



City of Canning
A welcoming and thriving city

Project Plan

Next Generation Community Park Wharf Street Basin

Prepared for Smart Cities and Suburbs
Round Two Funding Application



Our Partners



Department of Biodiversity,
Conservation and Attractions



Prepared by the City of Canning for
Smart Cities and Suburbs Program Round 2 Funding
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Next Generation Community Park Wharf Street Basin

'Canning will redefine the future of inaccessible water retention basins through the redevelopment of Wharf Street Basin into a Next Generation Community Park that embraces smart design and smart technology to deliver opportunities for recreation and education, and improvements to natural systems, within a piece of multifunction drainage infrastructure.'

Birdseye view of the 3D model showing the possible future form of Canning City Centre

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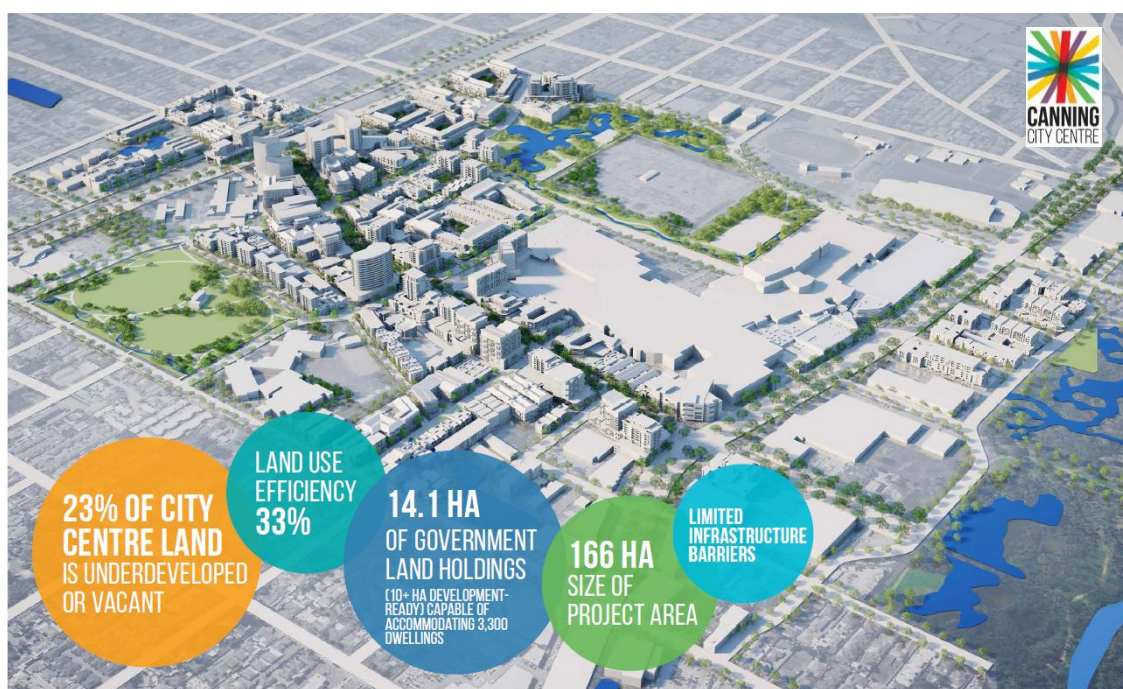
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01 Our City Our Future

Canning City Centre is undergoing a Council endorsed Regeneration Program of public realm improvements which will underpin the delivery of 10,000 new homes for up to 25,000 new residents. Currently, the neighbourhood area around the Wharf Street basin is considered to have a deficit in accessible public open space. The State endorsed Canning City Centre Activity Centre Plan and subsequent Master Planning work recognises that, in order to provide for the expanded population, it will be necessary to get more out of the remaining public open space. These areas will need to be highly accessible and maintained to a higher level than is typical elsewhere in the municipality.

One of the key SMART facets of this project is *'removing the fence'*. This is enabled by partnering with the owner of the asset, Water Corporation. As there are over 100 of these assets in Canning, creating a paradigm shift in the perception and function of these inaccessible areas that achieves much needed amenity is something that cannot be overstated. The Smart technology layer further creates a compelling value proposition to the existing community, new investors, visitors and students.

This smart city project will enable an inaccessible site to become a Next Generation Community Park, a first for the City of Canning (the 'City'). The delivery of this project is critical to the successful regeneration of the Canning City Centre and to our vision of *Canning, a welcoming and thriving City*.



01.1 Next Generation Community Park

The City is committed to growing as a dynamic learning city and to foster an inclusive, connected, innovative and vibrant community. The City wants to build a smart city precinct that embraces liveability, sustainability and productivity as represented through the Next Generation Community Park, whilst delivering measurable value to our wider community.

Working in partnership with the community and project partners, smart design and technology will be applied within the Next Generation Community Park to:

- ✱ Unlock a piece of single-function infrastructure to provide multiple benefits for the City, the environment and the community.
- ✱ Demonstrate how to deliver a complex drainage retrofit project which can be applied to the hundreds of basins across Perth.
- ✱ Generate real-time monitoring of water quality and levels to fill a significant gap in knowledge relating to thresholds and tipping points of drainage basins and natural systems.
- ✱ Provide openly available real time information to enable interrogation by other researchers, scientists, Local Governments and the community for related purposes.
- ✱ Understand and minimise management requirements of the drainage basin and smart park which will be transferrable across Local Governments, increasing smart cities capability across Australia.
- ✱ Ensure public safety through smart lighting, usage monitoring and water level management, driving innovation and wide adoption of new approaches and solutions.
- ✱ Enhance amenity and educate the community about wetlands and stormwater management; and
- ✱ Optimise the design of public spaces and facilities through monitoring the way people engage and use the space to advance design theory and practice.

01.2 Project Vision

Canning will redefine the future of inaccessible water retention basins through the redevelopment of Wharf Street Basin into a Next Generation Community Park. The Wharf Street Basin – A Next Generation Community Park project advances the delivery of ‘Smart’ outcomes, such that they are no longer just an alternative label for information technology, but instead, underpin a forward thinking and multi-dimensional approach to an urban challenge.

The project will improve the liveability and sustainability of the Canning City Centre through the application of smart technology solutions which deliver economic, social and environmental benefits for the community. It will incorporate smart technology solutions based on environmental data and community needs. These will include facilities, digital technology and materials which reflect and fit within the site’s cultural and environmental surroundings. The facilities will be easily accessible, resilient to climate change, water- and energy-efficient, easy to maintain, and will promote the health and safety of the community.

The Vision for this project will also assist in the delivery of the Vision for Canning as a Water Sensitive City.



Figure 1. Vision for Canning as a Water Sensitive City

01.3 Current site

The primary function of the Wharf Street Basin is to provide flood protection for a portion of the Canning City Centre. The basin, which is part of the Water Corporation's drainage network, holds up to 18,000 m³ stormwater to protect surrounding areas from flooding. It is approximately 2.5m deep and water levels exhibit a range of around 2m. The basin is rarely (if ever) completely dry and has a pumped outlet to the wetlands surrounding the Canning Civic Centre. The site is currently inaccessible to the public.



Figure 2. Wharf Street Basin overview of existing conditions

The site is surrounded by a high security fence which restricts community access. It is prone to poor amenity including rubbish and litter, as well as poor water quality. The fence limits access in some locations even to the street verge. Weed species are prevalent throughout the basin and a build-up of sediment in one location is leading to terrestrialisation. A steep rock embankment is located near the inlet and maintenance access is poor. Any works within the basin must maintain storage capacity; maintain inflow and outflow structures; and consider variable water level in designs, in addition to addressing safety concerns and managing access.

