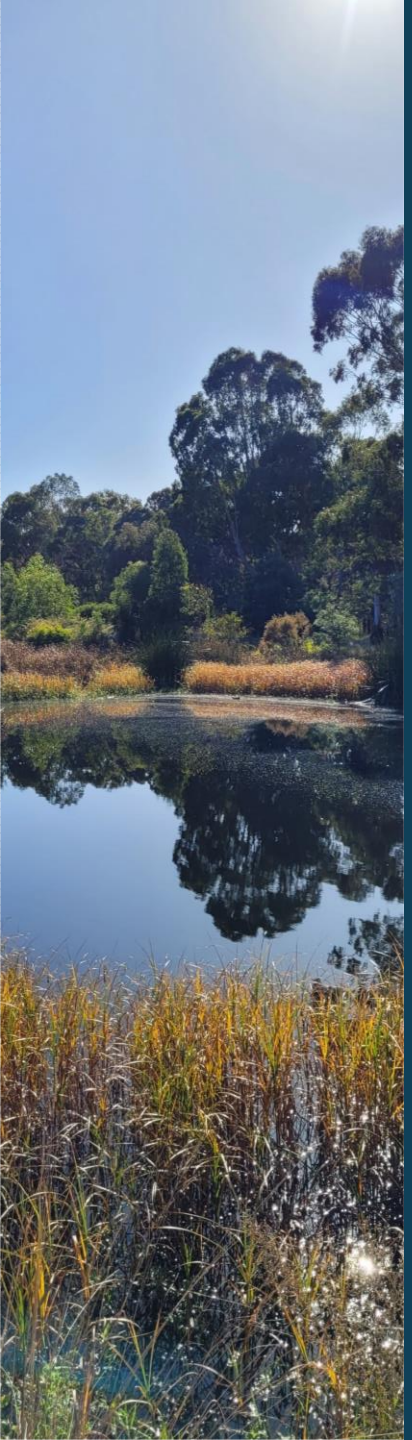


Merri-bek City Council

Place-based solutions

Catchment Scale Integrated Water Management in Merri-bek

June 2023

Integrated Water Management Strategy 2040

alluvium

WAIN

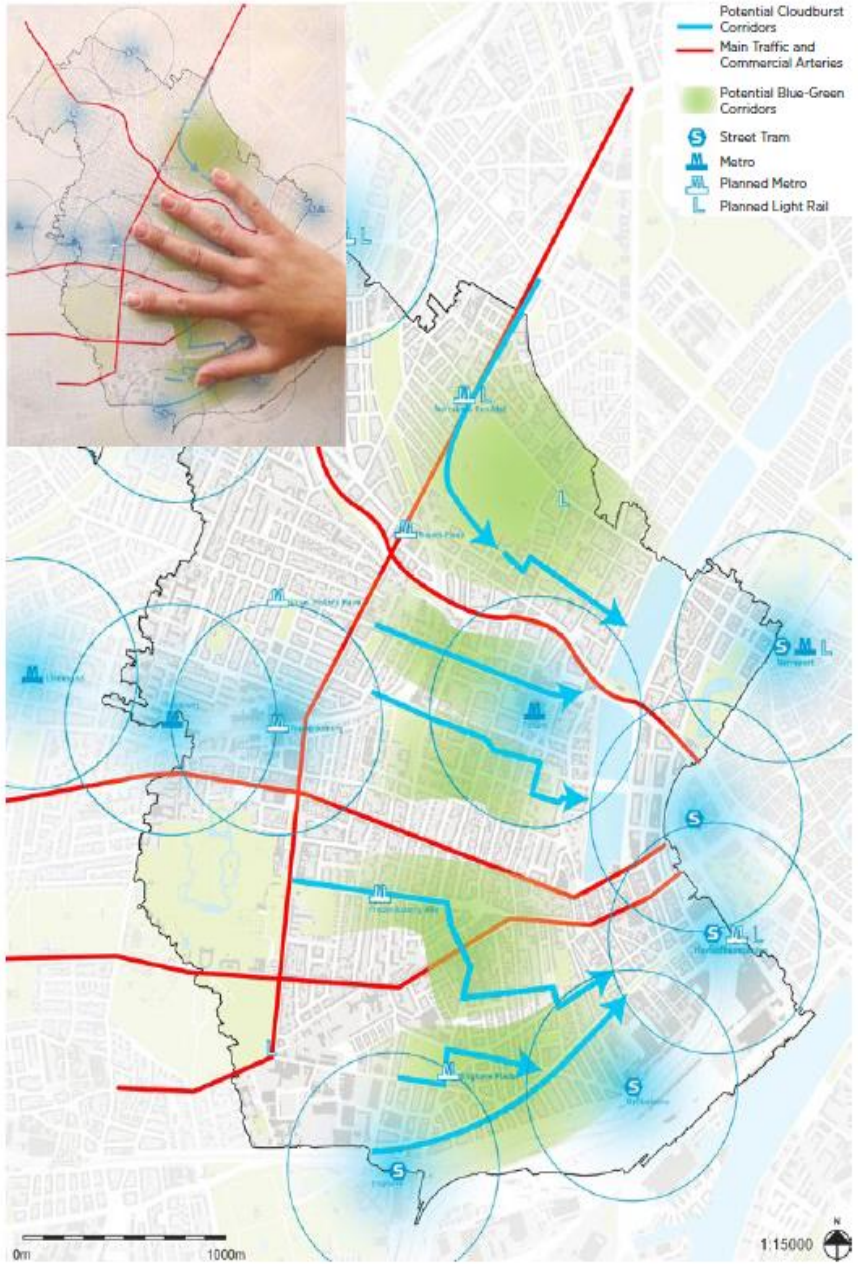
Engineering + Creativity = Better Water Outcomes

