

# Sydney: Going Blue - Green

CITY OF SYDNEY



Dr Amit Chanan





25% of National GDP

200,000 businesses

4M tourists a year

# Climate Change Risk

## Why Resilience Matters

- Chronic Stresses
- Health and the Elderly
- Flooding
- Reliable food production
- Extreme Weather
- Increase in drought conditions



# Climate Change

Australia's mean temperature has warmed by **0.9°C** since 1910.

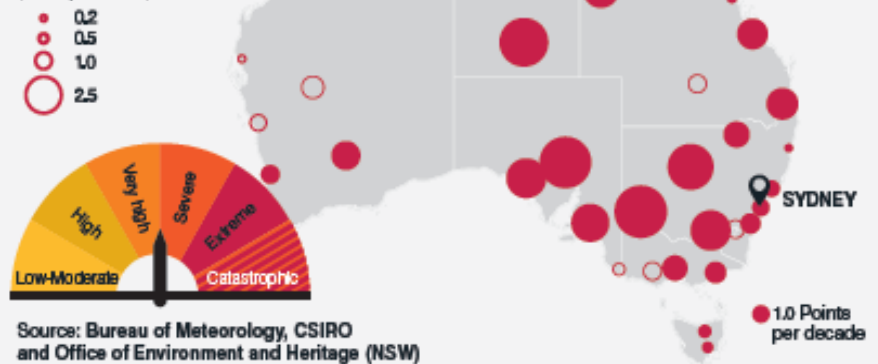
TEMPERATURE CHANGE (°C)



Source: Bureau of Meteorology  
Annual mean temperature changes across Australia since 1910.

The largest increases in fire weather have been in the southeast and away from the coast.

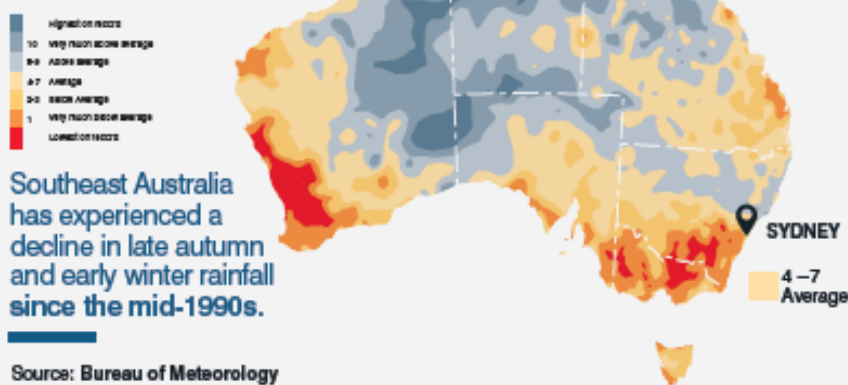
INCREASE DECREASE  
(Points per decade)



Source: Bureau of Meteorology, CSIRO and Office of Environment and Heritage (NSW)

Rainfall in the Southwest of Western Australia has been very much below average to **lowest on record**.

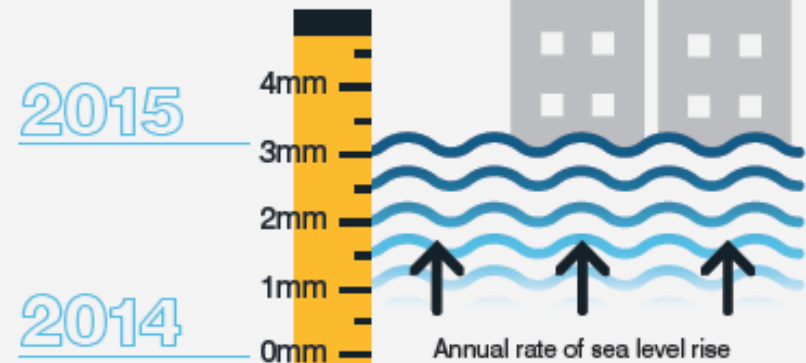
RAINFALL DECILE RANGES



Southeast Australia has experienced a decline in late autumn and early winter rainfall since the mid-1990s.

