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Switching on Darwin Advisory Committee
City of Darwin
GPO Box 84
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Dear Members of the Advisory Board,

Darwin's Smart City Project, 'Switching on Darwin', Discussion Paper – Property Council of Australia, Future Directions Committee Submission

The Future Directions Committee is the youth division of Australia's peak body representing the property industry in the Northern Territory. We collaborate, innovate and contribute to creating prosperous, vibrant and inclusive suburbs and cities across Australia. Naturally our relative youth means we are invested in the future prosperity of our city; in improving the liveability, productivity and sustainability of Darwin.

The Northern Territory division take pride in our city and take seriously the opportunity to comment on developments impacting our city. As outlined below, through data driven decisions, people focused design and increased public participation, we believe the awarded funds for the Switching on Darwin project (**Project**) will deliver a range of improved city services. And, apposite for our organisation, Switching on Darwin will inform infrastructure planning and investment.

A. Executive Summary

The objective of Darwin's smart city Project is to use data to improve traffic flows, make our community safer, foster economic development, and enhance many aspects of our city's liveability, workability, and sustainability.

Smart services infrastructure will be implemented and integrated through an open IoT platform. We understand Darwin Council has proposed as part of the Project:

- Establishment of a smart city platform to capture data from the new technology and an open data platform to make data available to the community and business sector;
- Smart LED street and park lighting operated via an RF communications network;
- A range of sensors for microclimate monitoring;
- Expanded CCTV with video analytics;
- Sensors for vehicle and pedestrian movement analysis;
- Expanded Wi-Fi; and
- Smart Parking technology.



Our submission touches on a number of the above services and existing services captured by the Project, as well as, several additional suggestions. Understanding the needs of our community are paramount so that the project can realise actual, identifiable, benefits.

B. The needs of our community and local businesses

At its most basic, a smart city is a city that uses information and communications technology — including traditional IT and advanced Internet of Things (IoT) technologies — to improve not only the way the city operates, but also the services it delivers to its people.

The success of the Project turns on the strength of the formulated strategy.

Simply put, the objective of the Project is sustainably improving our city. Under this umbrella there are some key issues and areas that require improvement in Darwin city, as with almost all cities, key areas include jobs, education and healthcare. Darwin city, however, has three substantial and unique issues to be addressed:

1. Heat

Soaring temperatures in the city centre must be addressed. This issue was intensified earlier this year when cyclone Marcus ripped out a significant number of our trees;

2. City vibe

Creating a character and ambience for our CBD which celebrates our diverse culture, for the enjoyment of tourists and locals alike.

Whilst some unique challenges arise in relation to cruise ship passengers, mostly people require wayfinding; to be readily able to navigate their way around Darwin. Today, people expect a premium experience from the moment of their arrival. And that is driving demand for exceptional spaces that are entertaining, inspiring and encourage exploration. This needs to be coupled with ubiquitous information services; and

3. Improved public transport services

Darwin's public transport system provides limited options and services. Improved public transport will assist in increased engagement with our city and a positive experience of Darwin city.

Admittedly, city vagrants remain a concern in Darwin. Homeless people in Darwin are largely Aboriginal people and the agency of Aboriginal people can challenge mainstream expectations about the uses of shared public space. The Larakia Nation published a research paper 'An Investigation into the influx of Indigenous 'visitors' to Darwin's Long Grass from remote NT communities' in 2008 and shamefully little to no progress has been made. Successive governments and city councils have engaged in campaigns against long-grassers in our city but further discussion and engagement must be had to understand the realities of their situation and to assist them to return to their



communities. We do not intend to discuss this matter further, as it is beyond the scope of this submission and our knowhow, but we do urge for renewed conversation with all stakeholders. We suggest Larakia Nation again be engaged in consultation on what interventions, initiatives and services are required to resolve this issue. Proactive and broad engagement on this issue will foster community.

[The 2008 Larakia Nation Research Paper by Catherine Holmes and Eva McRae-Williams can be viewed here: <http://www.ndlerf.gov.au/sites/default/files/publication-documents/monographs/monograph33.pdf>]

To facilitate change in the above areas we urge the Council to adopt a human-centered approach to driving and delivering the Project. Listening to the voice of the community, by engaging effectively with local people in local governance through the use of open innovation processes such as e-governance and e-participation, will improve the collective intelligence of the City of Darwin's institutions.

