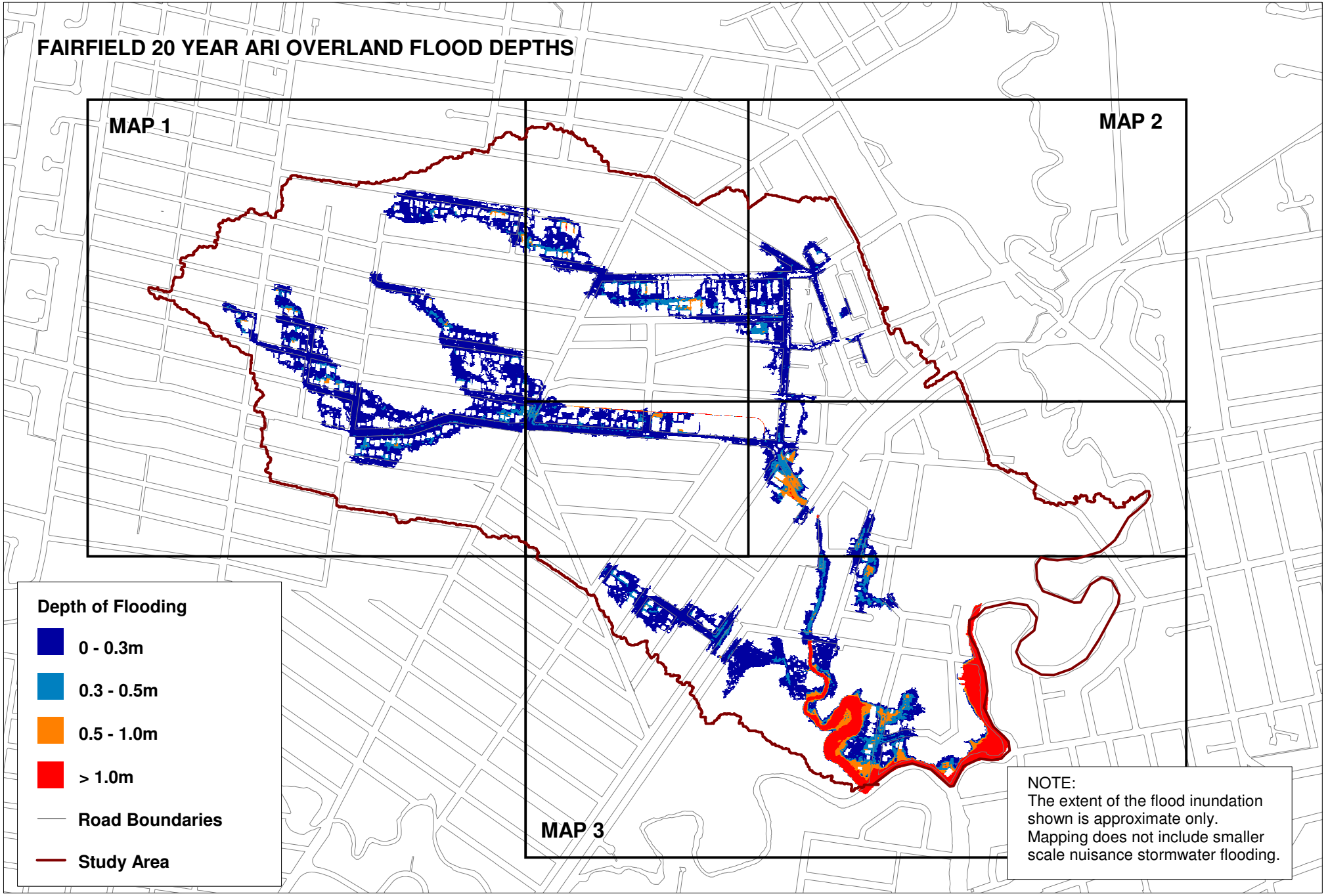
Appendix E Flood Depth Mapping

- Flood depths for 20, 100, 2,000 year ARI and PMF events presented
- Flood levels for the 100 year ARI event presented

FAIRFIELD 20 YEAR ARI OVERLAND FLOOD DEPTHS



FAIRFIELD 20 YEAR ARI OVERLAND FLOOD DEPTHS

MAP 1

N

0 100 200
metres

BEEMERA ST
NILE ST
PERCY ST
THE BOULEVARDE
WRAY ST
WARE ST
STATION ST
CUNNINGHAM
CAMDEN ST
LIGAR ST
EVANS ST
NELSON ST
HARDY ST
STANLEY ST
THROSBY ST
STELLA ST
ELIZA ST
EUSTACE ST
CHURCHILL ST
WRENTMORE ST
DAWSON ST
MACQUARIE ST
HUNTER ST
THOMAS ST
LINDA ST
JOYCE ST
HARRIS ST
HAMILTON RD
MBARD ST
LINE ST
RET ST
RICHARDSON ST
OXLEY ST
HAROLD ST
LACKEY ST
WENDEN ST
HUBERT ST
CHATSWORTH ST
SACKVILLE ST
AVISFORD ST
YORK ST
WOLSELEY

NOTE:
The extent of the flood inundation shown is approximate only.
Mapping does not include smaller scale nuisance stormwater flooding.

Depth of Flooding

- 0 - 0.3m
- 0.3 - 0.5m
- 0.5 - 1.0m
- > 1.0m
- Road Boundaries
- Study Area

FAIRFIELD 20 YEAR ARI OVERLAND FLOOD DEPTHS

MAP 2

N

0 100 200
metres

WARE ST
CUNNINGHAME ST
SMART ST
SACKVILLE ST
STATION ST
HARDY ST
NELSON ST
WRENTMORE ST
HUNTER ST
THOMAS ST
KENYON ST
BARBARA ST
HARRIS ST
WILLIAM ST
THE CRESCENT
HAMILTON RD
LACKEY ST
OXLEY ST
HAROLD ST
CHATSWORTH ST
YORK ST
RAILWAY PDE
FAIRLIGHT AV
ULVERSTONE ST
AVISFORD ST
BELL CR
ALAN ST
COURT RD
SPENCER ST
THE HORSLEY DR
WESTON ST
DALE ST
ANZAC AV
LAWSON ST
WILGA ST
DIPROSE ST

NOTE:
The extent of the flood inundation shown is approximate only.
Mapping does not include smaller scale nuisance stormwater flooding.

Depth of Flooding

- 0 - 0.3m
- 0.3 - 0.5m
- 0.5 - 1.0m
- > 1.0m
- Road Boundaries
- Study Area

MAP 3

HAMILTON RD
HAROLD ST
FREDERICK ST
AVISFORD ST
AUSTRAL PDE
NORTH ST
TOGIL ST
ARTIE ST
LAWSON ST
DIPROSE ST
GORDON ST
DALMAT
LACKEY ST
YORK ST
LYNDON ST
FAIRLIGHT AV
WILGA ST
ORCHARD RD
RIVERVIEW RD
HAUGHTON ST
WILCOCK ST
RUBY ST
WESTON ST
VINE ST
MAY ST
DALE ST
WILLIAM ST
OXLEY ST
CHATSWORTH ST
COLERAINE ST
HAMPTON ST
FRANCIS ST
OLIVE ST
WOLSELEY ST
RAILWAY PDE
EAST PDE
CATHCART ST
PROSPECT CREEK
ORPHAN SCHOOL CREEK

N

0 100 200
metres

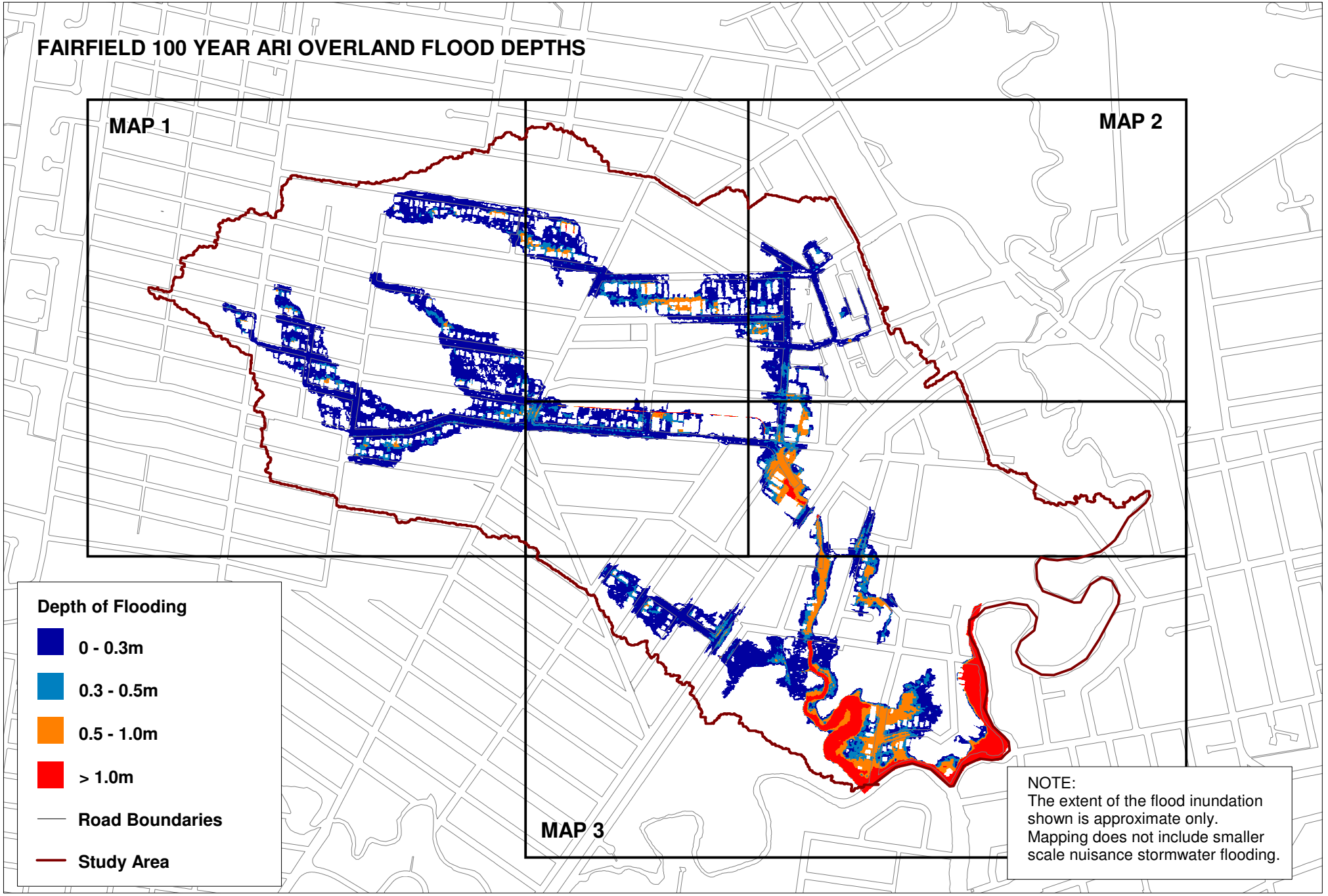
NOTE:
The extent of the flood inundation shown is approximate only.
Mapping does not include smaller scale nuisance stormwater flooding.