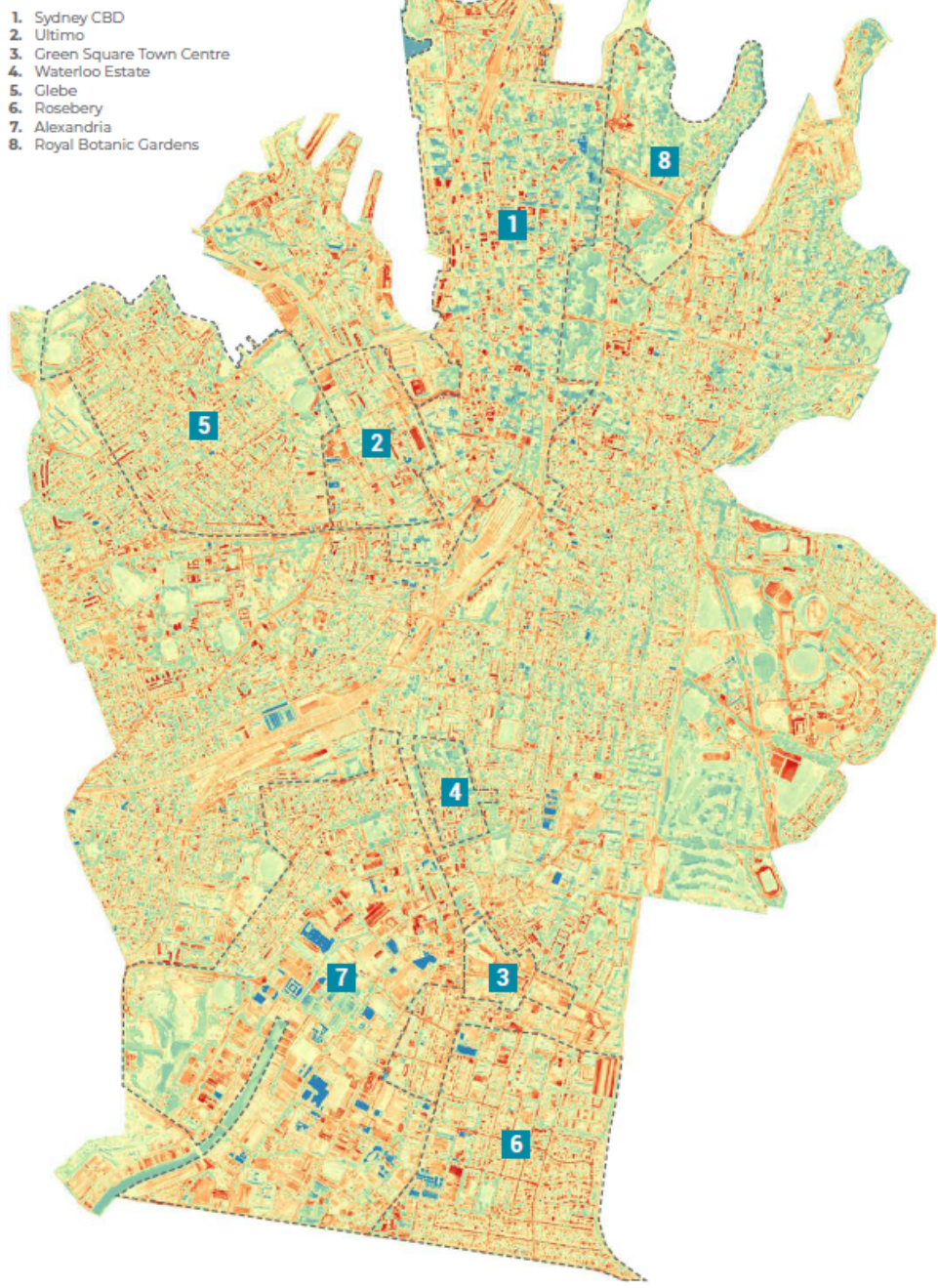
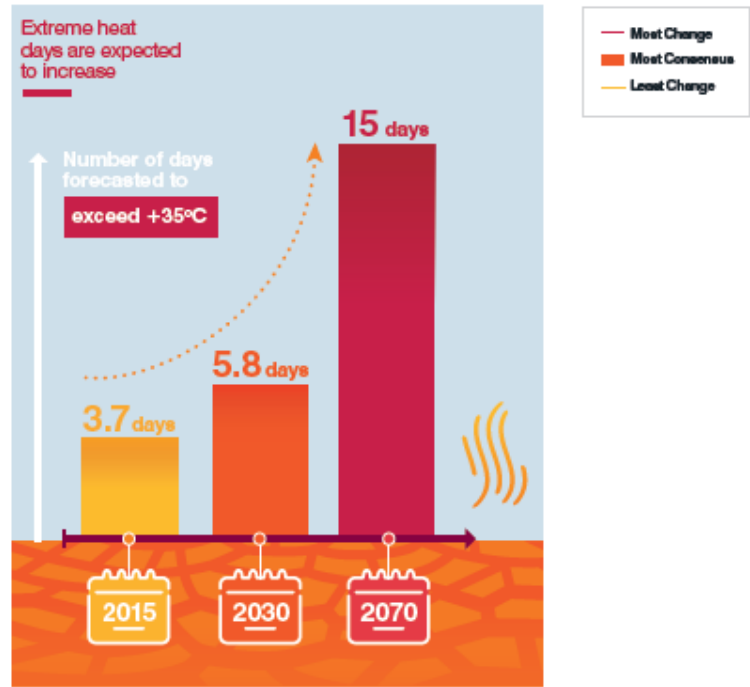
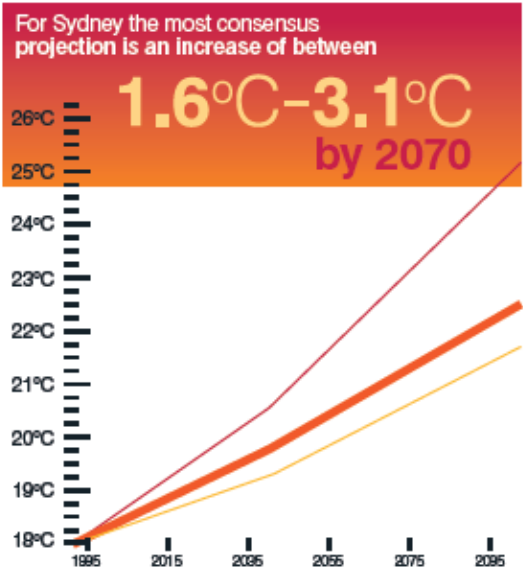
Source: Bureau of Meteorology

Sea level rose at a rate of **3.2mm per year** in the last 20 years.

