Prioritising IWM Opportunities in Inner Melbourne

ENGENY
WATER MANAGEMENT

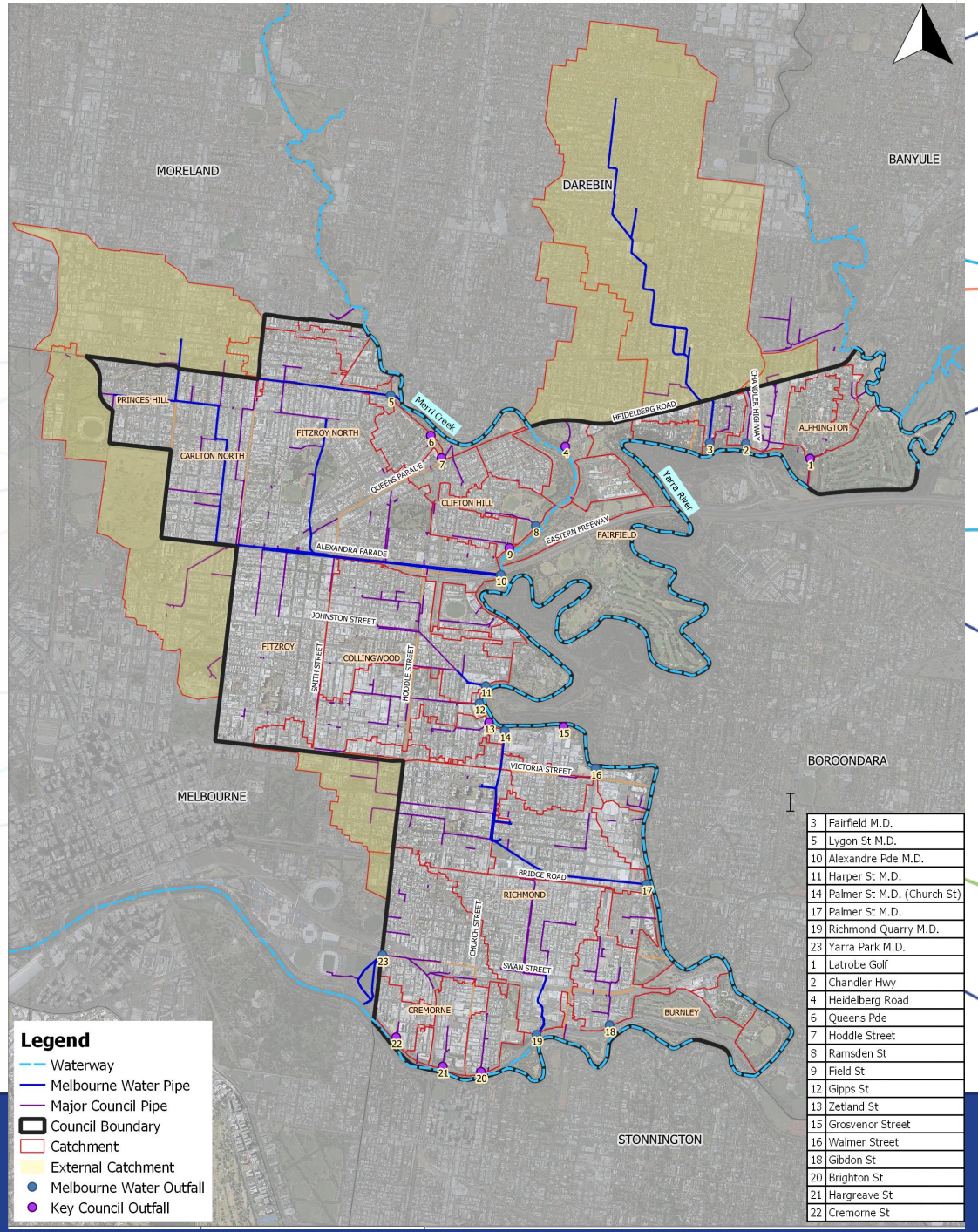
CITY OF YaRRA

PRESENTATION OVERVIEW

- About Yarra
- Project Background – Strategic Backing
- Study Drivers
- Engagement
- Project Steps
- Outputs

About Yarra

- Total Council Area =19.5 km²
- External Contributing Catchment Area = 9 km² (Moreland, Darebin & Melbourne City Councils)
- 8 Melbourne Water Stormwater Outfalls
- 15 Major Council Stormwater Outfalls

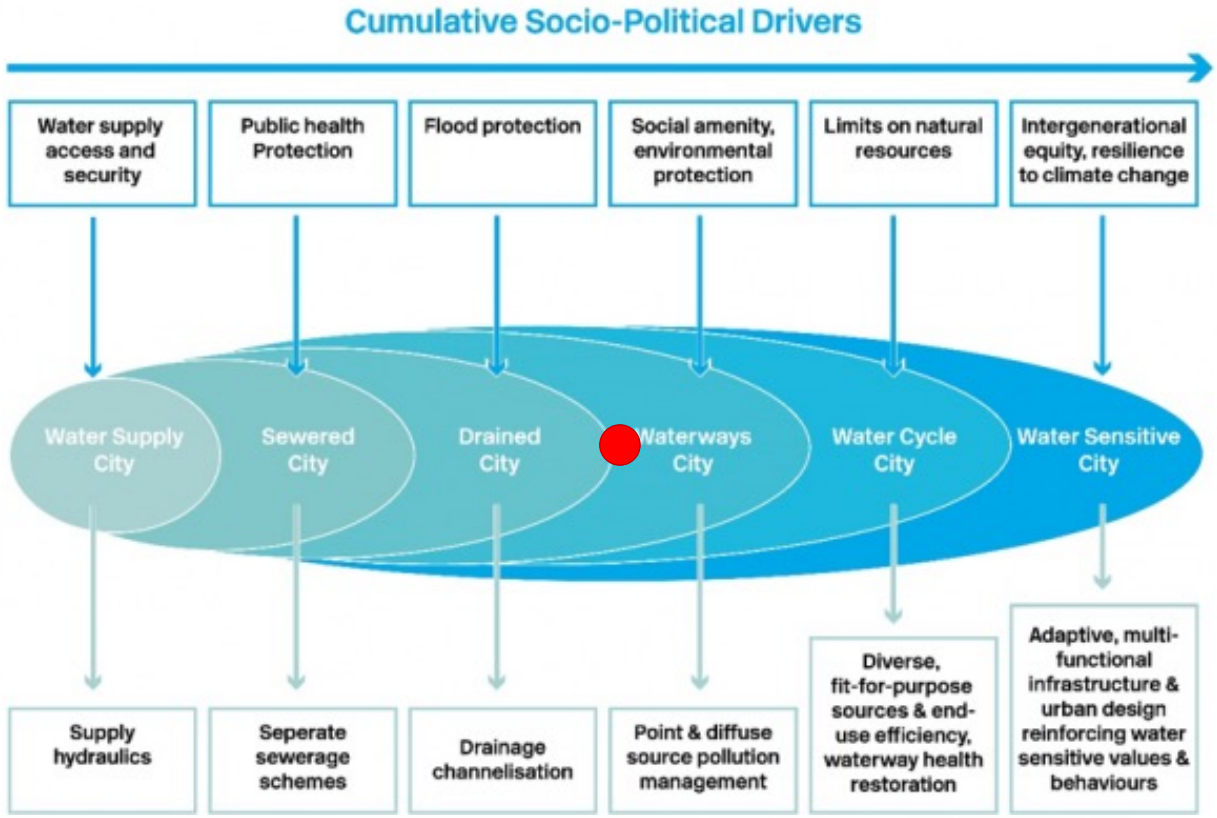


ENGENY WATER MANAGEMENT

CITY OF YARRA

STRATEGIC INTENT

- **Pre FY 20/21**
- Commencing the IWM Journey
- WSUD providing mixed outcomes
- Ed Gardens – industry leading, needing a refresh
- Allocated resources from 20/21
- Focus on flood mapping and solutions 2020
- IWM Plan complete in 2020

