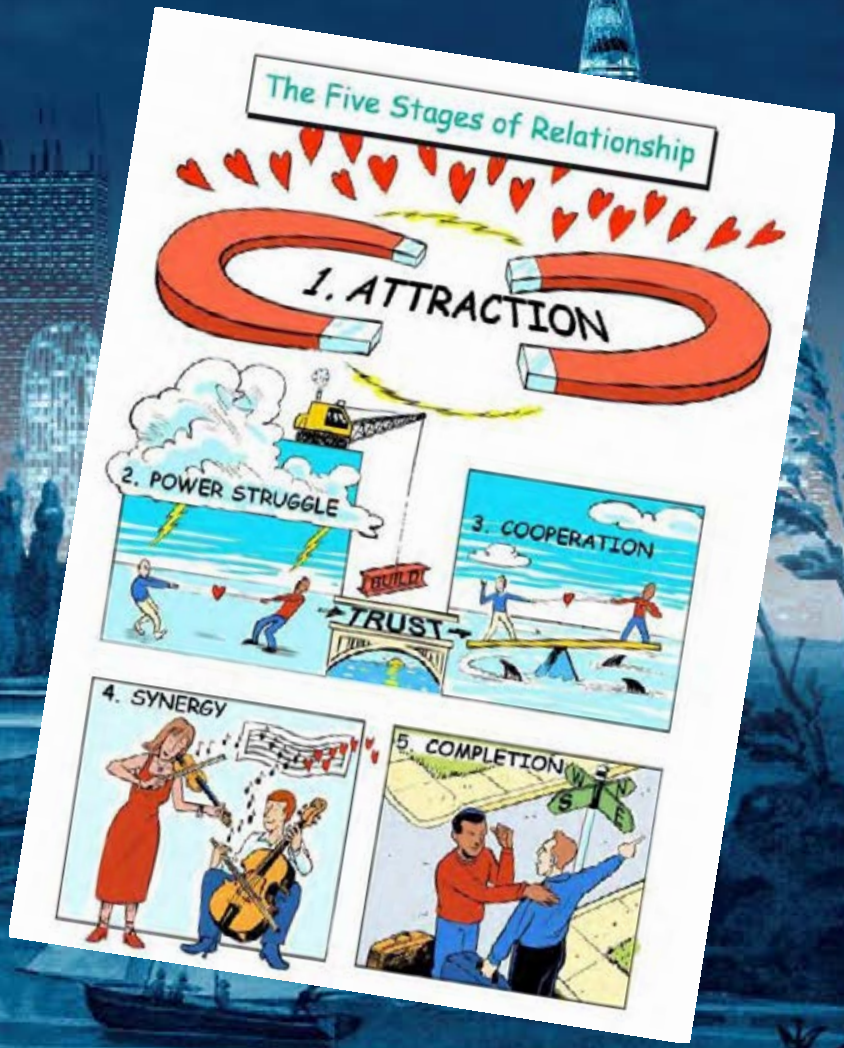
A river sensitive city

Julian Bolleter
AUDRC

1. Infatuation
2. Domination
3. Romanticisation
4. Consumation
5. Humiliation



1 Infatuation

The richness of the soil, the bright foliage of the shrubs, the majesty of the surrounding trees, the abrupt and red colour banks of the river occasionally seen, and the view of the blue mountains, from which we were not far distant, made the scenery of this spot as bieutiful (sic) as anything of the kind I have ever witnessed.

Captain James Stirling

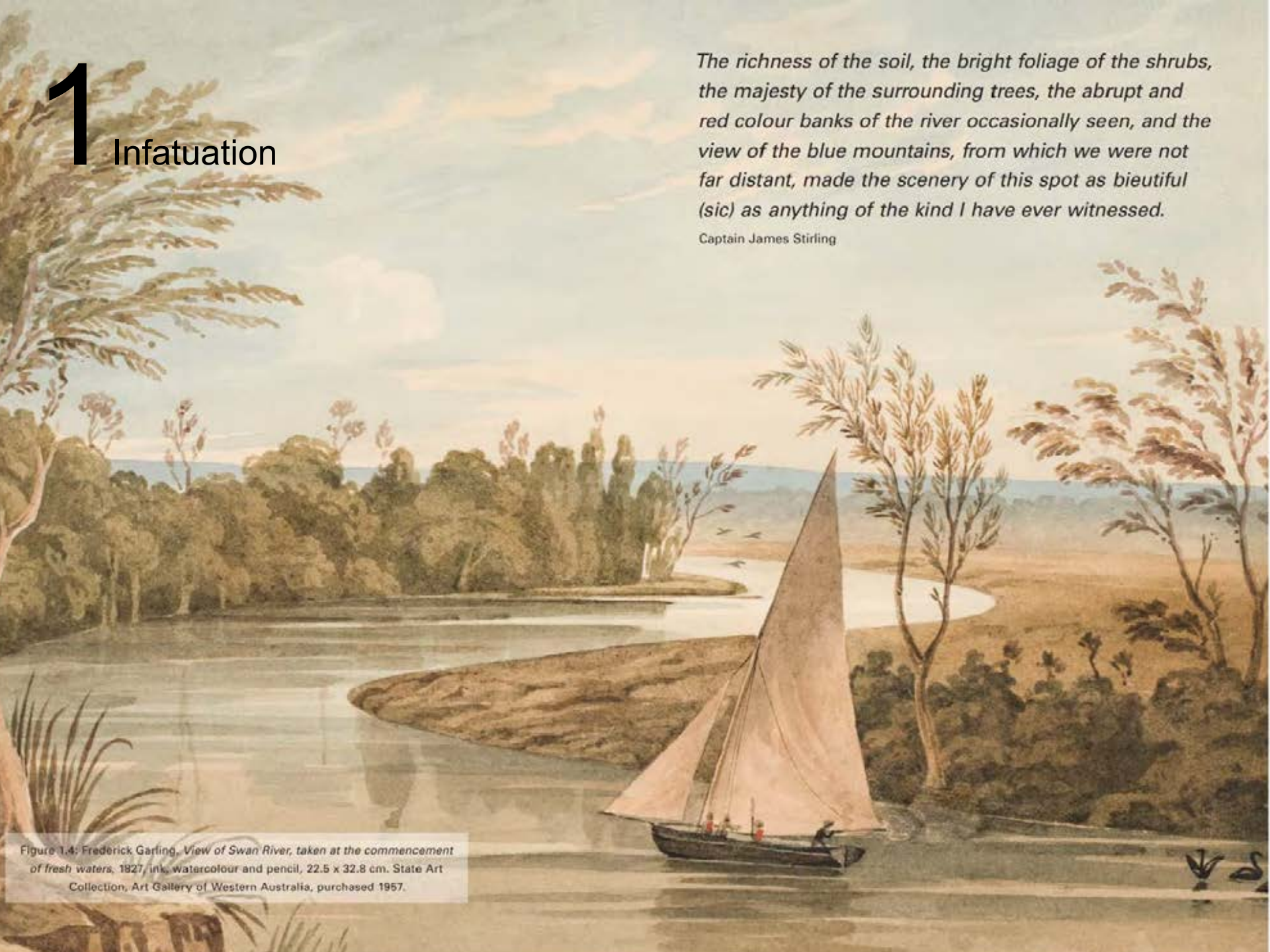


Figure 1.4: Frederick Garling, *View of Swan River, taken at the commencement of fresh waters*, 1827, ink, watercolour and pencil, 22.5 x 32.8 cm. State Art Collection, Art Gallery of Western Australia, purchased 1957.

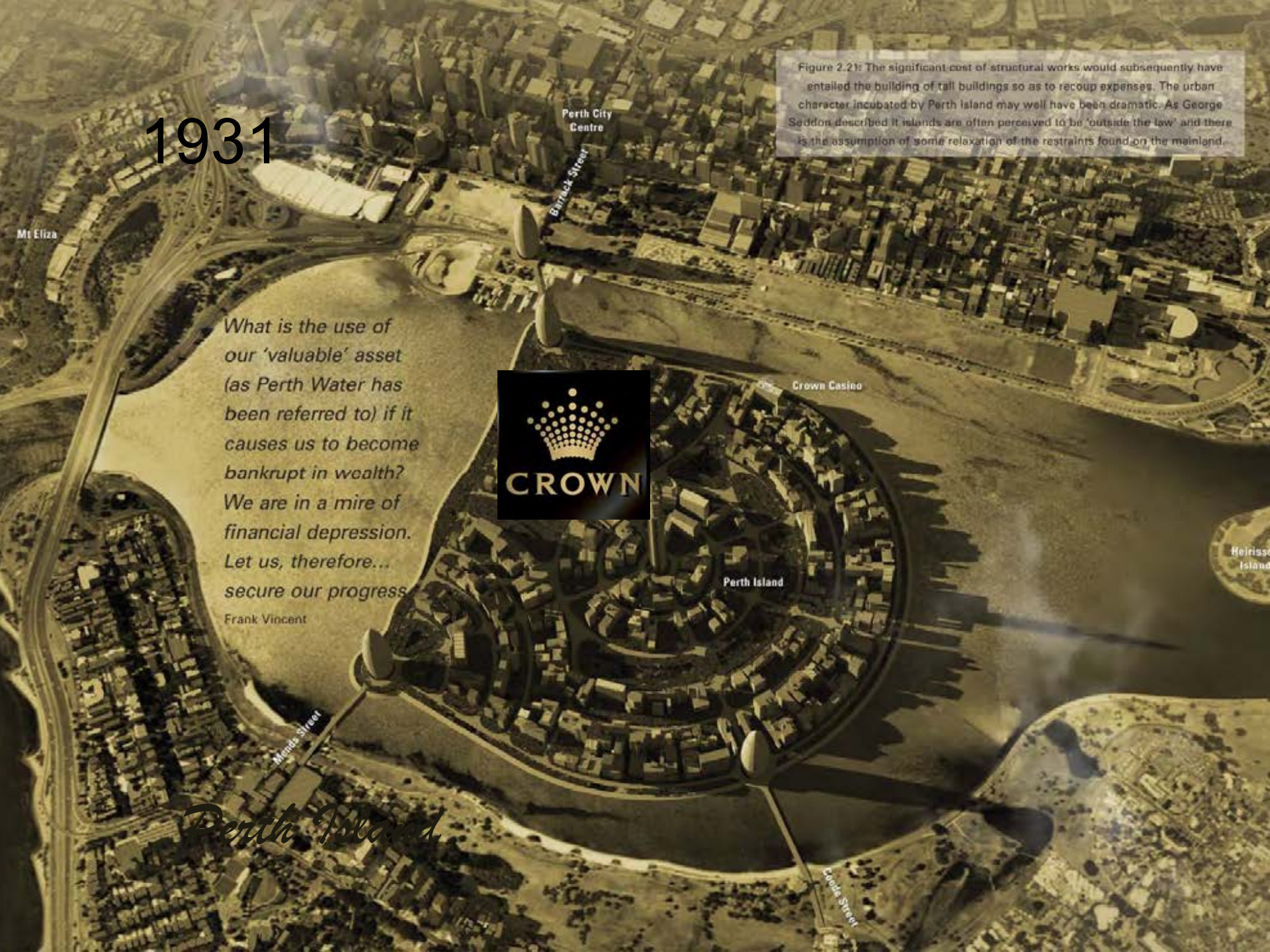

Darling scarp
Swan coastal plain

2

Domination

Figure 2.5: A city of Perth plan showing the Esplanade newly reclaimed from the river.

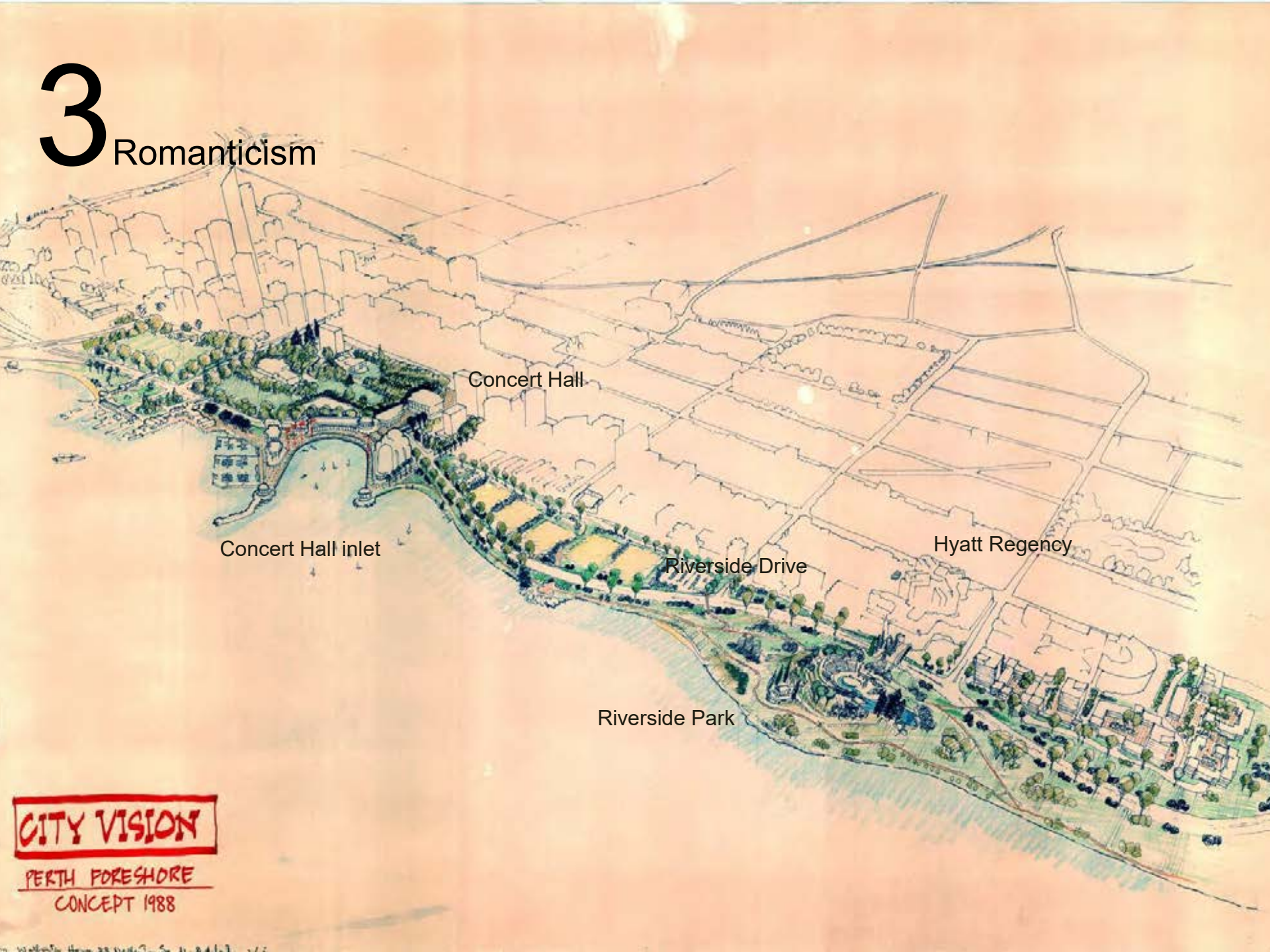
(Image courtesy of the State Records Office, Series 2168, cons 5698, item 1381/1382.)


