STORMWATER VICTORIA CONFERENCE 2023

6-7 JUNE 2023
BALLARAT, VICTORIA

THE CHALLENGES FOR THE IMPLEMENTATION OF SMART RAINWATER TANKS: CASE OF FISHERMANS BEND

Natalie Barron (City of Port Phillip), Cintia Dotto (City of Melbourne), Todd Berry (Fishermans Bend Taskforce, DTP), Vassiliki Boulomytis (City of Port Phillip), Maarten Van Herk (South East Water) and Michael Di Matteo (KBR, Melbourne Water)

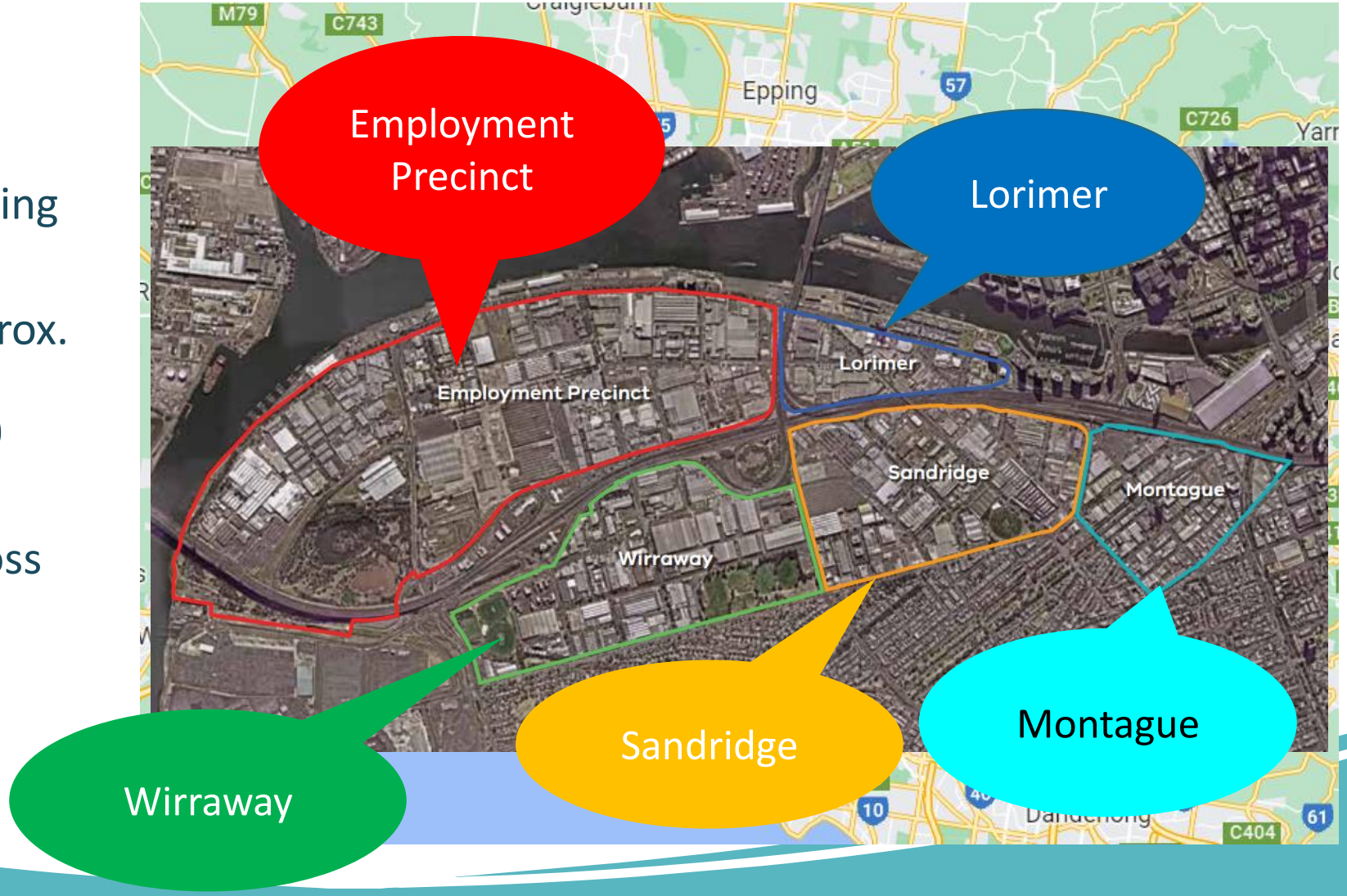
Purpose of the Study

Highlight the importance of an **effective governance** model for the **regulation** of smart rainwater tanks at Fishermans Bend.