01.3.1 Proposed site

The Next Generation Community Park will be designed to be a passive park that sits well within the city's parks and open spaces network. It will provide significant amenity to the proposed high-density development surrounding the site in the developing city centre.

Water quality and amenity will be improved within the basin and its surrounds through revegetation with appropriate local native species. These large areas of landscaping with native species will add to the City's intended outcomes of increasing natural areas, as stated in its recently adopted Biodiversity Strategy.

Floating bio filtration systems covered in wetland vegetation will be installed within the waterbody to create additional habitat and breeding areas for water birds, macroinvertebrates and other fauna inhabiting the site. The islands will be another element of the site's multifunctional infrastructure, providing significant benefits for water quality and nutrient management, a key issue in these types of inland water bodies within urban areas.



Figure 3. Wharf Street Basin proposed design concept

A nature play trail will be installed adjacent to the granitic path that will surround a majority of the water body. This will add interest and play elements to the space. The nature play trail will provide controlled risk opportunities across the different elements that will be suitable for all ages. Water body access will be limited to designated areas to reduce related risks, including in proximity to the nature play trail where it will be controlled by dense vegetation.

Gabion cages utilising recycled materials will increase the available habitat for small lizard and frog species while allowing controlled points of access to the water body and seating opportunities. The inclusion of stepped access will replace the steep edged retained area which could pose a safety risk for public access. Recycled materials from City construction projects and the City's waste transfer network will be utilised for these structures, which will minimise resource use and increase biodiversity.

Nesting boxes for local wildlife will be installed in the existing trees within the site. These boxes will significantly add to the habitat opportunities for local bird species, including water bird species that require nesting hollows to breed. Nesting boxes for locally occurring micro bat species will also be installed in the existing trees. These bat species, which include the Gould's wattled bat (*Chalinolobus gouldii*) are known to eat nuisance insects such as midges and mosquitoes. The City will utilise the presence of this fauna to naturally control these insect species. This will reduce the application of chemicals and other nuisance insect control measures, which would normally be undertaken around urban water bodies.

The invasive tree species will be removed from the existing island and replaced with native wetland tree species. This will reduce future maintenance costs associated with large scale tree removals, as the invasive species present are known to rapidly spread and colonise wetland environments in Western Australia. This will have a further benefit of reducing terrestrialisation of the water body.

01.4 Smart City Value Criteria

The Next Generation Community Park will apply smart design to achieve liveability, sustainability and productivity goals. Value criteria will be used to evaluate the effectiveness of design and technological innovations integrated into this project. The City will apply smart elements that provide multiple benefits to the community, as assessed against the following eight value criterion.



Liveability

1. Access

Public realm physically accessible to the wider community

2. Community Fit

Creatively utilises and reflects its physical, ecological, social and cultural surroundings

3. Safety

Provides a safe, secure and comfortable environment for users



Sustainability

4. Health

Facilitates healthy activities and promotes community wellness through multipurpose interaction

5. Water

Living Lab utilises strategies and technologies to develop semi-autonomous onsite water testing and management.

6. Resilience

Resilient to changes in environment, climate, population and land use.



Productivity

7. Operations & Maintenance

Harnesses technology solutions for streamlined and efficient operations and maintenance practices

8. Innovation

Produces real time open data that facilitates learning for our future through education, research and innovative practices

An assessment tool will be used to determine whether a smart design or technology solution has a positive, neutral or negative impact on each value criterion, therefore enabling the City to select the most appropriate elements to achieve the liveability, sustainability and productivity goals of this Smart City project.

02 Project Outcomes

The project delivers on a significant number of Goals and objectives in the City of Canning's revised *Strategic Community Plan 2017 – 2027: Our City: Our Future* (City of Canning, 2017). The Strategic Community Plan was created from the community's values and ideas for the future of Canning and is the key tool guiding planning and priorities in the City 2017-2027.



Figure 4. City of Canning Strategic Community Plan Goals

Reference: *Strategic Community Plan 2017 – 2027: Our City: Our Future* (City of Canning, 2017).

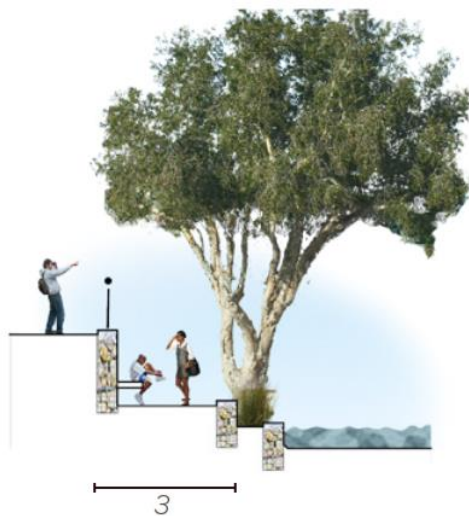
Specifically, this project meets the following goals and objectives:

Connect	<ul style="list-style-type: none"> Clean and safe public spaces Improved health and wellbeing High levels of participation Varied and accessible community events, services and facilities Diverse cultures and beliefs are respected
Grow	<ul style="list-style-type: none"> Well- managed natural areas supporting recreation and biodiversity Clean river, waterways and natural ecosystems A motivated and well-informed community
Build	<ul style="list-style-type: none"> Better pedestrian and cycling infrastructure Public open spaces integrated into housing and urban development Building and land use that is sustainable Pleasing public open spaces with waterwise landscaping
Prosper	<ul style="list-style-type: none"> Revitalised City Centre
Lead	<ul style="list-style-type: none"> The City is well positioned to meet future needs Collaborative relationships with stakeholders Effective communication between City and community Customer satisfaction

This framework will be considered as part of progress reporting and measurement of project success, in the areas of smart design, living lab, smart measurement, smart technology and facilities and smart management.

02.1 Smart design

Smart infrastructure design will ensure necessary drainage (water quantity) function, while improving ecological and water quality outcomes and creating a recreational space which promotes community interaction and engagement. Community connection to nature through enhanced biodiversity and interactive natural areas will also be created as part of the smart design.



The smart design will address any safety concerns of the community that may be raised from removing the high fencing that currently restricts public access to site. Innovative design will cater for the variations that will occur in water levels in the basin, possibly by raising and lowering

decks and platforms to manage drop-offs to the water or to facilitate events and enhanced usage of the space.

The design will also incorporate use of smart lighting, including at the water's edge (to show where it is) and sensor lights switching on and off when people enter/exit different parts of the park. Safety will also be enhanced through installation of CCTV monitoring.

To recognise that the Whadjuk-Noongar people are the original custodians of the land, Noongar knowledge, values and way of thinking will be incorporated into key design aspects. Traditional owner water stories and values will be incorporated into different areas of the site, which may take the form of art work, materials and colours palettes used, or the contouring and shaping of different parts of the site.



The City of Canning has a highly diverse community, with 70% of its residents born overseas, and 55% of households speaking a language other than English. To celebrate this considerable diversity of the Canning community, different cultural elements will be integrated into the design via artwork, with the ability to reflect different traditions or celebrations. Other messages may change or become visible within the various water levels of the basin or elsewhere in the park, that encourage multicultural and intergenerational use. In addition, smart lighting will be used to enhance activation in non-traditional times.