1931
Figure 2.21: The significant cost of structural works would subsequently have entailed the building of tall buildings so as to recoup expenses. The urban character incubated by Perth Island may well have been dramatic. As George Seddon described it islands are often perceived to be 'outside the law' and there is the assumption of some relaxation of the restraints found on the mainland.
Perth City Centre
Barrack Street
Mt Eliza
What is the use of our 'valuable' asset (as Perth Water has been referred to) if it causes us to become bankrupt in wealth? We are in a mire of financial depression. Let us, therefore... secure our progress.
Frank Vincent
CROWN
Crown Casino
Perth Island
Heirisson Island
Mends Street
Perth Water
Coode Street


1829
1883
1903
1935
1960
1967

Figure 2.26: The danger of the vast reclaimed landscapes to the south of Perth is that they became the dumping ground for, what we would now regard as, the detritus of modernity, in particular car parks and freeways.

3 Romanticism



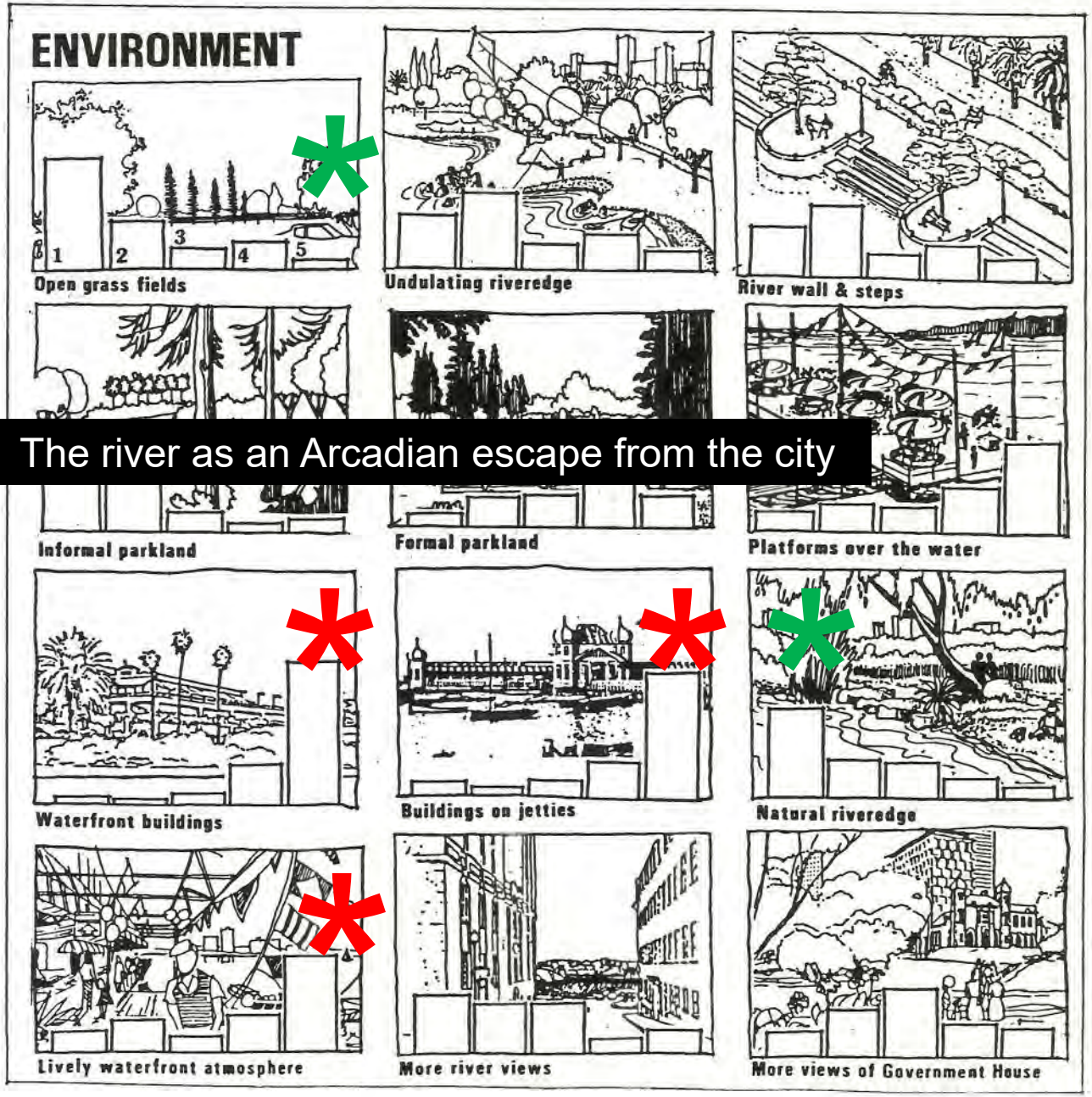
1988

SECTION 1 - QUESTIONNAIRE RESULTS

CENTRAL PERTH FORESHORE STUDY
OPPORTUNITIES · QUESTIONNAIRE

CITY of PERTH

1 — like a lot
2 — like
3 — don't mind one way or the other or cannot decide
4 — dislike
5 — dislike strongly



The river as an Arcadian escape from the city

1991 *Waterside Perth*

Perth Center

The Grand Crescent

Western Australia Gardens

Center for Environmental Learning

PERTH WATER

Waterside Perth

Happy New Year! - 1992 - Carr, Lynch, Hack and Sandell

J. Sandell

4 Consumation

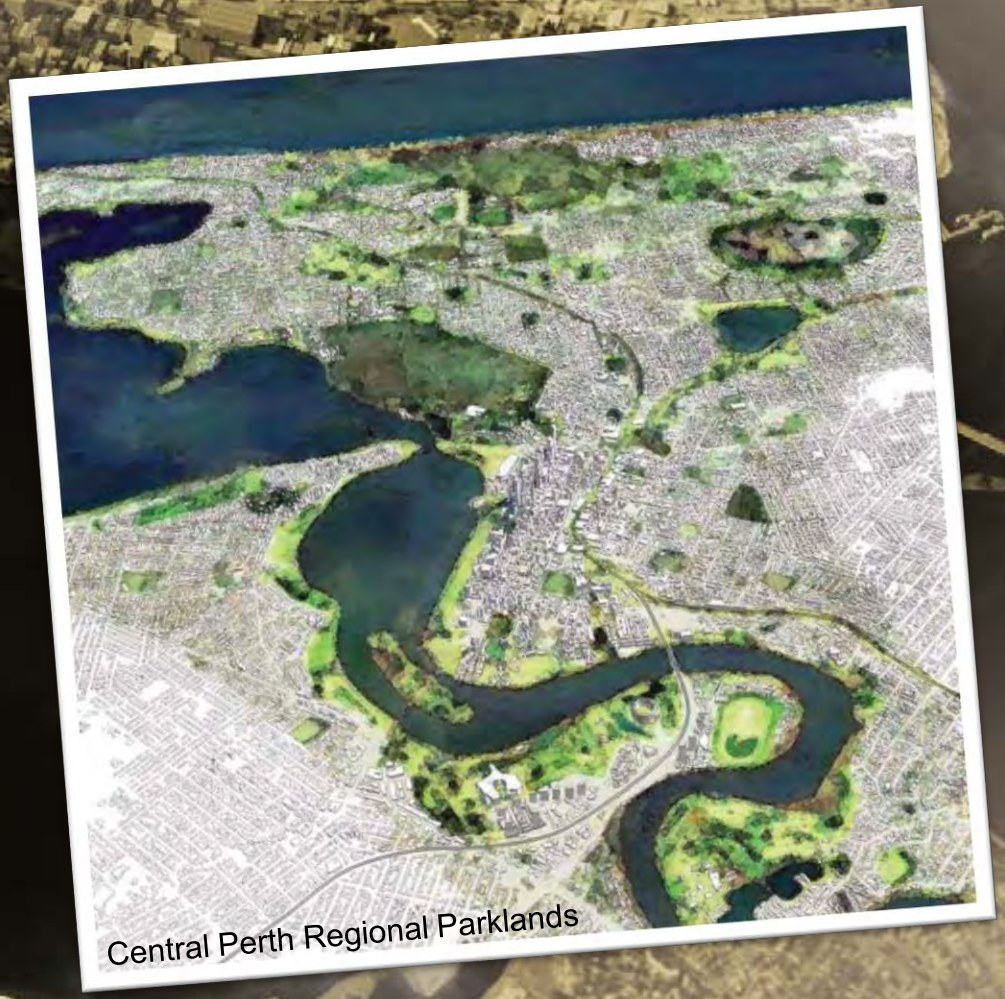
Esplanade Sq

River Circle

It is so pristine it is almost antiseptic


2016

5 humiliation



Central Perth Regional Parklands

Figure 1.2: Buneenboro (Perth Water)

As Ken Colbung explained: 'the Waugal eased and coiled his way down the Swan River, creating the bends in the river at Belmont and Maylands as he went. Before he reached the islands at the Causeway, he rattled his skin, shaking all the scales off in the mud as he wrestled to gain access to Perth Water. When he finally emerged through the arrows, he made another big coil to create the open expanse of water downstream of the Narrows. The Waugal then ascended Mount Eliza through a gap in the limestone cliffs by the way of the small valley or stormwater gully situated behind where the Swan Brewery stables were built.' In Patricia Vinnicombe, *Goonininup: A Site Complex on the Southern Side of Mount Eliza*, Western Australian Museum, Perth, 1988, p. 12.

SLR assumptions

The scenarios proposed in this presentation are based on SPP 2.6 SLRs at 2100 of +0.5m (medium projection) This is modelled with a 0.7m nominal highest astronomical tide (HAT) value for the region.

To capture the possible effects of the interaction between riverine flooding, storm tides and projected SLR we have also included a +2.5m water level which has been established by the Department of Water for the purpose of floodplain management.

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provide physical protection
cosystem services such
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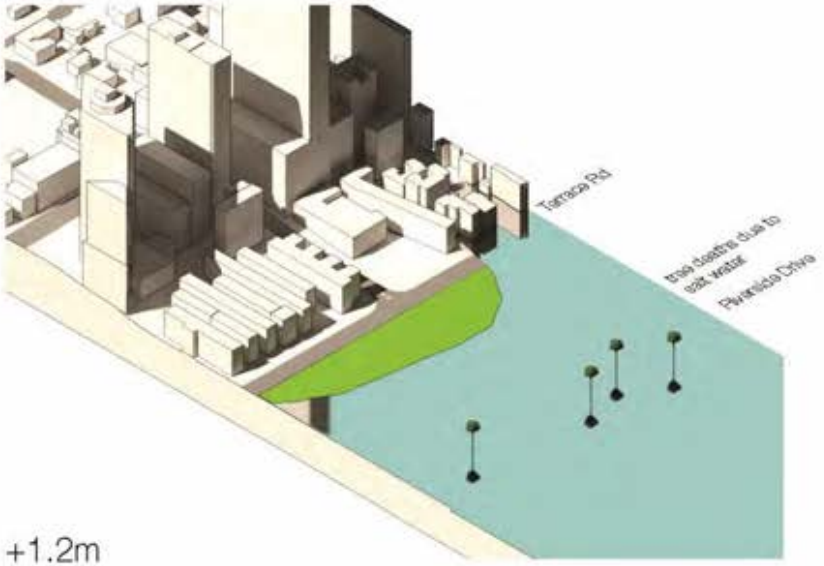

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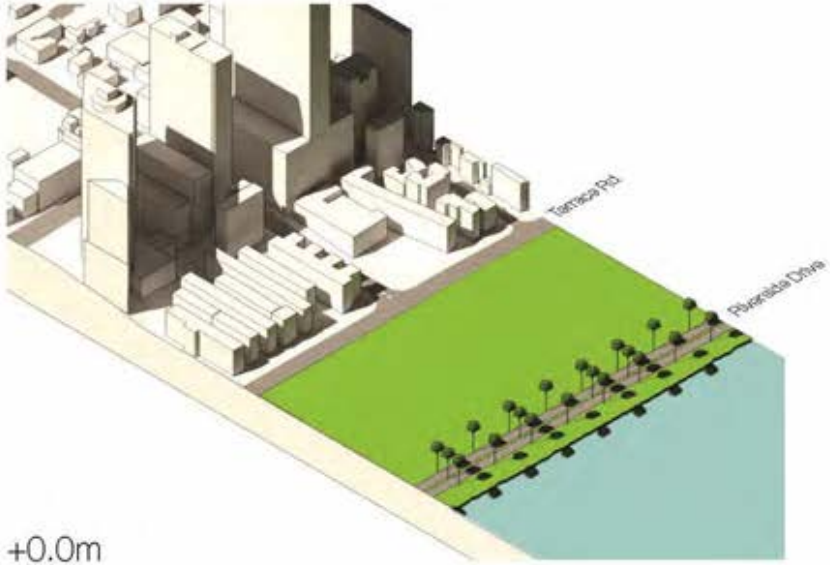