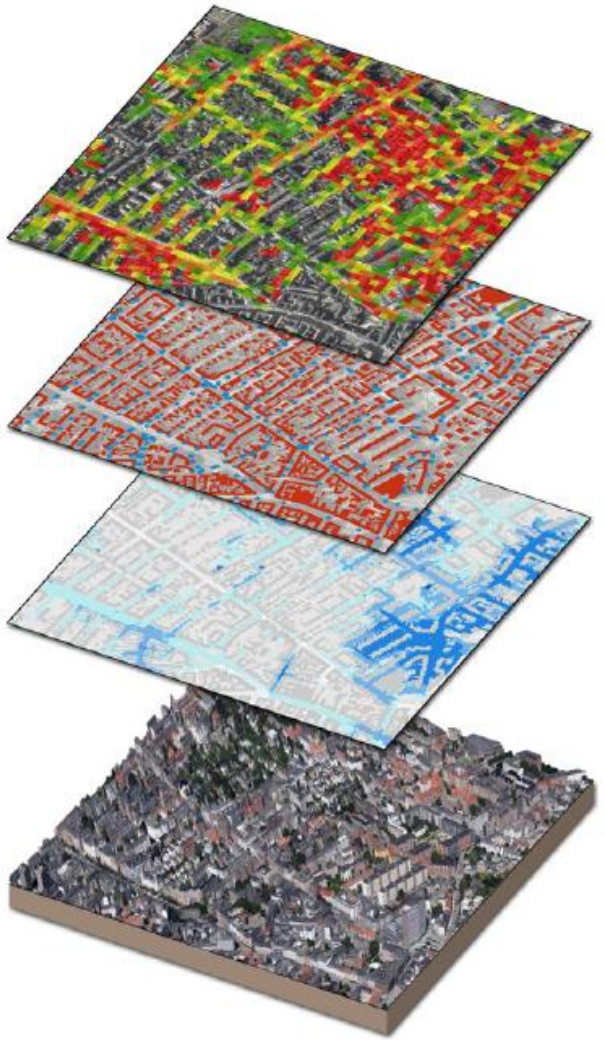
Merri-bek City Council

Why Place-Based Planning ?

- Siloed Thinking
- Single-Purpose Infrastructure
- Costly Impacts

- Integrated Solutions
- Resilience
- Social Equity





Detailed Analysis shows the complexity involved in determining areas most at risk to flooding and potential catalyst sites that can serve as test project areas

alluvium

Engineering + Creativity = Better Water Outcomes

Merri-bek City Council

Project Reference Group

- Yarra Valley Water
- DEECA
- Melbourne Water
- Merri-bek City Council
  - Asset management
  - Engineering services
  - Urban forest
  - Open space design and development
  - Strategic planning
  - Sustainable Built Environment
  - Transport

