

MURRUMBURRAH FLOOD STUDY

VOLUME 2 – APPENDICES

FINAL REPORT

- APPENDIX B.** **Detail Survey and Photographs of Hydraulic Structures**
- APPENDIX C.** **Model Calibration Results**
- APPENDIX D.** **Design Flood Mapping**
- APPENDIX E.** **Hydraulic Hazard and Flood Function Mapping**
- APPENDIX F.** **Emergency Response Planning Information**

APPENDIX B. Detail Survey and Photographs of Hydraulic Structures





Flood Mark 1 – Bridge Support Beam



Flood Mark 2 – Back of Museum



Flood Mark 3 – Corner of fence



Flood Mark 4 – Demountable building



Flood Mark 1 – Close view



Flood Mark 2 – Close view



Flood Mark 2 – As marked on internal wall

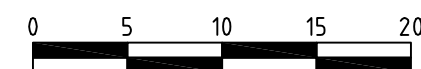
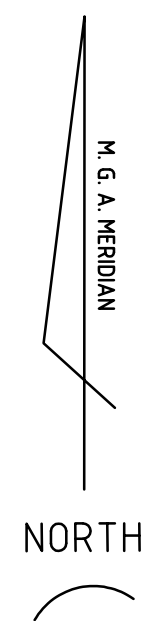


Flood Mark 3 – Close view

Flood Mark 4
SURVEYED 14-03-2019

EASTING: 623958.618
NORTHING: 6176025.403
RL (AHD): 372.821

NOTE: **NOT MARKED** This building is likely to be relocated to allow for some renovations on the site. As this mark is in close proximity to Mark 2, which is on a solid brick wall, with a very similar RL, we made it more permanent instead. Otherwise the building could have been moved, and replaced, and the mark would be incorrect.



SCALE 1:400 HOR, 1:400 VER at A1

Level of Origin
PM 84.902
(RL 379.614)
Contour Inv: 0.2
Datum: AHD

Flood Mark 1
SURVEYED 19-03-2019

EASTING: 624.125.114
NORTHING: 6176010.123
RL (AHD): 373.728

Flood Mark 2
SURVEYED 14-03-2019

EASTING: 623945.296
NORTHING: 6176029.658
RL (AHD): 372.824

Flood Mark 3
SURVEYED 14-03-2019

EASTING: 623873.205
NORTHING: 6176039.164
RL (AHD): 372.750



			I HEREBY CERTIFY THAT ENGINEERING WORKS SHOWN ON THIS PLAN ARE WORK-AS-EXECUTED AND HAVE BEEN CONSTRUCTED GENERALLY IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE DIRECTOR, IN ACCORDANCE WITH THE GENERAL REQUIREMENTS.	NAME: SIGNATURE: CAPACITY: DATE:	DATE 09-04-2019	CHECKED WJC	C.P.C. LAND DEVELOPMENT CONSULTANTS P/L ACN 003 773 975 Young Office 121 Nasmyth Street Young NSW, 2954 Tel (02) 6382 1501 Fax (02) 6382 4729 Cowra Office 5/103 Kendal Street Cowra NSW, 2794 Tel (02) 6342 4577 Fax (02) 6382 4729 Goulburn Office 299 Sloane Street Goulburn NSW, 2580 Tel (02) 4823 5100 Fax (02) 4823 5200				SHEET SUBJECT PLAN VIEW EXISTING DETAIL CROSS SECTIONS		PROJECT Murrumburrah Flood Study FLOOD MARKS						
		DRAWN EK			APPROVED WJC														
					DESIGNED EK	SCALE 1:400 Ver 1:400 Hor													
A	DETAIL PLAN	09-04-2019			COPYRIGHT THIS DRAWING IS NOT TO BE COPIED, OR TRANSFERRED TO ANY THIRD PARTY, OR STORED ON ANY OTHER STORAGE MEDIUM, WITHOUT THE WRITTEN PERMISSION OF C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD.														
ISSUE	AMENDMENT	DATE												CLIENT WMA Water		ISSUE A	PROJECT NO. 19195	SHEET NO. 2 of 23	SHEET A1



Albury Street Bridge - structure looking West



Albury Street Bridge - looking upstream from bridge



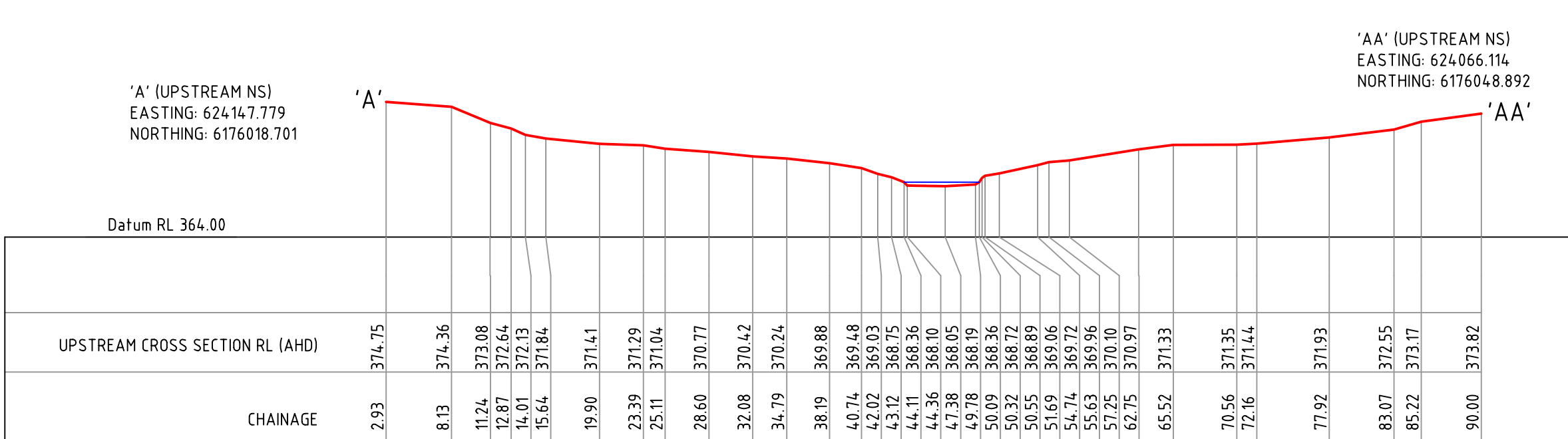
Albury Street Bridge - looking downstream



Albury Street Bridge - looking downstream from bridge

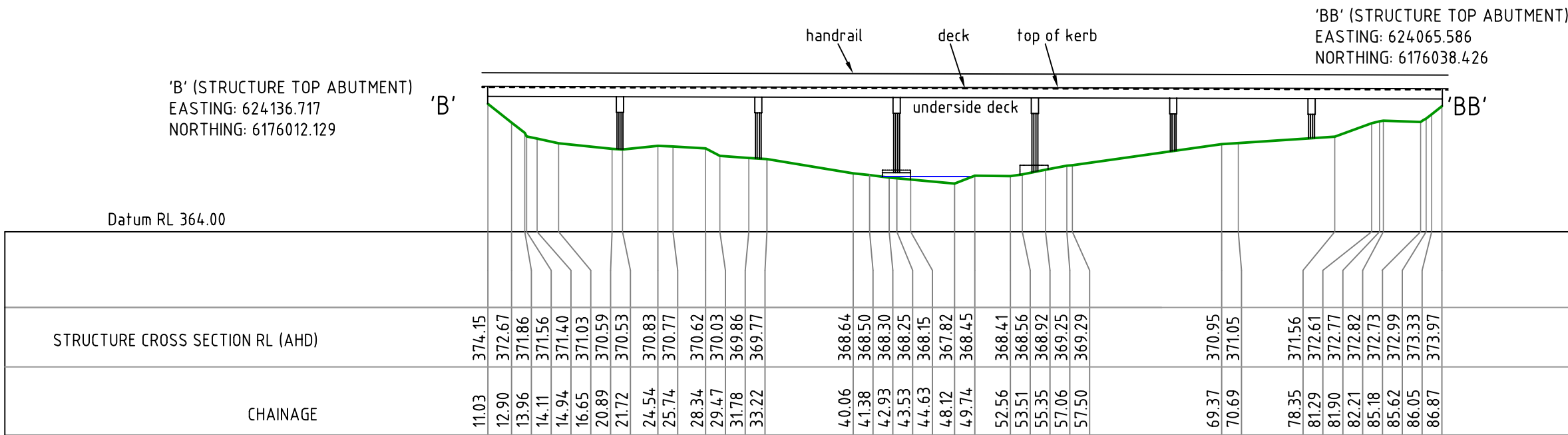


Albury Street Bridge - looking upstream



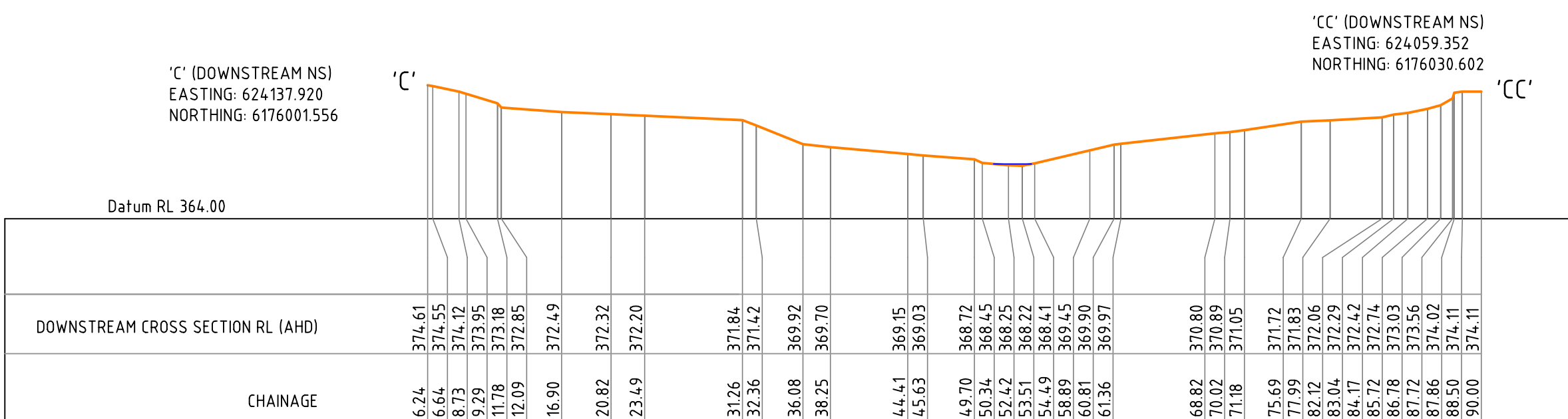
BRIDGE PROFILE - ALBURY (A - AA)

LOOKING DOWNSTREAM



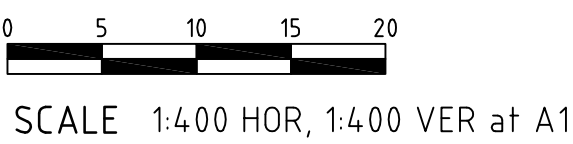
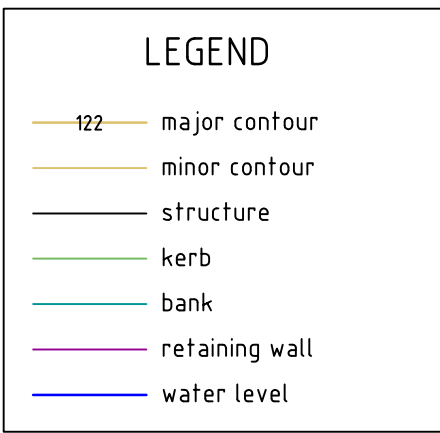
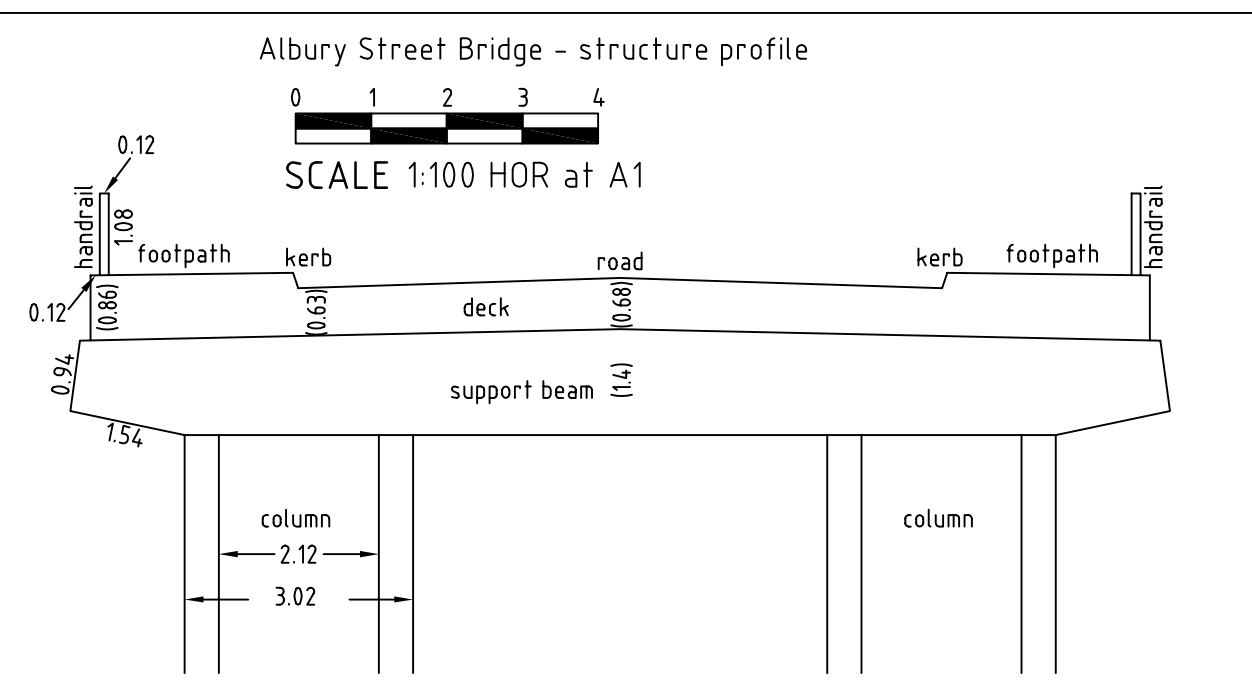
BRIDGE PROFILE - ALBURY (B - BB)

LOOKING DOWNSTREAM



BRIDGE PROFILE - ALBURY (C - CC)

LOOKING DOWNSTREAM



Bridge Albury Street
SURVEYED 19-03-2019

			I HEREBY CERTIFY THAT ENGINEERING WORKS SHOWN ON THIS PLAN ARE WORK-AS-EXECUTED AND HAVE BEEN CONSTRUCTED GENERALLY IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE DIRECTOR, IN ACCORDANCE WITH THE GENERAL REQUIREMENTS.	NAME:	DATE	CHECKED	C.P.C. LAND DEVELOPMENT CONSULTANTS P/L ACN 003 773 975 Young Office 121 Nasmyth Street Young NSW, 2954 Tel (02) 6382 1501 Fax (02) 6382 4729 Cowra Office 5/103 Kendal Street Cowra NSW, 2794 Tel (02) 6342 4577 Fax (02) 6382 4729 Goulburn Office 299 Sloane Street Goulburn NSW, 2580 Tel (02) 4823 5100 Fax (02) 4823 5200	SHEET SUBJECT		PROJECT				
				SIGNATURE:	10-04-2019	WJC		PLAN VIEW		Murrumburrah Flood Study				
				CAPACITY:				EXISTING DETAIL		BRIDGE ALBURY ST				
			DATE:		DRAWN	APPROVED	CROSS SECTIONS	CLIENT		ISSUE	PROJECT NO.	SHEET NO.	SHEET	
A	DETAIL PLAN	10-04-2019	COPYRIGHT		EK	WJC		WMA Water		A	19195	3 of 23		A1
ISSUE	AMENDMENT	DATE	THIS DRAWING IS NOT TO BE COPIED, OR TRANSFERRED TO ANY THIRD PARTY, OR STORED ON ANY OTHER STORAGE MEDIUM, WITHOUT THE WRITTEN PERMISSION OF C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD.		DESIGNED	SCALE								
					EK	1:400 Ver 1:400 Hor								



Bathurst Street Bridge - looking downstream



Bathurst Street Bridge - looking upstream



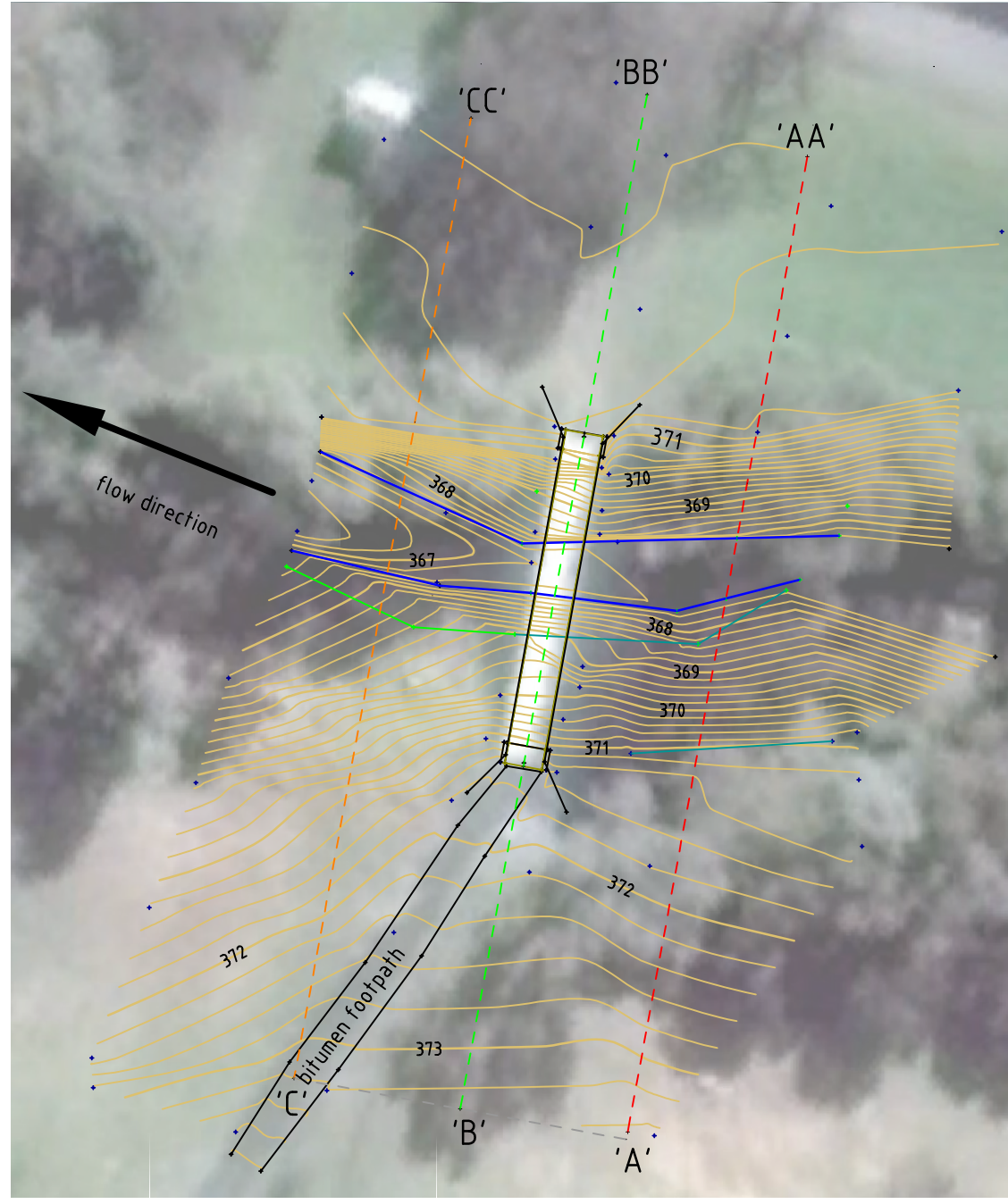
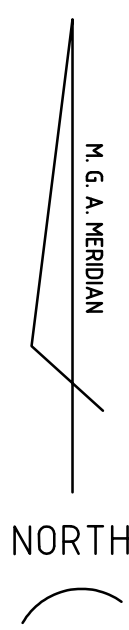
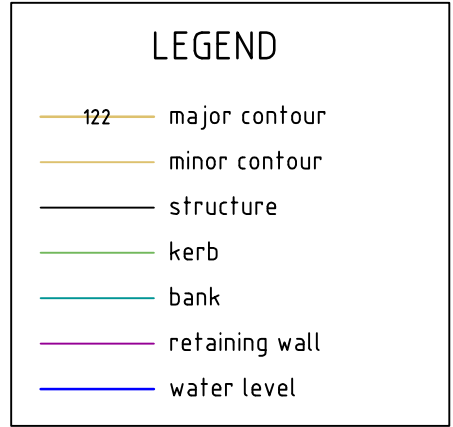
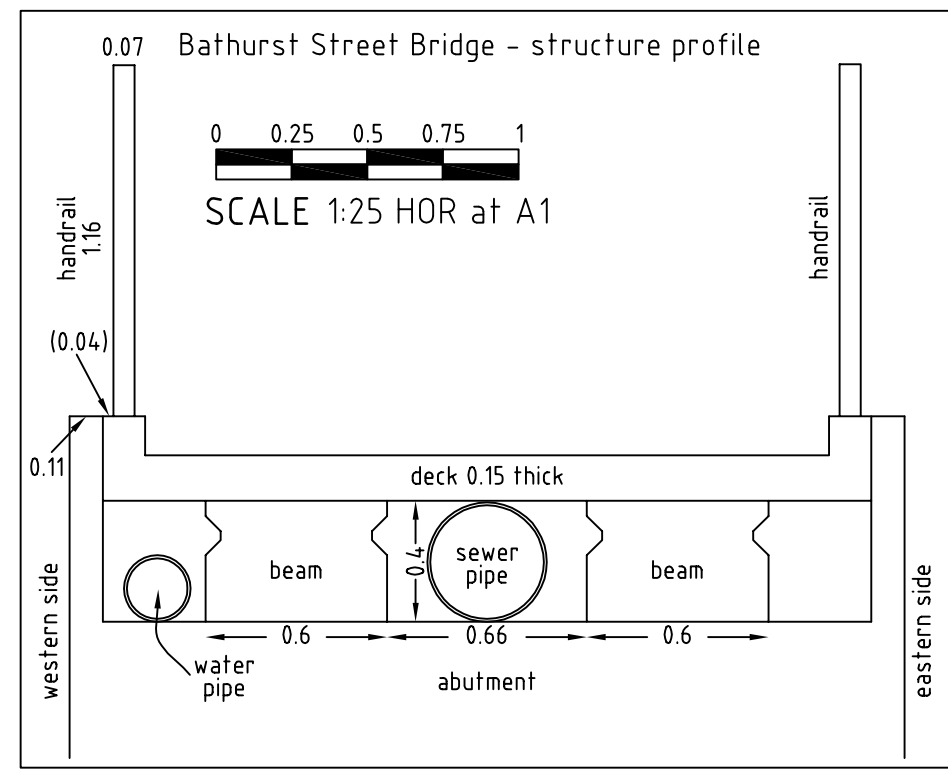
Bathurst Street Bridge - looking north across bridge



Bathurst Street Bridge - looking downstream from bridge



Bathurst Street Bridge - looking upstream from bridge



'A' (UPSTREAM NS)
EASTING: 623861.203
NORTHING: 6175966.698

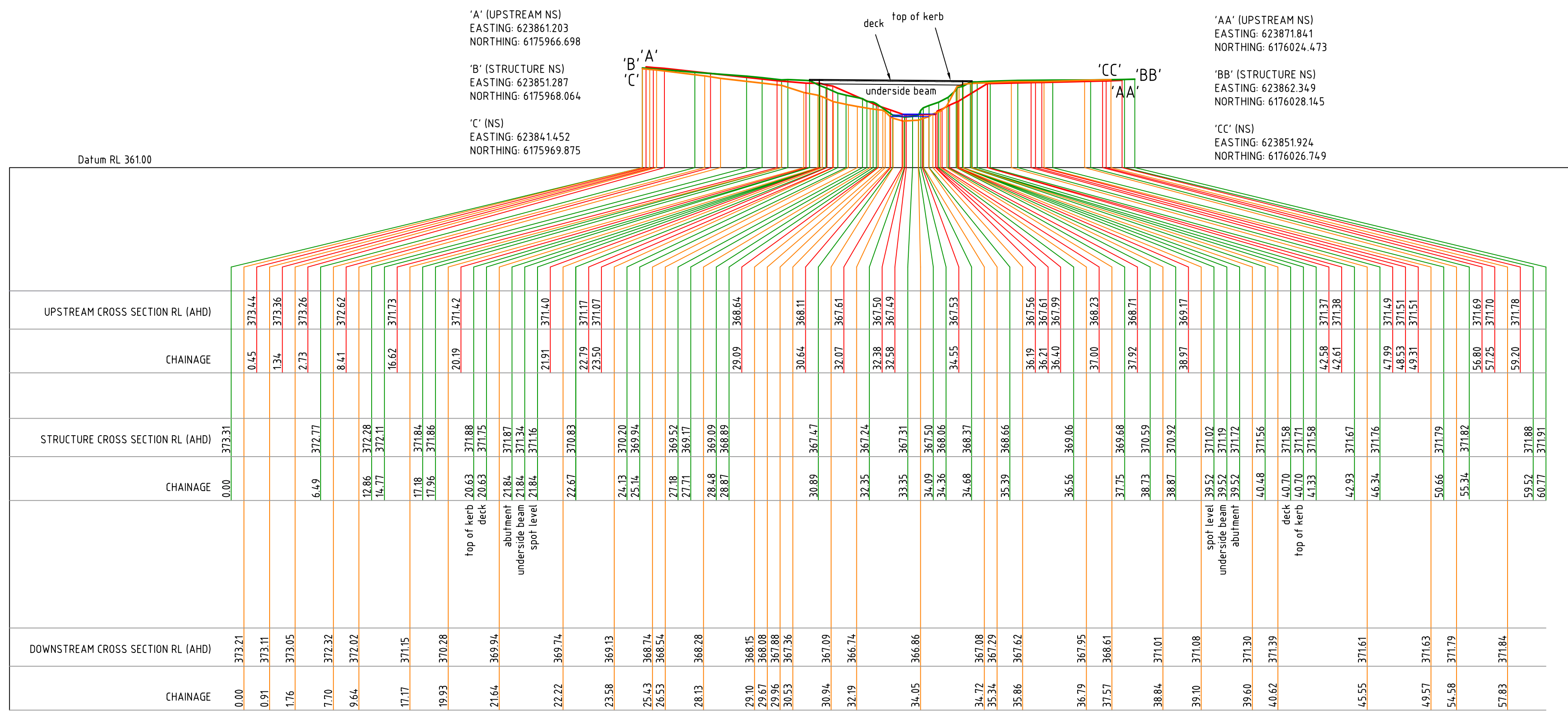
'B' (STRUCTURE NS)
EASTING: 623851.287
NORTHING: 6175968.064

'C' (NS)
EASTING: 62384.1452
NORTHING: 6175969.875

'AA' (UPSTREAM NS)
EASTING: 623871.841
NORTHING: 6176024.473

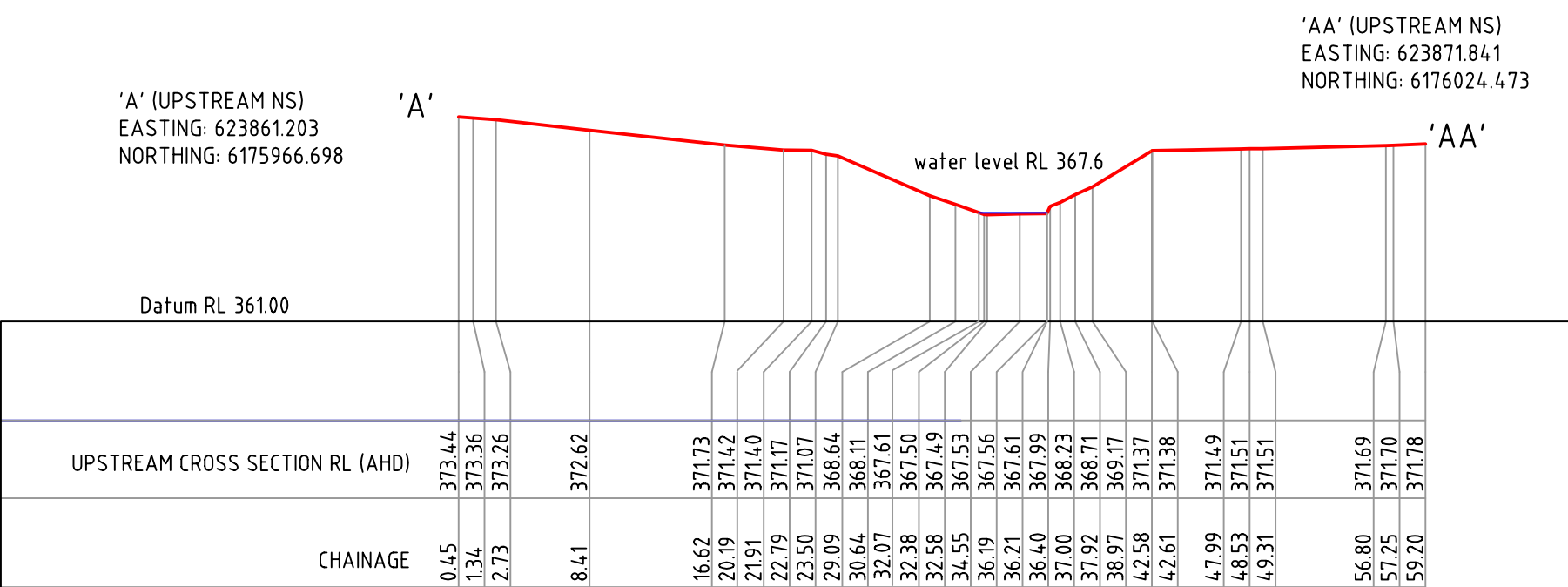
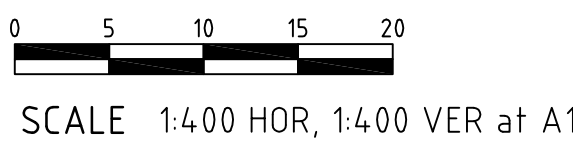
'BB' (STRUCTURE NS)
EASTING: 623862.349
NORTHING: 6176028.145

'CC' (NS)
EASTING: 623851.924
NORTHING: 6176026.749

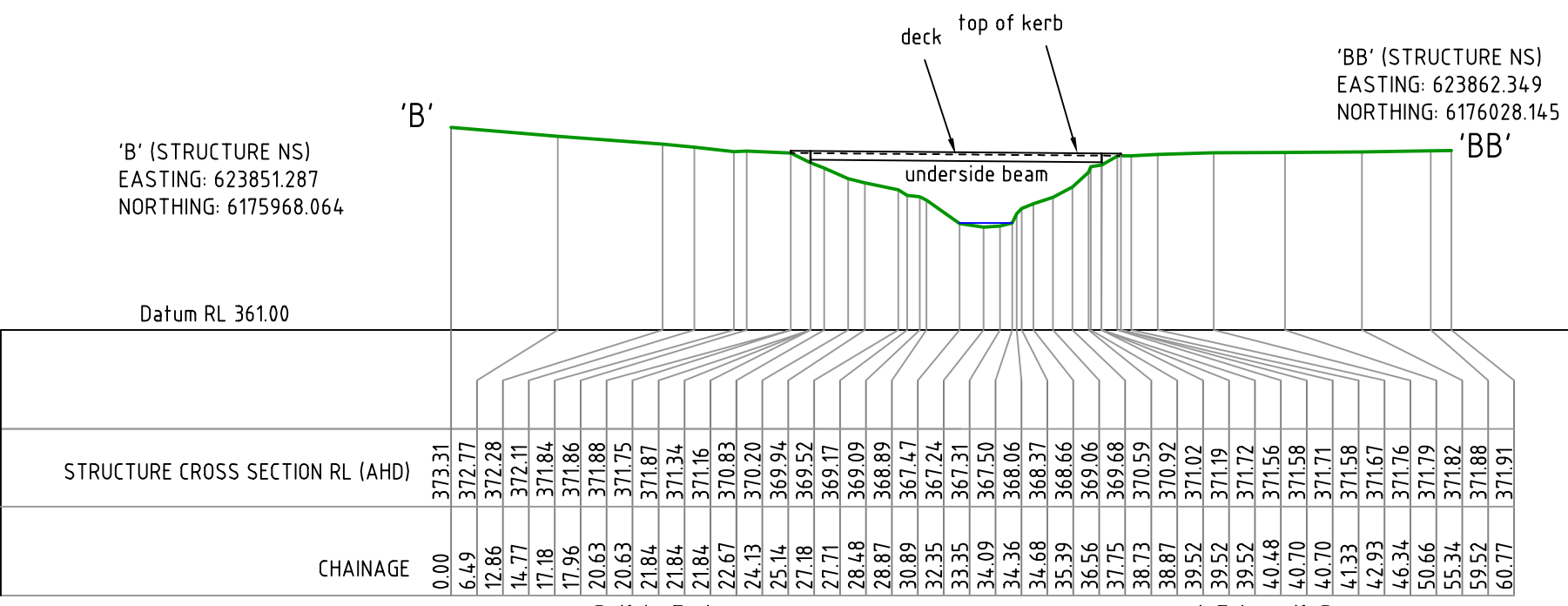


Level of Origin
PM 84.902
(RL 379.614)
Contour Inv: 0.2
Datum: AHD

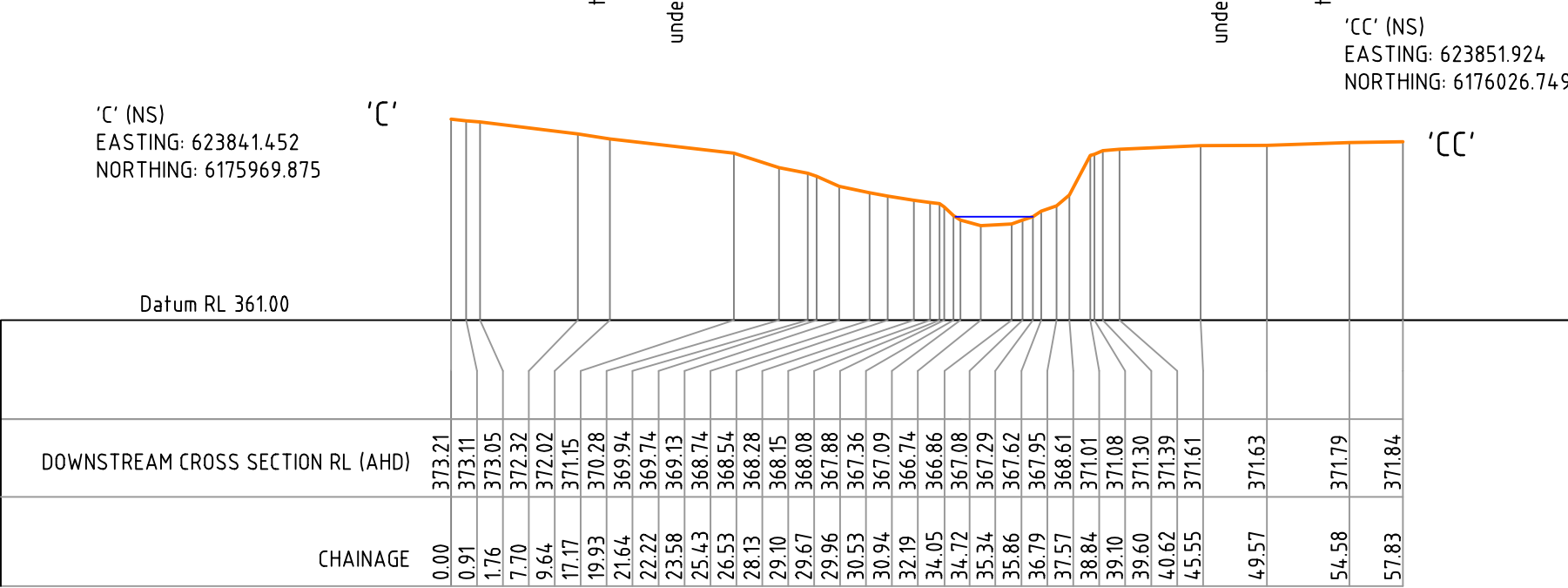
Bridge Bathurst Street
SURVEYED 14-03-2019



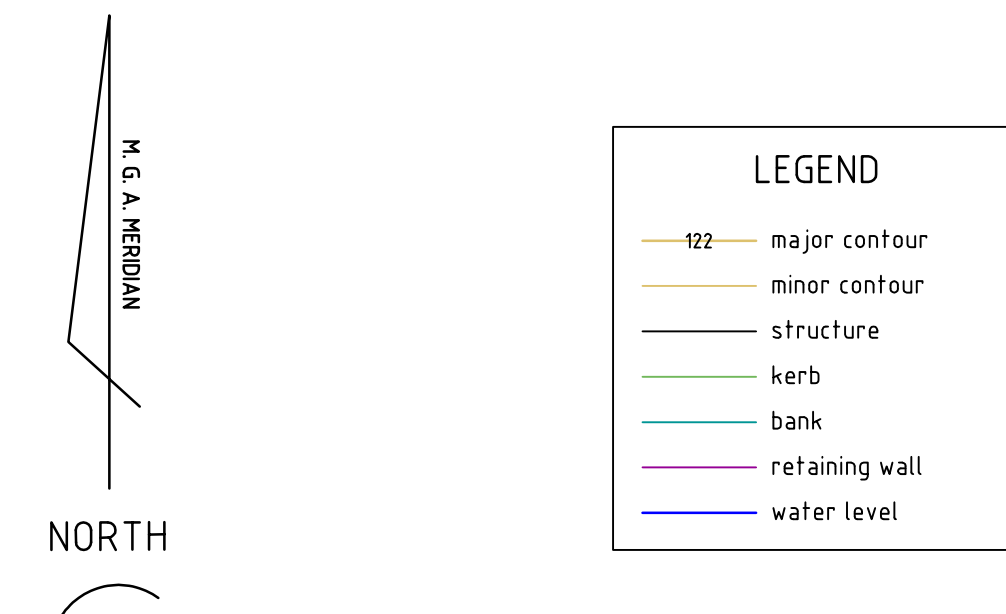
BRIDGE PROFILE - BATHURST (A - AA)
LOOKING DOWNSTREAM



BRIDGE PROFILE - BATHURST (B - BB)
LOOKING DOWNSTREAM



			I HEREBY CERTIFY THAT ENGINEERING WORKS SHOWN ON THIS PLAN ARE WORK-AS-EXECUTED AND HAVE BEEN CONSTRUCTED GENERALLY IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE DIRECTOR, IN ACCORDANCE WITH THE GENERAL REQUIREMENTS.	NAME:	DATE	CHECKED	C.P.C. LAND DEVELOPMENT CONSULTANTS P/L ACN 003 773 975 Young Office 121 Nashmyth Street Young NSW, 2954 Tel (02) 6382 1501 Fax (02) 6382 4729 Cowra Office 5/103 Kendal Street Cowra NSW, 2794 Tel (02) 6342 4577 Fax (02) 6382 4729 Goulburn Office 299 Sloane Street Goulburn NSW, 2580 Tel (02) 4823 5100 Fax (02) 4823 5200	SHEET SUBJECT	PROJECT				
				SIGNATURE:	05-04-2019	WJC		PLAN VIEW	Murrumburrah Flood Study				
				CAPACITY:				EXISTING DETAIL	BRIDGE BATHURST ST				
				DATE:				CROSS SECTIONS					
A	DETAIL PLAN	05-04-2019	COPYRIGHT THIS DRAWING IS NOT TO BE COPIED, OR TRANSFERRED TO ANY THIRD PARTY, OR STORED ON ANY OTHER STORAGE MEDIUM, WITHOUT THE WRITTEN PERMISSION OF C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD.	DESIGNED	SCALE		CLIENT WMA Water		ISSUE	PROJECT NO.	SHEET NO.	SHEET	
ISSUE	AMENDMENT	DATE		EK	1:400 Ver 1:400 Hor				A	19195	4 of 23	A1	



Rail Bridge - looking downstream from bridge

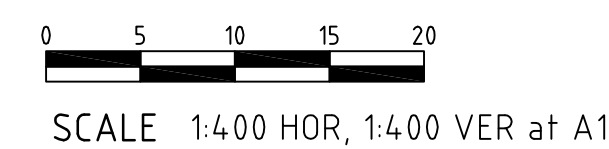
Rail Bridge - looking upstream from bridge

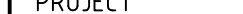
Rail Bridge - looking at bridge from downstream

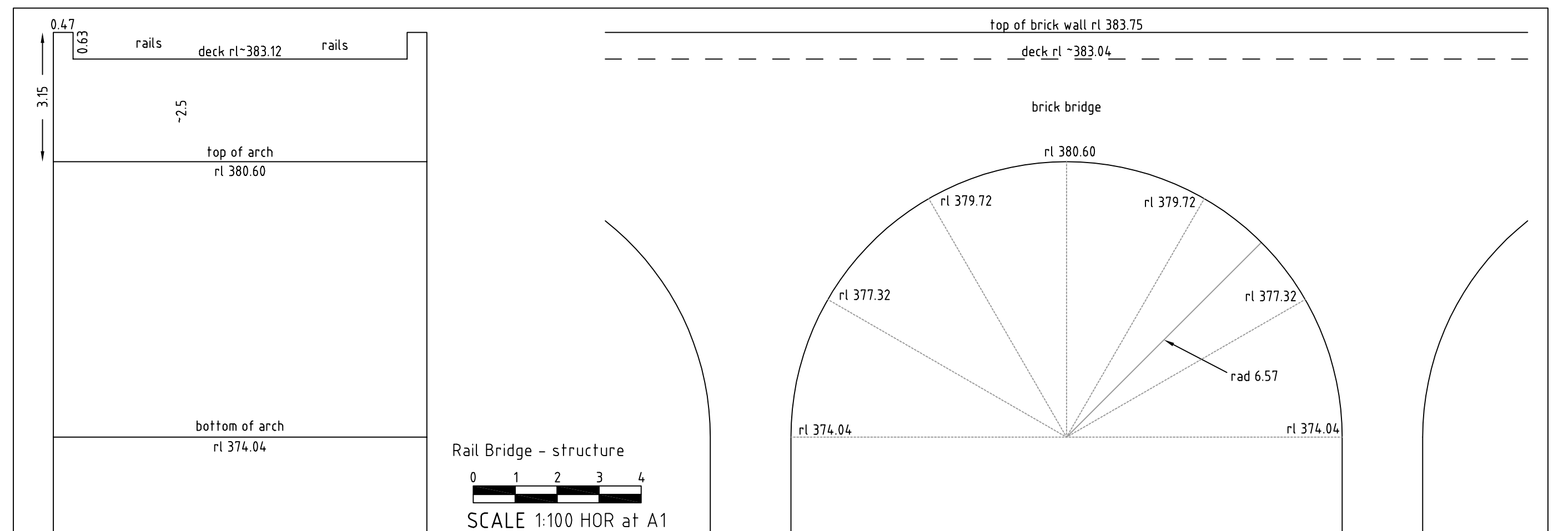
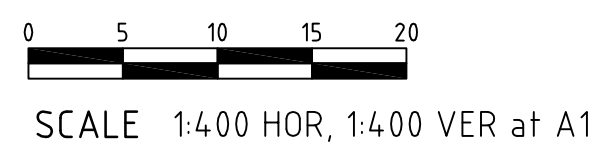
Rail Bridge - looking at bridge from upstream