Depth of Flooding

- 0 - 0.3m
- 0.3 - 0.5m
- 0.5 - 1.0m
- > 1.0m
- Road Boundaries
- Study Area

FAIRFIELD 20 YEAR ARI OVERLAND FLOOD DEPTHS

FAIRFIELD 100 YEAR ARI OVERLAND FLOOD DEPTHS



FAIRFIELD 100 YEAR ARI OVERLAND FLOOD DEPTHS

MAP 1

N

0 100 200
metres

BEEMERA ST
NILE ST
PERCY ST
THE BOULEVARDE
WRAY ST
WARE ST
STATION ST
CUNNINGHAM
LIGAR ST
CAMDEN ST
EVANS ST
NELSON ST
HARDY ST
STANLEY ST
THROSBY ST
STELLA ST
ELIZA ST
EUSTACE ST
CHURCHILL ST
WRENTMORE ST
DAWSON ST
MACQUARIE ST
HUNTER ST
THOMAS ST
LINDA ST
JOYCE ST
HARRIS ST
HAMILTON RD
RICHARDSON ST
OXLEY ST
HAROLD ST
LACKEY ST
WENDEN ST
HUBERT ST
CHATSWORTH ST
SACKVILLE ST
AVISFORD ST
YORK ST
WOLSELEY

NOTE:
The extent of the flood inundation shown is approximate only.
Mapping does not include smaller scale nuisance stormwater flooding.

Depth of Flooding

- 0 - 0.3m
- 0.3 - 0.5m
- 0.5 - 1.0m
- > 1.0m
- Road Boundaries
- Study Area

FAIRFIELD 100 YEAR ARI OVERLAND FLOOD DEPTHS

MAP 2

N

0 100 200
metres

WARE ST
CUNNINGHAME ST
SMART ST
SACKVILLE ST
STATION ST
HARDY ST
NELSON ST
WRENTMORE ST
HUNTER ST
THOMAS ST
KENYON ST
BARBARA ST
HARRIS ST
HAMILTON RD
LACKEY ST
OXLEY ST
HAROLD ST
CHATSWORTH ST
YORK ST
AVISFORD ST
RAILWAY PDE
FAIRLIGHT AV
WILLIAM ST
THE CRESCENT
WILGA ST
ULVERSTONE ST
ALAN ST
SPENCER ST
COURT RD
BELL CR
THE HORSLEY DR
WESTON ST
DALE ST
ANZAC AV
LAWSON ST

NOTE:
The extent of the flood inundation shown is approximate only.
Mapping does not include smaller scale nuisance stormwater flooding.

Depth of Flooding

- 0 - 0.3m
- 0.3 - 0.5m
- 0.5 - 1.0m
- > 1.0m
- Road Boundaries
- Study Area

MAP 3

HAMILTON RD
HAROLD ST
OXLEY ST
LACKEY ST
WILLIAM ST
DALE ST
WESTON ST
LAWSON ST
CHATSWORTH ST
FREDERICK ST
YORK ST
FAIRLIGHT AV
VINE ST
MAY ST
DIPROSE ST
AVISFORD ST
COLERAINE ST
LYNDON ST
WILGA ST
GORDON ST
HAMPTON ST
FRANCIS ST
AUSTRAL PDE
PROSPECT CREEK
DALMAT
OLIVE ST
NORTH ST
ORCHARD RD
RIVERVIEW RD
WOLSELEY ST
RAILWAY PDE
HAUGHTON ST
WILCOCK ST
CATHCART ST
EAST PDE
ARTIE ST
RUBY ST
ORPHAN SCHOOL CREEK
TOGIL ST

N

0 100 200
metres

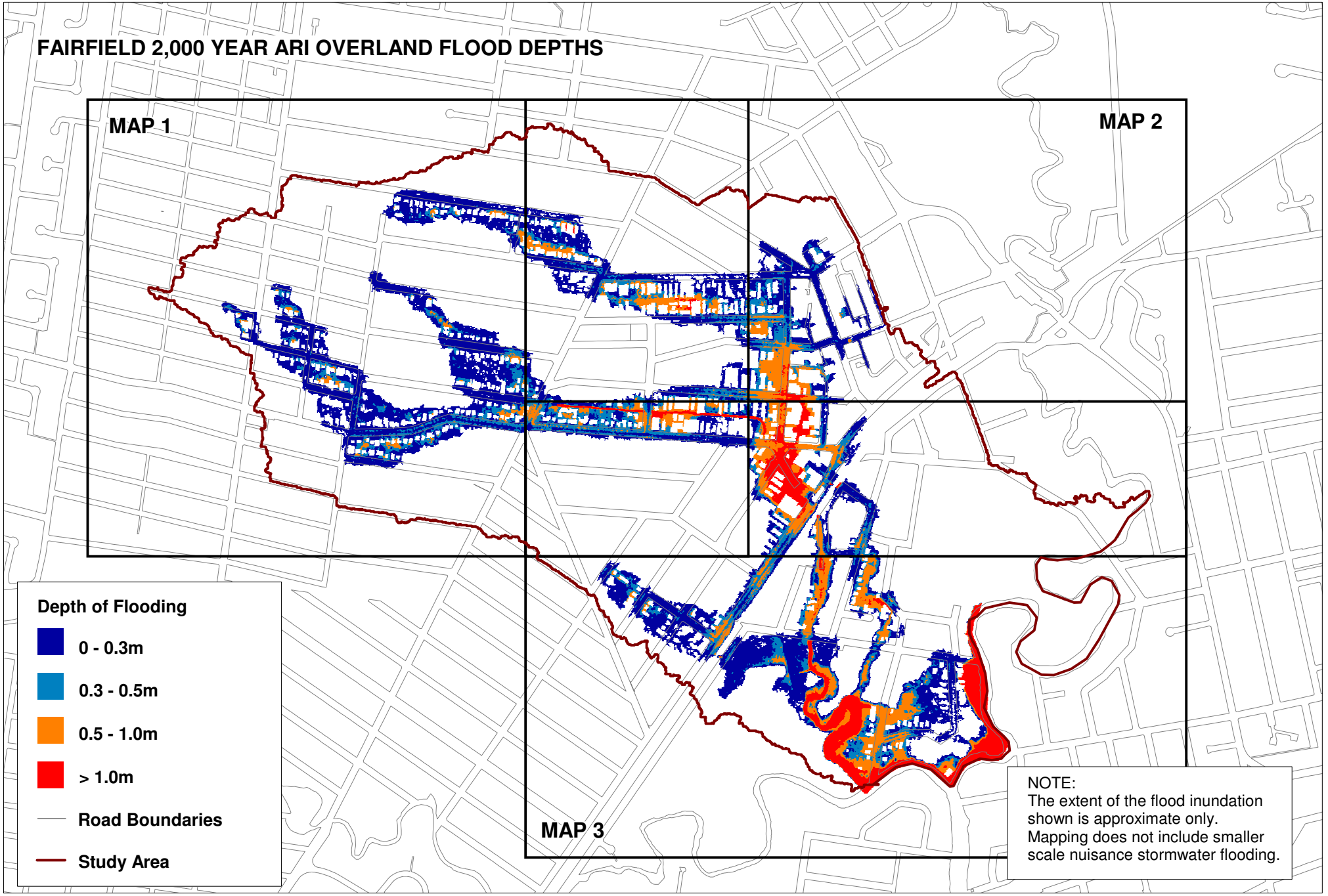
NOTE:
The extent of the flood inundation shown is approximate only.
Mapping does not include smaller scale nuisance stormwater flooding.

Depth of Flooding

- 0 - 0.3m
- 0.3 - 0.5m
- 0.5 - 1.0m
- > 1.0m
- Road Boundaries
- Study Area

FAIRFIELD 100 YEAR ARI OVERLAND FLOOD DEPTHS

FAIRFIELD 2,000 YEAR ARI OVERLAND FLOOD DEPTHS



FAIRFIELD 2,000 YEAR ARI OVERLAND FLOOD DEPTHS

MAP 1

N

0 100 200
metres

BEEMERA ST
NILE ST
PERCY ST
THE BOULEVARDE
WRAY ST
WARE ST
STATION ST
CUNNINGHAM
CAMDEN ST
LIGAR ST
EVANS ST
NELSON ST
HARDY ST
STANLEY ST
THROSBY ST
STELLA ST
ELIZA ST
EUSTACE ST
CHURCHILL ST
WRENTMORE ST
DAWSON ST
MACQUARIE ST
HUNTER ST
THOMAS ST
LINDA ST
JOYCE ST
HARRIS ST
HAMILTON RD
RICHARDSON ST
OXLEY ST
HAROLD ST
LACKEY ST
WENDEN ST
HUBERT ST
CHATSWORTH ST
SACKVILLE ST
AVISFORD ST
YORK ST

NOTE:
The extent of the flood inundation shown is approximate only.
Mapping does not include smaller scale nuisance stormwater flooding.

Depth of Flooding

- 0 - 0.3m
- 0.3 - 0.5m
- 0.5 - 1.0m
- > 1.0m
- Road Boundaries
- Study Area

FAIRFIELD 2,000 YEAR ARI OVERLAND FLOOD DEPTHS

MAP 2

N

0 100 200
metres

WARE ST
CUNNINGHAME ST
SMART ST
SACKVILLE ST
STATION ST
HARDY ST
NELSON ST
WRENTMORE ST
HUNTER ST
THOMAS ST
KENYON ST
BARBARA ST
HARRIS ST
HAMILTON RD
LACKEY ST
OXLEY ST
HAROLD ST
CHATSWORTH ST
YORK ST
AVISFORD ST
RAILWAY PDE
FAIRLIGHT AV
ULVERSTONE ST
WILLIAM ST
THE CRESCENT
WARE ST
DALE ST
ANZAC AV
LAWSON ST
WILGA ST
ALAN ST
COURT RD
SPENCER ST
BELL CR
THE HORSLEY DR
WESTON ST

NOTE:
The extent of the flood inundation shown is approximate only. Mapping does not include smaller scale nuisance stormwater flooding.

Depth of Flooding

- 0 - 0.3m
- 0.3 - 0.5m
- 0.5 - 1.0m
- > 1.0m
- Road Boundaries
- Study Area

MAP 3

HAMILTON RD
HAROLD ST
FREDERICK ST
AVISFORD ST
OXLEY ST
CHATSWORTH ST
COLERAINE ST
HAMPTON ST
FRANCIS ST
AUSTRAL PDE
LACKEY ST
YORK ST
LYNDON ST
WILLIAM ST
FAIRLIGHT AV
WILGA ST
DALE ST
LAWSON ST
WESTON ST
VINE ST
MAY ST
DIPROSE ST
GORDON ST
DALMAT
PROSPECT CREEK
NORTH ST
OLIVE ST
WOLSELEY ST
RAILWAY PDE
EAST PDE
CATHCART ST
ORCHARD RD
RIVERVIEW RD
HAUGHTON ST
WILCOCK ST
ARTIE ST
RUBY ST
TOGIL ST
ORPHAN SCHOOL CREEK