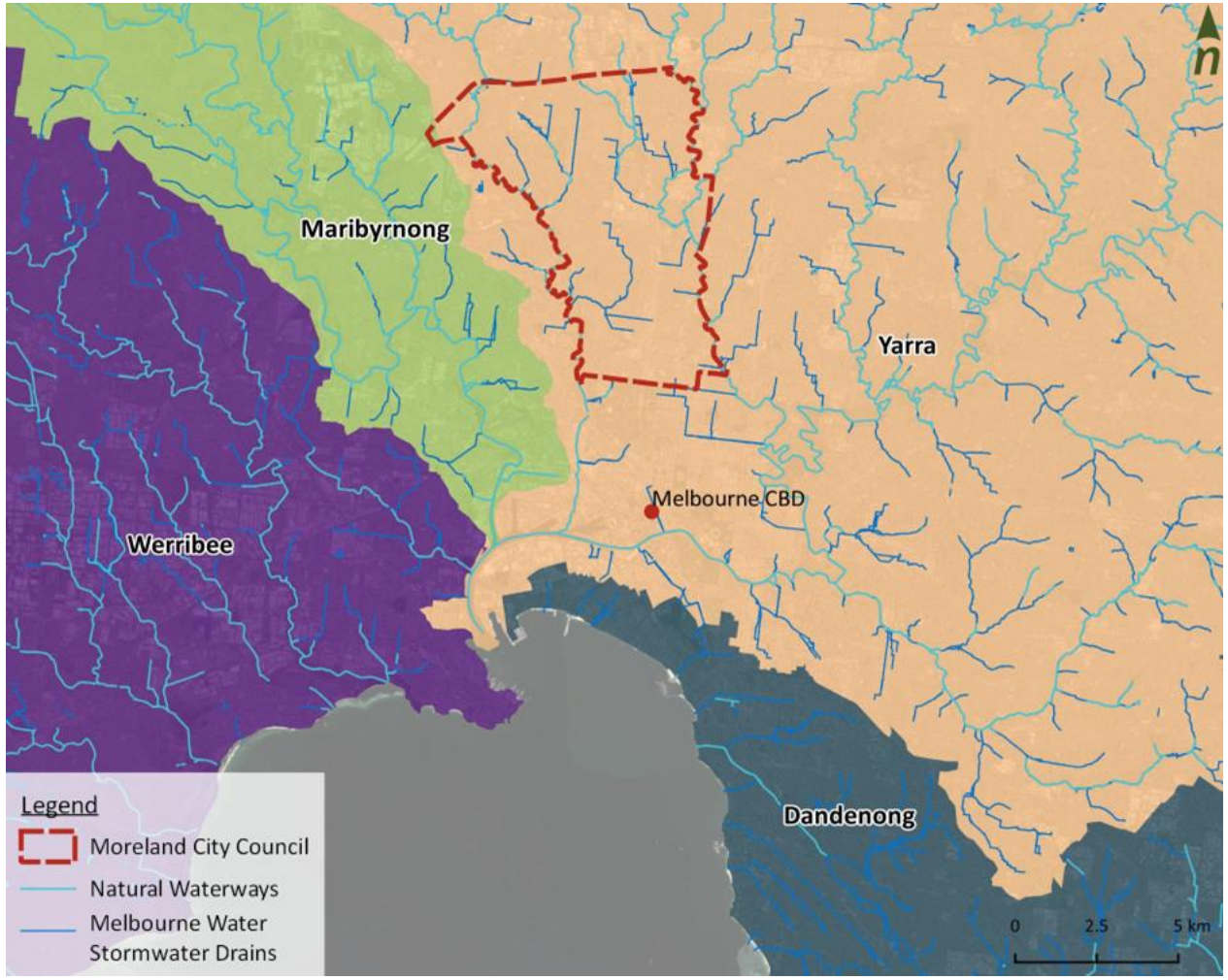
Aim

Set a strategic direction for IWM and public space works

Establish a collaborative and repeatable process

To identify a preferred sub-catchment within Merri-bek and IWM opportunities using:

- Outcomes and objectives within the Yarra Catchment Strategic Directions Statement (SDS)
- The Indicators and Measures defined within the Yarra's Catchment Scale IWM Plan (CSIWM).



Targets

- Area affected by 10% AEP event
- Effective flood storage
- Cross considering IWM and flood mitigation

- Total water use provided from alternative water sources
- Alternative water sources replacing potable demand

Safe, secure and affordable water supplies in an uncertain future

Effective and affordable wastewater systems

Existing and future flood risks are managed to maximise outcomes for the community

Healthy and valued waterways and marine environments

- Runoff volume reduction
- TN reduction
- TSS reduction

- Street trees supported by irrigation from an alternative source
- Active open space supported by an alternative source
- Reduction in land surface temperature

Healthy and valued urban and rural landscapes

Community values are reflected in place-based planning

Jobs, economic benefits and innovation

Enablers

- Blue-green infrastructure created or enhanced by IWM
- Community water literacy
- Water as a key element in city planning

Process

Thematic mapping

- Land use, sub-catchments, waterways, flooding, biodiversity, stormwater and WSUD, Urban heat, Community metrics
- Water users, Council and Yarra Valley Water works

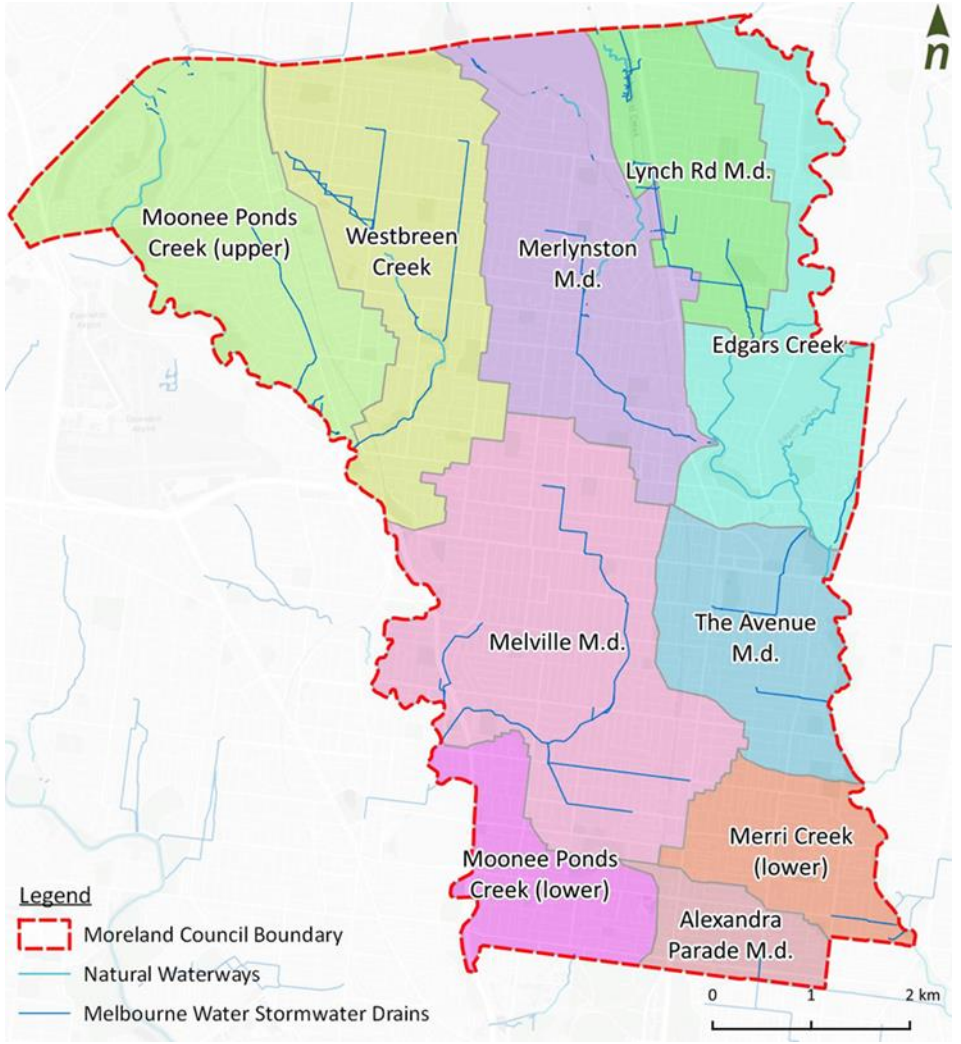
Multi Criteria Assessment Framework (Sub-catchment scale with 24 criteria)

