Fishermans Bend
Pursuing a hybrid approach to water

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Head of Fishermans Bend Strategy

26-28 March 2019
### An expanding central city

#### Fishermans Bend

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>By 2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jobs</td>
<td>17,000</td>
<td>40,000</td>
</tr>
<tr>
<td>Residents</td>
<td>80,000</td>
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#### Melbourne inner city precincts

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2035</th>
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<tbody>
<tr>
<td>Hoddle Grid</td>
<td>219,044</td>
<td>35,571</td>
</tr>
<tr>
<td>Docklands</td>
<td>53,266</td>
<td>10,295</td>
</tr>
<tr>
<td>Southbank</td>
<td>41,828</td>
<td>18,118</td>
</tr>
<tr>
<td>Arden Central (Draft Vision)</td>
<td>34,000</td>
<td>15,000</td>
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#### Source:

Fishermans Bend Urban Design Strategy, Hodyl + Co
Understanding the scale of the opportunity

- CBD Core: 219 Ha
- Fishermans Bend: 485ha
An industrial past...
Contamination challenges
Areas with ground water

Source: Fishermans Bend Baseline Drainage Report, GHD
Flooding issues
Flooding sources

Pluvial Flooding
Pluvial flooding is managed through localised detention areas namely rainwater tanks within buildings, blue lanes, green streets, cloudburst streets and cloudburst detention areas.

Fluvial Flooding
To manage fluvial flooding, it is recommended that a levee system is installed. Construction, heights, operation and maintenance will all need to be considered to provide a suitable solution.

Source: Fishermans Bend Integrated and Innovative Water Management, Ramboll
Water planning timeline

- **2016**
  - Fishermans Bend Baseline Drainage Plan Options (GHD) (Pipes, Pumps and WSUD)

- **2018**
  - Integrated and Innovative Water Management (Ramboll) (Distributed storage only)

- **2018 / 2019**
  - Water Sensitive Cities Strategy (Hybrid approach)

- **2016**
  - Fishermans Bend Vision
  - Landscapes will be designed to incorporate water sensitive urban design principles to improve water quality and improve flooding

- **2018**
  - Final Framework
  - Design the public realm to make water visible and part of the Fishermans Bend identity...

- **2019**
  - ICP / Funding and Finance Strategy

- **2018 / 2019**
  - Precinct Planning

CRC for Water Sensitive Cities

4th Water Sensitive Cities Conference

watersensitivecities.org.au
The baseline water plan

Source: Fishermans Bend Framework, Victorian Government

Source: Fishermans Bend Baseline Drainage Report, GHD
Turning the water challenges into an opportunity

This OR This?

Source: Fishermans Bend Integrated and Innovative Water Management, Ramboll

Current Plan for Fishermans Bend
The current plan for flood management at Fishermans Bend includes the installation of a levee, installing rainwater tanks in buildings, increased pipe diameters and more pump stations. The rainwater tanks can have benefits outside flood management, however the other components have no significant benefit outside of flood management.

**Building rainwater tanks**
Rainwater tanks have been specified in buildings. This water will be used to flush toilets, for laundry purposes and for irrigation.

**Increased pipe diameters**
Larger pipe diameters have been specified in some areas to reduce localised flooding.

**Pumping stations**
During flood events, pumps will have been specified to remove water from Fishermans Bend to the Yarra River.

**Levee**
A levee has been proposed to protect the site only. Areas outside the levee have not been considered and the levee does not improve the public realm.

Proposed Plan for Fishermans Bend
The Blue Green Tool proposed have the aim of being able to increase detention across the site, decreasing flooding risk. This will be able to detain more water not only protect the site from flooding, but will also improve the liveability of the Site through increased green areas, improvement of active transport routes and improved micro-climate.

**Building rainwater tanks**
Rainwater tanks have been specified in buildings. This water will be used to flush toilets, for laundry purposes and for irrigation.

**Improved streets**
Detention of water in the street corridor will improve micro-climate through the cooling action of water and also passive irrigation.

**Improved open space**
Curb and detention areas will function for the majority of the time as public realm.

**Liveable levees**
The levee is proposed to be a high quality urban space to attract people to the area.

CRC for Water Sensitive Cities
4th water sensitive cities conference
watersensitivecities.org.au
Benefits of distributed storage over pipes

– Improved social resilience to flooding.

– Sets a precedent for urban renewal by finding a natural solution to the problem.

– Helping to define the character of the place through water being visible.
– Where drainage is a driver, it will ensure that greening happens and more quickly.

– Reduced reliance on operation of pumps in a storm event through the slow release of flood water.

– Storages provide multiples lines of defence reducing local flooding impacts.

– Easier to monitor the performance and risk of failure of above ground storage.

– Reduced cost of pipes.