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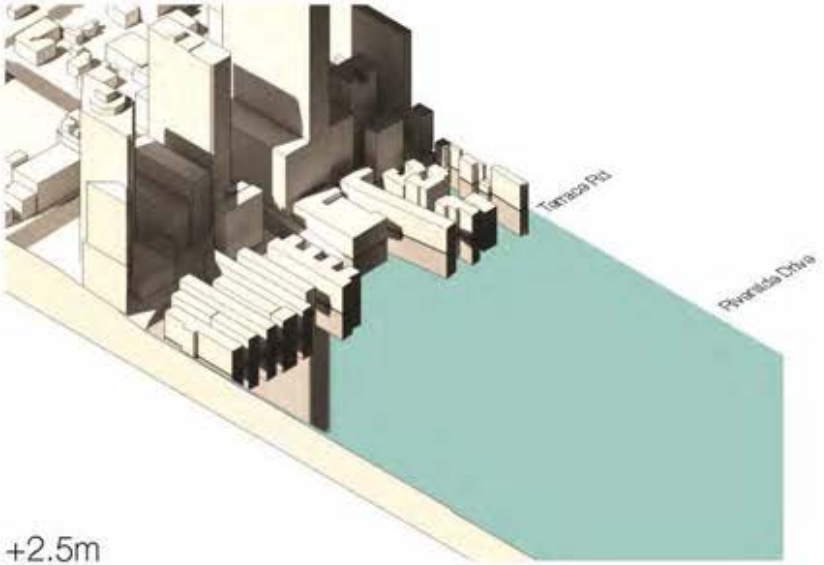
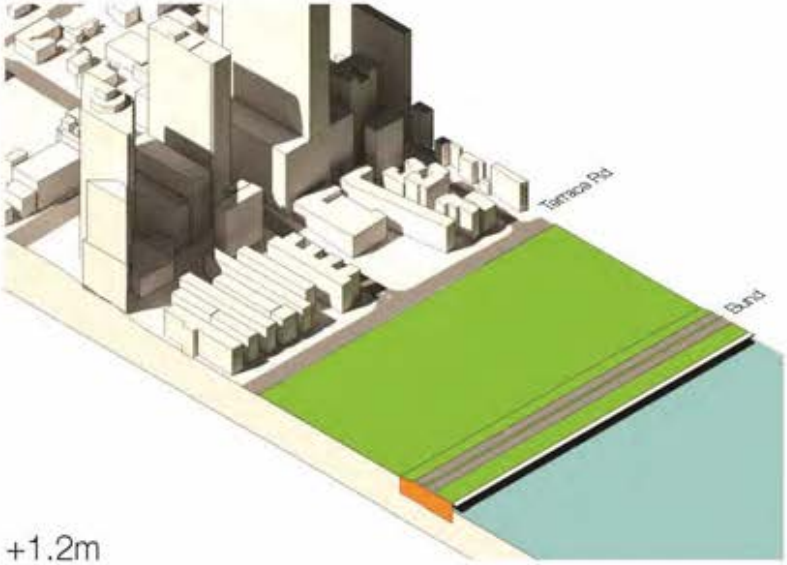


+2.5m

Langley Park foreshore, fortification

Fortification strategies in the Langley Park section could take the form of an earth bund running along the present day alignment of Riverside Drive. In a 1.2m SLR situation such a structure should be able to maintain the current area of foreshore devoted to active recreation. As such ecosystem services in relation to physical health should be able to be continued to be provided. However in a 2.5m SLR situation this bund is likely to fail for two reasons. Firstly, river water is likely to be able to seep under the bund. Secondly, if there is an extreme rainfall event storm water collecting behind the bund (on the inshore side) will need to be mechanically pumped into the river. At this point the ecosystem service provision of the Langley Park section will be compromised with respect to physical health and mental health (due to a lack of space for recreation- passive or active), and the mitigation of flood risk and coastal protection (the foreshore will cease to provide physical protection from floods and storm surges). At the same time, ecosystem services such water quality protection (that require wetland environments not found in the current Langley park section) are not likely to improve in a fortification SLR response.



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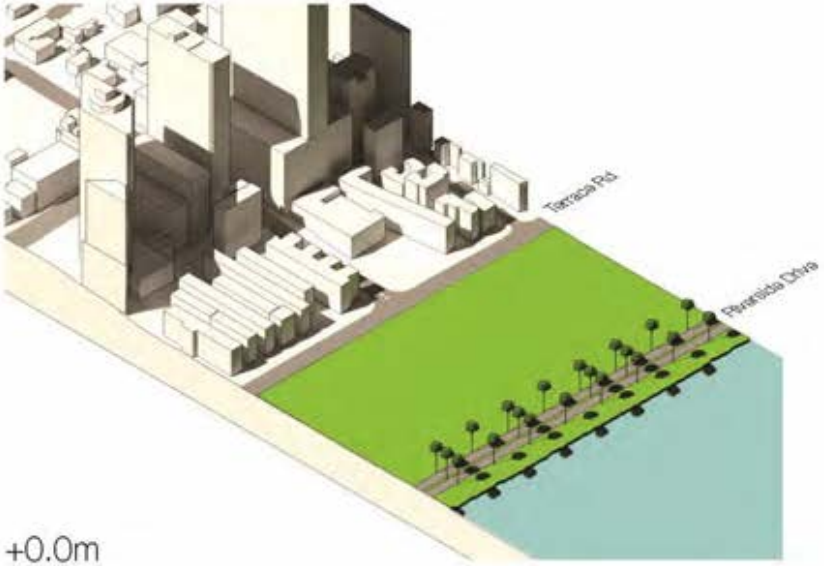

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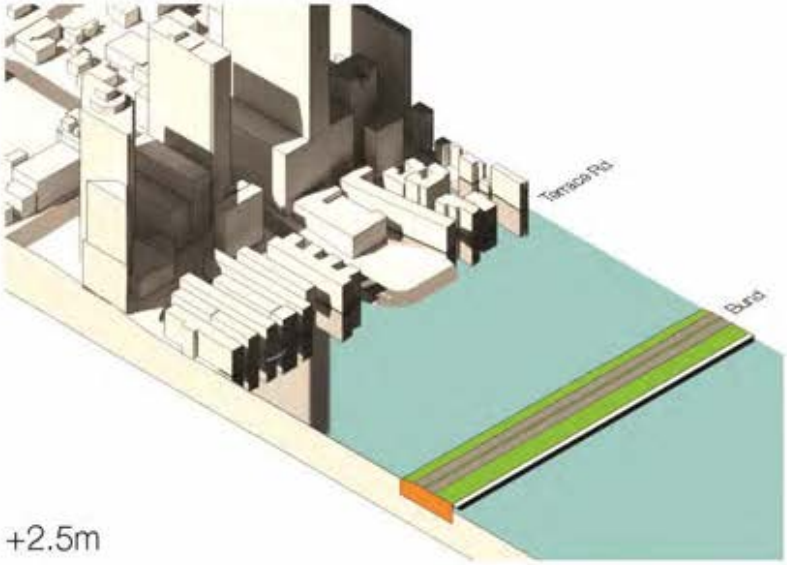
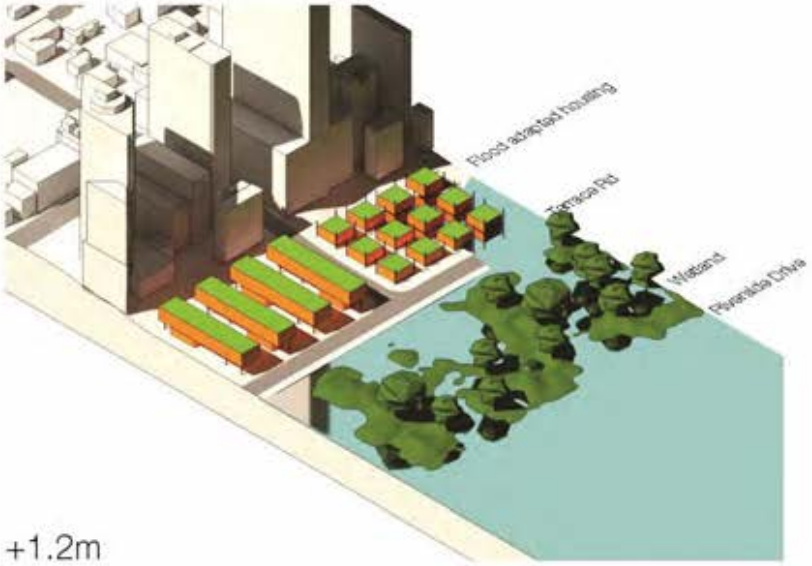


+2.5m

Langley Park foreshore, accommodation

Accommodation strategies in the Langley Park section could take the form of new building structures that are designed to allow for periodic inundation of the lower floors, as well as increased wetland planting in the foreshore reserve which should reduce the impact of flood events as well as filtering contaminants. In a 1.2m SLR situation such a reconfigured foreshore should be able to be continue to be provide physical and mental health ecosystem services – however there would be a shift towards more passive recreation (such as walking) from active recreation (such as ball sports) which has larger spatial requirements. At the same time ecosystem service provision in relation to water quality protection, mitigation of flood risk and coastal protection should all increase with the introduction of wetland environments. However in a 2.5m SLR situation the reconfigured foreshore environment will be substantially underwater and as such the provision of all of the ecosystem services will be reduced accordingly.



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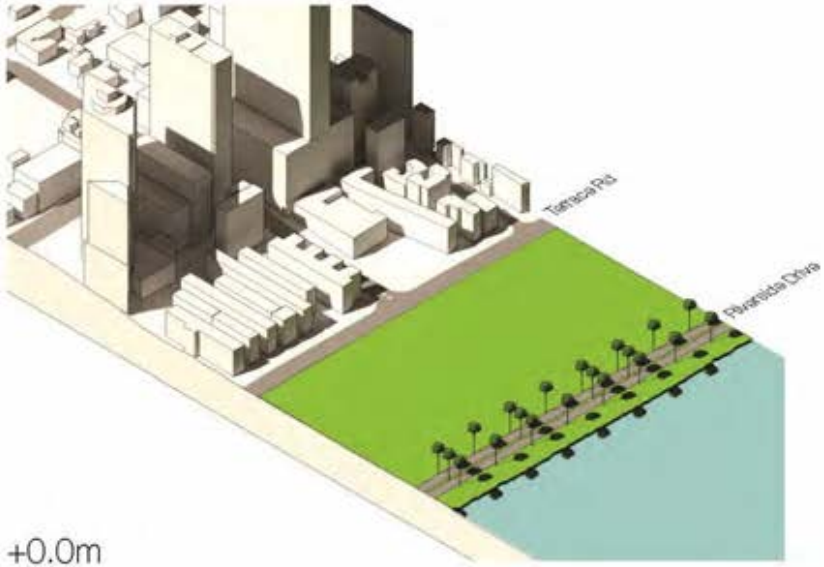

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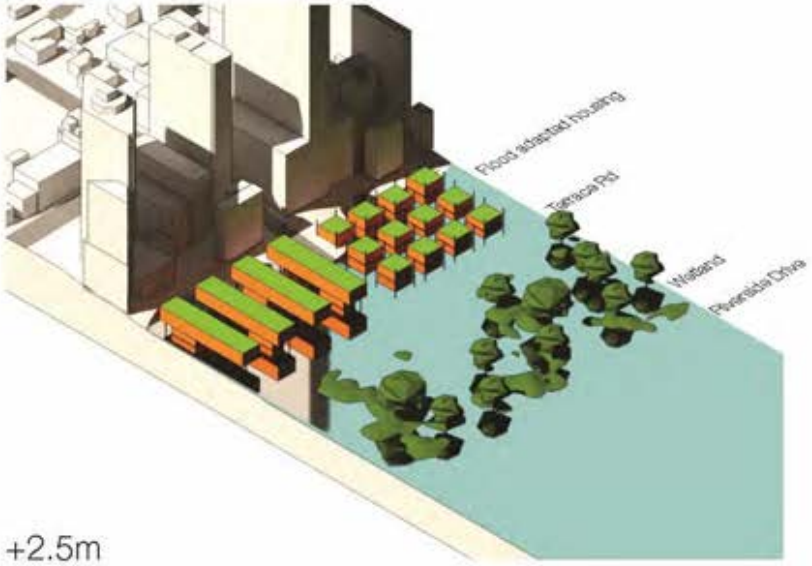
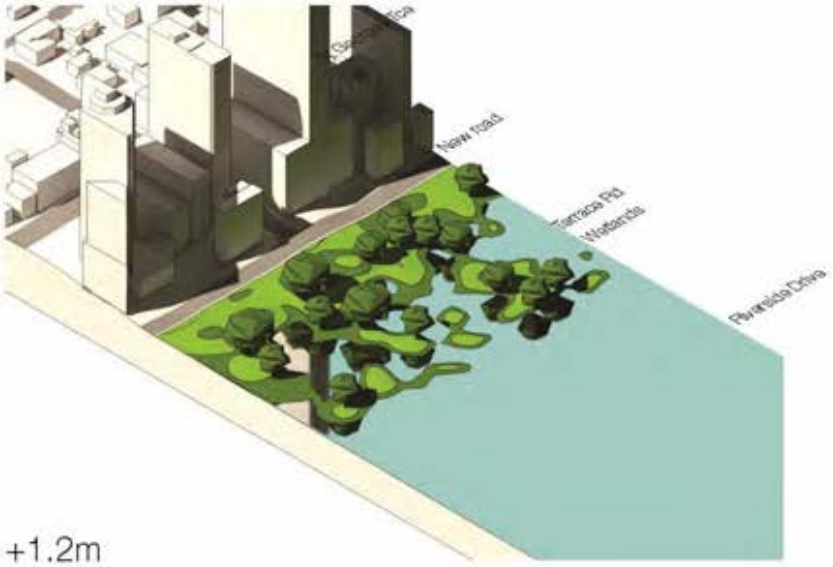


+2.5m

Langley Park foreshore, retreat

Retreat strategies in the Langley Park section could take the form of a rezoning of currently urban zoned land to a foreshore zoning and the subsequent demolition of buildings which have reached the end of their life-span. Both of these activities would be triggered by certain amounts of SLR (E.g. a 0.5m increase, a 1.0m increase etc.). This strategy essentially would allow the foreshore reserve to migrate inland as SLR occurs. Due to the foreshore width being largely maintained, and the introduction of wetland environments, such a strategy could see ecosystem services such as physical and mental health, sense of place, water quality protection, mitigation of flood risk and coastal protection be maintained, and in the case of water quality protection substantially increase.



