Appendix C – Hybrid Case Study Outputs

This appendix contains one of the key outputs of the City of Melbourne and City of Port Phillip case study work in this project, which is the design of the storages into the street cross-sections.

A map of the street hierarchies used in this process is provided below, followed by the calculations for storage available in tree pits (including raingardens) and linear parks for each street typology.

Legend

Proposed Road Use Hierarchy (CoM)

(Existing Roads Solid / New Roads Dashed)

- 1 Arterial Street
- 2 Collector Street
- 3 Neighbourhood Street
- 4 Local Street
- 5 Service Acess
- 6 Laneway - 9m
- 7 Laneway - 6m
- 8 Civic Boulevard - Treatment 1 - Lorimer Street
- 9 Civic Boulevard - Treatment 2 - with open space
- 10 Civic Boulevard - Treatment 3 - with vehicular

Proposed Road Use Hierarchy (CoPP)

- 1 Arterial Road (30m)
- 2 Arterial Road with tram (30m)
- 3 Plummer / Fennell Street civic boulevard (36m)
- 4 Buckhurst Street civic boulevard (30m)
- 5 Collector Street with bus (30m)
- 6 Collector Street / Local Street with 12m linear park (30m)
- 7 Collector Street / Local Street (30-34m)
- 8 Local Street with 12m linear park (34m)
- 9 Local Street with 12m linear park and recreational cycling path (9.1-30m; 9.2-34m)
- 10 Local Street (22m)
- 11 Local Street no separated cycle path (20m)
- 12 Local Street (12.1-15; 12.2-12m; 12.3-24m; 12.4-13m; 12.5-10m)
- 13 Blue Street (6m)

Lorimer Precinct
Employment Precinct
Sandridge Precinct
Wirraway Precinct
Montague Precinct
Lorimer St
Citylink
West Gate Fwy
Todd Rd
Salmon St
Ingles St
Montague St
Normanby Rd
Normanby Rd
City Rd
Williamstown Rd
Webb Dock Dr
Graham St
Wurundjeri Way
Spencer St
King St
Flinders St
William St
Southbank Blvd
City Rd
Power St
Queens Bridge St
Kings Way
Kings Way
Kings Way
Kings Way
Clarendon St
Moray St
York St
Crockford St
Dorcas St
Park St
Ferrars St
Bay St
Pickles St
Albert Rd
Kerferd Rd
Canterbury Rd
Beach St
Beaconsfield Pde
Kerferd Rd

Paper Size A3

0 70 140 280 420 560

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

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LEGEND
Precinct Boundaries

MELBOURNE WATER
FISHERMANS BEND WATER SENSITIVE DRAINAGE & FLOOD STRATEGY

Fishermans Bend Existing/New Road Use Hierarchy

Job Number	31-36555
Revision	A
Date	05/12/2018

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Data source: DELWP, VicMap, CIP Imagery (Jan 2017), Precinct Boundaries, 2018; CoPP/CoM, Proposed Road Hierarchy, 2018 Created by: SPLaird

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City of Melbourne Street Cross Sections – Potential Storage Area Estimates

Street typology	Linear park width (m)	Lines of trees (no)	Tree pit detention (m^3/m)	Total storage (m^3/m)	Notes/Assumptions
1.Arterial Street	0	2	0.29	0.29	Spacing assumed to be 10m and tree pits 1.5m x 1.5m
2.Collector Street	6	3	0.14	3.14	Spacing assumed to be 10m and tree pits 1.5m x 1.5m
3.Neighbourhood Street	6	2	0.09	3.09	Spacing assumed to be 10m and tree pits 1.5m x 1.5m
4.Local Street	0	1	0.09	0.09	Spacing assumed to be 10m and tree pits 1.5m x 1.5m
5.Service Acess	2.5	1	0.00	0.75	Assumed 2.5m wide linear park at depth of 0.3m
6.Laneway - 9m	1	1	0.00	0.30	Assumed 1m wide linear park at depth of 0.3m
7.Laneway - 6m	0	0	0.00	0.00	No trees or linear park
8.Civic Boulevard - Treatment 1 - Lorimer Street	0	3	0.12	0.12	Spacing assumed to be 10m and tree pits 1.5m x 1.5m
9.Civic Boulevard - Treatment 2 - with open space	2.5	3	0.24	1.49	Spacing assumed to be 10m and tree pits 1.5m x 1.5m
10.Civic Boulevard - Treatment 3 - with vehicular	6.5	3	0.24	3.49	Spacing assumed to be 10m and tree pits 1.5m x 1.5m

* These could possibly be rain gardens and have a greater spacing to allow for more parking