The floating deck will be universally accessible and will allow access to the water depending on the basin's water level, which is seasonal and rainfall dependant.

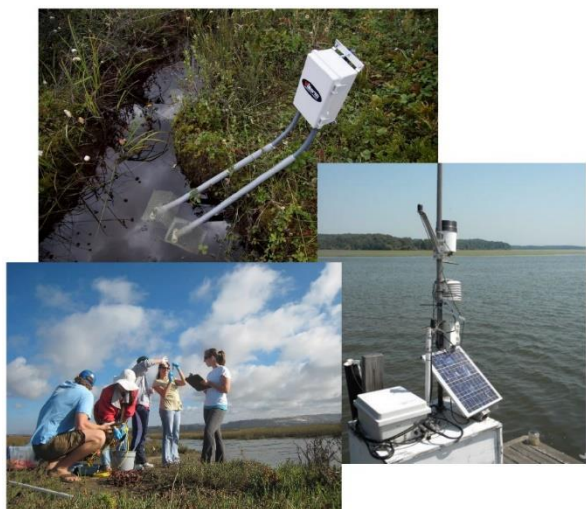
Interpretative signage and wayfinding will be incorporated throughout the site. QR codes will be installed on infrastructure elements and will provide students and the general public with a wealth of information regarding the site and its surrounds including information on function, history, biodiversity, technology, groundwater interaction, Traditional Owner water stories, and other elements. The site will become an educational resource and further physical signage will be developed and installed.

[Key project partner: Water Corporation]

[Smart values criteria: Access, Community Fit, Safety, Water, Health and Resilience]



02.2 Smart 'Living Lab'



A 'Living Lab' is an open innovation environment in a real life setting where user driven innovation is the co-creation process for new services, products or societal infrastructures. The Next Generation Community Park will operate like a 'Living Lab' to bring key stakeholders together to test scenarios and optimise management responses, ultimately leading to the goal of a self-managed stormwater basin.

Together with the City's multi-disciplinary project team and project partners, the site will increase collective knowledge of the interactions of water chemistry with influencing factors such as depth and climate. This will enable smart improvement of the management of water quality and quantity in drainage basins by Local Governments in the future.

Water quality at the site has been recently measured as part of a research project by the Cooperative Research Centre for Water Sensitive Cities (CRCWSC, 2015). Water quality exceeded ANZECC and Swan River Trust Healthy River Action Plan nutrient targets some (but not all) of the time. Algal blooms do occur, and it is likely that background nutrient levels in the sediments are high. These are almost certainly high enough to support algal blooms in warm temperatures following any kind of disturbance event (summer storms). The morphology of the basin (i.e. that it is deep and has a pump) possibly helps to limit the frequency of algal blooms as this may reduce water temperatures. This project will aim to test the proportionate influence of various design factors, such as water depth, shade, pumps/fountains, and vegetation against climatic factors to optimise management decisions.

The Living Lab applications of real-time sensors and access to monitoring equipment (see next section) will enable the City to engage directly with the community and partners in a real-life setting. Community involvement in the 'Living Lab' will occur through opportunities for visitors to take water

quality samples which look at different chemical and biological factors, strengthening STEM knowledge within the community.

The design of the physical space will also support an outdoor classroom concept, which can be utilised by local schools and interest groups as an extension of the Living Lab concept. A viewing deck on the edge of the water body will create a living classroom/lab space that can be utilised for the local community, and in particular for schools for outdoor learning opportunities. The site will be connected to the sensors within the waterbody and water body floating access deck. Educational programs utilising the smart data captured by the site can be delivered

through the City of Canning's Canning River Eco Education Centre under the City's Learning Cities Strategy.

The Living Lab will utilise smart technology solutions for environmental and social progress. The open platform will ensure innovative learnings from this site extend beyond the City's boundaries.

[Key project partners: Curtin University, University of Western Australia, Department of Water and Environmental Regulation, Department of Biodiversity, Conservation and Attractions and SERCUL]

[Smart values criteria: Access, Safety, Water, Health, Resilience, Operations & Maintenance, Innovation]

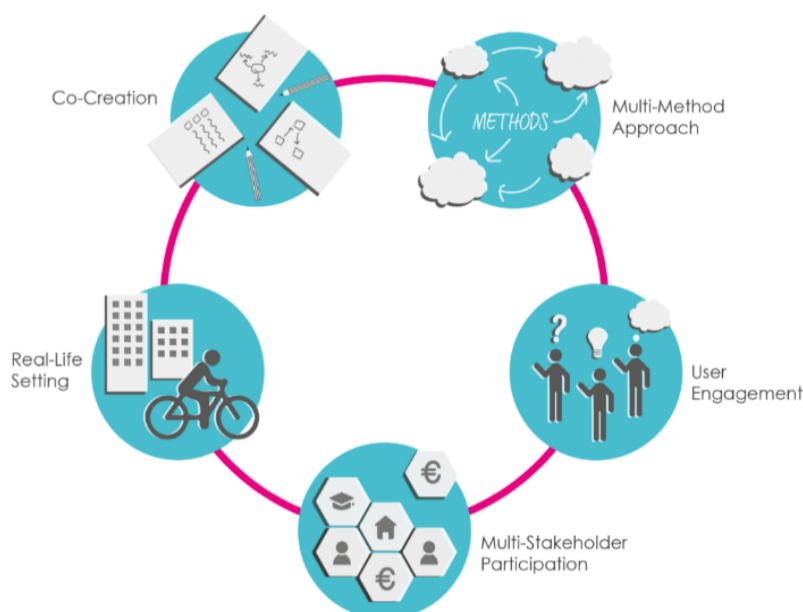


Figure 5. Common elements of a living lab
Reference: *Living Lab Methodology Handbook, U4IoT Consortium 2017*

02.3 Smart technology and facilities

The Next Generation Community Park will incorporate smart technology and facilities. The solution architecture for the site will encompass digital technology which will reflect and fit within the site's cultural and environmental surroundings. The facilities will be easily accessible, resilient to climate change, water- and energy-efficient, easy to maintain, and will promote the health and safety of the community.

Smart technology will be the enabler to deliver an interactive site and Living Lab concept to the community. The proposed digital solution will deliver community-focussed outcomes and improved operations including water management, safety and security as well as remote operations and control. Smart technology will also underpin the deployment of expanded or enhanced capabilities at the site, such as data analytics, utilisation