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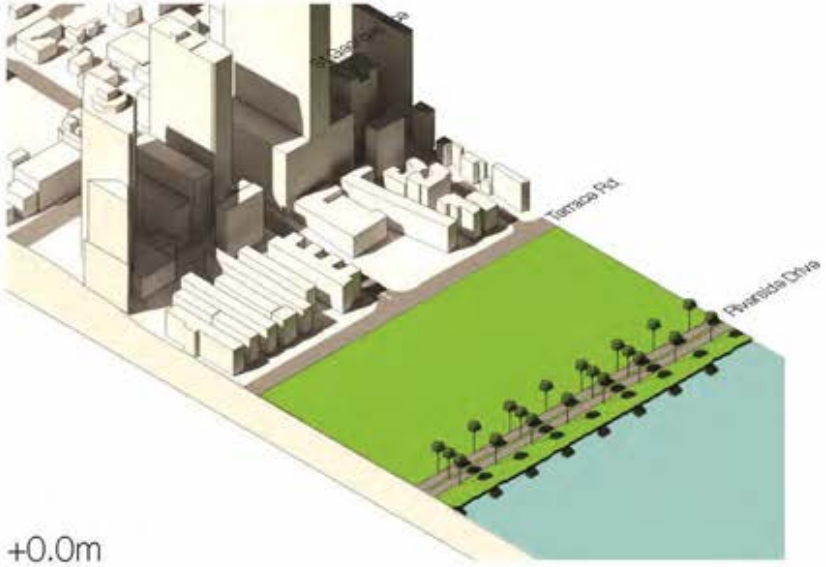

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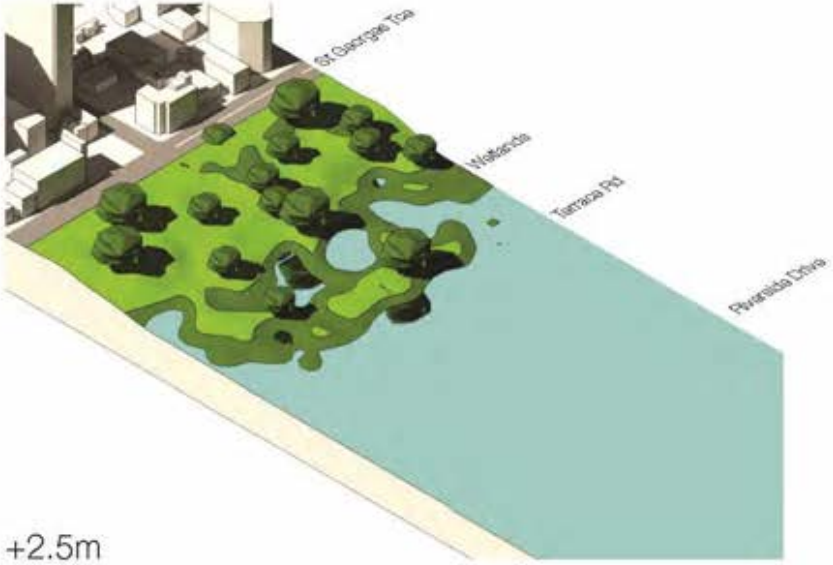


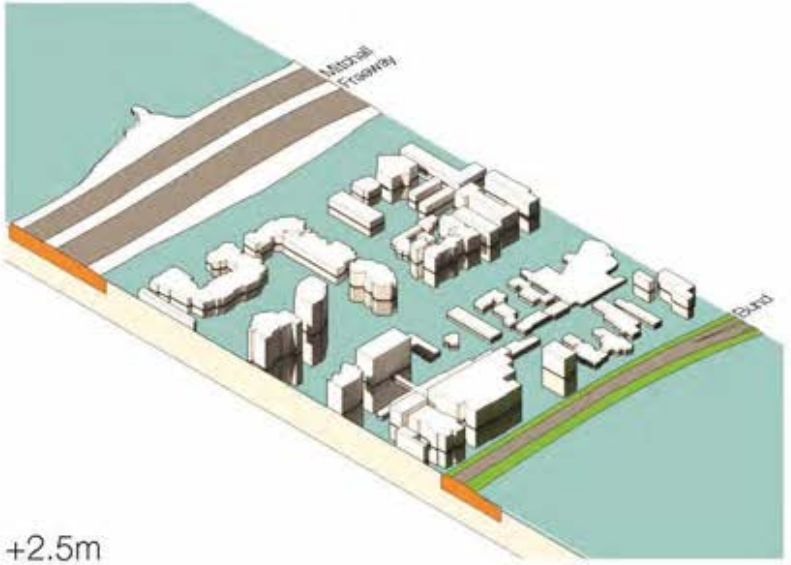
+2.5m

Mill Point foreshore, fortification

Fortification strategies in the Langley Park section could take the form of an earth bund running along the present day alignment of the South Perth Esplanade and the Mitchell Freeway. In a 1.2m SLR situation such a structure should be able to maintain the current area of foreshore devoted to recreation (typically walking and cycling). As such ecosystem services in relation to physical health should be able to be continued to be provided. However in a 2.5m SLR situation this bund is likely to fail for two reasons. Firstly, river water is likely to be able to seep under the bund. Secondly, if there is an extreme rainfall event storm water collecting behind the bund (on the inshore side) will need to be mechanically pumped into the river. At this point the ecosystem service provision of the Mill Point section will be compromised with respect to physical health and mental health (due to a lack of space for recreation- passive or active), and the mitigation of flood risk and coastal protection (the foreshore will cease to provide physical protection from floods and other storm surges). At the same time, ecosystem services such water quality protection (that require wetland environments not found in the current Langley park section) are not likely to improve in such a BAU SLR response.

+1.2m

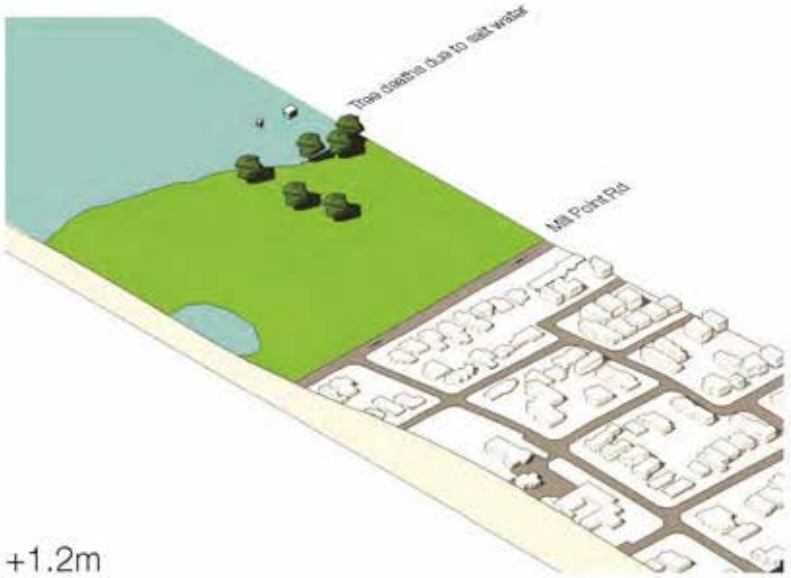
+0.0m



+2.5m

South Perth foreshore, BAU

Without a fortify, accommodate or retreat strategy in place SLR between 1.2m and 2.5m will see the South Perth foreshore area almost entirely reclaimed by the river. This will be accompanied by a substantial decrease in ecosystem service provision in relation physical and mental health (due to a lack of space for recreation), sense of place (Perth's characteristic green foreshore reserves will be replaced by an urban edge to the river and many trees will die because of salt water incursion), and the mitigation of flood risk and coastal protection (the foreshore will cease to provide physical protection from floods and other storm events). At the same time, ecosystem services such water quality protection (that require wetland environments not found in the current Langley park section) are not likely to improve in such a BAU SLR response.



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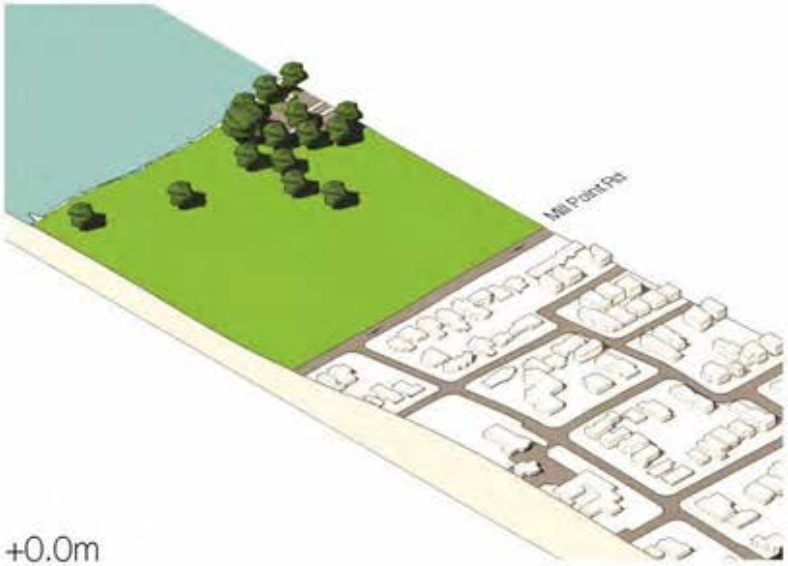

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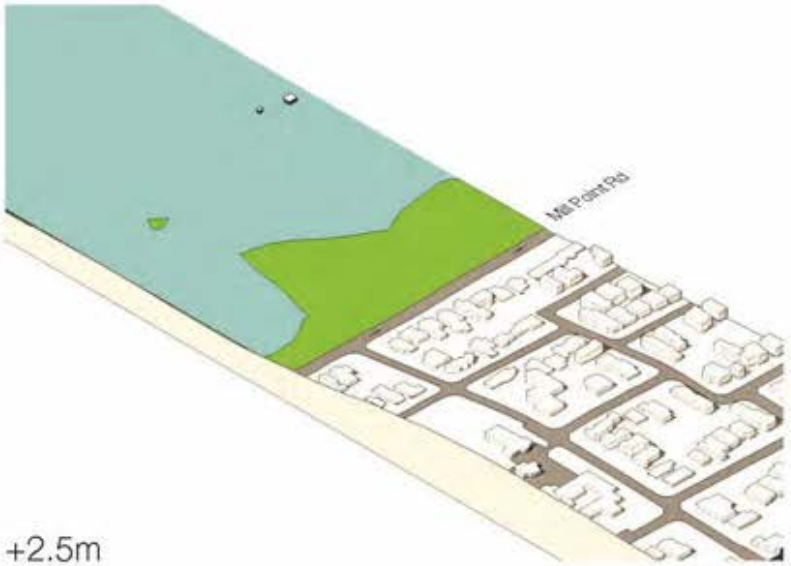
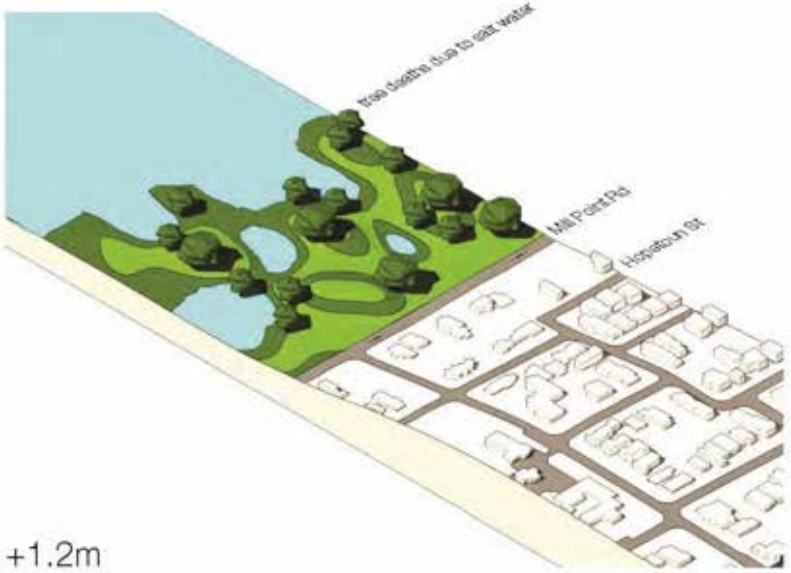


+2.5m

South Perth foreshore, retreat

Retreat strategies in the South Perth foreshore section could take the form of a rezoning of currently urban zoned land to a foreshore zoning and the demolition of buildings which have reached the end of their life-span. Both of these activities would be triggered by certain amounts of SLR (E.g. a 0.5m increase, a 1.0m increase etc.). This strategy essentially would allow the foreshore reserve to migrate inland as SLR occurs. Due to the foreshore width being largely maintained, and the introduction of wetland environments, such a strategy could see ecosystem services such as physical and mental health, sense of place, water quality protection, mitigation of flood risk and coastal protection be maintained, and in the case of water quality protection, substantially increase.



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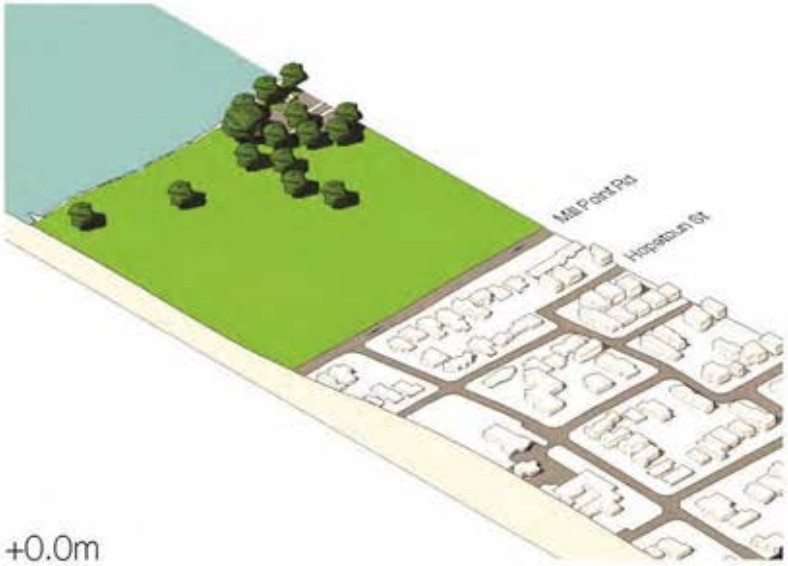

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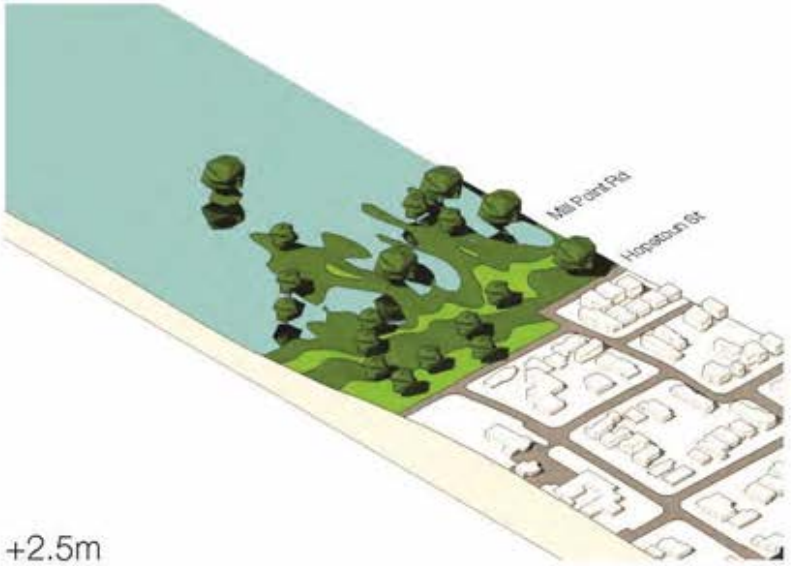
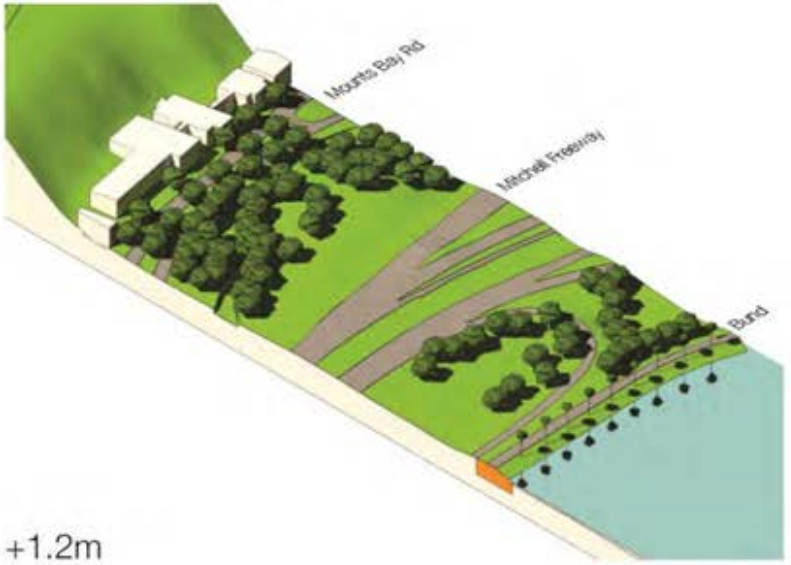