Level of Origin
PM 30376
(RL 388.438)
Contour Inv: 0.2
Datum: AHD

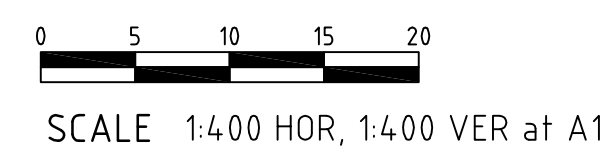
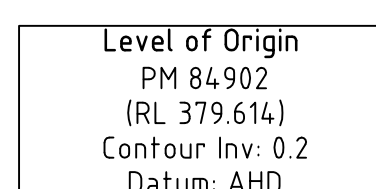
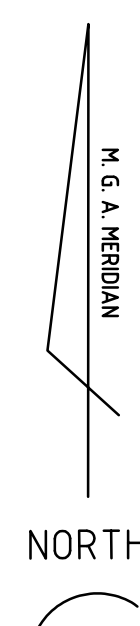
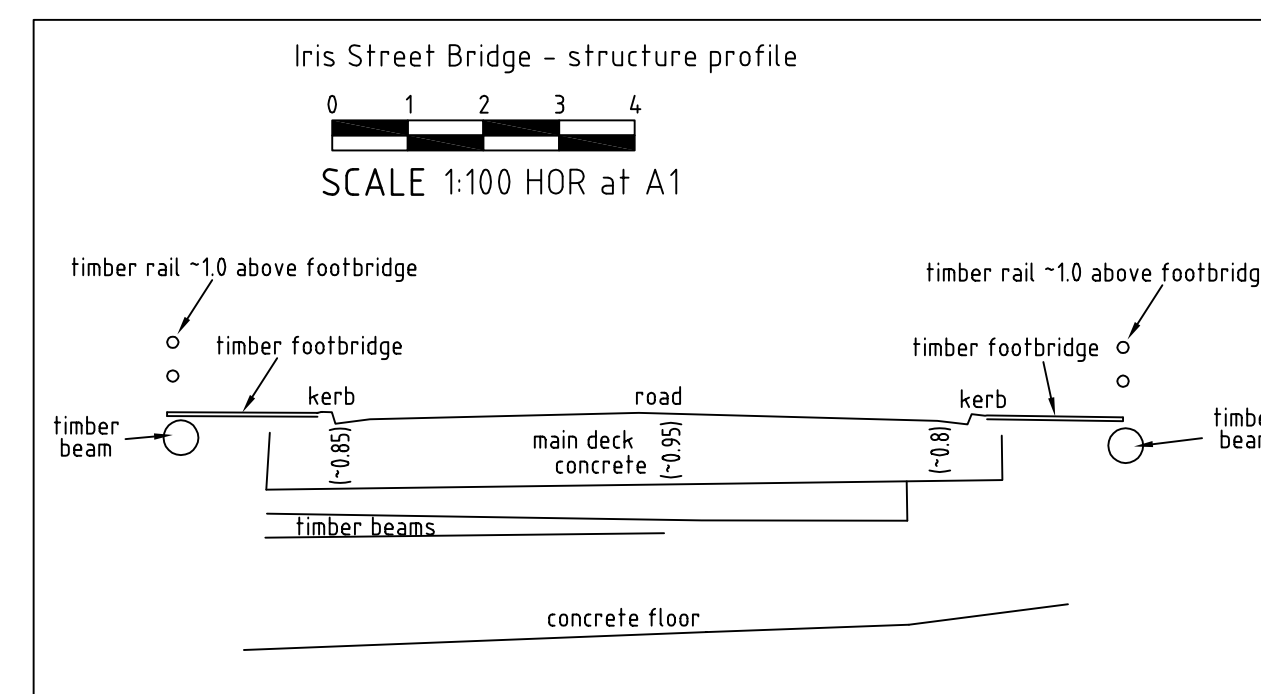
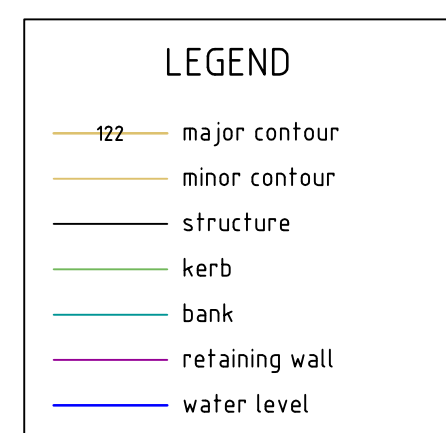
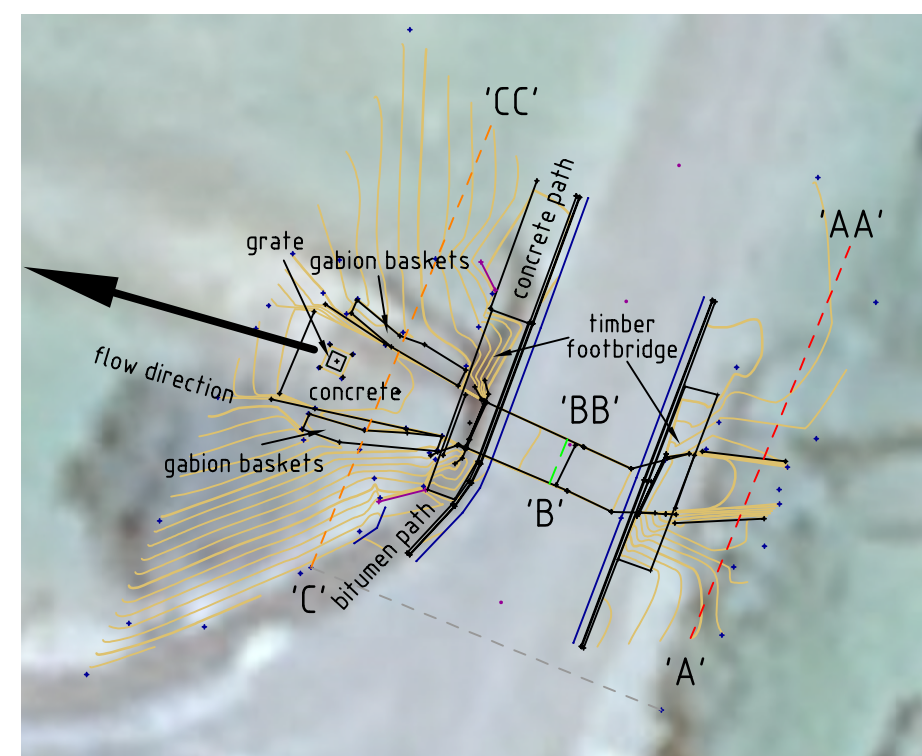
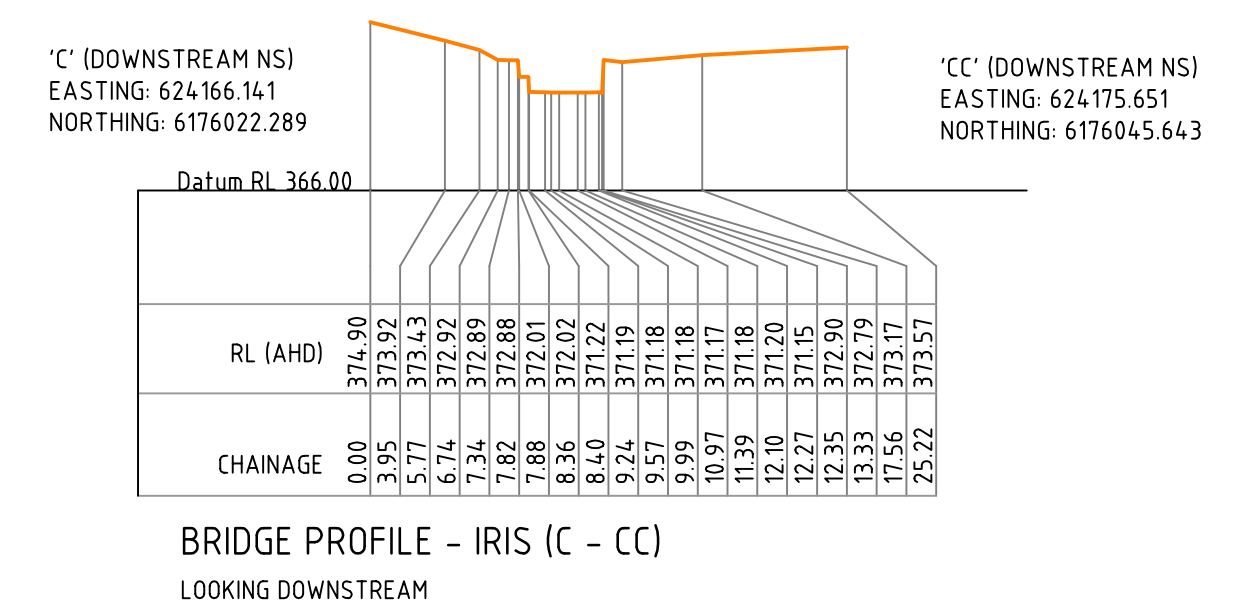
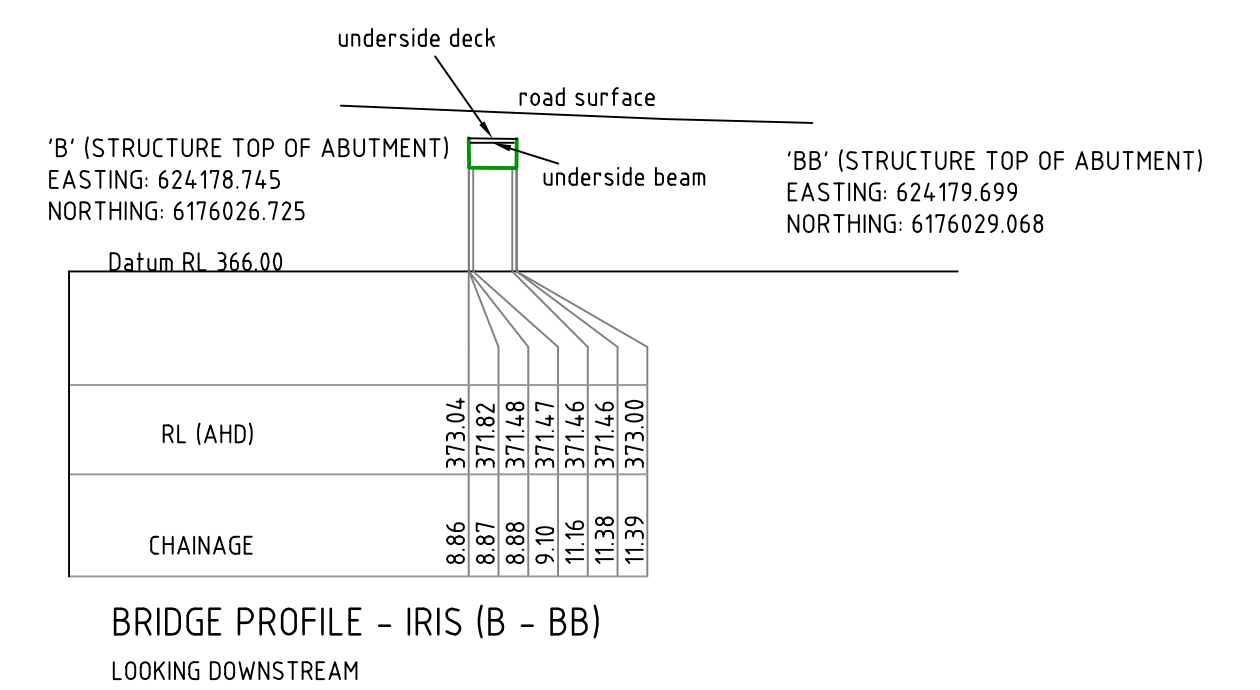
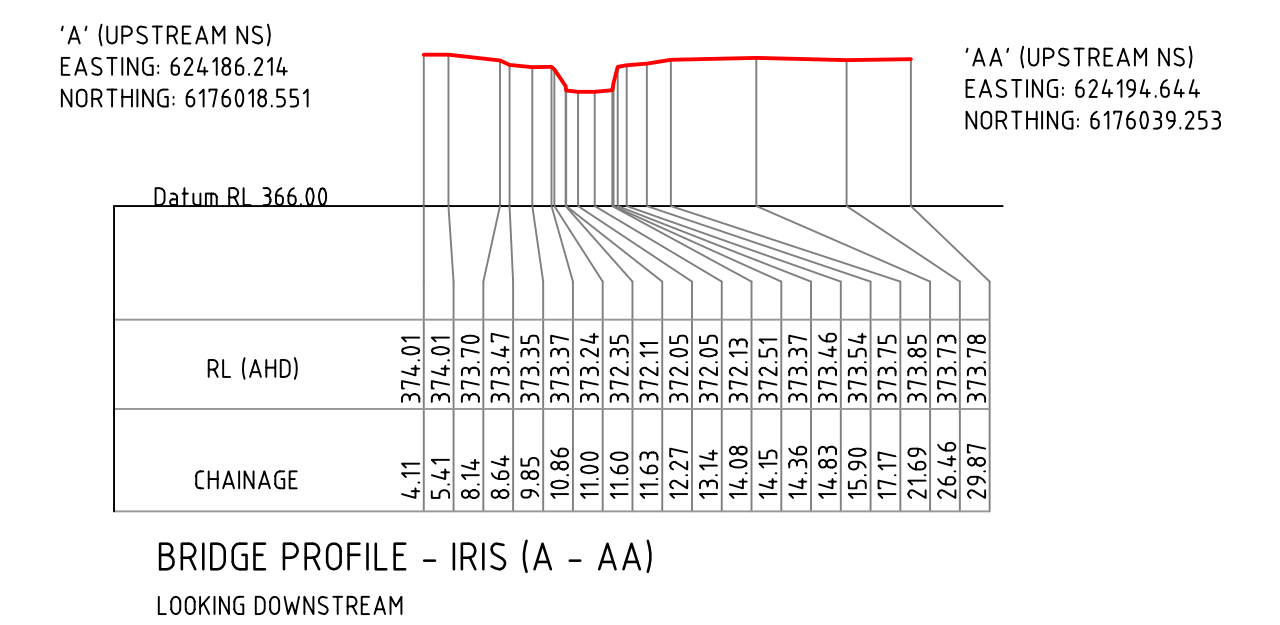
Rail Bridge - Currawong Creek
SURVEYED 20-03-2019



			I HEREBY CERTIFY THAT ENGINEERING WORKS SHOWN ON THIS PLAN ARE WORK-AS-EXECUTED AND HAVE BEEN CONSTRUCTED GENERALLY IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE DIRECTOR, IN ACCORDANCE WITH THE GENERAL REQUIREMENTS.			NAME: SIGNATURE: CAPACITY: DATE:			DATE 11-06-2019			CHECKED WJC			C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD ACN 903 773 975 Young Office 121 Nasmyth Street Young NSW, 2954 Tel (02) 6382 1501 Fax (02) 6382 4729 Cowra Office 5/103 Kendal Street Cowra NSW, 2794 Tel (02) 6342 4577 Fax (02) 6382 4729 Goulburn Office 299 Sloane Street Goulburn NSW, 2580 Tel (02) 4823 5100 Fax (02) 4823 5200										SHEET SUBJECT PLAN VIEW EXISTING DETAIL CROSS SECTIONS					PROJECT Murrumburrah Flood Study RAIL BRIDGE - CURRAWONG CREEK				
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A			DETAIL PLAN			11-04-2019			DESIGNED EK			SCALE 1:400 Ver 1:400 Hor																						
ISSUE			AMENDMENT			DATE																												
															CLIENT WMA Water wma water ISSUE A PROJECT NO. 19195 SHEET NO. 5 of 23 SHEET A1																			



			I HEREBY CERTIFY THAT ENGINEERING WORKS SHOWN ON THIS PLAN ARE WORK-AS-EXECUTED AND HAVE BEEN CONSTRUCTED GENERALLY IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE DIRECTOR, IN ACCORDANCE WITH THE GENERAL REQUIREMENTS.	NAME:	DATE	CHECKED	C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD ACN 003 373 975 Young Office 121 Nasmith Street Young NSW, 2954 Tel (02) 6382 1501 Fax (02) 6382 4729 Cowra Office 5/103 Kendal Street Cowra NSW, 2794 Tel (02) 6342 4577 Fax (02) 6382 4729 Goulburn Office 299 Sloane Street Goulburn NSW, 2580 Tel (02) 4823 5100 Fax (02) 4823 5100	SHEET SUBJECT		PROJECT			
				SIGNATURE:	11-04-2019	WJC		PLAN VIEW	Murrumburrah Flood Study				
				CAPACITY:	DRAWN	APPROVED		EXISTING DETAIL	RAIL BRIDGE - CURRAWONG CREEK - CROSS SECTIONS				
				DATE:	EK	WJC		CROSS SECTIONS					
A	DETAIL PLAN	11-04-2019	COPYRIGHT THIS DRAWING IS NOT TO BE COPIED, OR TRANSFERRED TO ANY THIRD PARTY, OR STORED ON ANY OTHER STORAGE MEDIUM, WITHOUT THE WRITTEN PERMISSION OF C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD.	DESIGNED	SCALE		CLIENT		ISSUE	PROJECT NO.	SHEET NO.	SHEET	
ISSUE	AMENDMENT	DATE		EK	1:4:00 Ver 1:4:00 Hor		WMA Water		A	19195	6 of 23	A1	



			I HEREBY CERTIFY THAT ENGINEERING WORKS SHOWN ON THIS PLAN ARE WORK-AS-EXECUTED AND HAVE BEEN CONSTRUCTED GENERALLY IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE DIRECTOR, IN ACCORDANCE WITH THE GENERAL REQUIREMENTS.	NAME:	DATE	CHECKED	C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD ACN 603 773 975 Young Office 121 Nasmyth Street Young NSW, 2954 Tel (02) 6382 1501 Fax (02) 6382 4729 Cowra Office 5/103 Kendal Street Cowra NSW, 2794 Tel (02) 6342 4577 Fax (02) 6382 4729 Goulburn Office 299 Sloane Street Goulburn NSW, 2580 Tel (02) 4823 5100 Fax (02) 4823 5200	SHEET SUBJECT		PROJECT			
				SIGNATURE:	26-03-2019	WJC		PLAN VIEW		Murrumburrah Flood Study			
				CAPACITY:				EXISTING DETAIL		BRIDGE VERNON ST			
				DATE:				CROSS SECTIONS					
			COPYRIGHT		DRAWN	APPROVED			CLIENT	ISSUE	PROJECT NO.	SHEET NO.	SHEET
A	DETAIL PLAN	26-03-2019	THIS DRAWING IS NOT TO BE COPIED, OR TRANSFERRED TO ANY THIRD PARTY, OR STORED ON ANY OTHER STORAGE MEDIUM, WITHOUT THE WRITTEN PERMISSION OF C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD.		EK	WJC			WMA water	A	19195	7 of 23	A1
ISSUE	AMENDMENT	DATE			DESIGNED	SCALE							
					EK	1:400 Ver 1:400 Hor							



Vernon Street Bridge - looking downstream



Vernon Street Bridge - looking upstream from bridge



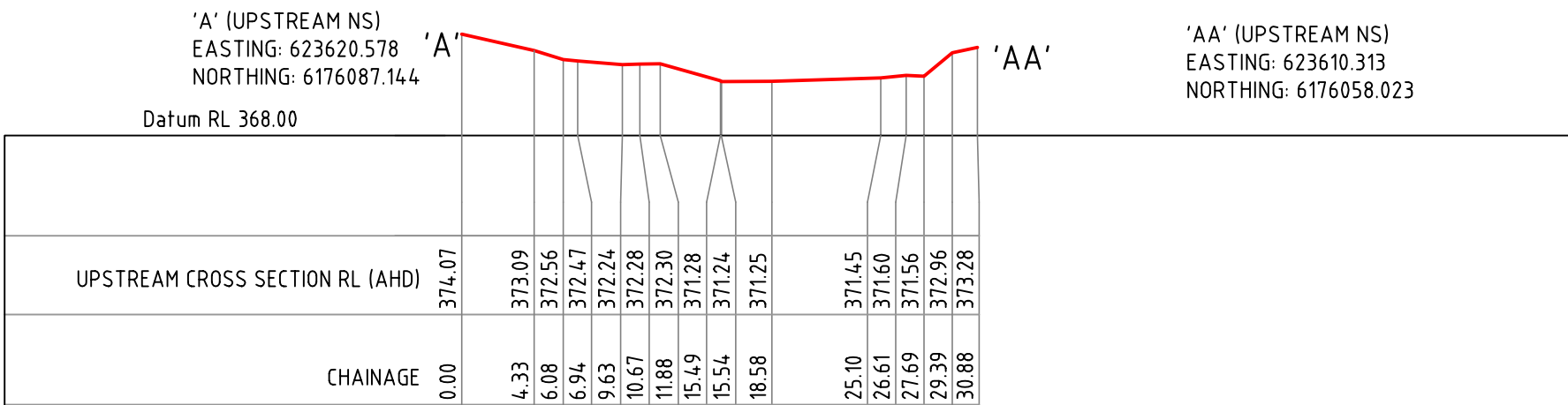
Vernon Street Bridge - looking north across bridge



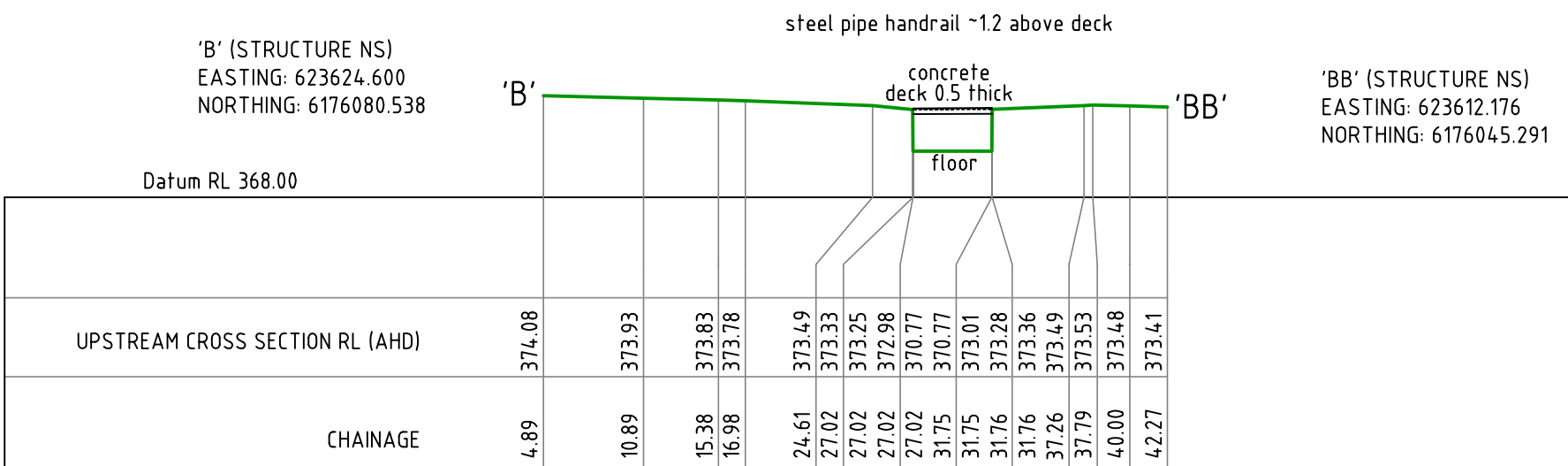
Vernon Street Bridge - looking downstream from bridge



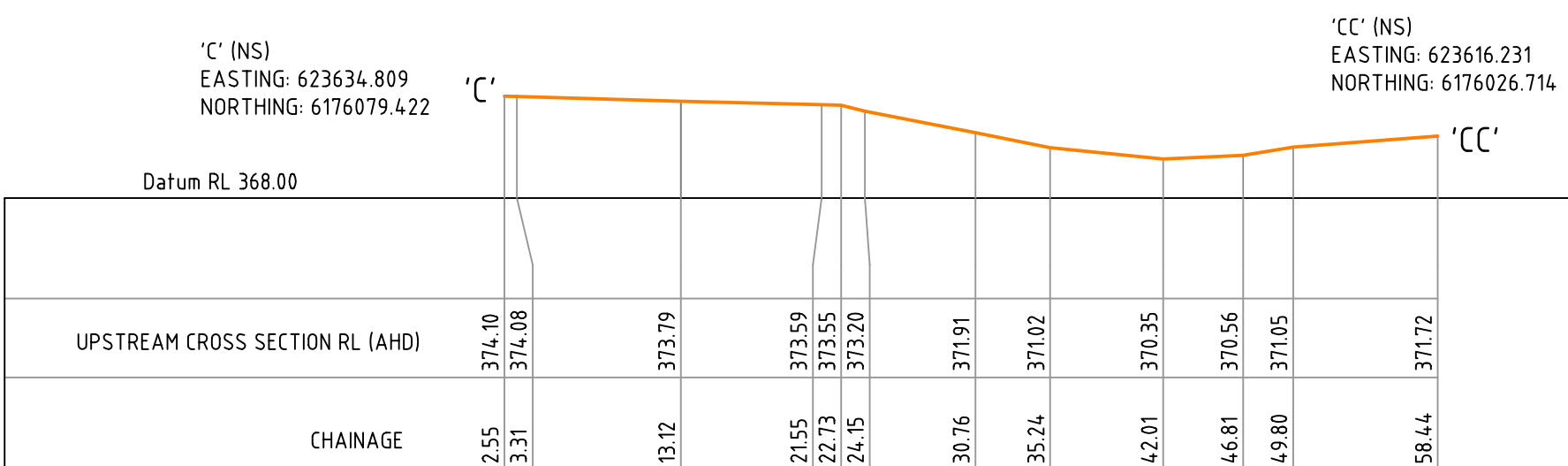
Vernon Street Bridge - looking upstream



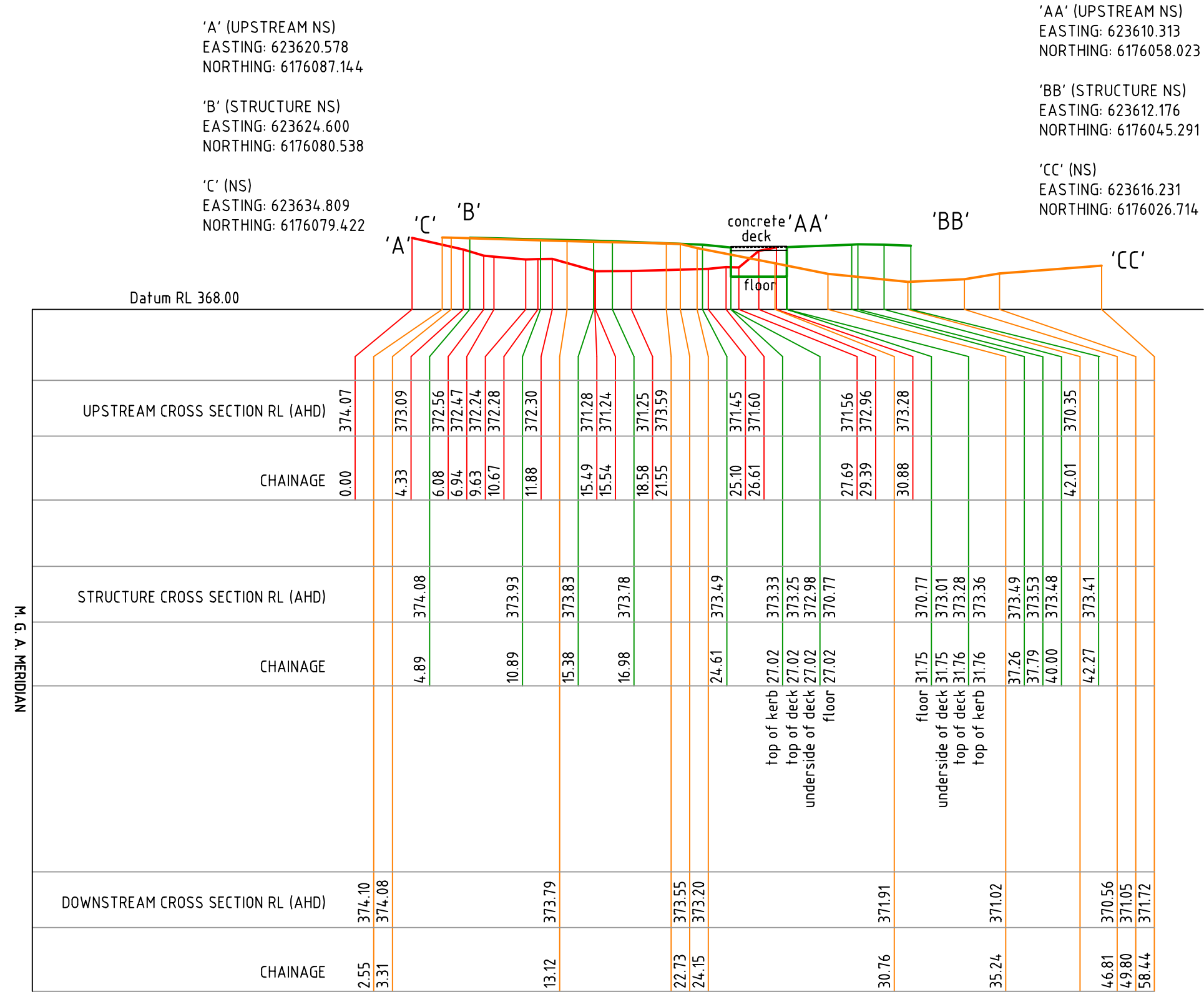
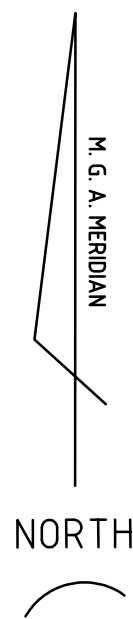
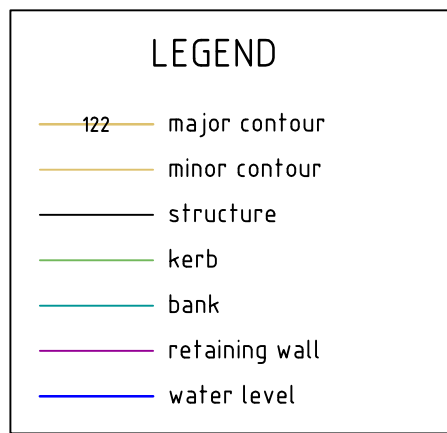
BRIDGE PROFILE - VERNON (A - AA)
LOOKING DOWNSTREAM



BRIDGE PROFILE - VERNON (B - BB)
LOOKING DOWNSTREAM



BRIDGE PROFILE - VERNON (C - CC)
LOOKING DOWNSTREAM



Level of Origin
PM 84.902
(RL 379.614)
Contour Inv: 0.2
Datum: AHD

Bridge Vernon Street
SURVEYED 14-03-2019

SCALE 1:400 HOR, 1:400 VER at A1

			I HEREBY CERTIFY THAT ENGINEERING WORKS SHOWN ON THIS PLAN ARE WORK-AS-EXECUTED AND HAVE BEEN CONSTRUCTED GENERALLY IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE DIRECTOR, IN ACCORDANCE WITH THE GENERAL REQUIREMENTS.	NAME: SIGNATURE: CAPACITY: DATE:	DATE 26-03-2019	CHECKED WJC	C.P.C. LAND DEVELOPMENT CONSULTANTS PXL ACN 003 773 975 Young Office 121 Nasmyth Street Young NSW, 2954 Tel (02) 6382 1501 Fax (02) 6382 4729 Covra Office 5/103 Kendal Street Covra NSW, 2794 Tel (02) 6362 4577 Fax (02) 6382 4729 Goulburn Office 299 Sloane Street Goulburn NSW, 2580 Tel (02) 4823 5100 Fax (02) 4823 5200	SHEET SUBJECT PLAN VIEW EXISTING DETAIL CROSS SECTIONS	PROJECT Murrumburrah Flood Study BRIDGE VERNON ST				
A	DETAIL PLAN	26-03-2019	COPYRIGHT THIS DRAWING IS NOT TO BE COPIED, OR TRANSFERRED TO ANY THIRD PARTY, OR STORED ON ANY OTHER STORAGE MEDIUM, WITHOUT THE WRITTEN PERMISSION OF C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD.					CLIENT WMA Water		ISSUE A	PROJECT NO. 19195	SHEET NO. 8 of 23	SHEET A1
ISSUE	AMENDMENT	DATE											



Cross Section 01 - looking downstream



Cross Section 01 - looking upstream



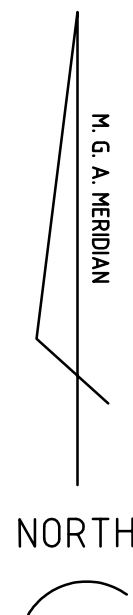
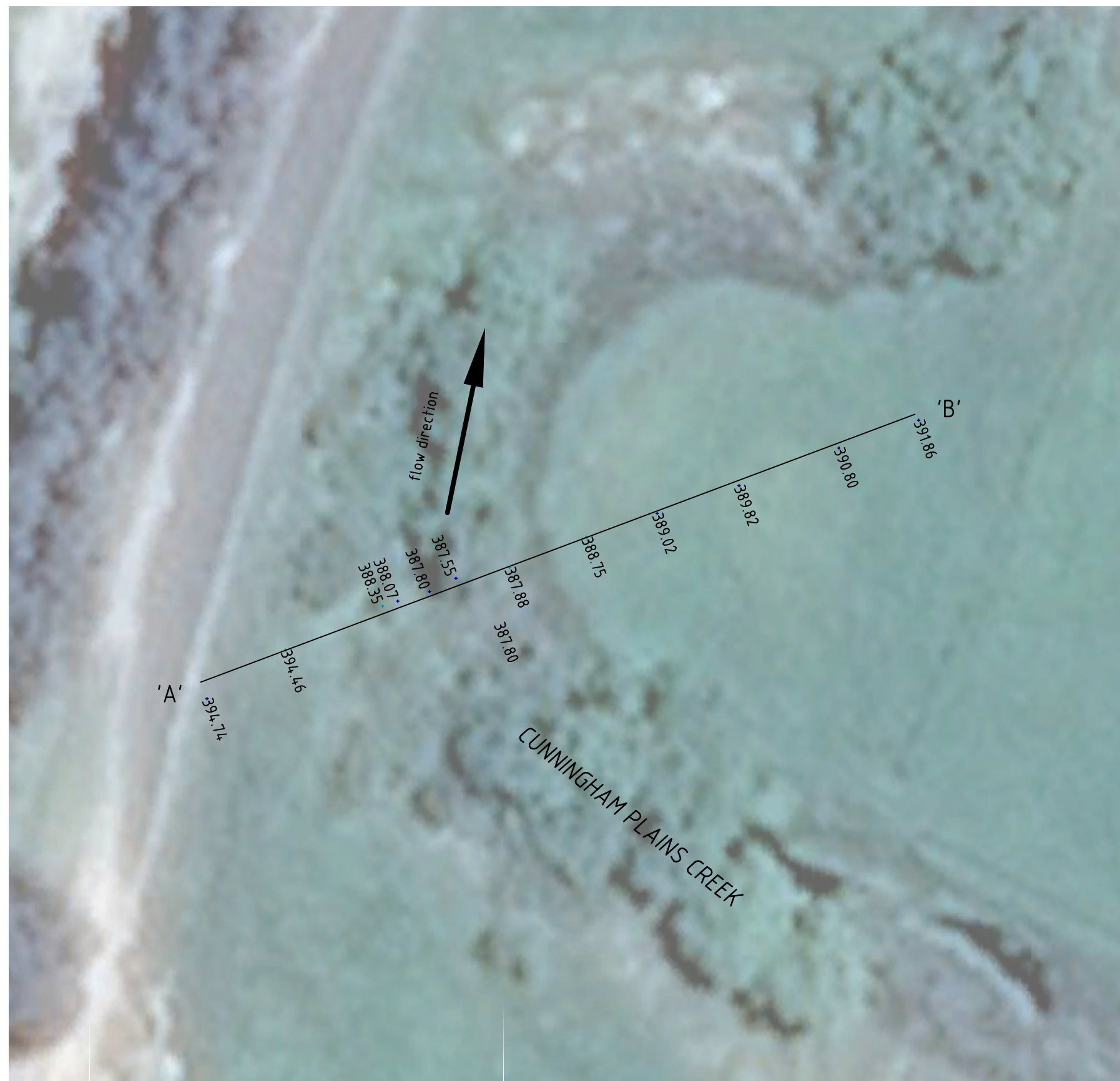
Cross Section 01 - looking downstream



Cross Section 01 - looking North from bank



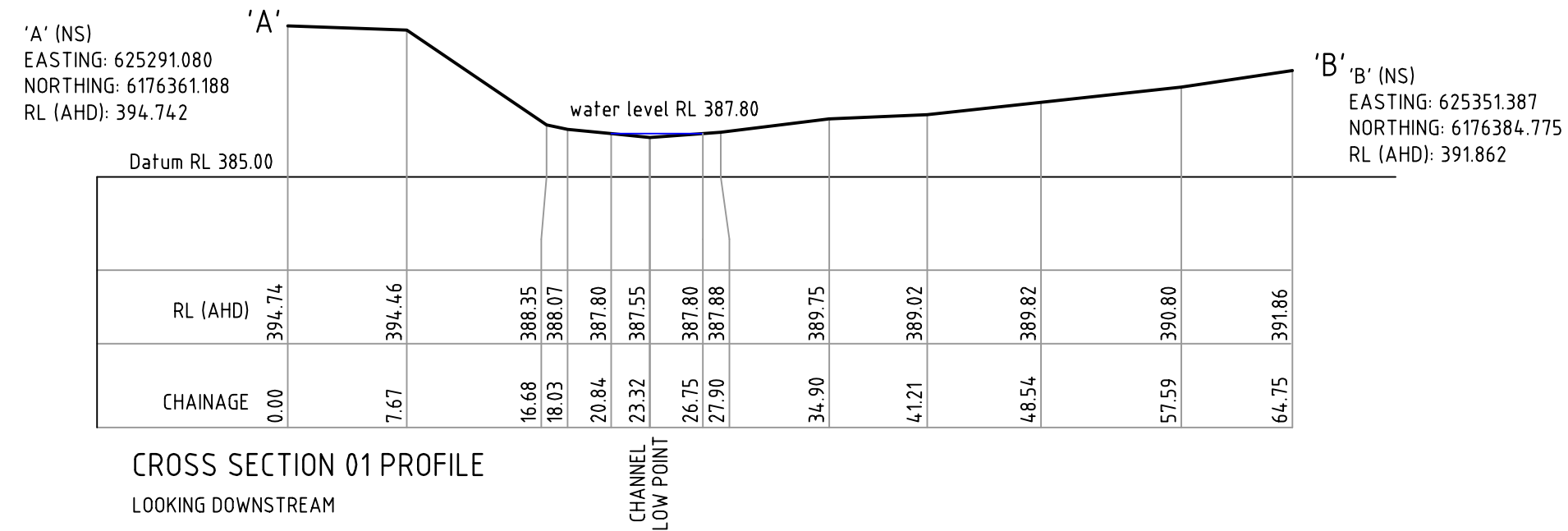
Cross Section 01 - Southern bank



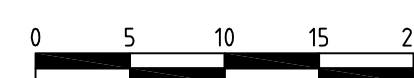
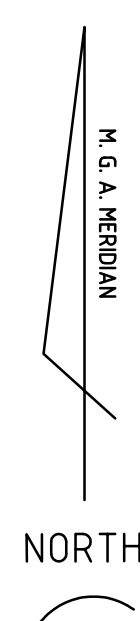
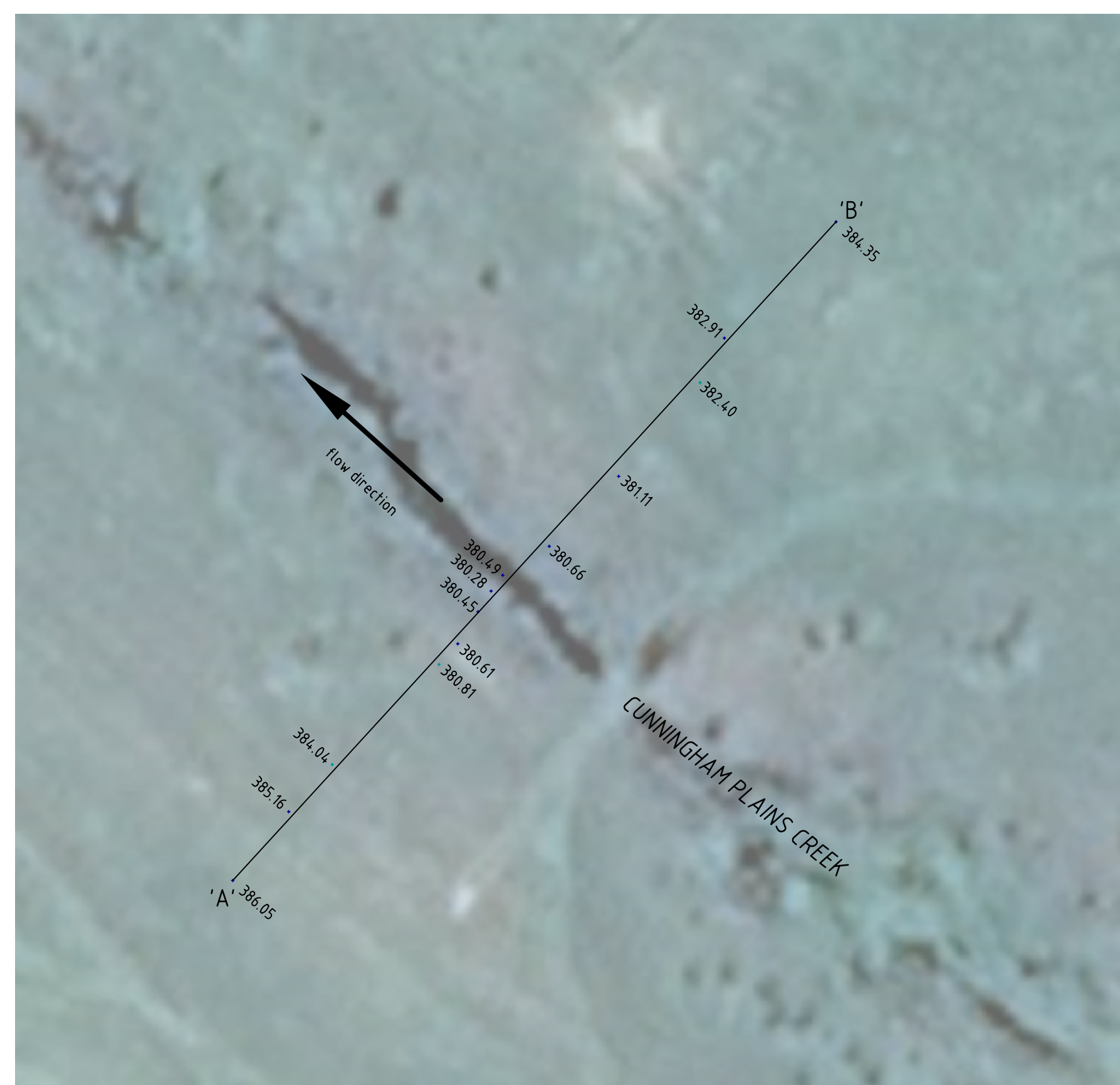
SCALE 1:400 HOR, 1:400 VER at A1

Level of Origin
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(RL 388.438)
Contour Inv: 0.2
Datum: AHD

Cross Section 01
SURVEYED 4-03-2019

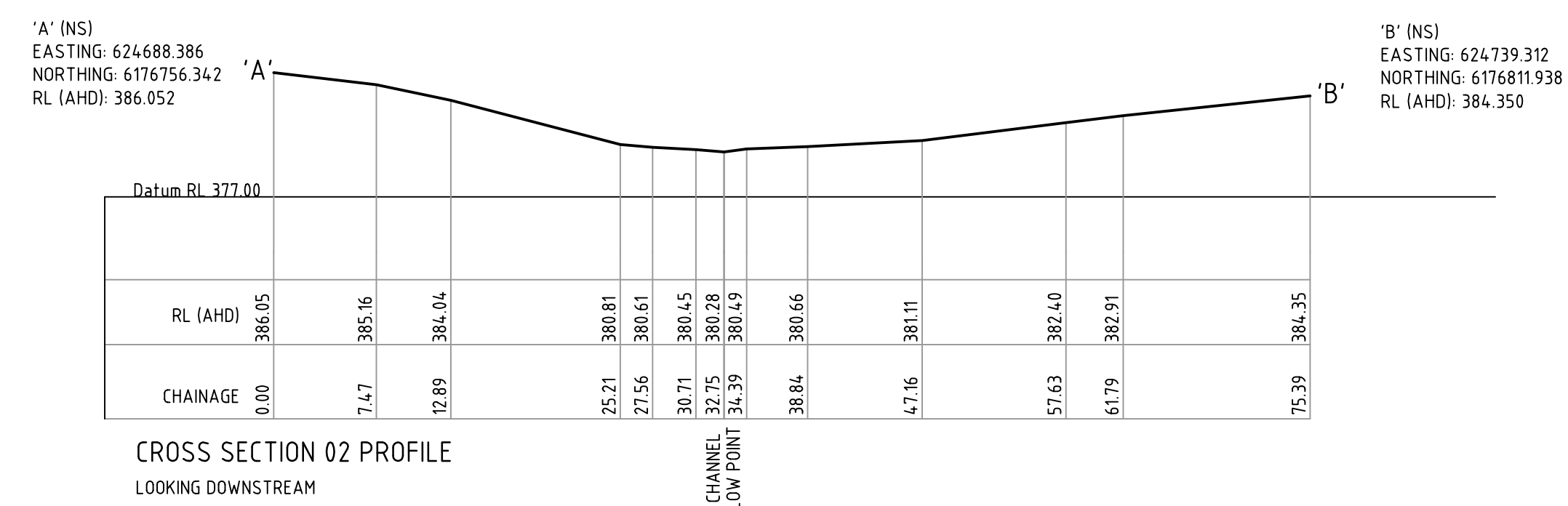


			I HEREBY CERTIFY THAT ENGINEERING WORKS SHOWN ON THIS PLAN ARE WORK-AS-EXECUTED AND HAVE BEEN CONSTRUCTED GENERALLY IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE DIRECTOR, IN ACCORDANCE WITH THE GENERAL REQUIREMENTS.	NAME: SIGNATURE: CAPACITY: DATE:	DATE 26-03-2019 DRAWN EK DESIGNED EK	CHECKED WJC APPROVED WJC SCALE 1:400 Ver 1:400 Hor	C.P.C. LAND DEVELOPMENT CONSULTANTS PXL ACN 003 773 975 Young Office 121 Nasmyth Street Young NSW, 2954 Tel (02) 6382 1501 Fax (02) 6382 4729 Cowra Office 5/103 Kendal Street Cowra NSW, 2794 Tel (02) 6342 4577 Fax (02) 6382 4729 Goulburn Office 299 Sloane Street Goulburn NSW, 2580 Tel (02) 4823 5100 Fax (02) 4823 5200	SHEET SUBJECT PLAN VIEW EXISTING DETAIL CROSS SECTION		PROJECT Murrumburrah Flood Study CROSS SECTION 01			
A	DETAIL PLAN	26-03-2019	COPYRIGHT THIS DRAWING IS NOT TO BE COPIED, OR TRANSFERRED TO ANY THIRD PARTY, OR STORED ON ANY OTHER STORAGE MEDIUM, WITHOUT THE WRITTEN PERMISSION OF C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD.					CLIENT WMA Water		ISSUE A	PROJECT NO. 19195	SHEET NO. 9 of 23	SHEET A1

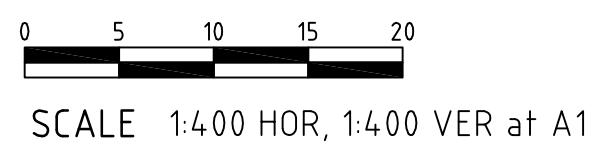
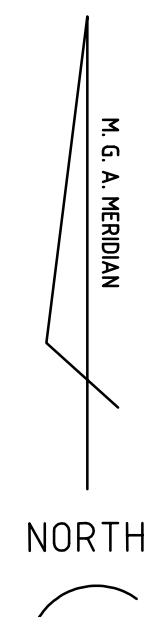
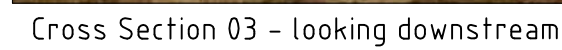
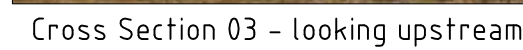
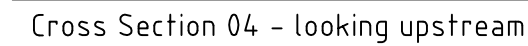
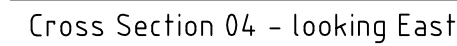
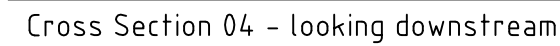
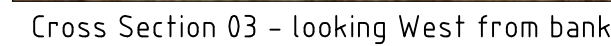