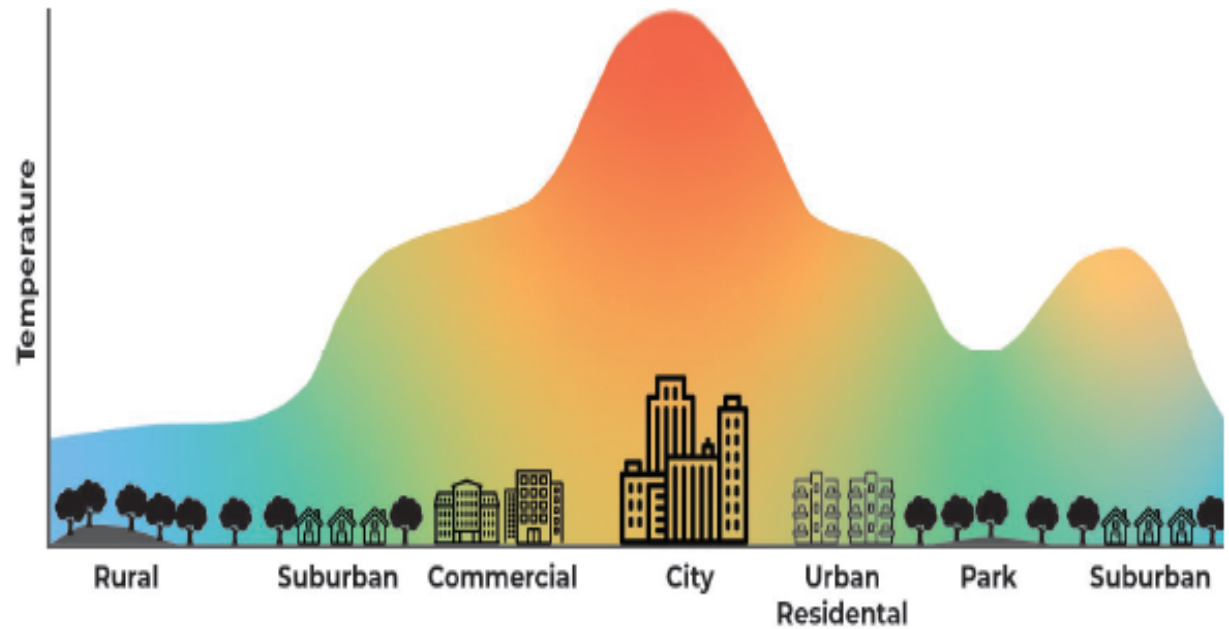




# How Hot Will it Be?

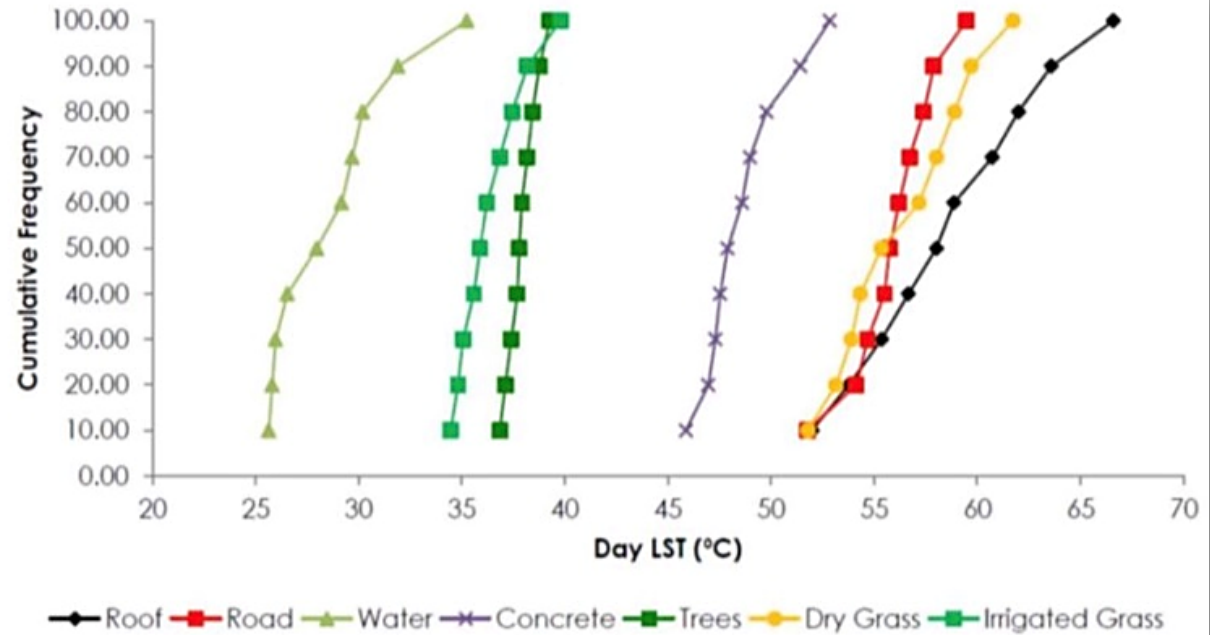


# Urban Heat Mitigation Planning

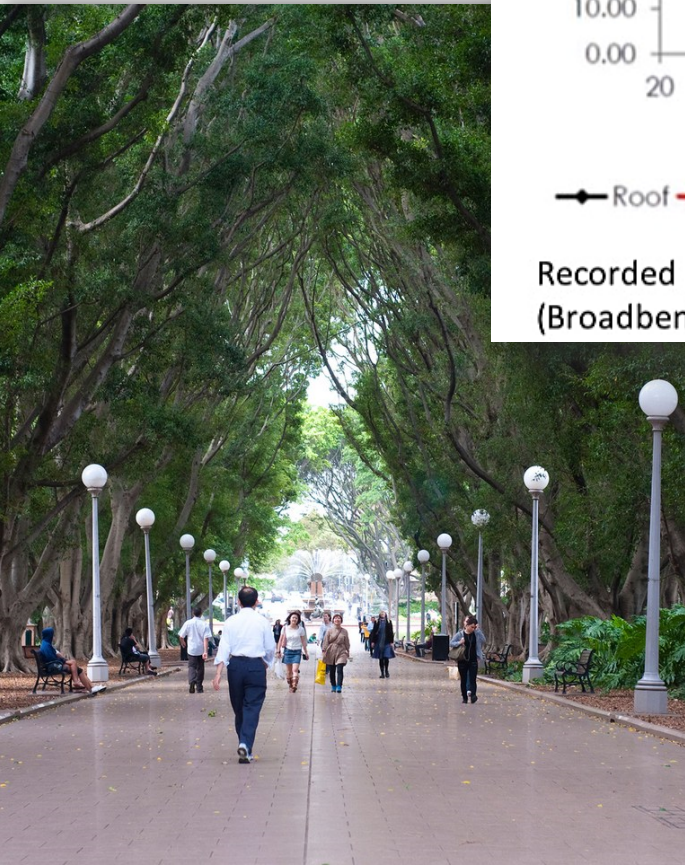




# Water for greening and cooling



Recorded land surface temperatures (LST) on extreme 40°C heat day (Broadbent 2017)





# Water and Human Settlements of Future



IHP-VIII THEMATIC AREA 4

## WATER AND HUMAN SETTLEMENTS OF THE FUTURE

ACTIVITIES AND OUTCOMES 2016-2017

### GAME-CHANGING APPROACHES AND TECHNOLOGIES (FA 4.1)

- “*Urban Resilience and Crisis Management*” (October 2016), workshop focussed on climate related flood risks in the City.
- This is a next chapter on that journey – where game changing approach to urban development





# Green Square Urban Renewal Area Location

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4 kilometres south of the Sydney CBD and 3.5 kilometres north of the Sydney Airport



