vibrancy of the city and stimulate the local economy. By 2028 more people will be living and working in Darwin's city than ever before with an estimate of 11,700 students studying and 600 university staff working in the city, with up to 1,000 students living in new student accommodation. A great opportunity exists to leverage this boost of talent and ensure the city is well positioned to retain a workforce equipped with the skills of the future.

A great opportunity exists to ensure the campus is implicitly open and connected to the city more broadly and an open, collaborative place and space for business and the community to interact with as a new world university campus. In addition to the co-location of the libraries, facilities such as makerspaces and adaptive collaborative spaces and labs that bring academics, students, researchers, industry, governments and the community together will contribute to redefining and transforming the city.

**CASE STUDY: City Lab Coventry** is the result of a joint venture between Coventry University and Coventry City Council that promotes real-life experimentation of new and sustainable technological solutions to address challenges within a smart city context. The program has established Coventry as a test-bed and incubation hub of low-carbon innovations, healthcare and advanced manufacturing. City Lab Coventry utilises university and council land and assets to provide users and producers with access to citizens, buildings, roads, and IT infrastructure within the city; business support for SMEs and start-ups; and large-scale trials.





## New Central Innovation Precinct

The Darwin Innovation Hub plays a crucial role in driving entrepreneurialism, innovation, collaboration and commercialisation within the city. For the benefits of #SmartDarwin and the value of open-data to be realised, the community's capacity to access, leverage and use data must be addressed. An expansion of the existing hub of innovation activity through the development of a new central Innovation Precinct would support the realisation of this untapped potential. A facility that supports community co-working space and welcomes pre-seed enterprises and social innovators and that is designed to leverage latent talent and build grassroots innovation capability would have the potential to expedite the potential. A central Innovation Precinct should leverage existing assets and revitalise and activate the city's laneways and enhance connectivity between the other precincts.

**CASE STUDY: The Local Economic Development Lab** in Vancouver is a place-based social innovation lab that partners with community organisations to build a more vibrant and inclusive local economy in Vancouver's inner city. Over three years, LEDlab helped to test and incubate 11 social enterprises and social service innovations, offered 300+ hours of facilitation and strategic support to organizations such as Urban Core, engaged an extensive network of civic and government stakeholders to collaborate for systemic change, and provided 1000+ person hours of workshop training in social enterprise development, social innovation and systems change. LEDlab also supported public policy research projects that have informed advocacy and policy development efforts.

Fostering the indigenous community and their involvement in the local area is vital to the future of Darwin. The local Larrakia people have economic development aspirations that can be fostered through local investment and cultural programs. Darwin can further these goals by promoting Indigenous led businesses and promoting innovative ideas that further cultural appreciation. This will be aided by the \$2 million investment to restart the Larrakia Ambassadors Program.

Using emerging technologies such as virtual reality, augmented reality, digital storytelling and wayfinding can promote Darwin's emersion in Indigenous culture. Augmented reality for example can be used to tell stories about how the local area may have looked historically and can highlight points of interest visitors can explore that contain local artworks overlaid on existing sites.

**CASE STUDY:** A young entrepreneur and member of **Muscowpetung First Nation in Canada** developed an augmented reality app to share Indigenous stories that are tied to physical places in Canadian cities. The app allows visitors to access traditional knowledge that isn't readily available and aims to be a digital network of Indigenous knowledge. It also enables users to add stories and content. When used at Vancouver's Skwachàys Lodge (Canada's first Indigenous arts hotel) for example, an animated raven pops up with a story about the hotel which houses Indigenous artists and their works.

## Celebrating & Elevating Indigenous Culture & History





The establishment of an Urban Living Lab through a co-design process will ensure that residents, workers and businesses will be the ultimate beneficiaries of world-leading research on cooling and greening tropical urban environments. With a distinct focus on tropical urban and building design, energy efficiency and heat mitigation, the Urban Living Lab has the potential to drive enormous economic efficiencies through evidence-based design, and enhance the city experience through agile trial and validation processes and create new opportunities for industry and innovators.

**CASE STUDY: Singapore** has for decades held the aspiration of being the “garden city”, delivering multiple initiatives that contribute to this vision. Recently, the city state has embarked on a program of using vertical gardens to insulate and cool walls of high-rise buildings. This initiative has improved the local area with the reduction of concrete faces leading to a reduction in temperature and power consumption through natural insulation and as a result, a reduction in cost.



There is significant opportunity for Darwin to leverage the emerging talent by creating new opportunities for greater participation by young people in the community, economy and civic leadership. Young people bring fresh perspectives and are generally early adopters of disruptive technology. By harnessing the energy and entrepreneurialism of the next generation of Darwinians –innovation within the city could be accelerated. Through the use of smart technologies, collaboration platforms and co-design methods, Darwin businesses, governments and community organisations can expedite the development of ideas that drive growth in the economy and enhance the local innovation culture. Engaging young people in civic decision-making processes can influence their tendency to participate more broadly.

**CASE STUDY: Youth Lead the Change** is a participatory budgeting process where young Bostonians decide how to spend a small percentage of the city's Operating Budget. The initiative program has had success in the past with projects such as art walls that are provided to local graffiti artists that reduce illegal artwork; parks that are disability accessible and use innovative technologies to provide new experiences; and new footpaths that include lighting improvements using LEDs. The program endorses a new initiative each year.

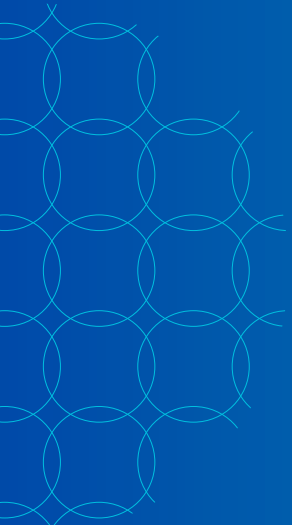
Science and technology are key enablers of the Australian Defence Force's operational capability and ensures the ADF remains resilient to emerging threats, including the possible use of disruptive technologies by adversaries. Opportunities exist to enhance collaboration between Darwin's SMEs, research institutions and academics to enable industry and Defence to collaborate and innovate together enabling Darwin to become a Smart Defence hub in the South East Asia region.

**CASE STUDY: Israel** has, over the last decade, become a world leader in cyber security innovation through the government acting as both a coordinator and incubator in the space. Israel harnessed the requirement of the military to find new and innovative cyber defences as threats constantly changed, marrying that need with a growing private technology sector that looks to expand into new areas. Investment in technology and skills development was made by many parties in the technology sector, the government and the military. This allowed for many innovative ideas to be investigated and invested in at once, with the interdisciplinary approach making for the most robust and tested solutions to be produced.









**#SmartDarwin was developed in partnership with GWI.**

GWI is a national team of specialists who empower our clients to solve real business problems and create value through their information and data assets. Our Civic Innovation practice focuses on creating public value by solving today's complex community problems through people-centred design and data-driven decisions.

Learn more about our Civic Innovation practice at [www.gwi.com.au](http://www.gwi.com.au)