Identify the complexity of the **current scenario** for the **implementation** of these smart rainwater tanks at Fishermans Bend.

Fishermans Bend

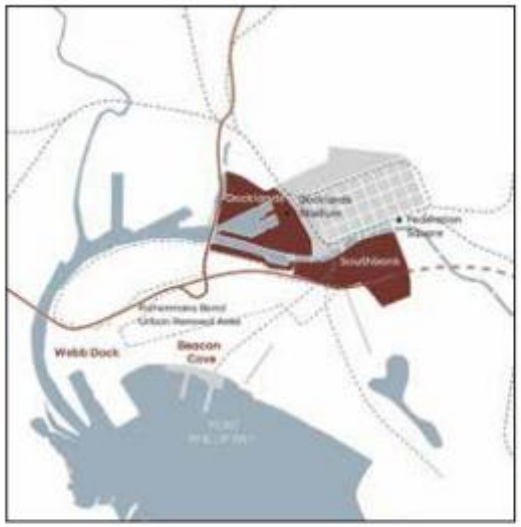
- Currently the largest urban renewal development in Australia.
- Covers 480 hectares, connecting Melbourne's CBD to the bay.
- By 2050, will be home to approx. 80,000 residents and provide employment for up to 80,000 people.
- Consists of five precincts across two municipalities (City of Melbourne and City of Port Phillip).



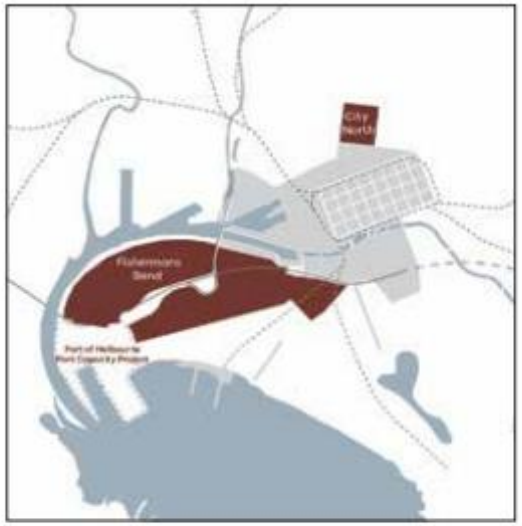
Source: www.fishermansbend.vic.gov.au

History and Geographical Background

West Gate Freeway expansion



Bolte Bridge 'on- ramp'



The Port of Melbourne

Spencer Street Station and rail yards (now Southern Cross)

1930's expansion of industry including soap, chemicals, rubber and blankets
Housing in Montague earmarked for demolition as part of slum abolition and converted to commercial and industrial uses
Fishermans Bend Airfield takes up most of the western end of the precinct

Construction of General Motors plant

The Garden City housing estates are developed providing low cost housing

Wartime industries including experimental tank depot, aircraft factories and runways

Fishermans Bend Migrant Hostel established

Australian Motor Industries car factory – later Toyota – opens

Webb Dock commences operations

West Gate Bridge is completed

Central city expands south of the Yarra River to Southbank

Postcode 3000 encourages residential use and development in the central city
Development of Docklands begins

Council amalgamations – Port Melbourne and South Melbourne become part of Port Phillip

Development of Beacon Cove begins

Bolte Bridge is completed

Federation Square is completed
Docklands continues to develop
The central city expands north towards the university and health precincts

Fishermans Bend Urban Renewal Area is rezoned as an extension of the capital city.