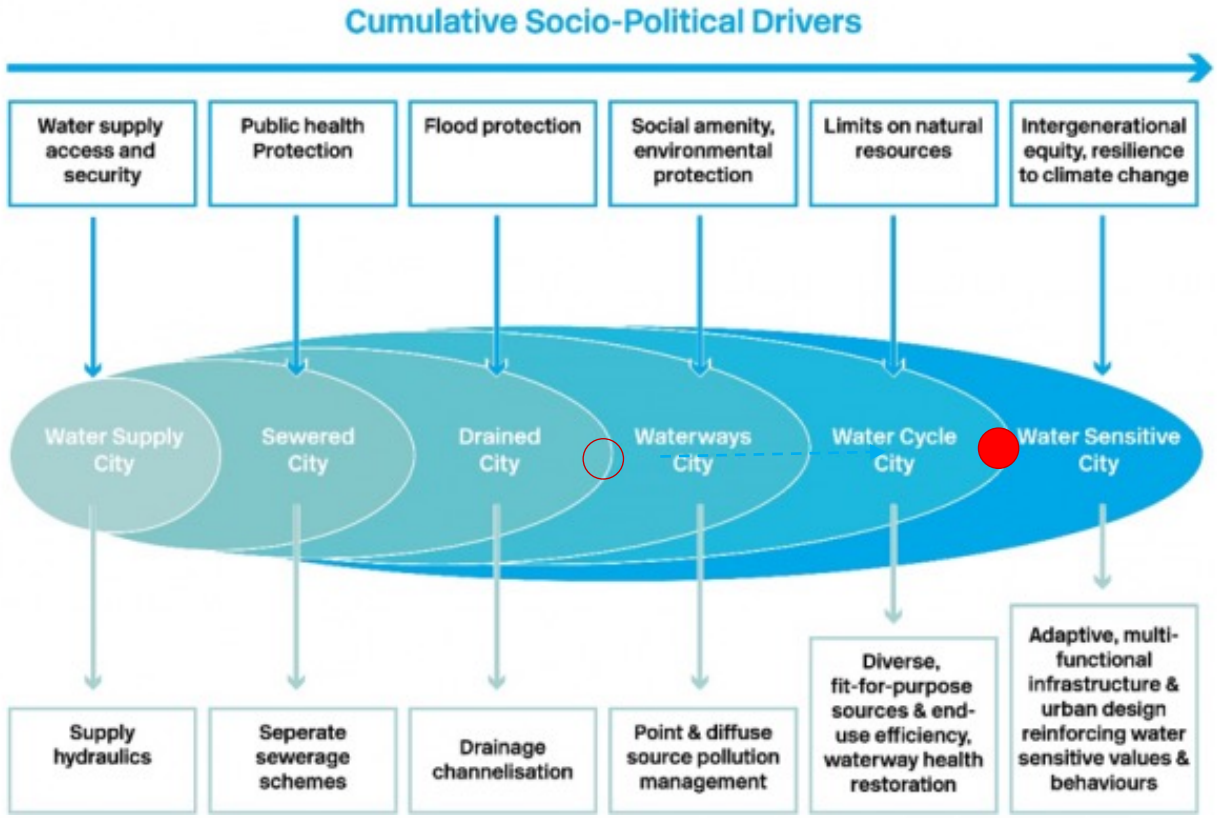


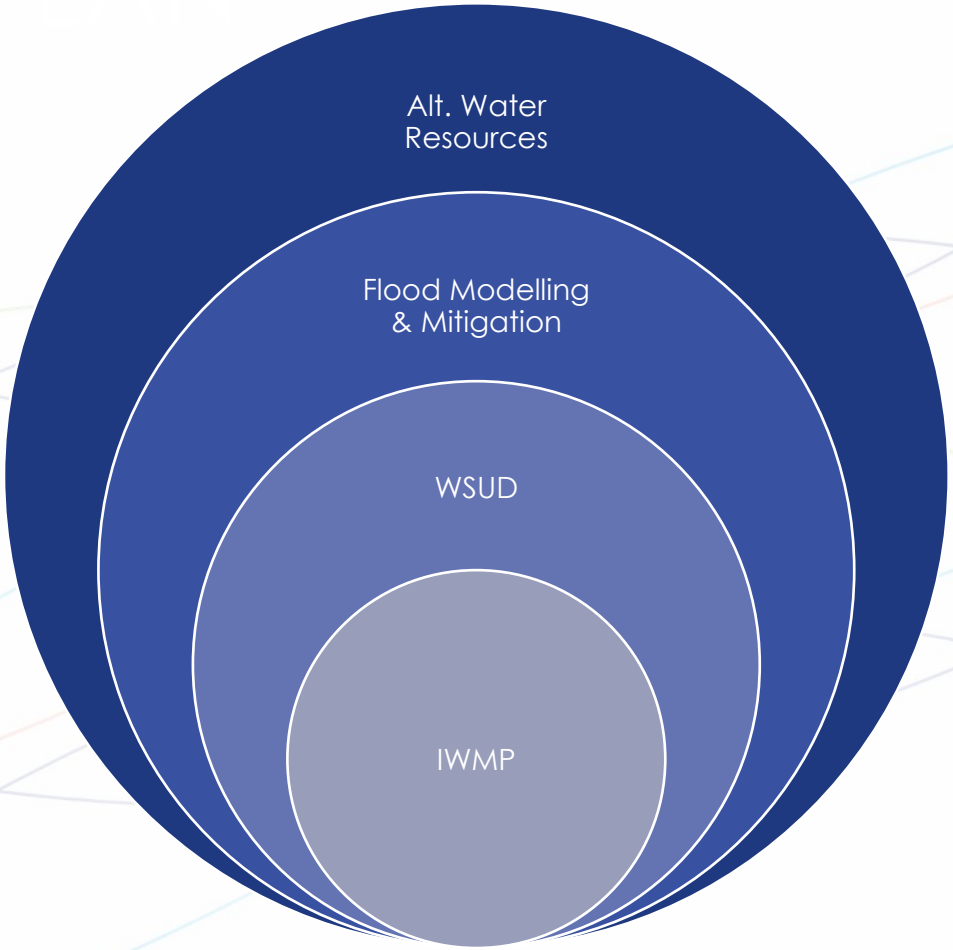
ENGENY WATER MANAGEMENT

CITY OF YARRA

STRATEGIC INTENT

- **FY 21/22**
- Year 2 of IWM Plan implementation
- Strategic Plan Developed
- IWM Lead Role Appointment
- Driving change management within the Yarra
- Driving excellence in the industry




Alt. Water Resources
Flood Modelling & Mitigation
WSUD
IWMP

STRATEGIC PLAN

FOCUS PROJECTS FY21/22

PLANNING, DESIGN & CAPITAL **DELIVERY**

- Flood Hot Spot Review/ Flood Mapping
- Ed. Gardens SWH Review
- Permeable Pavement Trial (SV)
- IWM Strategic Opportunities
- Ramsden Oval SWH Scheme Detailed Design
- Holden Street Drainage Upgrade – Detailed Design
- Ed. Gardens SWH Scheme Improvement works
- Ramsden Oval Perm Pavement Trial (DELWP)
- Curtain Square SWH Scheme Concept Design
- Holden Street Drainage Upgrade – Construction
- Scoping for Permeable Pavement Research Package (Melb Uni)
- Smart Tanks Investigation - Cremorne
- Glass Street Flood Review

COMMUNITY **ENGAGEMENT**

- IWM Strategic Comm. Engagement Plan
- Creating a Water Story
- Ramsden Oval Community Engagement
- Creating a knowledge bank
- A celebration of YCC's achievements
- Engagement through Schools: Water Smart Art Competition