Identify a priority sub-catchment

Define IWM ‘zones’ containing various issues and opportunities

Identify and prioritise IWM projects (12 criteria against a qualitative rubric)

Concept designs (5)



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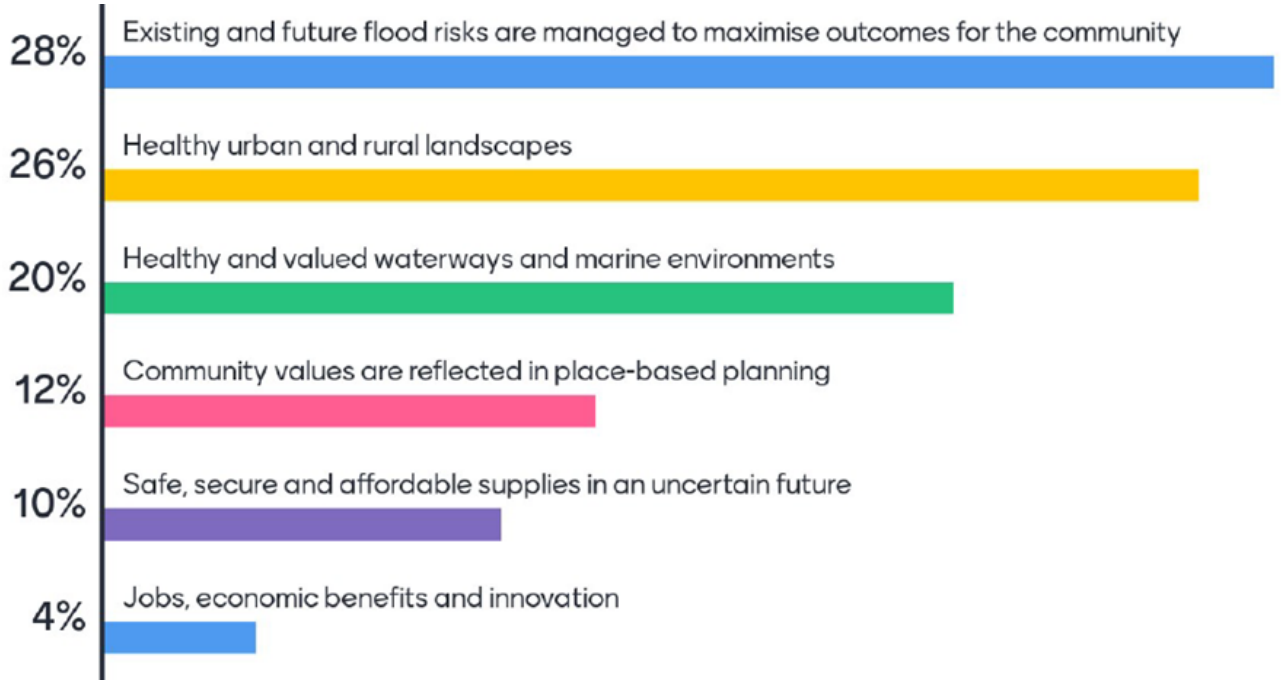

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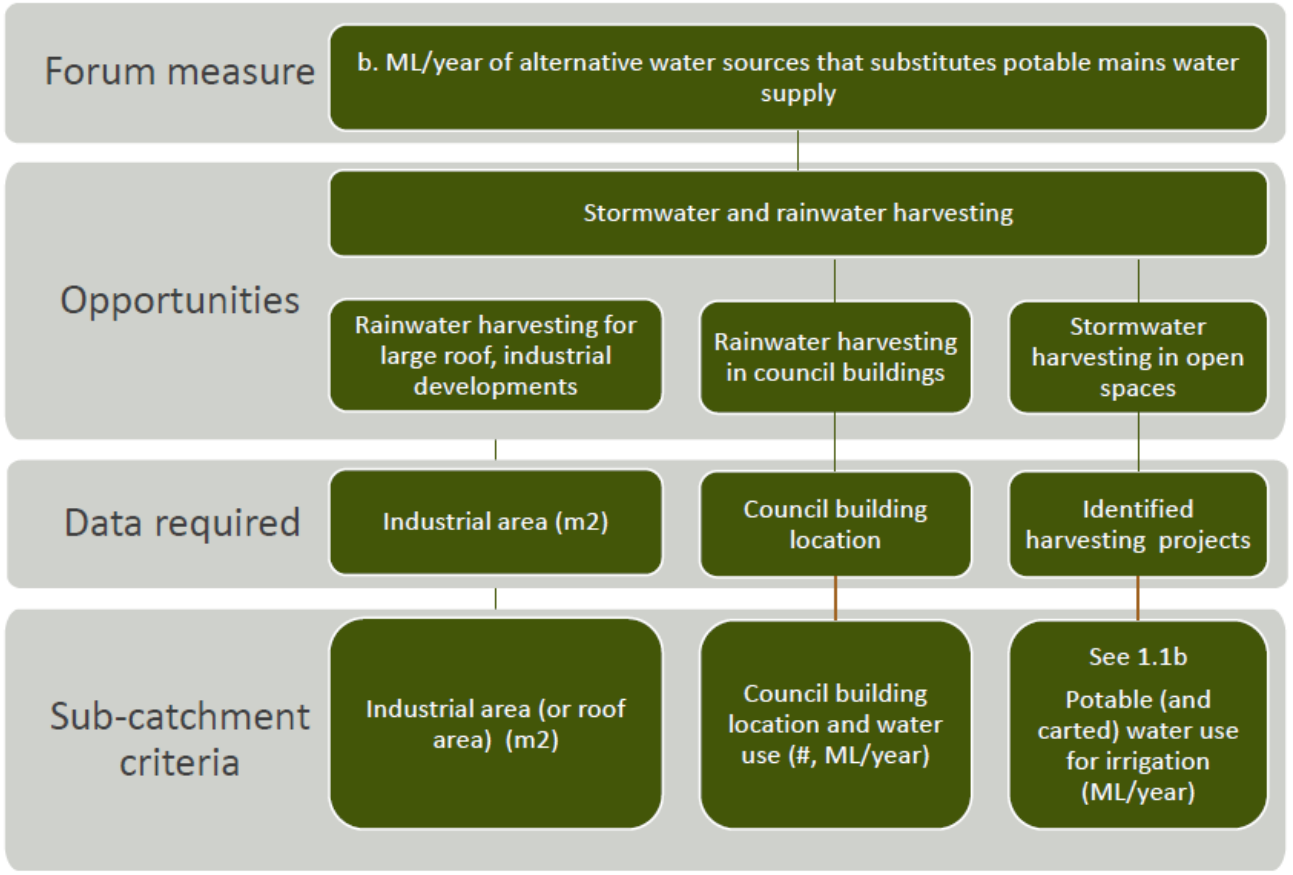