SCALE 1:400 HOR, 1:400 VER at A1

Cross Section 02
SURVEYED 4-03-2019



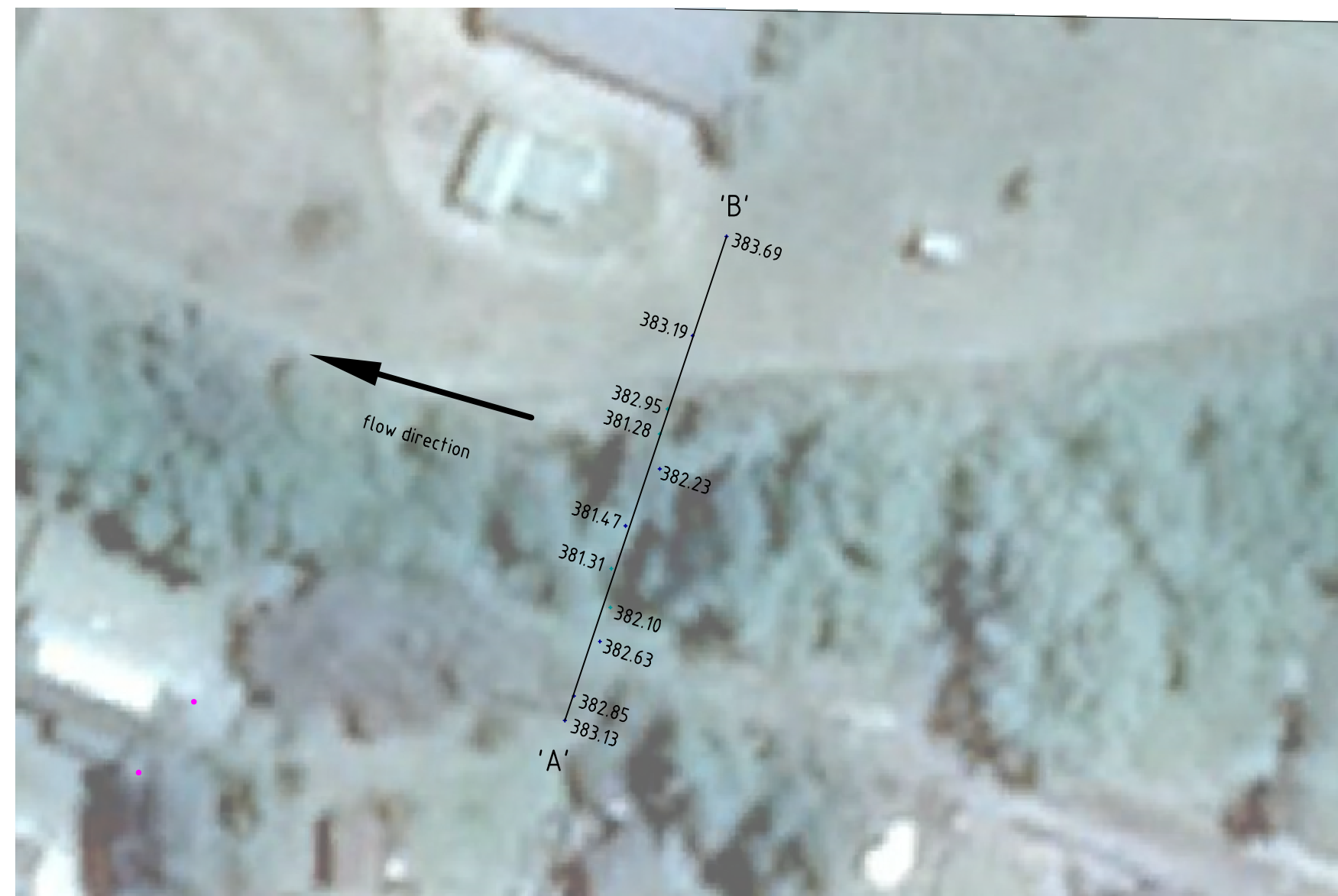
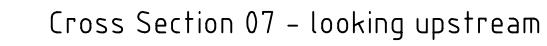
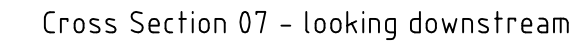
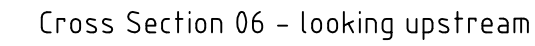
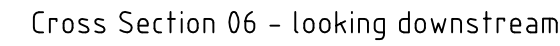
			I HEREBY CERTIFY THAT ENGINEERING WORKS SHOWN ON THIS PLAN ARE WORK-AS-EXECUTED AND HAVE BEEN CONSTRUCTED GENERALLY IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE DIRECTOR, IN ACCORDANCE WITH THE GENERAL REQUIREMENTS.	NAME:	DATE	CHECKED	C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD ACN 903 773 975 Young Office 121 Nasmith Street Young NSW, 2954 Tel (02) 6382 1501 Fax (02) 6382 4729 Cowra Office 5/103 Kendal Street Cowra NSW, 2796 Tel (02) 6342 4577 Fax (02) 6382 4729 Goulburn Office 299 Sloane Street Goulburn NSW, 2580 Tel (02) 4823 5100 Fax (02) 4823 5200	SHEET SUBJECT		PROJECT	
				SIGNATURE:	06-04-2019	WJC		PLAN VIEW	Murrumburrah Flood Study		
				CAPACITY:	DRAWN	APPROVED		EXISTING DETAIL	CROSS SECTION 02		
				DATE:	EK	WJC		CROSS SECTION			
A	DETAIL PLAN	06-04-2019	COPYRIGHT THIS DRAWING IS NOT TO BE COPIED, OR TRANSFERRED TO ANY THIRD PARTY, OR STORED ON ANY OTHER STORAGE MEDIUM, WITHOUT THE WRITTEN PERMISSION OF C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD.	DESIGNED	SCALE		CLIENT	ISSUE	PROJECT NO.	SHEET NO.	SHEET
ISSUE	AMENDMENT	DATE		EK	1:4.00 Ver 1:4.00 Hor		WMA Water	A	19195	10 of 23	A1



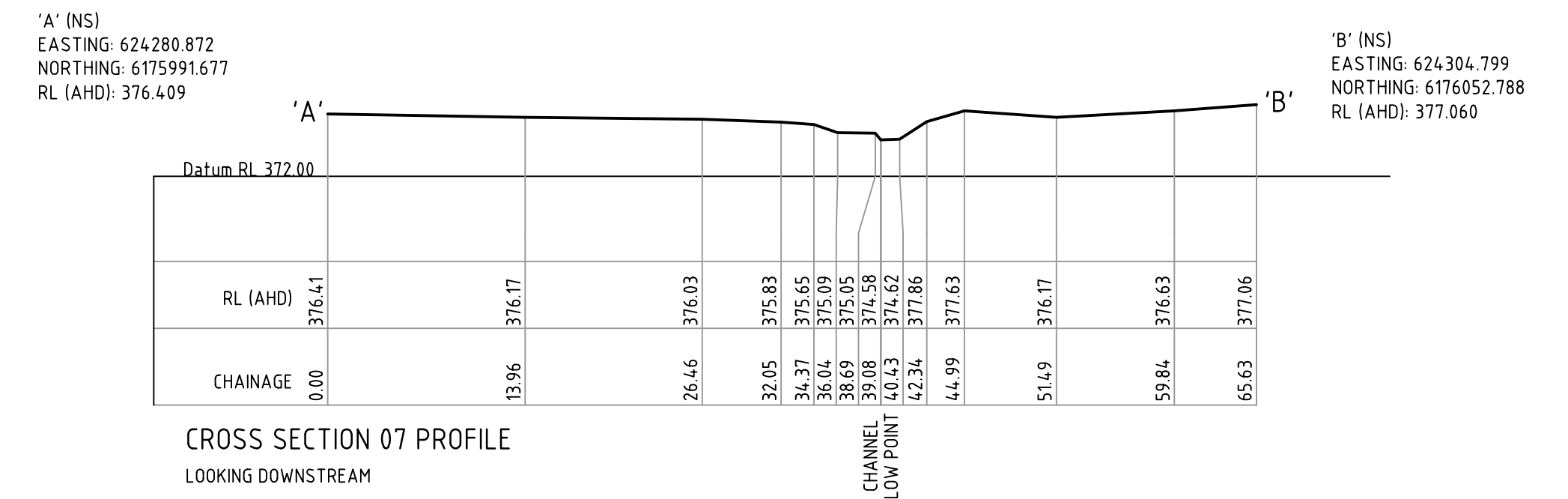
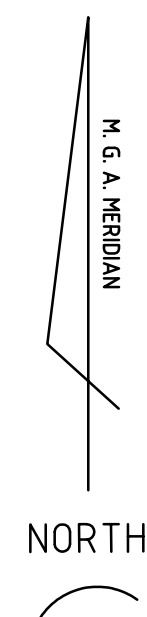
Level of Origin
PM 30376
(RL 388.438)
Contour Inv: 0.2
Datum: AHD



			I HEREBY CERTIFY THAT ENGINEERING WORKS SHOWN ON THIS PLAN ARE WORK-AS-EXECUTED AND HAVE BEEN CONSTRUCTED GENERALLY IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE DIRECTOR, IN ACCORDANCE WITH THE GENERAL REQUIREMENTS.	NAME:	DATE	CHECKED	C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD ACN 003 773 975 Young Office 121 Nasmith Street Young NSW, 2954 Tel (02) 6382 1501 Fax (02) 6382 4729 Cowra Office 5/103 Kendal Street Cowra NSW, 2794 Tel (02) 6342 4577 Fax (02) 6382 4729 Goulburn Office 299 Sloane Street Goulburn NSW, 2580 Tel (02) 4823 5100 Fax (02) 4823 5200					
				SIGNATURE:	06-04-2019	WJC						
				CAPACITY:	DRAWN	APPROVED						
				DATE:	EK	WJC						
A	DETAIL PLAN	06-04-2019	COPYRIGHT THIS DRAWING IS NOT TO BE COPIED, OR TRANSFERRED TO ANY THIRD PARTY, OR STORED ON ANY OTHER STORAGE MEDIUM, WITHOUT THE WRITTEN PERMISSION OF C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD.	DESIGNED	SCALE		SHEET SUBJECT PLAN VIEW EXISTING DETAIL CROSS SECTION	PROJECT Murrumburrah Flood Study CROSS SECTION 03 CROSS SECTION 04				
ISSUE	AMENDMENT	DATE		EK	1:4.00 Ver 1:4.00 Hor							
							CLIENT					
							WMA Water		ISSUE	PROJECT NO.	SHEET NO.	SHEET
									A	19195	11 of 23	A1



Level of Origin
PM 30376
(RL 388.438)
Contour Inv: 0.2
Datum: AHD

[illegible]



Culvert Road 01 - upstream side



Culvert Road 01 - downstream side



Culvert Small Rail 01 - upstream side



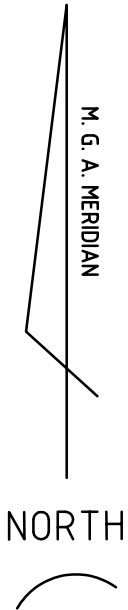
Culvert Small Rail 01 - downstream side



Culvert Small Rail 02 - upstream side



Culvert Small Rail 02 - downstream side



'A' (CULVERT INVERT)
EASTING: 626747.786
NORTHING: 6174980.560
RL (AHD): 415.099

'B' (CULVERT INVERT)
EASTING: 626753.105
NORTHING: 6174993.144
RL (AHD): 414.788

road surface			
Datum RL 413.00			
RL (AHD)	415.10	416.54	416.07
CHAINAGE	0.00	2.59	12.21
			13.66

CULVERT ROAD 01 PROFILE
LOOKING WEST

'E' (CULVERT INVERT)
EASTING: 626767.196
NORTHING: 6175000.780
RL (AHD): 413.655

'F' (CULVERT INVERT)
EASTING: 626771.269
NORTHING: 6175010.941
RL (AHD): 413.549

top of ballast			
Datum RL 410.00			
RL (AHD)	413.65	415.80	413.55
CHAINAGE	0.00	4.49	10.95

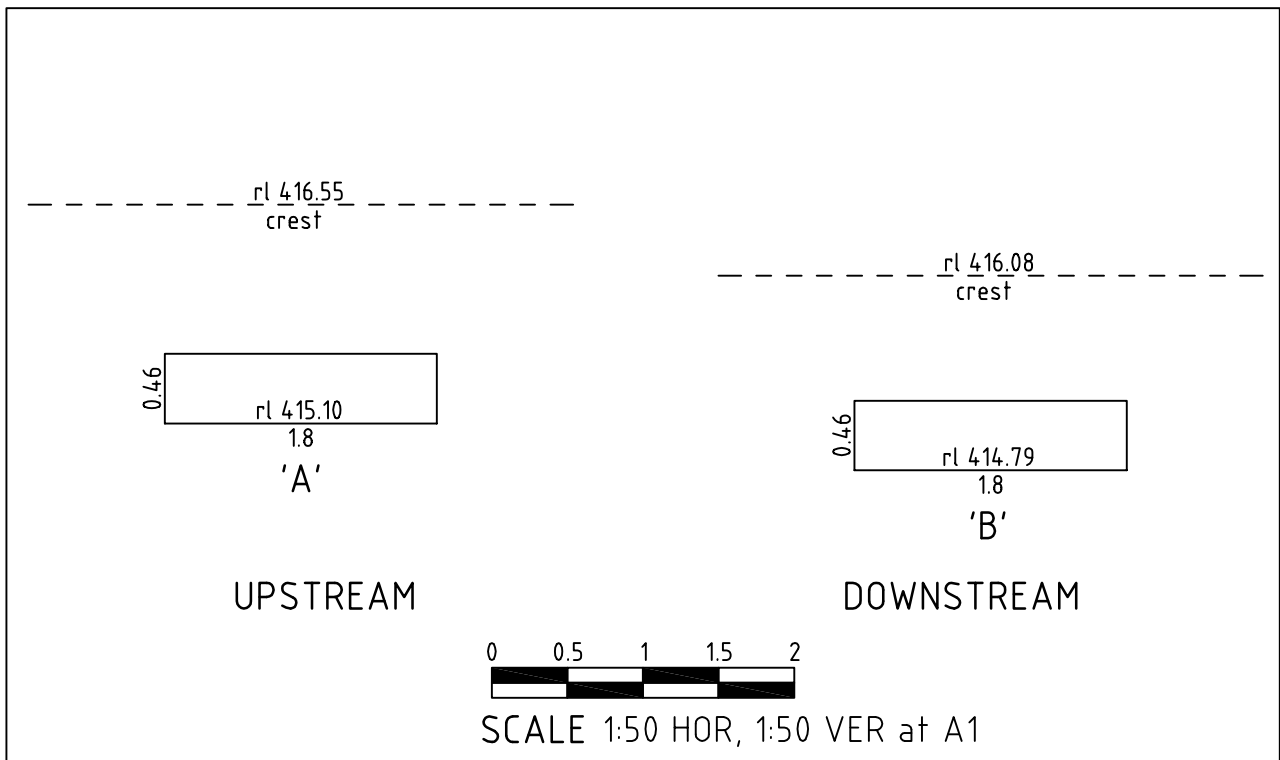
CULVERT SMALL RAIL 01 PROFILE
LOOKING WEST

'C' (CULVERT INVERT)
EASTING: 626759.751
NORTHING: 6175006.198
RL (AHD): 413.801

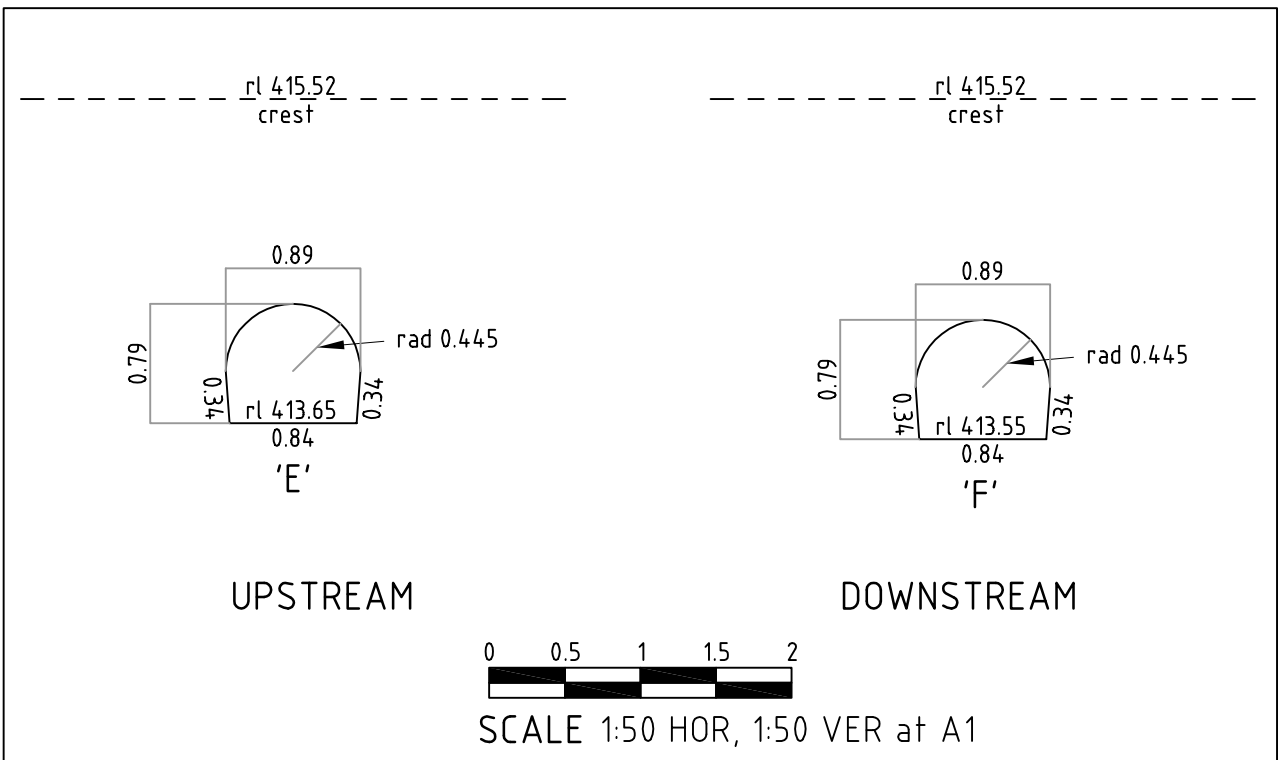
'D' (CULVERT INVERT)
EASTING: 626760.048
NORTHING: 6175013.774
RL (AHD): 413.577

top of ballast			
Datum RL 410.00			
RL (AHD)	413.80	415.52	413.58
CHAINAGE	0.00	4.17	8.26

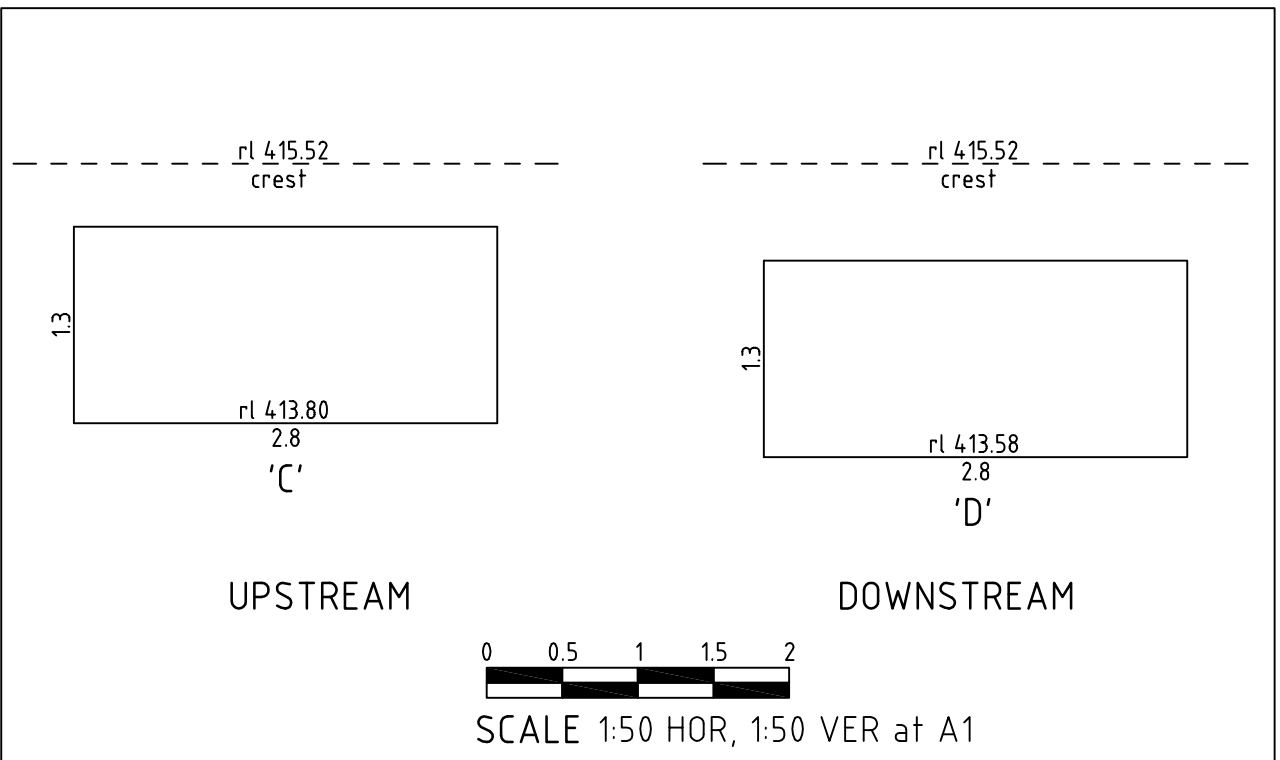
CULVERT SMALL RAIL 02 PROFILE
LOOKING WEST



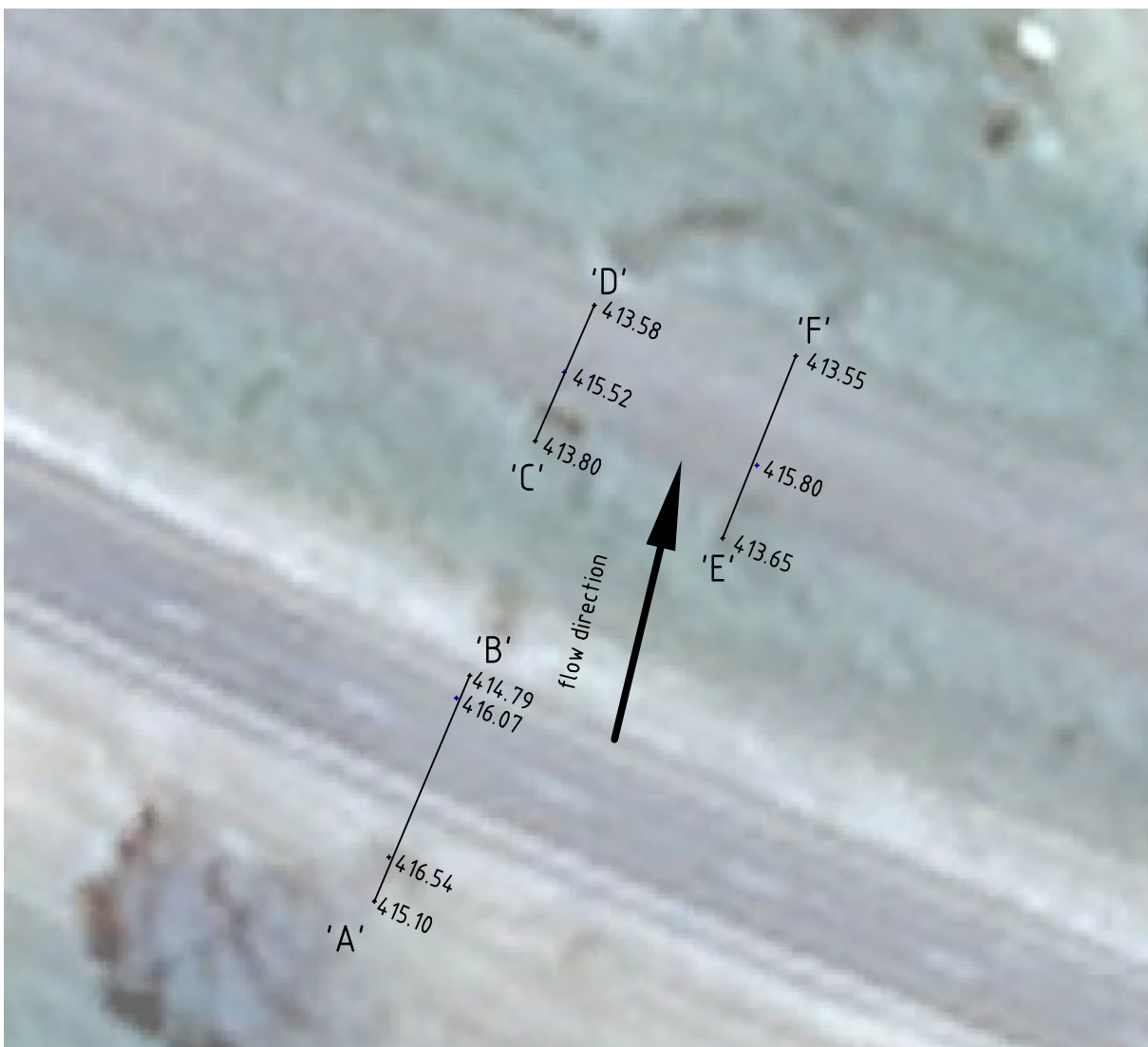
Culvert Road 01
SURVEYED 6-02-2019
STRUCTURE: CONCRETE BOX CULVERT
CROSS SECTION AREA: 0.828m²
SINGLE PIPE
FALL 2.3%



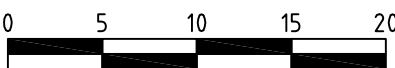
Culvert Small Rail 01
SURVEYED 6-02-2019
STRUCTURE: BRICK CULVERT
CROSS SECTION AREA: 0.610m²
SINGLE PIPE
FALL 1.0%
RAIL CHAINAGE 384.554



Culvert Small Rail 02
SURVEYED 6-02-2019
STRUCTURE: BRICK BOX CULVERT
CROSS SECTION AREA: 3.640m²
SINGLE PIPE
FALL 2.7%
RAIL CHAINAGE 384.565



Level of Origin
PM 84.896
(RL 415.049)
Contour Inv: 0.2
Datum: AHD



SCALE 1:400 HOR, 1:400 VER at A1

			I HEREBY CERTIFY THAT ENGINEERING WORKS SHOWN ON THIS PLAN ARE WORK-AS-EXECUTED AND HAVE BEEN CONSTRUCTED GENERALLY IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE DIRECTOR, IN ACCORDANCE WITH THE GENERAL REQUIREMENTS.	NAME: SIGNATURE: CAPACITY: DATE:	DATE 08-04-2019	CHECKED WJC	C.P.C. LAND DEVELOPMENT CONSULTANTS P/L ACN 003 773 975 Young Office 121 Nasmyth Street Young NSW, 2954 Tel (02) 6382 1501 Fax (02) 6382 4729 Cowra Office 5/103 Kendal Street Cowra NSW, 2794 Tel (02) 6342 4577 Fax (02) 6382 4729 Goulburn Office 299 Sloane Street Goulburn NSW, 2580 Tel (02) 4823 5100 Fax (02) 4823 5200	SHEET SUBJECT PLAN VIEW EXISTING DETAIL CROSS SECTION		PROJECT Murrumburrah Flood Study CULVERT ROAD 01 CULVERT SMALL RAIL 01 CULVERT SMALL RAIL 02			
A	DETAIL PLAN	08-04-2019	COPYRIGHT THIS DRAWING IS NOT TO BE COPIED, OR TRANSFERRED TO ANY THIRD PARTY, OR STORED ON ANY OTHER STORAGE MEDIUM, WITHOUT THE WRITTEN PERMISSION OF C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD.		DESIGNED EK	SCALE 1:400 Ver 1:400 Hor		CLIENT WMA Water		ISSUE A	PROJECT NO. 19195	SHEET NO. 14 of 23	SHEET A1
ISSUE	AMENDMENT	DATE											



Culvert Road 01 - upstream side



Culvert Road 01 - downstream side



Culvert Small Rail 03 - upstream side



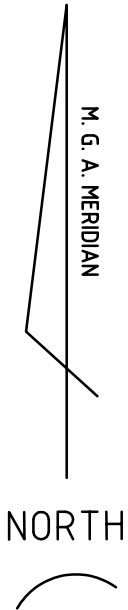
Culvert Small Rail 03 - downstream side



Culvert Small Rail 04 - upstream side

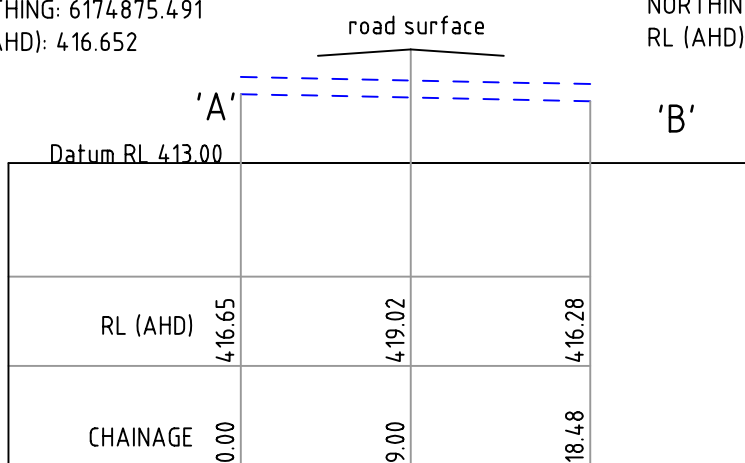


Culvert Small Rail 04 - downstream side



'A' (CULVERT INVERT)
EASTING: 627176.828
NORTHING: 6174.875.491
RL (AHD): 416.652

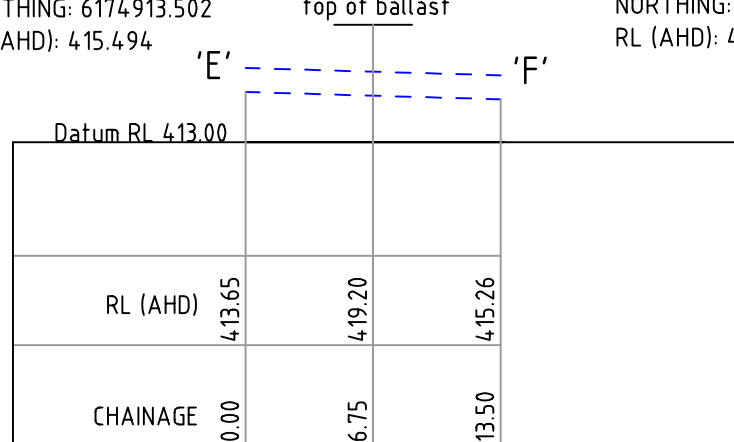
'B' (CULVERT INVERT)
EASTING: 627179.753
NORTHING: 6174.893.74
RL (AHD): 416.281



CULVERT ROAD 02 PROFILE
LOOKING WEST

'E' (CULVERT INVERT)
EASTING: 627170.067
NORTHING: 6174.913.502
RL (AHD): 415.494

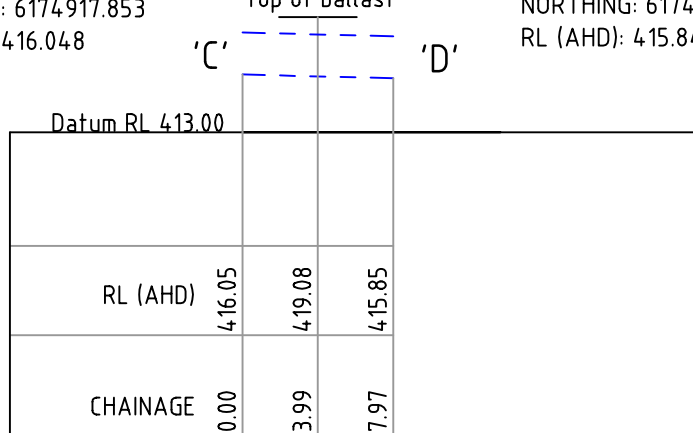
'F' (CULVERT INVERT)
EASTING: 627172.264
NORTHING: 6174.926.823
RL (AHD): 415.261



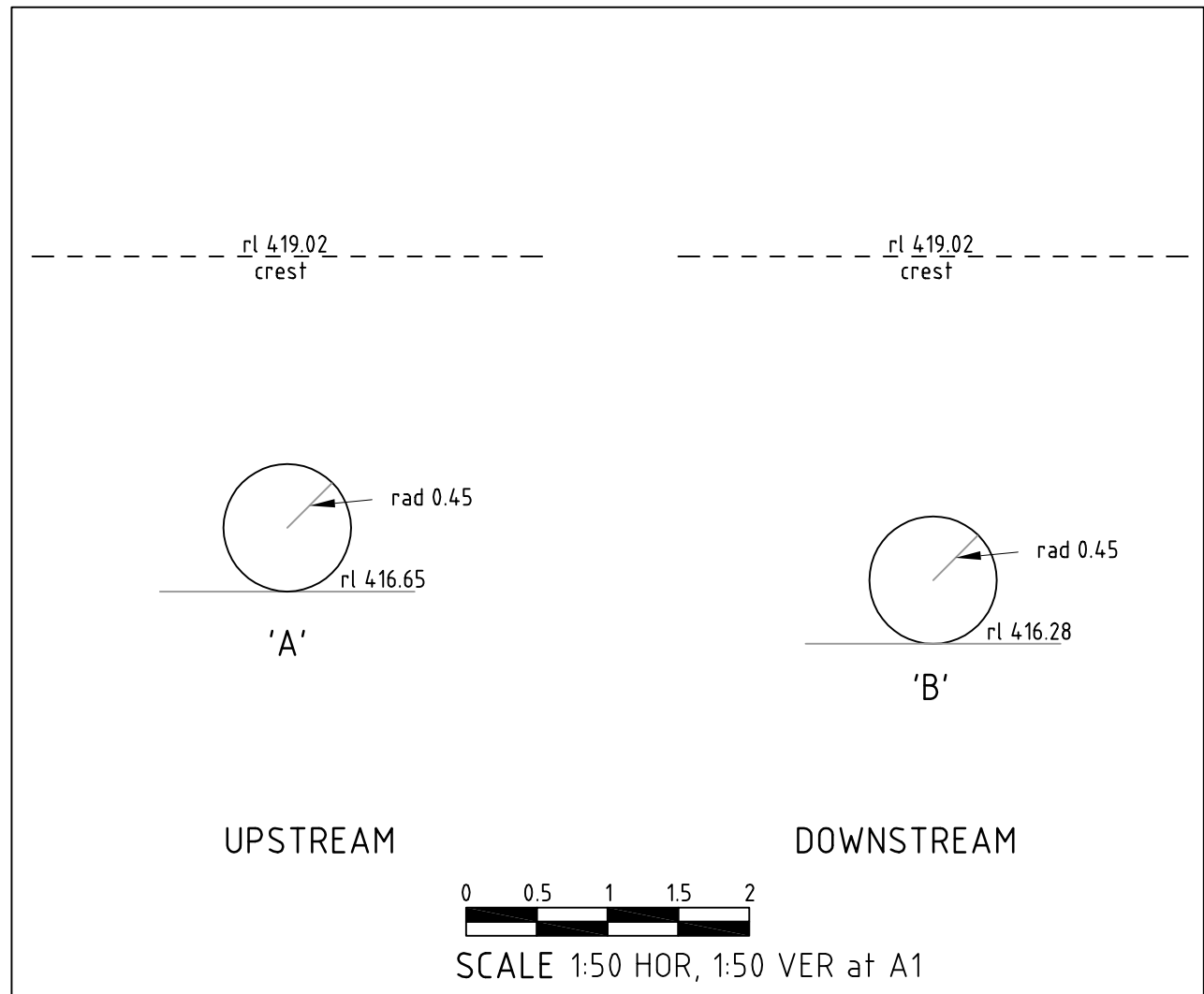
CULVERT SMALL RAIL 03 PROFILE
LOOKING WEST

'C' (CULVERT INVERT)
EASTING: 627159.301
NORTHING: 6174.917.853
RL (AHD): 416.048

'D' (CULVERT INVERT)
EASTING: 627160.467
NORTHING: 6174.925.741
RL (AHD): 415.848

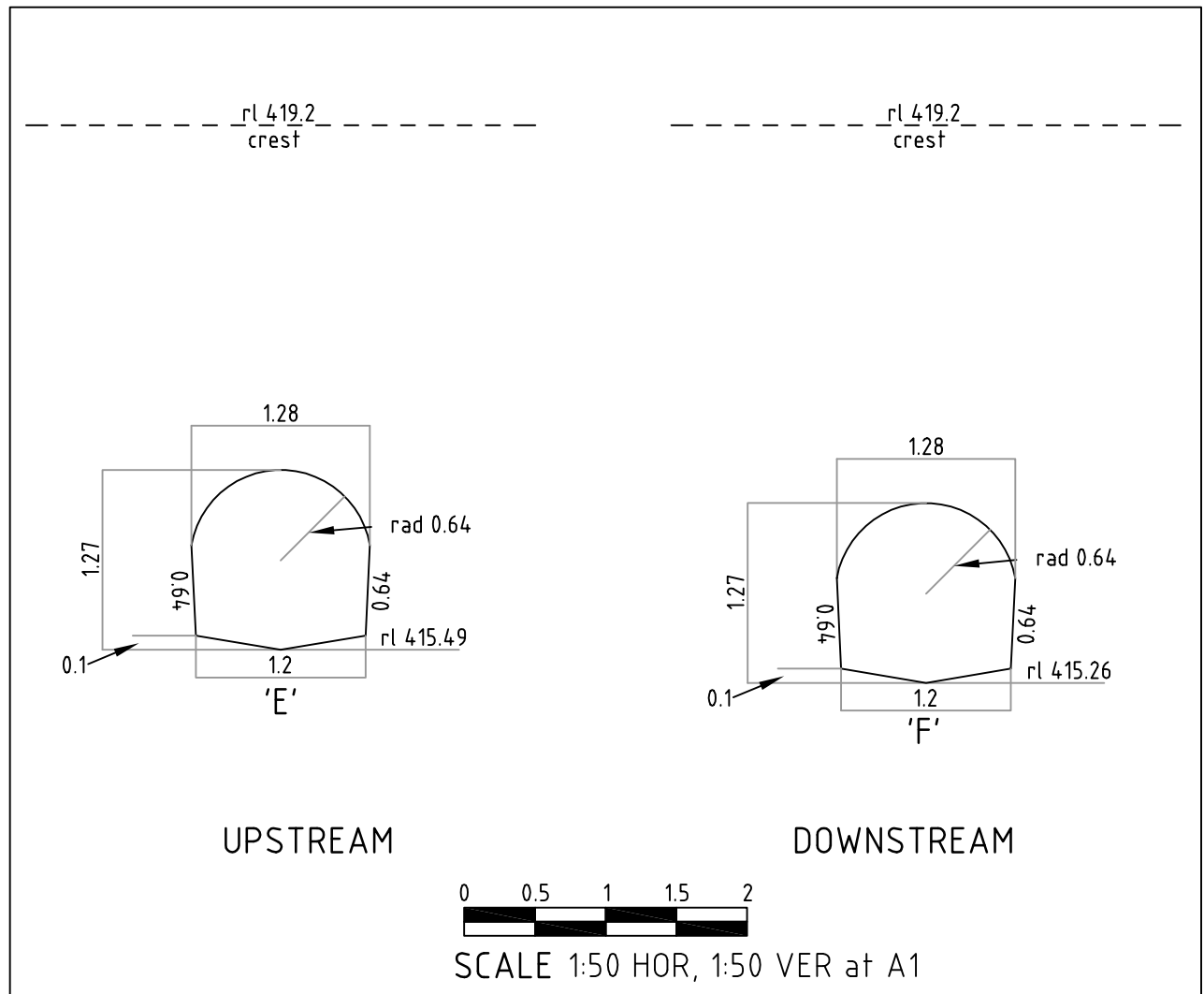


CULVERT SMALL RAIL 04 PROFILE
LOOKING WEST



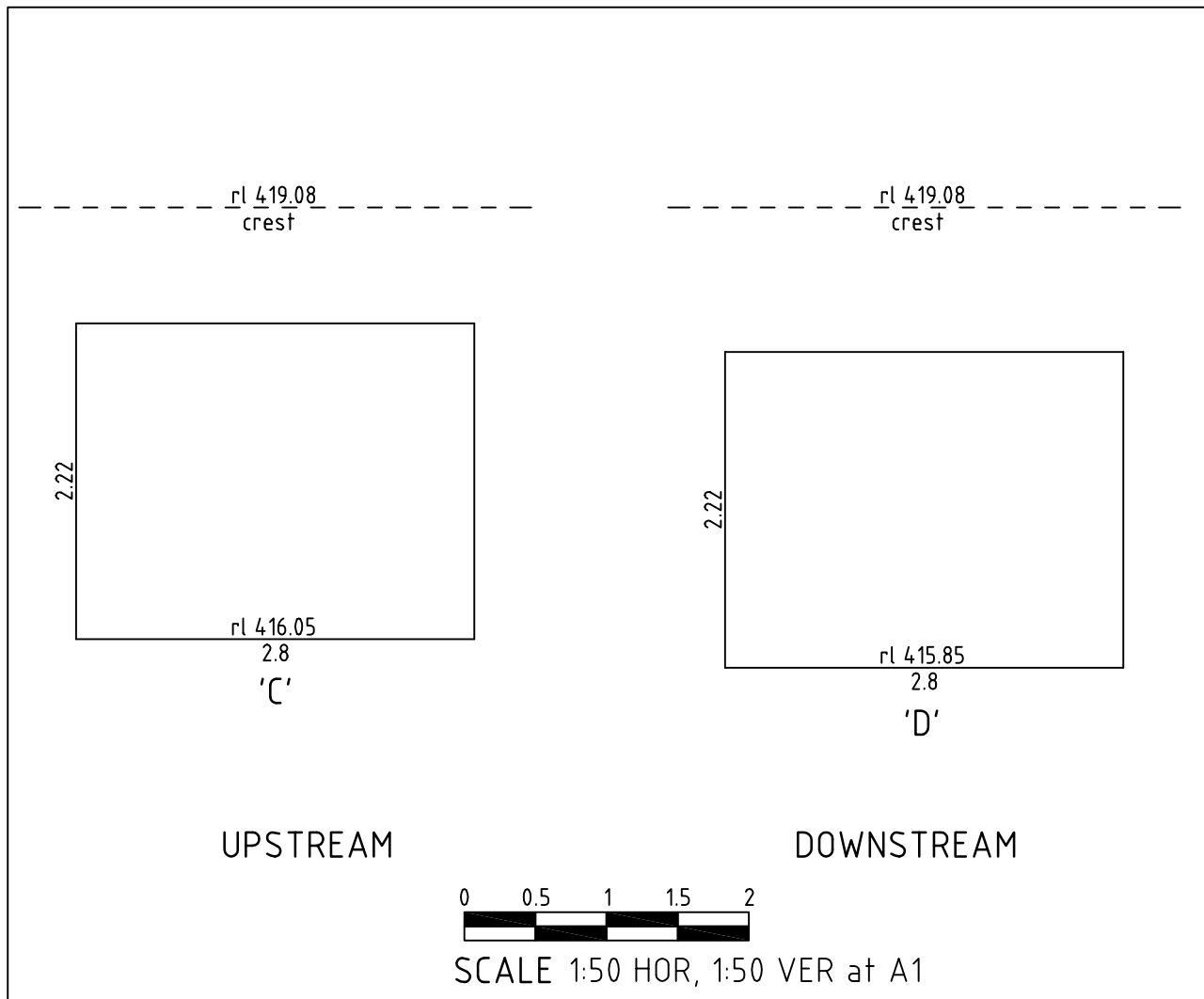
Culvert Road 02
SURVEYED 6-02-2019

STRUCTURE: REINFORCED CONCRETE PIPE
CROSS SECTION AREA: 0.636m²
SINGLE PIPE
FALL 2.0%



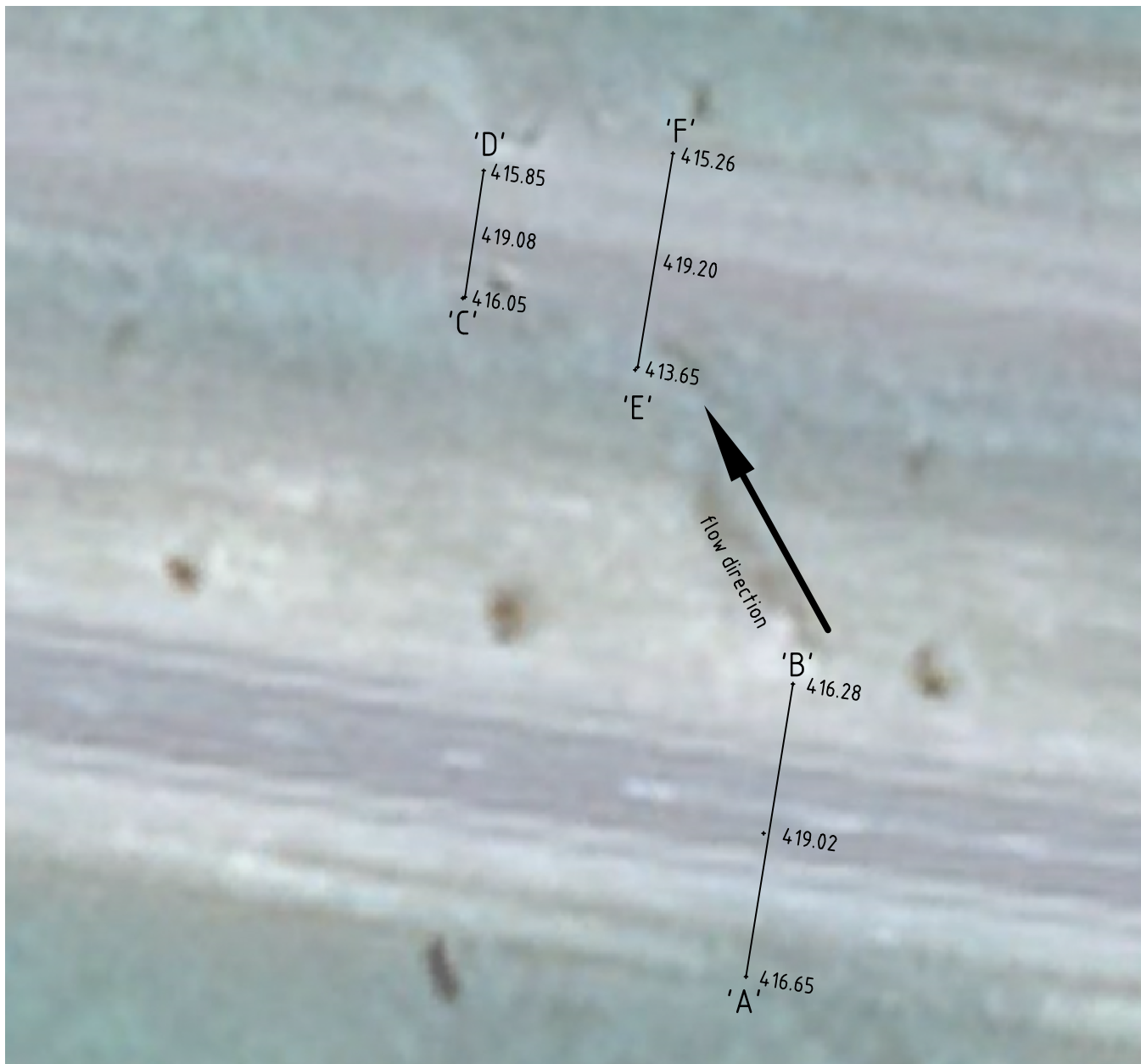
Culvert Small Rail 03
SURVEYED 6-02-2019

STRUCTURE: BRICK CULVERT
CROSS SECTION AREA: 1.351m²
SINGLE PIPE
FALL 1.7%
RAIL CHAINAGE 384.142



Culvert Small Rail 04
SURVEYED 6-02-2019

STRUCTURE: BRICK BOX CULVERT
CROSS SECTION AREA: 6.216m²
SINGLE PIPE
FALL 2.5%
RAIL CHAINAGE 384.152



Level of Origin
PM 84.896
(RL 415.049)
Contour Inv: 0.2
Datum: AHD



SCALE 1:400 HOR, 1:400 VER at A1

			I HEREBY CERTIFY THAT ENGINEERING WORKS SHOWN ON THIS PLAN ARE WORK-AS-EXECUTED AND HAVE BEEN CONSTRUCTED GENERALLY IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE DIRECTOR, IN ACCORDANCE WITH THE GENERAL REQUIREMENTS.	NAME:	DATE	CHECKED	C.P.C. LAND DEVELOPMENT CONSULTANTS PXL ACN 003 773 975 Young Office 121 Nasmyth Street Young NSW, 2954 Tel (02) 6382 1501 Fax (02) 6382 4729 Cowra Office 5/103 Kendal Street Cowra NSW, 2794 Tel (02) 6342 4577 Fax (02) 6382 4729 Goulburn Office 299 Sloane Street Goulburn NSW, 2580 Tel (02) 4823 5100 Fax (02) 4823 5200	SHEET SUBJECT		PROJECT	
				SIGNATURE:	08-04-2019	WJC		PLAN VIEW	Murrumburrah Flood Study		
				CAPACITY:				EXISTING DETAIL	CULVERT ROAD 02		
				DATE:				CROSS SECTION	CULVERT SMALL RAIL 03		
A	DETAIL PLAN	08-04-2019	COPYRIGHT THIS DRAWING IS NOT TO BE COPIED, OR TRANSFERRED TO ANY THIRD PARTY, OR STORED ON ANY OTHER STORAGE MEDIUM, WITHOUT THE WRITTEN PERMISSION OF C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD.		DRAWN	APPROVED	CLIENT	ISSUE	PROJECT NO.	SHEET NO.	SHEET
				DESIGNED	EK	SCALE					
ISSUE	AMENDMENT	DATE	EK	1:400 Ver 1:400 Hor			WMA Water				



Culvert Aurville Road – upstream side Southern end



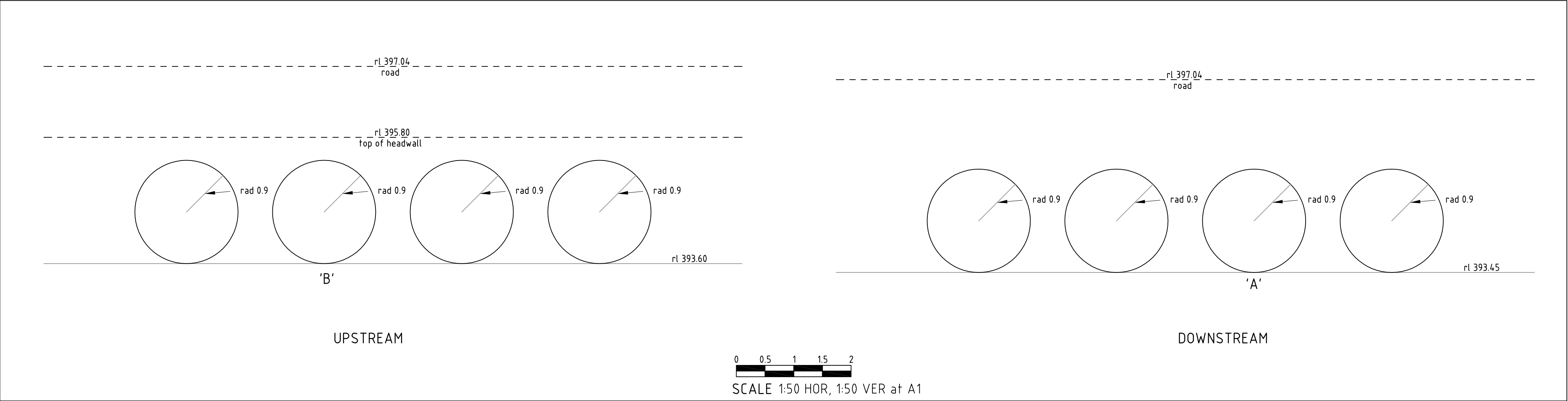
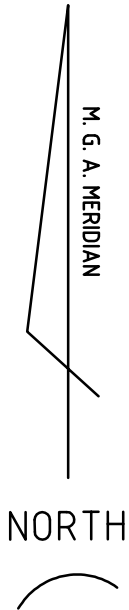
Culvert Aurville Road – upstream side Northern end



Culvert Aurville Road – downstream side



Culvert Aurville Road – upstream blockage



'A' [CULVERT INVERT]
EASTING: 625694.881
NORTHING: 6176180.378
RL (AHD): 393.449

'B' [CULVERT INVERT]
EASTING: 625706.406
NORTHING: 6176176.707
RL (AHD): 393.604

road			
'A'		'B'	
Datum RL 390.00			
		(headwall)	(headwall)
RL (AHD)	393.45 396.81	397.04 393.60	395.80
CHAINAGE	0.00 0.00	10.3 12.09	12.09

CULVERT AURVILLE ROAD PROFILE
LOOKING NORTH

Culvert Aurville Road
SURVEYED 4-03-2019

STRUCTURE: REINFORCED CONCRETE PIPE
CROSS SECTION AREA: 2.545m² each pipe, 10.180m² (total)
FOUR PIPES
FALL 1.3%

Level of Origin
PM 84.896
(RL 415.049)
Contour Inv: 0.2
Datum: AHD



SCALE 1:400 HOR, 1:400 VER at A1

			I HEREBY CERTIFY THAT ENGINEERING WORKS SHOWN ON THIS PLAN ARE WORK-AS-EXECUTED AND HAVE BEEN CONSTRUCTED GENERALLY IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE DIRECTOR, IN ACCORDANCE WITH THE GENERAL REQUIREMENTS.	NAME: SIGNATURE: CAPACITY: DATE:	DATE 08-04-2019 DRAWN EK DESIGNED EK	CHECKED WJC APPROVED WJC SCALE 1:400 Ver 1:400 Hor	C.P.C. LAND DEVELOPMENT CONSULTANTS PXL ACN 003 773 975 Young Office 121 Nasmyth Street Young NSW, 2954 Tel (02) 6382 1501 Fax (02) 6382 4729 Cowra Office 5/103 Kendal Street Cowra NSW, 2794 Tel (02) 6342 4577 Fax (02) 6382 4729 Goulburn Office 299 Sloane Street Goulburn NSW, 2580 Tel (02) 4823 5100 Fax (02) 4823 5200	SHEET SUBJECT PLAN VIEW EXISTING DETAIL CROSS SECTION		PROJECT Murrumburrah Flood Study CULVERT AURVILLE ROAD			
A	DETAIL PLAN	08-04-2019	COPYRIGHT THIS DRAWING IS NOT TO BE COPIED, OR TRANSFERRED TO ANY THIRD PARTY, OR STORED ON ANY OTHER STORAGE MEDIUM, WITHOUT THE WRITTEN PERMISSION OF C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD.					CLIENT WMA Water		ISSUE A	PROJECT NO. 19195	SHEET NO. 16 of 23	SHEET A1
ISSUE	AMENDMENT	DATE											



Culvert Ward Street - downstream side



Culvert Ward Street - lid on the likely pipe alignment



Culvert Ward Street - downstream side



Stormwater lid location

NOTE: The inlet structure for this culvert is not known. We have located a sealed stormwater lid within the grounds of the school (eastern side of the road) which may indicate the alignment, however further investigation may be required.