LEADING **ORGANISATIONAL** CHANGE

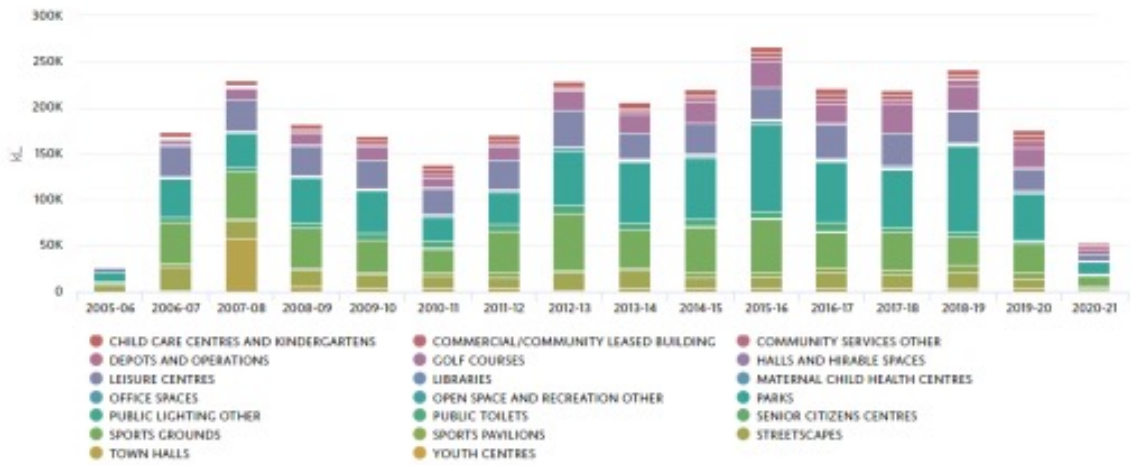
- Stormwater Framework Review
- Participation in the Yarra IWM Forum
- Internal Engagement driving IWM Plan Actions
- Drainage/ IWM Guideline
- IWM Lead
- WSUD Policy Review and Update
- Ed. Gardens SWH Scheme Staff Training (O&M)
- Contributions Policy
- IWM Advice on private and YCC projects

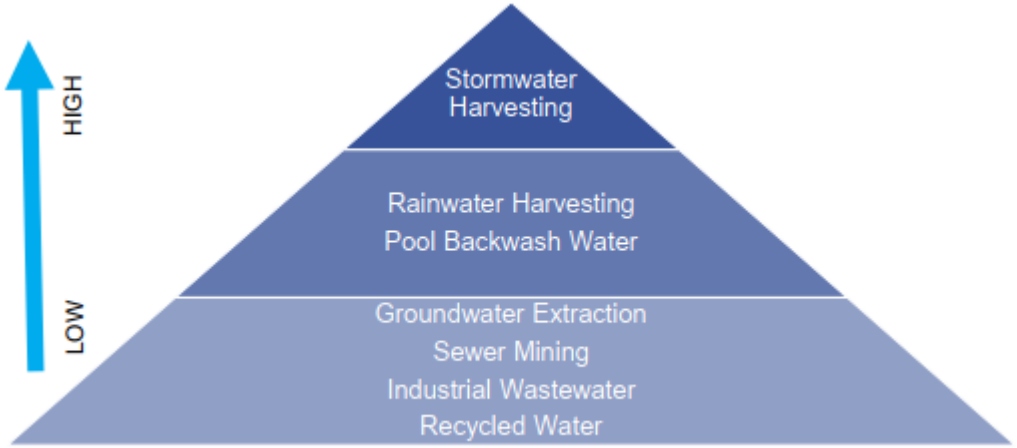
ENGENY
WATER MANAGEMENT

Project Phases

- Phase 1 – Background Investigations and Stakeholder Interviews

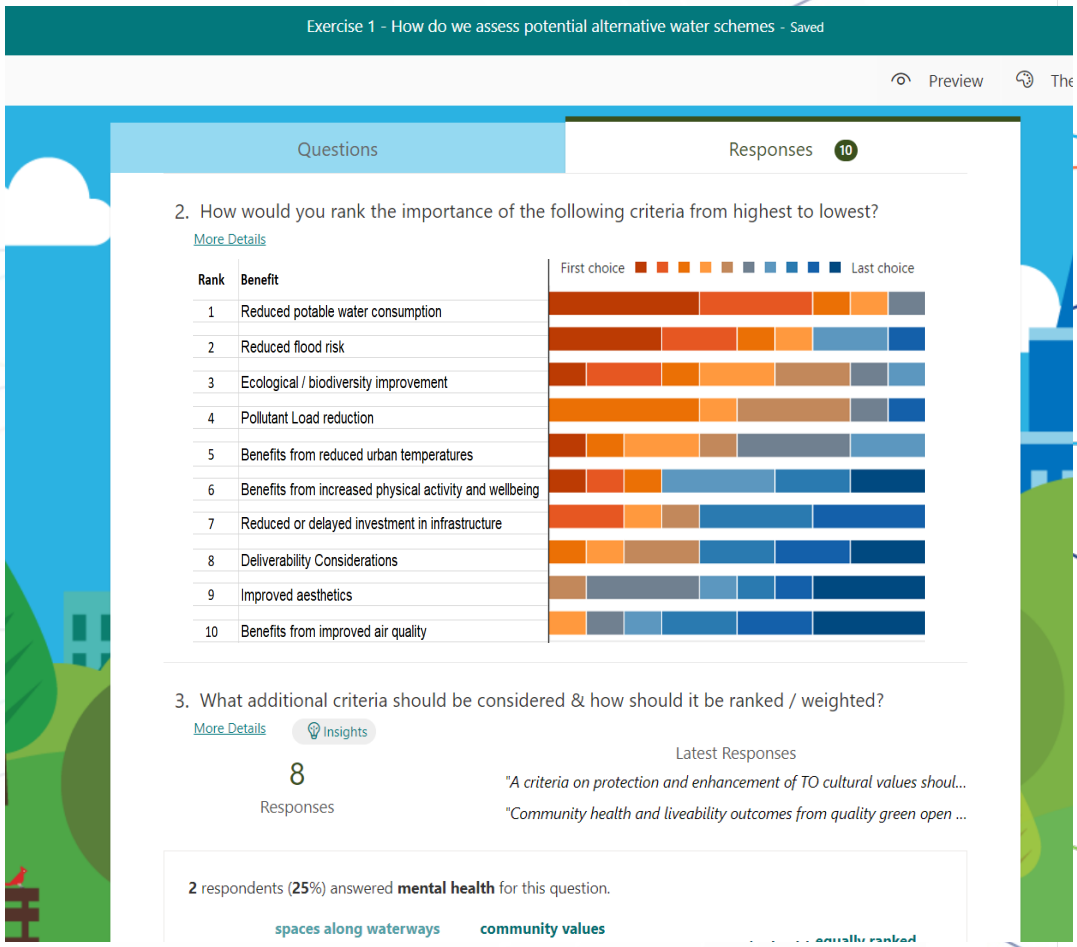
Feasibility of Alternative Water Sources





Stakeholder Interviews & Workshops

Figure 3.2: Key Stakeholder Themes



Project Phases

- Phase 1 – Background Investigations and Stakeholder Interviews 
- Phase 2 – Catchment Analysis / Consideration of Study Drivers