City of Port Phillip Street Cross Sections – Potential Storage Area Estimates

Street typology	Linear park width (m)	Lines of trees (no)	Tree pit detention (m^3/m)	Total storage (m^3/m)	Notes
1. Arterial Road (30m)	0	3	1.23	1.23	Continuous swale/raingarden in central median
2. Arterial Road with tram (30m)	0	3	0.52	0.52	See Section
3. Plummer / Fennell Street civic boulevard (36m)	0	4	1.06	1.06	See Section
4. Buckhurst Street civic boulevard (30m)	12	3	0.17	6.17	Assumed 10m spacing and 4m long rain gardens
5. Collector Street with bus (30m)	0	2	0.72	0.72	See Section
6. Collector / Local Street with 12m linear park (30m)	12	3	0.05	6.05	Tree pits vary in width from 1m to 1.4m
7. Collector / Local Street with on-street car parking (30-34m). No linear park specified	9	4	0.60	5.10	See Section
8. Local Street with 12m linear park (34m)	12	4	0.35	6.35	Assumed 10m spacing and 1.5m long tree pits
9.1 Local Street with 12m linear park and recreational cycling path (34m)	12	4	0.46	6.46	Alternating between raingardens and tree pits
9.2 Local Street with 12m linear park and recreational cycling path (30m)	12	3	0.07	6.07	Alternating between raingardens and tree pits
10. Local Street (22m)	0	3	0.54	0.54	Alternating between raingardens and tree pits
11. Local Street no separated cycle path (20m)	0	3	0.79	0.79	Unspecified length between car parks
12.1 Local Street (15m)	0	3	0.47	0.47	Assumed 1.5mx1.5m tree pits
12.1 Local Street (12m)	0	3	0.45	0.45	Assumed a width of 1.7m
12.1 Local Street (24m)	12	2	0.45	6.45	Included linear park
12.1 Local Street (13m)	0	3	0.00	0.00	No water storage
12.1 Local Street (10m)	0	0	0.00	0.00	No water storage
13. Blue St (6 m)	0	0	0.00	0.00	Assumed (see calculation below)

An example of the calculations used is shown in the images below. For each typology, assumptions were made on the number of lines of trees,

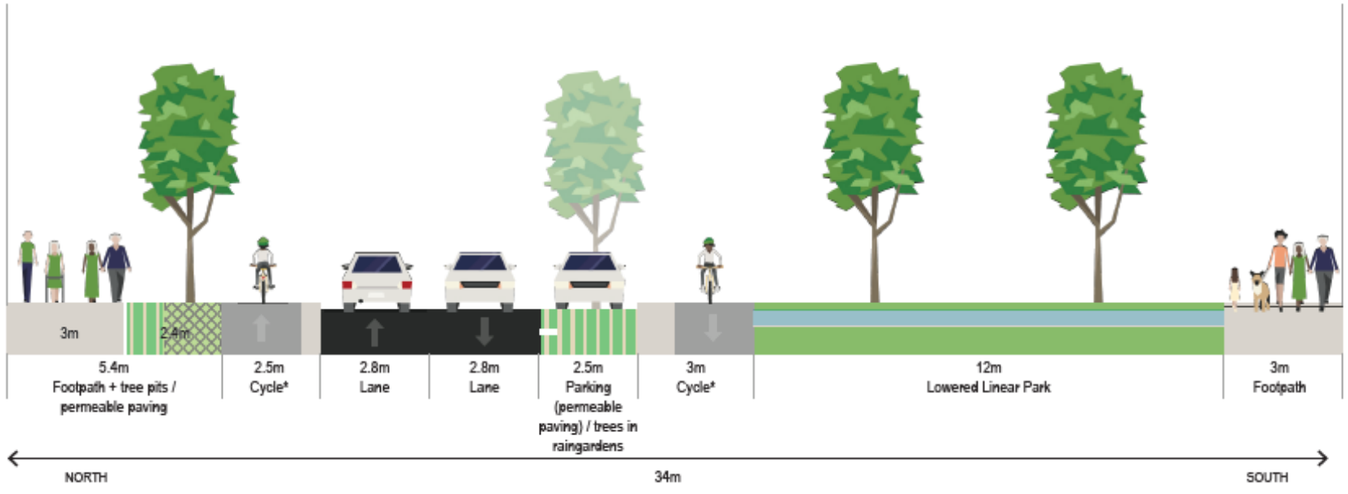
Tree pit storage

Width (m)	Depth (m)	Spacing (m)	Length (m)	Storage (m^3/m)
2.4	0.3	10	2.4	0.17
2.5	0.3	10	2.4	0.18
			Total	0.35

Notes:
Adjustments will be needed for the tram stops and intersections

8. Local Street with 12m linear park (34m)

Existing Streets: Tarver St (20m existing street + new 12m linear park)
New streets: Woodruff St extension (east and west), Tarver Street & Tarver Street extension.



Water Sensitive Cities Strategy approach / assumptions:

- Amended version of Graham Street case study cross section / plan view prepared by CoPP (David provided by email on 12/11/18). Key changes:
  - Linear park: increased to 12m (from 9m)
  - Northern footpath: permeable paving area with trees in tree pits increased to 2.4m (from 1.4m)

Low lying areas not recommended for storage (Woodruff St extension):

- TBC (further work required)