# Green Cover vs Heat Map









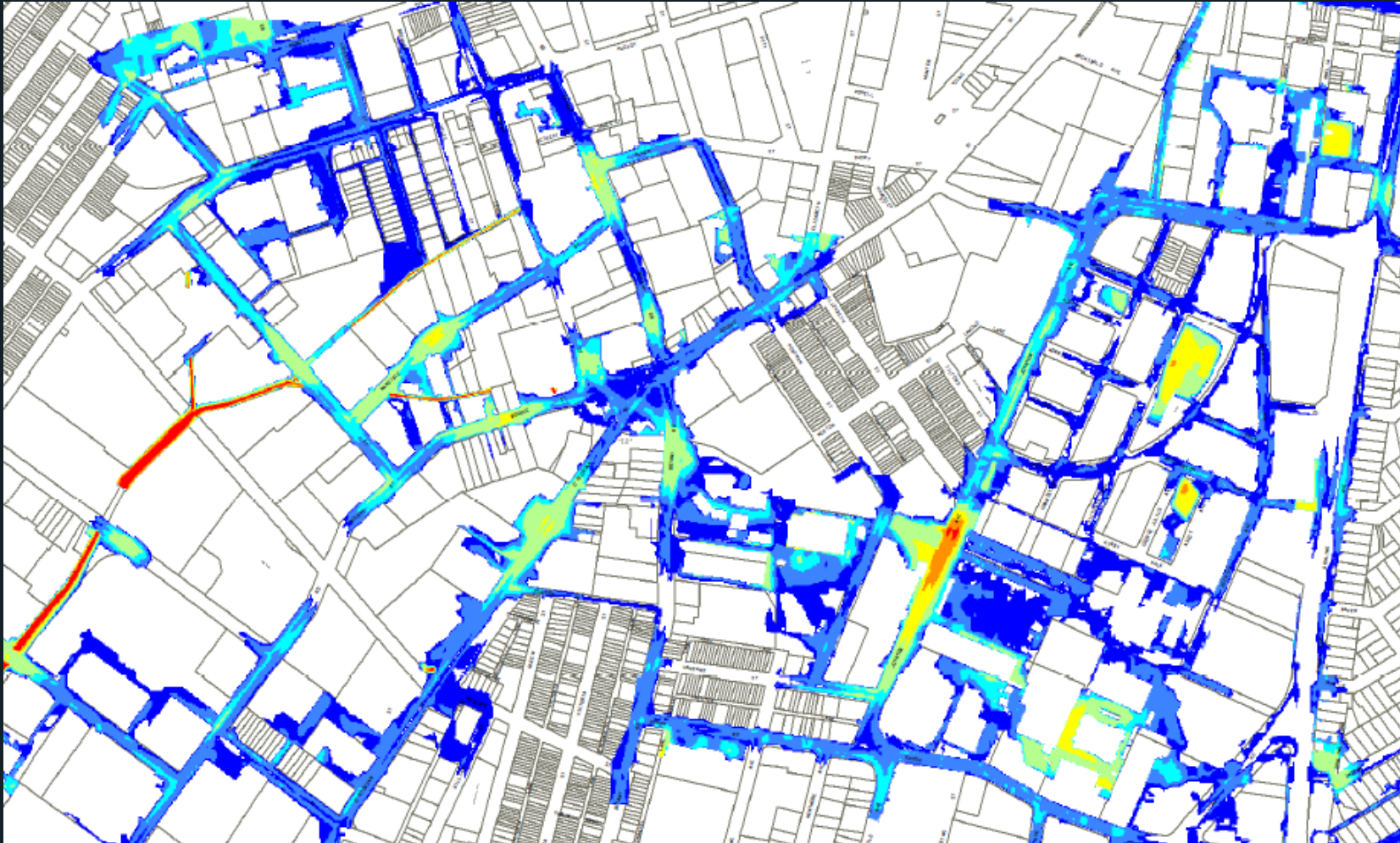




# Green Square Town Centre

## Key Constraints for Public and Private Development

*Peak flood depth – 1% AEP*





# Green Square Urban Renewal Area

An architectural rendering of a modern, curved high-rise building at night. The building features a large central void and is illuminated from within, showing multiple floors of office or residential spaces. The building is situated in an urban environment with other buildings and streets visible in the background.

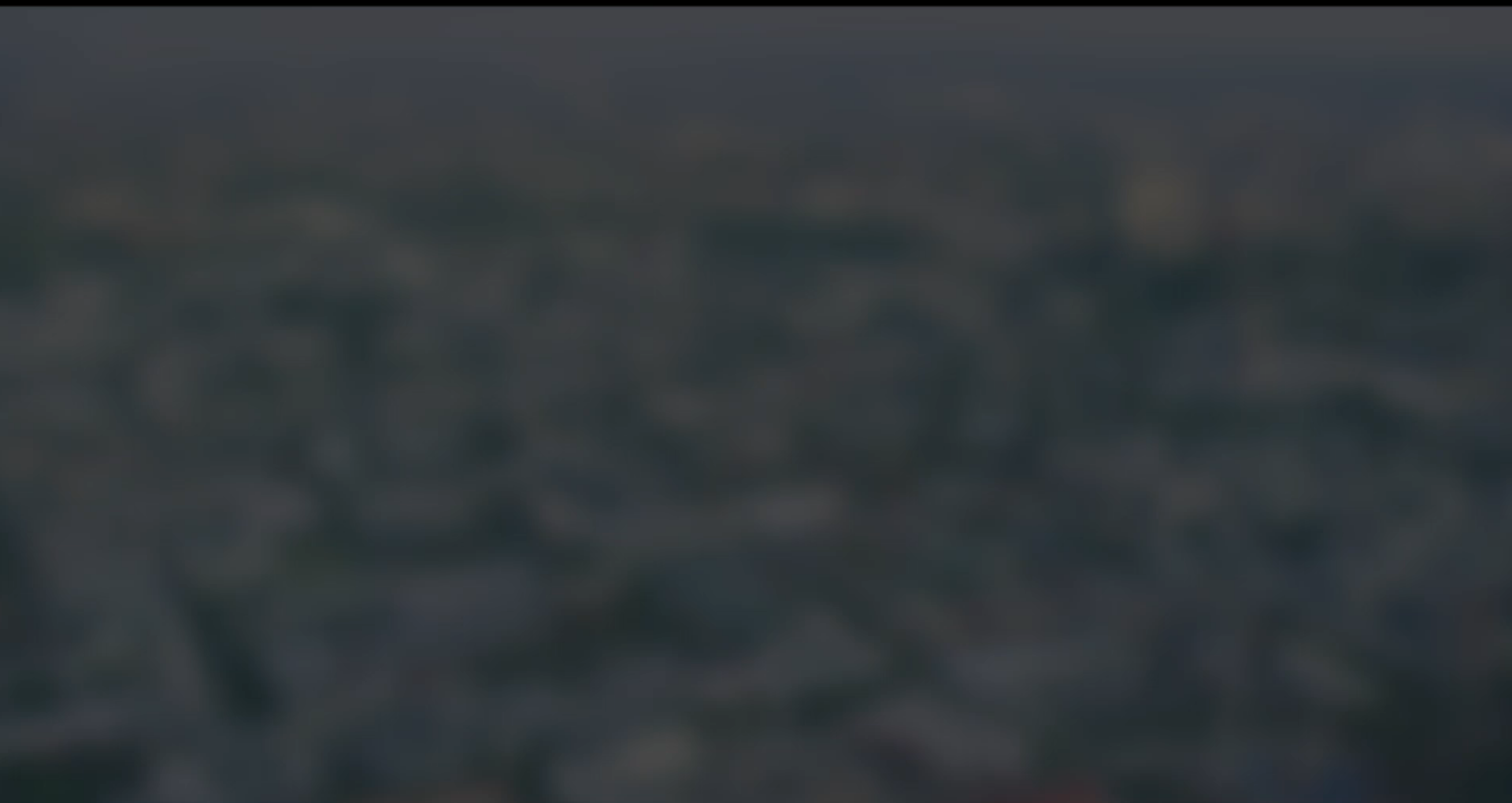
Private Development: \$8 Billion

Public Development: ~\$1.00 Billion

No of New Homes: 25,000

Forecast Population: 61,000

No of New Jobs: 28,000





# Green Corridor – Sustainable Urban Forest

## **Strategic Direction 1 - Protect and maintain the existing urban forest**

- The City will prioritise the maintenance and protection of existing trees

## **Strategic Direction 2 - Increase Canopy Cover**

- The City will increase the canopy cover from 15.5% to 23.25% by 2030, and then to 26.35% by 2050

## **Strategic Direction 3 - Improve urban forest diversity**

- Increase species diversity of more than 40% for a family, 30% for a genus, and 10% for a species

## **Strategic Direction 4 - Increase community knowledge and engagement**

- The City will educate the community on the benefits of trees and their management requirements,
- Assist community participation in the greening of Sydney.