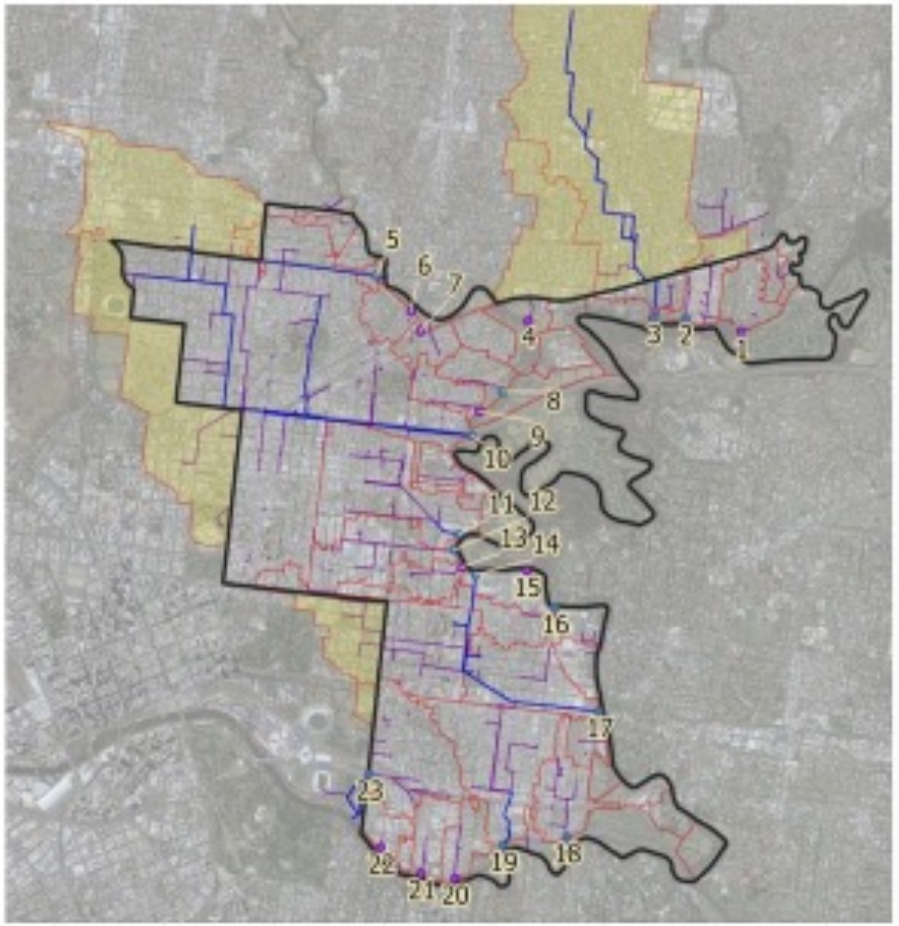
Water Balance Assessment

Mean Annual Stormwater

External Catchments
4129 ML/year

City of Yarra
7978 ML/year

TOTAL
12107 ML/year



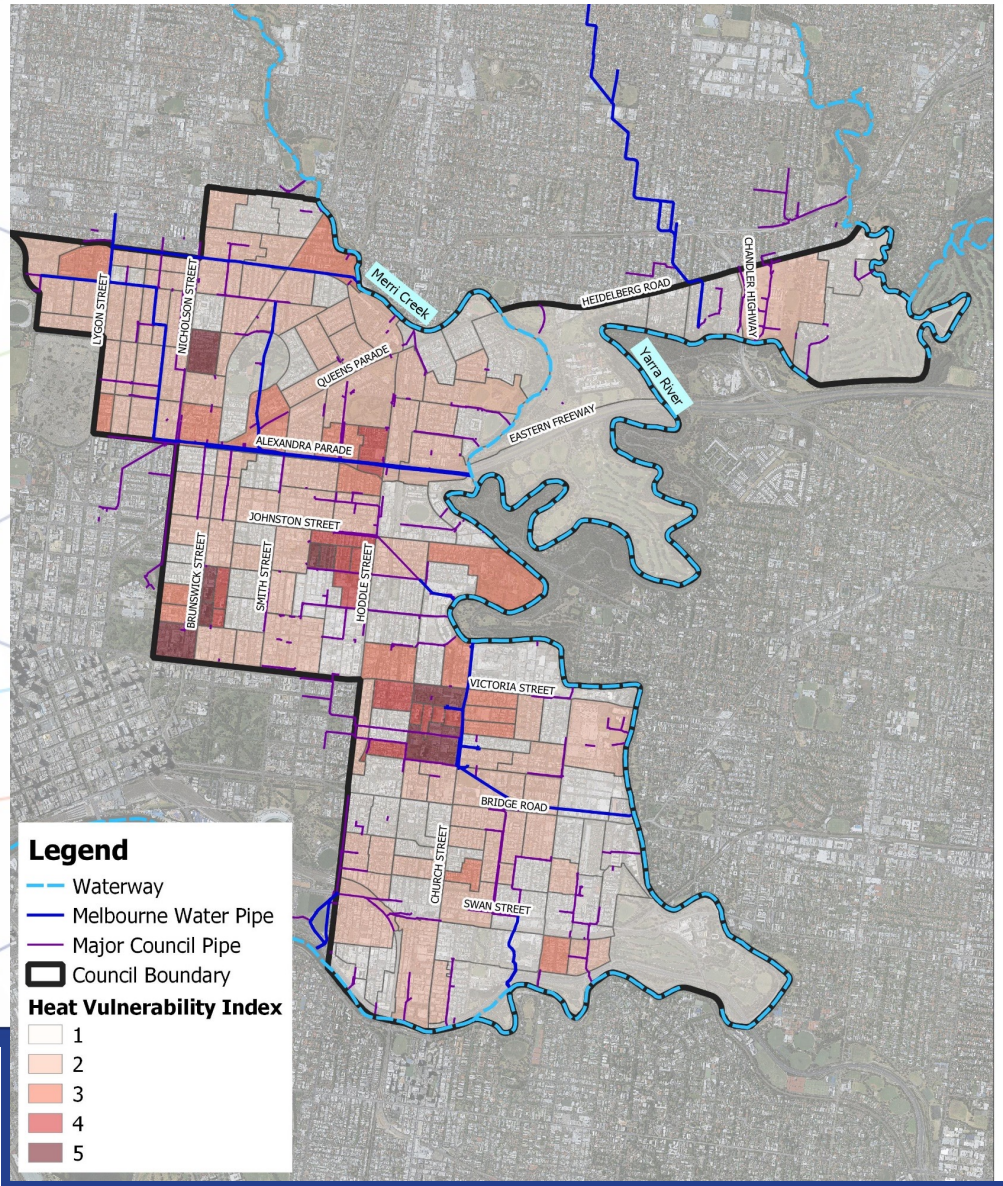
Mean Annual Pollutants

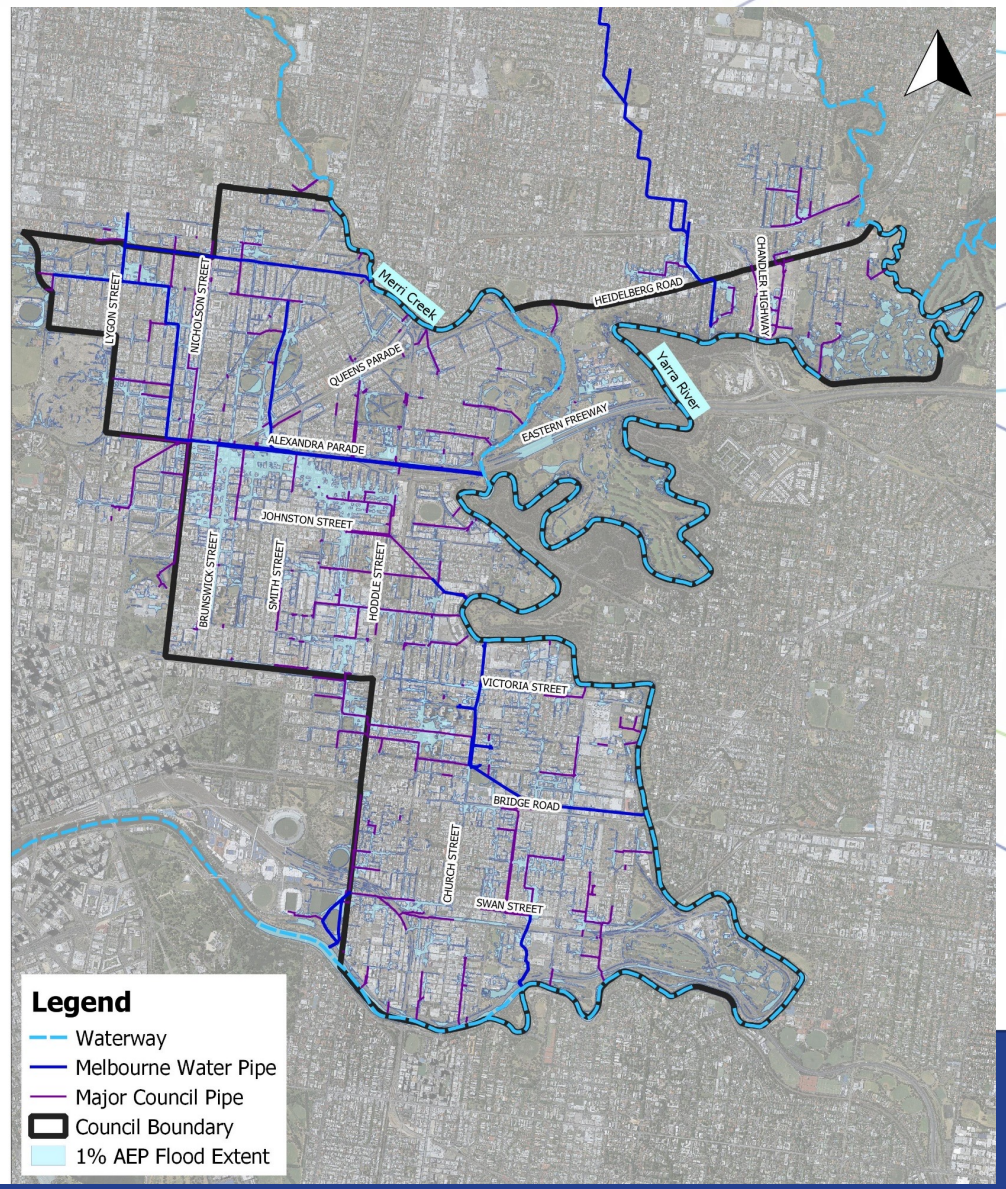
External Catchments
(tonnes/year)
TSS = 828
TP = 1.7
TN = 11.9