+2.5m

Freeway interchange foreshore, fortification

Fortification strategies in the freeway interchange section could take the form of an earth bund running along the present day alignment of Riverside Drive. In a 1.2m SLR situation such a structure should be able to maintain the current area of the John Oldham and David Carr parks devoted to passive recreation. As such ecosystem services in relation to physical health should be able to be continued to be provided. However in a 2.5m SLR situation this bund is likely to fail for two reasons. Firstly, river water is likely to be able to seep under the bund. Secondly, if there is an extreme rainfall event storm water collecting behind the bund (on the inshore side) will need to be mechanically pumped into the river. At this point the ecosystem service provision of the freeway interchange section will be compromised with respect to physical health and mental health (due to a lack of space for recreation, and the death of trees due to salt water incursion), and the mitigation of flood risk and coastal protection (the foreshore will cease to provide physical protection from floods and other storm surges). At the same time, ecosystem services such water quality protection (that require wetland environments not found in the current freeway interchange section) are not likely to improve in such a BAU SLR response.



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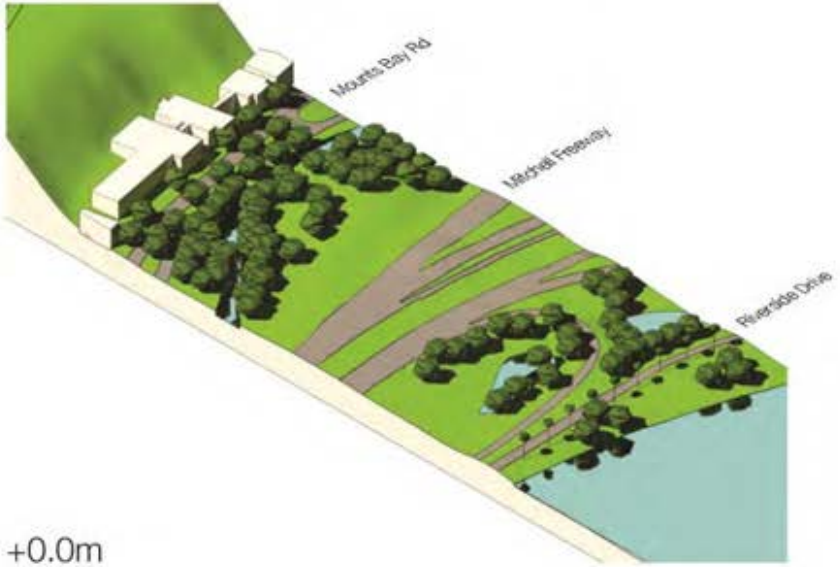

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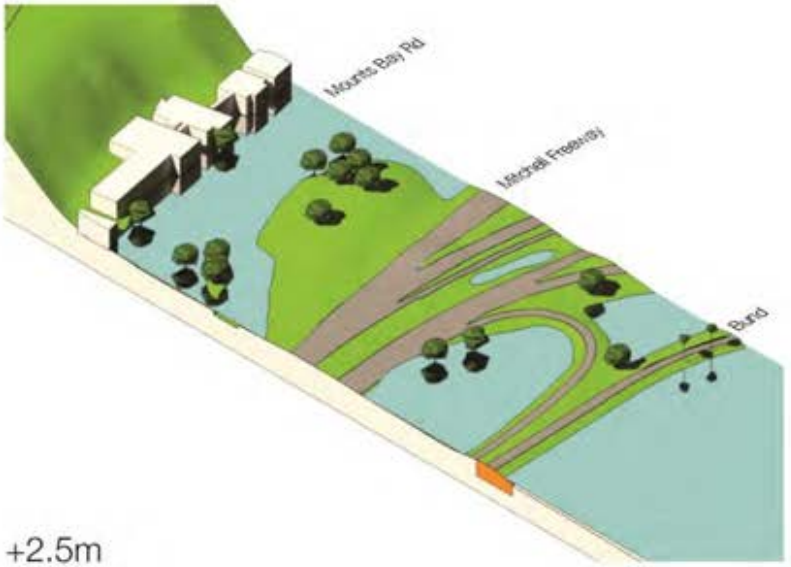
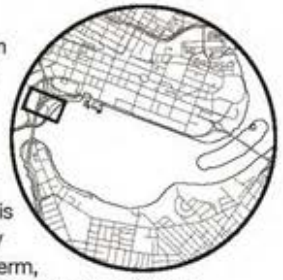
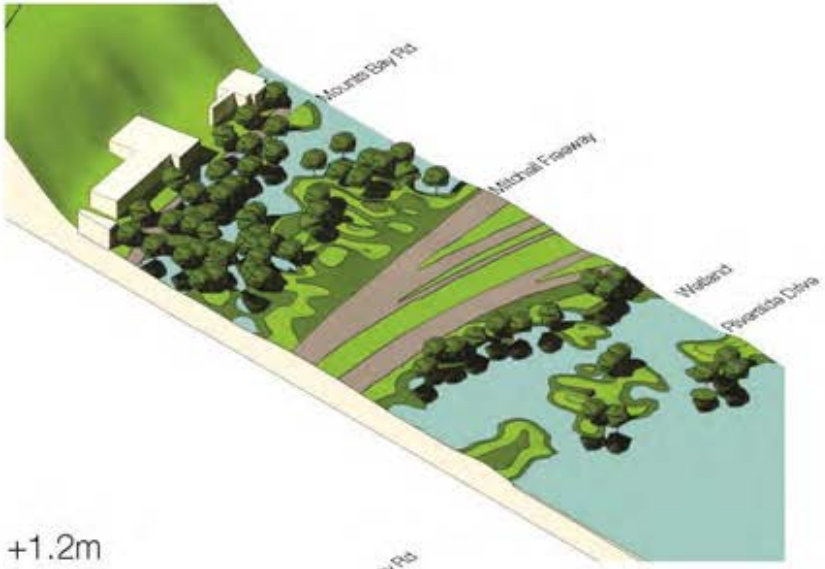


+2.5m

Freeway interchange foreshore, retreat

Retreat strategies in the freeway interchange section could take the form of a rezoning of currently urban zoned land along Mounts Bay Road to a foreshore zoning and the demolition of buildings which have reached the end of their life-span. Both of these activities would be triggered by certain amounts of SLR (E.g. a 0.5m increase, a 1.0m increase etc.). This strategy essentially would allow the existing freeway park and currently urban areas to be, in the longer term, reconstituted as wetlands. As such ecosystem services such as physical and mental health, and sense of place could be maintained, while services such as water quality protection could substantially increase.





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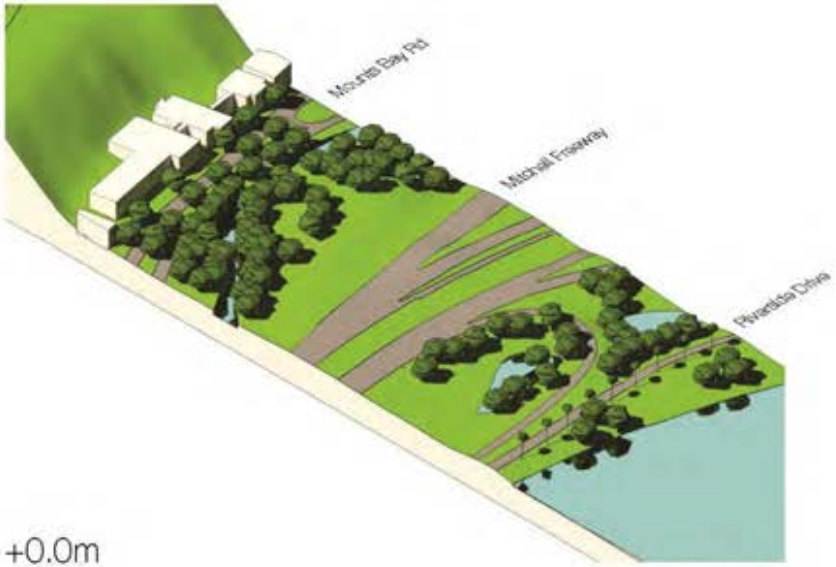

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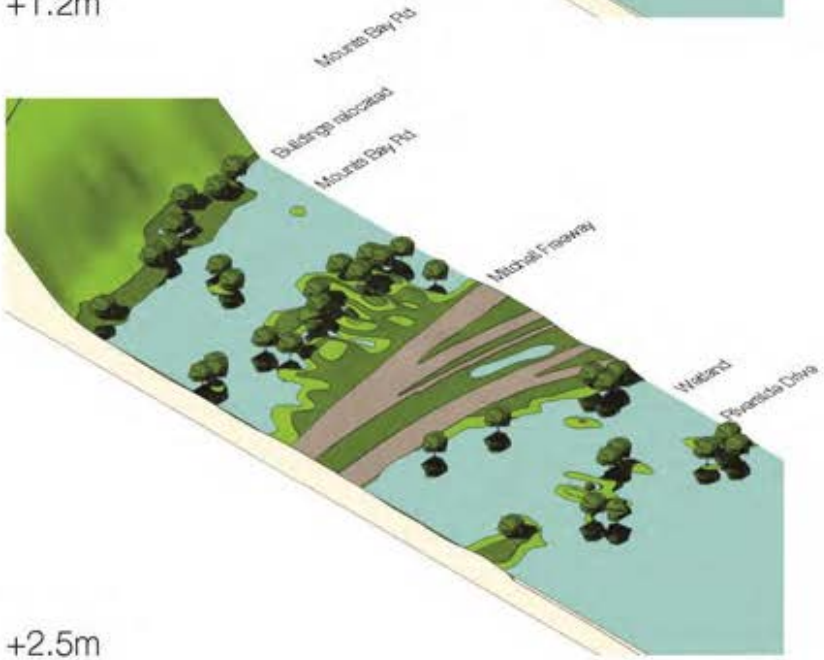