N

0 100 200
metres

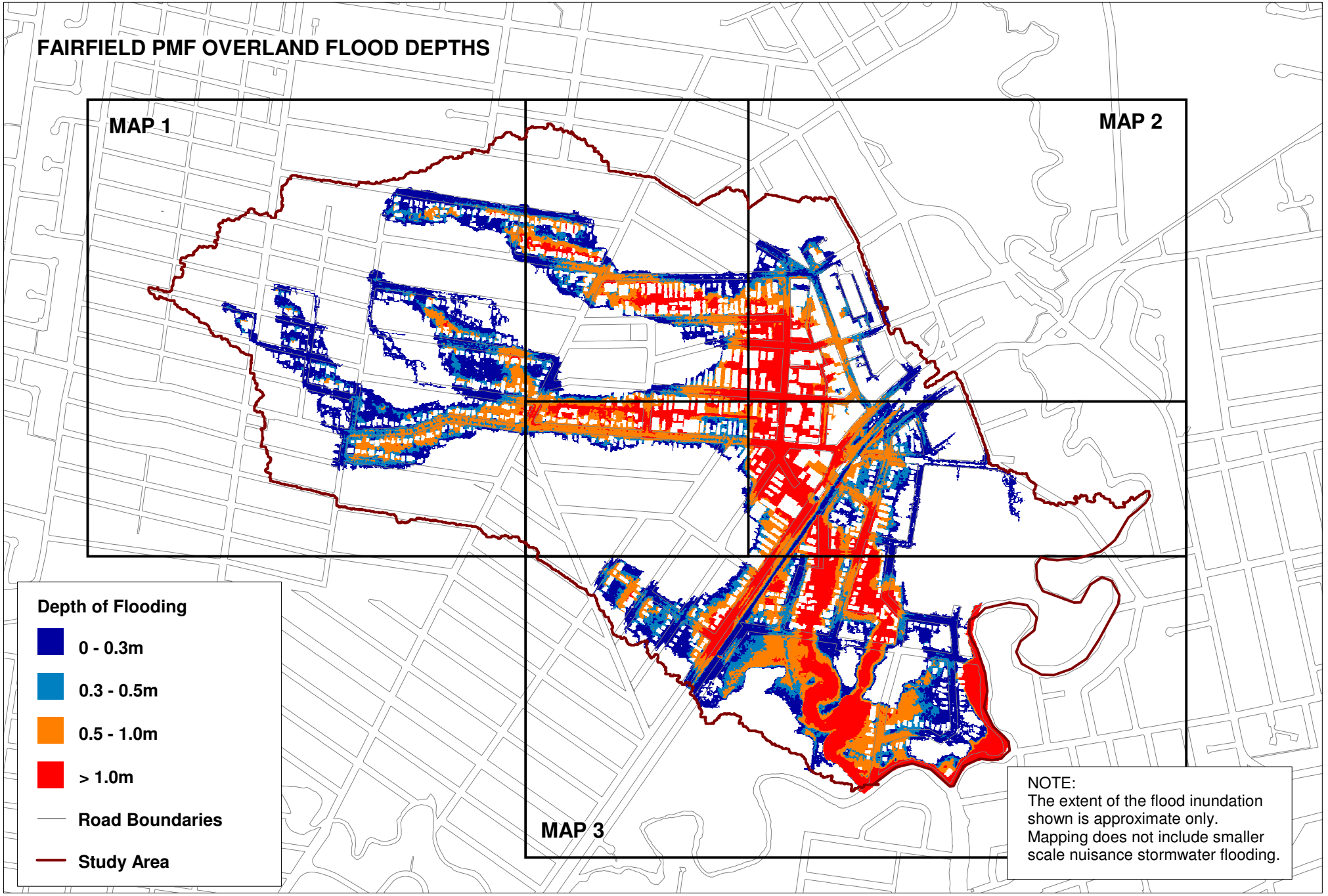
NOTE:
The extent of the flood inundation shown is approximate only.
Mapping does not include smaller scale nuisance stormwater flooding.

Depth of Flooding

- 0 - 0.3m
- 0.3 - 0.5m
- 0.5 - 1.0m
- > 1.0m
- Road Boundaries
- Study Area

FAIRFIELD 2,000 YEAR ARI OVERLAND FLOOD DEPTHS

FAIRFIELD PMF OVERLAND FLOOD DEPTHS



FAIRFIELD PMF OVERLAND FLOOD DEPTHS

MAP 1

N

0 100 200
metres

NOTE:
The extent of the flood inundation shown is approximate only.
Mapping does not include smaller scale nuisance stormwater flooding.

Depth of Flooding

- 0 - 0.3m
- 0.3 - 0.5m
- 0.5 - 1.0m
- > 1.0m
- Road Boundaries
- Study Area

BEEMERA ST
NILE ST
PERCY ST
THE BOULEVARDE
WRAY ST
WARE ST
STATION ST
CUNNINGHAM
CAMDEN ST
LIGAR ST
EVANS ST
NELSON ST
HARDY ST
STANLEY ST
THROSBY ST
STELLA ST
ELIZA ST
EUSTACE ST
CHURCHILL ST
WRENTMORE ST
DAWSON ST
MACQUARIE ST
HUNTER ST
THOMAS ST
LINDA ST
JOYCE ST
HARRIS ST
HAMILTON RD
RICHARDSON ST
OXLEY ST
HAROLD ST
LACKEY ST
WENDEN ST
HUBERT ST
CHATSWORTH ST
SACKVILLE ST
AVISFORD ST
YORK ST

FAIRFIELD PMF OVERLAND FLOOD DEPTHS

MAP 2

N

0 100 200
metres

WARE ST
CUNNINGHAME ST
SMART ST
SACKVILLE ST
STATION ST
HARDY ST
NELSON ST
WRENTMORE ST
HUNTER ST
KENYON ST
THOMAS ST
BARBARA ST
WARE ST
HARRIS ST
WILLIAM ST
THE CRESCENT
HAMILTON RD
LACKEY ST
OXLEY ST
HAROLD ST
CHATSWORTH ST
YORK ST
AVISFORD ST
RAILWAY PDE
FAIRLIGHT AV
ULVERSTONE ST
DALE ST
ANZAC AV
LAWSON ST
WILGA ST
SPENCER ST
COURT RD
ALAN ST
BELL CR
THE HORSLEY DR
WESTON ST

NOTE:
The extent of the flood inundation shown is approximate only.
Mapping does not include smaller scale nuisance stormwater flooding.

Depth of Flooding

- 0 - 0.3m
- 0.3 - 0.5m
- 0.5 - 1.0m
- > 1.0m
- Road Boundaries
- Study Area

MAP 3

HAMILTON RD
HAROLD ST
FREDERICK ST
AVISFORD ST
WOLSELEY ST
CATHCART ST
OXLEY ST
CHATSWORTH ST
COLERAINE ST
HAMPTON ST
INGTON ST
LACKEY ST
YORK ST
FRANCIS ST
AUSTRAL PDE
OLIVE ST
RAILWAY PDE
EAST PDE
WILLIAM ST
FAIRLIGHT AV
LYNDON ST
WILGA ST
NORTH ST
ORCHARD RD
RIVERVIEW RD
DALE ST
LAWSON ST
WESTON ST
VINE ST
MAY ST
DIPROSE ST
GORDON ST
DALMAT
HAUGHTON ST
WILCOCK ST
ARTIE ST
RUBY ST
TOGIL ST
ORPHAN SCHOOL CREEK
PROSPECT CREEK

N

0 100 200
metres

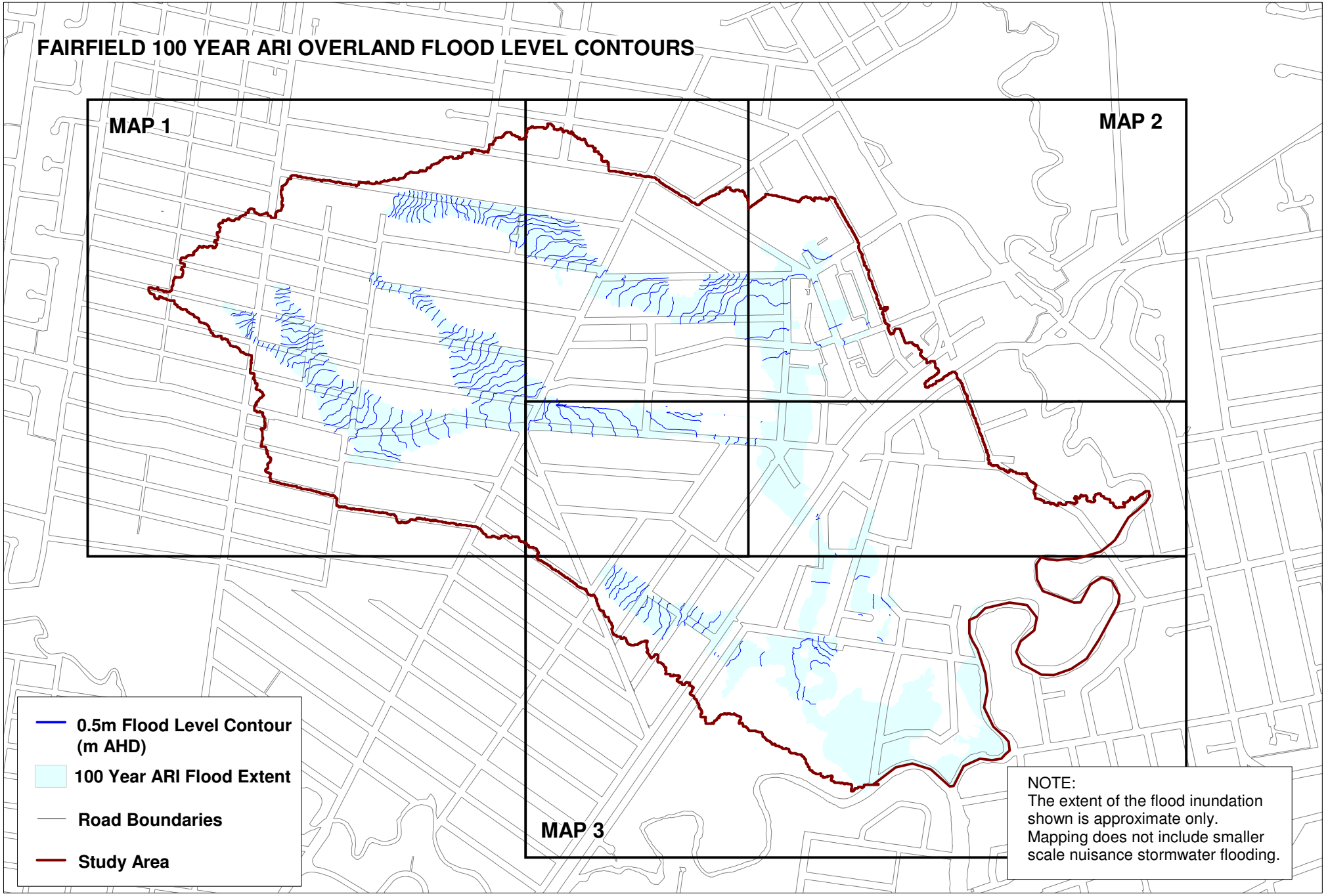
NOTE:
The extent of the flood inundation shown is approximate only.
Mapping does not include smaller scale nuisance stormwater flooding.