Fishermans Bend Draft Vision released for consultation

Strategic Framework Plan released

Strategic Framework Plan amended

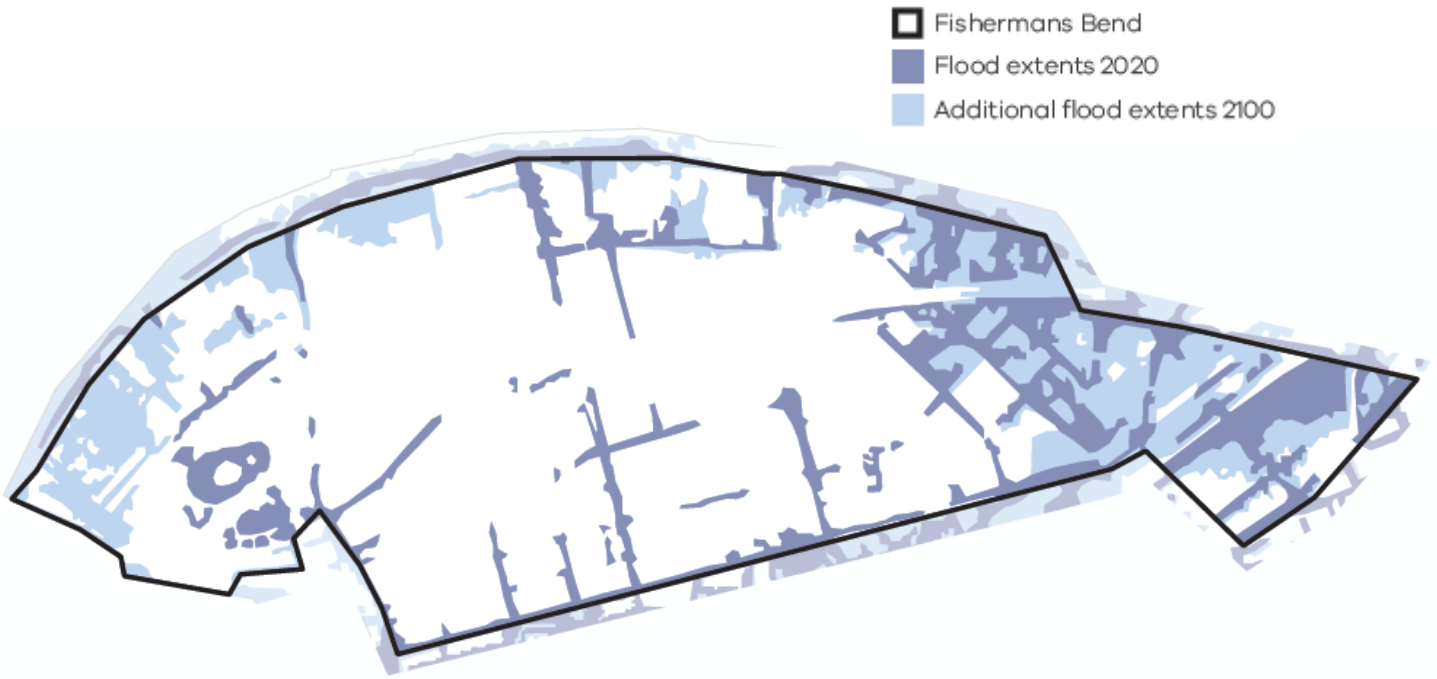
Recast of Fishermans Bend Vision

1930 1935 1940 1945 1950 1955 1960 1965 1970 1975 1980 1985 1990 1995 2000 2005 2010 2015

Source: Fishermans Bend Framework 2018

Environmental Challenges

- Land contamination
- Groundwater contamination
- Geotechnical conditions
- Flooding:
  - Near discharge point of Yarra River to Port Phillip Bay.
  - Low-lying and vulnerable to inundation in tidal events.
  - Capacity constraints in the underground drainage system.



Current and Future flood conditions for 1% AEP in Fishermans Bend.
Source: State of Government of Victoria (2021)

Vision: Fishermans Bend will be a thriving place that is a leading example for environmental sustainability, liveability, connectivity, diversity and innovation.