City of Yarra
(tonnes/year)
TSS = 1538
TP = 3.2
TN = 22.6

City of Yarra Pollutant Load Reductions
TSS = 3.66 %
TP = 2.52 %
TN = 2.11 %

Study Drivers – Municipal Challenges

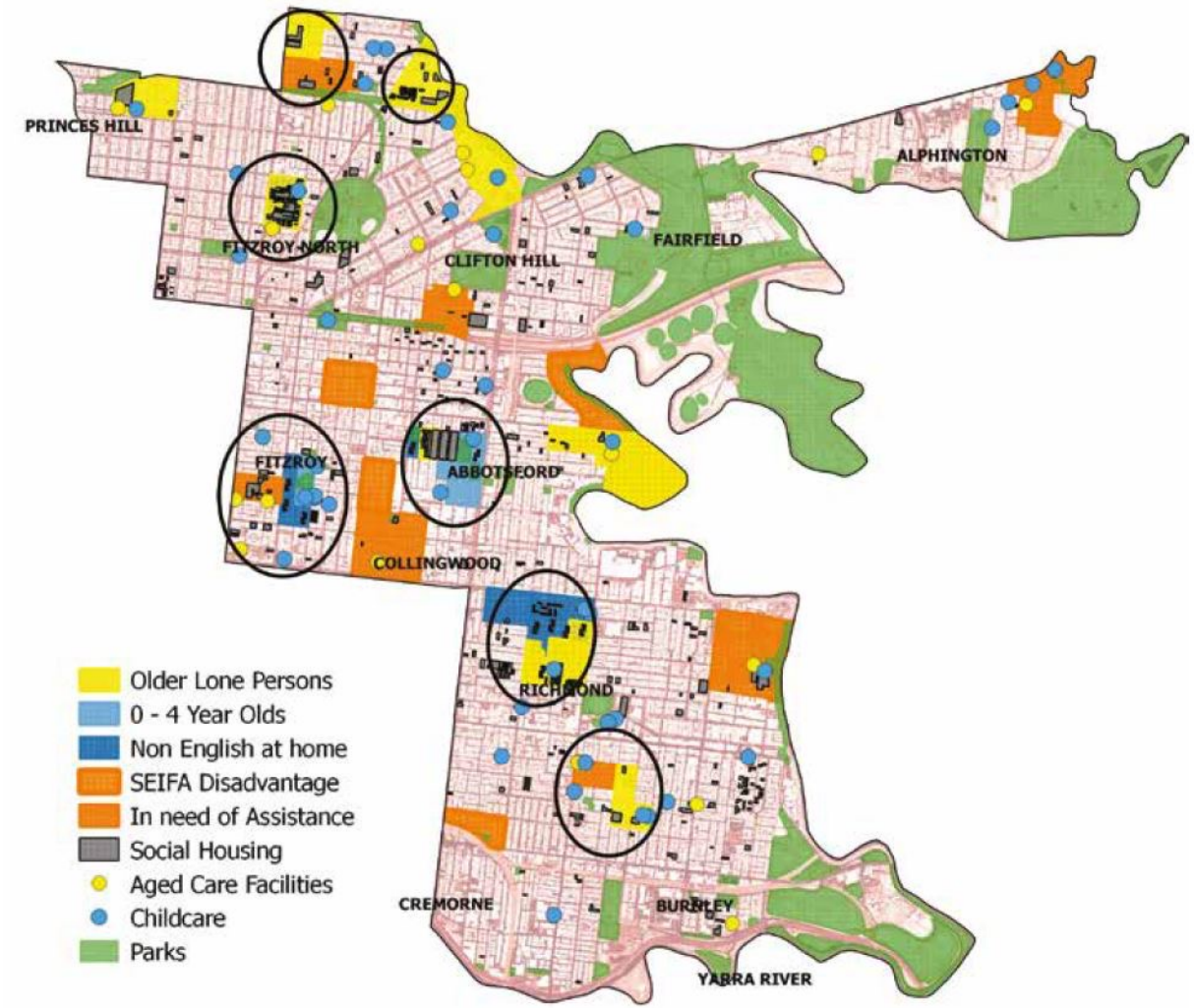


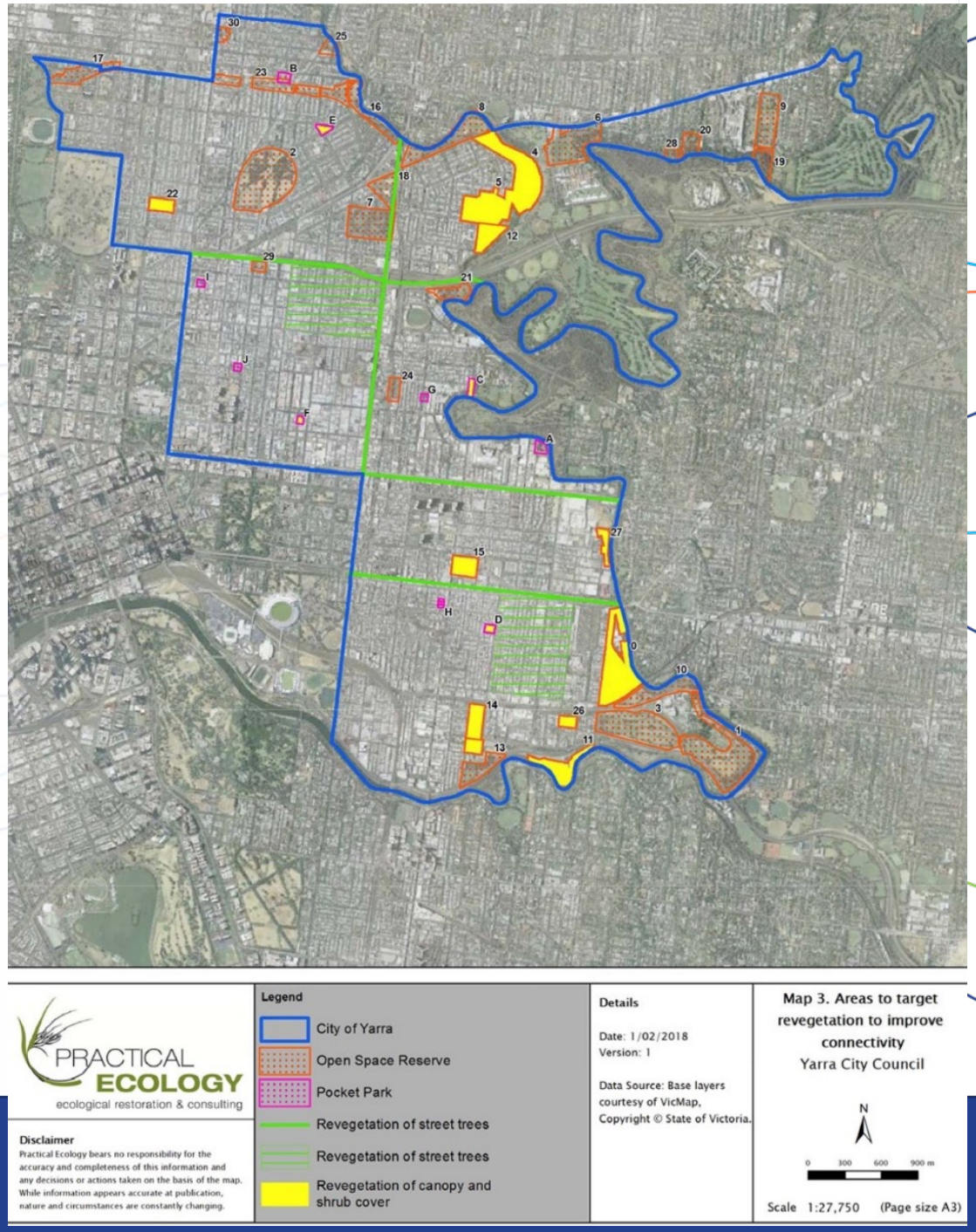


ENGENY WATER MANAGEMENT

CITY OF YARRA

Study Drivers

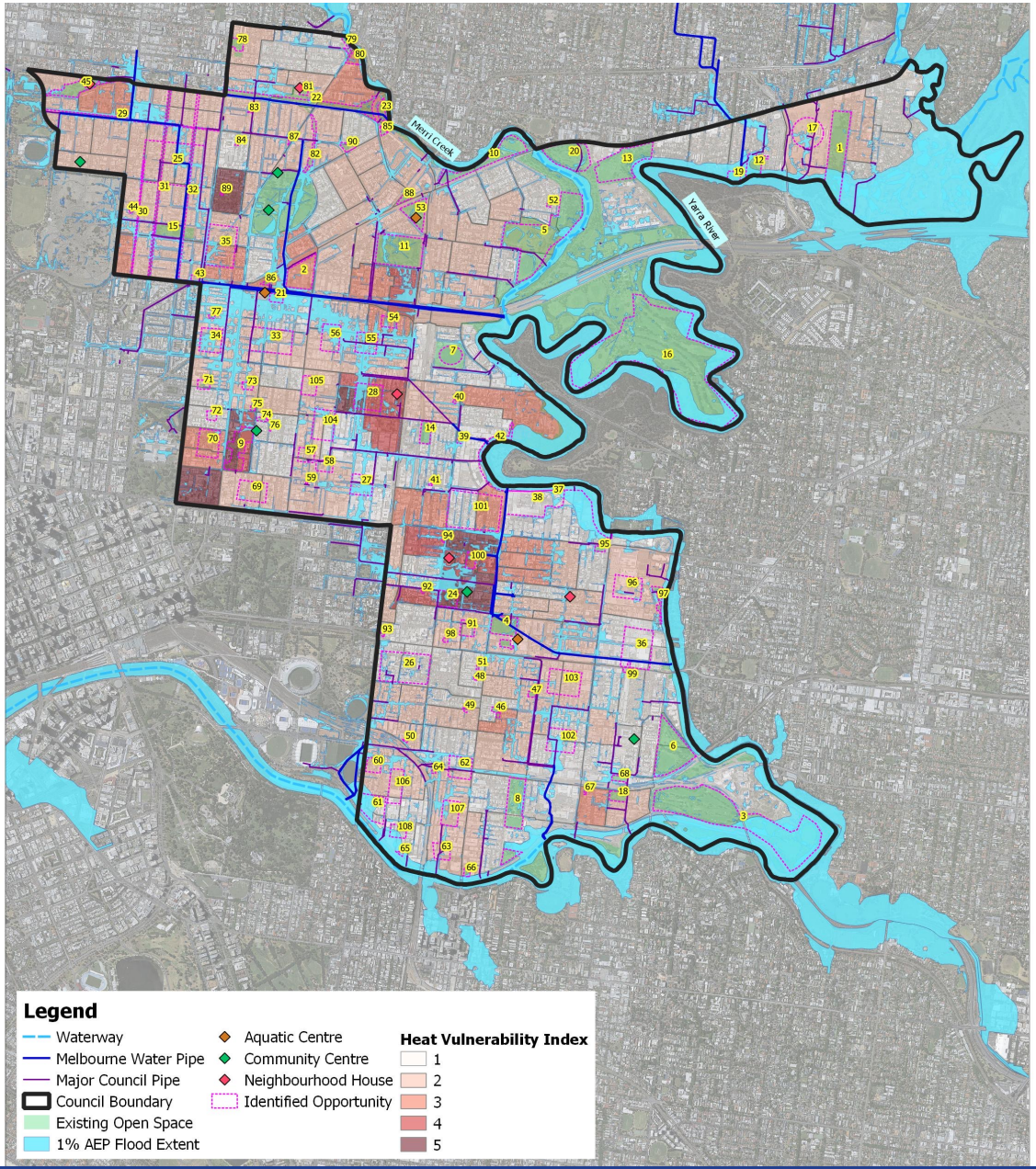




ENGENY WATER MANAGEMENT

city of YaRRA

Long List of Identified IWM Opportunities



Project Phases

- Phase 1 – Background Investigations and Stakeholder Interviews
- Phase 2 – Catchment Analysis / Consideration of Study Drivers
- Phase 3 – Scheme Prioritisation and Development

  - Long list reduced to Top 16 Schemes
  - Short listing the Top 4 Scheme
  - Assessment of Top 4 Schemes