Depth of Flooding

- 0 - 0.3m
- 0.3 - 0.5m
- 0.5 - 1.0m
- > 1.0m
- Road Boundaries
- Study Area

FAIRFIELD PMF OVERLAND FLOOD DEPTHS

FAIRFIELD 100 YEAR ARI OVERLAND FLOOD LEVEL CONTOURS



FAIRFIELD 100 YEAR ARI OVERLAND FLOOD LEVEL CONTOURS

MAP 1

N

0 100 200
metres

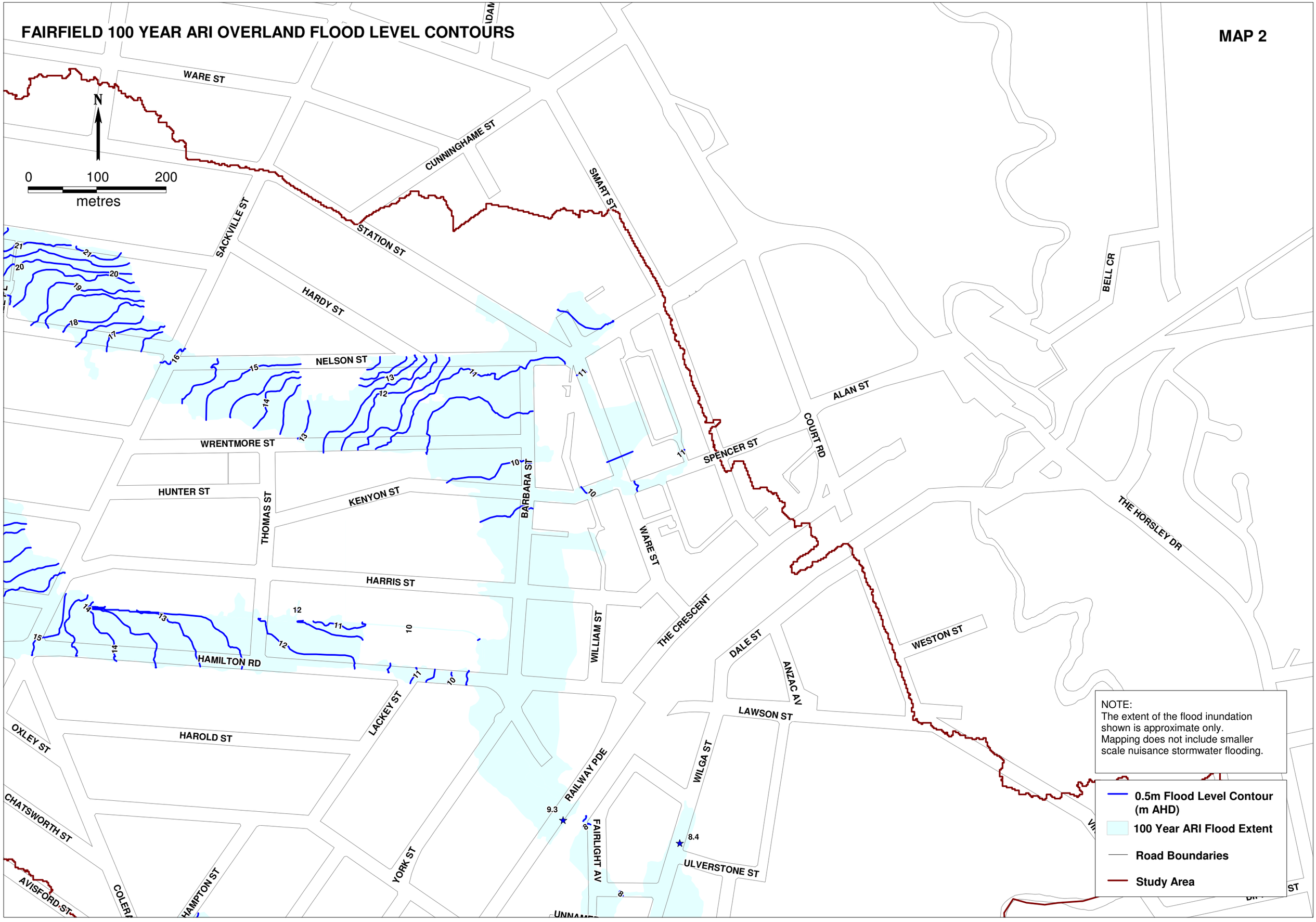
BEEMERA ST
NILE ST
PERCY ST
LIGAR ST
EVANS ST
THROSBY ST
STELLA ST
DAWSON ST
LINDA ST
LOMBARD ST
HAMILTON RD
RICHARDSON ST
HUBERT ST
WENDEN ST
ELIZA ST
STANLEY ST
THE BOULEVARDE
WRAY ST
STATION ST
CAMDEN ST
NELSON ST
EUSTACE ST
CHURCHILL ST
MACQUARIE ST
JOYCE ST
WARE ST
CUNNINGHAM
HARDY ST
WRENTMORE ST
HUNTER ST
THOMAS ST
HARRIS ST
HAMILTON RD
HAROLD ST
OXLEY ST
CHATSWORTH ST
LACKEY ST
YORK ST
SACKVILLE ST
AVISFORD ST
COLEMPTON ST
WOLSELEY

NOTE:
The extent of the flood inundation shown is approximate only.
Mapping does not include smaller scale nuisance stormwater flooding.

- 0.5m Flood Level Contour (m AHD)
- 100 Year ARI Flood Extent
- Road Boundaries
- Study Area

FAIRFIELD 100 YEAR ARI OVERLAND FLOOD LEVEL CONTOURS

MAP 2



MAP 3

HAMILTON RD
HAROLD ST
FREDERICK ST
AVISFORD ST
OXLEY ST
CHATSWORTH ST
COLERAINE ST
HAMPTON ST
INGTON ST
OLIVE ST
WOLSELEY ST
CATHCART ST
RAILWAY PDE
EAST PDE
FRANCIS ST
AUSTRAL PDE
YORK ST
LACKEY ST
WILLIAM ST
LYNDON ST
WILGA ST
DALE ST
LAWSON ST
NORTH ST
ORCHARD RD
RIVERVIEW RD
WESTON ST
VINE ST
MAY ST
DIPROSE ST
GORDON ST
DALMAT
HAUGHTON ST
WILCOCK ST
ARTIE ST
RUBY ST
TOGIL ST
MITCHE
PROSPECT CREEK
CANLAN SCHOOL CREEK

9.3
8.4
5.8
5.8
5.8

N

0 100 200
metres

NOTE:
The extent of the flood inundation shown is approximate only.
Mapping does not include smaller scale nuisance stormwater flooding.

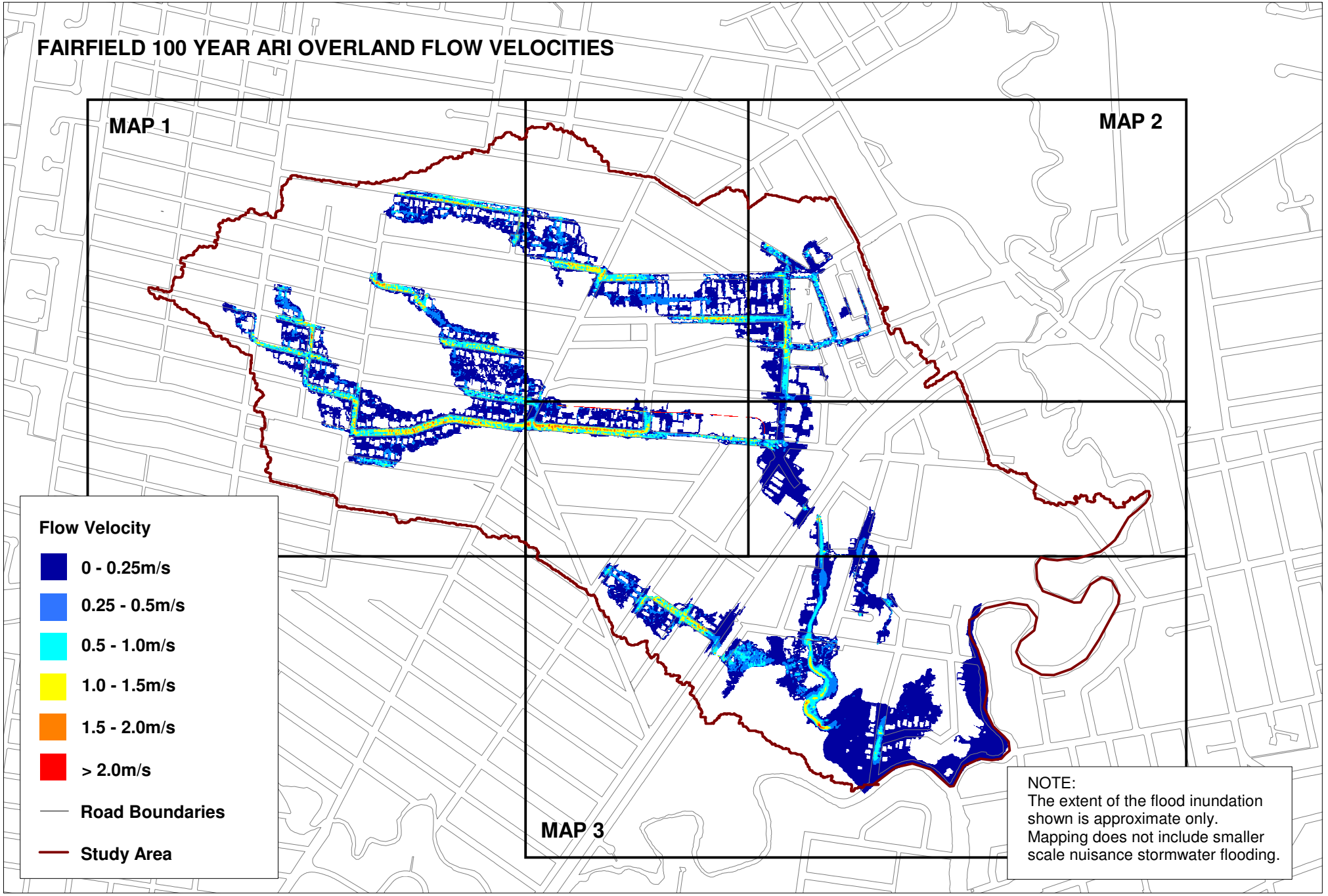
0.5m Flood Level Contour (m AHD)
100 Year ARI Flood Extent
Road Boundaries
Study Area

FAIRFIELD 100 YEAR ARI OVERLAND FLOOD LEVEL CONTOURS

Appendix F Flow Velocity Mapping

- Flow velocity grids for 100 year ARI and PMF events presented

FAIRFIELD 100 YEAR ARI OVERLAND FLOW VELOCITIES



FAIRFIELD 100 YEAR ARI OVERLAND FLOW VELOCITIES

MAP 1

N

0 100 200
metres

NOTE:
The extent of the flood inundation shown is approximate only.
Mapping does not include smaller scale nuisance stormwater flooding.

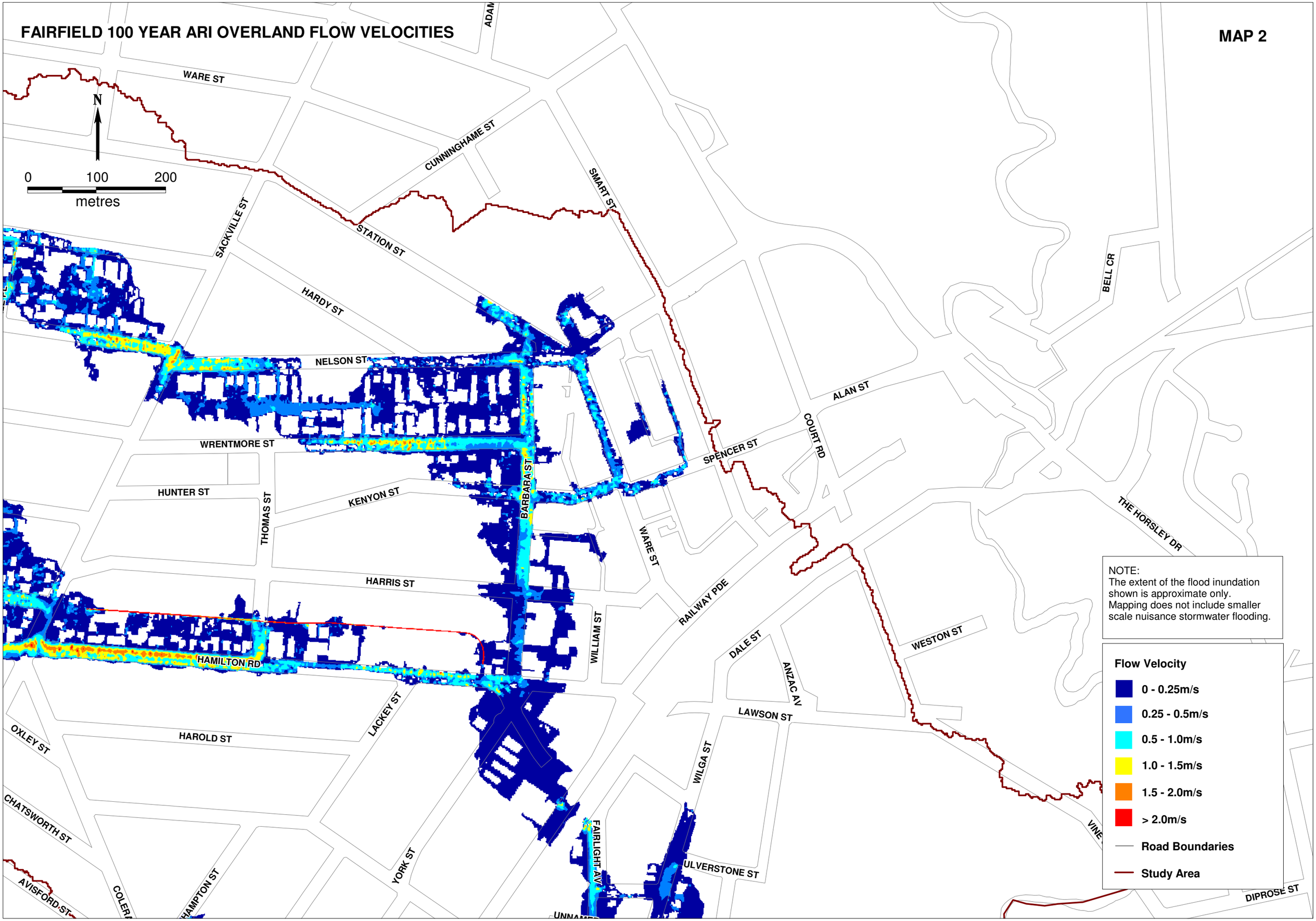
Flow Velocity

- 0 - 0.25m/s
- 0.25 - 0.5m/s
- 0.5 - 1.0m/s
- 1.0 - 1.5m/s
- 1.5 - 2.0m/s
- > 2.0m/s
- Road Boundaries
- Study Area