# Green Corridor – Sustainable Urban Forest

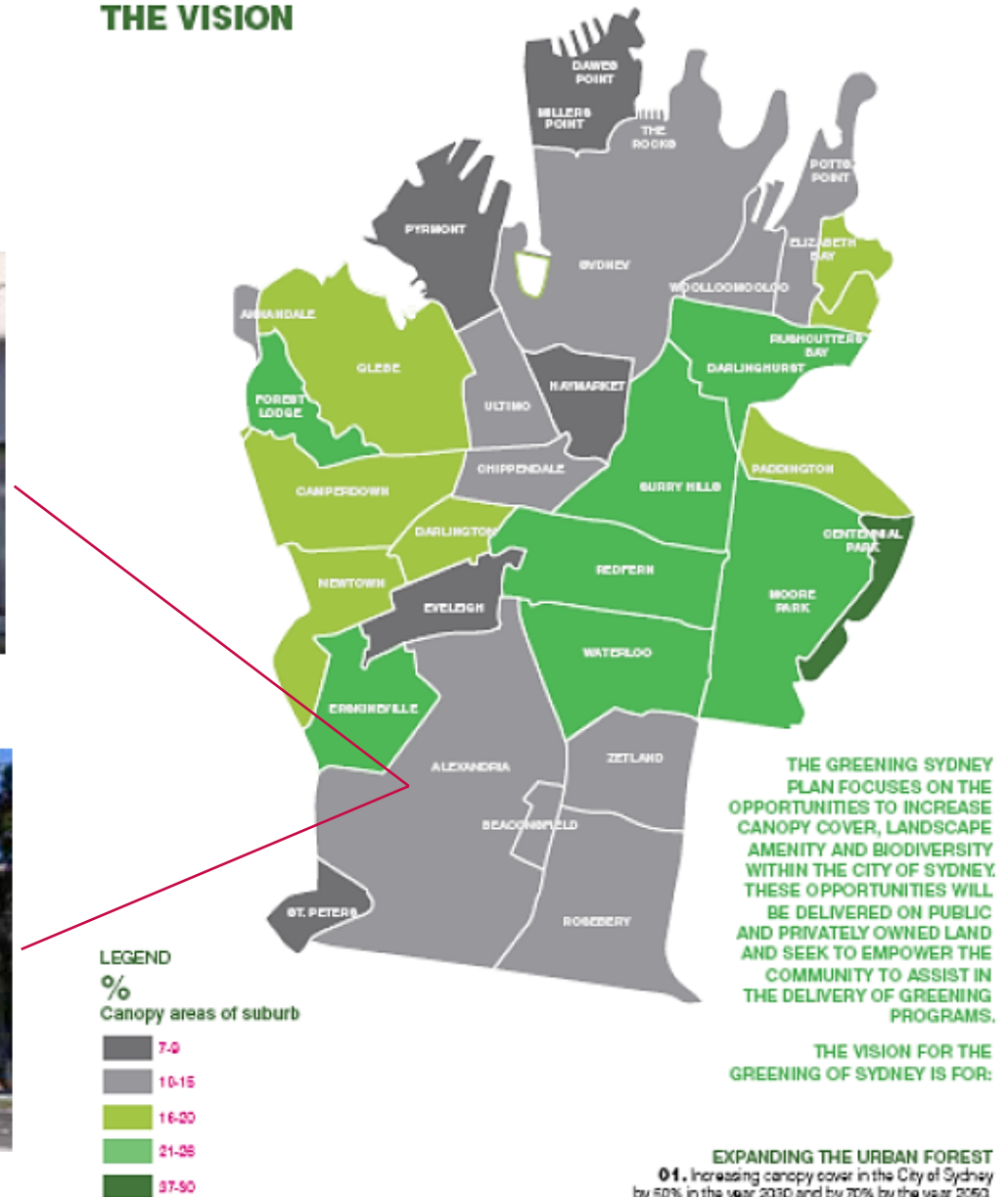
Current



Vision



## THE VISION



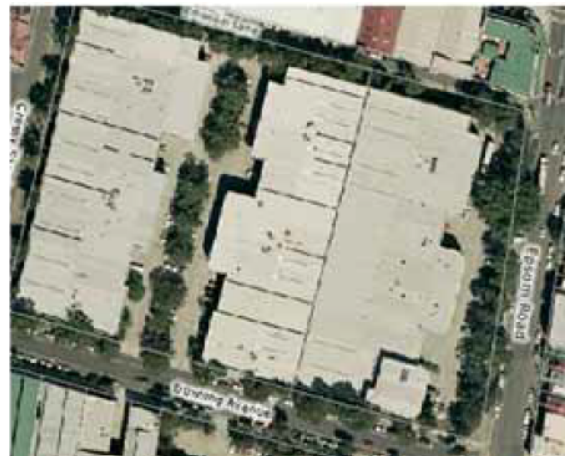
# Green Corridor

## THE VISION

Current

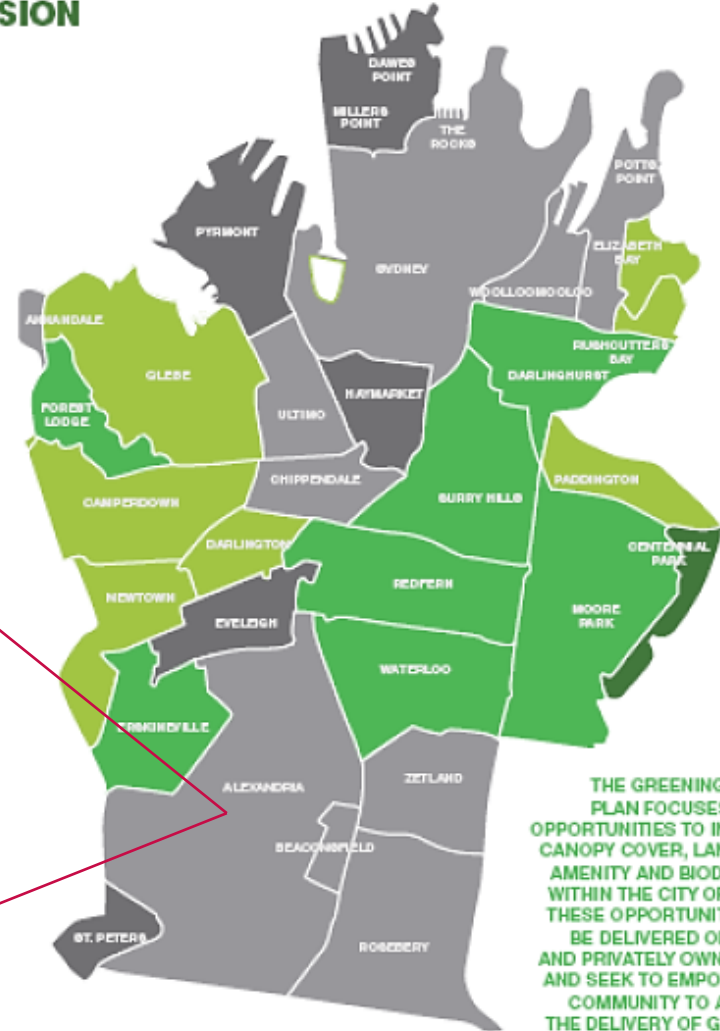


Vision



### LEGEND

%  
Canopy areas of suburb



THE GREENING SYDNEY PLAN FOCUSES ON THE OPPORTUNITIES TO INCREASE CANOPY COVER, LANDSCAPE AMENITY AND BIODIVERSITY WITHIN THE CITY OF SYDNEY. THESE OPPORTUNITIES WILL BE DELIVERED ON PUBLIC AND PRIVATELY OWNED LAND AND SEEK TO EMPOWER THE COMMUNITY TO ASSIST IN THE DELIVERY OF GREENING PROGRAMS.

THE VISION FOR THE GREENING OF SYDNEY IS FOR:

EXPANDING THE URBAN FOREST  
01. Increasing canopy cover in the City of Sydney by 50% in the year 2030 and by 70% by the year 2050.