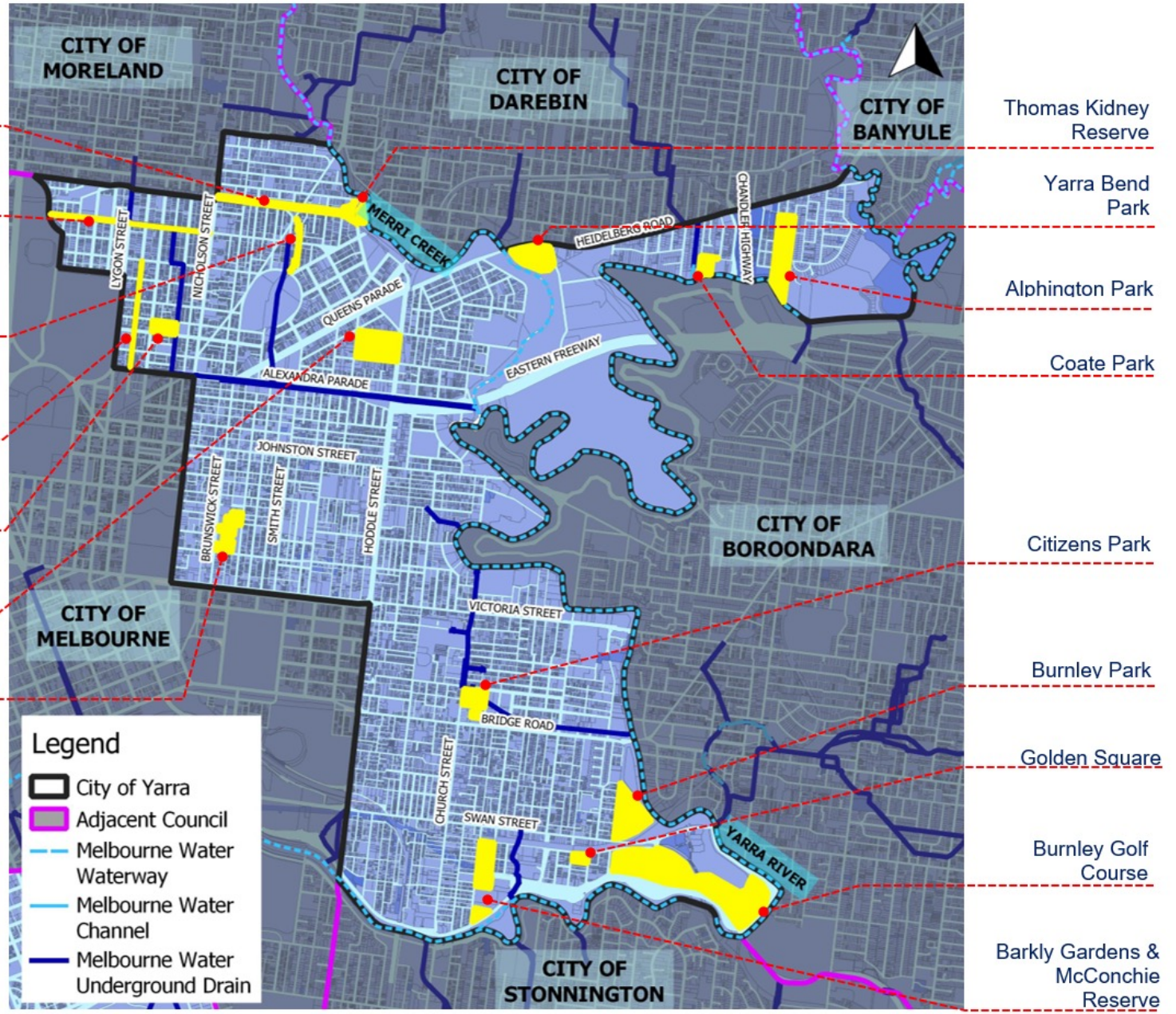
Simplified Criteria for Long List

DELWP Outcomes	Safe, secure, and affordable supplies in an uncertain future		Existing and future flood risks are managed to maximise outcomes for the community	Healthy and valued waterways and biodiversity environments		Healthy, resilient, and valued urban landscapes		Community values reflected in place-based planning
City of Yarra IWM Outcomes	Reduction in potable water use within council operated facilities and parks	Fit-for-purpose water reuse and alternative water opportunities identified	Impacts of flood are understood and mitigated	The community is provided with healthy waterways and open space	Quality of stormwater runoff into waterways is improved	Urban greening reduces the impact of urban heat	The community is provided with healthy waterways and open space	Collaboration and knowledge sharing is enhanced
HIGH	• If reliability coefficient[1] lies within the upper third **AND** demand lies within the middle third **AND** can provide connectivity of harvested stormwater to 2 or more other users. • If reliability coefficient[1] lies within the middle third **AND** demand lies within the upper third **AND** can provide connectivity of harvested stormwater to 2 or more other users.		• Located within or adjacent to a flooding hotspot with opportunity to mitigate flooding impacts.	• If the catchment area lies within the upper or middle third **AND** can support areas of native and biodiversity significance[2]		• Location within a High Heat Vulnerability Index[3] affected area with opportunity for increased greening **AND** • Benefits socially disadvantaged areas through improved well being		• High opportunity to influence community literacy given large open space area / high visitations
MEDIUM	• If reliability coefficient[1] **AND** demand lies within the middle third **AND** does / does not provide connectivity.		• Located near a lower priority flooding hotspot with opportunity to provide some flood storage to reduce flooding impacts.	• If the catchment area lies within the upper or middle third **AND** does not support areas of native and biodiversity significance[2]		• Located within a High Heat Vulnerability Index[3] affected area with the opportunity to increase greening **OR** • Benefits socially disadvantaged areas through improved well being		• Medium opportunity to influence community literacy given medium sized open space area / average visitations
LOW	• If reliability coefficient[1] **AND** demand lies within the lower third **AND** does / does not provide connectivity of harvested stormwater to other users.		• Not located within or near a flooding hotspot.	• If the catchment area lies within the lower third **AND** does not support areas of native and biodiversity significance[2]		• Not located within a High Heat Vulnerability Index[3] affected area **AND** • Does not benefit socially disadvantaged areas		• Low opportunity to influence community literacy given street scale project / localised visitations

KEY ASSESSMENT CRITERIA

- Reduction in potable water use and supply of fit-for-purpose alternative water source
- Reduction in flood impacts and damages
- Reduction in pollutant loads discharging into receiving waterways
- Increase in urban greening and community health benefits
- Increased opportunity to influence community literacy given large open space / high visitations

Top 16 Prioritised Projects



Latest Research Tools Used

Health Benefit Ready Reckoner v1.0

Dashboard | Navigation | Assumptions | Inputs | Changeable value | Calculations

Description

This 'ready reckoner' model quantifies the health benefits arising from intergrated water cycle management. This tool is an excel-based economic assessment model (in line with Treasury Guidelines and best practice investment decision-making) that applies the findings of our literature review.
This tool is an output of the WSAA Quantifying the liveability health benefits of water industry investments in Integrated Water Management project and should be used in conjunction with that report.

These values are changeable to allow the user to understand the impact on the incremental benefits from alternative assumptions

Final report assumes an investment/asset life of 20 years. Change this value to suit the water investment at hand

Input your attribution factor here. The degree to which improved greenspace or lower temps can be attributed to the investment will be highly project specific

Dashboard control

Global assumptions

Discount rate	discountrate	5%
Time horizon for NPV	NPVtime	30

Case study specific assumptions

Choose 'yes' or 'no' to the questions on the left

Case study one		Case study	Attribution factor	
Does the project lead to improved access to greenspace for active recreation?	greenspaceCS1	Yes	100%	100%
Does the project lead to improved access to greenspace	mentalgreenspaceCS1	Yes	100%	100%
Does the project lead to a reduction in urban temperatures?	urbantemperatureCS1	Yes	5%	5%
Does the project lead to an improvement in air quality?	airqualityCS1	Yes		

Population assumptions:

Population	PopulationCS1	1,500,000
Population growth rate	GrowthCS1	0.0%
Socio-economic quintile (Q1 the most disadvantaged and Q5 least disadvantaged)	socioeconomicsCS1	Q3
Proportion of males in the population	malesCS1	48.8%
Proportion of females in the population	femalesCS1	51.2%
Median weekly personal income	weeklysalaryCS1	719

Open-space assumptions

Proportion of the affected population that increases activity due to the greenspace	increasepopulationCS1	10%
Duration of the increase in activity (minutes)	increaseactivityCS1	15.00
Injuries associated with the increased activity	injuriesCS1	-1%
Proportion of the affected population exposed to greenspace	exposedpopulationCS1	20%
Reduction in depression due to increased exercise	depressionCS1	25%

Urban-cooling assumptions

Number of hot days	hotdaysCS1	30.00
Change in cooling degree days	coolingdegreedaysCS1	36%

INFFEWS BCA Tool
Benefit parameters

Category 2. Benefit per user-specified unit

Benefit (enter label)	Monetary? (drop-down menu)	Unit
Pollution abatement	Monetary	$ / TN Kg
Potable water savings	Monetary	$ / ML
Health benefits of reduced inactivity (Willingness to Pay Approach from WSAA Ready Reckoner Tool)	Monetary	$ / estimated population
Health benefits of reduced risk of depression (Willingness to Pay Approach from WSAA Ready Reckoner Tool)	Monetary	$ / estimated population
Flood Damages	Monetary	$ / buildings affected
	Monetary	

INFFEWS BCA Tool
Comparison Tool

Paste the

For comparison of results for different projects or different project versions

Instructions

1. Complete BCA of a project in the INFFEWS BCA Tool speadsheet.
2. Go to the *Comparison* sheet in the INFFEWS BCA Tool speadsheet.
3. Make sure that the project has a distinctive title in cell A14, so that you can easily identify it from a list of projects.
4. Click on the button to select and copy the row of grey cells, which contain the BCA results.
5. In this spreadsheet, select a cell in column A in the grey table below where you want to paste the results.
6. Click on the button above to paste the BCA results from clipboard into the table (using paste-special-values)
7. Once you have results from multiple project BCAs in the BCA Comparison spreadsheet, you can readily compare their results.