C. A review of presently available Darwin apps and innovative technologies

1. Have your say NT

This crowdsourcing platform is an excellent space for Territorians to engage with municipal project and policy developments.

We propose that the service be expanded and developed to foster engagement and to strengthen Darwin's e-participation and e-governance platform. We suggest Have Your Say NT be expanded to:

- be readily available on an easy to use and interactive mobile app (similar to or an extension of 'Darwin Click and Fix' app);
- include a participatory budgeting process that lets members of the community propose and vote on ideas for projects in the city;
- open access to council data and/or be integrated with City of Darwin's Live website services to allow residents to make and track a wide range of service requests, such as road damage, missed bin collection, faulty lighting or abandoned vehicles.

We hope the system will encourage residents to share ideas for service improvements and help them collaborate with neighbours to take action to improve our communities, for example allow individuals to either create or join a city project; ranging from food and community gardening to bike lanes and urban design.

It will also simultaneously provide local authorities with data to help them respond better to community needs.

2. PayStay

Developed to meet increasing concerns around availability and affordability of parking in Darwin's CBD, and more recently, Palmerston, PayStay is an app which allows users to park and pay without leaving the car.

PayStay requires small improvements to be more user friendly by providing a greater range of options to users. For example, the app only notifies a user at the expiry of the parking term, rather than sending them an alert reminder.

3. 'Tap and Ride card'

Darwin bus network already has a smartcard (contactless fare payment) ticketing system, for users to pay, reload and reuse on public transport network.

We recommend an app to help customers find the right bus stop, provide guidance on how to purchase a ticket and predict (in real time) when buses will arrive based on the bus GPS location. This suggested service is in addition to our proposed 'city circle' transport recommendation below at [3].

4. LED smart street lights

A timely addition as more effective and efficient street lighting could not come soon enough with dark spots and dark streets increasingly effecting the safety of our streets. In our submission almost all LED street lights being installed should be solar powered. Solar powered LED street lights are increasingly common around the world and are an effective choice for our climate. Further, as with conventional lighting, smart hardware and software communication technology can improve the LED solar lights functionalities; dimming features, fault notifications etc.

5. CCTV and video analytics technology

Used in various locations around broader Darwin to ensure harmony on our city streets.

6. Heat mapping

Professor Lawrence Nield obtained data on (some wall) surface temperatures and using this heat mapping data developed a heat model for the whole city. We understand Darwin city will install additional microclimate monitoring sensors, including heat, humidity, rain and sound monitoring.

Darwin city has already began to implement heat mitigation strategies, including the Cavanagh Street shade structure.

[Mr Nield's report is available on the City of Darwin website:

https://darwincitydeal.nt.gov.au/_data/assets/pdf_file/0010/442648/heat_study_final_report.pdf]

With an eye to the future, this Project will develop on the above technological solutions and continue to press for significant progress. Accordingly, in addition to our above suggestions, we further propose the below technological suggestions; ranging from the simple to the more ambitious and progressive.

D. Apps to meet present and future Darwin city needs

We acknowledge that Darwin City needs to implement a number of data gathering sensors and technologies to inform service decisions, however, in some instances, as shown below, the service itself will likely provide data to inform that same information deficit, albeit through different data points.

Technology for the immediate future

1. A city guide app “Darwin Days”;

As stated above wayfinding is desperately needed in our CBD. Wayfinding will enhance peoples understanding and experience of our city.

A private company, City Savvy App Pty Ltd, released an app earlier this year, ‘City Savvy’, that goes some of the way to meeting this service. City Savvy provides directions and identifies and locates services and shopping for users.

We submit that the app should be publically run to enable the government to retain valuable data on what services are used in our CBD and analyse the information retained by the app to improve city services. For instance, it should provide information such as:

- a. when cruise ships will arrive and depart from Darwin city;
- b. location, as well as, opening and closing times of Darwin’s cafes, restaurants and gyms;
- c. similarly opening and closing times, as well as, location and a summary of services offered by tourist centres and entertainment venues;
- d. how to navigate Darwin’s arcade system (to draw people to the shops and eateries, and to as much as possible assist people in avoiding Darwin’s heavy wet season storms);
- e. information and stories which better communicate, capture and celebrate Darwin’s rich history (in this sense we acknowledge the Government’s recent success in launching the pilot audio-self-guide ‘A Tale of Four Cities’; a foundation for further development).