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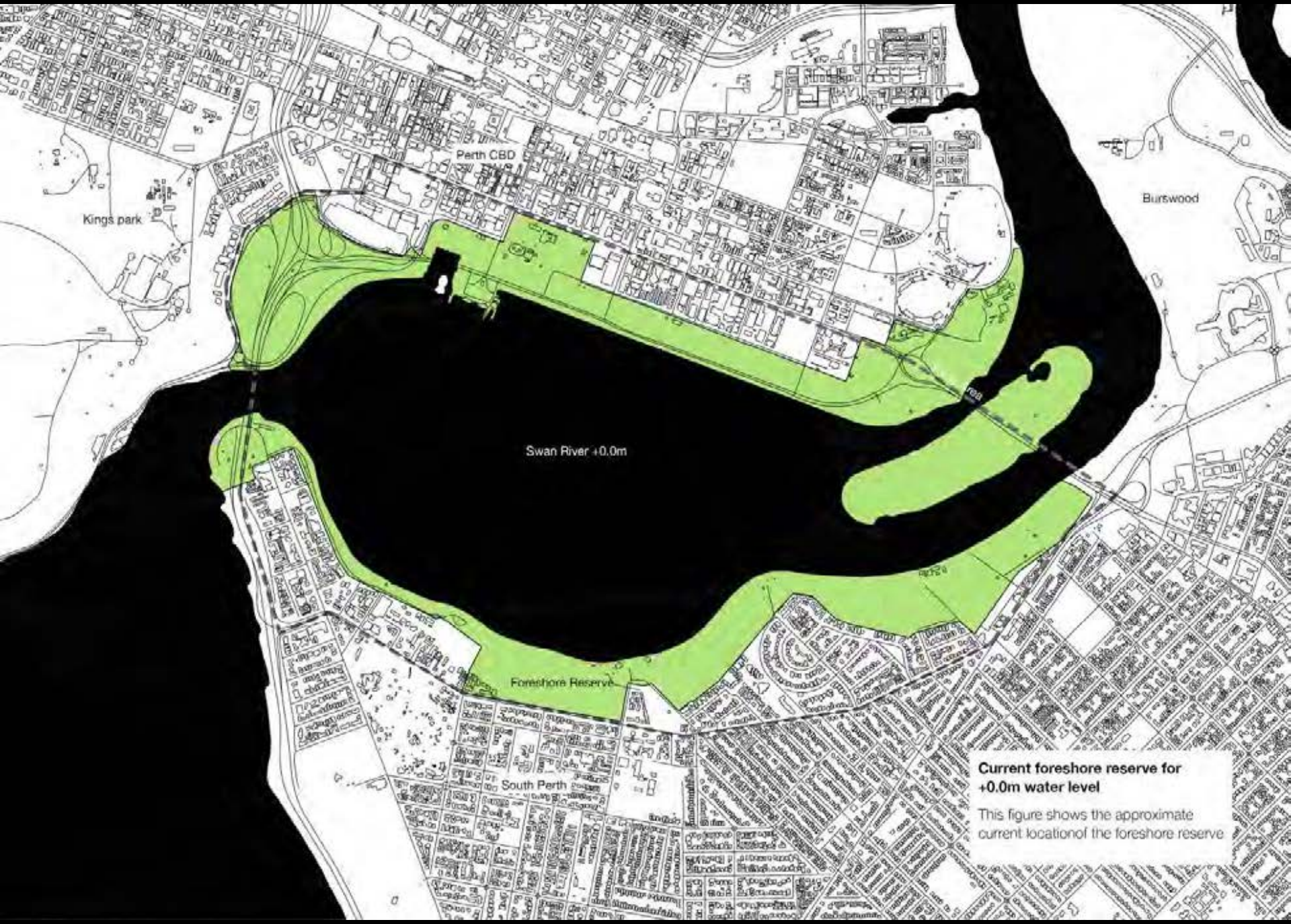
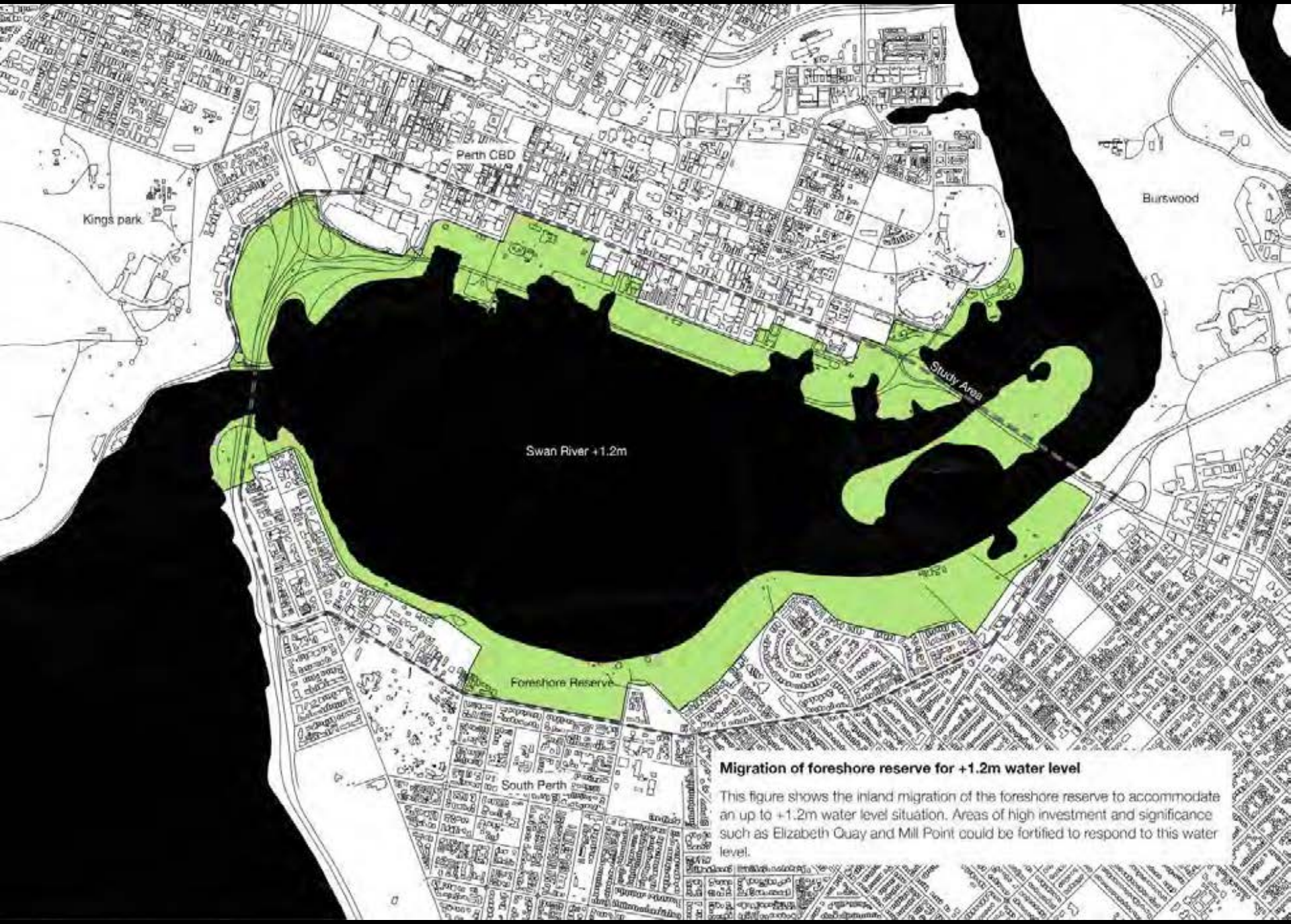

Perth CBD
Kings park
Burswood
Swan River +0.0m
Foreshore Reserve
South Perth
Current foreshore reserve for +0.0m water level
This figure shows the approximate current locationof the foreshore reserve



Migration of foreshore reserve for +1.2m water level

This figure shows the inland migration of the foreshore reserve to accommodate an up to +1.2m water level situation. Areas of high investment and significance such as Elizabeth Quay and Mill Point could be fortified to respond to this water level.

Migration of foreshore reserve for +1.6m water level

This figure shows the inland migration of the foreshore reserve to accommodate an up to +1.6m water level situation. The migration of the foreshore reserve would require the rezoning of urban areas to a foreshore reserve zoning, particularly in Mill Point in South Perth and between Terrace Road and St Georges Terrace at the foot of the city. Areas of high investment and significance such as Elizabeth Quay could be possibly fortified to respond to this water level.

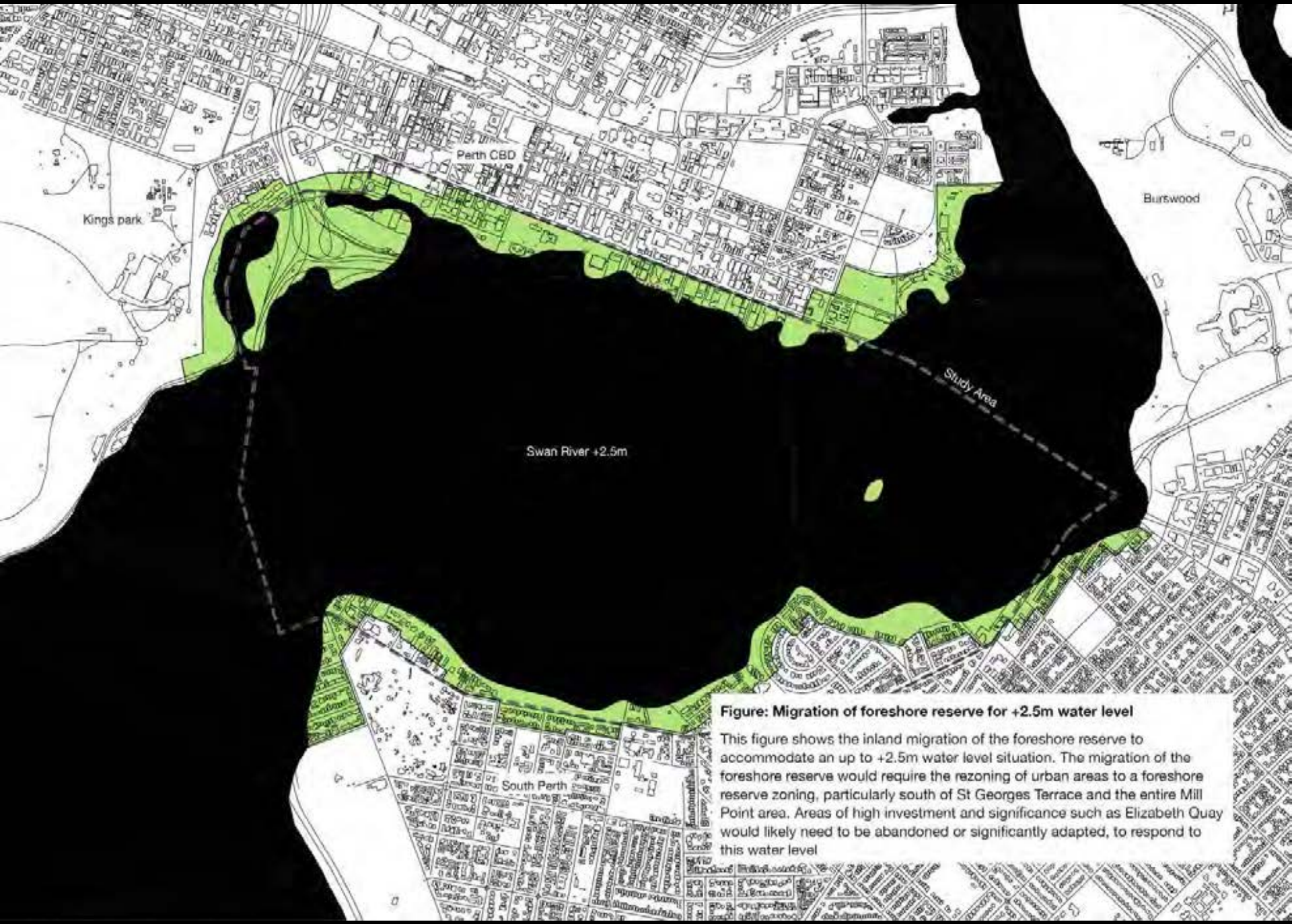
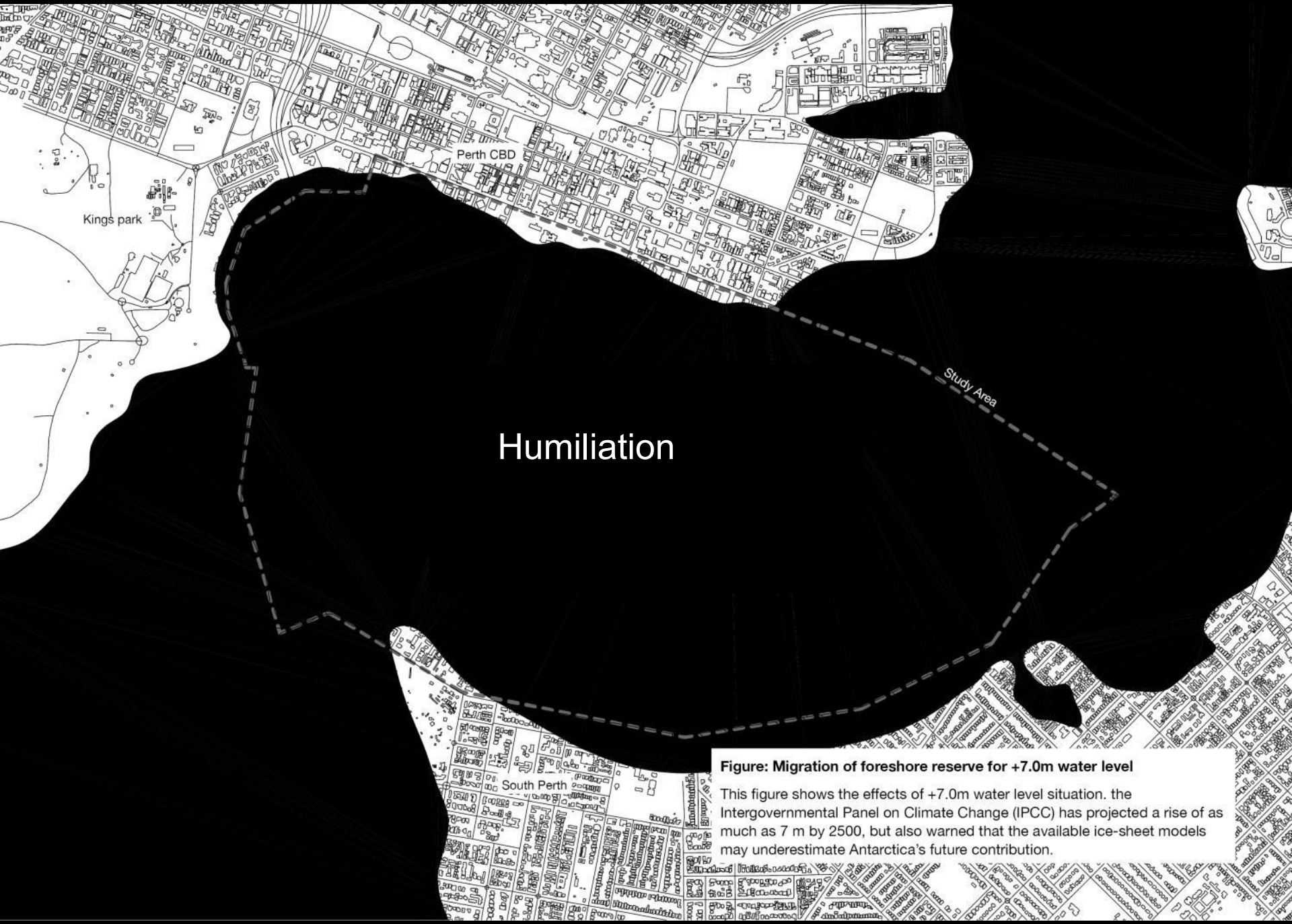


Figure: Migration of foreshore reserve for +2.5m water level

This figure shows the inland migration of the foreshore reserve to accommodate an up to +2.5m water level situation. The migration of the foreshore reserve would require the rezoning of urban areas to a foreshore reserve zoning, particularly south of St Georges Terrace and the entire Mill Point area. Areas of high investment and significance such as Elizabeth Quay would likely need to be abandoned or significantly adapted, to respond to this water level



Humiliation

Figure: Migration of foreshore reserve for +7.0m water level

This figure shows the effects of +7.0m water level situation. the Intergovernmental Panel on Climate Change (IPCC) has projected a rise of as much as 7 m by 2500, but also warned that the available ice-sheet models may underestimate Antarctica's future contribution.

9. Contributors

The research work of AUDRC is supported by the Metropolitan Redevelopment Authority.

Julian Bolleter
Julian is an Assistant Professor at the Australian Urban Design Research Centre (AUDRC) at the University of Western Australia. His role at the AUDRC includes teaching a master's program in urban design and conducting urban design related research and design projects.

Joerg Baumeister
Joerg is Director of the Australian Urban Design Research Centre (AUDRC) and has been researching, practising, educating and exploring Urban Design and Architecture for more than 20 year in Australia, Europe, Africa, and on the Arabian Peninsula.

Zoe Myers
Dr Zoe Myers is a researcher and lecturer at the Australian Urban Design Research Centre (AUDRC) at the University of Western Australia, where she contributes to state and local research and design projects, and teaches in the Master in Urban Design. Zoe holds a PhD in Australian History, and has experience spanning policy, project management, strategic communications, and web design. Her current interests are the design of ecologically regenerative and creative urban spaces, and ensuring urban design research has genuine social impact.

Iwan is an urban design intern at the Australian Urban Design Research Centre (AUDRC) currently assisting in design and research projects at the centre. He is a recent urban design graduate from AUDRC and has a background in architecture and town planning.