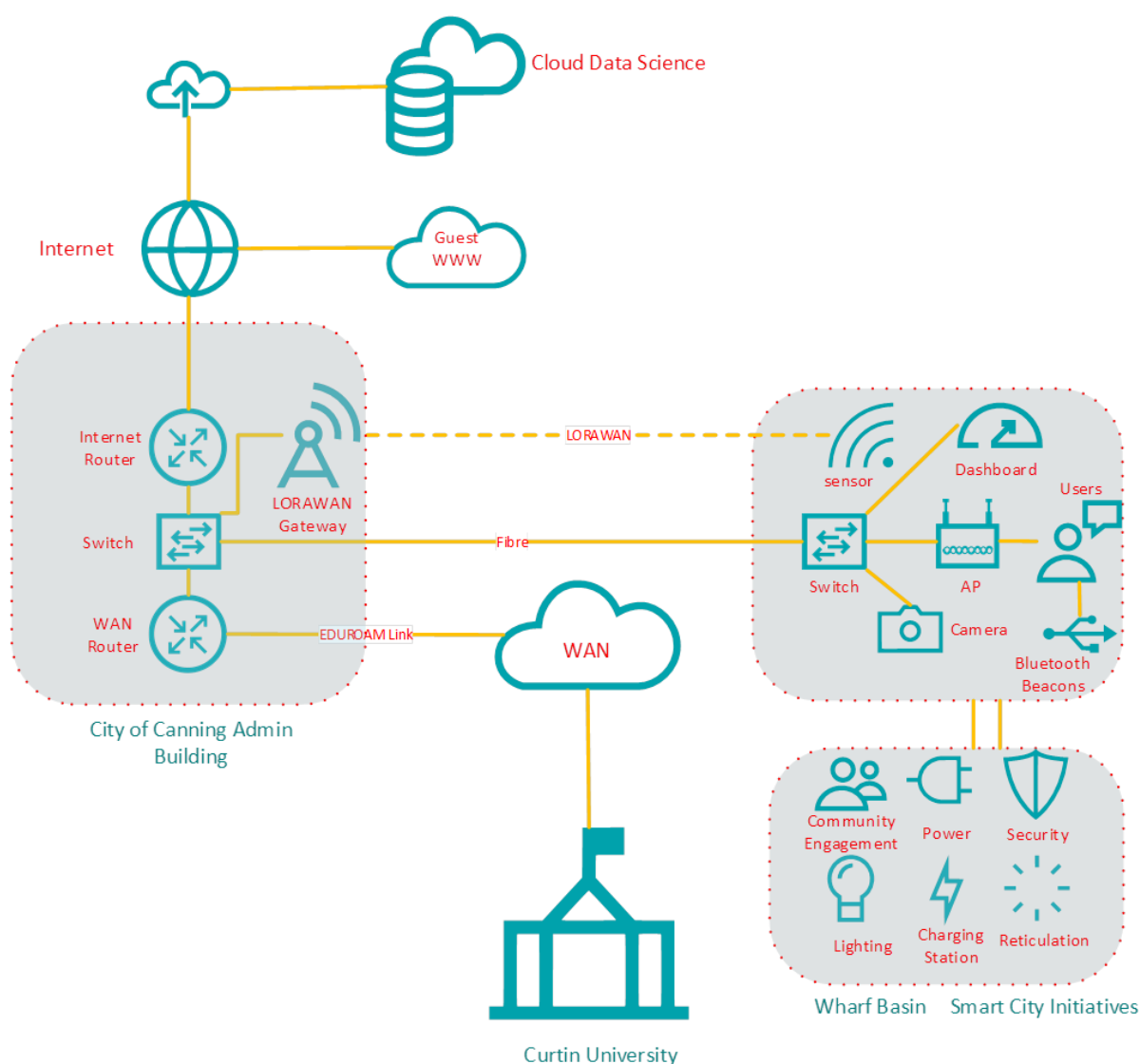


Figure 6. Proposed NGCP Technology Infrastructure Network

statistics and community feedback, to inform design and maintenance decisions and water level changes to address safety, enhance park usage and improve water quality..

In addition, the installation of creative and engaging infrastructure is intended to make the site more attractive, alluring and in some cases interactive, to those who visit.



Technology will be incorporated into the proposed structures on the site such as the viewing deck, floating platform, bridge structure and other elements. This will minimise the visual nature of technology-related infrastructure to ensure the site does not become quickly dated as technological innovations are superseded. It will also ensure the visual and spatial nature of the site is consistent with a natural, passive reserve. Additional benefits will be to ensure that technology related infrastructure is not easily vandalised.

The smart facilities are likely to include a LoRaWAN network gateway to support an Internet of Things (IoT) network across the site to capture data from sensors. On-site digital access will be provided for the community through wifi availability, wifi device charging options and digital notice boards, which may be linked to those at the City's administration centre and Canning River Eco Education Centre. A multi-purpose interaction hub is also likely to be developed, which can be deployed and retrieved through the City (based on community and group bookings) to support events and outdoor classroom programs held at the site.

A smart lighting array will enhance safety and engagement. This may include vibration and proximity sensors which interact with movement, highlighting people getting closer to the water's edge through changes in colour and intensity. Alternatively, lighting may respond to movement and vibrations when people move along boardwalks, paths and/or nature play trails. The opportunity also exists for the park to generate energy for devices and instalments at the site, through the installation of solar panels.

Public art will be incorporated into the site through a number of the proposed habitat and play elements. Insect hotels

will be created as sculptural elements utilising recycled materials. These sculptures will provide additional habitat opportunities for beneficial insect species, while adding to the environmental education elements.

Battery storage will be incorporated under the viewing deck structure to store energy generated by additional solar and wind generation infrastructure, to provide power for bollard lighting where solar lighting is not suitable. Alternative power generation will also support device charging and powering of devices required for outdoor learning space functions.

The site will have access to the eduroam educational wi-fi network allowing students easy access to the site's data as well as opening up the area as a space in which general study can be conducted. The infrastructure for these systems will be based at the City's nearby administration centre, which will further reduce the need for these elements and their associated infrastructure to be physically installed on

site. This will have added benefits in reducing the maintenance costs, both in economic and environmental terms as infrastructure will be able to be integrated within the City's existing systems. Additional benefits will be to ensure that technology related infrastructure is not easily vandalised.

Care will be taken to ensure that the technology and facilities that are incorporated into the Next Generation Community Park assist the community to connect with and use the park. Facilities and/or technology will not be incorporated or used just because it is "new". Selection may be guided by *SMART Parks: A Toolkit* (UCLA Luskin Centre for Innovation) which presents a values criteria based methodology for consideration of SMART park technologies.

[Key project partners: Innovation Central Perth supported by Cisco]

[Smart values criteria: Safety, Water, Health, Resilience, Operations & Maintenance, Innovation]

02.4 Smart Measurement

It is proposed that a core element of the Living Lab will be a semi-autonomous, on-site water quality testing station which will be installed with remote connectivity to a laboratory. Water quality, level and climate measurements will be taken systematically. The on-site station will enable some interactivity with visitors, including broad interpretation of results of their measurements and the implications of such. Results may be displayed on digital noticeboards, which could depict both real-time and community measurements. Both types of data will be shared in real time, in an open-source platform.

Measurement of upstream and downstream flows and quality will also help to understand the physical and biological processes occurring in the system and support management decisions. Measurements are likely to include:

- Depth
- Flow
- Dissolved oxygen
- pH
- Water temperature
- Air temperature
- Rainfall

- Total suspended solids
- Electric conductivity
- Nutrients
- Invertebrates

The City will establish a cloud-based data collection platform and dashboard for open sharing with community and external partners. Open source access to this information will also enable analysis by researchers and students supporting an increase in our body of knowledge regarding the functioning of these complex systems. The site can be used for rapid prototyping and testing of measurement methods that still require further development.



Sensors will also be located throughout the park to monitor and measure park usage by visitors. This will allow identification of preferences for types of access, textures, play structures and equipment, as well as urban furniture and amenities. This will provide a valuable insight for open space managers, as well as the future design of parks and community spaces, and any upgrades or

changes to the facilities within the park itself.

[Key project partners: Centre for Sport and Recreation Research, Curtin University.]

[Smart values criteria: Safety, Water, Health, Resilience, Operations & Maintenance, Innovation]



02.5 Smart Management

Although there are a significant number of constructed urban wetlands and water drainage basins in the City's suburbs, there is a lack of locally relevant information about how they perform in the long term. There is also a reliance on simple assumptions of how water basins and wetlands work which are used to guide management actions.