BEEMERA ST
WRAY ST
NILE ST
WARE ST
PERCY ST
STATION ST
CUNNINGHAM
CAMDEN ST
LIGAR ST
EVANS ST
NELSON ST
HARDY ST
STANLEY ST
THROSBY ST
STELLA ST
ELIZA ST
EUSTACE ST
CHURCHILL ST
WRENTMORE ST
DAWSON ST
MACQUARIE ST
HUNTER ST
THOMAS ST
LINDA ST
JOYCE ST
HARRIS ST
HAMILTON RD
RICHARDSON ST
OXLEY ST
HAROLD ST
LACKEY ST
WENDEN ST
HUBERT ST
CHATSWORTH ST
SACKVILLE ST
AVISFORD ST
YORK ST

FAIRFIELD 100 YEAR ARI OVERLAND FLOW VELOCITIES

MAP 2



MAP 3

HAMILTON RD
HAROLD ST
OXLEY ST
LACKEY ST
WILLIAM ST
DALE ST
WESTON ST
LAWSON ST
CHATSWORTH ST
FREDERICK ST
YORK ST
FAIRLIGHT AV
VINE ST
MAY ST
DIPROSE ST
AVISFORD ST
COLERAINE ST
HAMPTON ST
FRANCIS ST
AUSTRAL PDE
LYNDON ST
WILGA ST
GORDON ST
PROSPECT CREEK
DALMAT
NORTH ST
OLIVE ST
WOLSELEY ST
ORCHARD RD
RIVERVIEW RD
RAILWAY PDE
HAUGHTON ST
CATHCART ST
EAST PDE
WILCOCK ST
ARTIE ST
RUBY ST
ORPHAN SCHOOL CREEK
TOGIL ST

N

0 100 200
metres

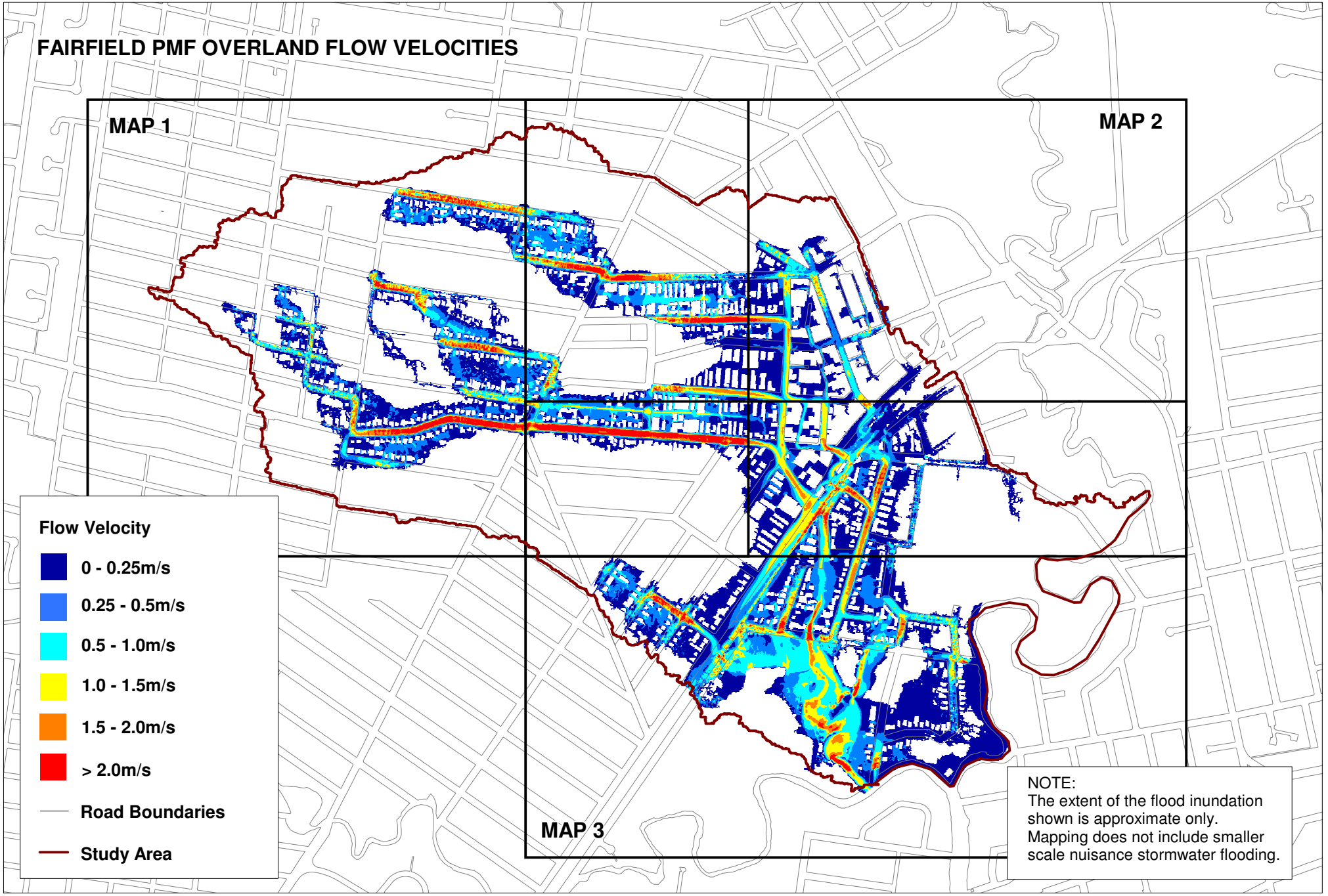
NOTE:
The extent of the flood inundation shown is approximate only.
Mapping does not include smaller scale nuisance stormwater flooding.

Flow Velocity

- 0 - 0.25m/s
- 0.25 - 0.5m/s
- 0.5 - 1.0m/s
- 1.0 - 1.5m/s
- 1.5 - 2.0m/s
- > 2.0m/s
- Road Boundaries
- Study Area

FAIRFIELD 100 YEAR ARI OVERLAND FLOW VELOCITIES

FAIRFIELD PMF OVERLAND FLOW VELOCITIES



FAIRFIELD PMF OVERLAND FLOW VELOCITIES

MAP 1

N

0 100 200
metres

BEEMERA ST
NILE ST
PERCY ST
WRAY ST
WARE ST
STATION ST
CUNNINGHAM
CAMDEN ST
LIGAR ST
EVANS ST
NELSON ST
HARDY ST
STANLEY ST
THROSBY ST
STELLA ST
ELIZA ST
EUSTACE ST
CHURCHILL ST
WRENTMORE ST
DAWSON ST
MACQUARIE ST
HUNTER ST
THOMAS ST
LINDA ST
JOYCE ST
HARRIS ST
HAMILTON RD
HAMILTON RD
RICHARDSON ST
OXLEY ST
HAROLD ST
LACKEY ST
WENDEN ST
CHATSWORTH ST
HUBERT ST
SACKVILLE ST
AVISFORD ST
YORK ST

NOTE:
The extent of the flood inundation shown is approximate only. Mapping does not include smaller scale nuisance stormwater flooding.

Flow Velocity

- 0 - 0.25m/s
- 0.25 - 0.5m/s
- 0.5 - 1.0m/s
- 1.0 - 1.5m/s
- 1.5 - 2.0m/s
- > 2.0m/s
- Road Boundaries
- Study Area

FAIRFIELD PMF OVERLAND FLOW VELOCITIES

MAP 2

N

0 100 200
metres

WARE ST
CUNNINGHAME ST
SMART ST
SACKVILLE ST
STATION ST
HARDY ST
NELSON ST
WRENTMORE ST
HUNTER ST
THOMAS ST
KENYON ST
BARBARA ST
HARRIS ST
HAMILTON RD
WILLIAM ST
WARE ST
RAILWAY PDE
SPENCER ST
COURT RD
ALAN ST
BELL CR
THE HORSLEY DR
WESTON ST
DALE ST
ANZAC AV
LAWSON ST
WILGA ST
FAIRLIGHT AV
ULVERSTONE ST
LACKEY ST
OXLEY ST
HAROLD ST
CHATSWORTH ST
YORK ST
AVISFORD ST
DIPROSE ST

NOTE:
The extent of the flood inundation shown is approximate only. Mapping does not include smaller scale nuisance stormwater flooding.

Flow Velocity

- 0 - 0.25m/s
- 0.25 - 0.5m/s
- 0.5 - 1.0m/s
- 1.0 - 1.5m/s
- 1.5 - 2.0m/s
- > 2.0m/s
- Road Boundaries
- Study Area

MAP 3

HAMILTON RD
WILLIAM ST
DALE ST
WESTON ST
LAWSON ST
LACKEY ST
HAROLD ST
OXLEY ST
FREDERICK ST
CHATSWORTH ST
YORK ST
FAIRLIGHT AV
VINE ST
MAY ST
DIPROSE ST
AVISFORD ST
COLERAINE ST
AUSTRAL PDE
FRANCIS ST
LYNDON ST
WILGA ST
GORDON ST
HAMPTON ST
INGTON ST
PROSPECT CREEK
DALMAT
OLIVE ST
NORTH ST
ORCHARD RD
RIVERVIEW RD
WOLSELEY ST
RAILWAY PDE
EAST PDE
CATHCART ST
HAUGHTON ST
WILCOCK ST
ARTIE ST
RUBY ST
TOGIL ST
ORPHAN SCHOOL CREEK