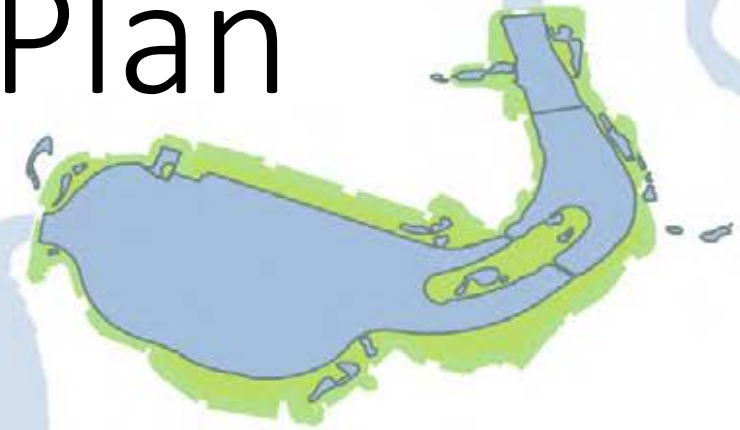
Bill Grace
Bill is a Fellow of Engineers Australia with over 30 years of experience in infrastructure and development in Australia and internationally. He is an independent sustainability adviser, researcher and consultant, and an Adjunct Professor at the University of Western Australia's Urban Design Research Centre. Bill works at the interface of economics and sustainability, advising state and local government agencies and land developers. He has extensive multi-disciplinary multi-faceted experience in providing strategic advice on sustainability aspects of land development, including integrated urban water cycle management, sustainable energy, materials and waste management and green building design.

Department of Biodiversity, Conservation and Attractions

SWAN CANNING RIVERPARK

Perth Water Precinct Plan

Shaping the Swan Rivers Future



Greg Comiskey – Town Planner

The river breathes

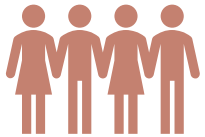
Water levels rise and fall with the rain and tides

Fringing vegetation cleans and oxygenates water as it enters the river

The river cools Perth as it flows to the sea

What is Perth Water

A place of noongar spirituality



A gathering place

The lungs of the City

What is the Perth Water Precinct Plan?

To guide future use, activities and development within Perth Water

What is the Perth Water Precinct Plan

5-year strategic plan

Promote cooperation, understanding and alignment among managing authorities

Strong community engagement focus
- Local groups, Indigenous, WA-wide

Address gaps in decision making – reflect / endorse established plans and frameworks

Consider and balance:

- Recreation
- Commercial nodes
- Access, facilities and infrastructure
- Environmental enhancement and management

Cross Government Policy

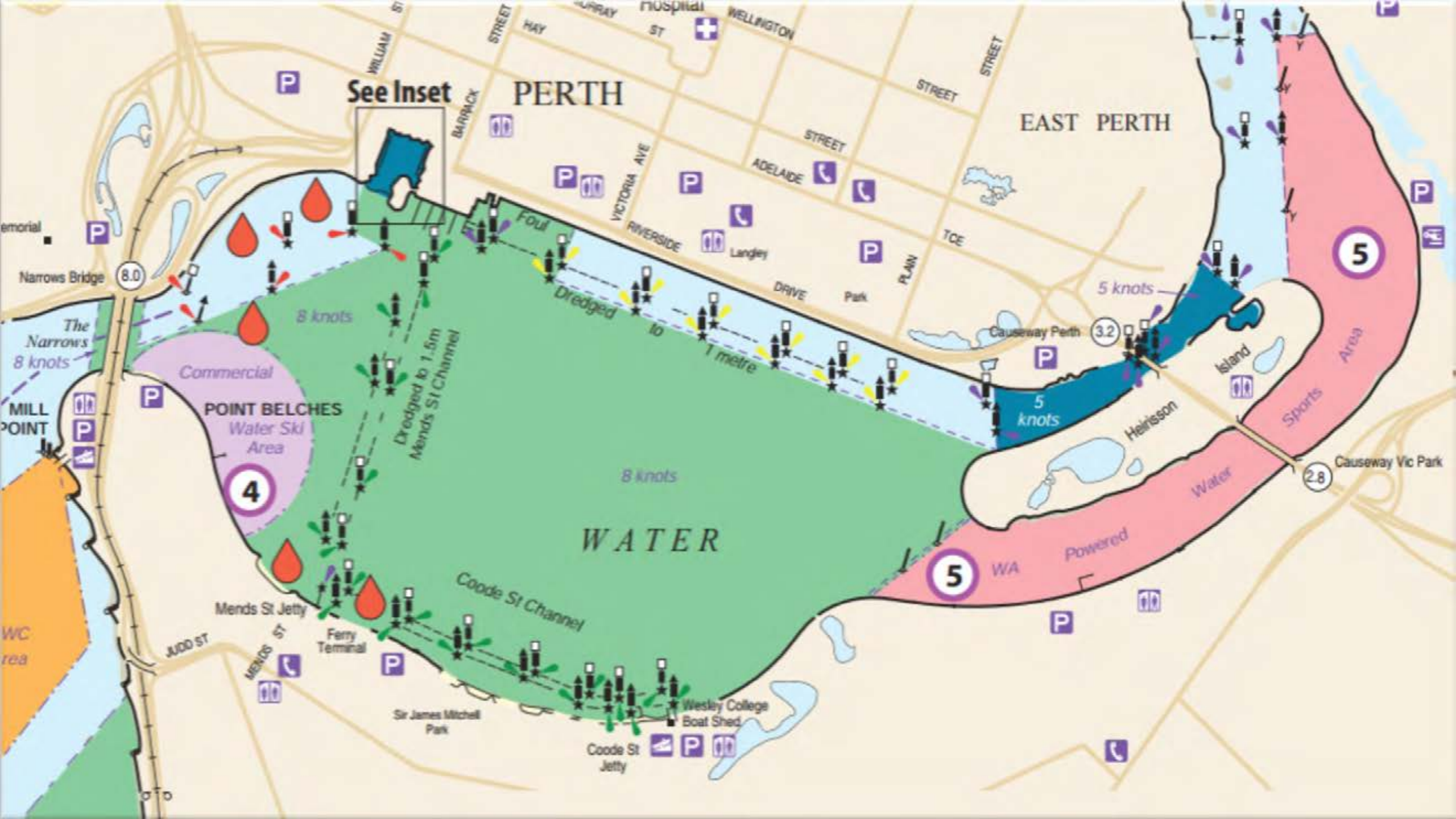
- City of Perth
- City of South Perth
- Department of Transport
- Metropolitan Redevelopment Authority
- Tourism Western Australia
- Town of Victoria Park
- Western Australian Planning Commission
- Department of Biodiversity, Conservation and Attraction

A few simple questions

What do you want to see on Perth Water?


BARGE CO.


South West
in the
...CITY

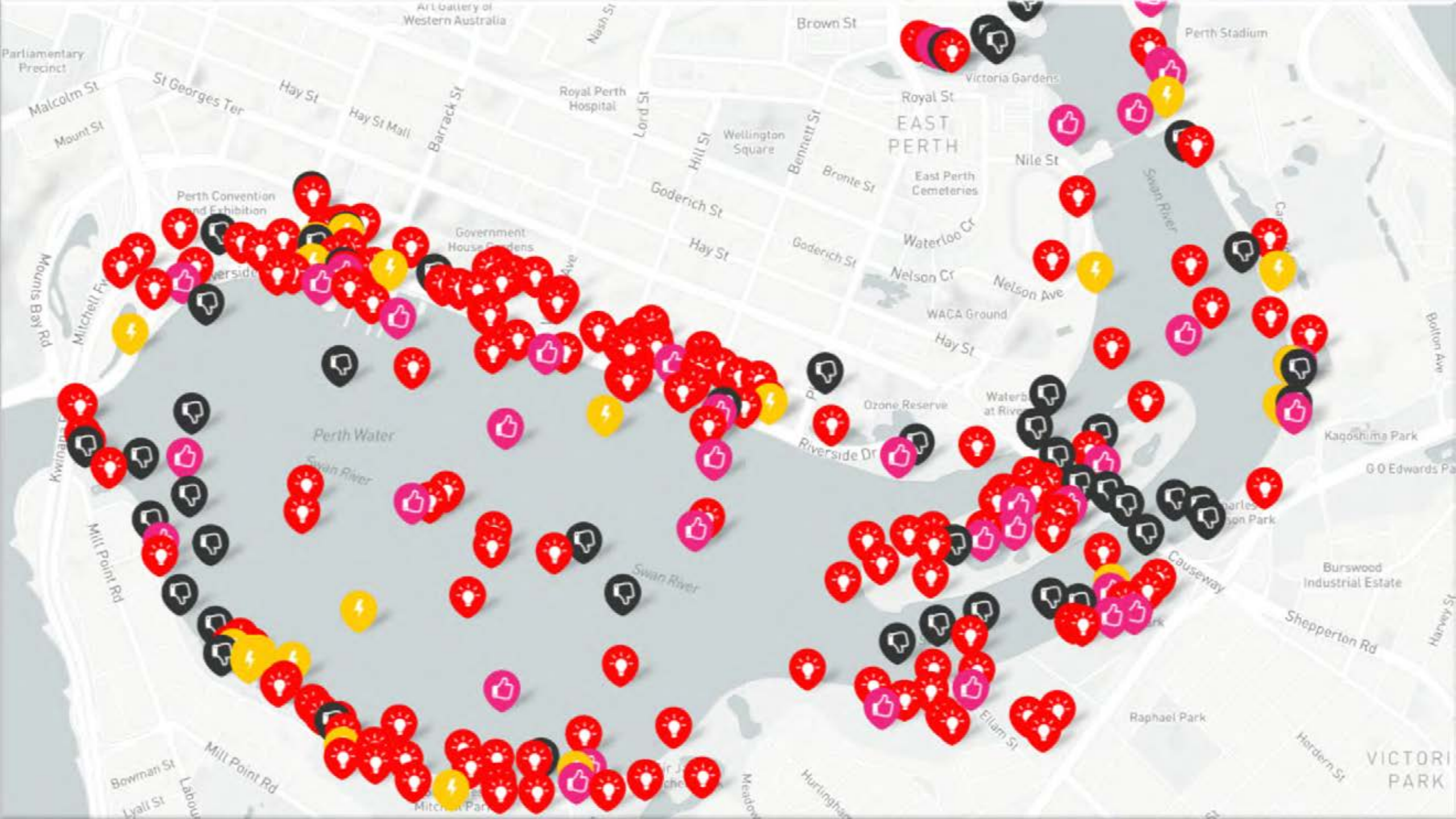

See Inset
PERTH
EAST PERTH
Narrows Bridge
8.0
The Narrows
8 knots
MILL POINT
POINT BELCHES
Commercial
Water Ski Area
4
8 knots
Dredged to 1.5m Mends St Channel
Foul
Dredged to 1 metre
8 knots
WATER
Coode St Channel
5 knots
Causeway Perth
3.2
5
5 knots
Heirisson Island
Sports Area
Causeway Vic Park
2.8
WA Powered Water
Mends St Jetty
Ferry Terminal
Sir James Mitchell Park
Wesley College Boat Shed
Coode St Jetty
HAY ST
WELLINGTON STREET
ADELAIDE STREET
VICTORIA AVE
RIVERSIDE DRIVE
TCE
PLAIN
Langley Park
JUDD ST
MENDS ST

A Community Discussion

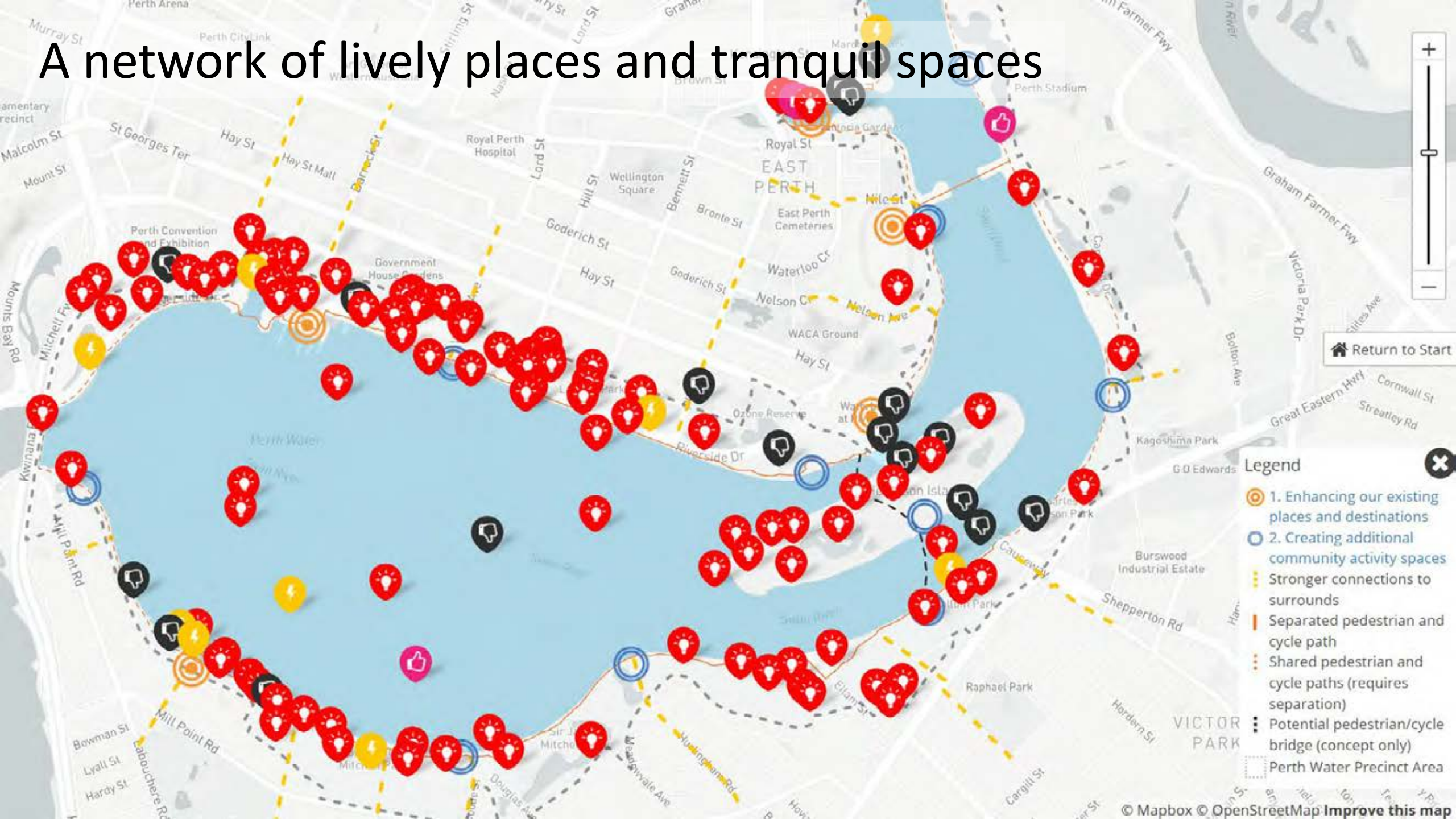
- Prior to drafting the Precinct Plan
- Web based community consultation
- Focussed workshops
  - Noongar community
  - Local interest groups
  - Government stakeholders