It is known that design features can have a significant impact on performance, and that not all nutrients of concern are processed equally within the water column, with significant variability occurring daily, seasonally and annually, as well as spatially.

This project provides a unique opportunity to establish a comprehensive monitoring program which will assess the complexity and performance of a range of design features and management responses, leading towards the ultimate goal of a self-managed system.

The degree of measurement proposed is critical to support the creation of a new approach to management of the stormwater basin. The current approach to management of stormwater volumes (levels) is simplistic, with a 'stop/start' level which turns the pump on and off.

Monitoring of upstream conditions coupled with weather forecasts will enable a prediction of likely stormwater flows into the basin. The Smart system will then release water from the basin ahead of higher flows to ensure there is capacity to retain the storm event. The Smart management system may also provide 'warnings' to any site users that water levels are likely to increase to a certain point within a certain time-period, to ensure appropriate use of parts of the site that are likely to become inundated. Consideration will also be given to the ability to manipulate water levels to enhance site utilisation, while still allowing for effective functionality in managing stormwater flows. This may include pumping water out to allow for greater public capacity if there is an event being held at the site, or to reveal culturally significant art work at particular times of the year.

Replacement of the existing vegetation (which is predominately weed species such as *kikuyu*, *bacopa* and *typha*) will make long term economic and environmental sense for the City and the Water Corporation. Chemical and fuel use from maintenance will be reduced as these species are replaced with water wise

local native plant species. In the long term, the reserve will become predominately carbon use free in its related maintenance activities as the mechanical mowing and slashing of vegetation will be minimised or eliminated entirely. Native species will also naturally regenerate once these species are re-introduced on site, further reducing long term costs of landscape maintenance. These offset costs will have additional benefits for the biodiversity existing within the area.

Smart management of the Next Generation Community Park will be optimised through installation of smart furniture. This will monitor usage and inform maintenance staff off-site, through the integrated platform, of maintenance actions required. Monitoring of community engagement and park usage patterns will assist with planning for maintenance, upgrades or changes to the facilities within the park itself, optimising efficiency of delivery.

The community's experience of the Next Generation Community Park will be as more than a recreational space. The park will provide a living lab experience to inform and engage the community with opportunities for active participation in collection of water quality data. The park will also respond to presented information about open space function. Water quality monitoring equipment will invite participation and help people to interpret the natural signs and signals of a healthy or stressed ecosystem. Instantaneous feedback from park usage sensors using smart lighting and information boards will allow the community to 'vote with their feet' to inform the City and designers of their favourite elements and spaces.

[Key project partner: Water Corporation]

[Smart values criteria: Safety, Water, Health, Resilience, Operations & Maintenance, Innovation]





CONCEPT MASTERPLAN

- | | | | | |
|--|---|--|--|--|
| <p> Canning City Centre Plan Area</p> <p>1 Canning River</p> <p>2 River Park</p> <p>3 Civic Centre Park</p> <p>4 City of Canning Council Building</p> <p>5 Wharf Street</p> <p>6</p> <p>7 Pattie Street</p> | <p>8 Cecil Avenue</p> <p>9 Cecil Square & Carousel Expansion Stage 2</p> <p>10 Carousel Road</p> <p>11 Carousel Road Extension</p> <p>12 Cannington Community College</p> <p>13 Coker Park</p> <p>14 Cannington Leisureplex</p> | <p>15 Lake Street Extension</p> <p>16 Sevenoaks Senior College</p> <p>17 Sevenoaks Street</p> <p>18 Railway Basin Park</p> <p>19 Cannington Station</p> <p>20 Station Square</p> <p>21 Lake Street Living Stream</p> | <p>22 Lake Street</p> <p>23 Gerald Street</p> <p>24 Bush Park</p> <p>25 Southern Link Road</p> <p>26 Western Power Sub station</p> <p>27 Grose Avenue</p> <p>28 Westfield Carousel Shopping Centre</p> | <p>29 Carousel Expansion Stage 1</p> <p>30 Liege Street</p> <p>31 Cannington Exposition Centre & Showgrounds</p> <p>32 Albany Highway</p> <p>33 Carden Drive</p> <p>34 River Park Activity Hub</p> |
|--|---|--|--|--|

03 Program of works

03.1 A co-design approach

This project is proposed to be delivered through a co-design approach. The proposed process, which is based on a collaborative governance framework, has the potential to significantly enhance outcomes for the project. Importantly it will establish a platform to build further knowledge and insight once the site is operational, beyond the life of this project.

The diagram below illustrates the co-design process which starts with an appreciation that there is a 'dilemma' that needs views from many different angles. Key to this process is a commitment from a range of participants and partners to developing a collaborative process and working through a set of steps towards a collaborative solution.

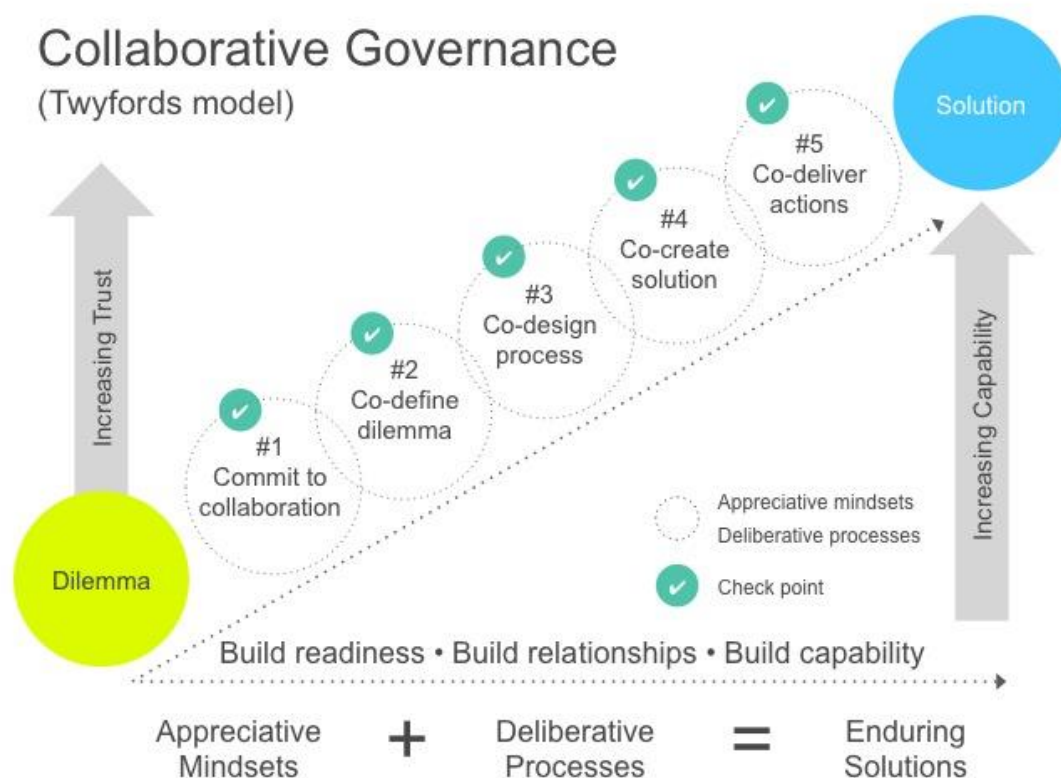


Figure 7. Twyfords' collaborative governance model

This framework will be used as the basis of the methodology which is outlined below. This approach involves:

- Establishing agreement about a collaborative and co-design approach;
- Acknowledgement that the project is dealing with a set of complex and interrelated factors that can be considered a multifaceted dilemma;
- A starting point with agreement on the dimension of the problem and the process to be followed, recognising there may be more than one pathway to deliver the project;
- Evolution of the opportunities and potential solutions, and therefore the project approach where necessary, as understanding grows;
- The research / design team working closely with the Steering Group to help frame the process and deliver the outcomes in line with project objectives; and
- The Steering Group taking responsibility for decisions at the key check in points.