# More Green More Blue in Urban Planning





# Heat Refuge

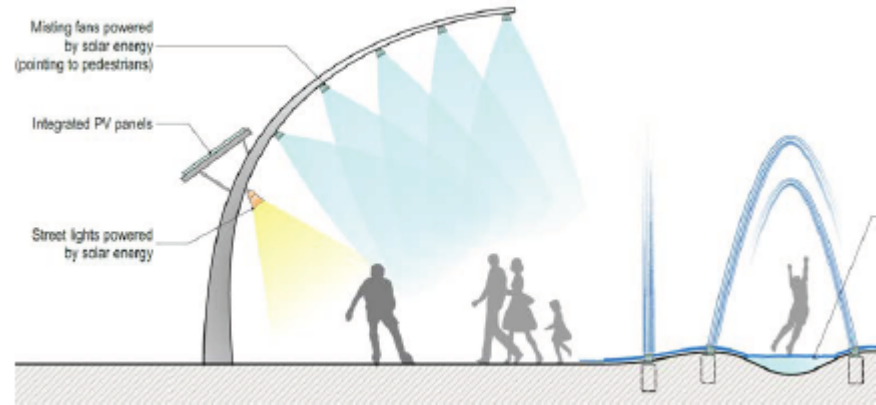
## Green Square Town Centre Mitigation Action

- Reduced average ambient temperature by 1.3°C
- Reduced localised temperature by 6°C

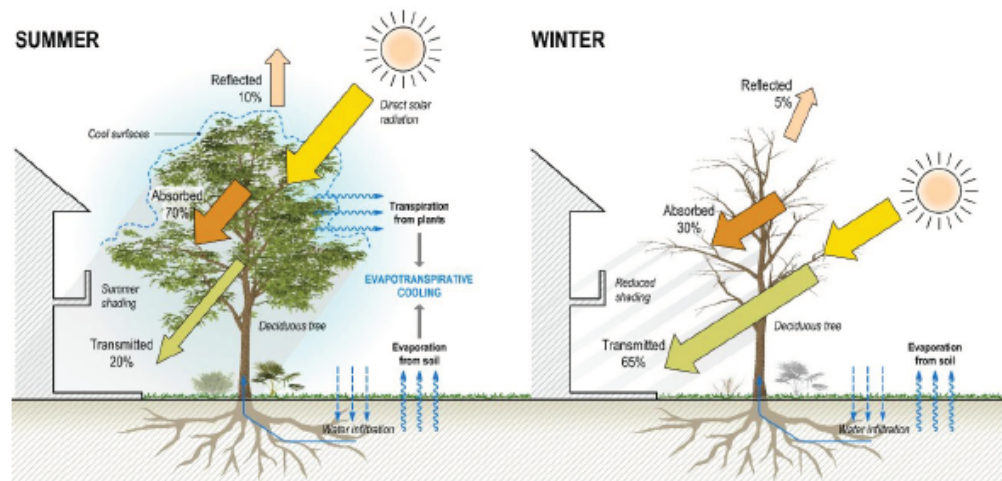
## Green Open spaces (Parks) more for mixed dwellings

- Reduced radiant temperature by 2°C to 4°C
- Reduced ambient temperature by 1°C to 4°C
- Reduced surface temperature by 15°C

### Water Features & Evaporative Cooling



### Street Trees & Planting





# Blue Corridor - Water in the Urban Form

Using urban design to create places that:

- Respond to water
- Express water and its cultural value
- Draw people to waterways
- Slow down and clean stormwater
- Provide greening, cooling and amenity benefits
- Promote biodiversity.

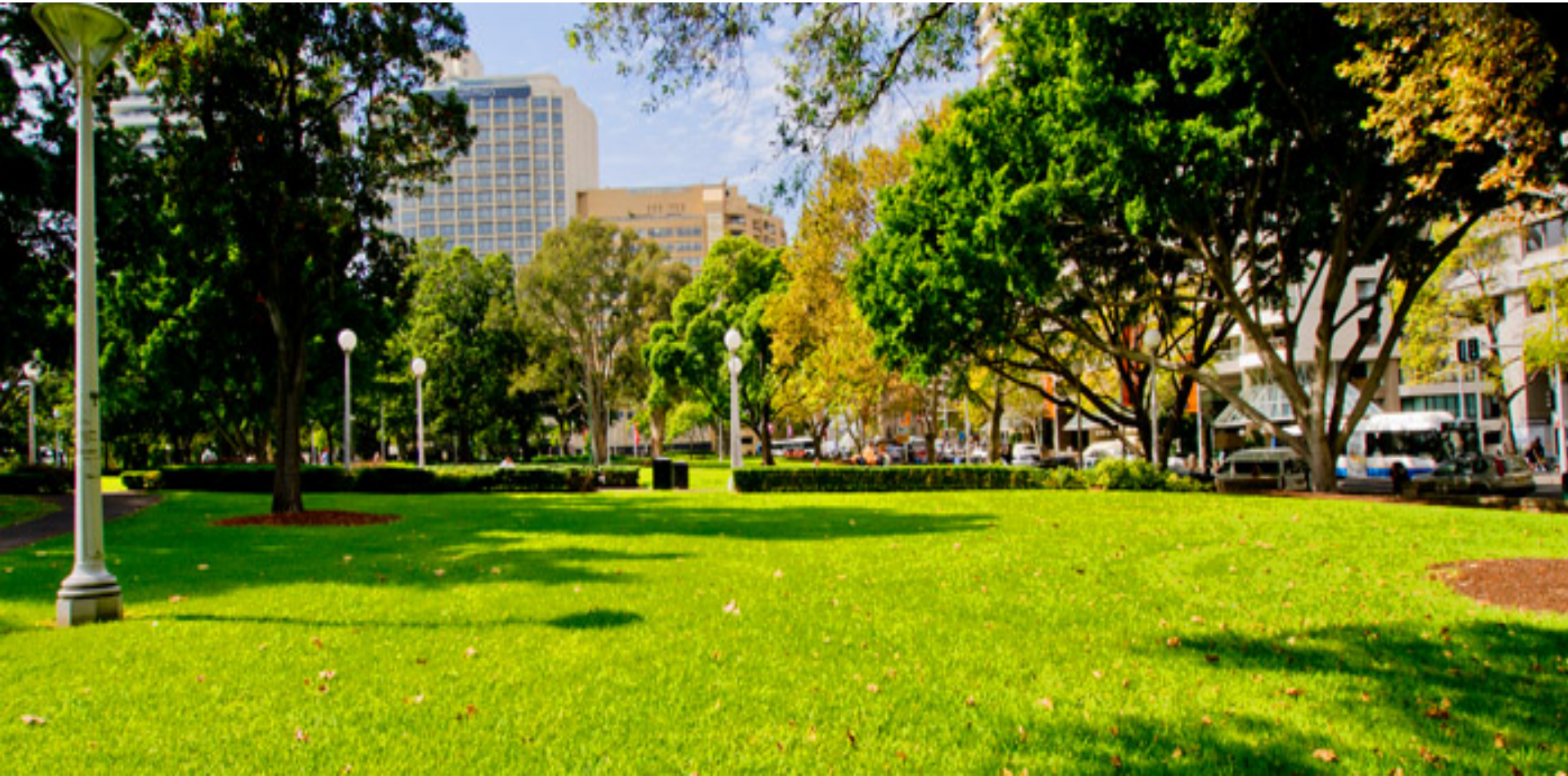




# Blue Corridor - Recycled Water Implementation

## Park-scale stormwater harvesting

- Anticipated 52% increase in green space area by 2030





# Blue Corridor - Green Square Water Reuse

Stage 1.