Key Consultation Themes

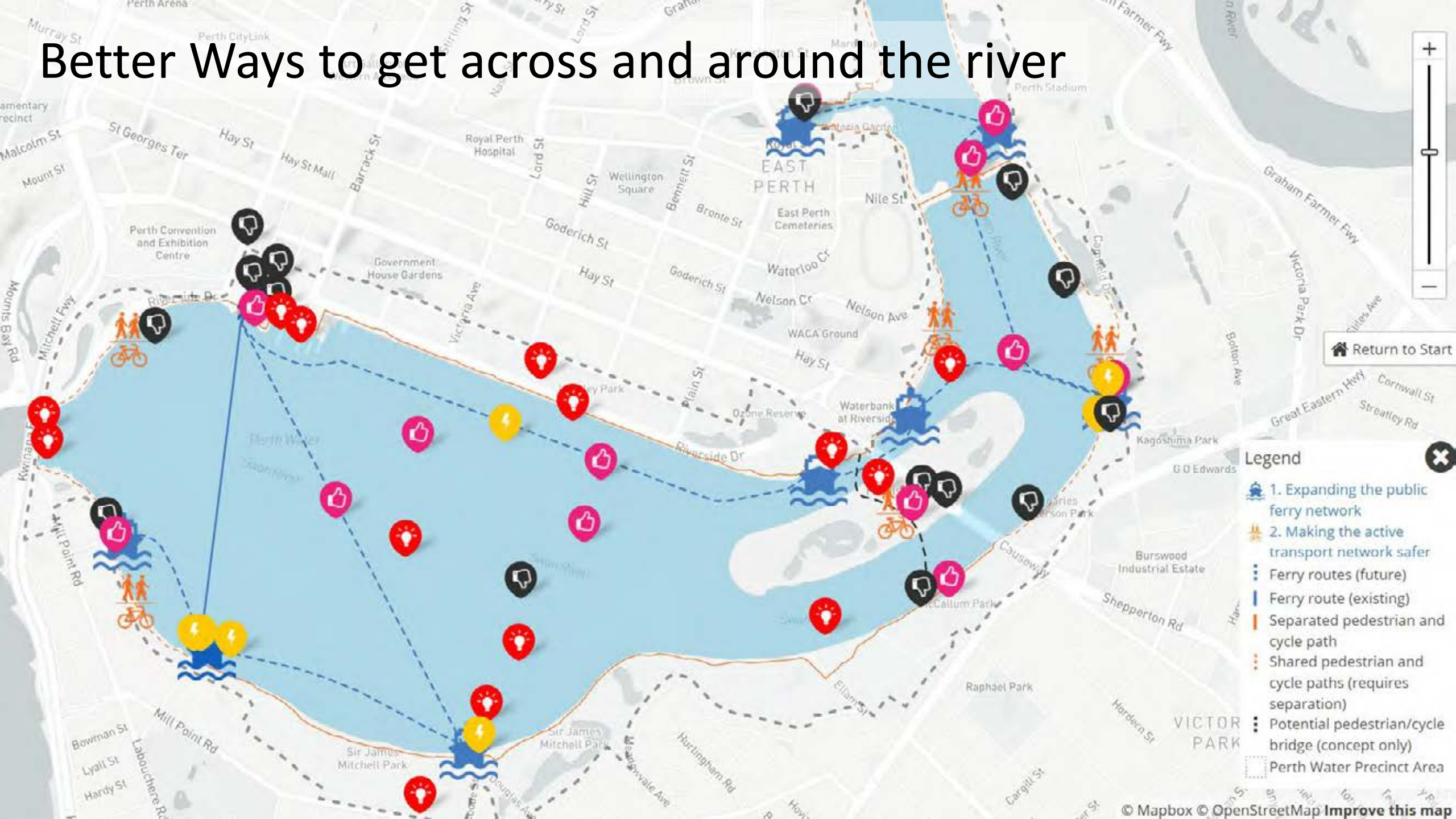
- Let the river breathe
- See, touch, experience river life
- Celebrating culture and community
- More ways to get across and around the river
- A network of lively places and tranquil spaces


Art Gallery of Western Australia
Brown St
Perth Stadium
Parliamentary Precinct
Malcolm St
St Georges Ter
Hay St
Hay St Mall
Barrack St
Royal Perth Hospital
Lord St
Hill St
Wellington Square
Bennett St
Victoria Gardens
Royal St
EAST PERTH
Nile St
Mount St
Bronte St
East Perth Cemeteries
Perth Convention and Exhibition
Goderich St
Government House Gardens
Waterloo Cr
Nelson Cr
Nelson Ave
WACA Ground
Mounts Bay Rd
Mitchell Fwy
Perth Water
Swan River
Ozone Reserve
Riverside Dr
Kwinana Fwy
Mill Point Rd
Causeway
Burswood Industrial Estate
Kagoshima Park
Shepperton Rd
Raphael Park
Ellam St
Bowman St
Lyall St
Hurlingham
Hordern St
VICTORIA PARK

A network of lively places and tranquil spaces

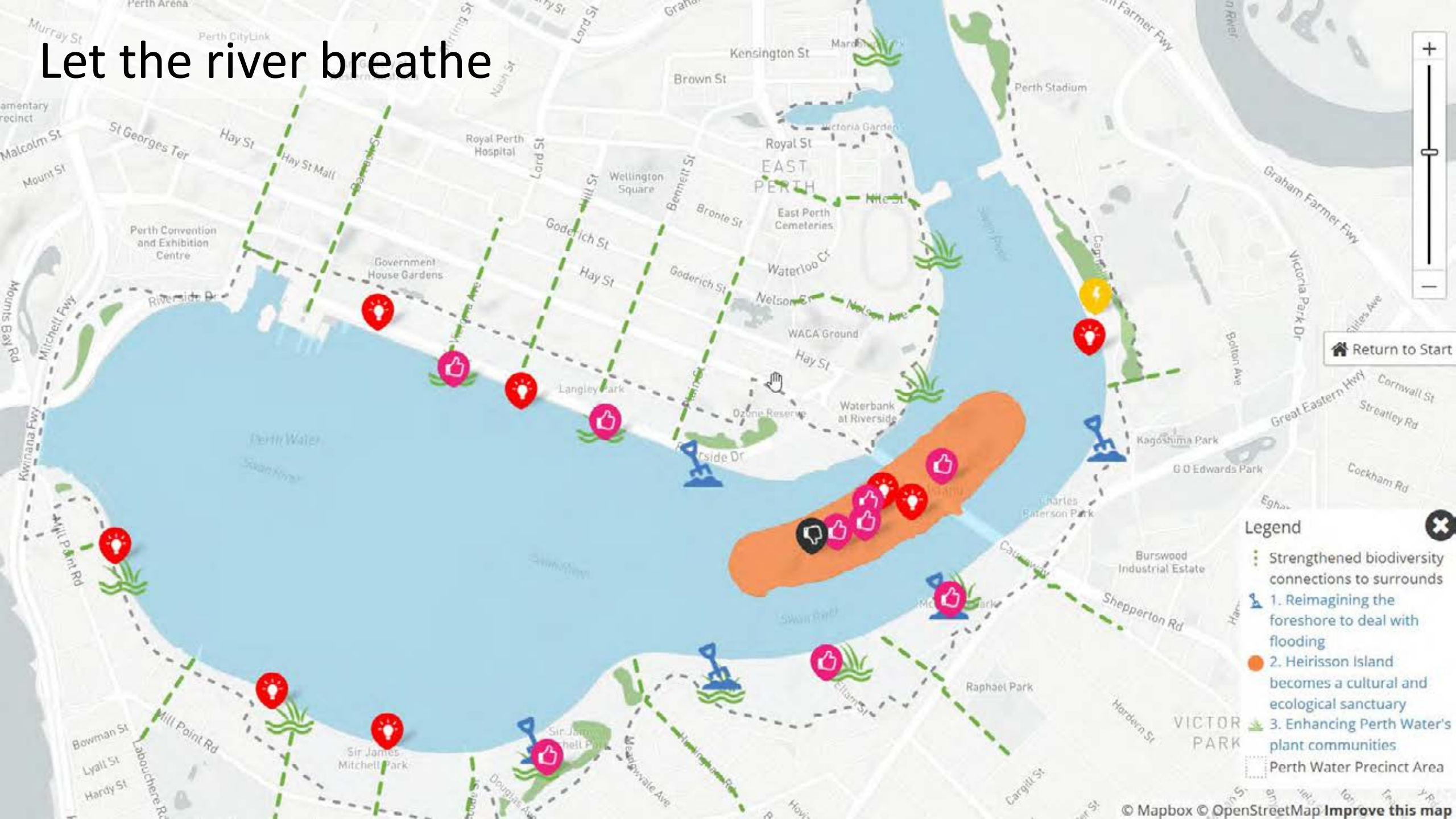


Better Ways to get across and around the river

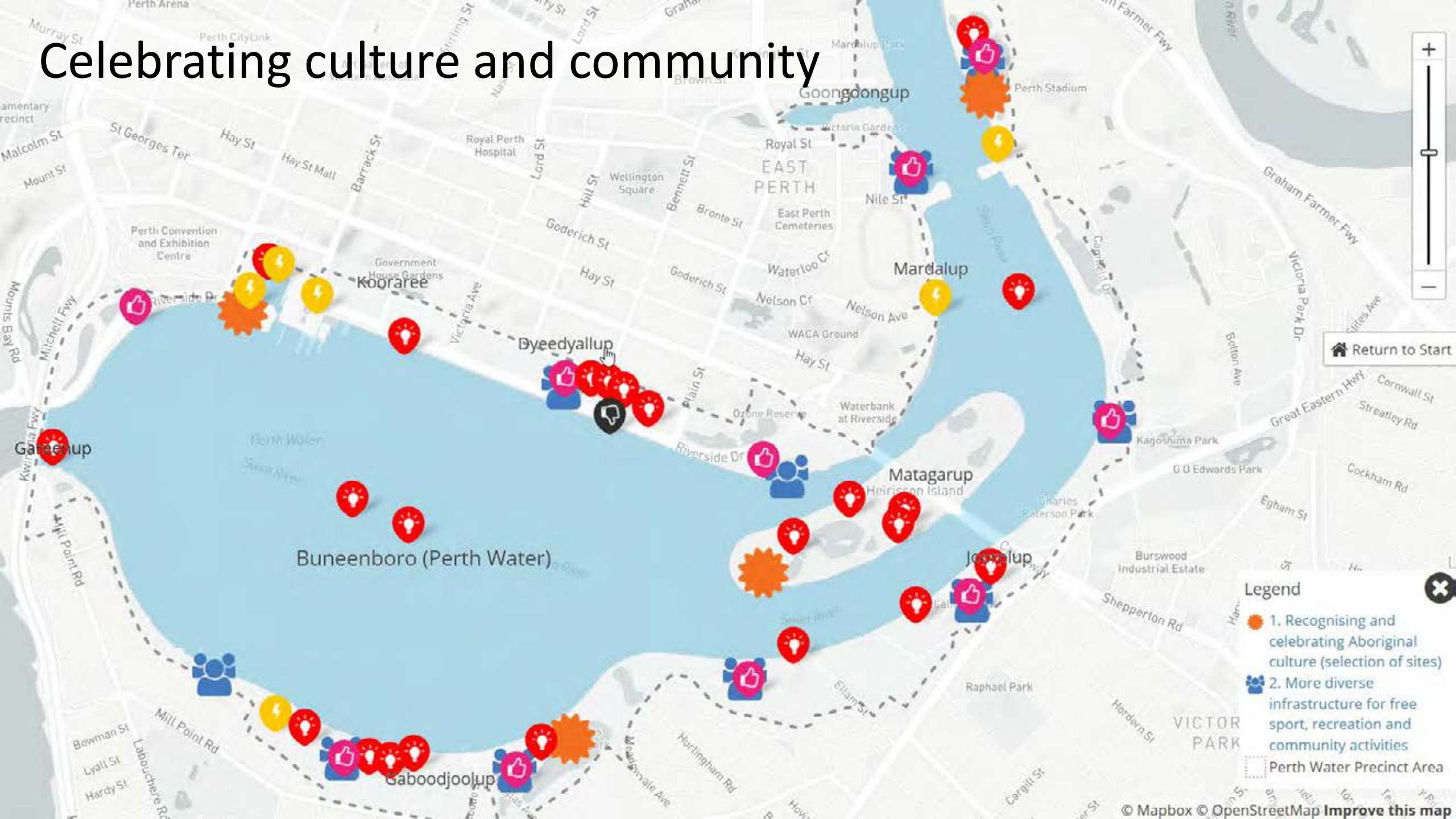


See touch and experience river life

Let the river breathe



Celebrating culture and community



Some interesting Stats

- 2187 unique users
- 695 unique ideas generated
- 503 responses to specific questions posed

Messages from consultation

1. Unique WA tourism offerings
2. A mix of intensive and serene places
3. Expanded public ferries
4. Sympathetic, low-impact uses
5. Concern and confusion around the WA Powered Sports Area’s exclusive use area
6. Work to restore the river's health

Messages from consultation

6. Respect and celebrate Noongar spirituality and connection
7. Better co-ordination and management
8. Genuine engagement of the community
9. Softer foreshore treatments
10. Protect and celebrate the public open space around the foreshore

What's Next

Additional Noongar workshops are planned to assist in the development of the Precinct Plan

Respond to key policy issues as required

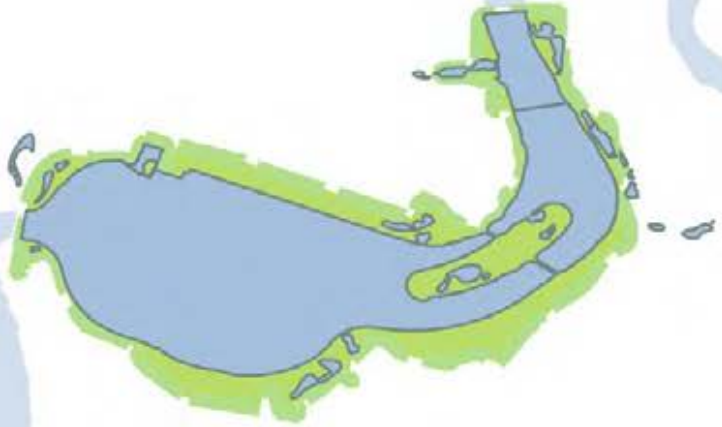
A draft precinct plan will be released for public comment early 2019

Department of Biodiversity, Conservation and Attractions

GOVERNMENT OF WESTERN AUSTRALIA

SWAN CANNING RIVERPARK

What's Next?



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