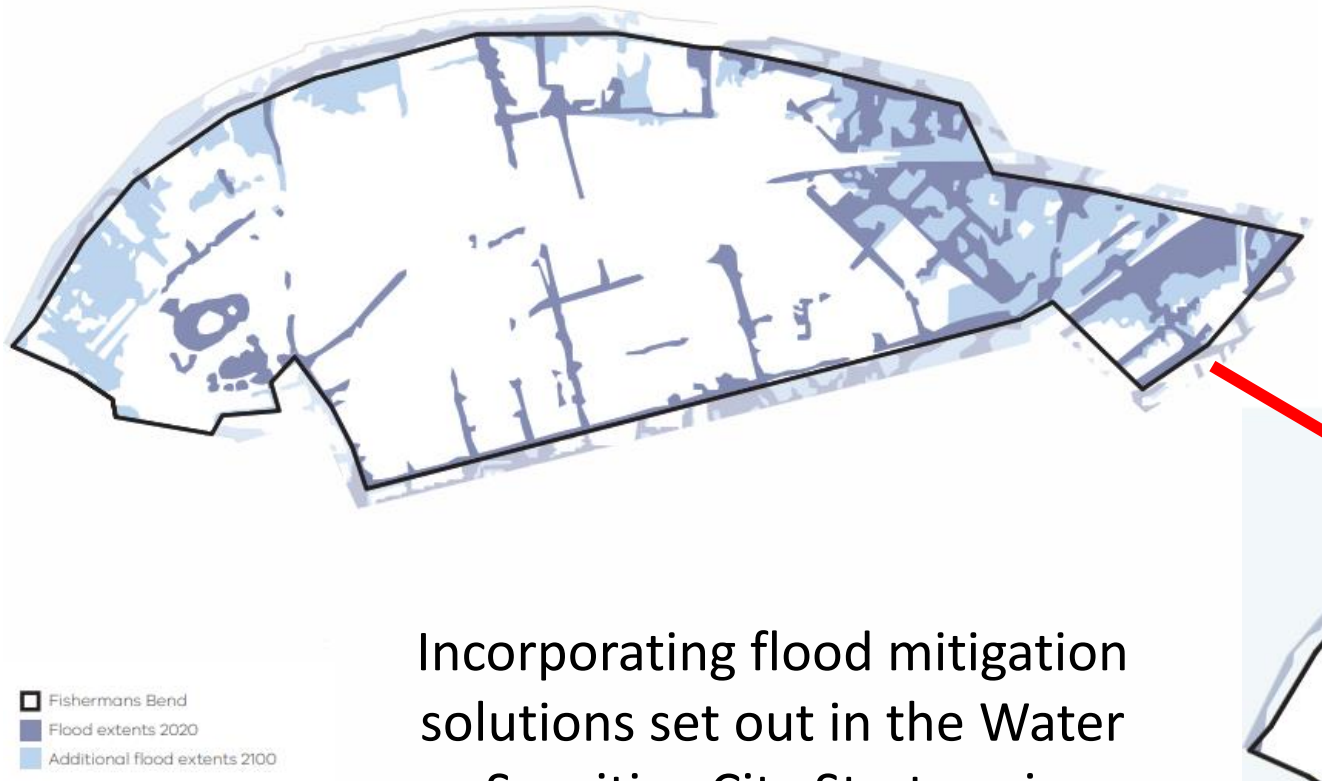
Source: Fishermans Bend Framework 2018

Fishermans Bend Water Sensitive City Strategy

- Need for a **Water Sensitive City** approach.
- Reducing the **magnitude and impact of flooding** is critical.
- Design solutions were guided by **service level objectives**.
- Included **projected increases** in rainfall intensity and sea levels associated with climate change.

Source: Fishermans Bend Water Sensitive City Strategy 2022
Fishermans-Bend-Water-Sensitive-City-Strategy.pdf (fishermansbend.vic.gov.au)

Fishermans Bend Water Sensitive City Strategy



Traditional and non-traditional infrastructure proposed.

Incorporating flood mitigation solutions set out in the Water Sensitive City Strategy is expected to reduce flood events significantly.