Process

Thematic mapping

- Land use, sub-catchments, waterways, flooding, biodiversity, stormwater and WSUD, Urban heat, Community metrics
- Water users, Council and Yarra Valley Water works

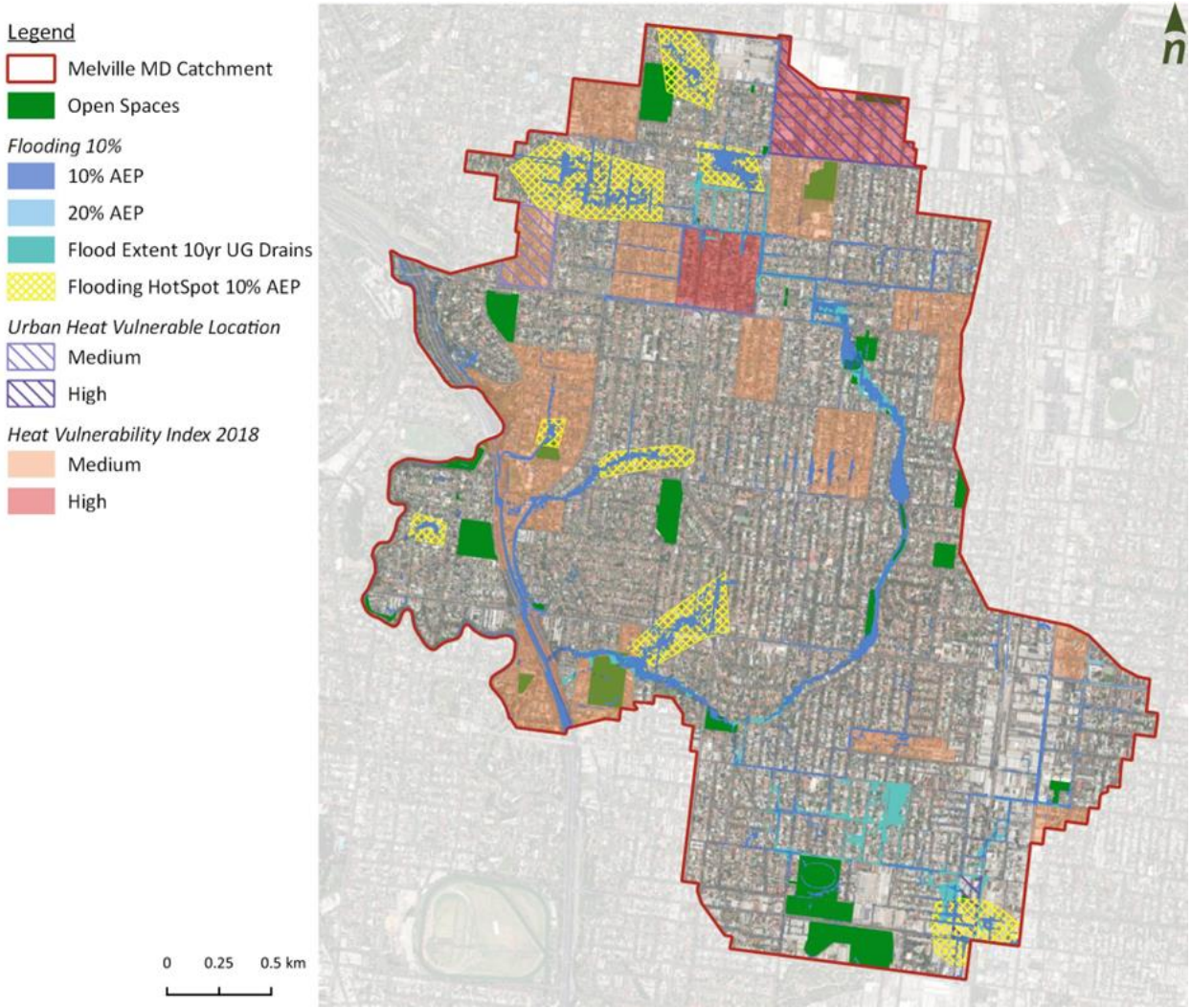
Multi Criteria Assessment Framework (Sub-catchment scale with 24 criteria)