Medium term technology solutions

2. Multi-faceted (smart, interactive and integrated) bus shelters

We recommend the bus shelters be solar powered operated to supply lighting technologies, Wi-Fi, digital display maps, digital signage and USB charge stations.

3. A city circle tram/train/bus/monorail

To improve the liveability, experience and engagement with our city we think it imperative that an option be explored to provide a free and convenient way for people to get around Darwin and access Darwin’s major attractions. The service should as a minimum connect



Darwin waterfront to Darwin CBD, particularly to service tourists arriving on cruise ships and visitors staying at Darwin waterfront and the Darwin Westin (once it's developed). An extension to Cullen Bay should likewise be considered.

This service will improve visitors experience of our city. The service will assist in eliminating heat as a deterrent to engagement with the city. And digital displays for advertisements could be used to generate income.

4. Smart irrigation in public parks

A smart city sensors system for irrigation. Sensors in the ground analyse rain alongside the predicted level of rain forecasted to occur and will modify the city's sprinklers accordingly to help conserve water. This system will also assist in the public's enjoyment of these spaces; i.e. sprinklers will always be directed to spray away from footpaths and eliminate over watering.

Long term (ambitious) technology suggestions for a brighter future

5. Autonomous vehicle transportation

Whilst it may seem outlandish or far-fetched, Darwin and greater Darwin roads may be an excellent location for connected autonomous vehicles. For instance, fully automated driverless electric shuttles may be an effective way to connect Royal Darwin Hospital and the new Palmerston Regional Hospital.

6. Solar Road

From the heat mapping already conducted in Darwin's CBD it is abundantly clear that the city and greater Darwin is an excellent space for piloting a solar road (footpath or bike path). A solar road has the double duty of road surface and electricity generator.

We suggest that this ambitious suggestion be investigated by implementing new heat sensors in areas where Darwin's cycle paths or footpaths will inevitably be upgraded or expanded, for instance the Coolalinga cycle path extension.

7. Streamlining public works projects using mapping technology

Collaborative GIS technology to streamline major city works and reduce disruption. This initiative is currently being trailed in Perth as part of their Smarter Planning Perth program.

This innovation would require inter-governmental organisations and essential infrastructure service providers initiative and engagement to register their infrastructure works, identify public works projects in close proximity and notify project managers of the opportunity to coordinate schedules and share resources.

The initiative would increase collaboration and coordination between government agencies. Further, the service will improve traffic flow as the public can view and avoid



road closures. Obviously the success of the program will translate in to reduced costs for ratepayers.

If possible, we suggest that this service likewise be integrated with City of Darwin's 'Click and Fix' service which uses GPS technology to easily locate and identify required works.

8. Pay As You Throw garbage disposal to encourage people to recycle more and waste less

Recycling is one of the simplest and most important ways to conserve resources and diminish our environmental impact. However, we do not have a particularly comprehensive or efficient model in Darwin.

We suggest bottle collection depots be located next to local grocery retailers.

A recycling and/or refilling bottles program led by local retailers should be considered, with a mind to reducing waste, particularly plastics. To be successful this proposed initiative requires heavy governmental policy change.

E. Privacy and Security

City of Darwin must collaborate with the public on privacy and design security into their vision for Darwin. The technology identified above is to protect us, but there needs to be informed consent about what it is capable of doing. The ramification of collection of big citizen data retention and the increase of video surveillance must be balanced against individual rights. The below considerations must be transparent:

- how long data can be archived;
- what sort of data will be retained; and
- how searchable metadata will be utilised.

Ongoing monitoring of how the Project impacts on the privacy and security of our community is imperative.

By implementing strategic initiatives aimed at fostering community the Project will contribute to the rejuvenation of our city and, together with open data will help to stimulate increased public participation and collaboration, new partnerships and business growth, and help to combat social and safety challenges.

We appreciate the opportunity to provide feedback and look forward to further consultation on this matter.

Should you wish to discuss this matter with us please contact me via email, freya.mulvey@squirepb.com

Yours sincerely,

Freya Mulvey

Chair, Darwin Property Council of Australia Future Directions Committee