- stormwater harvesting

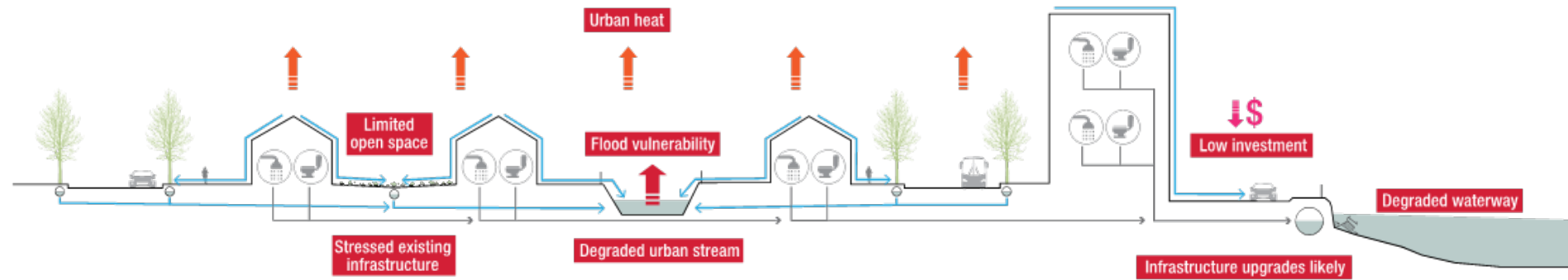
Stage 2.

- wastewater recycling

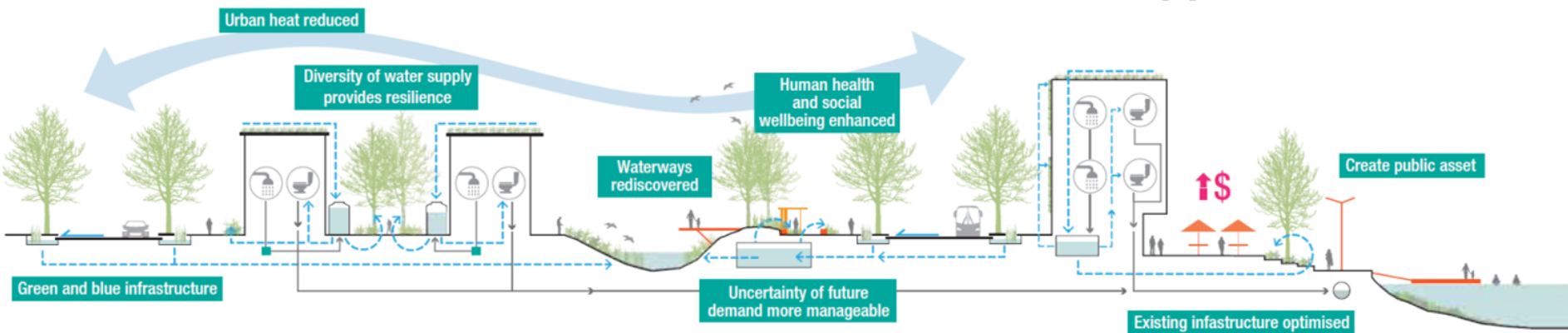


# Blue Corridor - Integrated Water Management

- Current Approach



- Water Sensitive Approach





# Blue Corridor – Water Demand by 2030

Figure 2.11: 2030 Growth in water demand

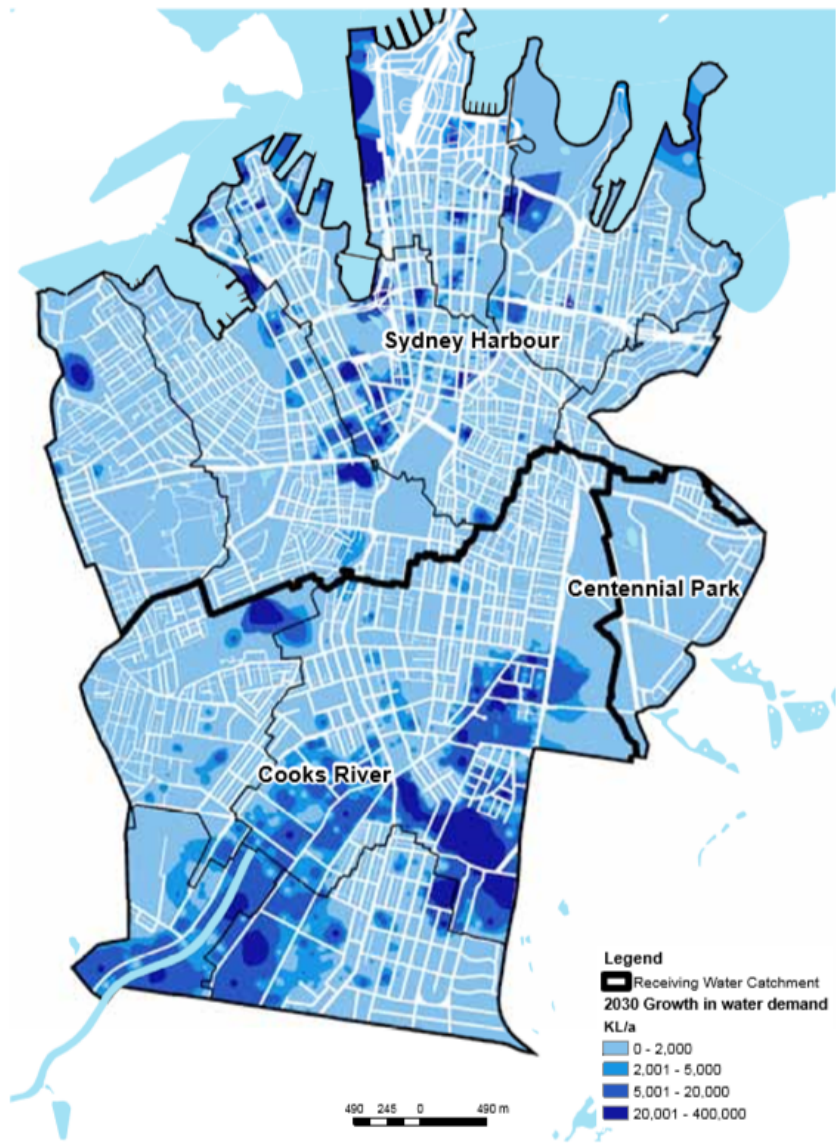
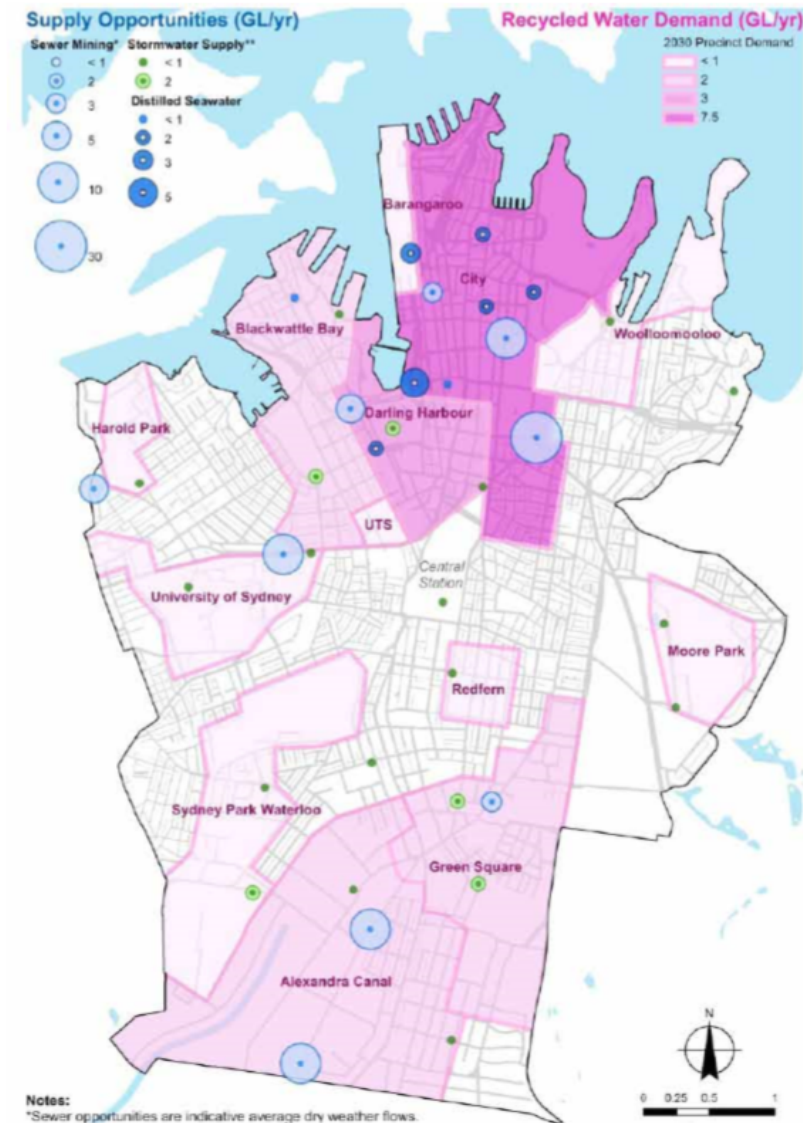