Identify a priority sub-catchment – Melville Main Drain

Define IWM ‘zones’ containing various issues and opportunities

Identify and prioritise IWM projects (12 criteria against a qualitative rubric)

Concept designs (5)



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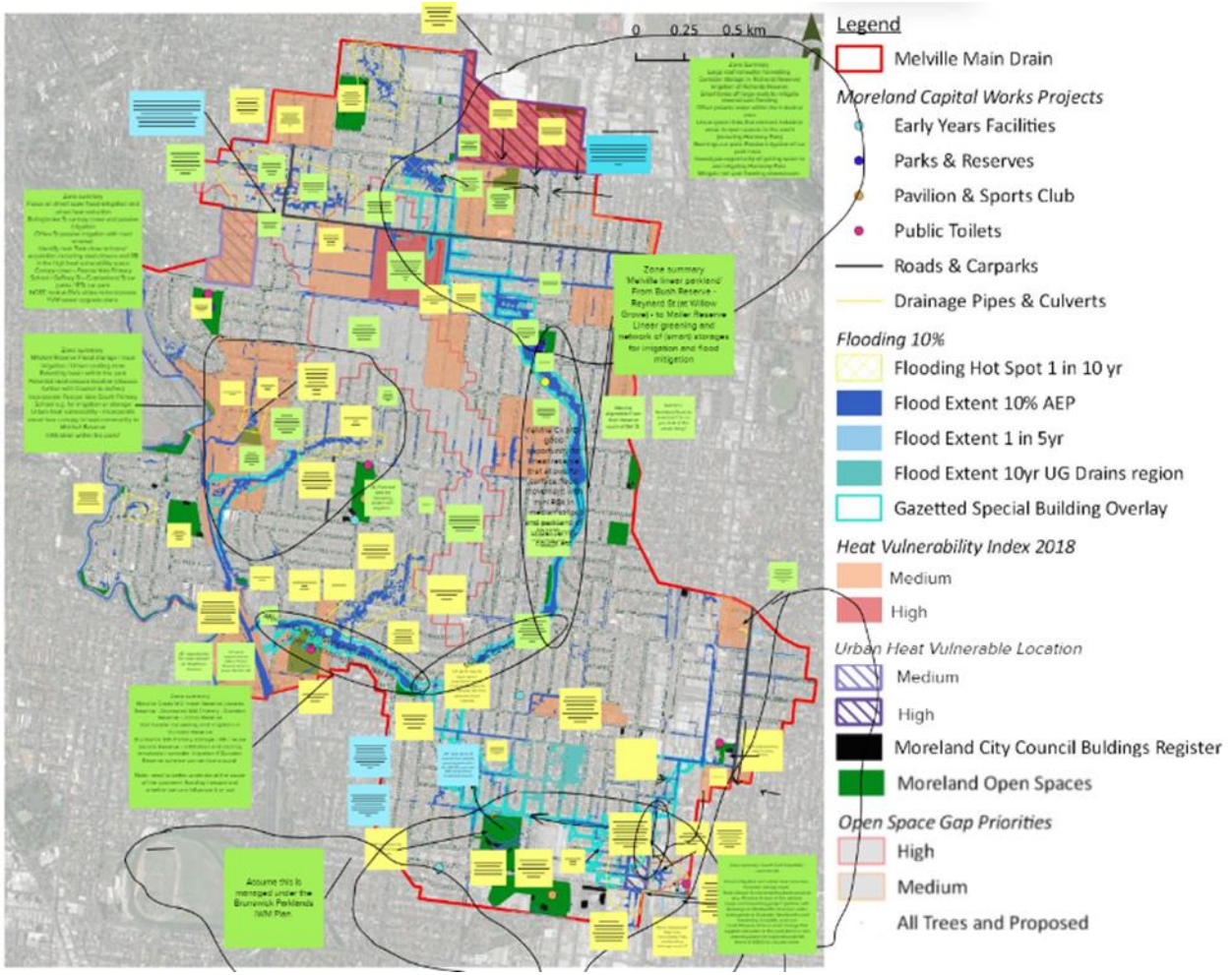