N

0 100 200
metres

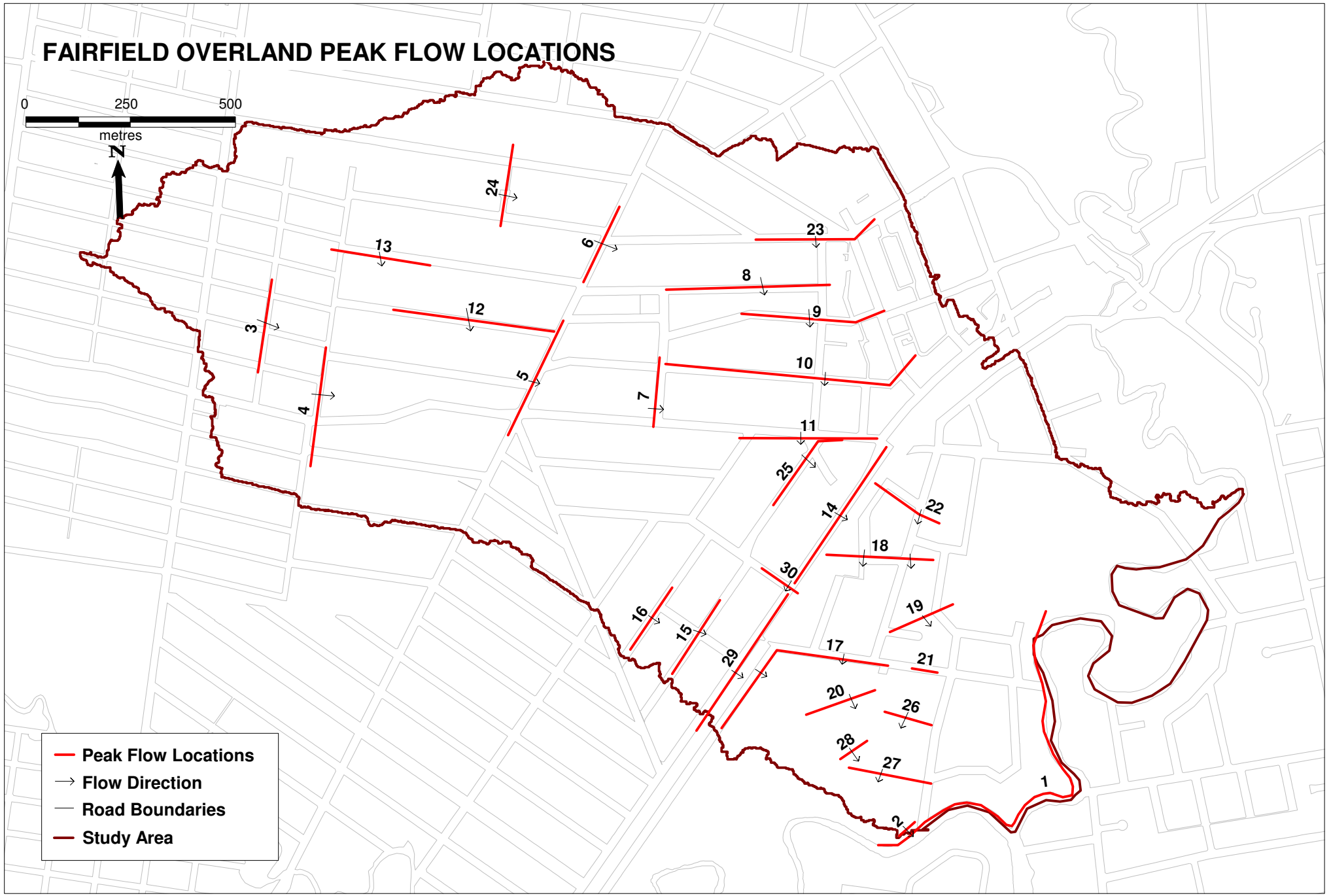
NOTE:
The extent of the flood inundation shown is approximate only.
Mapping does not include smaller scale nuisance stormwater flooding.

Flow Velocity

- 0 - 0.25m/s
- 0.25 - 0.5m/s
- 0.5 - 1.0m/s
- 1.0 - 1.5m/s
- 1.5 - 2.0m/s
- > 2.0m/s
- Road Boundaries
- Study Area

FAIRFIELD PMF OVERLAND FLOW VELOCITIES

Appendix G Peak Flows and Water Levels


FAIRFIELD OVERLAND PEAK FLOW LOCATIONS
0
250
500
metres
N
24
13
6
23
8
12
9
3
10
5
7
4
11
25
14
22
18
30
16
19
15
29
17
21
20
26
28
27
1
2
Peak Flow Locations
Flow Direction
Road Boundaries
Study Area

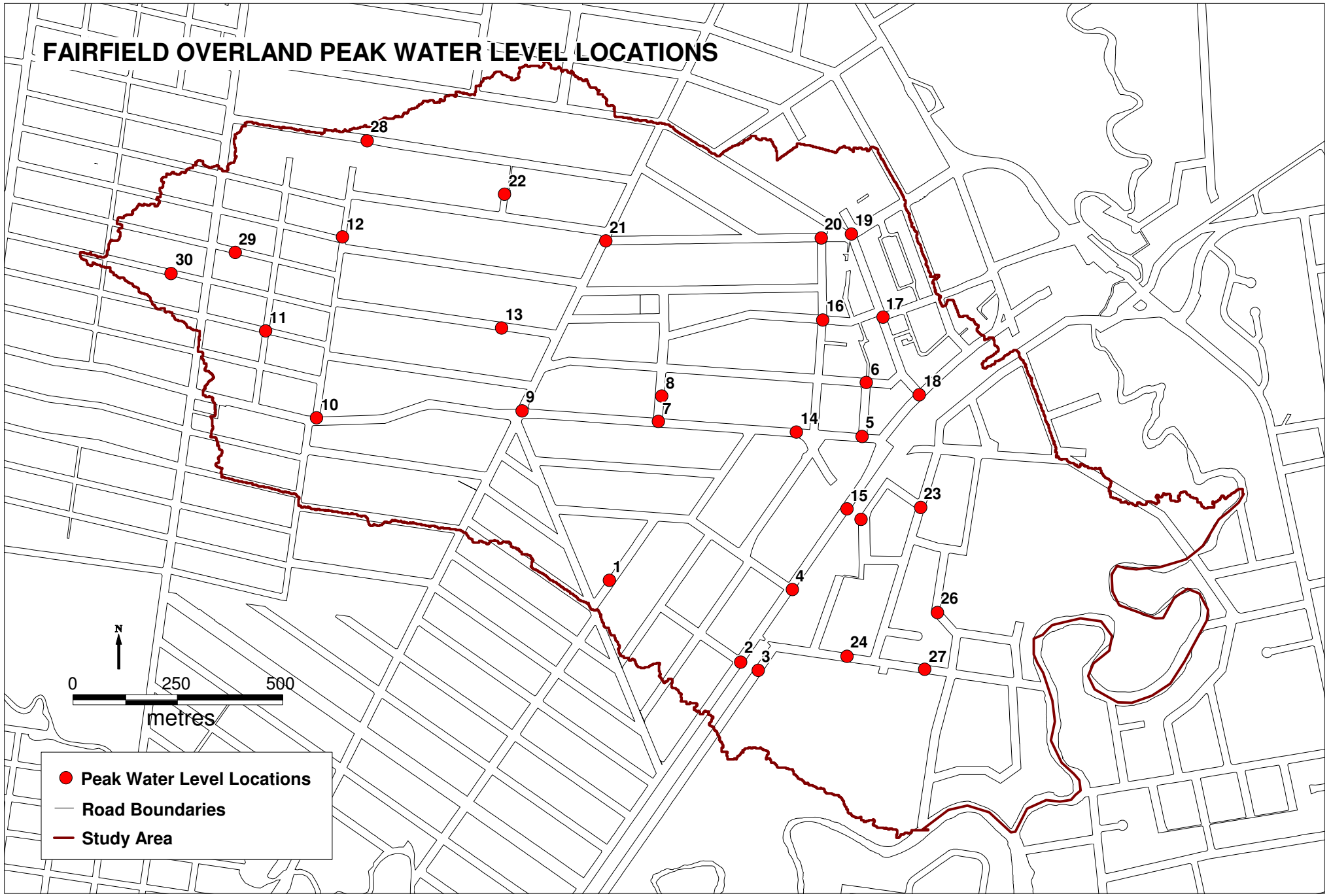

FAIRFIELD OVERLAND PEAK WATER LEVEL LOCATIONS
28
22
12
21
20
19
29
30
11
13
16
17
6
18
8
10
9
7
14
5
15
23
1
4
26
2
3
24
27
N
0
250
500
metres
Peak Water Level Locations
Road Boundaries
Study Area