The process will involve a number of consultative steps that will draw on input from the community, researchers and other interested parties. This will ensure the outcome delivers the greatest benefit to the community and the City, thereby growing smart cities capability and capacity through shared knowledge and expertise.

03.2 Project initiation

The project will commence with the establishment of a Partner Steering Group, which will comprise at least one member of each of the partner organisations. The organisations who have indicated their support for the project at the time of the submission are:

- City of Canning (lead);
- Water Corporation;
- Department of Water and Environmental Regulation;
- Innovation Central Perth & Cisco;
- Curtin University – Centre for Sport and Recreational Research;
- Department of Biodiversity, Conservation and Attractions; and
- Urbaqua.

The City is also in discussions with other stakeholders and it is expected that the following organisations will become project partners:

- University of Western Australia (UWA) – Environmental Engineering; and
- South East Regional Centre for Urban Landcare (SERCUL).

The Project Initiation meeting is intended to achieve step #1 of the collaboration model, as representatives on the Partner Steering Group will be asked to commit to a collaborative approach for the delivery of this project.

Further Partner Steering Group meetings will be scheduled to achieve key milestones as identified in Section 06. These meetings are vitally important for the delivery of the co-design methodology, as they will be the vehicle for moving through the stages of:

- co-defining the dilemma;
- co-designing the process; and
- co-creating the solution.

The Partner Steering Group will be maintained throughout the life of the project and potentially beyond, during measurement and monitoring. As such, they will get to co-deliver the actions, leading to the solution.

A Project Design Team will be established to deliver the scope of works. This will include representatives of the agencies contracted to deliver the required tasks. The composition of the Project Design Team will vary in response to the project phases and tasks.

The Partner Steering Group will monitor progress of the project and provide strategic guidance to the project design team. The partner steering group will also review design team tender submissions and appoint the project design team.

[Milestone 1 – Establishment of the Partner Steering Group and the project design team]

03.3 Community engagement

The City will adopt the International Association for Public Participation (IAP2) framework for Community Engagement during this project. The City will embrace the IAP2 core values throughout this process, by ensuring the following:

- The City will engage those who are affected by the development of the Next Generation Community Park by recognising that they have a right to be involved in the decision-making process;
- The City will ensure that the public's participation during engagement activities will contribute to the design of the Next Generation Community Park;
- Public participation will promote sustainable decisions by the City in relation to this project, as it recognises and communicates the needs and interests of all participants;
- The City will provide the community with the information they need to participate in a meaningful way; and
- The City will communicate to participants how their input affected the design of the Next Generation Community Park.

Recognising that the Whadjuk-Noongar people are the original custodians of the land on which this project is sited, identifying and connecting with Noongar water knowledge and values will be an integral part of the project. Traditional owners will be included in design processes and decision making, with Noongar knowledge, values and way of thinking incorporated into key design aspects of the site. It is recognised that engagement with Traditional Owners as part of water planning and decision-making requires greater focus and attention. This project will provide a learning opportunity around how traditional owner engagement can be undertaken within water management projects, and how it can connect a highly diverse community with the Whadjuk-Noongar people and with their original custodianship of the land and its resources.

The City of Canning and partner organisations will run a community scoping exercise to engage with local stakeholders including Traditional Owners. This will provide the community with opportunities to submit ideas and concepts via an online engagement

platform. These ideas and concepts will then be discussed and developed further at workshops with Traditional Owners, the community and school groups.

The preferred concept for Wharf Street Basin that is identified through this process will be developed into a preliminary concept design for approval by the Partner Steering Group and other stakeholders as necessary. The consultation and workshop series recommended is as follows:

- Community Consultation – Traditional Owners
- Community consultation - online engagement tools
- Community workshop 1 - Ideas & concepts
- Schools workshop - Ideas & concepts
- Community workshop 2 - Preferred concept
- Community engagement - online information updates

Community engagement will continue throughout the remainder of the project, with provision of regular news updates and opportunities to provide additional input into design ideas.

[Milestone 2 – Community preferred concept identified]

03.4 Preliminary scoping

The first phase of work for the project team will be provision of support during the community scoping exercise followed by development of visualisation materials to bring the community's vision to life.

The project team will also undertake hydraulic modelling and testing of the concepts to ensure that the critical flood protection function of the Wharf Street Basin is not compromised. The final preliminary concept for Wharf Street Basin will be provided for partner and stakeholder review. This phase of work will end with the confirmation of an approved preliminary concept plan with in principle support from all stakeholders.

[Milestone 3 – Preliminary concept confirmed]

03.5 Conceptual design

Necessary site works including survey, geotechnical and environmental investigations will be undertaken on commencement of this phase of work to inform the development of more detailed concept designs.

The preliminary concept plan will be used as the basis for concept design of each of the various elements of the project. This is likely to require appointment of consultants to provide the following services:

- Engineering;
- Landscape design; and
- Development of smart technologies.

The design concepts prepared by the design team will provide refined information to enable development of prototype smart technology elements.

Completion of this phase of work will deliver a 50% design report for stakeholder review and include approval from the Project Steering Group to prepare detailed designs.

[Milestone 4 – Approval to commence detailed design]

03.6 Detailed design and development

This phase of work includes development of detailed civil, structural and electrical engineering and landscape designs as well as the design and development of prototype smart technology elements.

During this phase of work, 85% design drawings will be provided to the Project Steering Group to gain approval for the development of construction tender documentation. Provision has been made in the project plan for the design and development of prototype smart technology elements under this milestone.

[Milestone 5 – Approval to prepare tender documentation]

03.7 Tender design

Tender designs and specifications will be developed by the project design team for the approval by the Partner Steering Group. Tendering for a construction team will be consistent with the procurement policies of the City and will include consideration of sustainability practices.

[Milestone 6 – Appointment of construction team]

03.8 Construction and installation

Provision has been made in the project plan to complete development of smart technology elements during development of tender designs and establishment of the construction team. Subsequently, construction and installation will be undertaken in three major phases:

1. Civil works including earthworks and service installation will be undertaken first and will include all major structural elements together with installation of necessary power and lighting connection points.
2. Landscape installation will commence following completion of civil works and will include the installation of minor structural elements such as footpaths, boardwalks, lighting, irrigation systems and shade structures as well as planting.
3. Finally, the installation of smart technology elements will be undertaken. It is possible that this will occur concurrently with landscape installation.

[Milestone 7 – Practical completion]

03.9 Commissioning and testing

Following practical completion of all site works there will be a commissioning and testing period for smart infrastructure prior to the project's ultimate completion and public opening of the site. It is anticipated that the NGCP will be formally opened and celebrated as part of a community event.

[Milestone 8 – Public opening event]

04 Governance

Key governance will be undertaken by the Canning City Centre Regeneration Program Control Group which has been established to coordinate delivery of the City's ten-year, \$76 million Canning City Centre Regeneration Program. Project partners will form the Partner Steering Group as an extension to the Program Control Group. This will be supported by the Project design team, together with various business groups from the City of Canning as depicted below.