Source: Fishermans Bend Water Sensitive City Strategy 2022
Fishermans-Bend-Water-Sensitive-City-Strategy.pdf (fishermansbend.vic.gov.au)

Smart Rainwater Tanks (SRWTs)

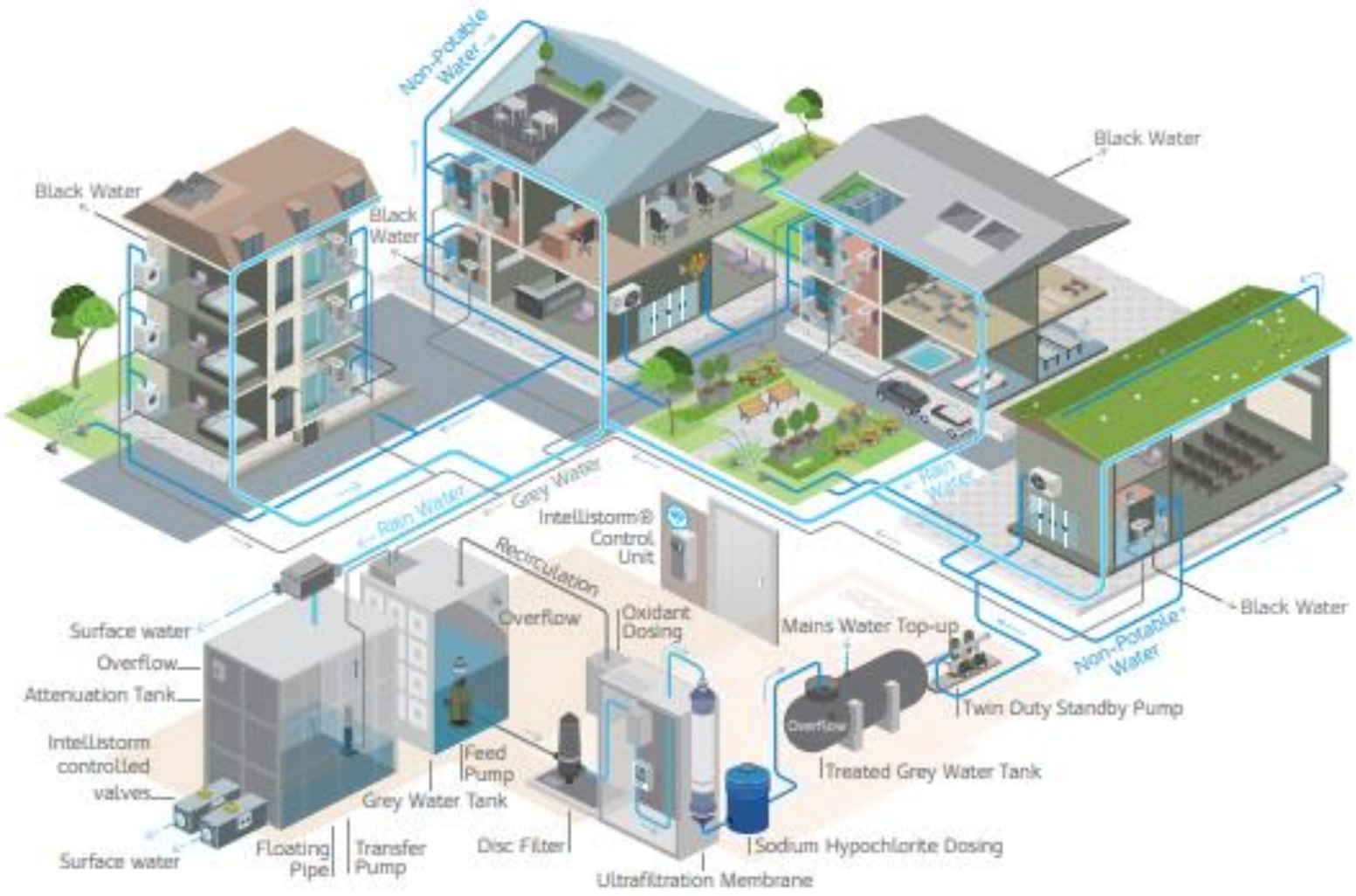
- Definition (FB Water Sensitive Strategy, 2022):

  A rainwater tank that uses weather forecasting data and water level control technology to optimise the storage capacity to assist with flood management in major storm events.