Table G-1 Peak Water Levels at Selected Locations

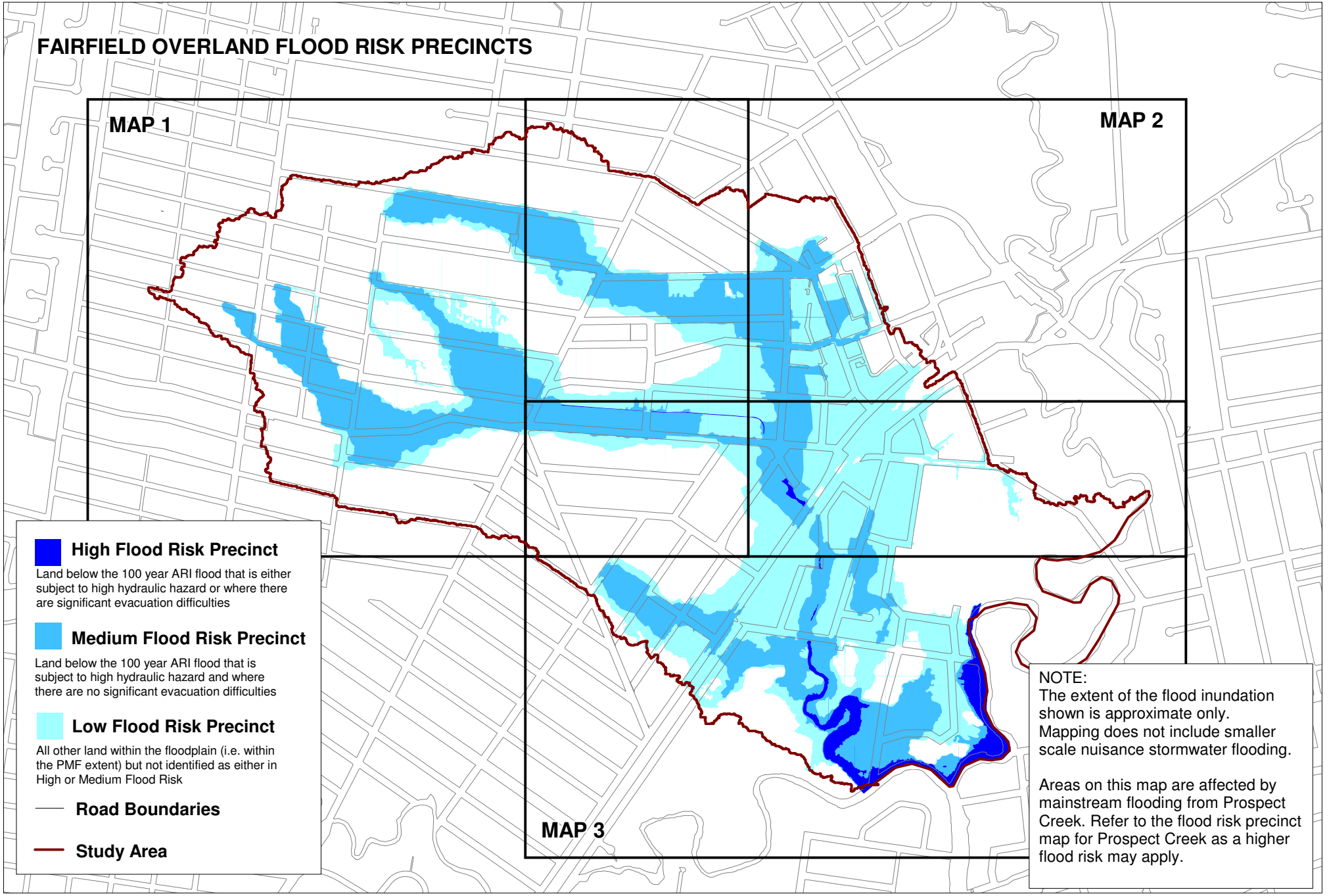
Location	Event ARI													
	20 year		100 year		200 year		500 year		2000 year		10000 year		PMF	
	Peak Flood Level (m AHD)	Critical Event	Peak Flood Level (m AHD)	Critical Event	Peak Flood Level (m AHD)	Critical Event	Peak Flood Level (m AHD)	Critical Event	Peak Flood Level (m AHD)	Critical Event	Peak Flood Level (m AHD)	Critical Event	Peak Flood Level (m AHD)	Critical Event
1 Hampton St	16.35	30m	16.37	30m	16.37	30m	16.38	30m	16.38	30m	16.40	30m	16.53	30m
2 Railway_Austral	9.30	1h	9.37	1.5h	9.40	2h	9.46	2h	9.58	1.5h	10.19	1.5h	10.49	1h
3 East Pde	8.11	1.5h	8.15	1.5h	8.16	1.5h	8.19	1.5h	8.20	30m	8.23	30m	8.38	1h
4 Railway_Frederick	9.18	30m	9.18	30m	9.18	30m	9.57	2h	9.85	1.5h	10.21	1.5h	10.50	1h
5 Hamilton_William	9.62	30m	9.62	30m	9.62	30m	9.72	2h	9.99	1.5h	10.27	1h	10.80	1h
6 Harris_William	9.85	30m	9.85	30m	9.85	30m	9.85	30m	10.03	1.5h	10.30	1h	10.94	1h
7 Hamiton_Thomas	12.38	30m	12.39	1h	12.40	2h	12.43	2h	12.54	1h	12.64	30m	13.03	30m
8 Thomas St	12.11	30m	12.11	30m	12.12	2h	12.27	2h	12.41	1h	12.54	30m	13.03	30m
9 Sackville-Hamilton	14.93	1.5h	14.94	45m	14.96	2h	14.99	2h	15.01	30m	15.07	30m	15.57	30m
10 Hamilton_Eustace	19.65	1.5h	19.65	30m	19.67	2h	19.68	2h	19.70	1h	19.69	30m	19.87	30m
11 Eliza_Dawson	24.31	45m	24.31	2h	24.31	2h	24.31	2h	24.36	30m	24.31	2h	24.32	3h
12 Eustace_Evans	27.87	30m	27.89	30m	27.89	30m	27.90	30m	27.90	30m	27.91	30m	27.93	30m
13 Macquarie St	17.72	2h	17.79	1h	17.83	1h	17.91	2h	18.00	30m	18.14	30m	18.43	30m
14 Hamilton_Open_Drain	9.27	2h	9.33	2h	9.51	2h	9.73	2h	10.00	1.5h	10.27	1h	10.85	1h
15 Railway Pde Nth	9.24	30m	9.32	2h	9.51	2h	9.72	2h	9.99	1.5h	10.26	1h	10.66	1h
16 Barbara_Kenyon	9.61	30m	9.62	1.5h	9.63	1h	9.73	2h	10.03	1.5h	10.32	1h	11.05	1h
17 Ware_Spencer	10.37	30m	10.38	1h	10.39	1h	10.40	1.5h	10.44	30m	10.51	30m	11.05	1h
18 Ware_The Crescent	10.14	30m	10.14	30m	10.14	30m	10.14	30m	10.14	30m	10.26	1h	10.67	1h
19 Nelson_Ware	11.21	1.5h	11.25	2h	11.26	2h	11.28	2h	11.29	30m	11.34	30m	11.46	30m
20 Nelson_Barbara	11.11	30m	11.11	30m	11.12	30m	11.12	30m	11.13	30m	11.14	30m	11.31	30m
21 Sackville_Nelson	15.92	2h	15.94	2h	15.95	1.5h	15.96	1.5h	15.98	30m	16.09	30m	16.48	30m
22 Hale Pl	19.92	1.5h	19.95	1.5h	19.95	1.5h	19.99	2h	20.03	30m	20.13	30m	20.37	30m
23 Fairlight_Wilga	8.49	30m	8.49	30m	8.49	30m	8.49	30m	8.60	1.5h	8.71	1h	9.63	1h
24 North St West	6.84	1.5h	7.05	2h	7.07	2h	7.09	2h	7.14	1.5h	7.22	2h	7.87	1h
25 Fairlight Ave	8.31	30m	8.31	30m	8.31	30m	8.31	30m	8.31	30m	8.34	1h	9.40	1h
26 Latty St	7.70	30m	7.70	30m	7.70	30m	7.70	30m	7.83	1.5h	8.12	2h	8.96	1h
27 North St East	6.46	30m	6.46	30m	6.46	30m	6.47	2h	6.67	1.5h	6.88	2h	7.66	1h
28 Camden_Eustace	30.28	30m	30.28	30m	30.28	30m	30.28	30m	30.28	30m	30.28	30m	30.42	30m
29 Throsby St	30.75	45m	30.75	1.5h	30.75	2h	30.75	2h	30.77	30m	30.75	2h	30.75	3h
30 Stella St	31.83	30m	31.84	30m	31.84	1.5h	31.84	1.5h	31.88	30m	31.84	1.5h	31.84	2h

Table G-2 Peak Flows at Selected Locations

Location	Event ARI													
	20 year		100 year		200 year		500 year		2000 year		10000 year		PMF	
	Peak Flow (m^3/s)	Critical Event	Peak Flow (m^3/s)	Critical Event	Peak Flow (m^3/s)	Critical Event	Peak Flow (m^3/s)	Critical Event	Peak Flow (m^3/s)	Critical Event	Peak Flow (m^3/s)	Critical Event	Peak Flow (m^3/s)	Critical Event
1 PC_boundary	77.2	3h	85.4	1.5h	85.0	1h	90.2	3h	33.5	3h	44.4	3h	165.0	1h
2 St Elmos Outlet	20.1	1h	23.4	1h	25.8	1h	29.6	1h	34.5	1.5h	44.4	1h	158.8	1h
3 Eliza St	1.9	45m	2.1	2h	2.2	2h	2.2	2h	4.5	30m	2.2	2h	2.3	3h
4 Eustace St	2.8	1.5h	2.7	1.5h	4.6	2h	5.1	2h	6.4	30m	4.8	30m	10.9	30m
5 Sackville St Sth	5.2	1.5h	7.6	1h	9.7	2h	12.8	2h	16.5	30m	24.1	30m	64.1	30m
6 Sackville St Nth	2.5	2h	4.0	2h	4.9	2h	6.6	2h	8.4	30m	12.8	30m	34.7	30m
7 Thomas St	4.0	1.5h	3.3	1h	7.2	2h	9.1	2h	21.6	1h	28.9	30m	75.1	30m
8 Wrentmore St	1.8	1.5h	0.0	30m	5.5	1h	8.0	2h	10.7	1h	18.3	30m	53.5	30m
9 Kenyon St	1.3	1.5h	0.0	1.5h	5.4	1h	8.3	1h	11.9	1h	19.1	1h	54.1	1h
10 Harris St	0.2	1h	0.1	45m	3.7	1.5h	5.7	1h	6.5	1h	13.4	1h	60.1	1h
11 Hamilton Rd	1.5	2h	1.2	45m	4.2	2h	6.1	2h	13.7	1h	26.2	1h	114.2	1h
12 Macquarie St	1.1	1h	0.0	30m	2.1	2h	2.7	2h	3.2	30m	4.8	30m	12.6	30m
13 Churchill St	1.6	30m	0.0	30m	2.4	30m	3.0	30m	3.0	30m	4.4	30m	11.0	30m
14 Railway Pde Nth	0.2	30m	0.5	30m	0.5	30m	0.7	2h	6.2	1.5h	13.6	1h	103.9	1h
15 Olive St	1.7	2h	2.5	2h	2.8	2h	3.6	2h	4.6	30m	6.9	30m	17.8	30m
16 Francis St	1.9	2h	2.5	2h	2.9	2h	3.5	2h	4.1	30m	5.8	30m	14.2	30m
17 East-North	1.8	1.5h	6.0	2h	7.5	2h	9.1	1h	14.8	1.5h	21.5	2h	111.9	1h
18 Fairlight Ave	1.7	2h	0.0	30m	4.9	2h	6.1	2h	10.7	1.5h	16.0	1.5h	106.4	1h
19 Wilga-Latty	0.7	2h	0.4	1.5h	1.5	2h	1.9	2h	3.3	1.5h	5.6	2h	34.3	1h
20 St Elmos 4	16.6	1h	0.3	30m	25.1	2h	26.9	2h	31.4	1.5h	38.0	2h	131.2	1h
21 North St	0.0	30m	0.0	30m	0.0	30m	0.0	2h	1.6	1.5h	5.0	2h	37.4	1h
22 Fairlight-Wilga	0.0	30m	0.0	2h	0.0	1.5h	0.1	2h	3.5	1.5h	6.5	1h	47.8	1h
23 Nelson St	2.7	2h	3.8	2h	4.5	2h	5.5	2h	6.3	30m	9.5	30m	24.3	30m
24 Hale Pl	1.4	1.5h	2.5	2h	3.0	2h	3.7	2h	4.0	30m	6.0	30m	16.6	30m
25 York St	1.1	2h	1.6	1h	3.3	2h	4.8	2h	10.4	1h	19.8	1h	82.7	1h
26 St Elmos 3	0.0	30m	0.0	30m	0.0	30m	0.0	30m	1.4	1.5h	4.4	2h	36.7	1h
27 St Elmos 1	20.1	1h	0.0	1.5h	28.2	1h	31.3	1h	37.0	1.5h	47.6	1h	166.8	1h
28 St Elmos 2	18.5	1.5h	25.6	2h	27.0	2h	29.2	2h	34.5	1.5h	42.1	2h	111.6	1h
29 Railway Pde Sth	1.2	1.5h	2.3	2h	2.8	2h	3.9	2h	5.3	30m	8.0	30m	21.9	1h
30 Railway Pde at Frederick	0.0	30m	0.0	30m	0.0	30m	0.4	2h	5.9	1.5h	12.9	1h	22.2	1h

Appendix H Flood Risk Precinct Mapping

FAIRFIELD OVERLAND FLOOD RISK PRECINCTS



FAIRFIELD OVERLAND FLOOD RISK PRECINCTS

MAP 1

N

0 100 200
metres

NOTE:
The extent of the flood inundation shown is approximate only.
Mapping does not include smaller scale nuisance stormwater flooding.

Areas on this map are affected by mainstream flooding from Prospect Creek. Refer to the flood risk precinct map for Prospect Creek as a higher flood risk may apply.

High Flood Risk Precinct
Land below the 100 year ARI flood that is either subject to high hydraulic hazard or where there are significant evacuation difficulties

Medium Flood Risk Precinct
Land below the 100 year ARI flood that is subject to high hydraulic hazard and where there are no significant evacuation difficulties

Low Flood Risk Precinct
All other land within the floodplain (i.e. within the PMF extent) but not identified as either in High or Medium Flood Risk

Road Boundaries

Study Area

BEEMERA ST
NILE ST
PERCY ST
THE BOULEVARDE
WRAY ST
WARE ST
STATION ST
CUNNINGHAM
LIGAR ST
CAMDEN ST
EVANS ST
NELSON ST
HARDY ST
STANLEY ST
THROSBY ST
STELLA ST
ELIZA ST
EUSTACE ST
CHURCHILL ST
WRENTMORE ST
DAWSON ST
MACQUARIE ST
HUNTER ST
THOMAS ST
LINDA ST
JOYCE ST
HARRIS ST
HAMILTON RD
RICHARDSON ST
OXLEY ST
HAROLD ST
LACKEY ST
WENDEN ST
HUBERT ST
CHATSWORTH ST
SACKVILLE ST
AVISFORD ST
YORK ST

FAIRFIELD OVERLAND FLOOD RISK PRECINCTS

MAP 2

N

0 100 200
metres

WARE ST
CUNNINGHAME ST
SMART ST
SACKVILLE ST
STATION ST
HARDY ST
NELSON ST
BELL CR
ALAN ST
COURT RD
SPENCER ST
WRENTMORE ST
HUNTER ST
THOMAS ST
KENYON ST
BARBARA ST
WARE ST
HARRIS ST
WILLIAM ST
THE CRESCENT
DALE ST
ANZAC AV
WESTON ST
HAMILTON RD
LACKEY ST
OXLEY ST
HAROLD ST
LAWSON ST
RAILWAY PDE
WILGA ST
CHATSWORTH ST
FAIRLIGHT AV
ULVERSTONE ST
YORK ST
AVISFORD ST

NOTE:
The extent of the flood inundation shown is approximate only.
Mapping does not include smaller scale nuisance stormwater flooding.