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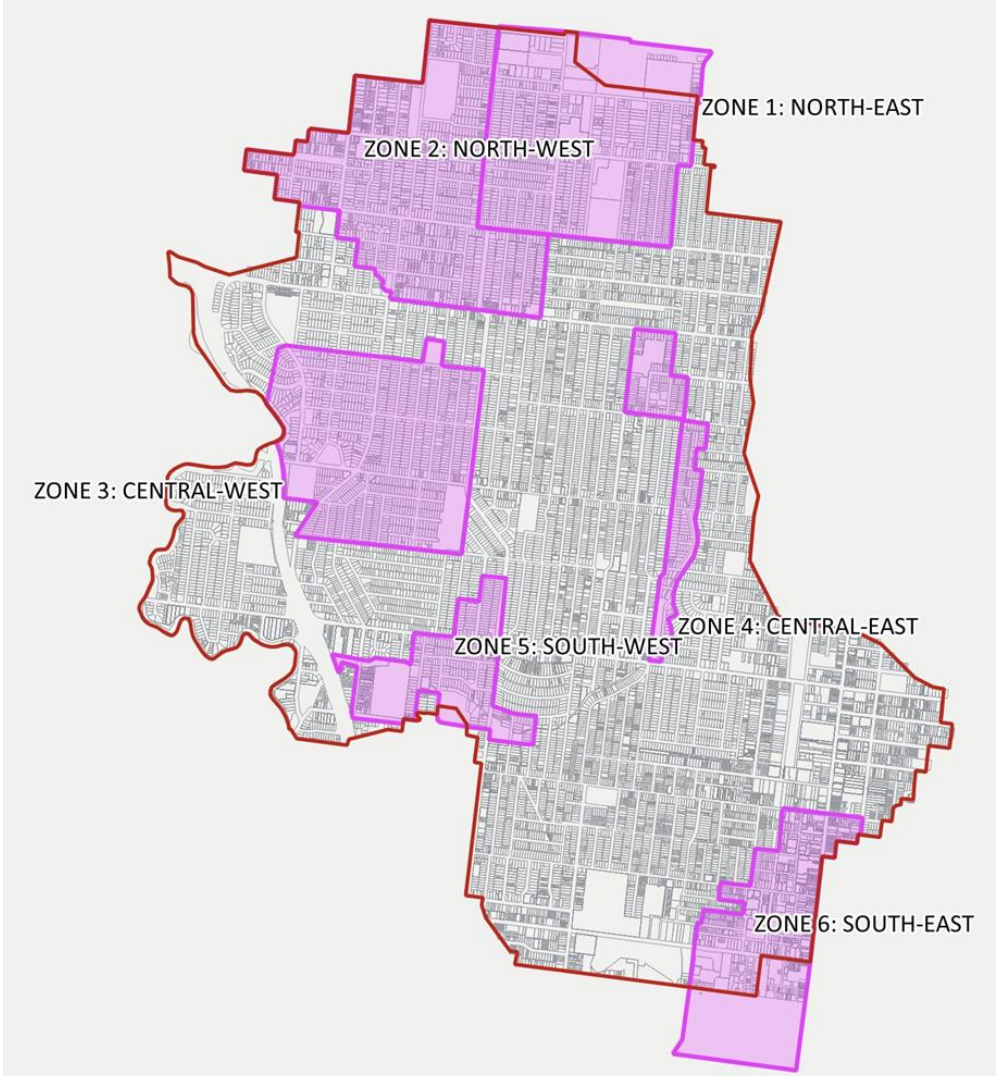


Process

Zone 1: North-east

Project 1: Cooling industrial streets (Gaffney St)

Aim: Greater canopy cover and infiltration of stormwater for tree irrigation to increase canopy cover and reduce urban heat.

Scope

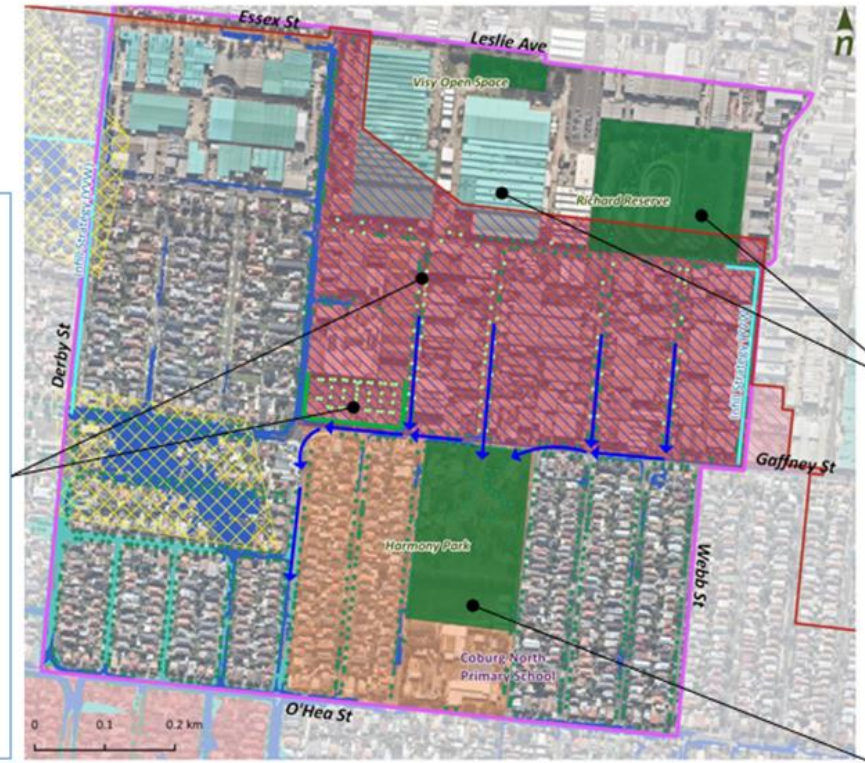
- Additional street trees and passive irrigation in the industrial streets north of the Gaffney St and between Lens St and Hossack Ave.
- Passive irrigation in commercial carparks within the High heat vulnerability areas e.g. the Coles at the corner of Sussex and Gaffney

Issues and opportunities

- YVW works in the area e.g. Hossack Ave and Derby St.
- Car park opportunities to install storage cells beneath permeable road surfaces for storage

Stakeholder works (internal / external)

- YVW infill water supply work along Derby St and Raeburn St



Project 2: Richards Reserve industrial roof rainwater harvesting

Aim: Harvesting rainwater off Visy roof / industrial roofs to reduce potable water demand and to reduce downstream runoff

Scope

- To harvest water from Visy's roof to
  - Divert rainwater to storages in Richards Reserve for irrigation (requiring a dedicated rainwater collection network).
  - Store in open space on Leslie Ave to meet internal water demands

Issues and opportunities

- Visy as a large water user. Rainwater could reduce potable water use. Open space at the rear of Visy could house storage
- Richards Reserve is at the top of the catchment. Contours on following map suggest flows could be directed east but there may be challenges in terms of level.
- Richards Reserve storage could be a 'Smart tank' contributing to reduced downstream flooding.
- Richard Reserve is planned to undergo upgrade and resurfacing in 5 years.