Culvert Woolrych Street - downstream side



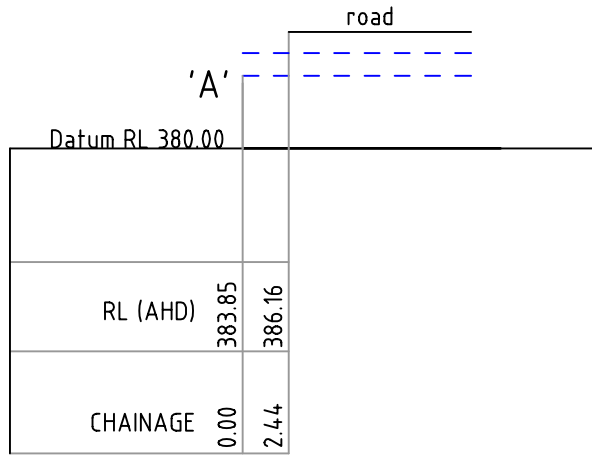
Culvert Woolrych Street - upstream side



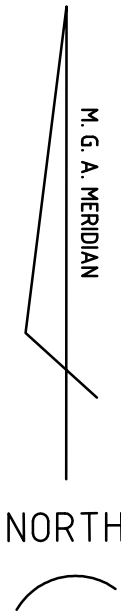
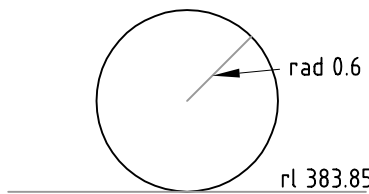
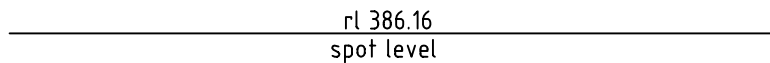
Culvert Woolrych Street - upstream side



Culvert Woolrych Street - downstream side

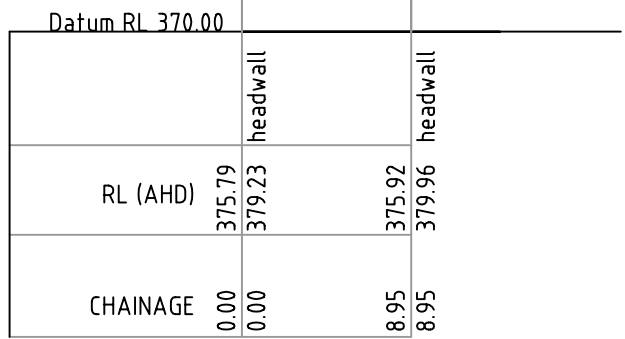


CULVERT WARD STREET PROFILE
LOOKING NORTH

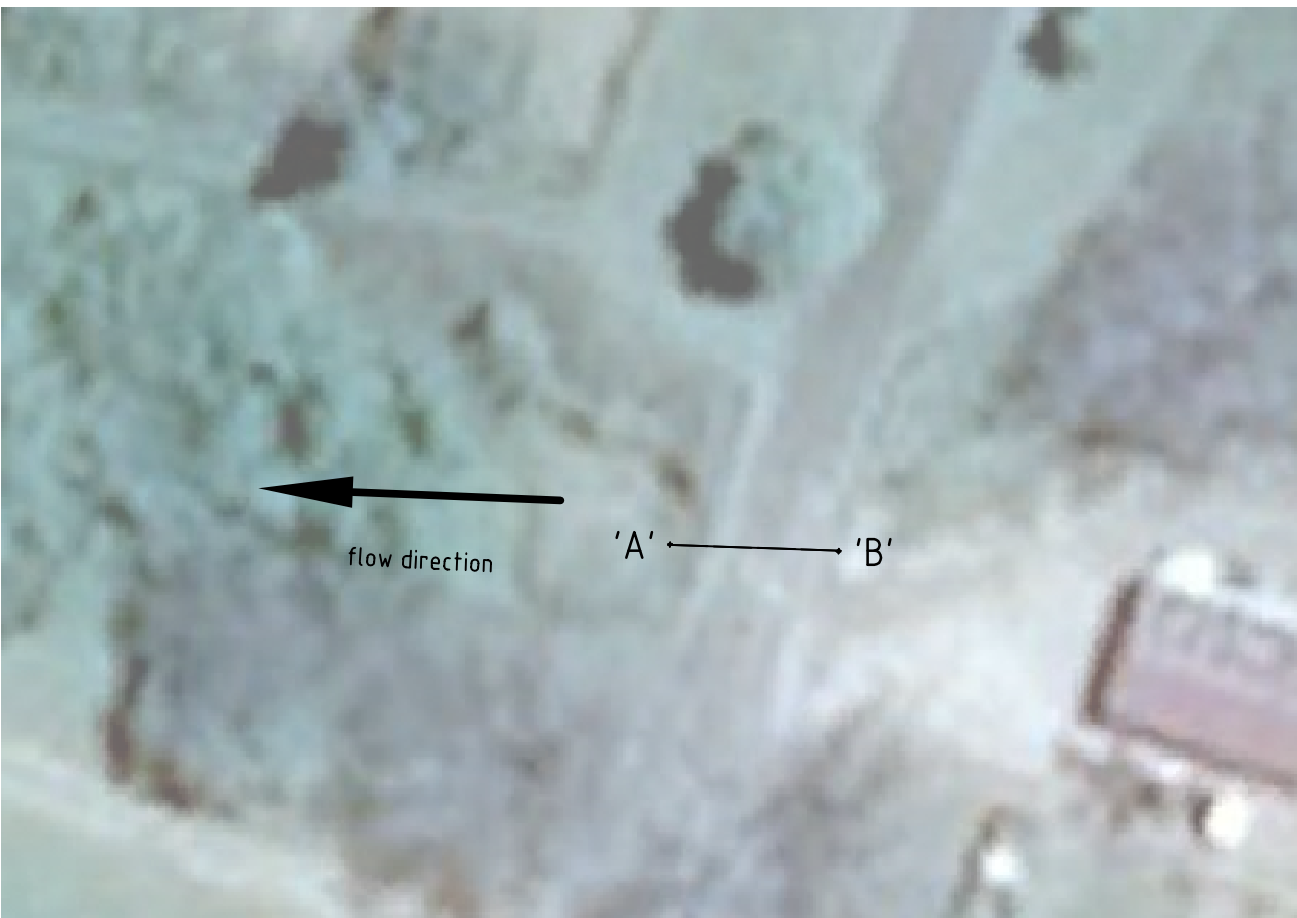
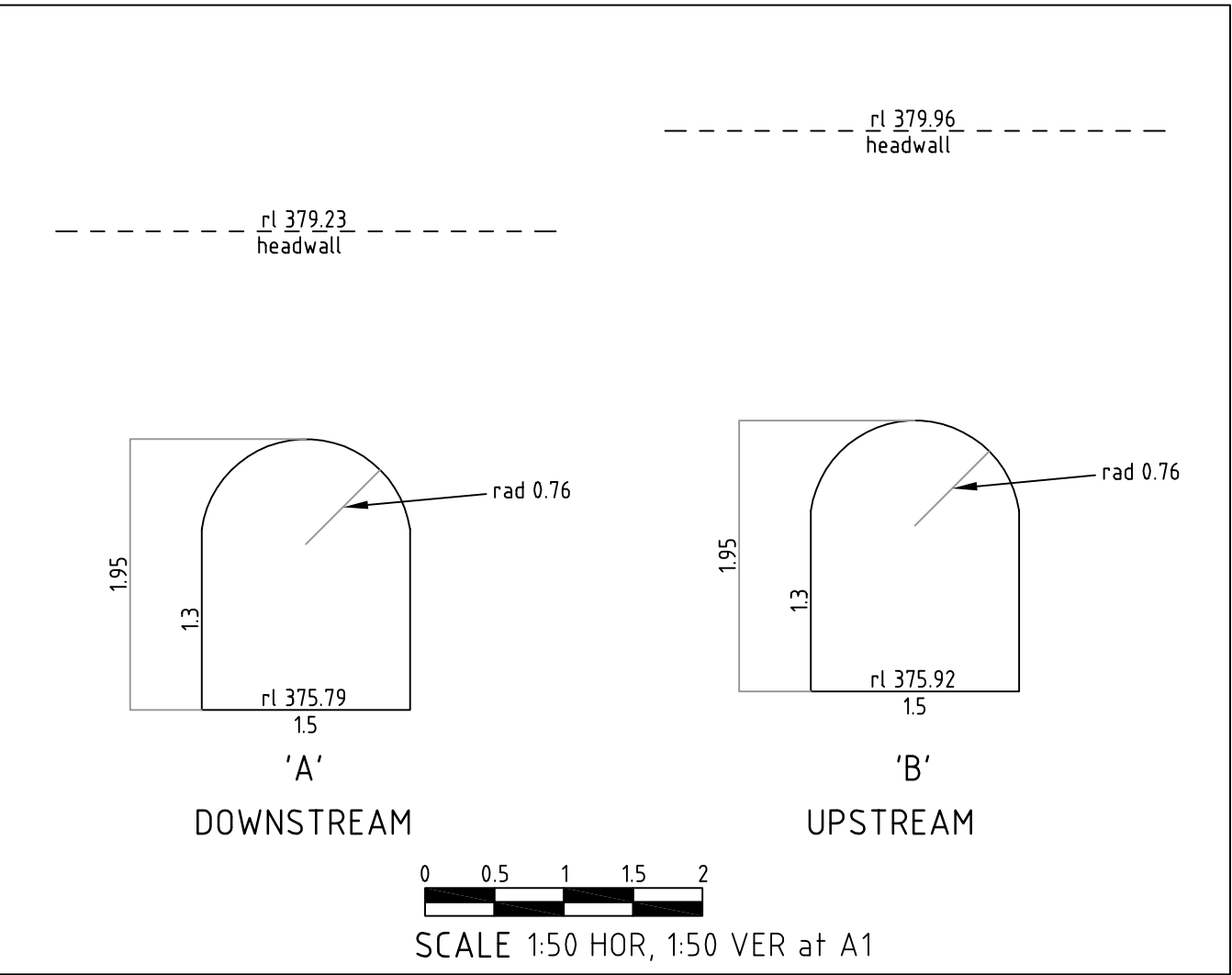


'A' (CULVERT INVERT)
EASTING: 624397.924
NORTHING: 6175975.991
RL (AHD): 375.788

'B' (CULVERT INVERT)
EASTING: 624406.872
NORTHING: 6175975.686
RL (AHD): 375.922



CULVERT WOOLRYCH STREET PROFILE
LOOKING WEST



SCALE 1:400 HOR, 1:400 VER at A1

Culvert Woolrych Street SURVEYED 5-03-2019

STRUCTURE: CONCRETE CULVERT
CROSS SECTION AREA: xxxxm²
SINGLE PIPE
FALL 1.5%

			I HEREBY CERTIFY THAT ENGINEERING WORKS SHOWN ON THIS PLAN ARE WORK-AS-EXECUTED AND HAVE BEEN CONSTRUCTED GENERALLY IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE DIRECTOR, IN ACCORDANCE WITH THE GENERAL REQUIREMENTS.	NAME: SIGNATURE: CAPACITY: DATE:	DATE 08-04-2019 DRAWN EK DESIGNED EK	CHECKED WJC APPROVED WJC SCALE 1:400 Ver 1:400 Hor	C.P.C. LAND DEVELOPMENT CONSULTANTS PXL ACN 003 773 975 Young Office 121 Nasmyth Street Young NSW, 2954 Tel (02) 6382 1501 Fax (02) 6382 4729 Cowra Office 5/103 Kendal Street Cowra NSW, 2794 Tel (02) 6342 4577 Fax (02) 6382 4729 Goulburn Office 299 Sloane Street Goulburn NSW, 2580 Tel (02) 4823 5100 Fax (02) 4823 5200		SHEET SUBJECT PLAN VIEW EXISTING DETAIL CROSS SECTION	PROJECT Murrumburrah Flood Study CULVERT WARD STREET CULVERT WOOLRYCH STREET	CLIENT WMA Water	ISSUE A	PROJECT NO. 19195	SHEET NO. 17 of 23	SHEET A1
--	--	--	--	---	---	--	--	--	--	---	---------------------	------------	----------------------	-----------------------	-------------



Culvert Rail 01 - upstream side



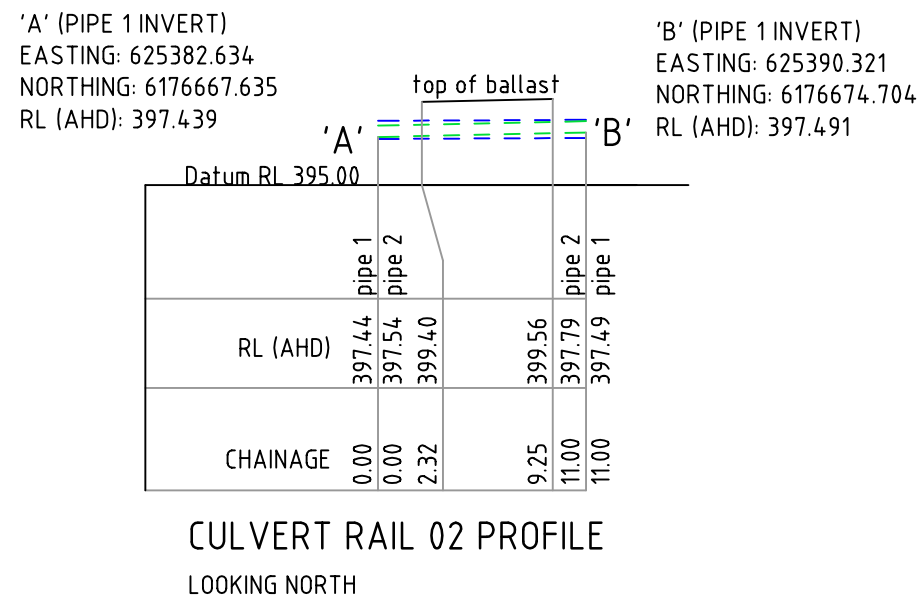
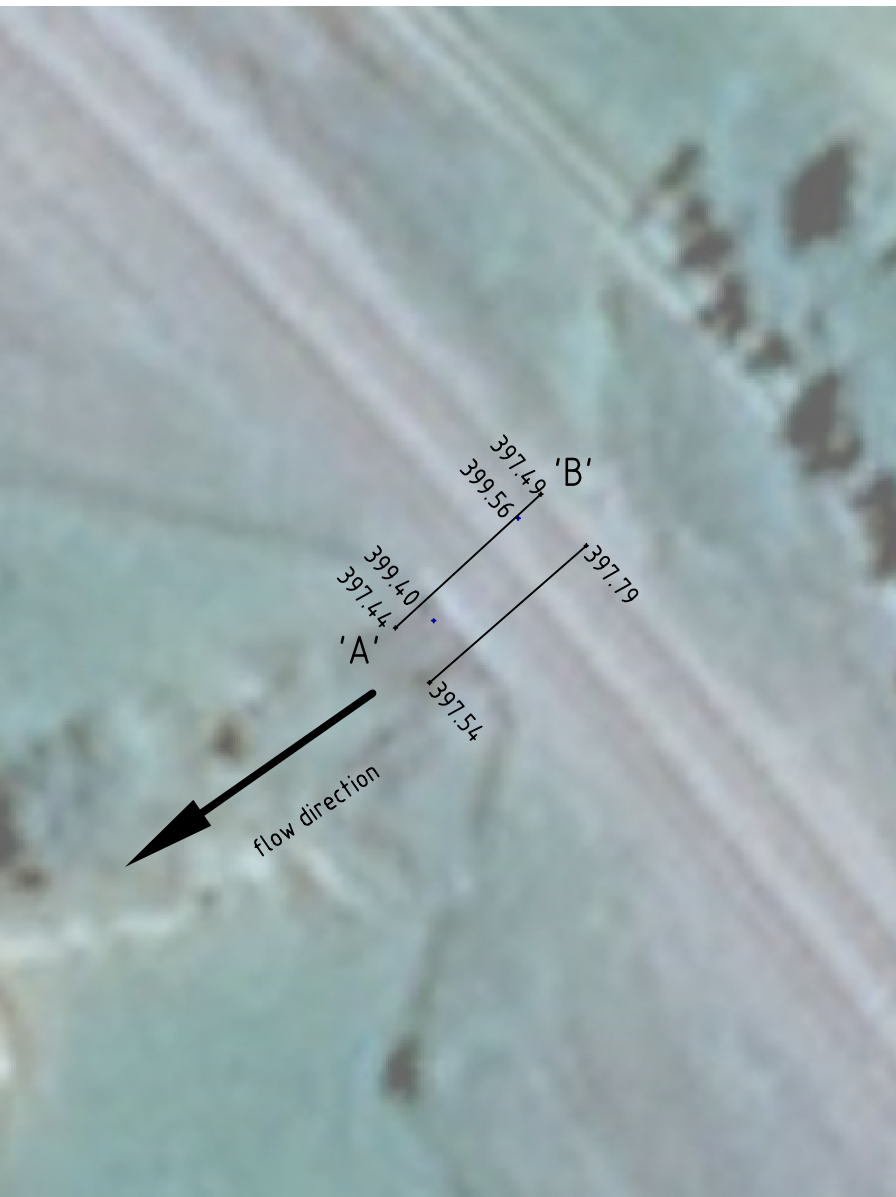
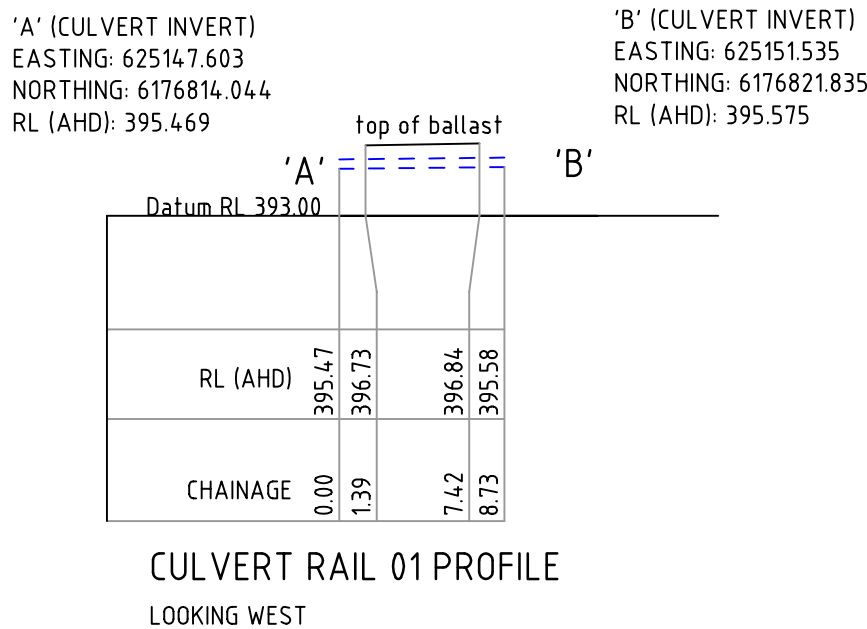
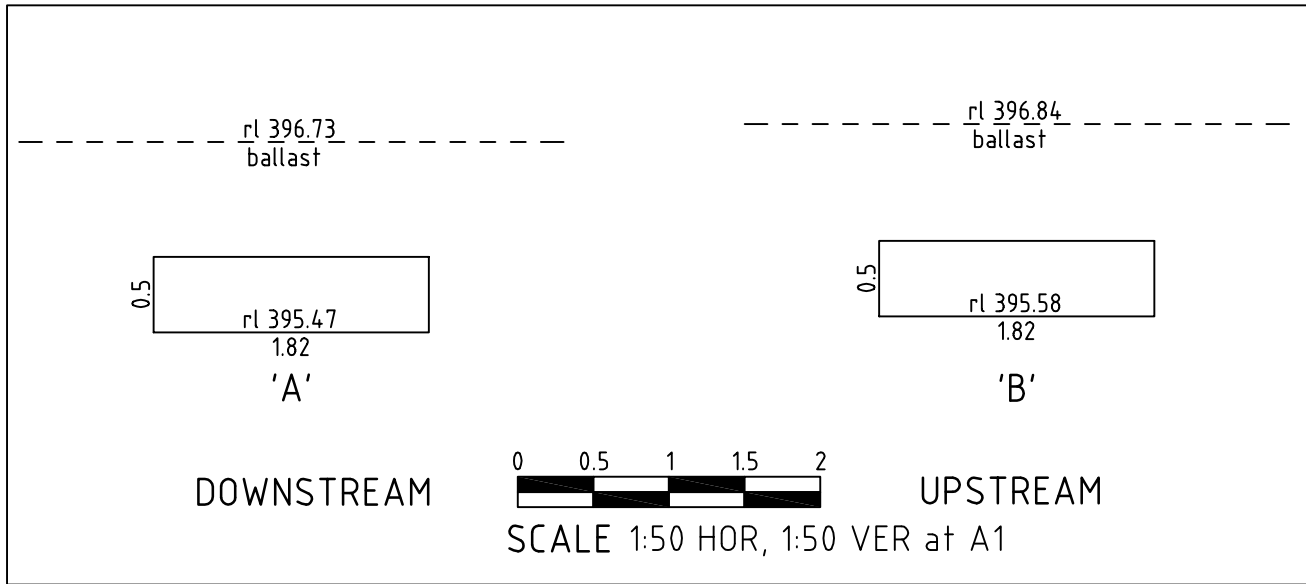
Culvert Rail 01 - downstream side



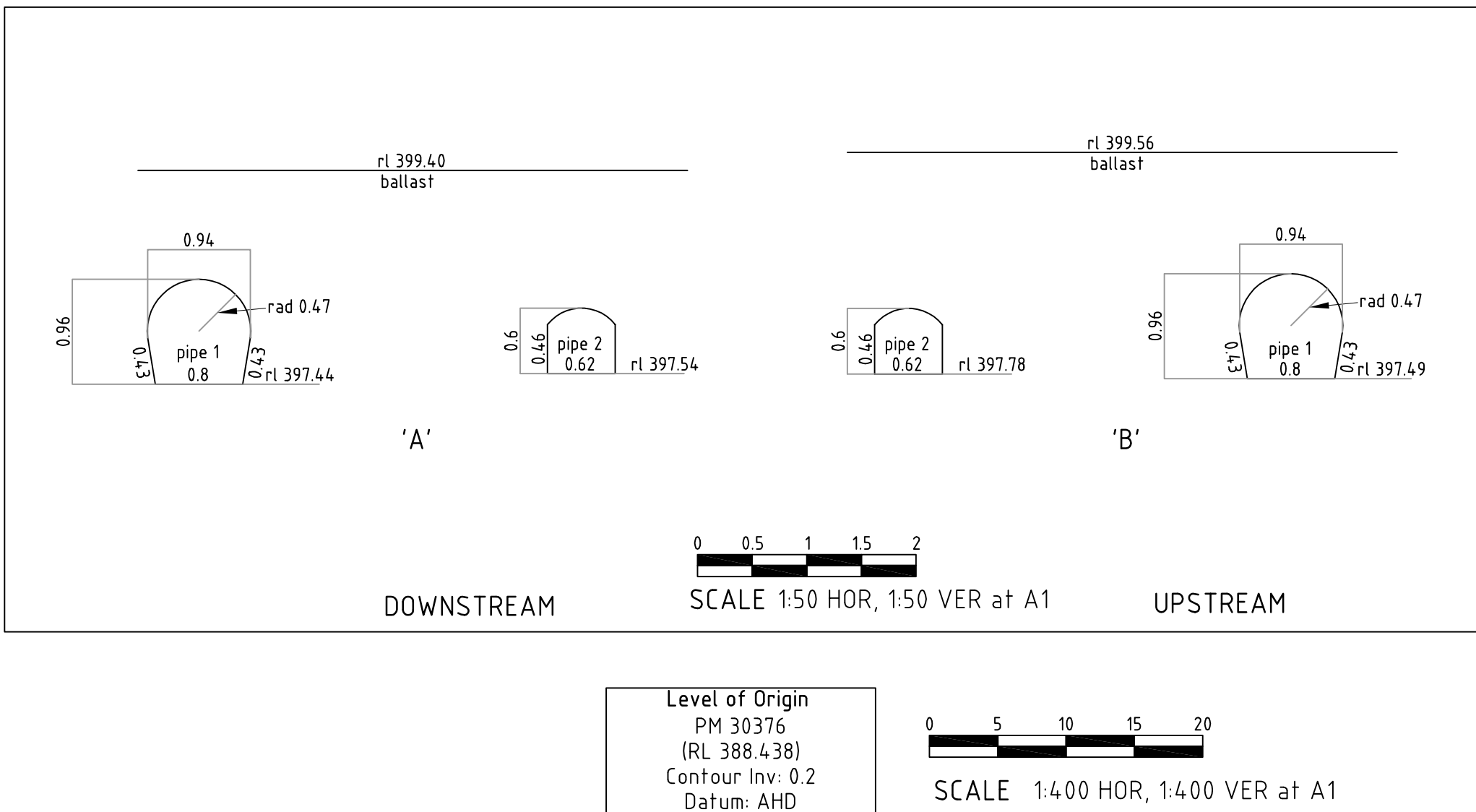
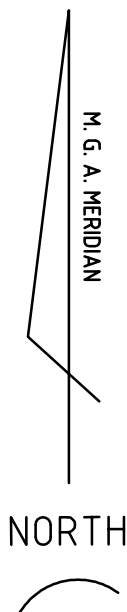
Culvert Rail 02 - upstream side



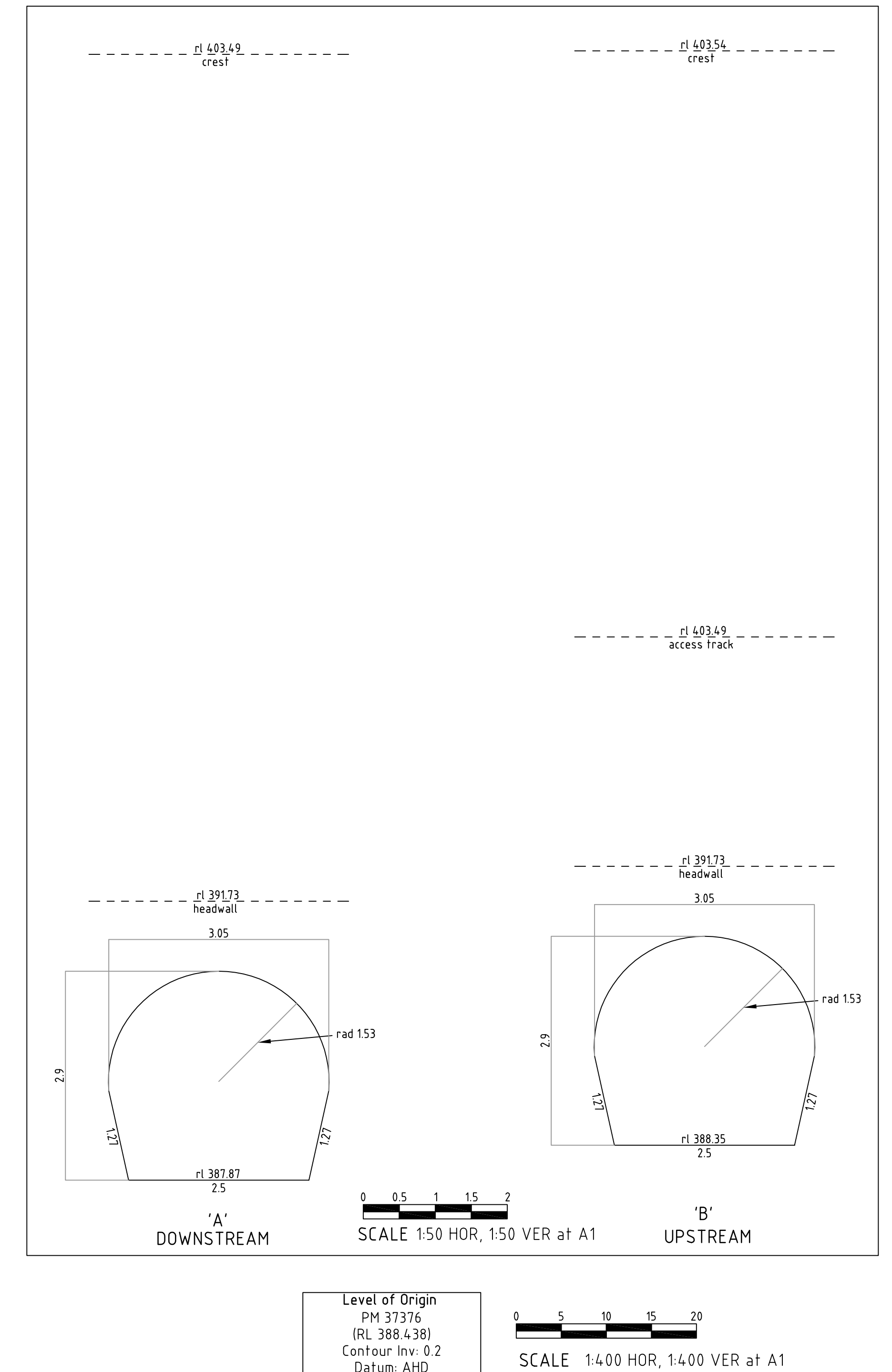
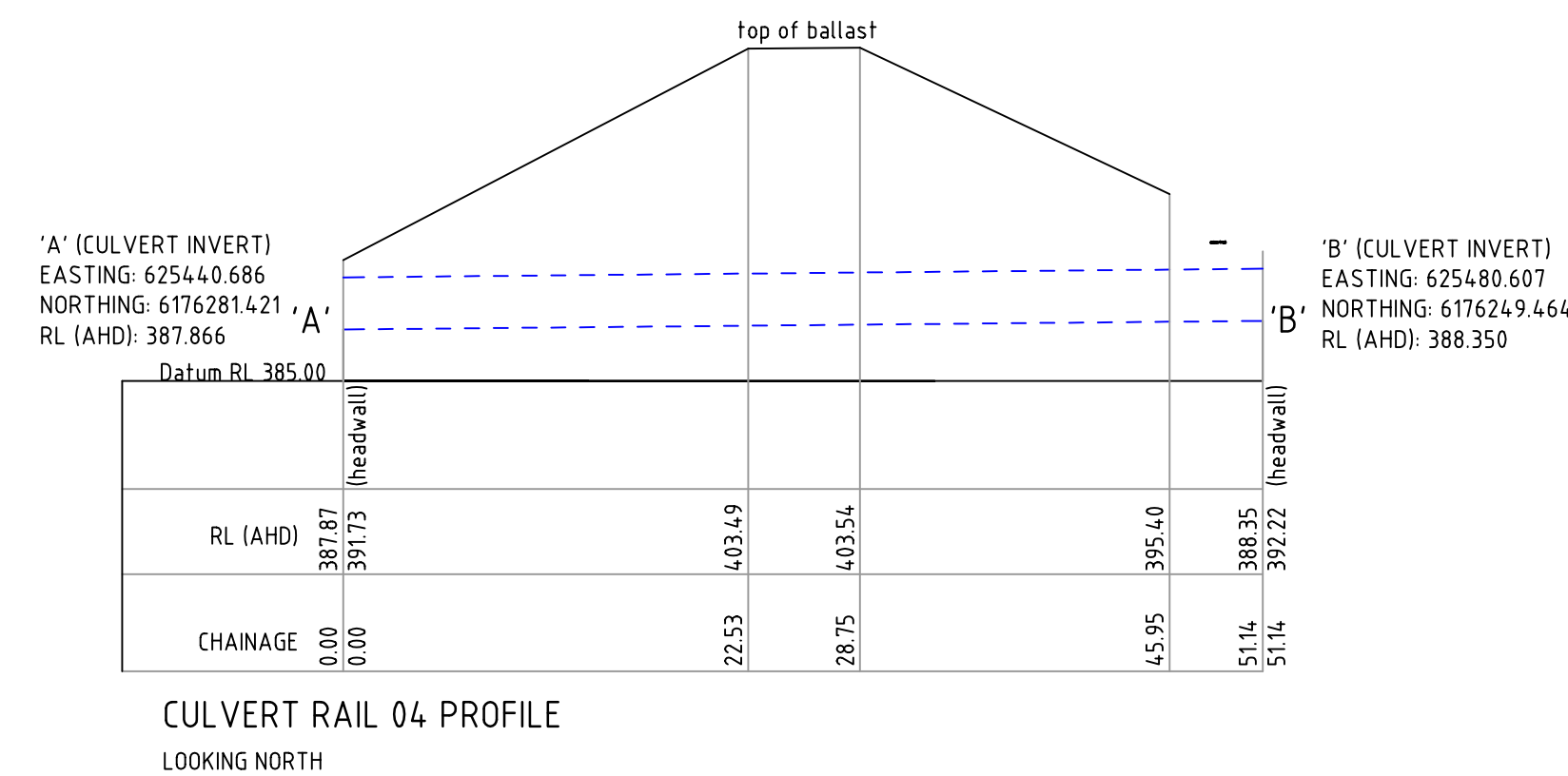
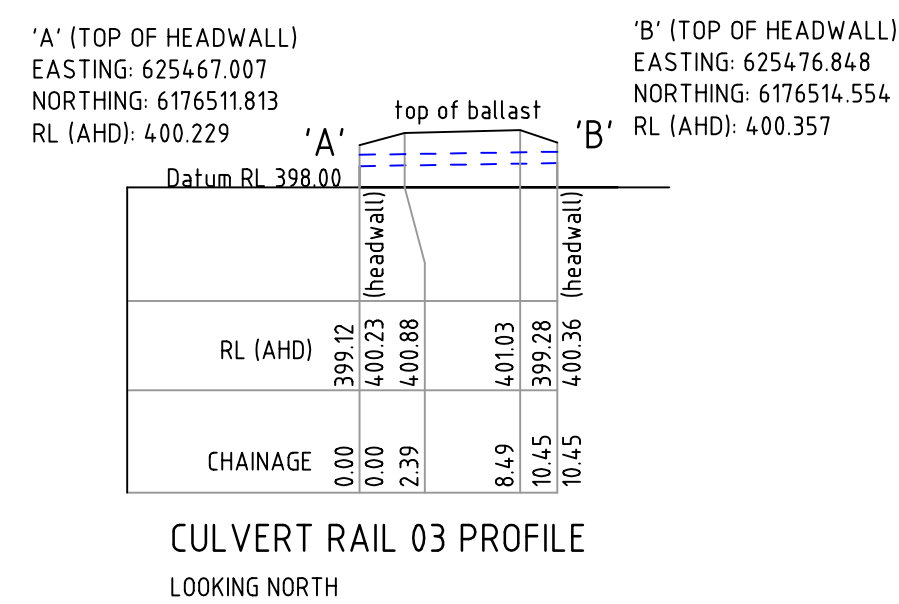
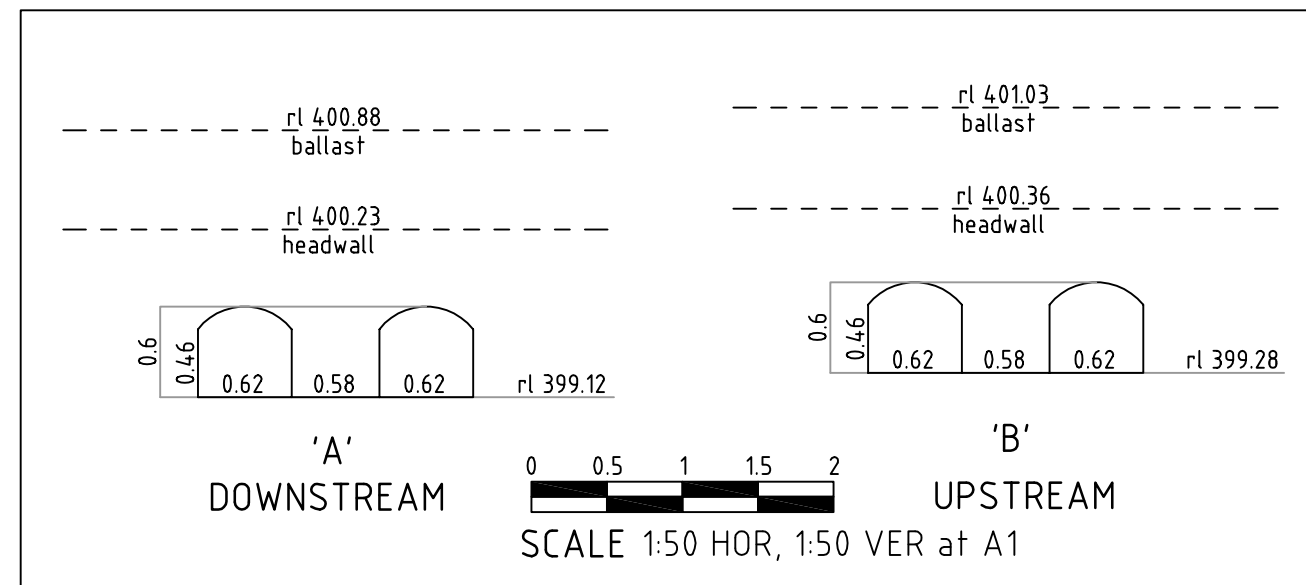
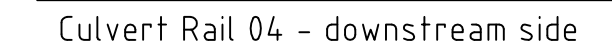
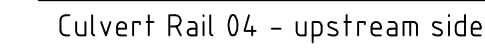
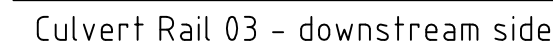
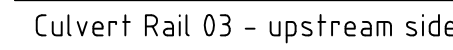
Culvert Rail 02 - downstream side



Culvert Rail 01
SURVEYED 4-03-2019
STRUCTURE: CONCRETE BOX CULVERT
CROSS SECTION AREA: 0.910m²
SINGLE PIPE
FALL 1.2%
RAIL CHAINAGE 387.221



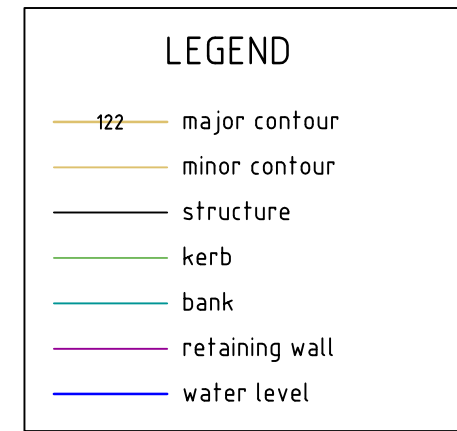
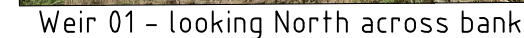
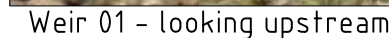
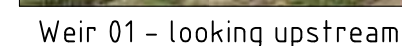
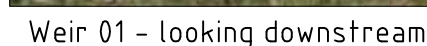
			I HEREBY CERTIFY THAT ENGINEERING WORKS SHOWN ON THIS PLAN ARE WORK-AS-EXECUTED AND HAVE BEEN CONSTRUCTED GENERALLY IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE DIRECTOR, IN ACCORDANCE WITH THE GENERAL REQUIREMENTS.	NAME: SIGNATURE: CAPACITY: DATE:	DATE 08-04-2019 DRAWN EK DESIGNED EK	CHECKED WJC APPROVED WJC SCALE 1:400 Ver 1:400 Hor	C.P.C. LAND DEVELOPMENT CONSULTANTS P/L ACN 003 773 975 Young Office 121 Nasmyth Street Young NSW, 2954 Tel (02) 6382 1501 Fax (02) 6382 4729 Cowra Office 5/103 Kendal Street Cowra NSW, 2794 Tel (02) 6342 4577 Fax (02) 6382 4729 Goulburn Office 299 Sloane Street Goulburn NSW, 2580 Tel (02) 4823 5100 Fax (02) 4823 5200	SHEET SUBJECT PLAN VIEW EXISTING DETAIL CROSS SECTION		PROJECT Murrumburrah Flood Study CULVERT RAIL 01 CULVERT RAIL 02			
A	DETAIL PLAN	08-04-2019	COPYRIGHT THIS DRAWING IS NOT TO BE COPIED, OR TRANSFERRED TO ANY THIRD PARTY, OR STORED ON ANY OTHER STORAGE MEDIUM, WITHOUT THE WRITTEN PERMISSION OF C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD.					CLIENT WMA Water		ISSUE A	PROJECT NO. 19195	SHEET NO. 18 of 23	SHEET A1
ISSUE	AMENDMENT	DATE											



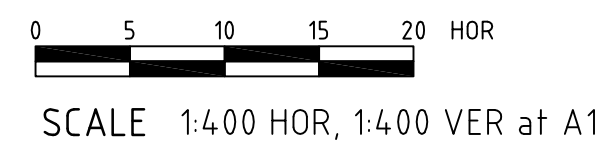
Culvert Rail 03
SURVEYED 4-03-2019
STRUCTURE: BRICK CULVERT
CROSS SECTION AREA: 0.344m² each pipe, 0.688m² (total)
TWO PIPES
FALL 1.5%
RAIL CHAINAGE 386.762

Culvert Rail 04
SURVEYED 4-03-2019
STRUCTURE: BRICK CULVERT
CROSS SECTION AREA: 7.515m²
SINGLE PIPE
FALL 0.9%
RAIL CHAINAGE 386.510