Figure 3.6: Precinct scale recycled water solutions across the city

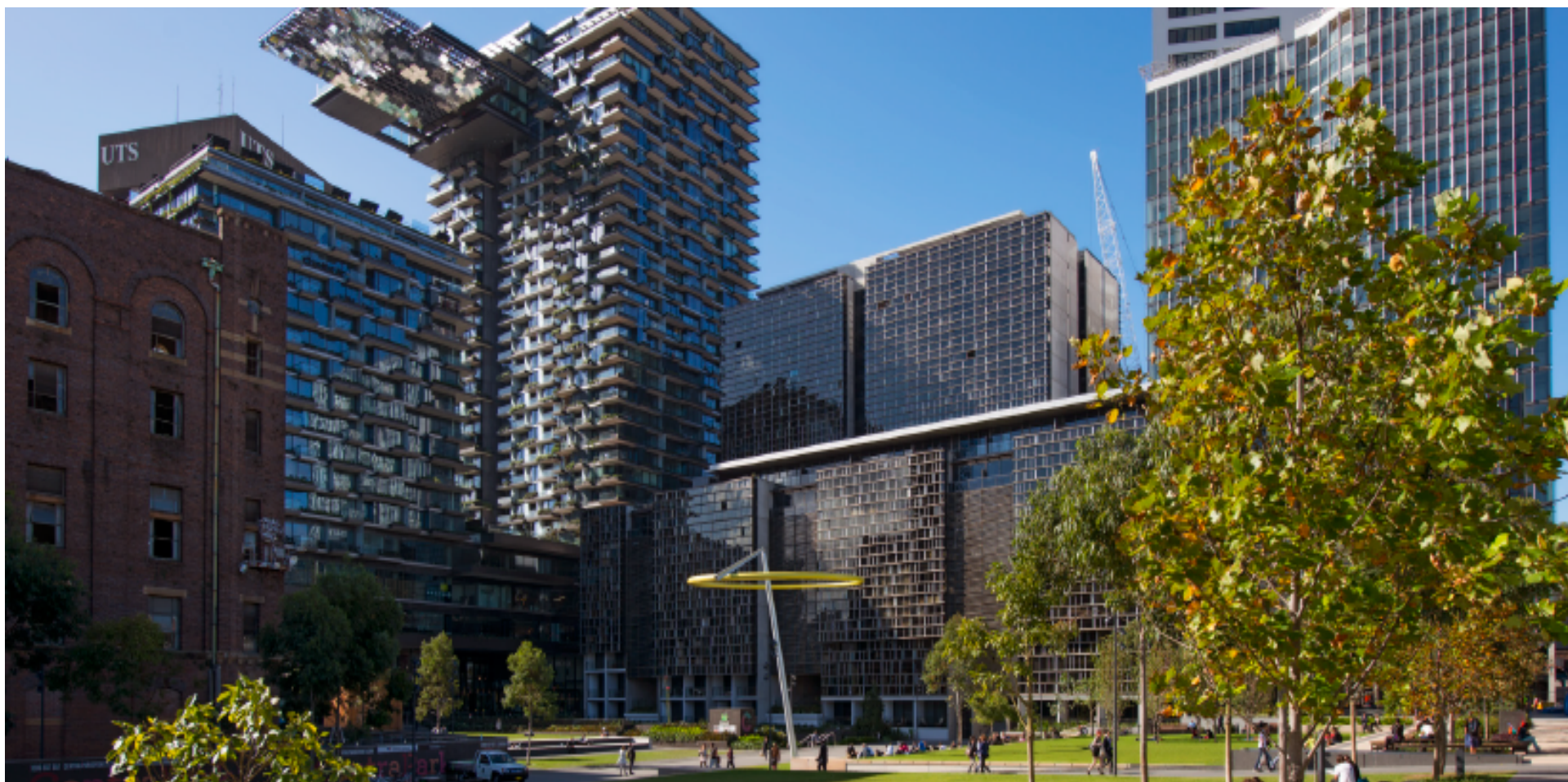




# Implementing Resilience

Improved resilience will occur when our organisations and communities:

- Understand climate risks
- **Collaboration** between Water Utility and City Hall critical,
- Invest resources to take action – No Regrets Adaptation Actions are vital.





Sydney  
**WATER**

**CITY OF SYDNEY** 