Areas on this map are affected by mainstream flooding from Prospect Creek. Refer to the flood risk precinct map for Prospect Creek as a higher flood risk may apply.

High Flood Risk Precinct
Land below the 100 year ARI flood that is either subject to high hydraulic hazard or where there are significant evacuation difficulties

Medium Flood Risk Precinct
Land below the 100 year ARI flood that is subject to high hydraulic hazard and where there are no significant evacuation difficulties

Low Flood Risk Precinct
All other land within the floodplain (i.e. within the PMF extent) but not identified as either in High or Medium Flood Risk

Road Boundaries

Study Area

MAP 3

HAMILTON RD
WILLIAM ST
DALE ST
WESTON ST
LAWSON ST
OXLEY ST
HAROLD ST
LACKEY ST
CHATSWORTH ST
FREDERICK ST
YORK ST
FAIRLIGHT AV
VINE ST
MAY ST
DIPROSE ST
AVISFORD ST
COLERAINE ST
LYNDON ST
WILGA ST
GORDON ST
HAMPTON ST
FRANCIS ST
AUSTRAL PDE
PROSPECT CREEK
DALMAT
NORTH ST
OLIVE ST
WOLSELEY ST
ORCHARD RD
RIVERVIEW RD
RAILWAY PDE
HAUGHTON ST
CATHCART ST
EAST PDE
WILCOCK ST
MITCHE
ORPHAN SCHOOL CREEK
TOGIL ST

N

0 100 200
metres

NOTE:
The extent of the flood inundation shown is approximate only.
Mapping does not include smaller scale nuisance stormwater flooding.

Areas on this map are affected by mainstream flooding from Prospect Creek. Refer to the flood risk precinct map for Prospect Creek as a higher flood risk may apply.

High Flood Risk Precinct
Land below the 100 year ARI flood that is either subject to high hydraulic hazard or where there are significant evacuation difficulties

Medium Flood Risk Precinct
Land below the 100 year ARI flood that is subject to high hydraulic hazard and where there are no significant evacuation difficulties

Low Flood Risk Precinct
All other land within the floodplain (i.e. within the PMF extent) but not identified as either in High or Medium Flood Risk

Road Boundaries

Study Area

FAIRFIELD OVERLAND FLOOD RISK PRECINCTS

Appendix I Model Quality Assurance Review Recommendations

An internal Quality Assurance review of the Fairfield Overland Flood Study TUFLOW model was undertaken by Greg Rogencamp. Greg is SKM's Practice Leader for Surface Water Hydraulics and Flood Studies and Floodplain Management, and joined SKM after 17 years with BMT WBM, the developers of TUFLOW. During his time at BMT WBM, he worked closely with TUFLOW's software development staff in both development and application roles.

Table I-1 presents the comments from the QA review and responses in consideration of the comments.

Table I-1 QA review comments and recommendations

Comment	Response
Review covers model development, model simulations, inflows into model, DS boundaries, Manning's n, 2D/1D links, mass balance and other items;	
Model development seems sound and appropriate;	
Could consider using 0.015 for roads areas and 0.03 for footpaths. Report needs to be clear on limitations on using 0.2 for all urban areas. Could use blockages for fences as well.	Decision was made in consultation with FCC that n = 0.2 and no fences would be adopted for consistency with previous studies. Limitations of this approach will be commented on in report as suggested.
Look at Bill's paper on this issue (see http://www.tuflow.com/Downloads/Publications/2008.09%20-%202D%20Modelling%20Approaches%20for%20Buildings%20and%20Fences.Syme.pdf), especially bottom of P.2 where the issue of whether to block out buildings or use high n values. I would suggest using a high n value (say 1.0) to get water in there (matching flood storage in buildings) but getting conveyance right. Also provides more continuous flood surface.	Decision was made in consultation with FCC that buildings would be modelled as solid blocked obstructions for consistency with previous studies.
Location of 2d_bc inflows from DRAINS should avoid high Mannings n areas (0.2). Step below should avert this;	Agree and model has been updated with consideration of this.
Inflows from DRAINS into pits should be improved by using SA polygon with PITS flag. Tested this on day of review. Found marked changes in flows in pipes;	Agree and model has been updated with consideration of this.
Large 'pit' on DS side of railway should be re-modelled as 2D SX over about 9 cells with extended culverts and pit with 1.5 inlet/outlet losses;	Agree and model has been updated with consideration of this.
Should consider pit losses at all pit junctions – use 1.5 or check QUDM;	Updated in DRAINS using QUDM method and applied to TUFLOW
Re-run PMF with screen display on higher frequency and check Mass Balance reporting – send to me for review of your MB	Done. Hamilton Rd channel modelled as 2D element in

spreadsheet;	TUFLOW for stability. Checked using mass balance info.
Use X type channels for link channels instead of large weirs etc;	X type channels not valid where there is a Q type boundary
Consider simpler DS boundary arrangement with 2d_bc line with HT type;	
In summary, the model seems well constructed, good naming conventions, runs well.	

Glossary

Term	Description
Annual Exceedance Probability (AEP)	Term used to describe the chance of a flood of a given or larger size occurring in any one year, expressed as a percentage. Eg. a 1% AEP flood means there is a 1% (ie. one-in-100) chance of a flood of that size or larger occurring in any one year (see ARI).
Australian Height Datum (AHD)	A common national plain of level corresponding approximately to mean sea level. All flood levels, floor levels and ground levels are normally provided in metres AHD (m AHD)
Average Recurrence Interval (ARI)	The long-term average number of years between the occurrence of a flood as big as, or larger than, the selected event. For example, floods with a discharge as great as, or greater than, the 20 year ARI flood event will occur on average once every 20 years. ARI is another way of expressing the likelihood of occurrence of a flood event.
catchment	A catchment is the area of land from which rainwater drains into a common point such as a reservoir, pond, lake, river or creek. In urban areas such as Fairfield, the majority of the rainwater is collected by gutters and pipes and then flows through stormwater drains into the stormwater system.
conveyance	A direct measure of the flow carrying capacity of a particular cross-section of a stream or stormwater channel. (For example, if the conveyance of a channel cross-section is reduced by half, then the flow carrying capacity of that channel cross-section will also be halved).
discharge	The rate of flow of water measured in terms of volume per unit time, eg. cubic metres per second (m^3/s). Also known as **flow**. Discharge is different from the speed/velocity of flow which is a measure of how fast the water is moving.
extreme flood	An estimate of the probable maximum flood, which is the largest flood likely to ever occur.
flood	A relatively high stream flow which overtops the natural or artificial banks in any part of a stream, river, estuary, lake or dam, and/or local overland flooding associated with major drainage as defined by the FDM before entering a watercourse.
flood awareness	An appreciation of the likely effects of flooding and a knowledge of the relevant flood warning and evacuation procedures.
flood hazard	The potential for damage to property or harm to persons during a flood or a situation with a potential to cause loss. In relation to this study, the hazard is flooding which has the potential to cause harm or loss to the community. Flood hazard is a key tool used to determine flood severity and is used for assessing the suitability of future types of land use.
flood level	The height of the flood described as either a depth of water above a particular location (eg. 1m above floor level) or as a depth of water related to a standard level such as Australian Height Datum (eg. flood level is 5m AHD).
flood liable/flood prone land	Land susceptible to flooding up to the PMF. The term flood liable or flood prone land covers the entire floodplain.

Term	Description
floodplain	The area of land that is subject to inundation by floods up to and including the PMF event.
Floodplain Development Manual (FDM)	Refers to the document dated April 2005, published by the New South Wales Government and entitled "Floodplain Development Manual: the management of flood liable land".
Floodplain Risk Management Plan (FRMP)	A plan prepared for one or more floodplains in accordance with the requirements of the FDM or its predecessors.
Floodplain Risk Management Study (FRMS)	A study prepared for one or more floodplains in accordance with the requirements of the FDM or its predecessors.
flood risk	The chance of something happening that will have an impact. It is measured in terms of consequences and probability (likelihood). In the context of this study, it is the likelihood of consequences arising from the interaction of floods, communities and the environment.
flood risk precinct	An area of land with similar flood risks and where similar development controls may be applied by a Council to manage the flood risk. The flood risk is determined based on the existing development in the precinct or assuming the precinct is developed with normal residential uses. Usually the floodplain is categorised into three flood risk precincts 'low', 'medium' and 'high', although other classifications can sometimes be used. *High Flood Risk: T*his has been defined as the area of land below the 100-year flood event that is either subject to a high hydraulic hazard or where there are significant evacuation difficulties. *Medium Flood Risk:* This has been defined as land below the 100-year flood level that is not within a high flood risk precinct. This is land that is not subject to a high hydraulic hazard or where there are no significant evacuation difficulties. *Low Flood Risk:* This has been defined as all land within the floodplain (i.e. within the extent of the probable maximum flood) but not identified within either a high flood risk or a medium flood risk precinct. The low flood risk precinct is that area above the 100-year flood event.
flood study	A study that investigates flood behaviour, including identification of flood extents, flood levels and flood velocities for a range of flood events.
hydraulics	The study of water flow in waterways; in particular, the evaluation of flow parameters such as water level and velocity.
hydraulic hazard	The hazard as determined by the provisional criteria outlined in the FDM in a 100 year flood event.

Term	Description
hydrology	The study of rainfall and runoff process; in particular, the evaluation of peak discharges, flow volumes and the derivation of hydrographs (graphs that show how the discharge or stage/flood level at any particular location varies with time during a flood).
local drainage	Term given to small scale inundation in urban areas outside the definition of major drainage as defined in the FDM. Local drainage problem invariably involve shallow depths (less than 0.3m) with generally little danger to personal safety.
local overland flooding	The inundation by local runoff rather than overbank discharge from a stream, river, estuary, lake or dam.
mainstream flooding	The inundation of normally dry land occurring when water overflows the natural or artificial banks of a stream, river, estuary, lake or dam.
overland flow path	The path that floodwaters can follow if they leave the confines of the main flow channel or pipe system. Overland flow paths can occur through private properties or along roads.
peak discharge	The maximum discharge or flow during a flood measured in cubic metres per second (m^3/s).
probable maximum flood (PMF)	The largest flood that could conceivably occur at a particular location, usually estimated from probable maximum precipitation.
probable maximum precipitation (PMP)	The greatest depth of precipitation for a given duration meteorologically possible over a given size storm area at a particular location at a particular time of the year, with no allowance made for long-term climatic trends (World Meteorological Organisation, 1986). It is the primary input to the estimation of the probable maximum flood.
probability	A statistical measure of the expected chance of flooding (see ARI).
risk	See *flood risk.*
runoff	The amount of rainfall that ends up as flow in a stream. Also known as rainfall excess.
velocity	The term used to describe the speed of floodwaters, usually in metres per second (m/s).
water level	See *flood level.*
water surface profile	A graph showing the height of the flood (ie. water level or flood level) at any given location along a watercourse at a particular time.
zone of significant flow	The area of the floodplain where a significant discharge of water occurs during floods. Should the area within this boundary be fully or partially blocked, a significant distribution of flood flows or increase in flood levels would occur.