- Rainwater **storage and discharge** in the drainage network **before critical events**.
- Current **uncertainties** are related to:
  - The governance model
  - Information and communication technologies
  - Design and operational requirements
  - Performance control and maintenance systems.

- The **requirement** is in the **planning controls**.
- **No suitable governance model currently exists** to underpin the delivery, operation and maintenance of these new assets.
- **Determining the governance model is pivotal**
  - without it, informed investigations to ensure the long-term success of the tanks implementation and operability cannot proceed
  - policy change, design standards and technology protocols.

Smart Water Management Systems (SWMS)



Smart Rainwater and Grey Water Tank System for a community

Source: SDS Intelligent Rainwater Recycling - SDS (sdslimited.com)

- Reduction of potable water use through fit-for-purpose water use.
- Helping to ensure the rainwater tanks are empty before the next rain event; required as part of the flood mitigation strategy.
- Smart tank technology will be used when usage alone isn't enough to empty the tanks before a rain event.

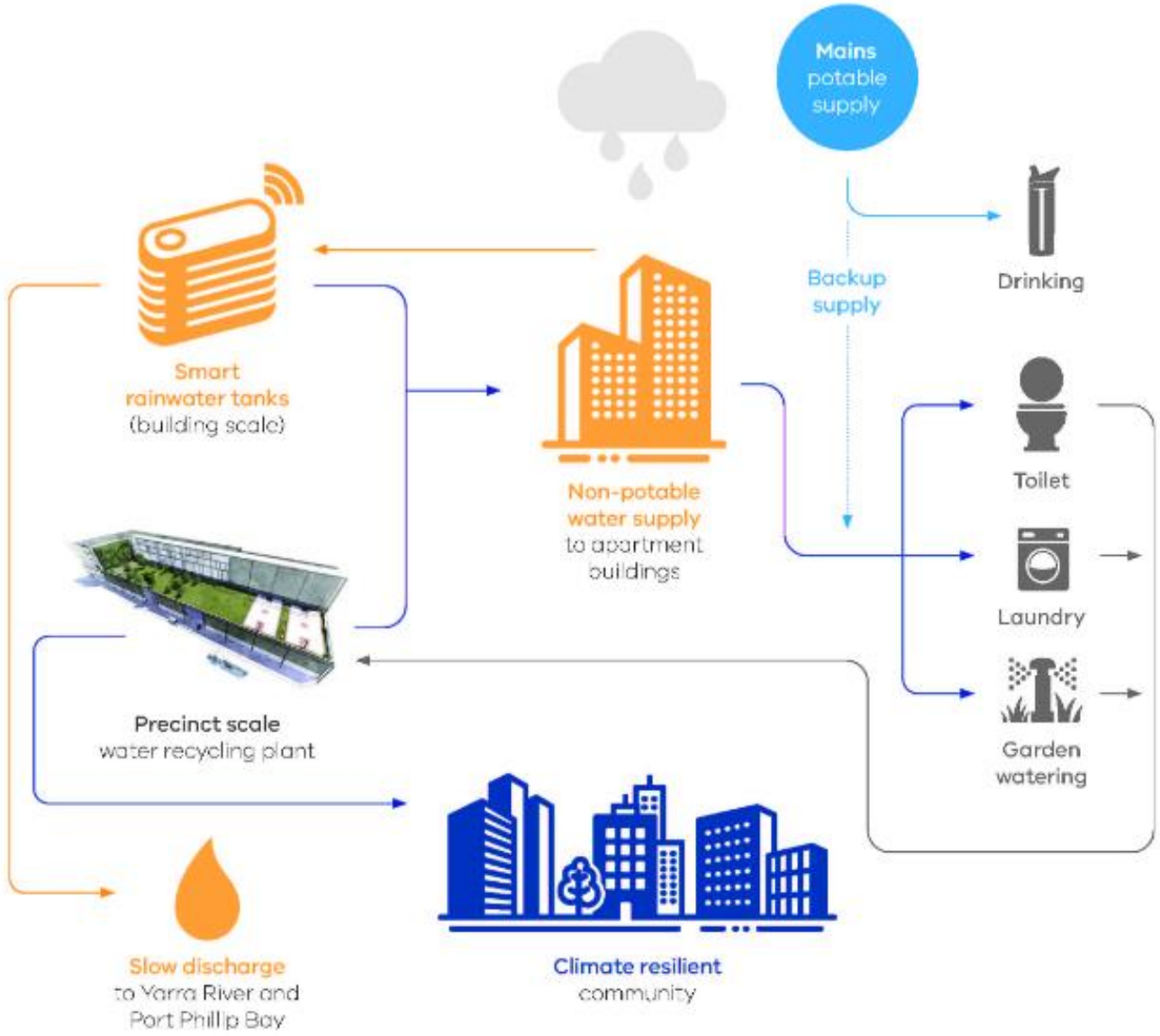
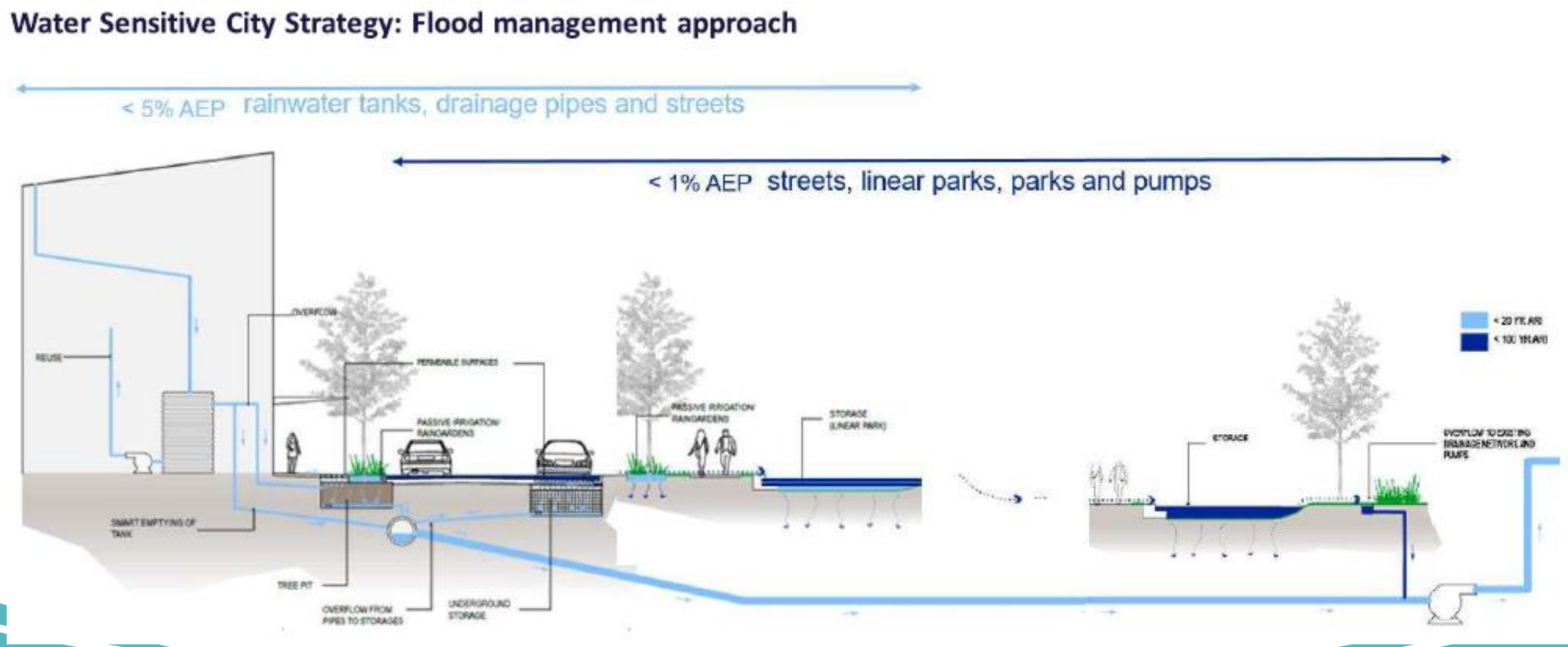