04.1 Project partners

As noted in section 03, a number of agencies have indicated their support for the project and nominated to become a project partner. This includes:

- City of Canning;
- Water Corporation;
- Department of Water and Environmental Regulation;
- Innovation Central Perth & Cisco;
- Curtin University – Centre for Sport and Recreational Research and;
- Department of Biodiversity, Conservation and Attractions.

Although letters of support were not available at the time of submission, a preliminary indication of support for becoming a project partner has been received from SERCUL and UWA. These relationships will continue to be explored while the application is being assessed by the Federal Government.

Other project partners will continue to be sought where it is felt that a gap in knowledge exists or there is an opportunity to expand the project outcomes.

A Partner Steering Group will be formed on initiation of the project and coordinated by Urbaqua as the lead consultant and external project manager. It will include at least one representative of each partner agency. The Partner Steering Group will monitor progress of the project, ensuring that each Milestone is reached on time and within budget.

As part of the co-design delivery model, the Partner Steering Group will assist in the delivery of key Milestones, moving through the process as follows:

- co-define the dilemma – preliminary scoping and confirmation of preliminary scope
- co-design the process – community engagement process and conceptual design
- co-create the solution – detailed design
- co-deliver the actions – construction and initiation

The Partner Steering Group will also review design team tender submissions and appoint the project design team.

04.2 Project design team

A Project Design Team will be established to deliver the scope of works. This will include representatives of the agencies contracted to deliver the required tasks. The composition of the Project Design Team will vary in response to the project phases and tasks, but it is likely to include:

- City of Canning;
- Water Corporation;
- Hydrology consultant;
- Engineering consultants;

- Landscape design – consultant and contractor;
- Smart technology provider(s) and;
- Traditional Owners.

The project design team will be appointed by the City of Canning, consistent with the City's procurement policies.

04.3 Project management

Project management will be provided by Urbaqua. This will include coordination of Partner Steering Group meetings and Project Design team meetings, with the intent of meeting the project milestones and ensuring the project meets budget allocations.

Urbaqua will also provide required progress reporting to the Department of Industry, Innovation and Science, consistent with the Grant Agreement. This will include reporting on:

- progress against agreed project milestones;
- project expenditure, including expenditure of grant funds; and
- contributions of participants directly related to the project.

04.4 Communications

The City will establish a cloud-based data collection platform and dashboard for open sharing with community and external partners. Open source access to this information will also enable analysis by other researchers and/or students and increase our body of knowledge regarding the functioning of these complex systems.

Water quality data collected at the park will also be formatted for integration into the Department of Water and Environmental Regulation's web-based Water Information Reporting system. The data stored on this platform is publicly available for use free of charge and its map-based system allows simple selection of sites of interest to find and download associated data. The Water Information Reporting system is widely used by

researchers, water managers and industry experts to access and utilise data in research and development activity as well as a tool to improve management of water assets.

In addition, the participation of New WAtEr Ways, Western Australia's water sensitive urban design capacity building organisation, will assist with the translation of learnings both within the City and beyond to other Local Government Authorities.

New WAtEr Ways will disseminate learnings from the project through its capacity building activities which include regular newsletters, speaking opportunities at seminars and networking events as well as publication of case studies and fact sheets. New WAtEr Ways will also coordinate and advertise at least one onsite activity or seminar providing learning opportunities for participants from various disciplines in the City of Canning and other Local Government Authorities.

05 Resources

The City of Canning has already committed \$70million over 10 years for the regeneration of Canning City Centre. This regeneration program will see a series of projects delivered that contribute towards the creation of Canning City Centre as a vibrant city of the future.

Wharf St Next Generation Community Park project will be delivered as one of the first elements of the regeneration program and has already been allocated a budget of \$1.37million by the City of Canning with additional cash contributions from project partners. The power of this project is to show leadership during the early stages of the regeneration program so that future actions meet high standards and continuous improvement.

05.1 Project budget

The project budget broken down by milestone and distributed between the two-year project timeframe as well as a more detailed itemised breakdown are presented in the tables below.

Milestone	FY 2018-19	FY 2019-20	Total
Milestone 1	\$ 25,230	\$ -	\$ 25,230
Milestone 2	\$ 32,750	\$ -	\$ 32,750
Milestone 3	\$ 43,100	\$ -	\$ 43,100
Milestone 4	\$ 73,700	\$ -	\$ 73,700
Milestone 5	\$ 174,760	\$ -	\$ 174,760
Milestone 6	\$ -	\$ 210,690	\$ 210,690
Milestone 7	\$ -	\$ 1,893,690	\$ 1,893,690
Milestone 8	\$ -	\$ 136,230	\$ 136,230
Total	\$ 575,075	\$ 2,015,075	\$ 2,590,150

Wharf St Basin - Budget

Cost Item	FY 2018-19	FY 2019-20	Total
Labour costs	\$ 101,490	\$ 81,760	\$ 183,250
Project leader (City of Canning)	\$ 14,180	\$ 12,070	\$ 26,250
Project assistant (CoC)	\$ 20,770	\$ 17,605	\$ 38,375
Landscape Architect (CoC)	\$ 45,350	\$ 39,025	\$ 84,375
Community Engagement (CoC)	\$ 13,590	\$ 6,534	\$ 20,124
Marketing and Communications (CoC)	\$ 3,800	\$ 3,263	\$ 7,063
Land Administration/Legal (CoC)	\$ 3,800	\$ 3,263	\$ 7,063
Contractor costs	\$ 197,600	\$ 94,400	\$ 292,000
<i>Project management</i>			
- Project manager (60 days @ \$1,600/day)	\$ 56,000	\$ 40,000	\$ 96,000
<i>Design team</i>			
- Civil & structural design (60 days @ \$1,600/day)	\$ 80,000	\$ 16,000	\$ 144,000
- Landscape design (30 days @ \$1,600/day)	\$ 32,000	\$ 16,000	\$ 48,000
- Electrical design (10 days @ \$1,600/day)	\$ 9,600	\$ 6,400	\$ 16,000
- Smart infrastructure design (20 days @ \$1,600/day)	\$ 16,000	\$ 16,000	\$ 32,000
<i>Site investigations team</i>			
- Survey (1.5 days @ \$2,000/day)	\$ 3,000	\$ -	\$ 3,000
- Environmental (0.5 days @ \$2,000/day)	\$ 1,000	\$ -	\$ 1,000
Smart Park Infrastructure Delivery	\$ 50,450	\$ 2,064,450	\$ 2,114,900
Civil works (includes materials and basic power & comms)	\$ -	\$ 406,000	\$ 406,000
Landscape works (materials & play equipment)	\$ -	\$ 663,000	\$ 663,000
Technical works (installation of smart technology) (10 days @ \$2,000/day)	\$ -	\$ 20,000	\$ 20,000
Water quality monitoring system	\$ 25,450	\$ 25,450	\$ 50,900
Recreational usage monitoring system	\$ 25,000	\$ 25,000	\$ 50,000
Smart furniture (bins, benches & lights)	\$ -	\$ 264,300	\$ 264,300
Communications infrastructure (WiFi, LoRa, data management etc)	\$ -	\$ 445,700	\$ 445,700
Lighting (includes solar & battery systems)	\$ -	\$ 215,000	\$ 215,000
Total project costs	\$ 349,540	\$ 2,240,610	\$ 2,590,150

05.2 Budget contributions

Committed budget contributions from project partners aligned with the grant request to meet the project budget target are summarized in the table below.