Note 1: Benefits reported here are the top eight individual benefits, ranked by overall benefit (adjusted for adoption and project risk).
Note 2: The total benefits include all benefits (not just the top eight).
Note 3: This version of the Comparison Tool works only with version 2020.1 of the BCA Tool, and later.

Overall community-wide BCA (social BCA)

Name of project	Benefit: Health benefits of reduced risk of depression (Willingness to Pay Approach from WSAA Ready Reckoner Tool)	Benefit: Health benefits of reduced inactivity (Willingness to Pay Approach from WSAA Ready Reckoner Tool)	Benefit: Potable water savings	Benefit: Pollution abatement	Benefit: Unnamed	Benefit: Unnamed	Benefit: Unnamed	Benefit: Unnamed	Total benefits	Costs (project org)	Costs (stakeholders)	Excess burden	BCR	NPV
22	1,338,629	895,592	309,018	122,101	101,657	0	0	0	2,766,997	1,565,038	0	125,203	1.69	1,076,755.35
24	657,880	468,446	169,429	30,690	10,530	0	0	0	1,336,975	938,310	0	75,065	1.34	323,600.52
28	745,597	689,549	81,326	31,158	11,394	0	0	0	1,559,024	953,596	0	76,288	1.55	529,140.48
8	706,324	502,941	303,515	117,980	33,886	0	0	0	1,664,646	1,272,056	0	101,764	1.23	290,825.64
11	904,286	583,223	439,457	174,534	81,326	0	0	0	2,182,826	1,768,853	0	141,508	1.15	272,465.59
23	507,821	339,751	45,846	15,990	6,777	0	0	0	916,184	953,596	0	76,288	0.88	-113,699.18
4	828,929	634,073	590,242	245,494	149,097	0	0	0	2,447,836	1,768,853	0	141,508	1.30	537,475.30
1	610,629	506,938	331,946	247,210	40,663	0	0	0	1,737,386	1,398,144	0	159,851	0.79	-420,609.35
3	1,209,370	506,938	493,358	331,946	20,331	0	0	0	2,561,943	3,908,902	0	312,712	0.58	-1,659,670.98
29	431,011	282,229	135,543	31,678	10,958	0	0	0	891,418	882,261	0	70,581	0.93	-61,423.54
15	889,861	582,686	135,543	131,683	46,680	0	0	0	1,786,454	973,977	0	77,918	1.75	734,558.39
18	380,631	248,406	60,212	54,217	22,450	0	0	0	765,915	928,119	0	74,250	0.75	-236,453.16

ENGENY WATER MANAGEMENT

CITY OF YARRA

(a) Location of Melbourne Water's Alexandra Parade Main Drain on the western side of Canning Street

(b) South-Eastern lawn area looking towards Canning / Newry Street intersection

LEGEND:

EXISTING ELEMENTS
- SITE BOUNDARY - CURTAIN SQUARE
- GRASS
- MULCH AND/OR GARDEN BED
- HARDSCAPE
- UNDERGROUND INFRASTRUCTURE
- TREES TO BE RETAINED
- TREE TO BE REMOVED
- TREE PROTECTION ZONES

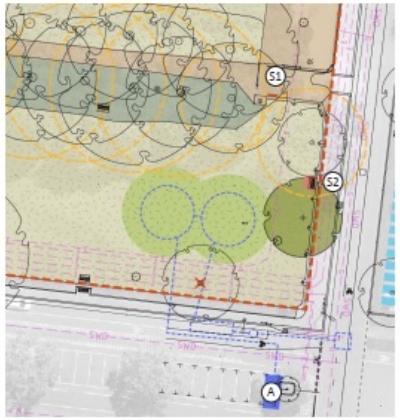
PROPOSED ELEMENTS
- UNDERGROUND WATER INFRASTRUCTURE
- ADVANCED TREATMENT FACILITY (EXACT LOCATION TBC)
- EXTENT OF GRASS RESURFACING
- PROPOSED TREE (EXACT LOCATION TBC)
- POTENTIAL MEDIAN IRRIGATION ALONG CANNING ST & RATHDOWNE ST (EXTENT TBC)

INTERPRETATION ELEMENT OPTIONS:
- S1 - FREESTANDING
- S2 - GROUND PLANE

CURTAIN SQUARE - INTEGRATED WATER MANAGEMENT
LANDSCAPE CONCEPT PLAN

1:750 @ A3
0 10 20 30 40

PETER HAACK CONSULTING
DATE: 13/12/21 REV: A
DWG NO: 1



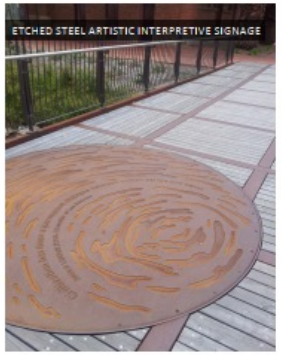
INTERPRETATION ELEMENTS

To help inform the public of the project, interpretation elements may be provided. A number of different options are presented. The locations indicated on the plan are indicative only.


EXAMPLE OF FREESTANDING INTERPRETIVE SIGNAGE

S1 FREESTANDING SIGN

A freestanding sign may be provided in a location which receives relatively high levels of foot traffic while still being in proximity to the new infrastructure, for example near the eastern entry to Curtain Reserve as indicated.


ETCHED STEEL ARTISTIC INTERPRETIVE SIGNAGE

S2 GROUND PLANE FEATURE

A more elegantly integrated option which may provide a more enjoyable experience is to design the interpretive signage as a ground plane feature that is viewed when people are seated at a bench nearby.

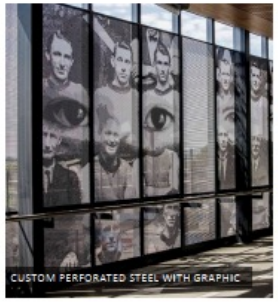
A similar material and style of graphic could be used as per the freestanding sign, or alternatively a more artistic approach using graphics etched into steel, stone or concrete may be used.

AUGMENTED REALITY

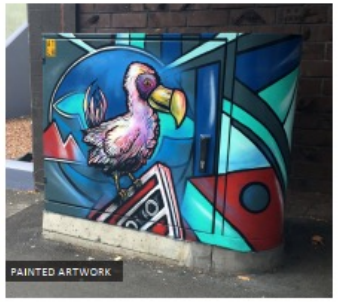
Members of the public could view the underground infrastructure in its exact location by scanning a QR code nearby and using augmented reality software on smart phones.

A ADVANCED TREATMENT FACILITY


TYPICAL EXAMPLE OF AN ADANCED TREATMENT FACILITY


CUSTOM PERFORATED STEEL WITH GRAPHIC


ILLUMINATED LASER CUT STEEL ARTWORK


PAINTED ARTWORK

The advanced treatment facility will be a freestanding piece of infrastructure surrounded by cladding. There are a couple of approaches for how it can be successfully integrated in the landscape - design it to be unobtrusive, or make it an attractive and distinctive feature.

UNOBTRUSIVE APPROACH

Examples of how the facility can be designed to blend into the landscape include:

- Selecting an unobtrusive colour such as charcoal or black in a matte finish,
- Providing some planting to screen or soften views, while keeping open any areas that are necessary to access the facility, and
- Minimizing the size of the facility as much as possible.

DISTINCTIVE APPROACH

Examples of how the facility can be designed so that it is an attractive feature of the landscape include:

- Using customized laser-cut steel cladding which integrates an artwork or relevant graphic, instead of standard perforated steel,
- Illuminating the laser cut steel from inside, and
- Using a solid, flat cladding and engaging an artist to apply a painted artwork.

Any artwork/graphic used could draw upon the theme of water to further support the interpretation signage.

CURTAIN SQUARE - INTEGRATED WATER MANAGEMENT
LANDSCAPE CONCEPT - PRECEDENTS

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DWG NO: 2

Questions