– Reduced flooding impacts south of the precinct in Port Melbourne.
Turning the water challenges into an opportunity

Source: Fishermans Bend Integrated and Innovative Water Management, Ramboll
Cloudburst Boulevards & Green Streets

Rainwater overflow from tanks and roofs will be directed towards stormwater planters that can filter out pollutants from the water. In larger rain events the water will overflow to the Yarra River detention area.

By applying a cut & fill method, detention areas for stormwater and created urban green space to complement the vegetation areas for improved pedestrian traffic resulting in more comfortable seating areas.

Source: Fishermans Bend Integrated and Innovative Water Management, Ramboll
Water Plaza

Source: Fishermans Bend Integrated & Innovative Water Management, Ramboll
Creation of the Water Sensitive City Working Group

- Multi-stakeholder working group created to work towards a hybrid between the baseline strategy and the Cloudburst Master Plan.

- Comprised members of the Fishermans Bend Taskforce, Melbourne Water, South East Water, CRC, City of Melbourne, City of Port Phillip supported by GHD.
Scope of the Working Group

- Establish agreed benefits and investigate challenges / risks of distributed water storage
- Test where distributed storage is feasible and mitigate identified risks
- Estimate costs to feed into benefit to cost analysis

<table>
<thead>
<tr>
<th>Risk</th>
<th>Potential Mitigations</th>
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<tr>
<td>Inadequate storage achieved (rainwater tanks and/or streets)</td>
<td>• Careful wording of planning controls and ability to update</td>
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<tr>
<td>Note: rainwater tank risk applies to both options</td>
<td>• Audit of rain tank / street storage volumes actually installed</td>
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<tr>
<td></td>
<td>• Undertake a pilot distributed storage project to test this risk.</td>
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<tr>
<td>Timing of implementation of new streets / renewals (multiple asset solution)</td>
<td>• Living with unacceptable flooding (1:5 or 1:20 year) until augmentation.</td>
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<tr>
<td></td>
<td>• Use of piped solution where flood mitigation is critical to development</td>
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<td></td>
<td>• Staged delivery of streets to align with likely drainage needs</td>
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<tr>
<td></td>
<td>• Site planning controls (e.g. on-site detention, temporary works or works-in-kind).</td>
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<tr>
<td>Costs of additional excavation to achieve road &amp; open space storage are greater than assumed</td>
<td>• Further on-site investigation</td>
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<tr>
<td>Note: that this issue will apply to all construction works in the precinct and therefore is a shared risk</td>
<td>• Allow for a process to recover additional costs if they arise</td>
</tr>
<tr>
<td></td>
<td>• Undertake a pilot distributed storage project to test this risk.</td>
</tr>
<tr>
<td>Reliance on ongoing management and maintenance of multiple assets</td>
<td>• Maintenance requirements outlined, costed and agreed by asset owner.</td>
</tr>
<tr>
<td>Note: because the storage area is required to serve a drainage function it is more likely that it will be properly maintained.</td>
<td></td>
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<tr>
<td>Future flooding is worse than assumed</td>
<td>• Monitor and review Water Sensitive City Strategy with 5-year review of Precinct Plans and ICP (already programmed).</td>
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Water Sensitive Cities Strategy
Ramboll cloudburst detention areas and CoPP proposed case study area
Water Sensitive Design Strategy
Sample public open space plan - JL Murphy Reserve

Passive open space along Plummer Street
Create a generous open space along the Plummer Street Civic Boulevard, which provides recreational amenity for the community. Any required sporting pavilions could be integrated into this space.

Connect the linear park across JL Murphy reserve

Lowered sporting fields / detention area
Move the sports fields to the southern part of JL Murphy Reserve and lower them to create a large detention area (up to 70,000m²). Relocate one of the existing soccer pitches to another public open space (e.g. Wirraway North or Prohasky Park).

Examples of lowered sporting fields

Example of passive recreation facilities

Example of passive recreation facilities
Case Study for 34 metre streets
Water Sensitive Design Strategy
Decision Framework - storages in streets and public spaces

Does the required storage prevent flooding of roads in the 20 year event?
  Yes
  No

Does the required storage prevent flooding of roads in the 100 year event?
  Yes
  No

Can the storage volumes be designed into streets & open space?

Optimisation process within each catchment

New and Existing Streets and Public Open Space
  natural surface level < 1.4m AHD

Is storage cost competitive with pipe upgrades?
  Yes
  No

DISTRIBUTED STORAGE
  Storage in streets / open spaces

PIPES & WSUD
  No additional storage in streets / open spaces

CRC for Water Sensitive Cities
4th water sensitive cities conference
Water Sensitive Design Strategy
Storage volumes - 20 year ARI event

Montague
Sandridge
Wirraway

Employment Precinct
(Future street planning envisaged to be able to accommodate required storage)
Next Step – piloting distributed storage

New Melbourne University Engineering Campus at the former General Motors Holden Site