Contributions summary		
City of Canning	\$ 1,370,000	53%
Water Corporation	\$ 100,000	4%
DWER	\$ 30,000	1%
Grant requested	\$ 1,090,150	42%
Project budget target	\$ 2,590,150	100%

05.3 In-kind contributions

In-kind contributions from project partners aligned with the grant request however are not able to be included as direct budget contributions are summarised in the table below.

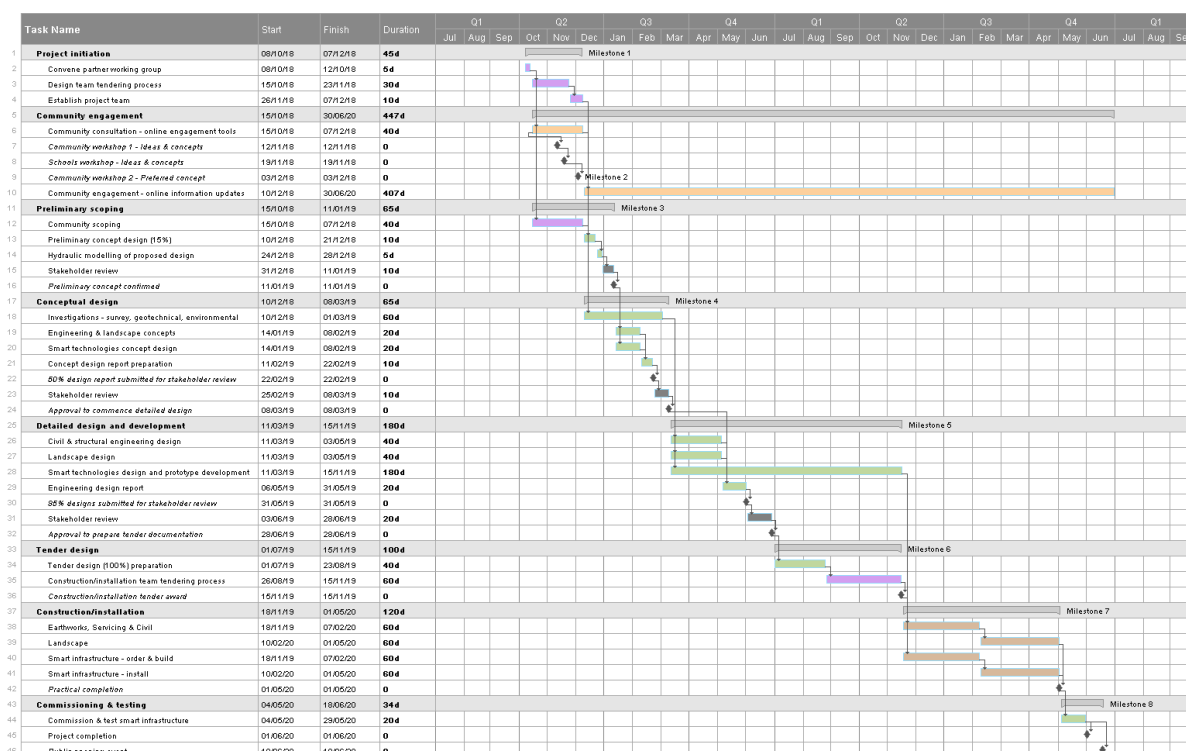
In-Kind contributions summary		
Curtin University – Centre Sport and Recreation Research	\$ 31,250 (Cash equivalent)	Professor (time equivalent to \$31,250 Curtin Contribution) and 1 Researcher for the duration of the project. <i>'Baseline the current state of public amenity and community utilisation at the location covered by the project and then assess the impact of the project through implementation and for a designated period following practical completion'</i>
Department Biodiversity, Conservations and Attractions	\$ 50,000 (Cash equivalent)	Linking Wharf Street Basin project to the Wharf Street Constructed Wetland water quality information represents an additional in-kind contribution value of \$50,000 per annum through an existing partnership agreement with City of Canning, SERCUL and DBCA.
Cisco Innovation Central Perth (Curtin University)	Undetermined	Cisco have committed \$7 million to Innovation Central Perth over 5 years. All in-kind support for the City during the project will be provided under the MOU that exists between the City and Curtin University. Cisco and associated partners of ICP will also provide discounted pricing on specific technology aligned to this project.

06 Milestones

The following milestones are proposed. The tasks associated with each milestone are outlined in section 03.

Milestone	Title	Start date	End date
Milestone 1	Establishment of the partner working group and project design team	8 October 2018	7 December 2018
Milestone 2	Community preferred concept identified	15 October 2018	3 December 2018
Milestone 3	Preliminary concept confirmed	15 October 2018	11 January 2019
Milestone 4	Approval to commence detailed design	10 December 2018	8 March 2019
Milestone 5	Approval to prepare tender documentation	11 March 2019	28 June 2019
Milestone 6	Appointment of construction team	1 July 2019	15 November 2019
Milestone 7	Practical completion	18 November 2019	1 May 2020
Milestone 8	Public opening event	4 May 2020	18 June 2020

06.1 Schedule



06.2 Dependencies

The key dependencies of the various tasks of this project are shown in the project schedule above. It is recognised that most of the tasks are linked to form the project critical path and will therefore require careful management to prevent project delays. Project management will focus on maintaining close communication with the Project Design Team and the Project Steering Group to ensure early identification and minimisation of project risks.

07 Risks

The following key project risks have been identified and will require ongoing management:

- Project approvals delays;
- Design team delays;
- Traditional owner and community engagement delays;
- Delivery delays for technological components and systems;
- Construction delays;
- Project design team cost overruns;
- Cost overruns for design and development of new technologies; and
- Construction cost overruns.

07.1 Risk management

The collaborative framework approach that has been identified for this project will enable the early identification and minimisation of risks. However, it is recognised that the key identified risks as well as unforeseen risks may result in a need to change the Project Plan as the project progresses.

While change is both certain and required, it is important to note that any changes to the Project Plan will impact at least one of three critical success factors: Available Time, Available Resources (Financial, Personnel), or Project Scope. The decision by which to make modifications to the Project Plan (including project scope and resources) will be coordinated using the following process:

Step 1: As soon as a change which impacts project scope, schedule, staffing or spending is identified, the Project Manager (Urbaqua) will document the issue.

Step 2: The Project Manager will review the change and determine the associated impact to the project and will forward the issue, along with a recommendation, to the Project Steering Group for review and decision.

Step 3: Upon receipt, the Project Steering Group should reach a consensus opinion on whether to approve, reject or modify the request based upon the Project Manager's

recommendation and their own judgment. Should the Project Steering Group be unable to reach consensus on the approval or denial of a change, the issue will be forwarded to the Project Lead Agency (City of Canning), with a written summation of the issue, for ultimate resolution.

Step 4: If required due to a lack of consensus, the Project Lead Agency shall review the issue(s) and render a final decision on the approval or denial of a change.

Step 5: Following an approval or denial (by the Project Steering Group or Project Lead Agency), the Project Manager will notify the original requestor of the action take

08 Reference Documents

The following documents will provide additional guidance and reference in relation to this Smart City Project.

- City of Canning Strategic Community Plan 2017- 2027
- City of Canning Corporate Business Plan 2018-2021
- Canning City Centre Master Plan
- City of Canning Public Open Space Strategy
- Vision for Canning as A Water Sensitive City
- City of Canning Digital Strategy (In development)