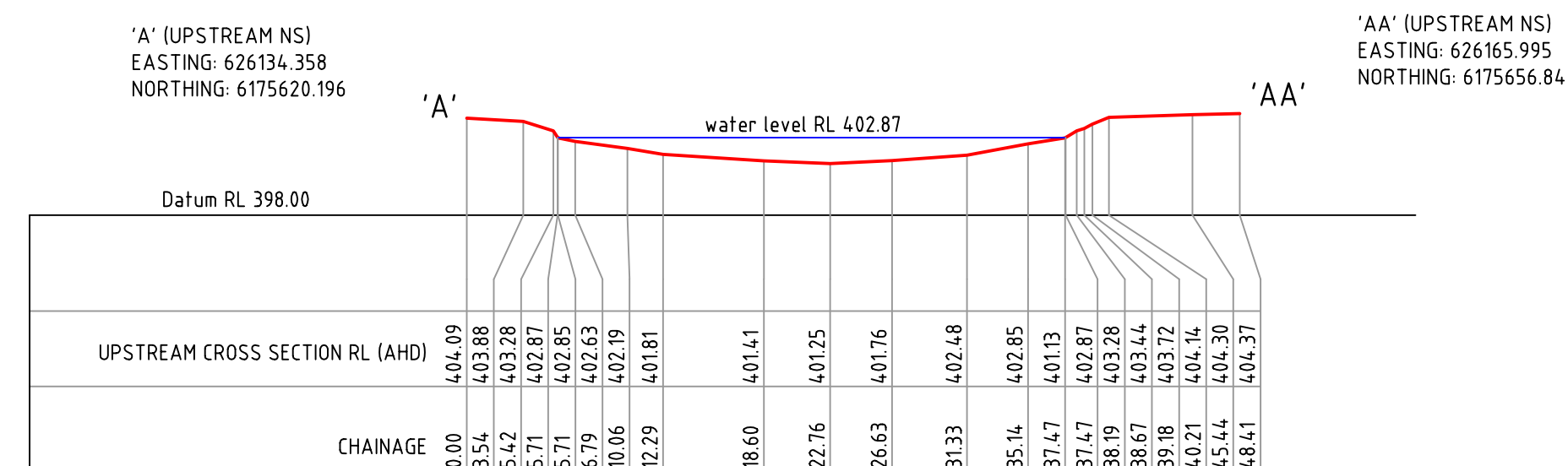
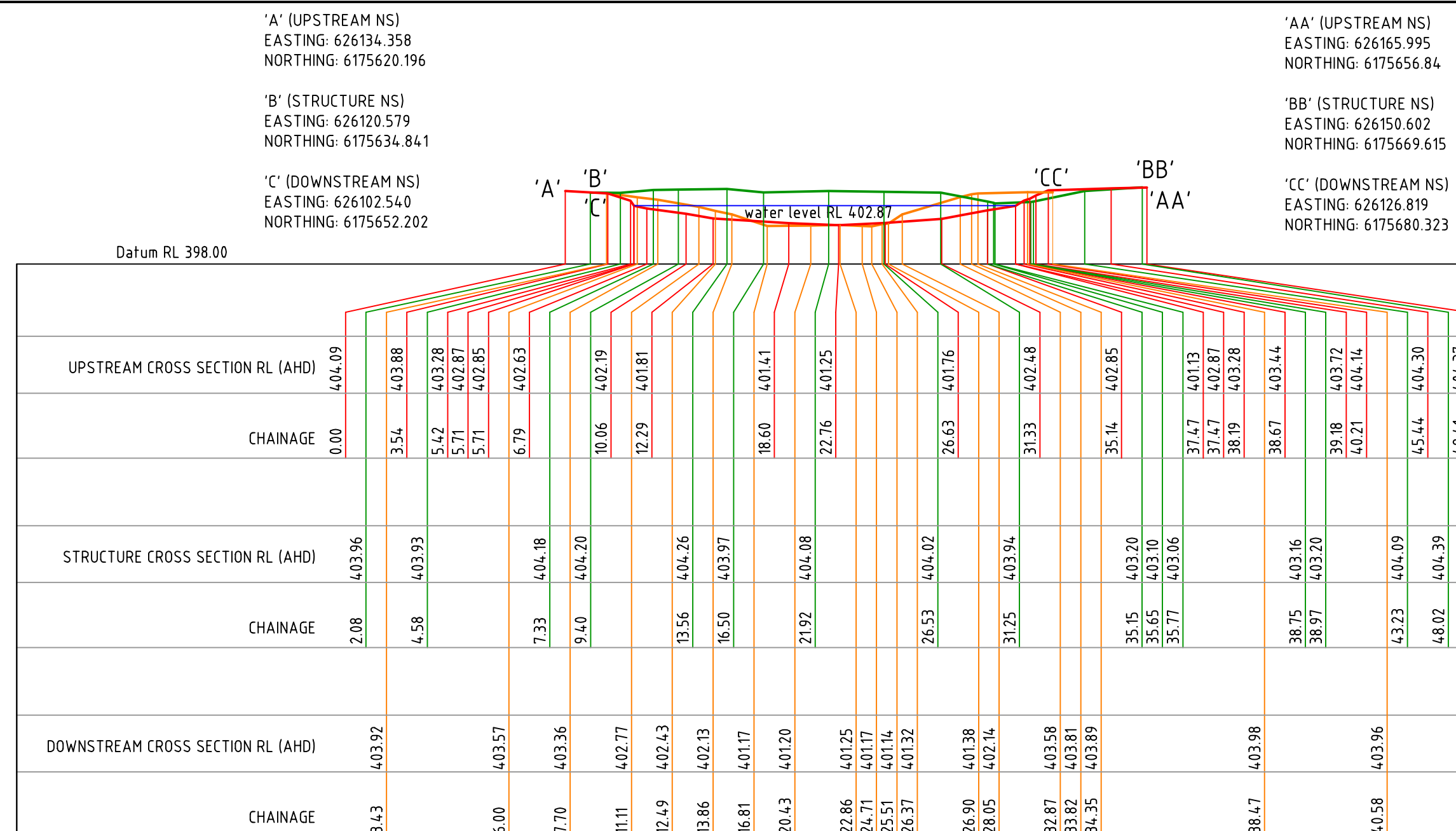
			I HEREBY CERTIFY THAT ENGINEERING WORKS SHOWN ON THIS PLAN ARE WORK--AS--EXECUTED AND HAVE BEEN CONSTRUCTED GENERALLY IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE DIRECTOR, IN ACCORDANCE WITH THE GENERAL REQUIREMENTS.	NAME: SIGNATURE: CAPACITY: DATE:	DATE 08-04-2019	CHECKED WJC	C.P.C. LAND DEVELOPMENT CONSULTANTS P/L ACN 903 713 975 Young Office 121 Nasmith Street Young NSW, 2954 Tel (02) 6382 1501 Fax (02) 6382 4729 Cowra Office 5/103 Kendal Street Cowra NSW, 2794 Tel (02) 6342 4577 Fax (02) 6382 4729 Goulburn Office 299 Sloane Street Goulburn NSW, 2580 Tel (02) 4823 5100 Fax (02) 4823 5200	SHEET SUBJECT PLAN VIEW EXISTING DETAIL CROSS SECTION		PROJECT Murrumburrah Flood Study CULVERT RAIL 03 CULVERT RAIL 04				
A	DETAIL PLAN	08-04-2019		COPYRIGHT THIS DRAWING IS NOT TO BE COPIED, OR TRANSFERRED TO ANY THIRD PARTY, OR STORED ON ANY OTHER STORAGE MEDIUM, WITHOUT THE WRITTEN PERMISSION OF C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD.	DESIGNED EK	SCALE 1:400 Ver 1:400 Hor								
ISSUE	AMENDMENT	DATE												
											CLIENT WMA Water		ISSUE A	PROJECT NO. 19195



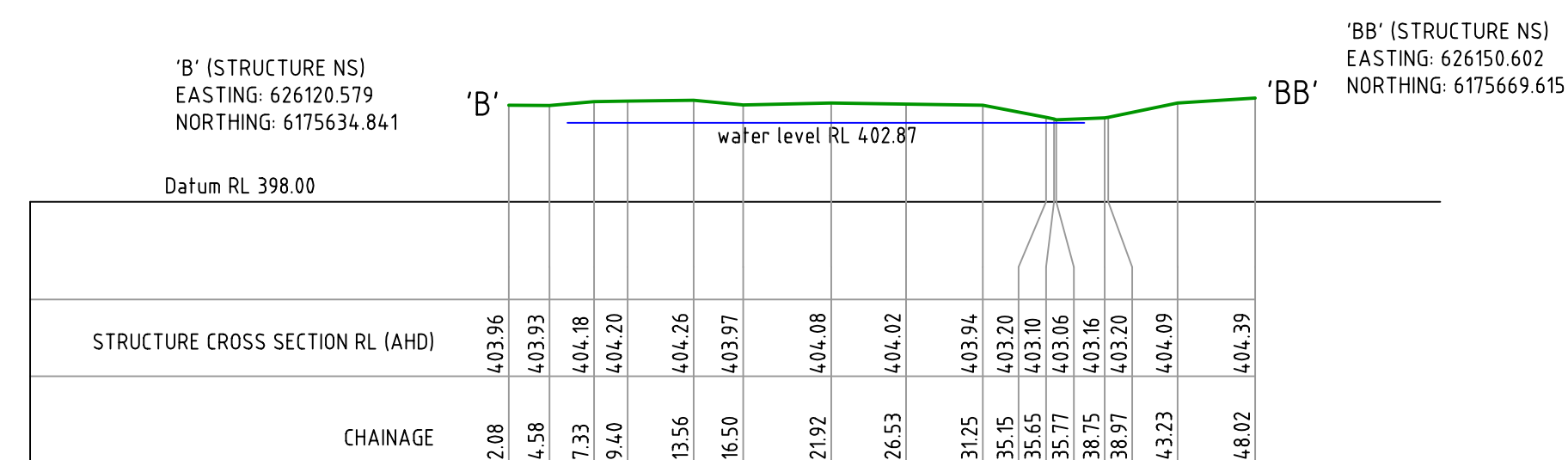
Level of Origin
PM 84896
(RL 415.049)
Contour Inv: 0.2
Datum: AHD



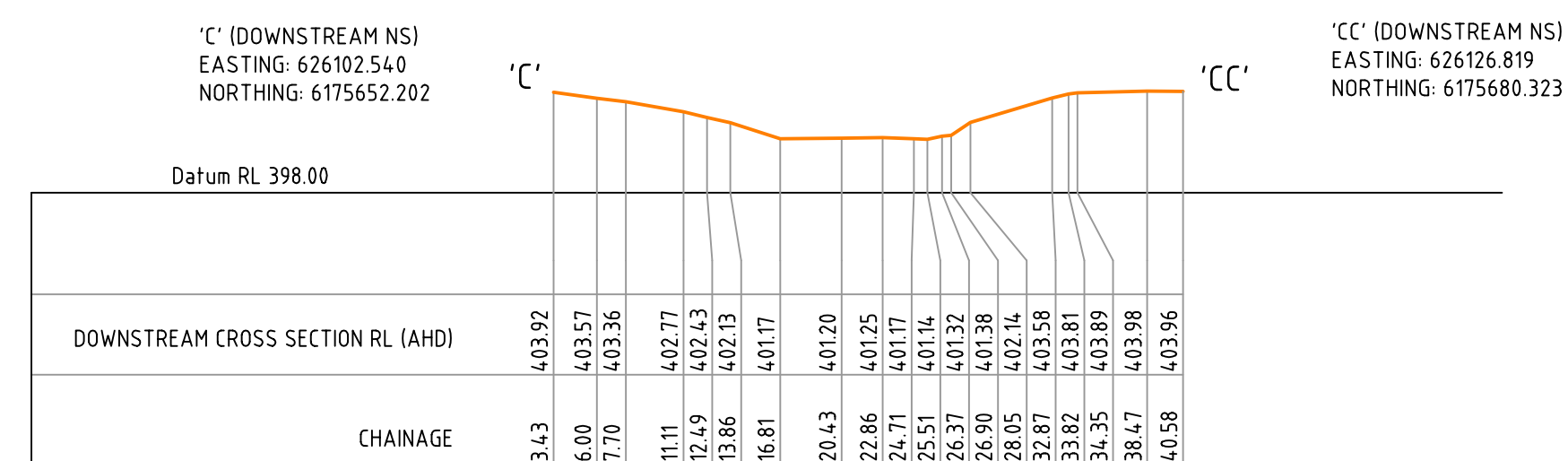
WEIR 01
SURVEYED 14-02-2019



WEIR PROFILE - 01 (A - AA)
LOOKING DOWNSTREAM



WEIR PROFILE - 01 (B - BB)
LOOKING DOWNSTREAM



WEIR PROFILE - 01 (C - CC)
LOOKING DOWNSTREAM

			I HEREBY CERTIFY THAT ENGINEERING WORKS SHOWN ON THIS PLAN ARE WORK-AS-EXECUTED AND HAVE BEEN CONSTRUCTED GENERALLY IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE DIRECTOR, IN ACCORDANCE WITH THE GENERAL REQUIREMENTS.	NAME:	DATE	CHECKED	C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD ACN 003 773 975 Young Office 121 Nasmith Street Young NSW, 2954 Tel (02) 6382 1501 Fax (02) 6382 4729 Cowra Office 5/103 Kendal Street Cowra NSW, 2794 Tel (02) 6342 4577 Fax (02) 6382 4729 Goulburn Office 299 Sloane Street Goulburn NSW, 2580 Tel (02) 4823 5100 Fax (02) 4823 5200	SHEET SUBJECT		PROJECT	
				SIGNATURE:	25-03-2019	WJC		PLAN VIEW	Murrumburrah Flood Study		
				CAPACITY:				EXISTING DETAIL	WEIR 01		
				DATE:				CROSS SECTIONS			
A	DETAIL PLAN	25-03-2019	COPYRIGHT THIS DRAWING IS NOT TO BE COPIED, OR TRANSFERRED TO ANY THIRD PARTY, OR STORED ON ANY OTHER STORAGE MEDIUM, WITHOUT THE WRITTEN PERMISSION OF C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD.	DRAWN	DESIGNED	SCALE	CLIENT	ISSUE	PROJECT NO.	SHEET NO.	SHEET
ISSUE	AMENDMENT	DATE		EK	EK	1:4.00 Ver 1:4.00 Hor	WMA Water	A	19195	20 of 23	A1



Weir 02 - looking upstream



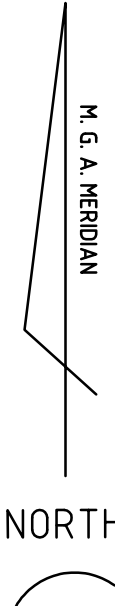
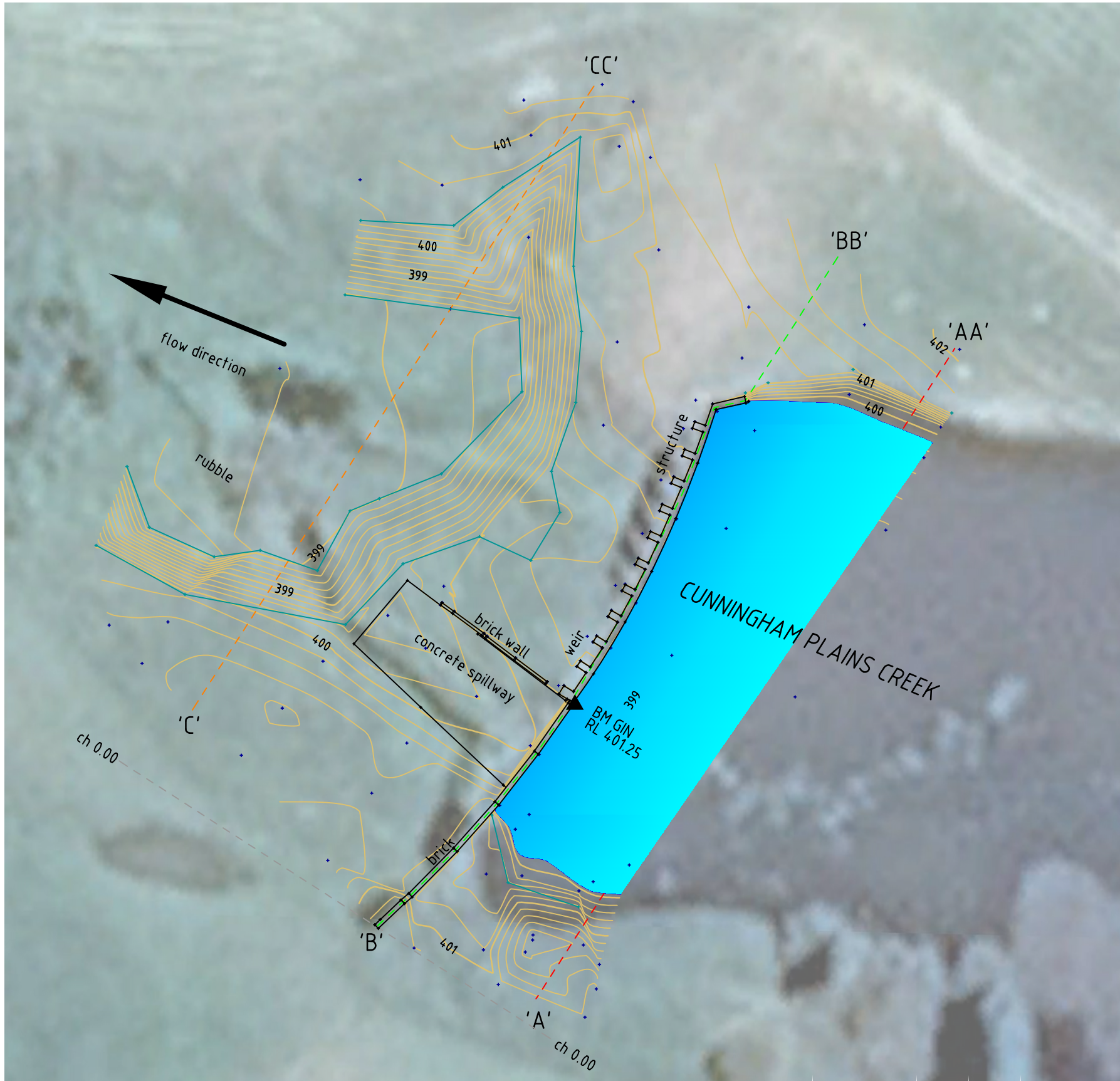
Weir 02 - looking upstream



Weir 02 - looking North from bank

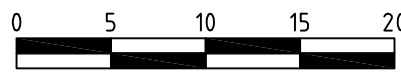


Weir 02 - looking North from bank



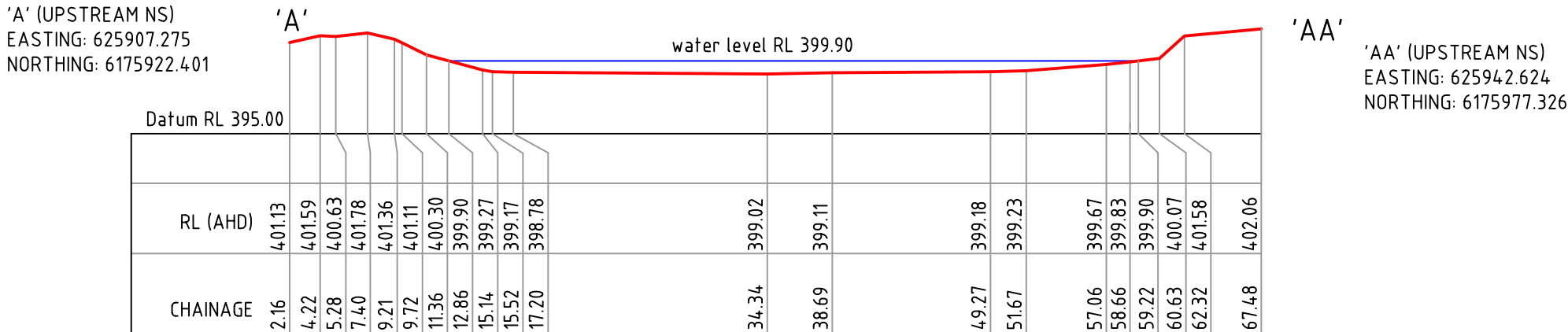
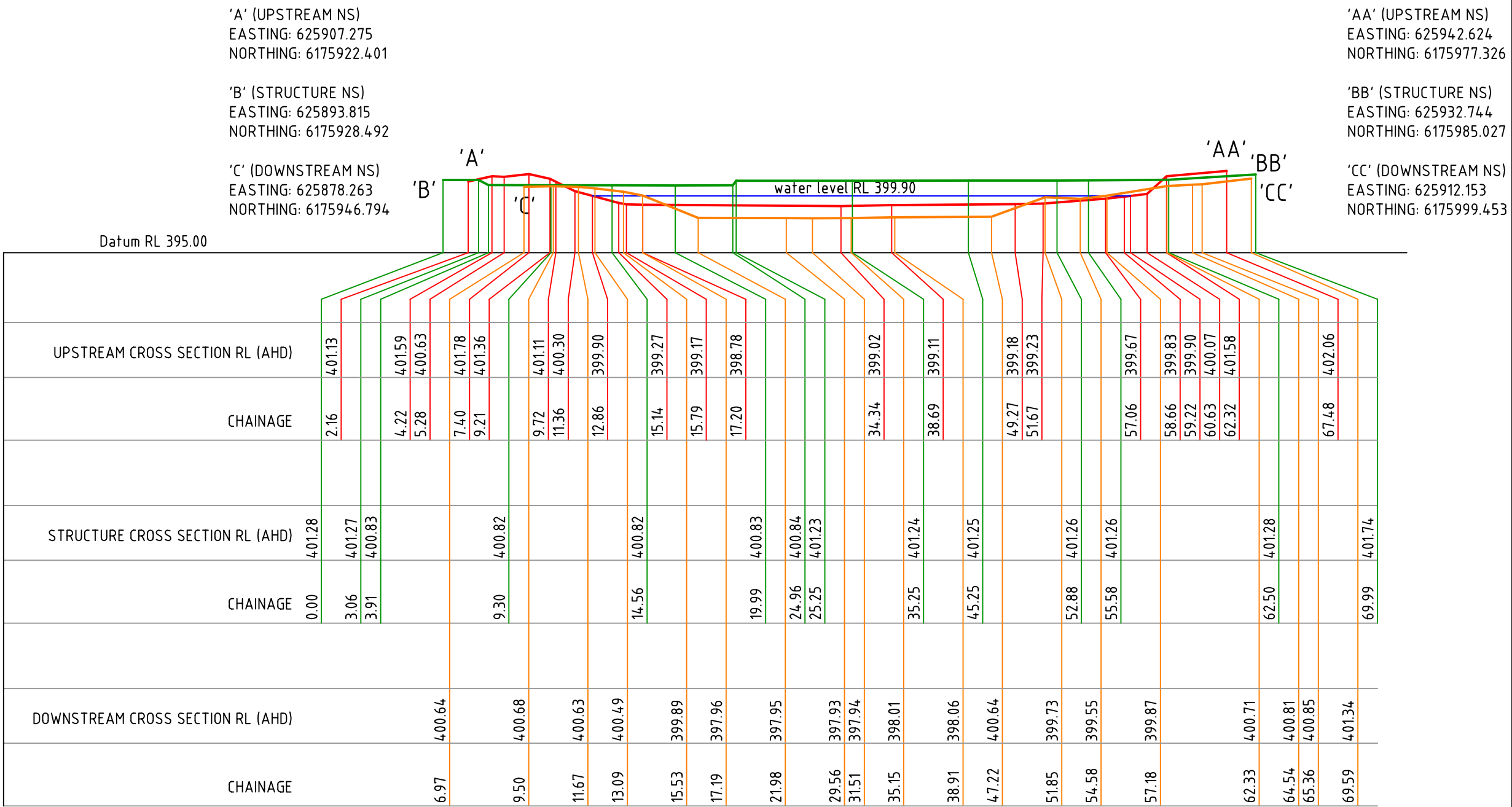
Level of Origin
PM 84.896
(RL 415.049)
Contour Inv: 0.2
Datum: AHD

LEGEND	
—	major contour
—	minor contour
—	structure
—	kerb
—	bank
—	retaining wall
—	water level

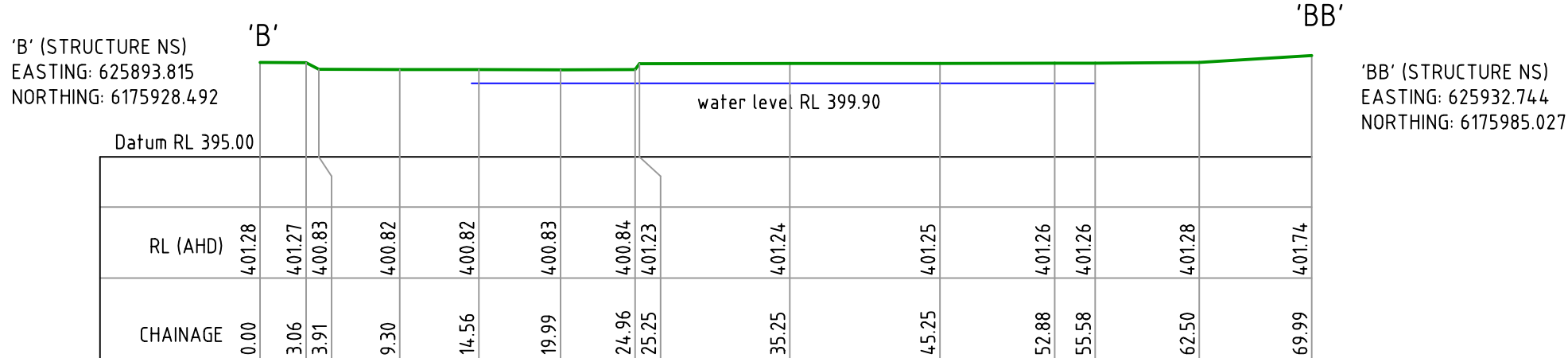


SCALE 1:400 HOR, 1:400 VER at A1

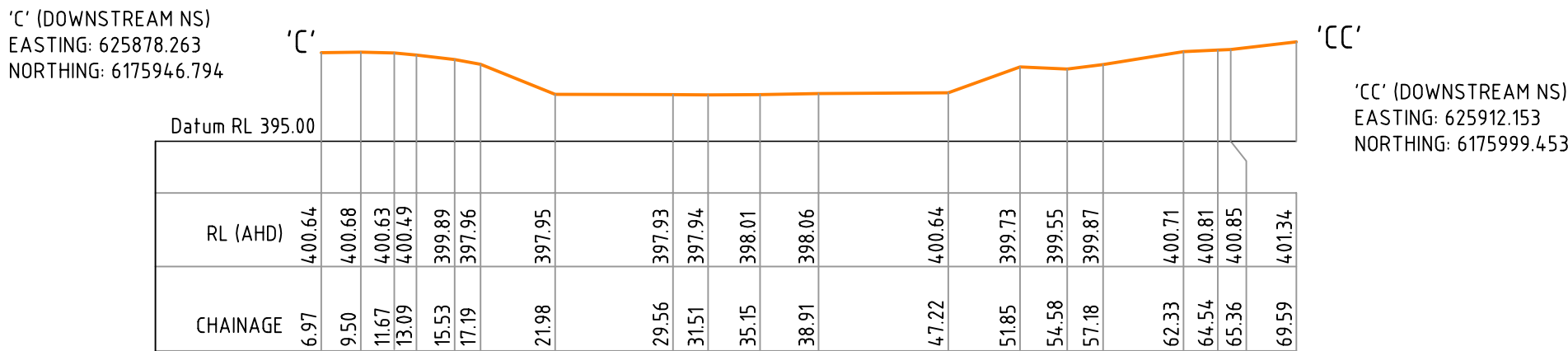
WEIR 02 SURVEYED 14-02-2019



WEIR PROFILE - 02 (A - AA)
LOOKING DOWNSTREAM

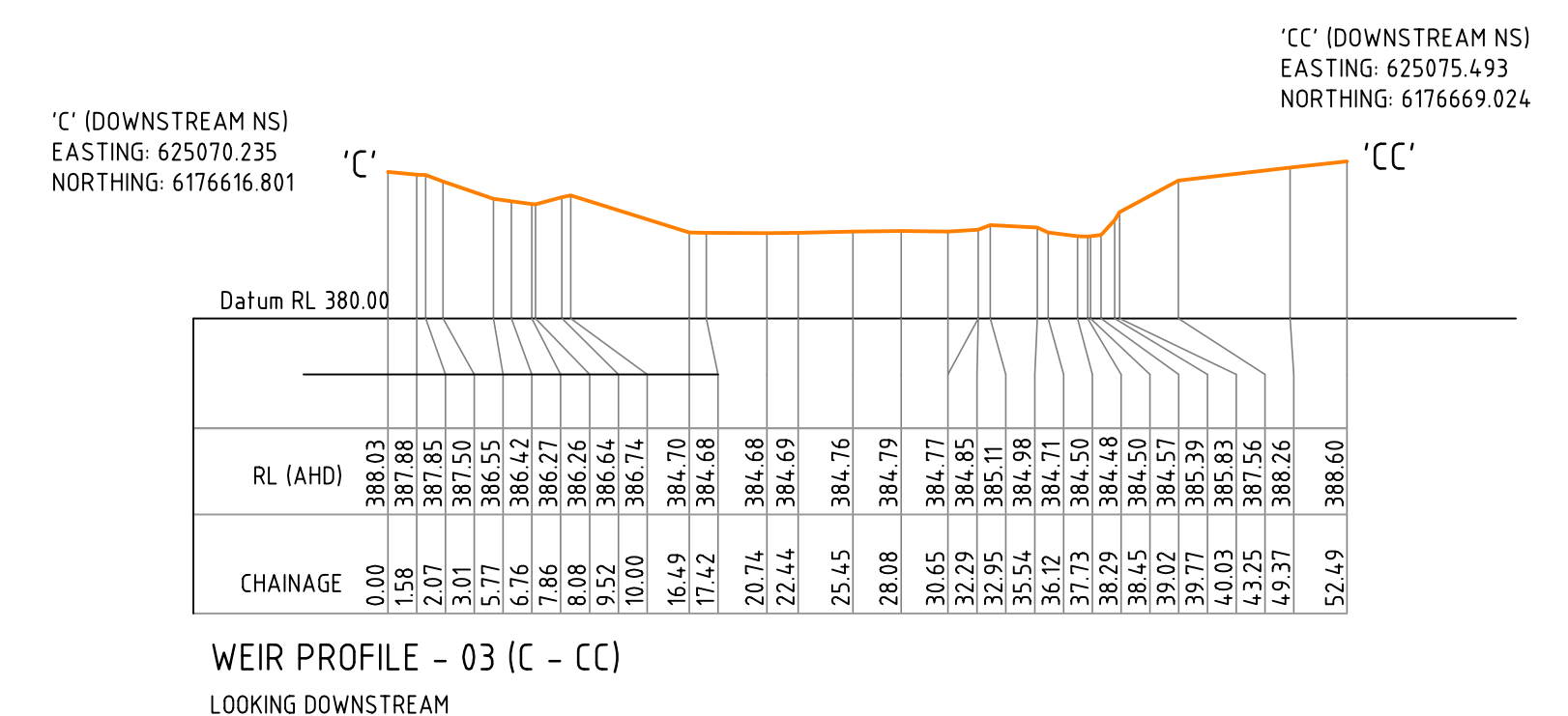
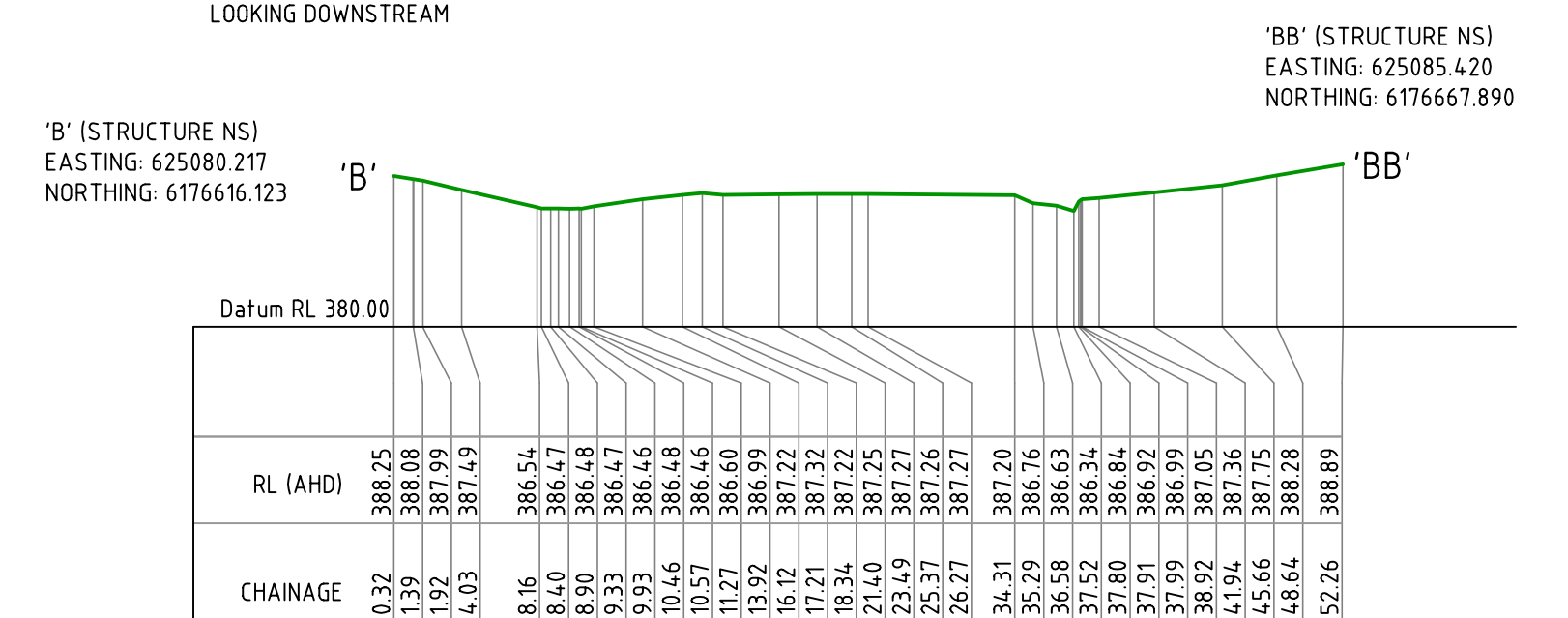
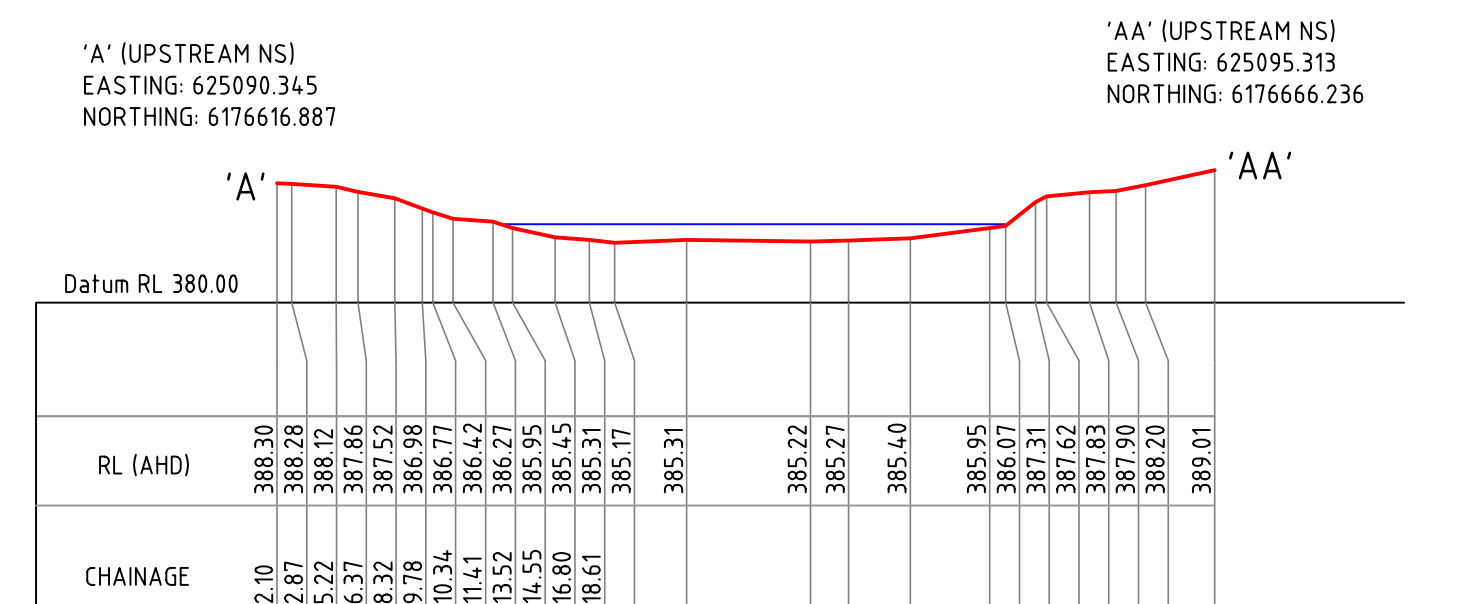
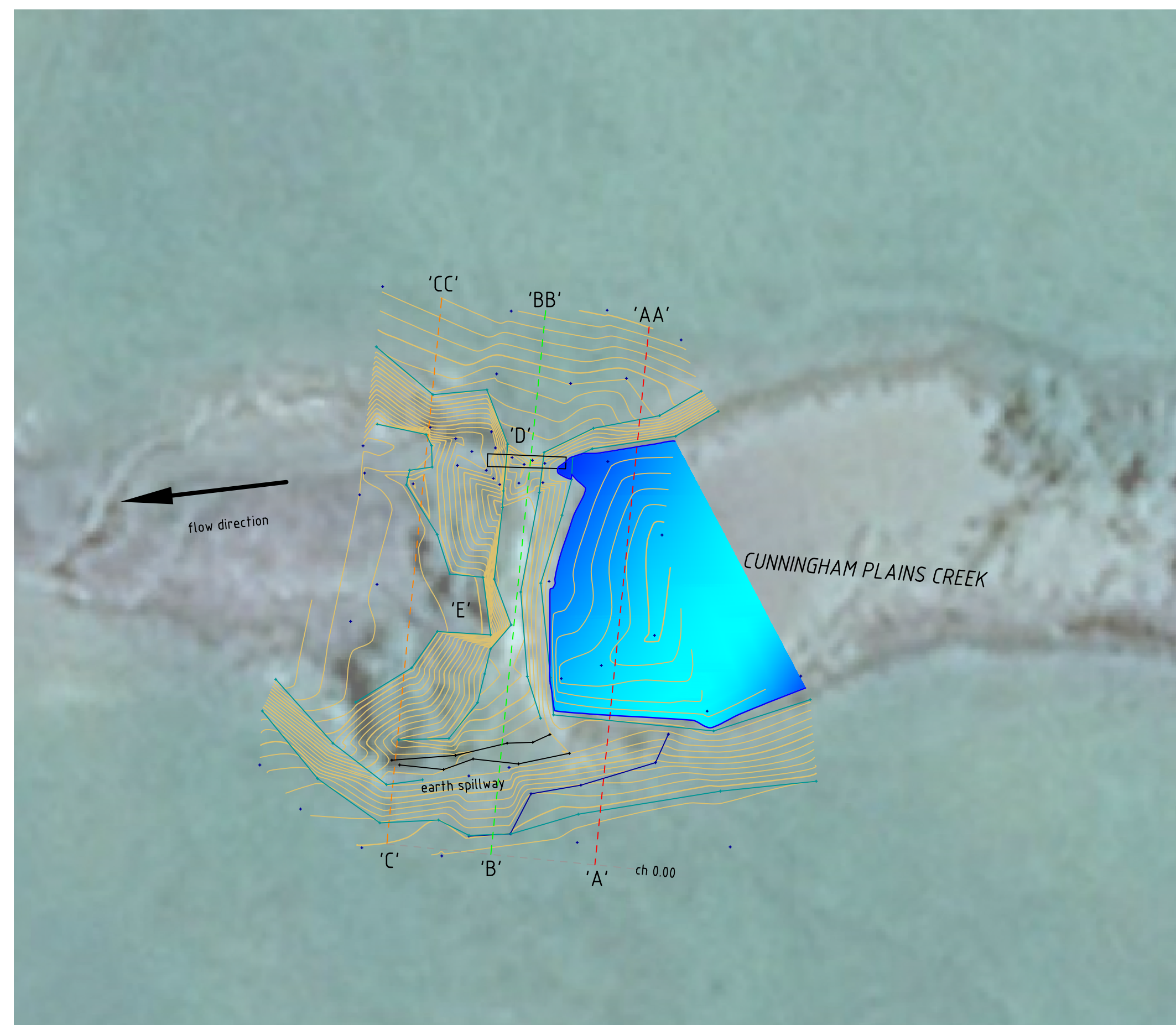


WEIR PROFILE - 02 (B - BB)
LOOKING DOWNSTREAM

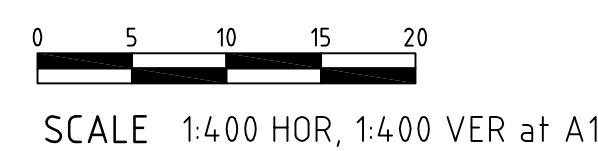
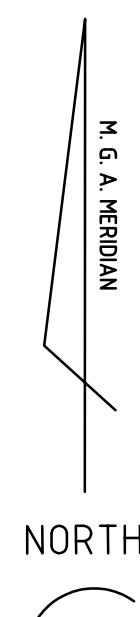
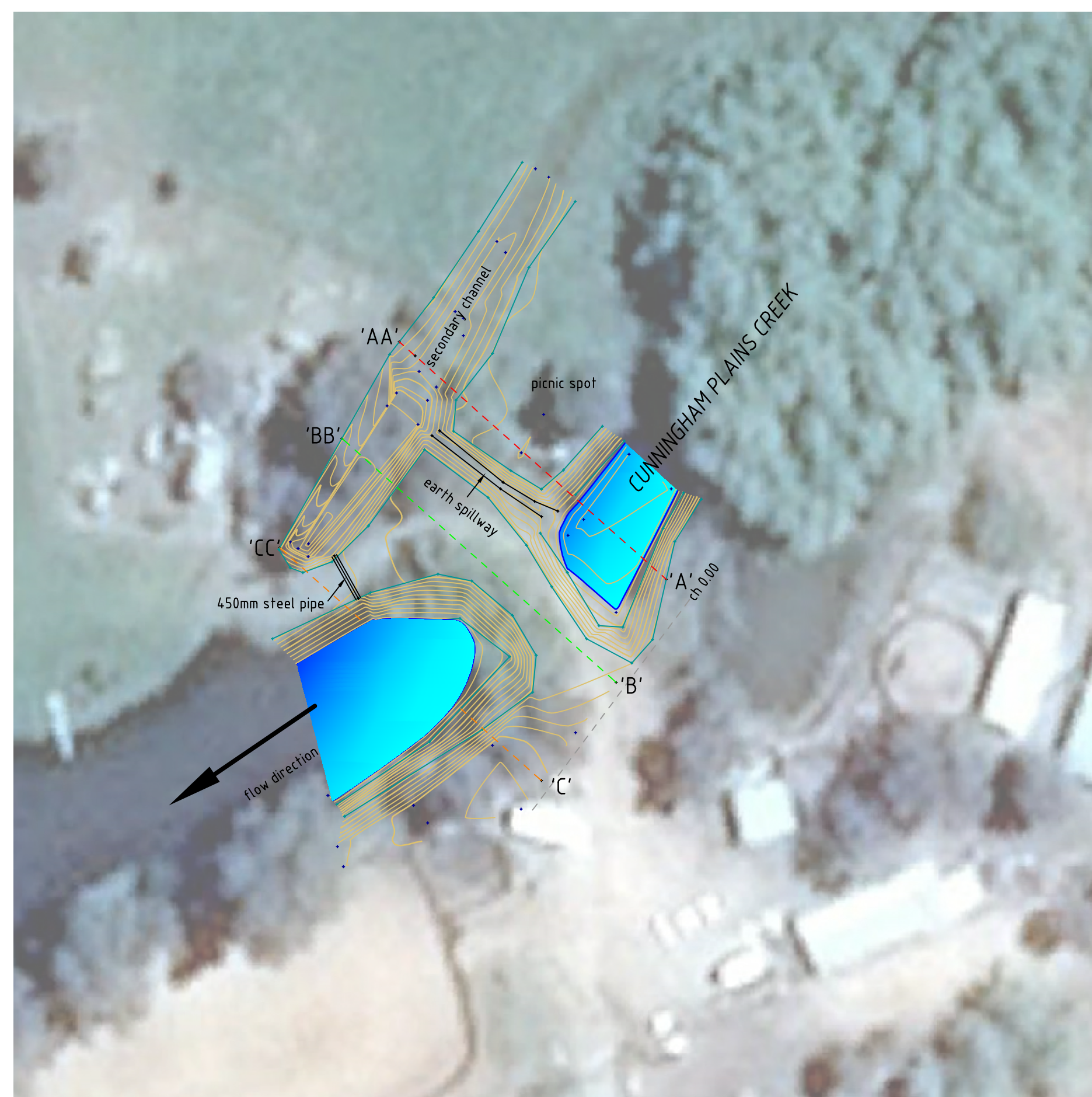
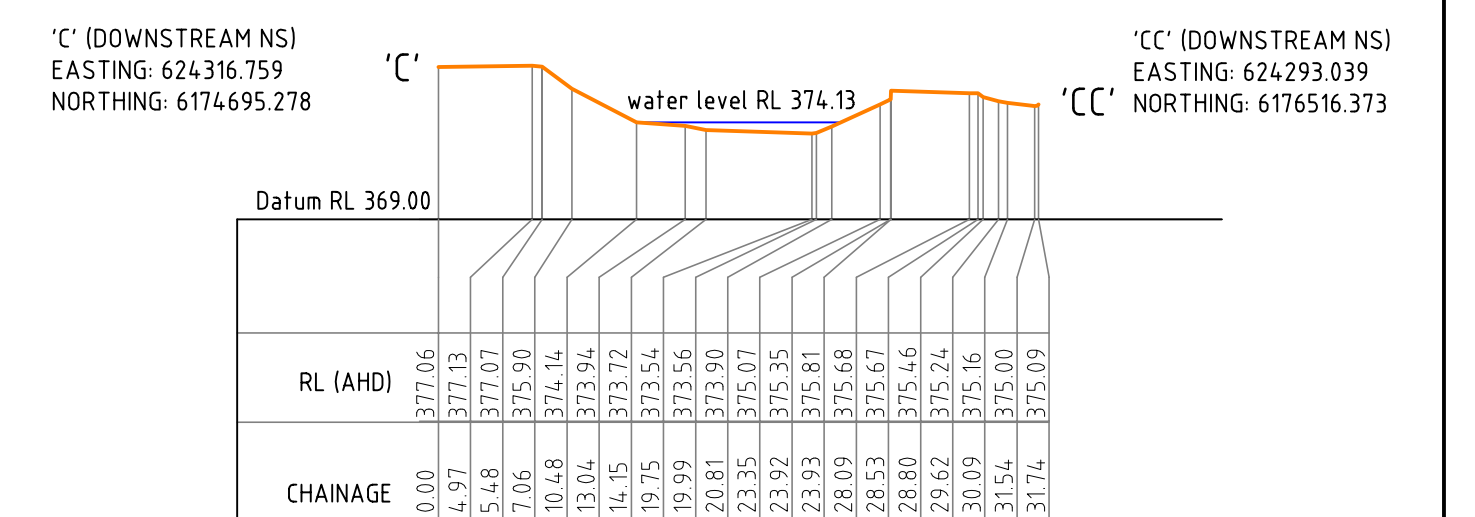
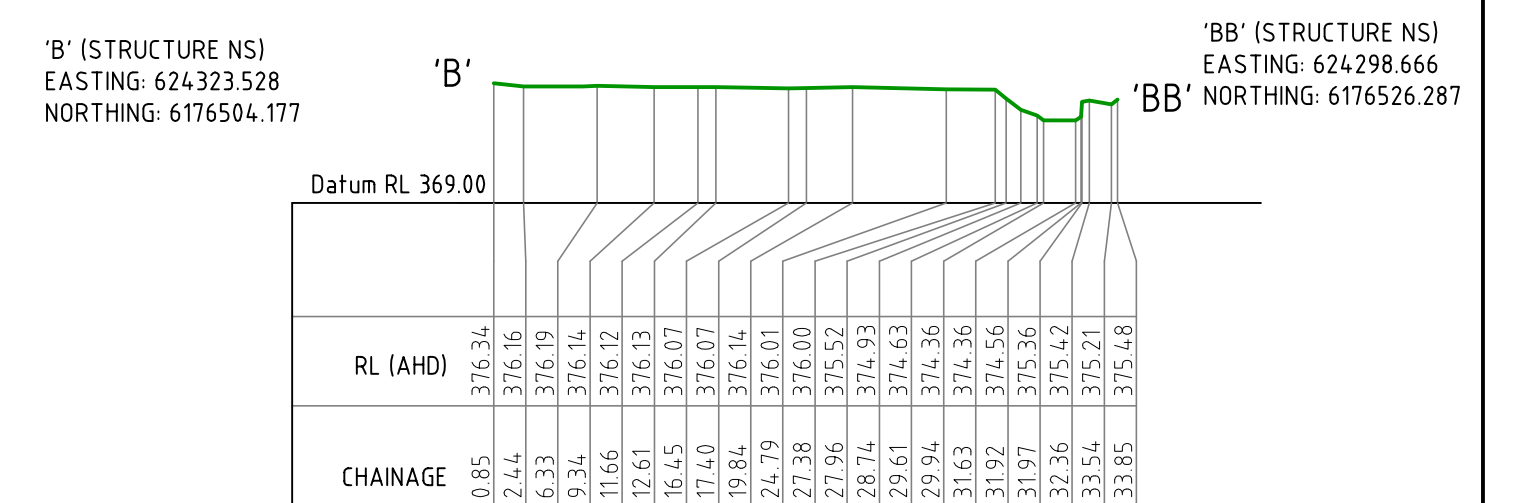
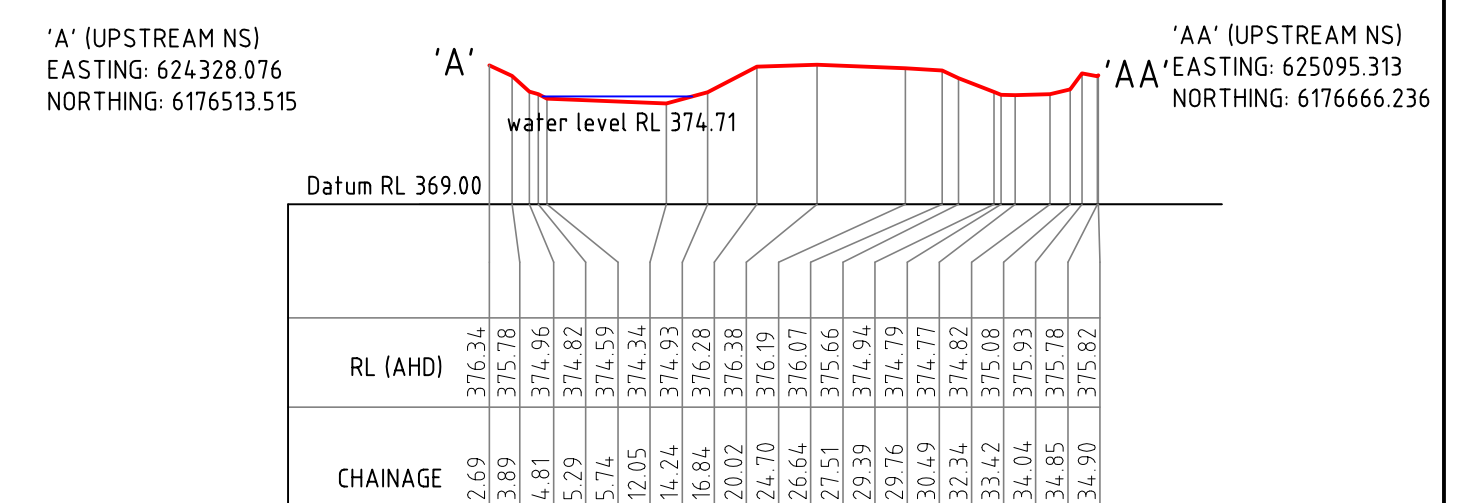