Stakeholder works (internal / external)

- Partnership opportunity with Visy's Sustainability Team and other industrial companies for onsite storage and reuse of rainwater.

Project 3: Harmony Park stormwater harvesting

Aim: Stormwater harvesting for the irrigation of Harmony Park and Coburg North Primary

Scope

- Divert flows from north of Gaffney Street via the DN600 Jersey St drain into a storage in Harmony Park
- Connect Coburg North Primary School to the scheme
- Smart storage to provide flood detention

Issues and opportunities

- Depth of Jersey St drain needs to be determined

Stakeholder works (internal / external)

- Potential partnership with Coburg North Primary School

Process

Outcome	Weighting	Forum Measure	Forum Measure description	Forum Measure weighting	Zone 1: North-east			Zone 2: North-west			Zone 3: Central-west		Zone 4: Central-east		Zone 5: South- west		Zone 6: South-east		
					Project 1: Cooling industrial streets (Gaffney St)	Project 2: Richards Reserve industrial roof rainwater harvesting	Project 3: Harmony Park harvesting	Project 1: Opportunistic Greening (Dale St and Cumberland Rd)	Project 2: Park Close to Home	Project 3: Raeburn Reserve stormwater harvesting	Project 1: Mitchell Reserve flood storage and irrigation	Project 2: Large roof smart tanks (e.g. Antonine College)	Project 1: Melville Main Drain linear flow (Bell St to Reynard St)	Project 2: Melville Main Drain linear flow (Reynard St to Moreland Rd)	Project 1: Melville Main Drain linear reserve (Brunswick NW Primary)	Project 2: Department of Housing smart tanks (100 Gronn Place and Everett St)	Project 1: Sydney Road car park storages	Project 2: Sydney Road opportunistic greening	Project 3: Roofwater harvesting (Woolworths)
Safe, secure and affordable supplies in an uncertain future	10%	1.1a	Decrease potable water use (residential or non-residential)	100%	0	2	1	0	0	1	2	1	0	0	1	2	1	0	2
Existing and future flood risks are managed to maximise outcomes for the community	28%	3.3	Will the project influence the number of properties affected by flood (in the 10% AEP event)	45%	0	2	2	1	1	3	3	2	1	1	1	1	1	0	1
		3.3	Does the project contribute to reducing flood hotspot area	55%	0	3	3	0	0	3	3	0	3	3	0	0	0	0	0
Healthy and valued waterways and marine environments	20%	4.1	Reduce the total urban stormwater runoff volume discharged to receiving waters	56%	1	2	3	1	1	3	3	1	0	0	2	1	2	1	2
		4.2	Reduce the tonnes/year of stormwater pollutants (including TSS and TN) discharging to receiving waters	44%	1	3	3	1	1	3	3	1	0	0	2	2	2	1	2
Healthy urban and rural landscapes	26%	5.1	Increase the number of trees supported with permanent (active or passive) irrigation from an alternative water supply	32%	3	0	0	3	3	1	1	1	0	0	2	2	0	2	0
		5.2	Provision of alternative water sources for irrigation of public open spaces	34%	0	3	3	0	1	3	3	1	0	0	1	0	0	0	0
		5.3	Reduce urban heat through the provision of additional green space	34%	2	0	0	1	2	2	2	1	0	0	2	1	1	1	0
	12%	6.1b	Is there a meaningful opportunity for Traditional Owner engagement For example : would the project contribute to outcomes in Reconciliaiton Action Plans (RAPs) or other documents.	28%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Community values are reflected in place based planning		6.2	Will the project contribute the to community's sense of place, health, and well-being	51%	2	3	3	2	3	3	3	1	3	3	2	2	2	2	3
		6.3	Improve communities' connection with and understanding of the water cycle	21%	2	3	3	2	2	3	3	1	3	3	2	2	2	2	3
Jobs, economic benefits and innovation	4%	7.1a	Does the project provide water for productive agricultural or industrial use?	100%	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
				Raw score	11	24	21	11	14	25	26	10	10	10	15	13	11	9	16
				Weighted score	3.6	8.0	6.9	4.9	4.9	9.0	10.0	5.5	1.3	1.3	6.2	6.0	4.5	2.8	6.7
				Rank	12	3	4	9	9	2	1	8	14	14	6	7	11	13	5

Discussion

What went well

- Collaborative buy-in was successful, particularly from internal Merri-bek staff (open space, roads, community)
- Focussing spatially, from LGA to sub-catchment to zone allowed the group to understand the broader context before zooming in.
- The ‘zone’ approach also allowed the group to identify spatially proximate opportunities and link them together.
- The evaluation framework worked (but was time and data consuming) and could be adjusted based on available data, LGA and sub-catchment conditions
- Our group was not comfortable making assessments for Traditional Owner related criteria
- Identified opportunities aligning with flood mitigation works

Discussion

Room for improvement

- **Out of sub-catchment opportunities:** Accommodate if opportunity or timing dictates e.g. Engeny's identified 2-3 flood mitigation projects in open space outside the Melville main drain sub-catchment e.g. Raeburn Reserve stormwater harvesting opportunity.
- **Bias toward larger (harvesting) schemes:** Smaller scale / less conventional opportunities didn't perform well (e.g. street scale urban cooling, passive irrigation, 'Parks close to home', linear green corridors).
- **Flood mitigation and stormwater harvesting**: should be considered together with realistic expectations about what is achievable.