FIGURE 1: *Alternative water supply for Fishermans Bend*

Suitability of appropriate Governance Model



Source: Fishermans Bend Water Sensitive City Strategy 2022
Fishermans-Bend-Water-Sensitive-City-Strategy.pdf (fishermansbend.vic.gov.au)

Investigation

- Uncertainty about the ownership and responsibility for the operation and maintenance.
    - The water supplier has rights to replace rainwater with recycled water (section 145 Water Act.) in a pre-storm event period.
    - The water supplier should provide the Condition of connection requires for the system to operate.
- Complexity of multiple tanks and wider private realm stormwater system.
    - Fragility/Difficulty to integrate the connections and discharge response from the private realm to the drainage network.
    - Uncertainty on when systems will be switched on or off.
    - Great strain for drainage network if discharge flows occur in critical periods.
- Policy/Legal changes might be required (e.g., access rights/enforcement).

Key Gaps

Who will ensure this network of tanks are connected and functional?

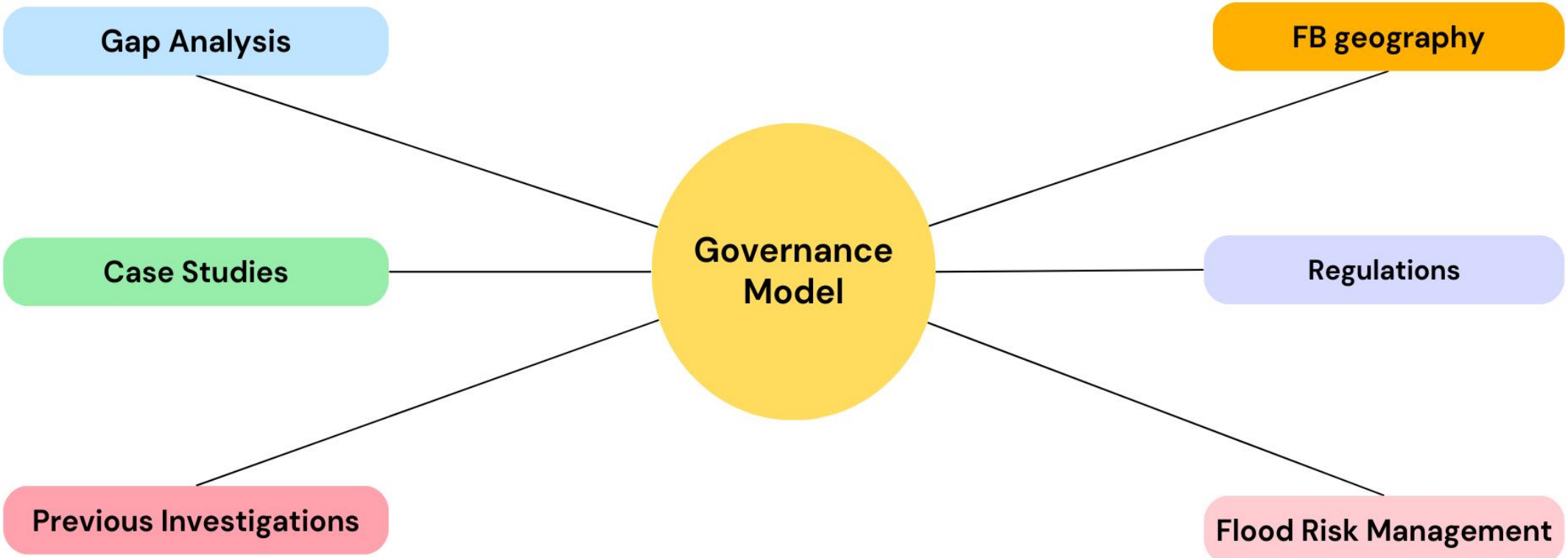
Who will own and maintain the tanks?

Are changes in regulations required to enable the sucesss of tank installation and operation?

Who will oversee tank construction for compliance?

Who will the developers buy the smart technology from?

Future Opportunities



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ANY QUESTIONS?

THANK YOU!!

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