WEIR PROFILE - 02 (C - CC)
LOOKING DOWNSTREAM

			I HEREBY CERTIFY THAT ENGINEERING WORKS SHOWN ON THIS PLAN ARE WORK-AS-EXECUTED AND HAVE BEEN CONSTRUCTED GENERALLY IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE DIRECTOR, IN ACCORDANCE WITH THE GENERAL REQUIREMENTS.	NAME: SIGNATURE: CAPACITY: DATE:	DATE 25-03-2019	CHECKED WJC	C.P.C. LAND DEVELOPMENT CONSULTANTS P/L ACN 003 773 975 Young Office 121 Nasmyth Street Young NSW, 2954 Tel (02) 6382 1501 Fax (02) 6382 4729 Cowra Office 5/103 Kendal Street Cowra NSW, 2794 Tel (02) 6342 4577 Fax (02) 6382 4729 Goulburn Office 299 Sloane Street Goulburn NSW, 2580 Tel (02) 4823 5100 Fax (02) 4823 5200	SHEET SUBJECT PLAN VIEW EXISTING DETAIL CROSS SECTIONS		PROJECT Murrumburrah Flood Study WEIR 02				
A	DETAIL PLAN	25-03-2019	COPYRIGHT THIS DRAWING IS NOT TO BE COPIED, OR TRANSFERRED TO ANY THIRD PARTY, OR STORED ON ANY OTHER STORAGE MEDIUM, WITHOUT THE WRITTEN PERMISSION OF C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD.		DESIGNED EK	SCALE 1:400 Ver 1:400 Hor			CLIENT WMA Water		ISSUE A	PROJECT NO. 19195	SHEET NO. 21 of 23	SHEET A1
ISSUE	AMENDMENT	DATE												



			I HEREBY CERTIFY THAT ENGINEERING WORKS SHOWN ON THIS PLAN ARE WORK-AS-EXECUTED AND HAVE BEEN CONSTRUCTED GENERALLY IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE DIRECTOR, IN ACCORDANCE WITH THE GENERAL REQUIREMENTS. COPYRIGHT THIS DRAWING IS NOT TO BE COPIED, OR TRANSFERRED TO ANY THIRD PARTY, OR STORED ON ANY OTHER STORAGE MEDIUM, WITHOUT THE WRITTEN PERMISSION OF C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD.	NAME: SIGNATURE: CAPACITY: DATE:	DATE 10-04-2019	CHECKED WJC	C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD ACN 003 773 978 Young Office 121 Nasmyth Street Young NSW, 2954 Tel (02) 6382 1501 Fax (02) 6382 4729 Cowra Office 5/103 Kendal Street Cowra NSW, 2794 Tel (02) 6342 4577 Fax (02) 6382 4729 Goulburn Office 299 Sloane Street Goulburn NSW, 2580 Tel (02) 4823 5100 Fax (02) 4823 5200	SHEET SUBJECT PLAN VIEW EXISTING DETAIL CROSS SECTIONS		PROJECT Murrumburrah Flood Study WEIR 03						
				DRAWN EK	APPROVED WJC											
A	DETAIL PLAN	10-04-2019		DESIGNED EK	SCALE 1:400 Ver 1:400 Hor						CLIENT WMA water		ISSUE A	PROJECT NO. 19195	SHEET NO. 22 of 23	SHEET A1
ISSUE	AMENDMENT	DATE														



LEGEND

- major contour
- minor contour
- structure
- kerb
- bank
- retaining wall
- water level

Level of Origin
PM 30376
(RL 388.438)
Contour Inv: 0.2
Datum: AHD

			I HEREBY CERTIFY THAT ENGINEERING WORKS SHOWN ON THIS PLAN ARE WORK-AS-EXECUTED AND HAVE BEEN CONSTRUCTED GENERALLY IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE DIRECTOR, IN ACCORDANCE WITH THE GENERAL REQUIREMENTS.	NAME:	DATE	CHECKED	C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD ACN 903 773 975 Young Office 121 Nasmyth Street Young NSW, 2954 Tel (02) 6382 1501 Fax (02) 6382 4729 Cowra Office 5/103 Kendal Street Cowra NSW, 2794 Tel (02) 6342 4577 Fax (02) 6382 4729 Goulburn Office 299 Sloane Street Goulburn NSW, 2580 Tel (02) 4823 5100 Fax (02) 4823 5200	SHEET SUBJECT		PROJECT			
				SIGNATURE:	10-04-2019	WJC		PLAN VIEW		Murrumburrah Flood Study			
				CAPACITY:	DRAWN	APPROVED		EXISTING DETAIL		WEIR 04			
				DATE:	EK	WJC		CROSS SECTIONS					
A	DETAIL PLAN	10-04-2019		COPYRIGHT THIS DRAWING IS NOT TO BE COPIED, OR TRANSFERRED TO ANY THIRD PARTY, OR STORED ON ANY OTHER STORAGE MEDIUM, WITHOUT THE WRITTEN PERMISSION OF C.P.C. LAND DEVELOPMENT CONSULTANTS PTY LTD.	DESIGNED	SCALE				CLIENT	ISSUE	PROJECT NO.	SHEET NO.
ISSUE	AMENDMENT	DATE	EK		1:400 Ver 1:400 Hor			WMA Water	A	19195	23 of 23	A1	

APPENDIX C. Model Calibration Results



FIGURE C1
PEAK FLOOD DEPTHS AND LEVELS
OCTOBER 1993

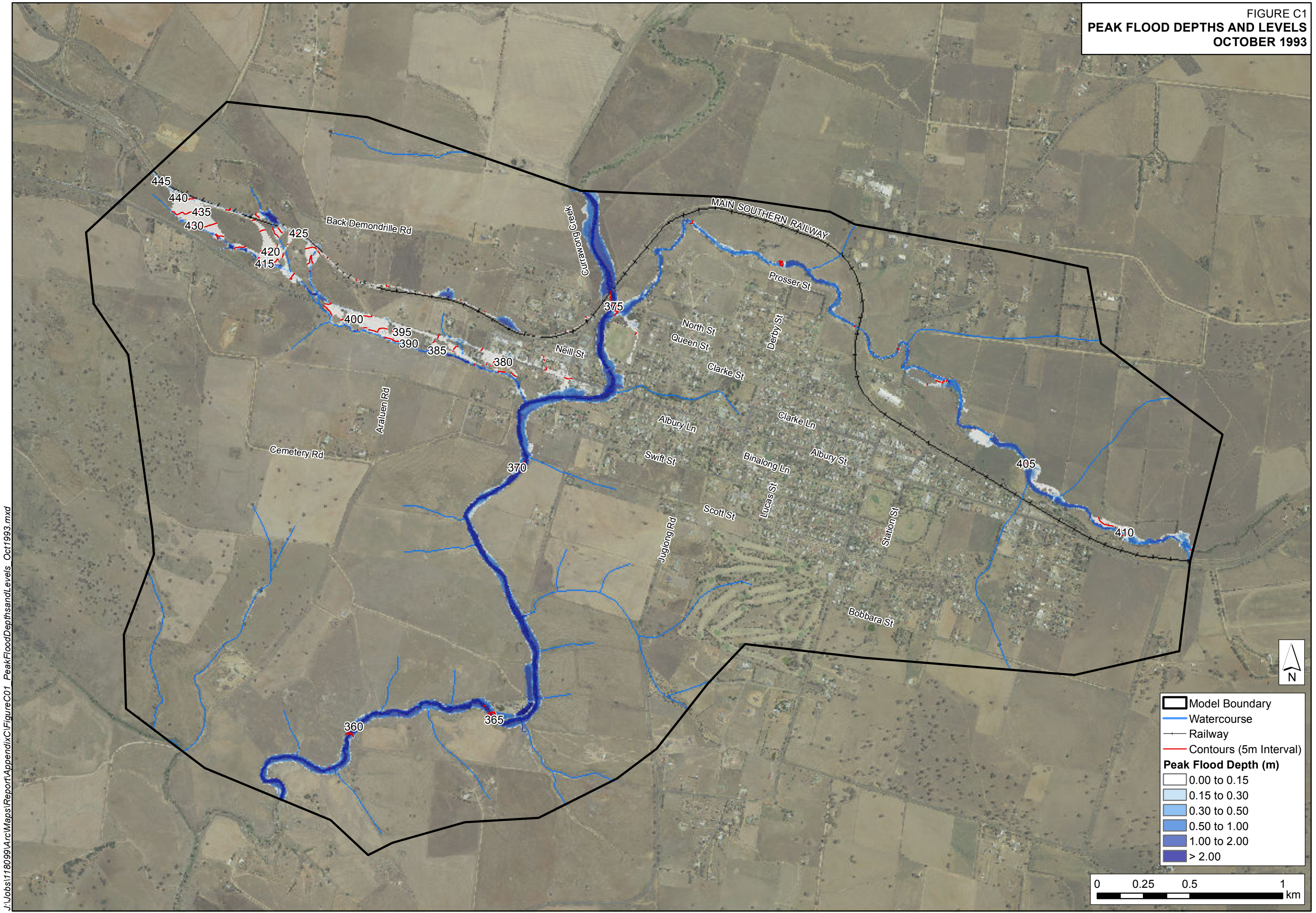
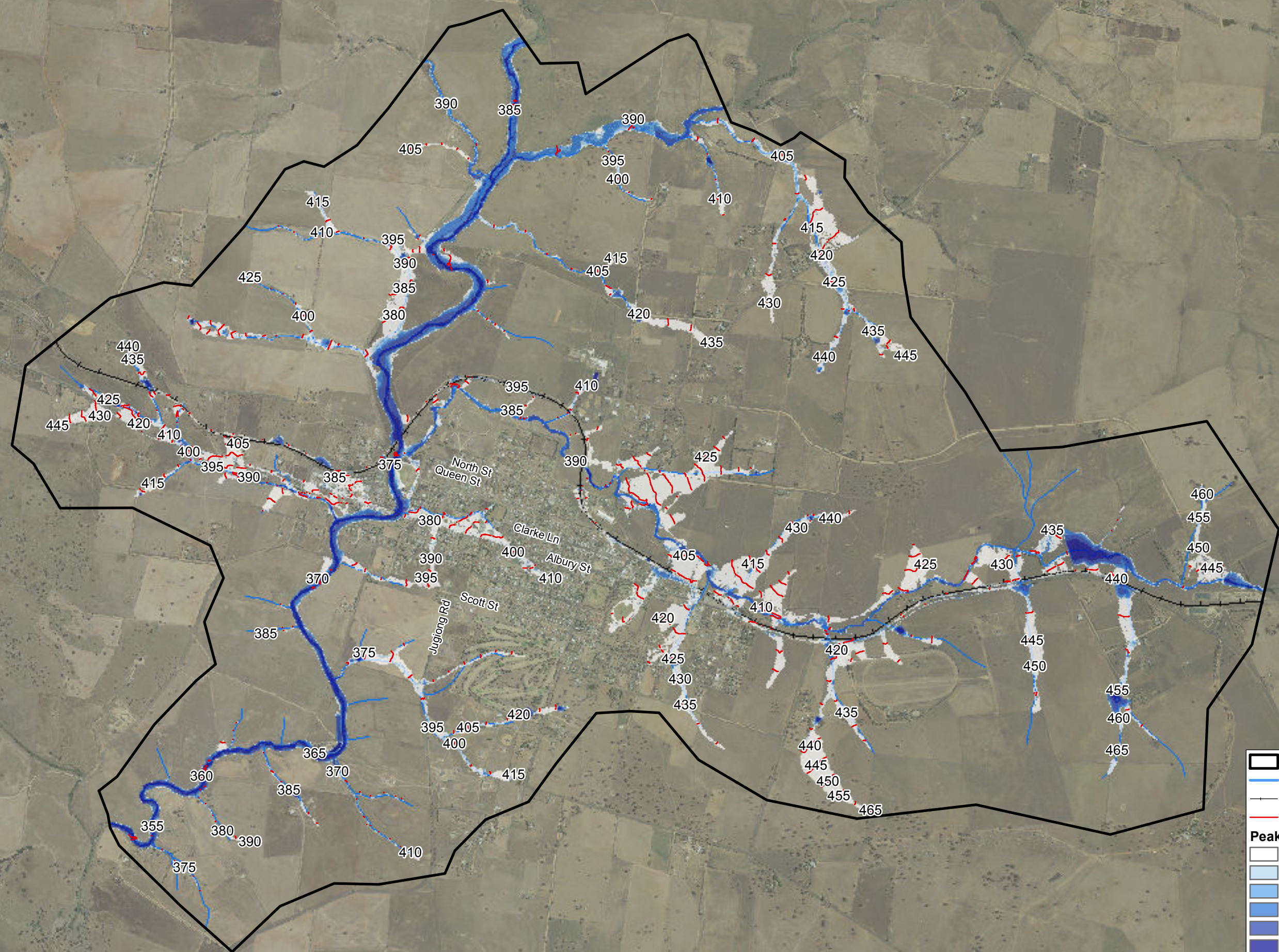


FIGURE C2
PEAK FLOOD DEPTHS AND LEVELS
DECEMBER 2010



Model Boundary
Watercourse
Railway
Contours (5m Interval)

Peak Flood Depth (m)

0.00 to 0.15
0.15 to 0.30
0.30 to 0.50
0.50 to 1.00
1.00 to 2.00
> 2.00

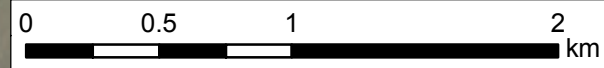
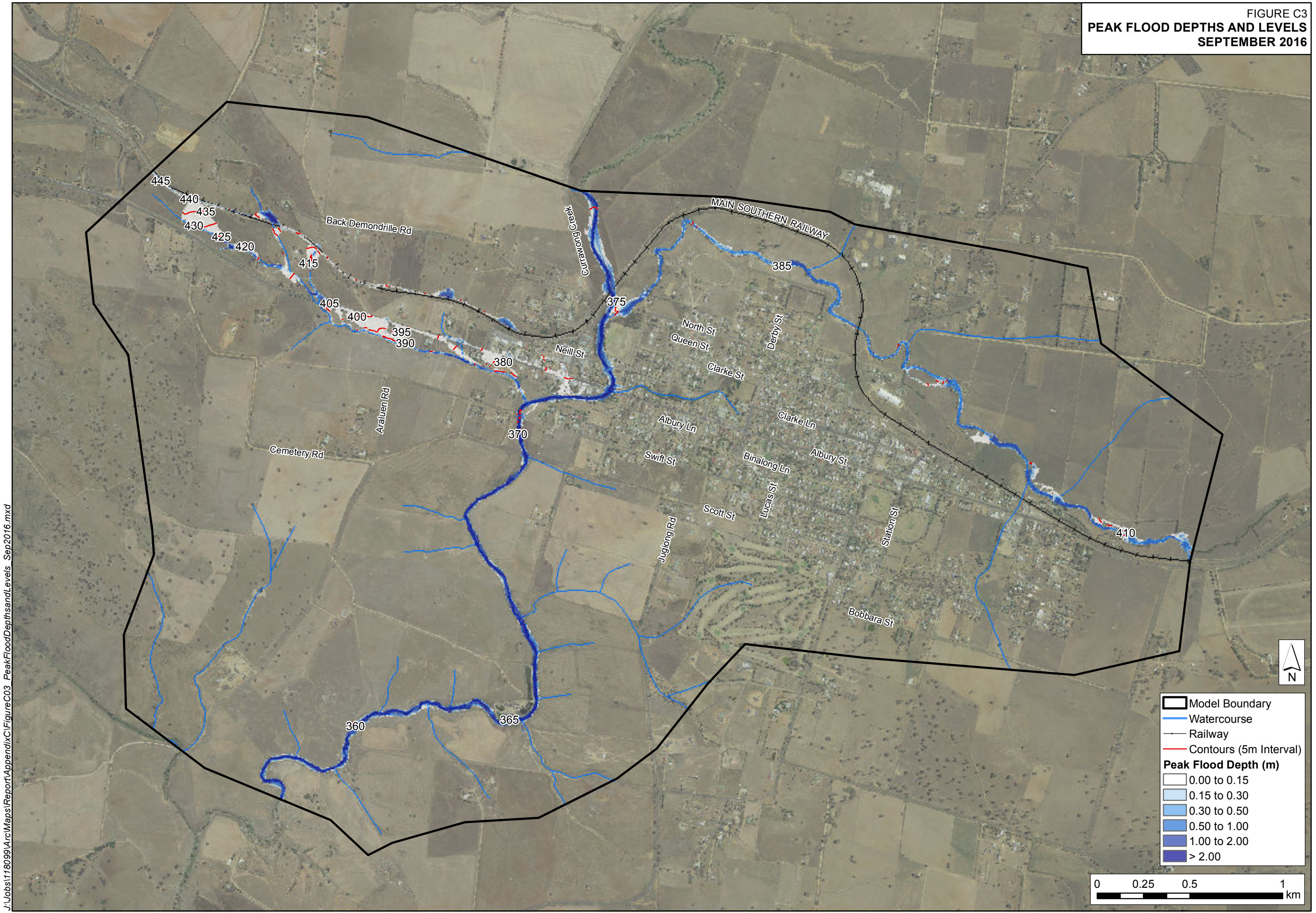


FIGURE C3
PEAK FLOOD DEPTHS AND LEVELS
SEPTEMBER 2016



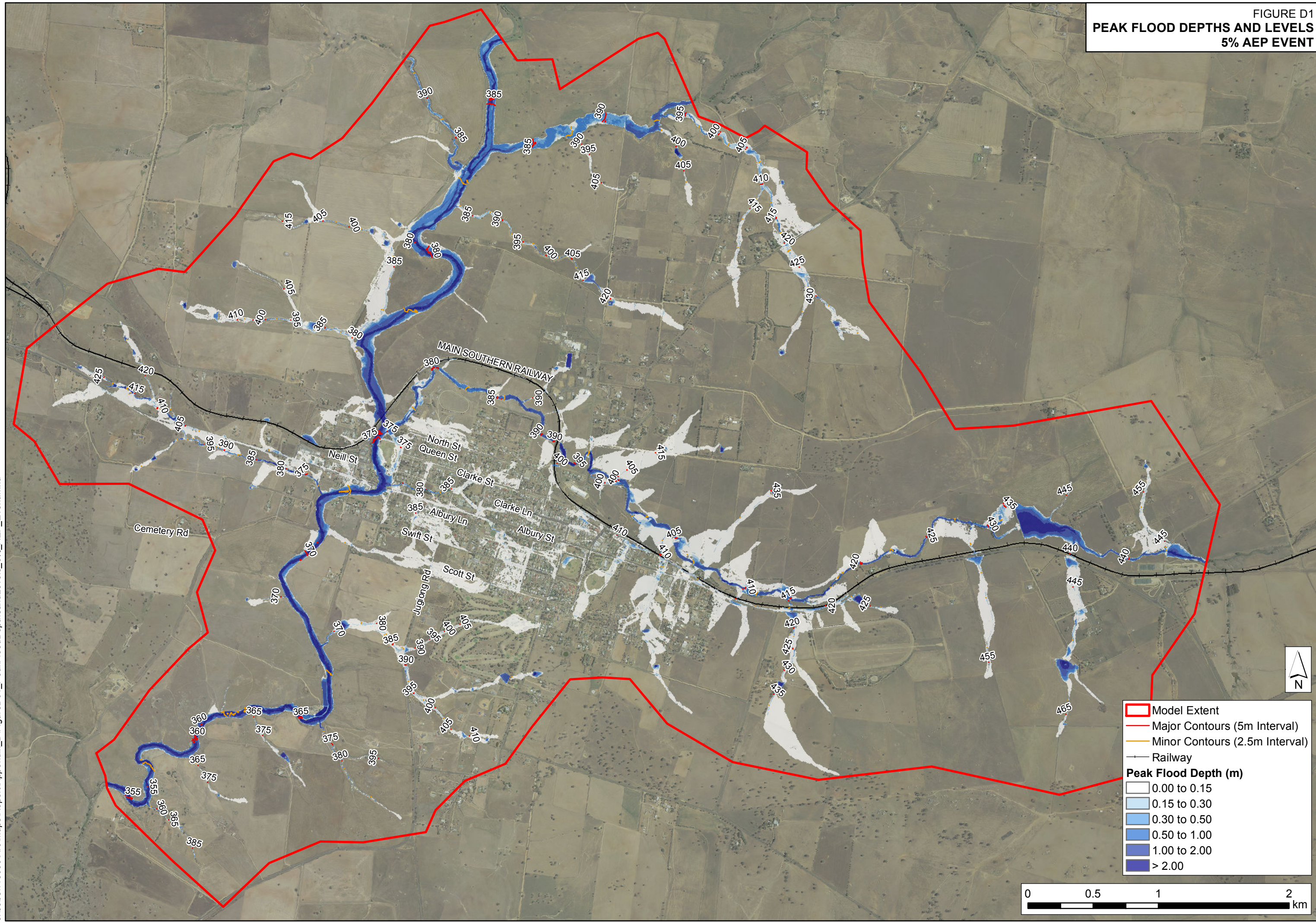
APPENDIX D. Design Flood Mapping



Appendix D

FIGURE D1
PEAK FLOOD DEPTHS AND LEVELS
5% AEP EVENT

J:\Jobs\118099\ArcMaps\Report\Appendix_D\FigureD01_PeakFloodDepthsandLevels_5%_AEP_Event.mxd



- Model Extent
 - Major Contours (5m Interval)
 - Minor Contours (2.5m Interval)
 - Railway
- Peak Flood Depth (m)**
- 0.00 to 0.15
 - 0.15 to 0.30
 - 0.30 to 0.50
 - 0.50 to 1.00
 - 1.00 to 2.00
 - > 2.00

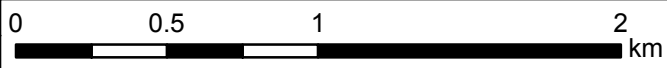


FIGURE D2
PEAK FLOOD DEPTHS AND LEVELS
2% AEP EVENT

J:\Jobs\118099\ArcMaps\Report\Appendix_D\FigureD02_PeakFloodDepthsandLevels_2%_AEP_Event.mxd

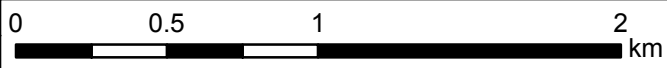
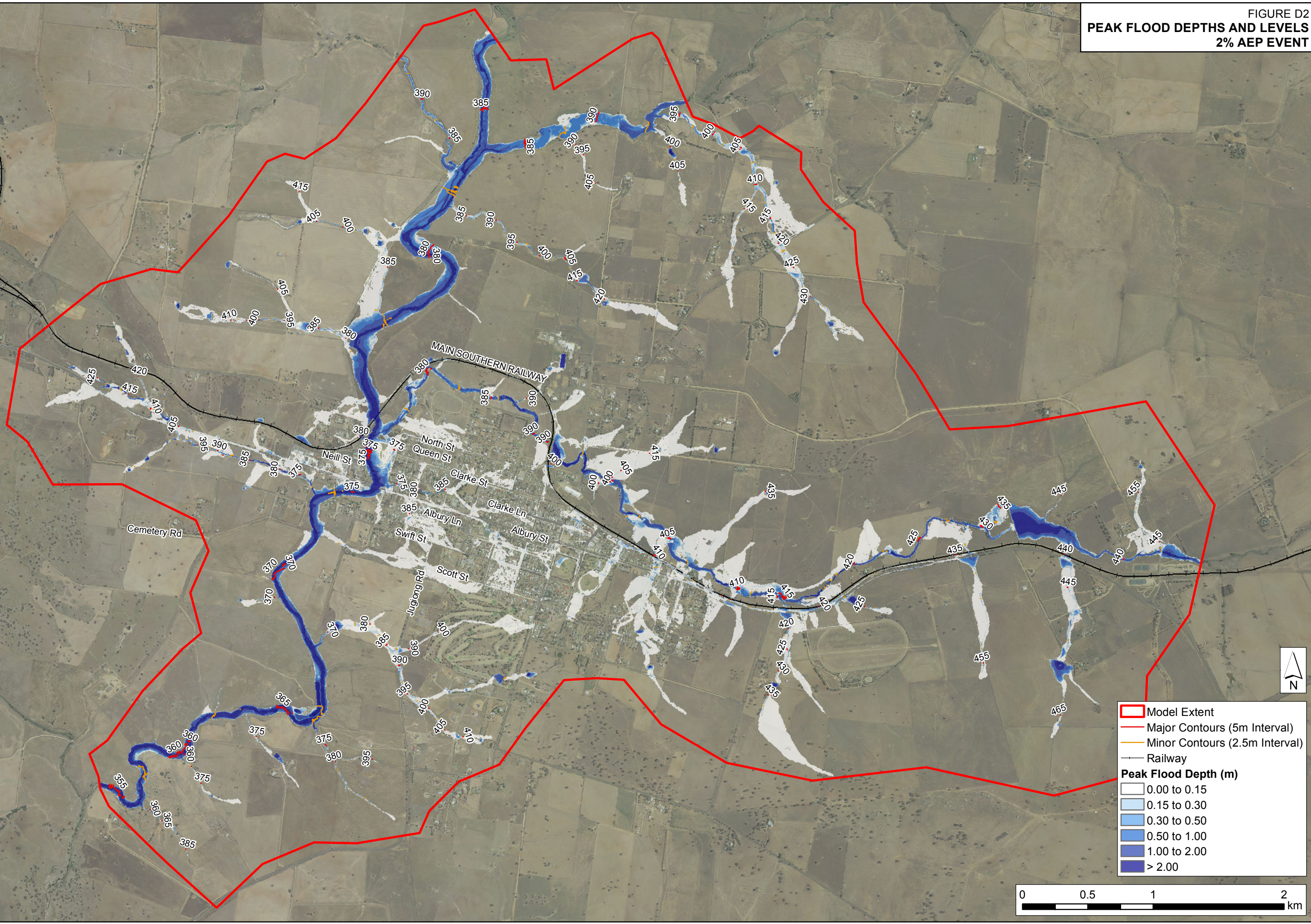


FIGURE D3
PEAK FLOOD DEPTHS AND LEVELS
1% AEP EVENT

J:\Jobs\118099\ArcMaps\Report\Appendix_D\FigureD03_PeakFloodDepthsandLevels_1%_AEP_Event.mxd

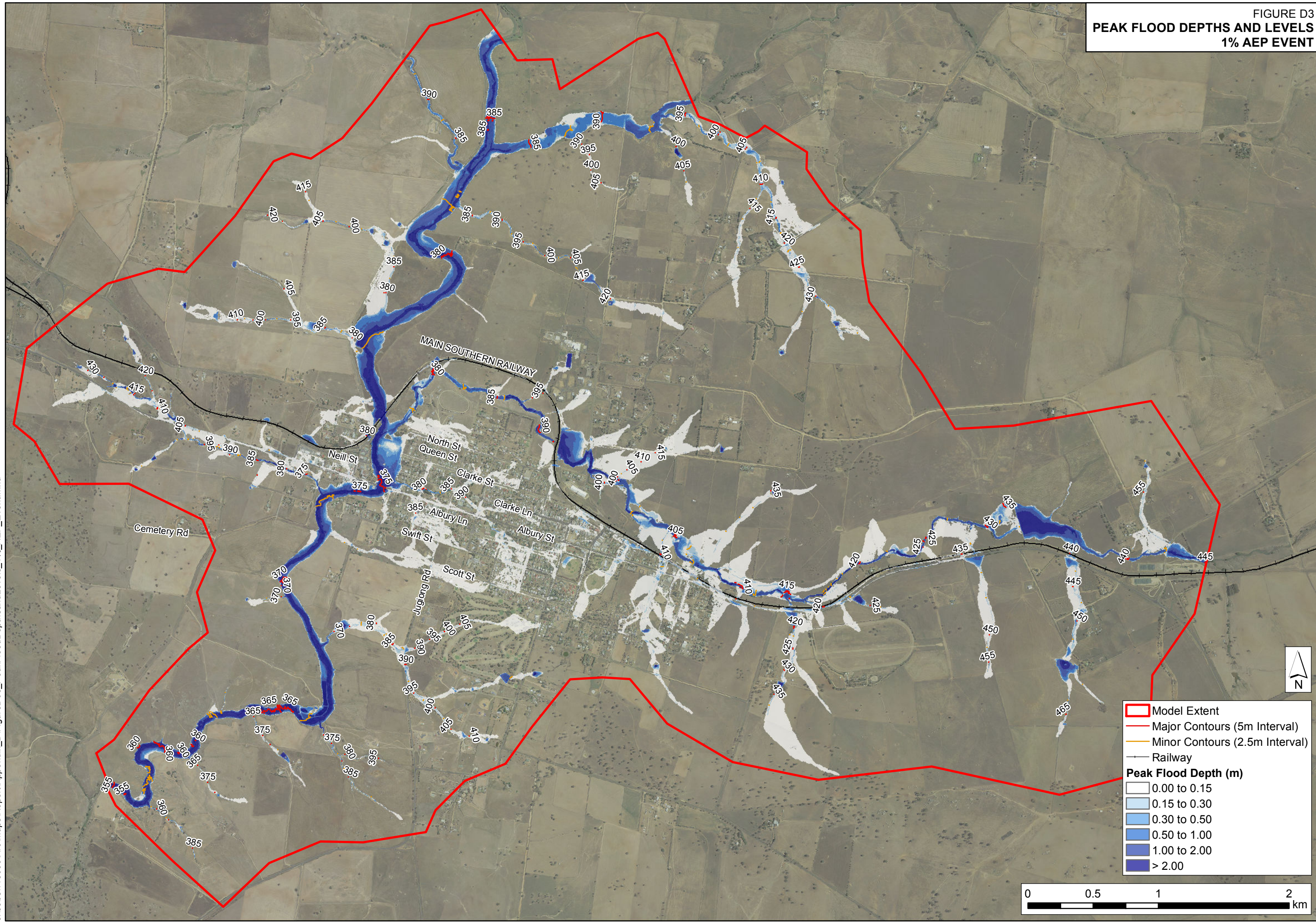


FIGURE D4
PEAK FLOOD DEPTHS AND LEVELS
0.5% AEP EVENT

J:\Jobs\118099\ArcMaps\Report\Appendix_D\FigureD04_PeakFloodDepthsandLevels_0.5%_AEP_Event.mxd

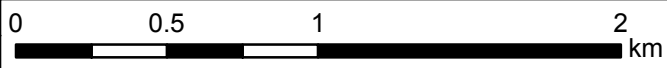
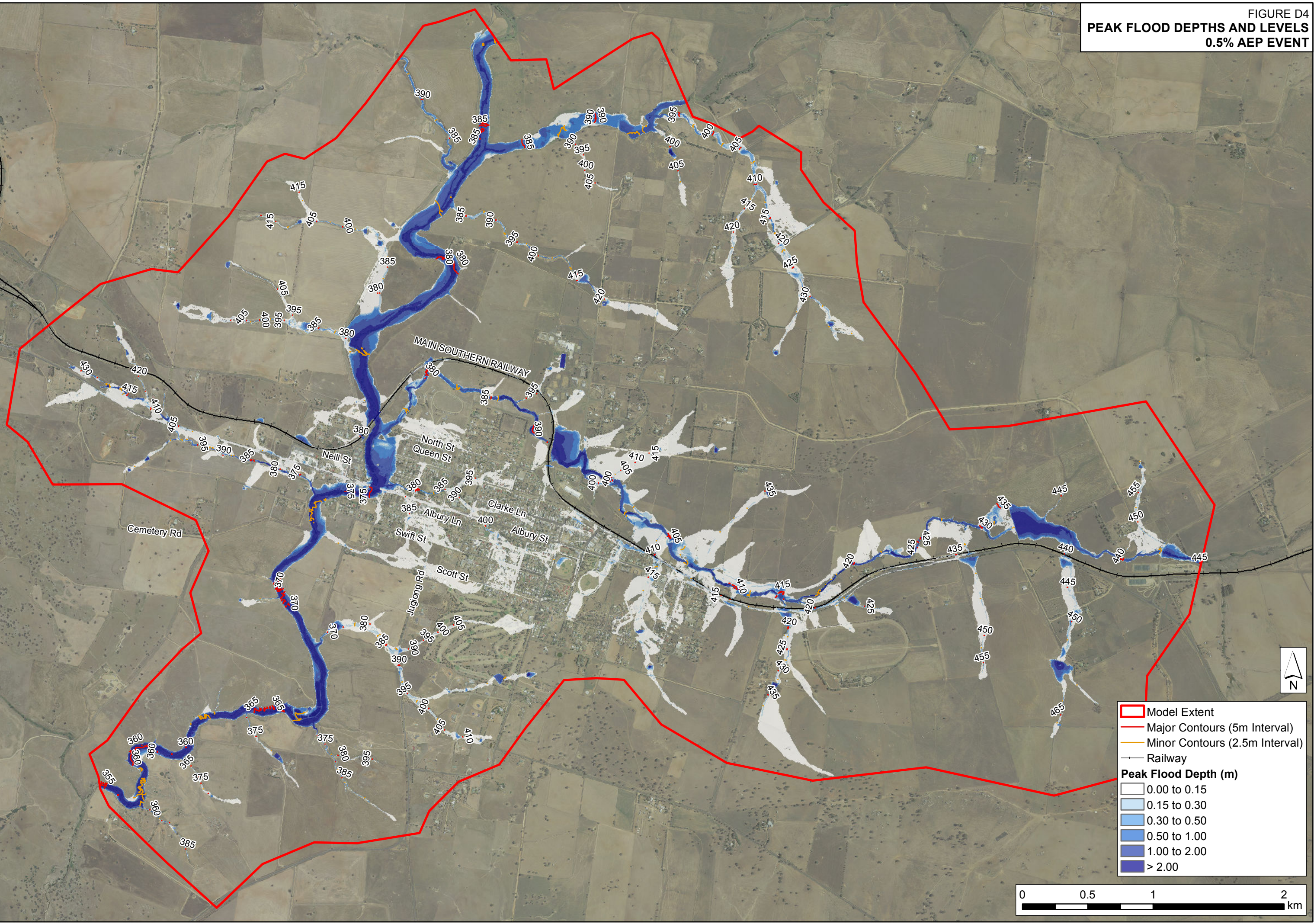


FIGURE D5
PEAK FLOOD DEPTHS AND LEVELS
0.2% AEP EVENT

J:\Jobs\118099\ArcMaps\Report\Appendix_D\FigureD05_PeakFloodDepthsandLevels_0.2%_AEP_Event.mxd

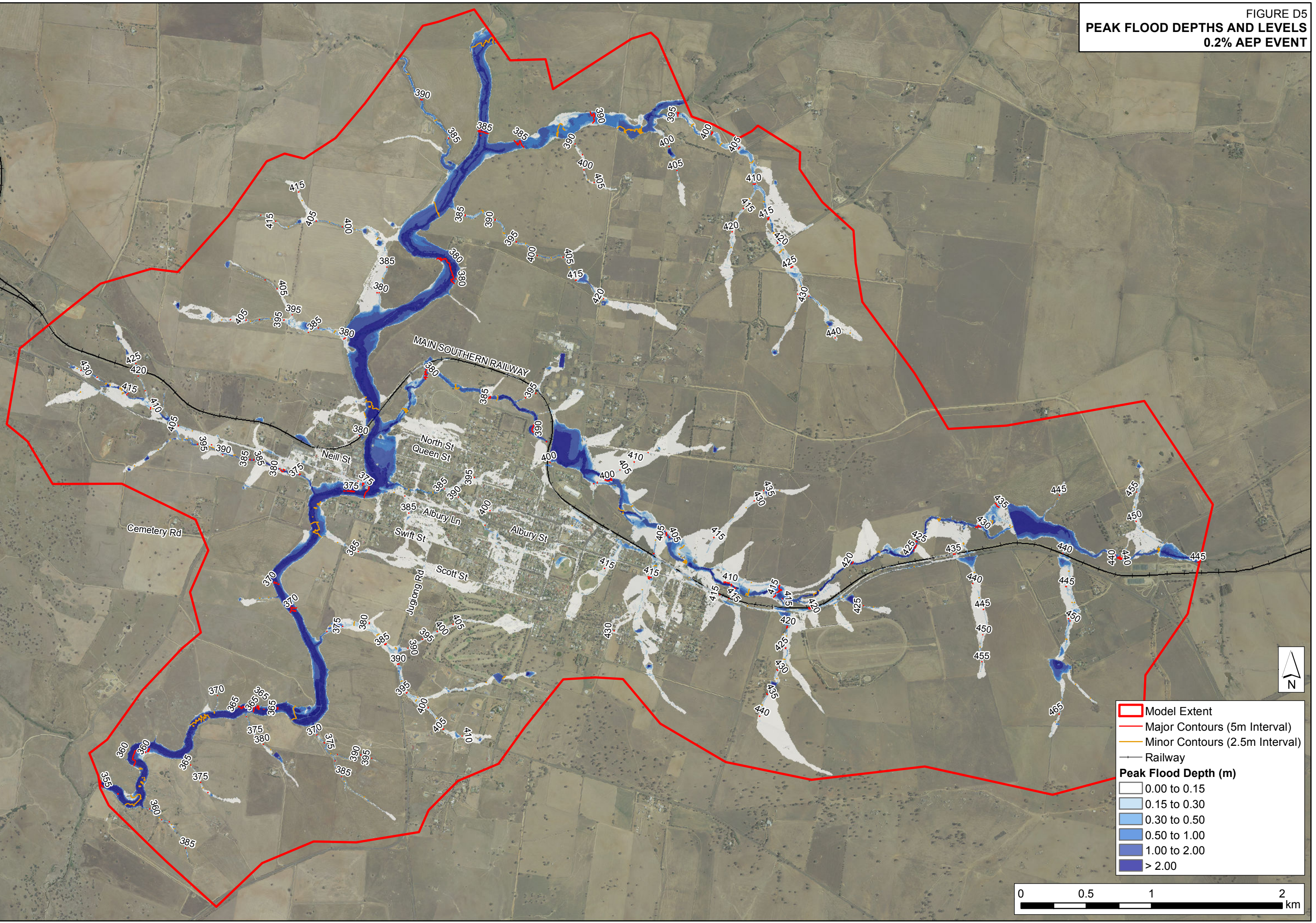


FIGURE D6
PEAK FLOOD DEPTHS AND LEVELS
PMF EVENT

J:\Jobs\118099\ArcMaps\Report\Appendix_D\FigureD06_PeakFloodDepthsandLevels_PMF_Event.mxd

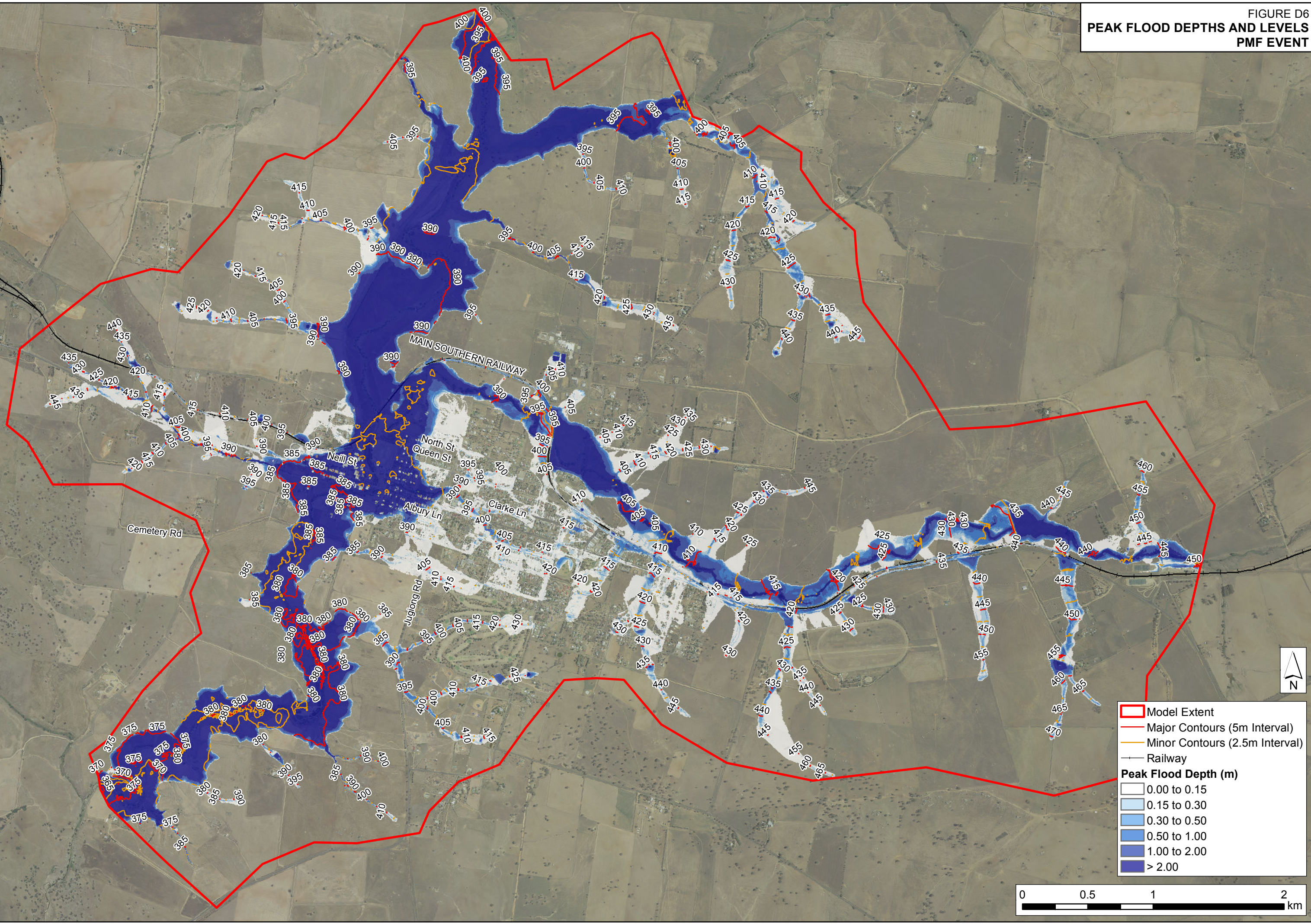


FIGURE D7
PEAK FLOOD VELOCITIES
5% AEP EVENT

J:\Jobs\118099\ArcMaps\Report\Appendix_D\FigureD07_PeakFloodVelocities_5%_AEP_Event.mxd

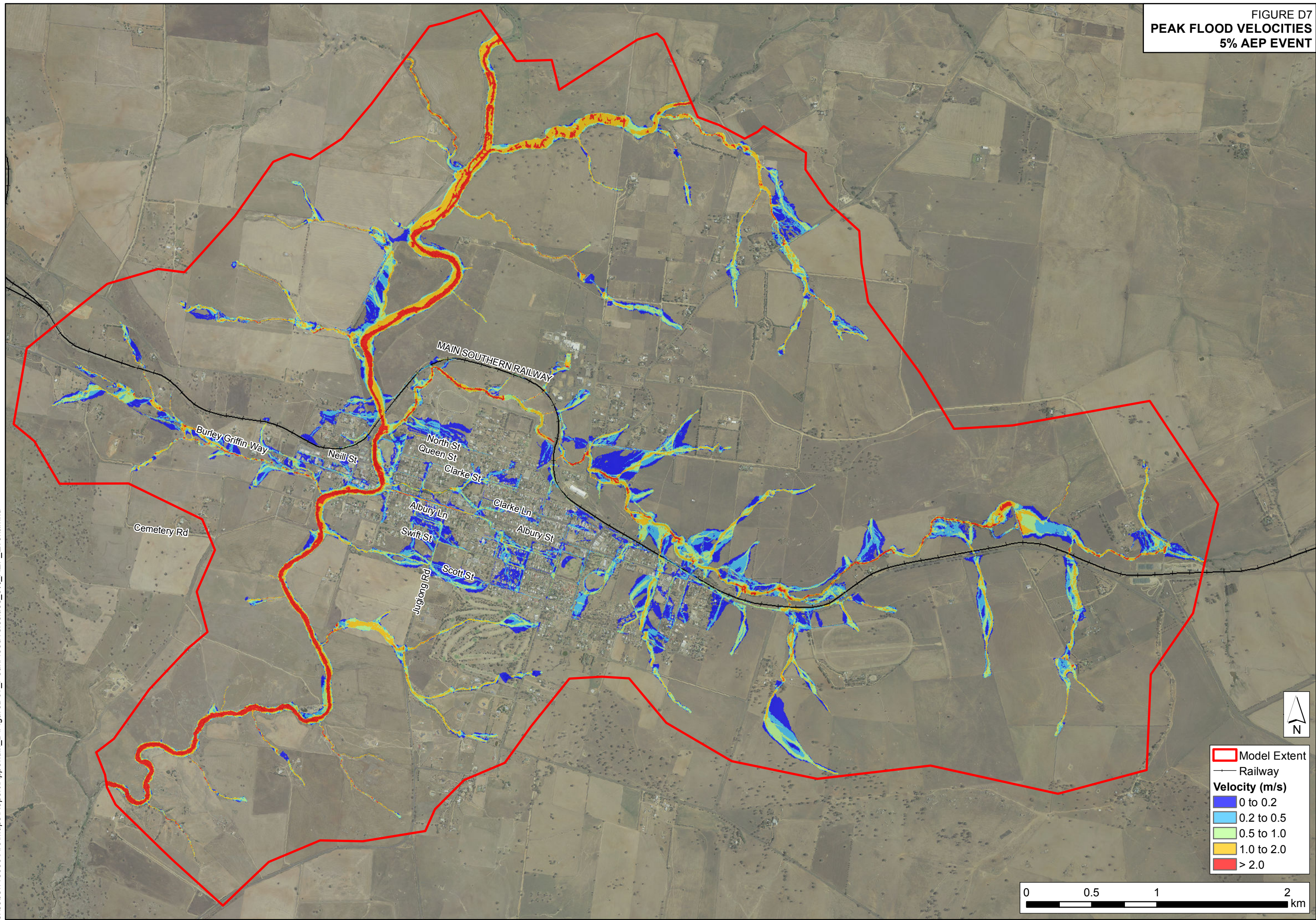


FIGURE D8
PEAK FLOOD VELOCITIES
2% AEP EVENT

J:\Jobs\118099\ArcMaps\Report\Appendix_D\FigureD08_PeakFloodVelocities_2%_AEP_Event.mxd

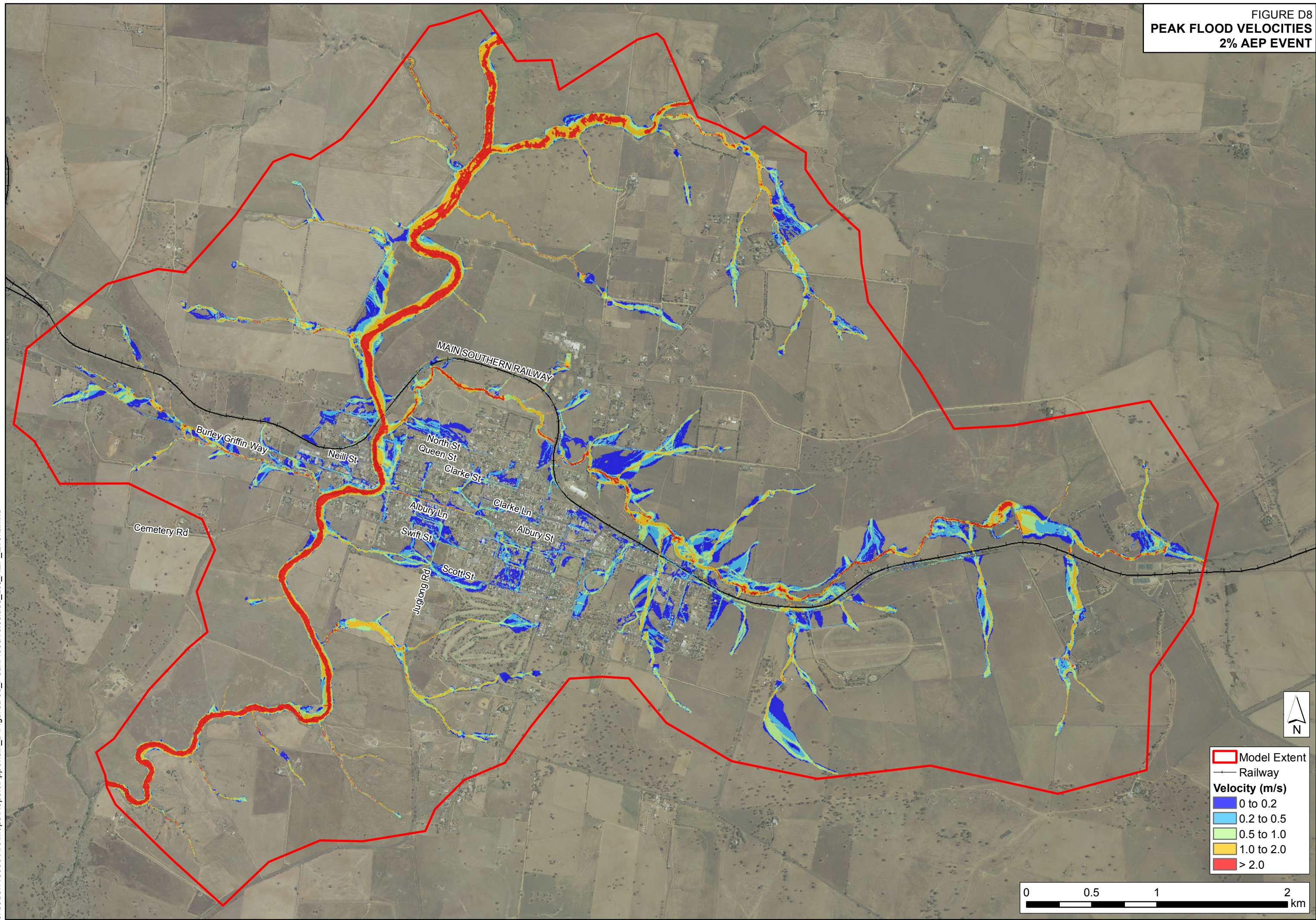


FIGURE D9
PEAK FLOOD VELOCITIES
1% AEP EVENT

J:\Jobs\118099\ArcMaps\Report\Appendix_D\FigureD09_PeakFloodVelocities_1%_AEP_Event.mxd

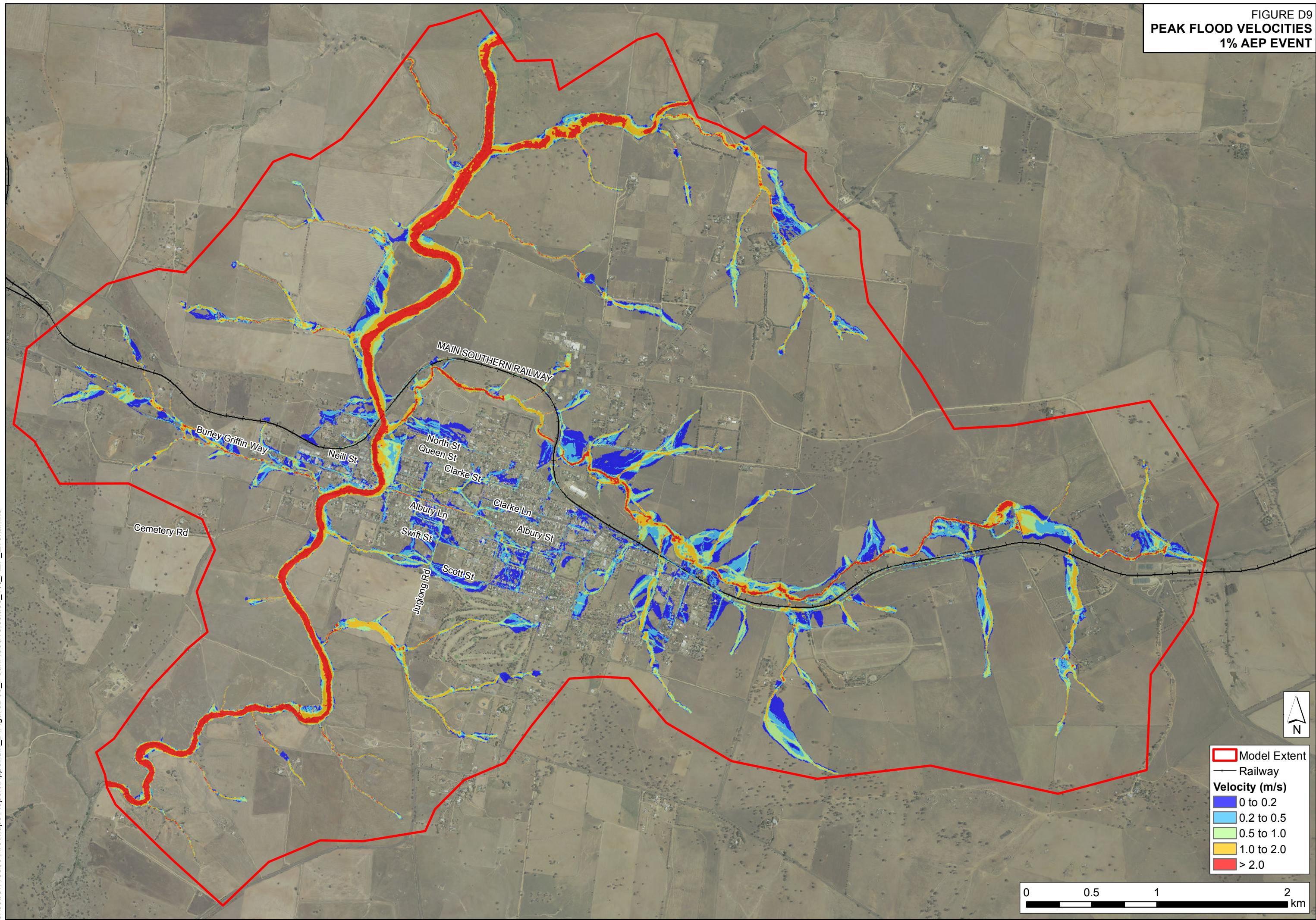


FIGURE D10
PEAK FLOOD VELOCITIES
0.5% AEP EVENT

J:\Jobs\118099\ArcMaps\Report\Appendix_D\FigureD10_PeakFloodVelocities_0.5%_AEP_Event.mxd

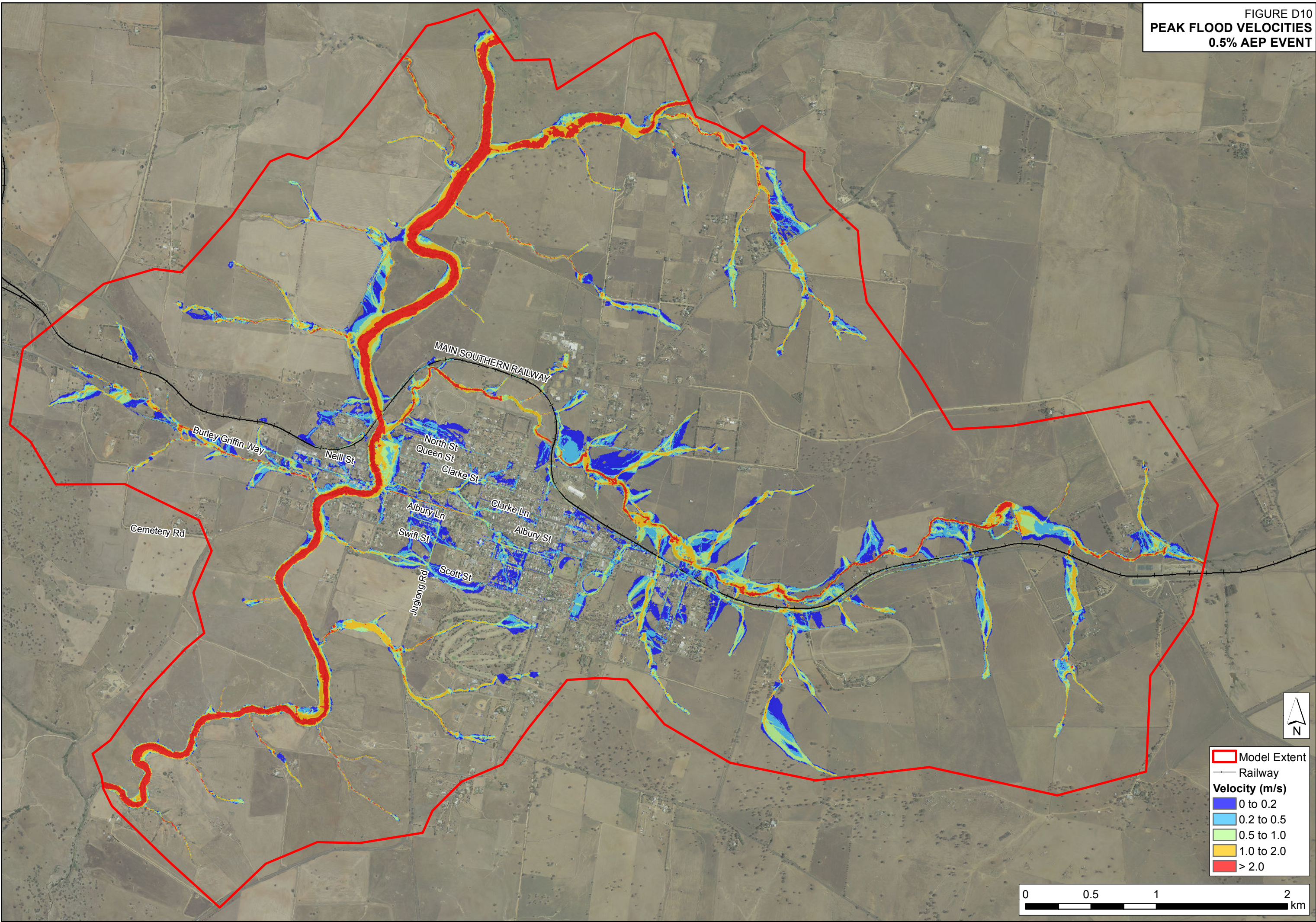


FIGURE D11
PEAK FLOOD VELOCITIES
0.2% AEP EVENT

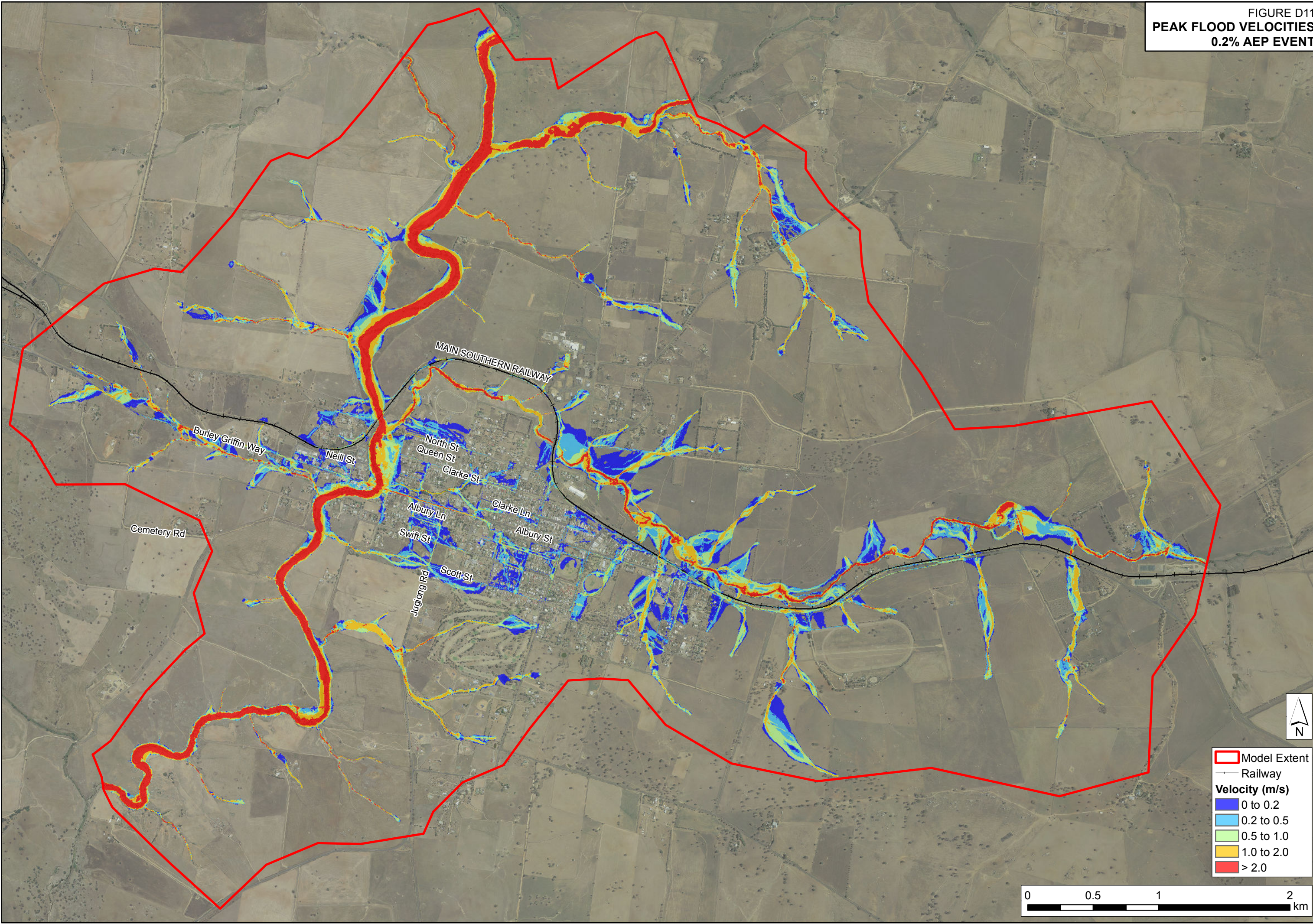
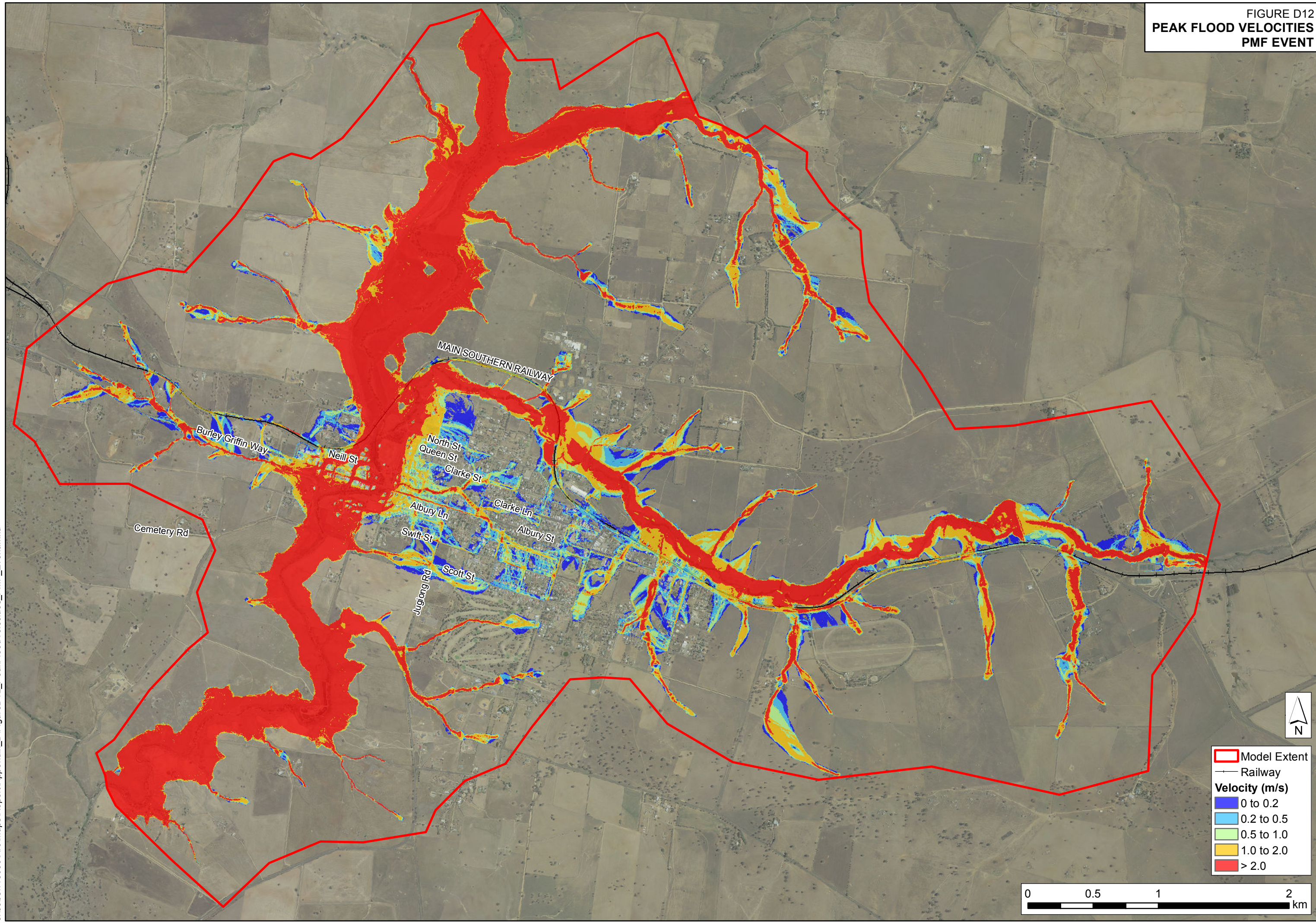


FIGURE D12
PEAK FLOOD VELOCITIES
PMF EVENT



APPENDIX E. Hydraulic Hazard and Flood Function Mapping



Appendix E

FIGURE E1
HYDRAULIC HAZARD (FDM)
5% AEP EVENT

J:\Jobs\118099\ArcMaps\Report\Appendix_E\FigureE01_HydraulicHazard_FDM_5%_AEP_Event.mxd

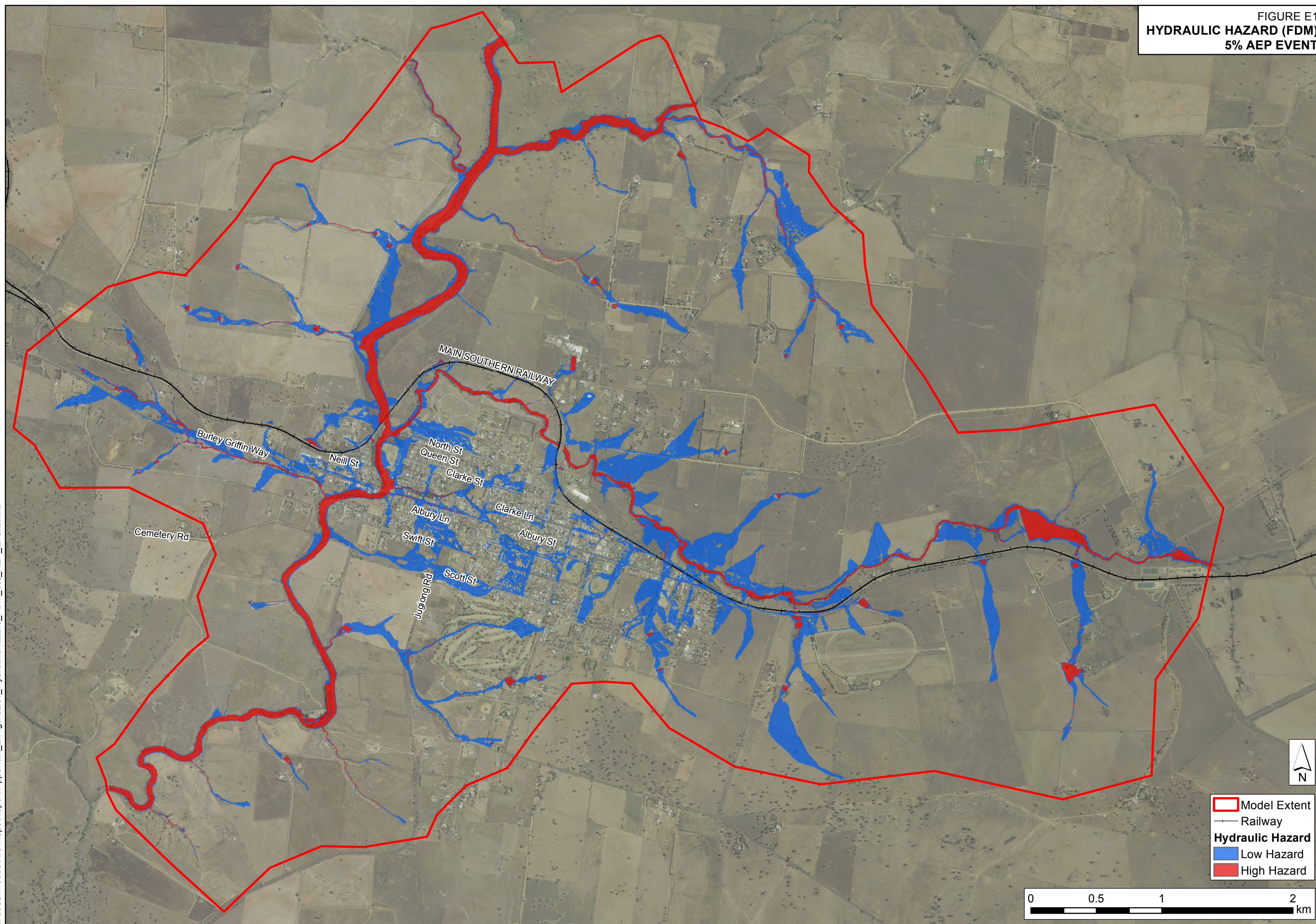
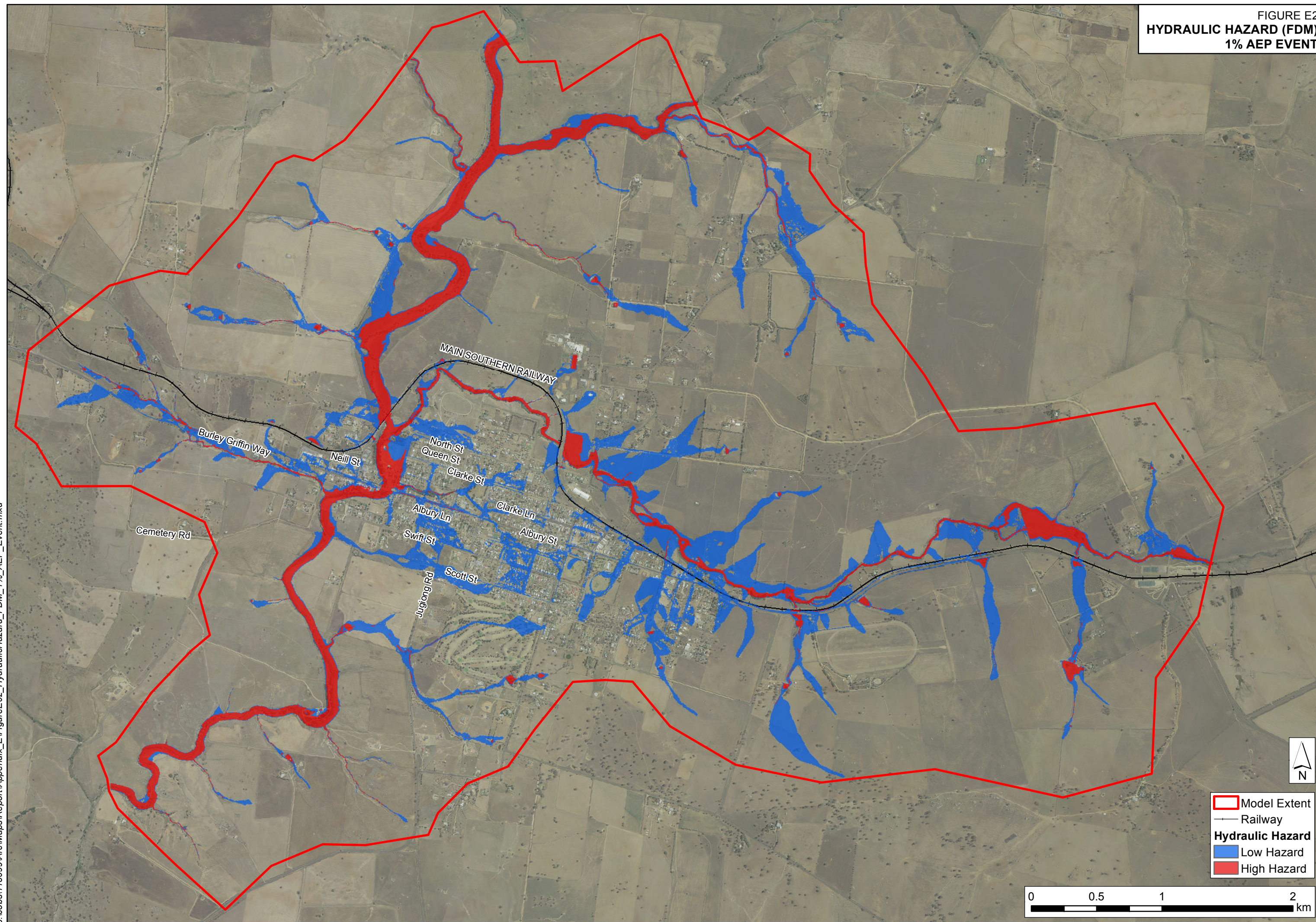


FIGURE E2
HYDRAULIC HAZARD (FDM)
1% AEP EVENT



- Model Extent
- Railway
- Hydraulic Hazard**
- Low Hazard
- High Hazard

0 0.5 1 2 km

FIGURE E3
HYDRAULIC HAZARD (FDM)
0.2% AEP EVENT

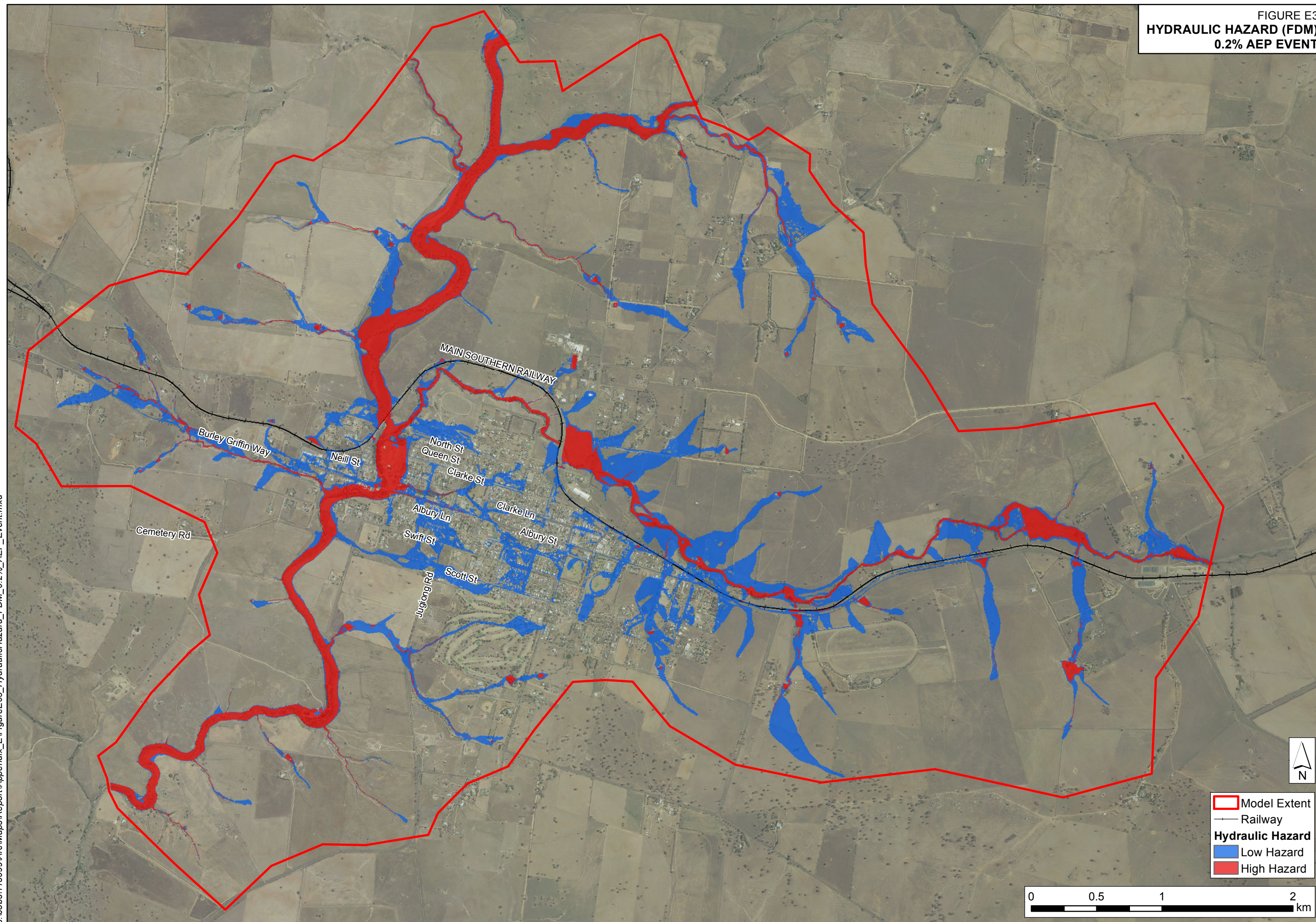


FIGURE E4
HYDRAULIC HAZARD (FDM)
PMF EVENT

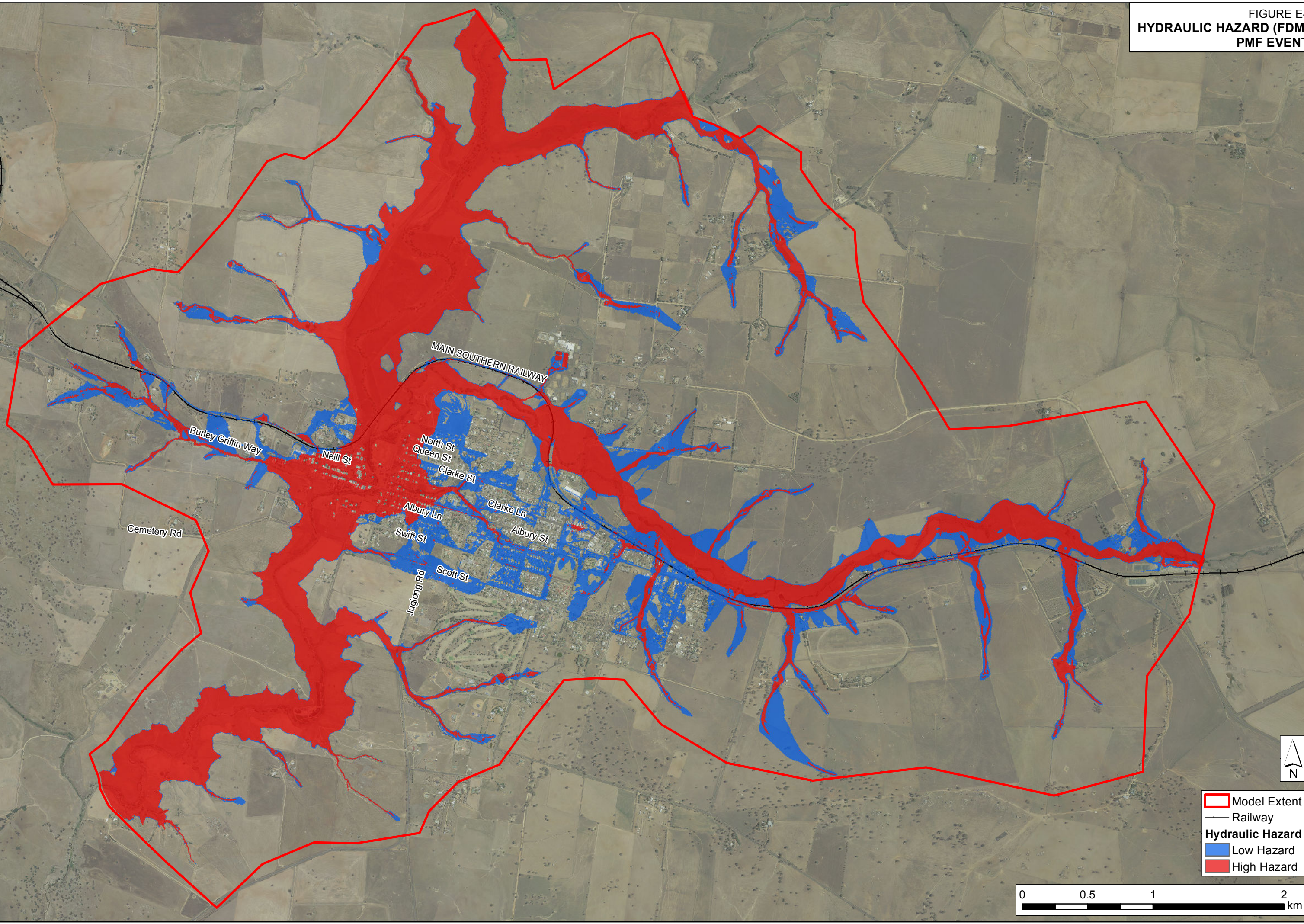
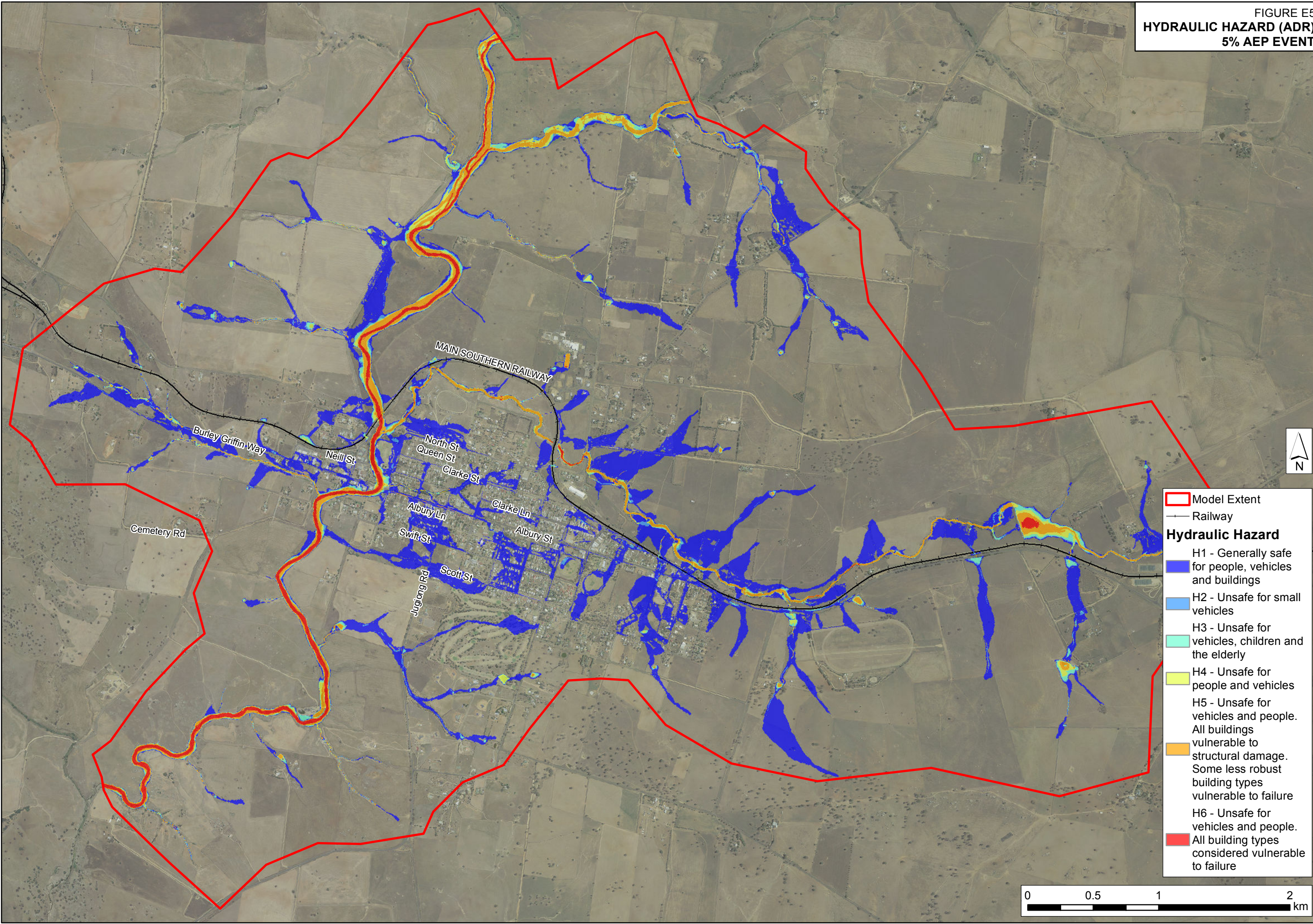


FIGURE E5
HYDRAULIC HAZARD (ADR)
5% AEP EVENT



Model Extent
Railway

Hydraulic Hazard

- H1 - Generally safe for people, vehicles and buildings
- H2 - Unsafe for small vehicles
- H3 - Unsafe for vehicles, children and the elderly
- H4 - Unsafe for people and vehicles
- H5 - Unsafe for vehicles and people. All buildings vulnerable to structural damage. Some less robust building types vulnerable to failure
- H6 - Unsafe for vehicles and people. All building types considered vulnerable to failure

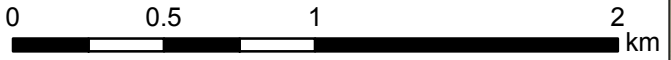
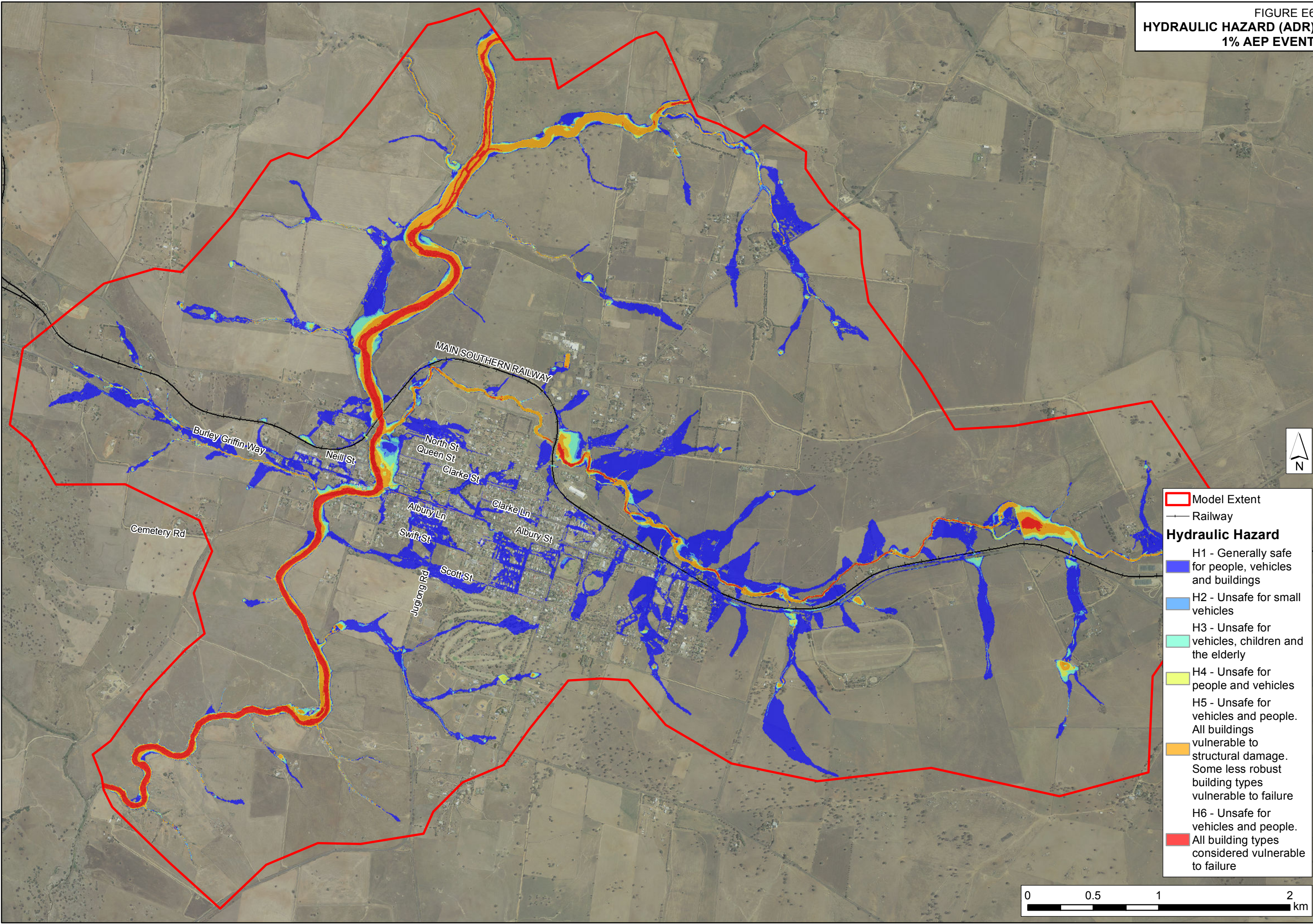


FIGURE E6
HYDRAULIC HAZARD (ADR)
1% AEP EVENT



- Model Extent
Railway
- Hydraulic Hazard**
- H1 - Generally safe for people, vehicles and buildings
 - H2 - Unsafe for small vehicles
 - H3 - Unsafe for vehicles, children and the elderly
 - H4 - Unsafe for people and vehicles
 - H5 - Unsafe for vehicles and people. All buildings vulnerable to structural damage. Some less robust building types vulnerable to failure
 - H6 - Unsafe for vehicles and people. All building types considered vulnerable to failure

FIGURE E7
HYDRAULIC HAZARD (ADR)
0.2% AEP EVENT

J:\Jobs\118099\ArcMaps\Report\Appendix_E\FigureE07_HydraulicHazard_ADR_0.2%_AEP_Event.mxd

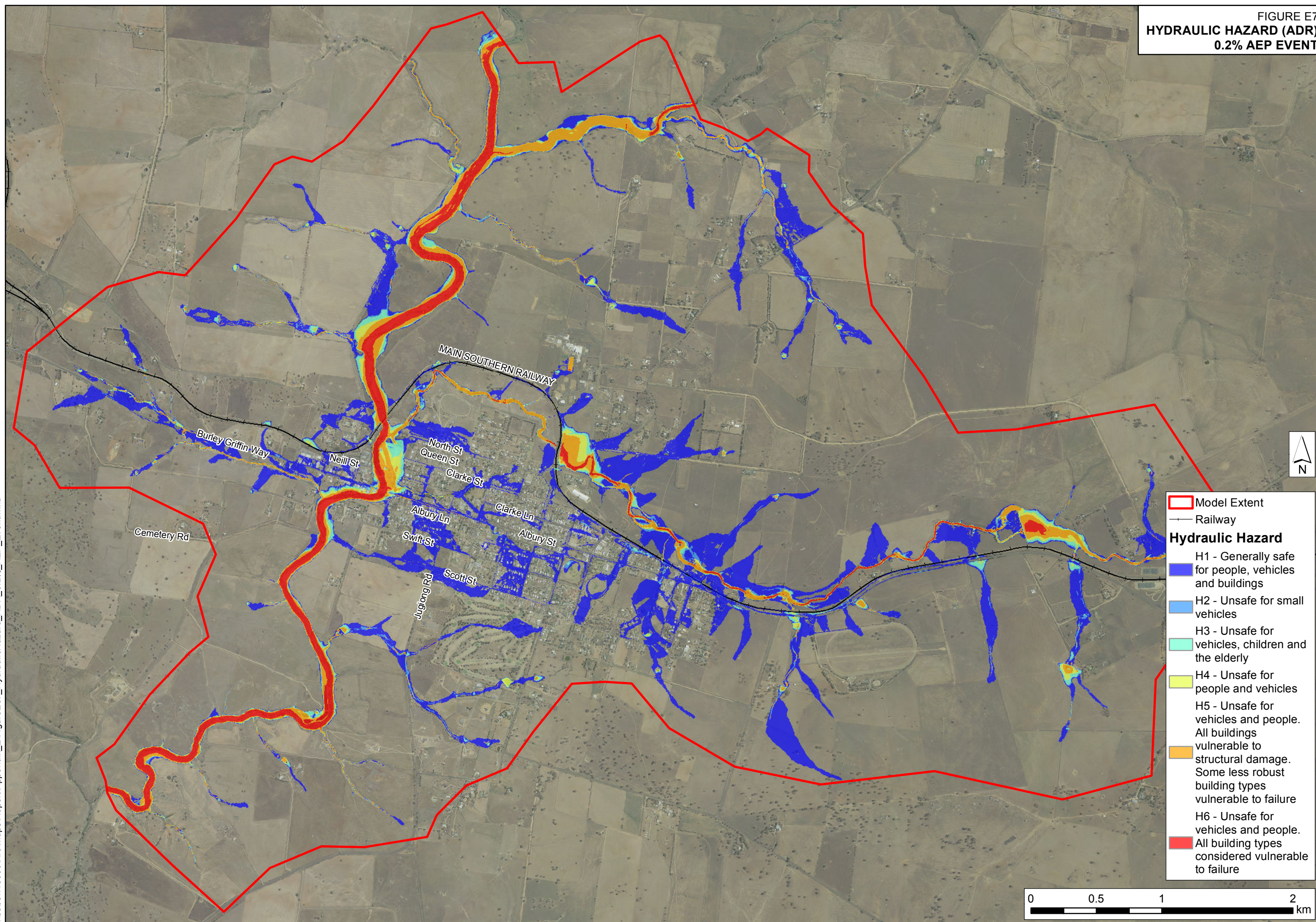
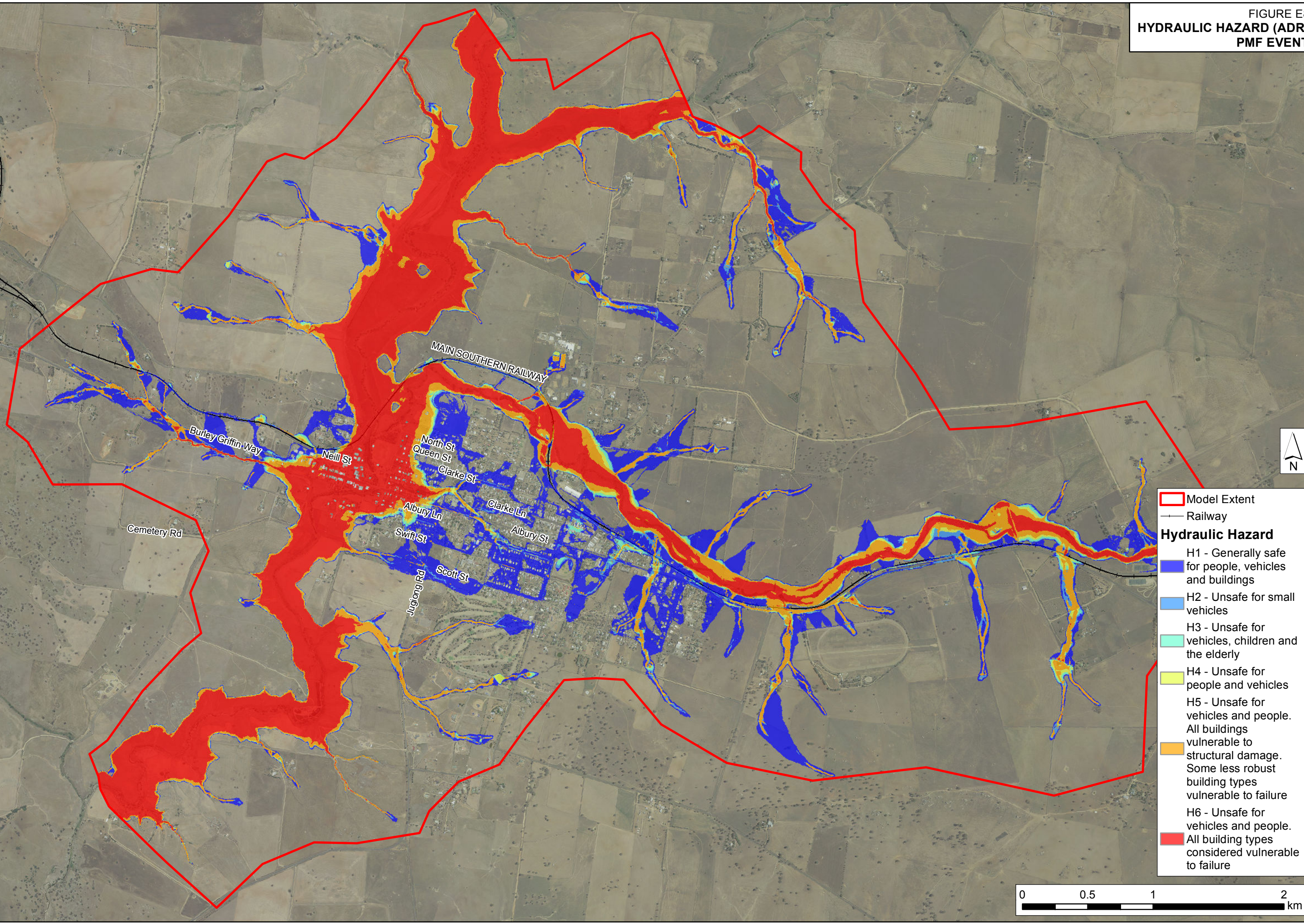


FIGURE E8
HYDRAULIC HAZARD (ADR)
PMF EVENT



Model Extent
Railway

Hydraulic Hazard

- H1 - Generally safe for people, vehicles and buildings
- H2 - Unsafe for small vehicles
- H3 - Unsafe for vehicles, children and the elderly
- H4 - Unsafe for people and vehicles
- H5 - Unsafe for vehicles and people. All buildings vulnerable to structural damage. Some less robust building types vulnerable to failure
- H6 - Unsafe for vehicles and people. All building types considered vulnerable to failure

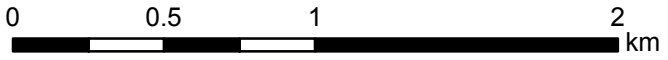


FIGURE E9
HYDRAULIC CATEGORIES
5% AEP EVENT

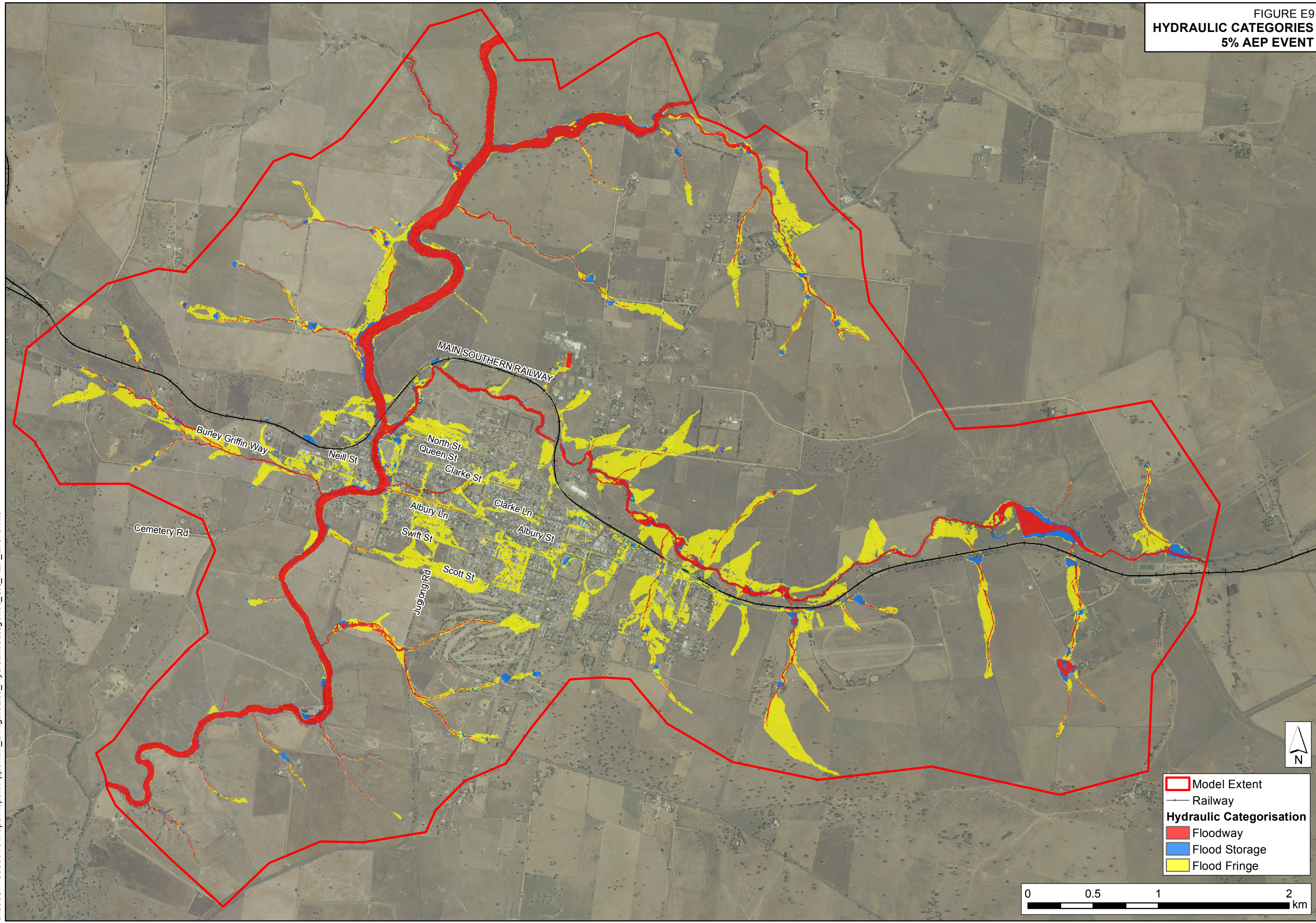


FIGURE E10
HYDRAULIC CATEGORIES
1% AEP EVENT

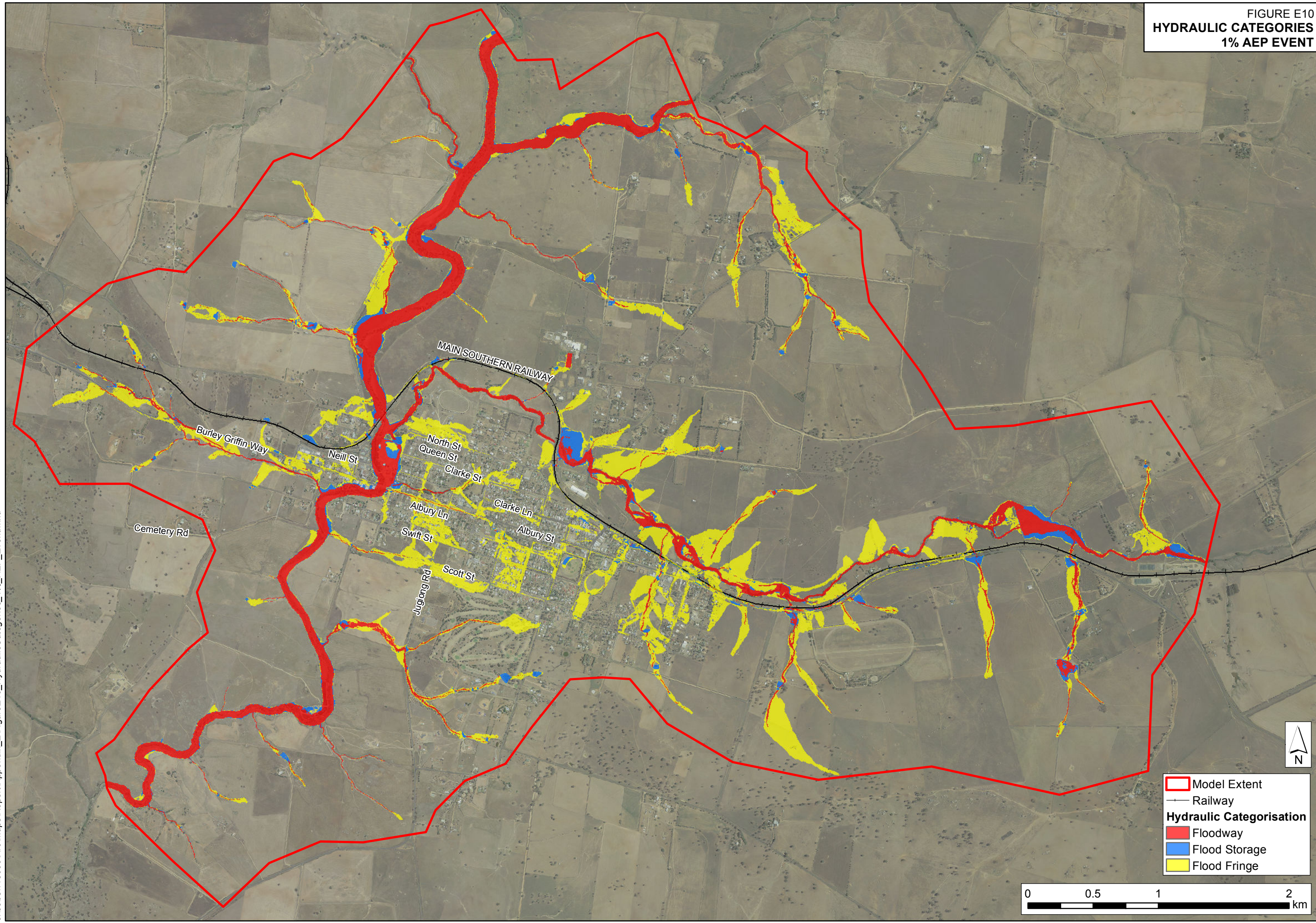
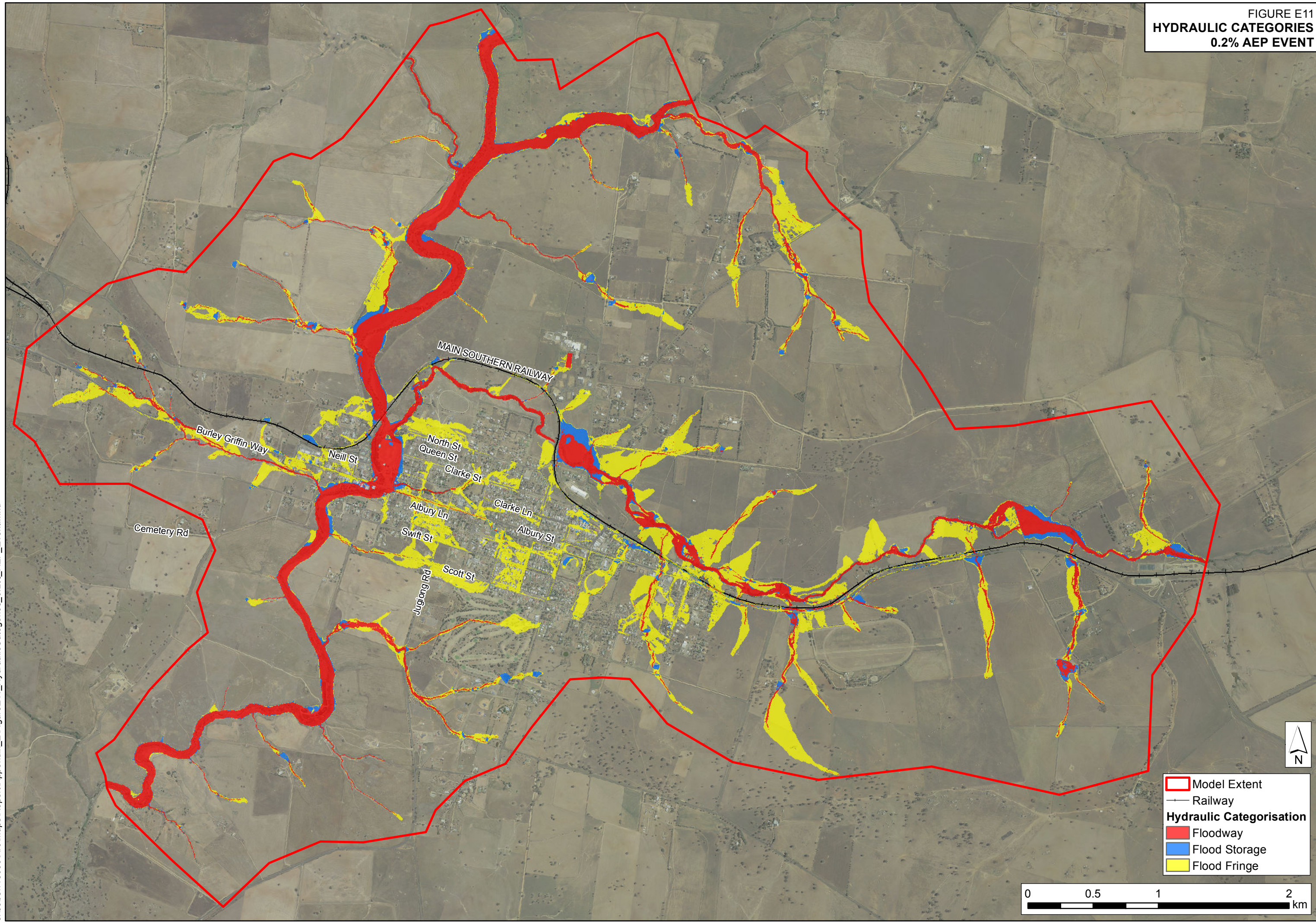
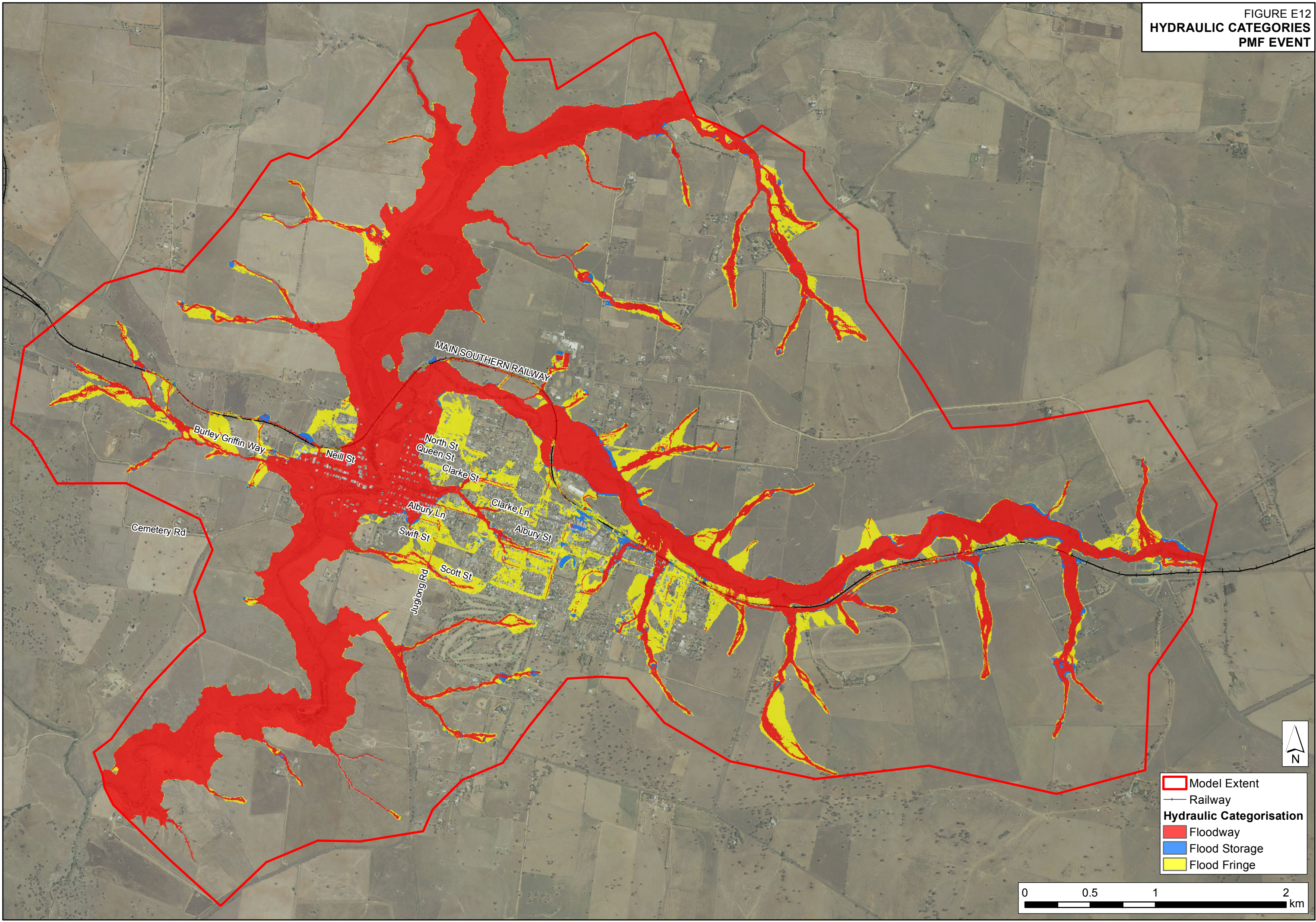


FIGURE E11
HYDRAULIC CATEGORIES
0.2% AEP EVENT



J:\Jobs\118099\ArcMaps\Report\Appendix_E\FigureE11_HydraulicCategories_0.2%_AEP_Event.mxd

FIGURE E12
HYDRAULIC CATEGORIES
PMF EVENT



APPENDIX F. Emergency Response Planning Information



FIGURE F1
ROAD INUNDATION REPORTING LOCATIONS
1% AEP EVENT



J:\Jobs\118099\Hydraulics\Reporting_Locations\Hydrographs\FigureF02_Flood_Level_Hydrograph_Location_SES1_AlburySt_Bridge_v02.xlsm

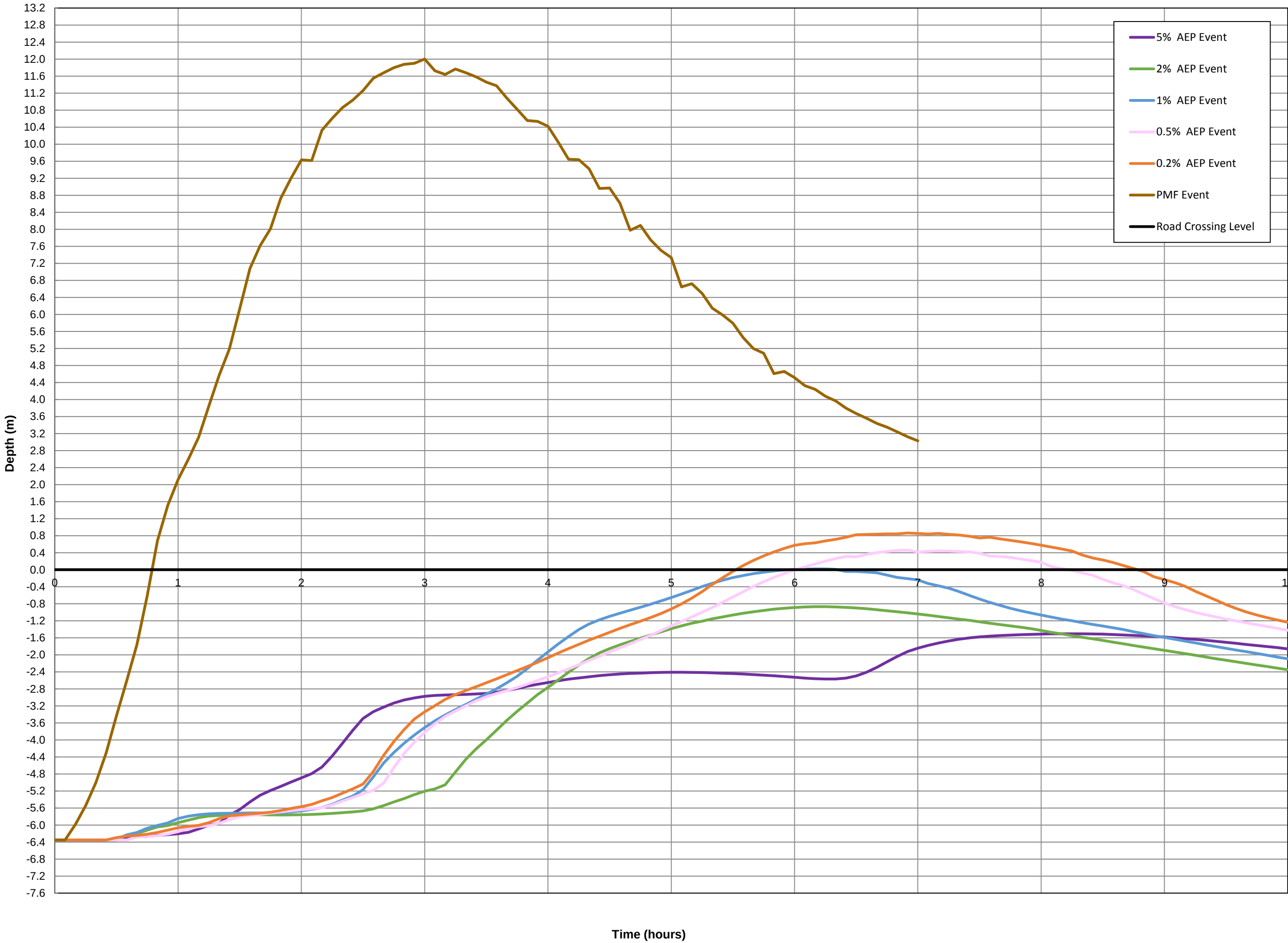


FIGURE F2
FLOOD DEPTH ABOVE ROAD HYDROGRAPH
LOCATION SES1 - ALBURY STREET BRIDGE

J:\Jobs\118099\Hydraulics\Reporting_Locations\Hydrographs\FigureF03_Flood_Level_Hydrograph_Location_SES2_BathurstSt_Underpass_v02.xlsm

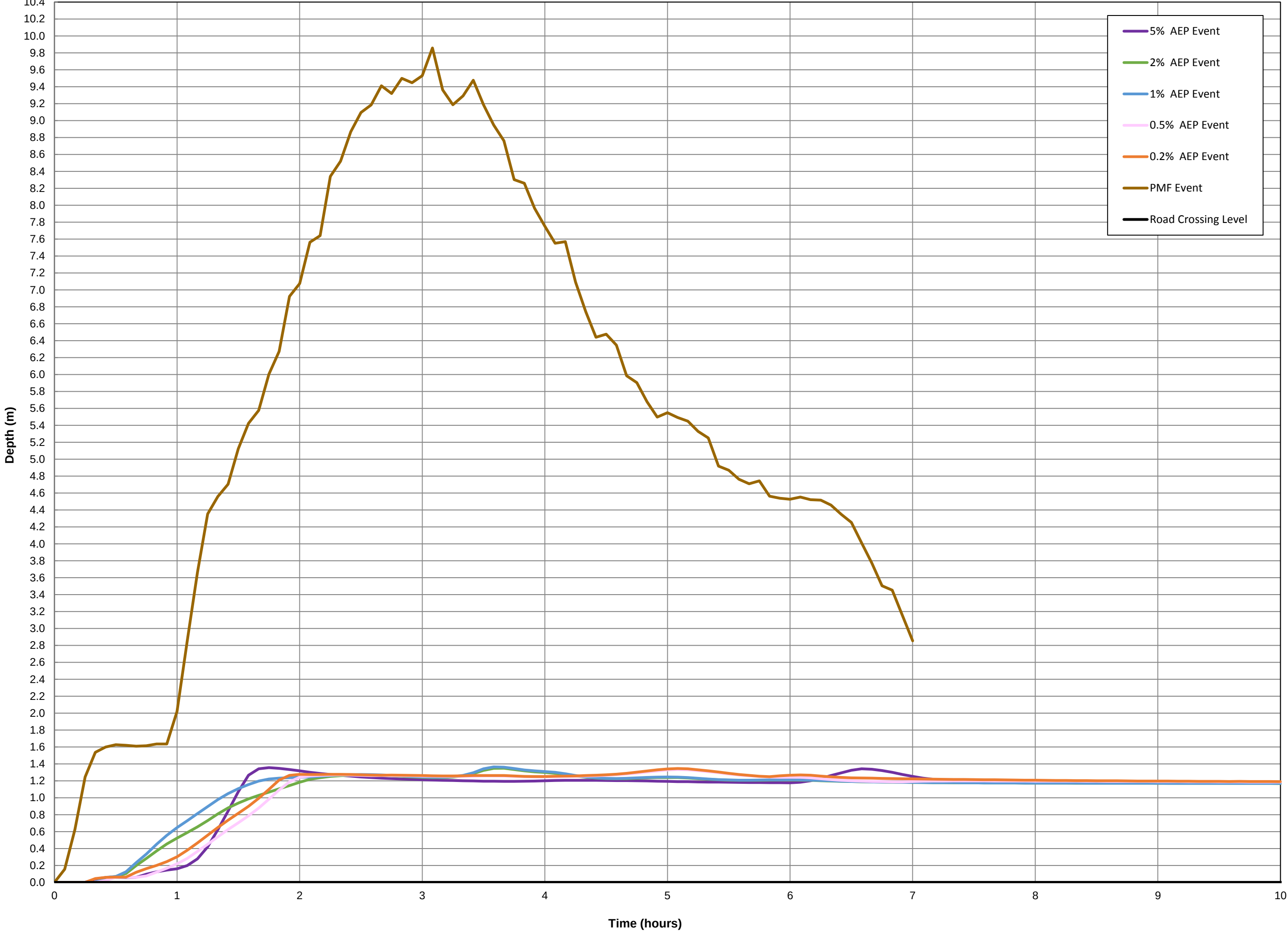


FIGURE F3
FLOOD DEPTH ABOVE ROAD HYDROGRAPH
LOCATION SES2 - BATHURST STREET UNDERPASS

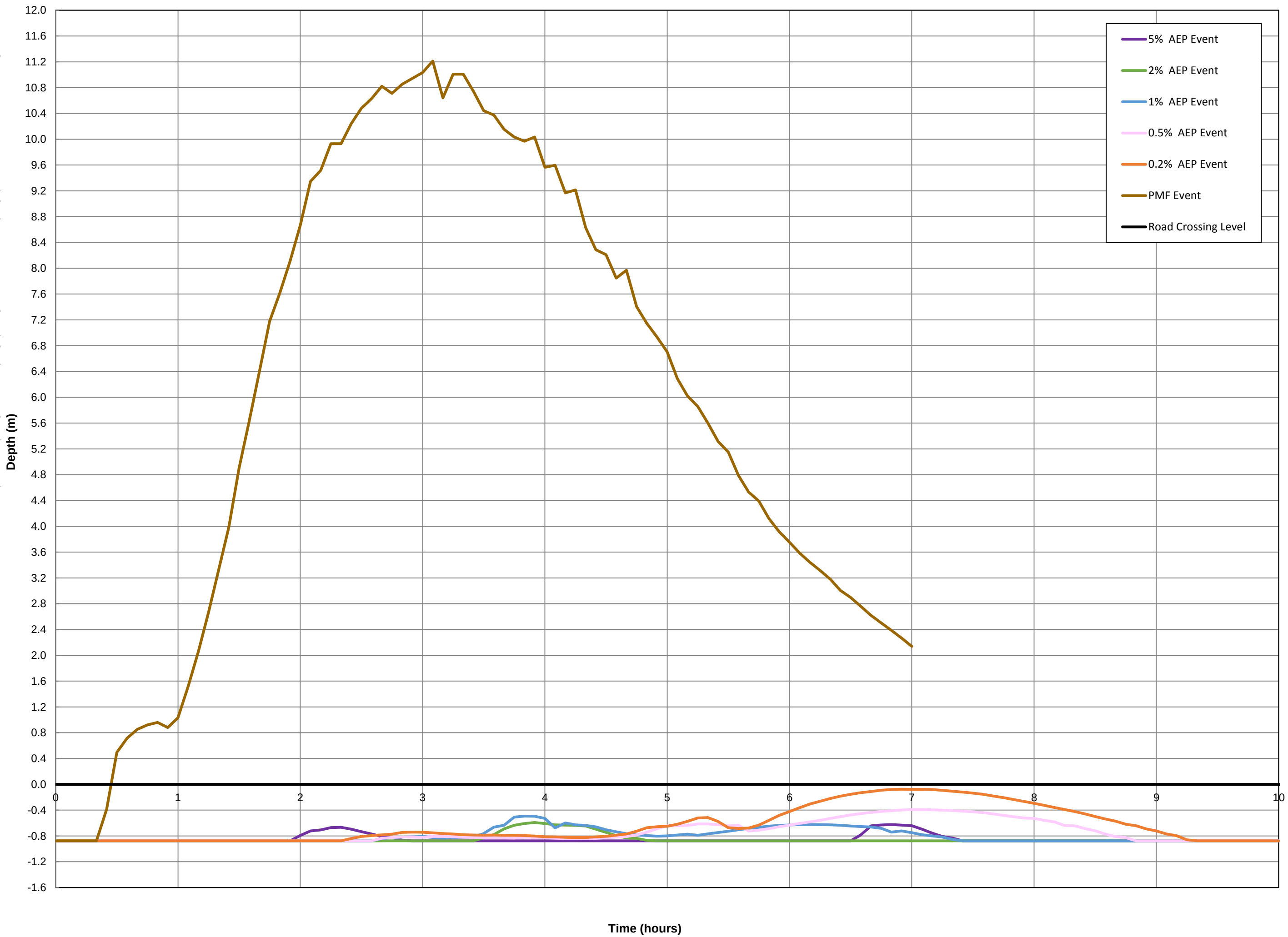


FIGURE F4
FLOOD DEPTH ABOVE ROAD HYDROGRAPH
LOCATION SES3 - VERNON STREET BRIDGE

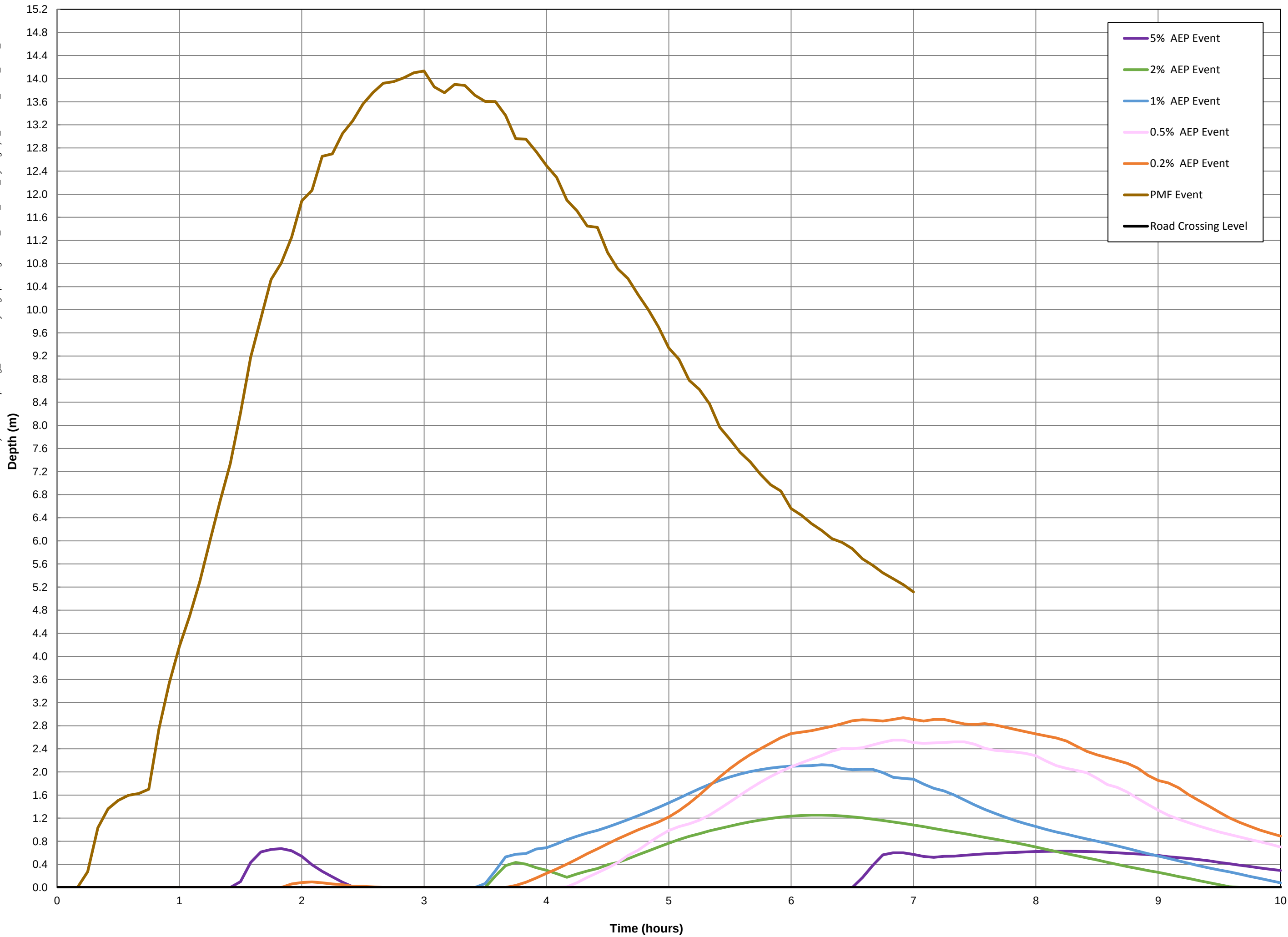


FIGURE F5
FLOOD DEPTH ABOVE ROAD HYDROGRAPH
LOCATION SES4 - IRIS STREET

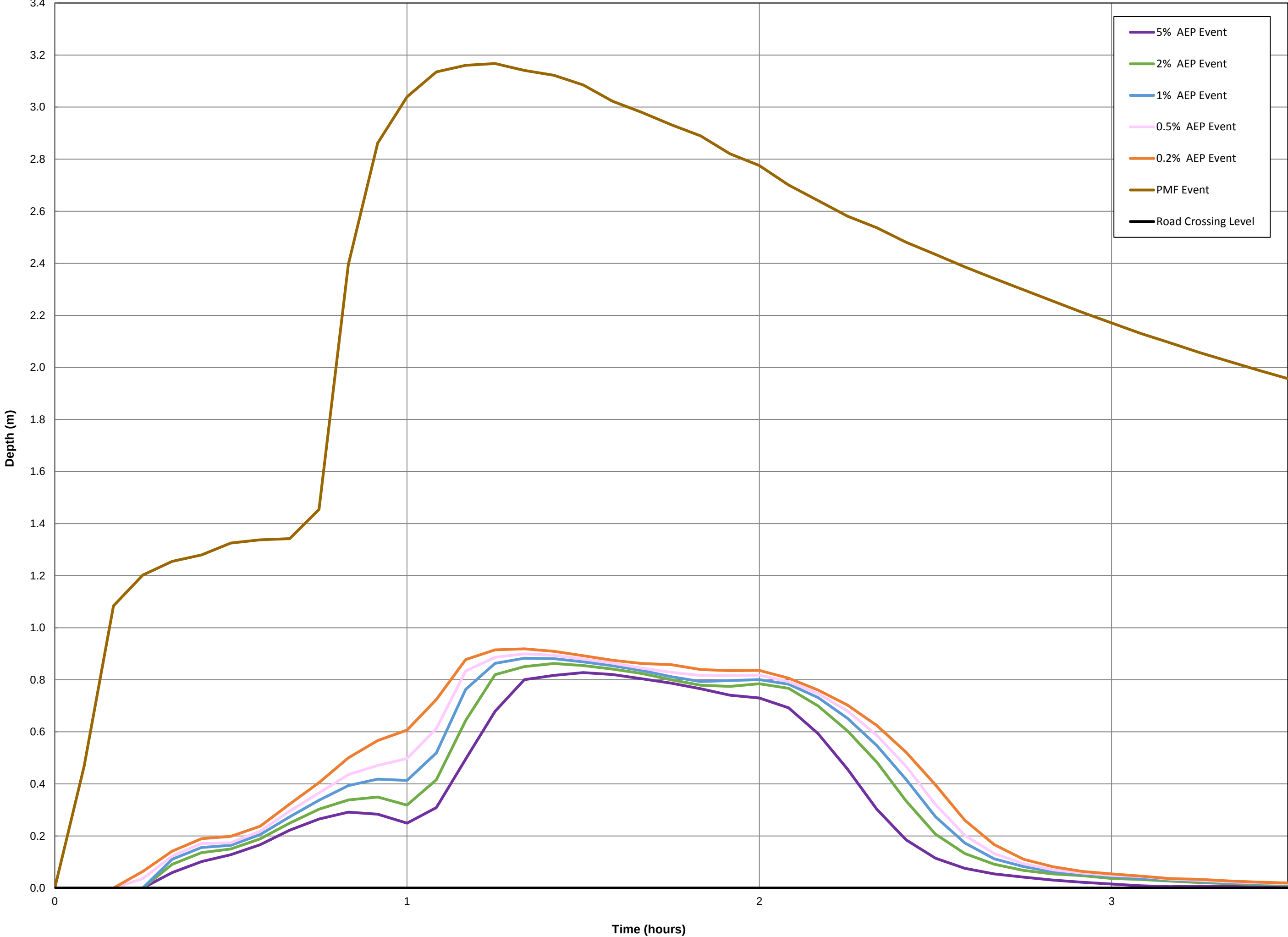


FIGURE F6
FLOOD DEPTH ABOVE ROAD HYDROGRAPH
LOCATION SES5 - AURVILLE ROAD RAILWAY UNDERPASS

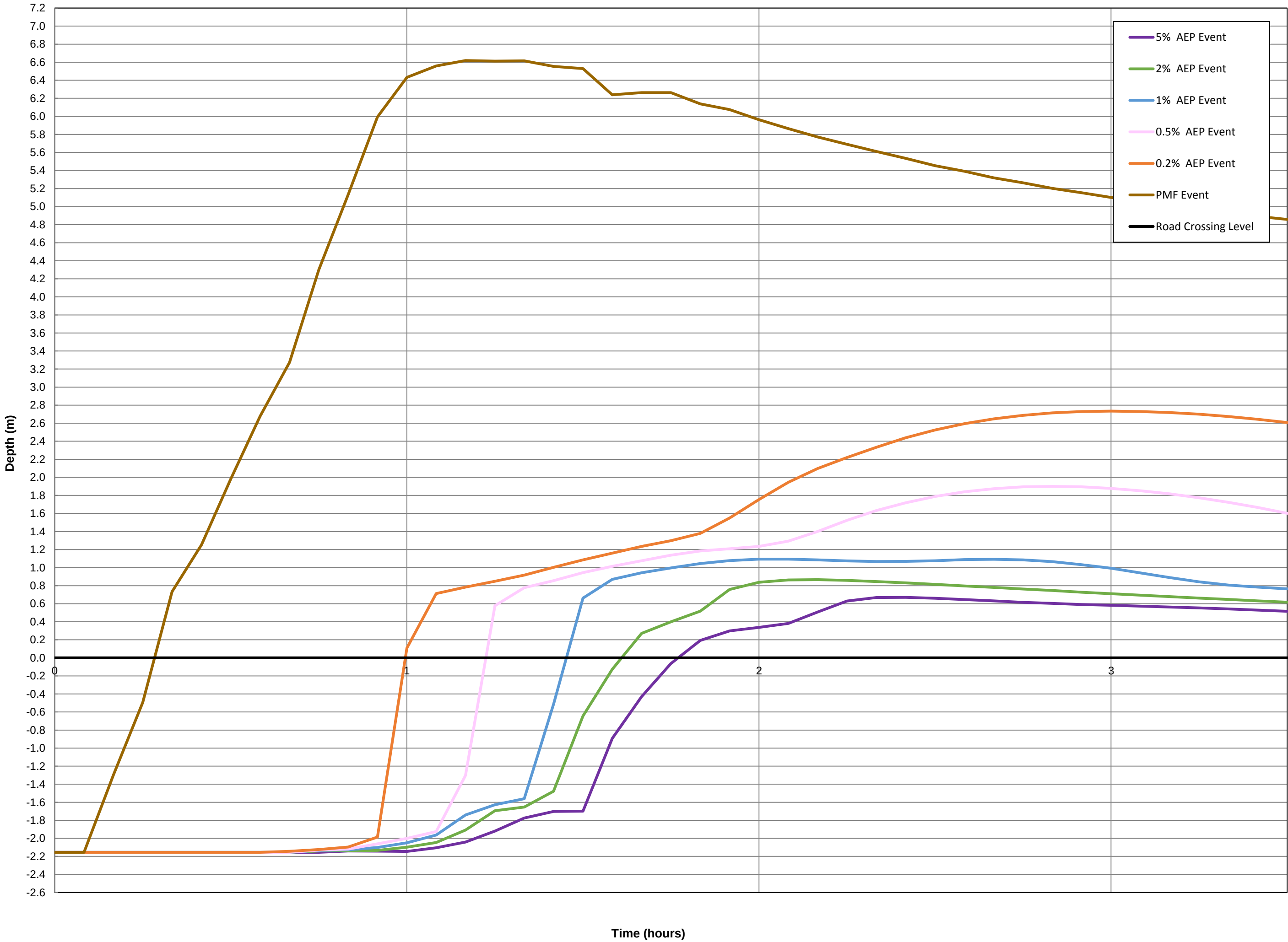


FIGURE F7
FLOOD DEPTH ABOVE ROAD HYDROGRAPH
LOCATION SES6 - AURVILLE ROAD CROSSING

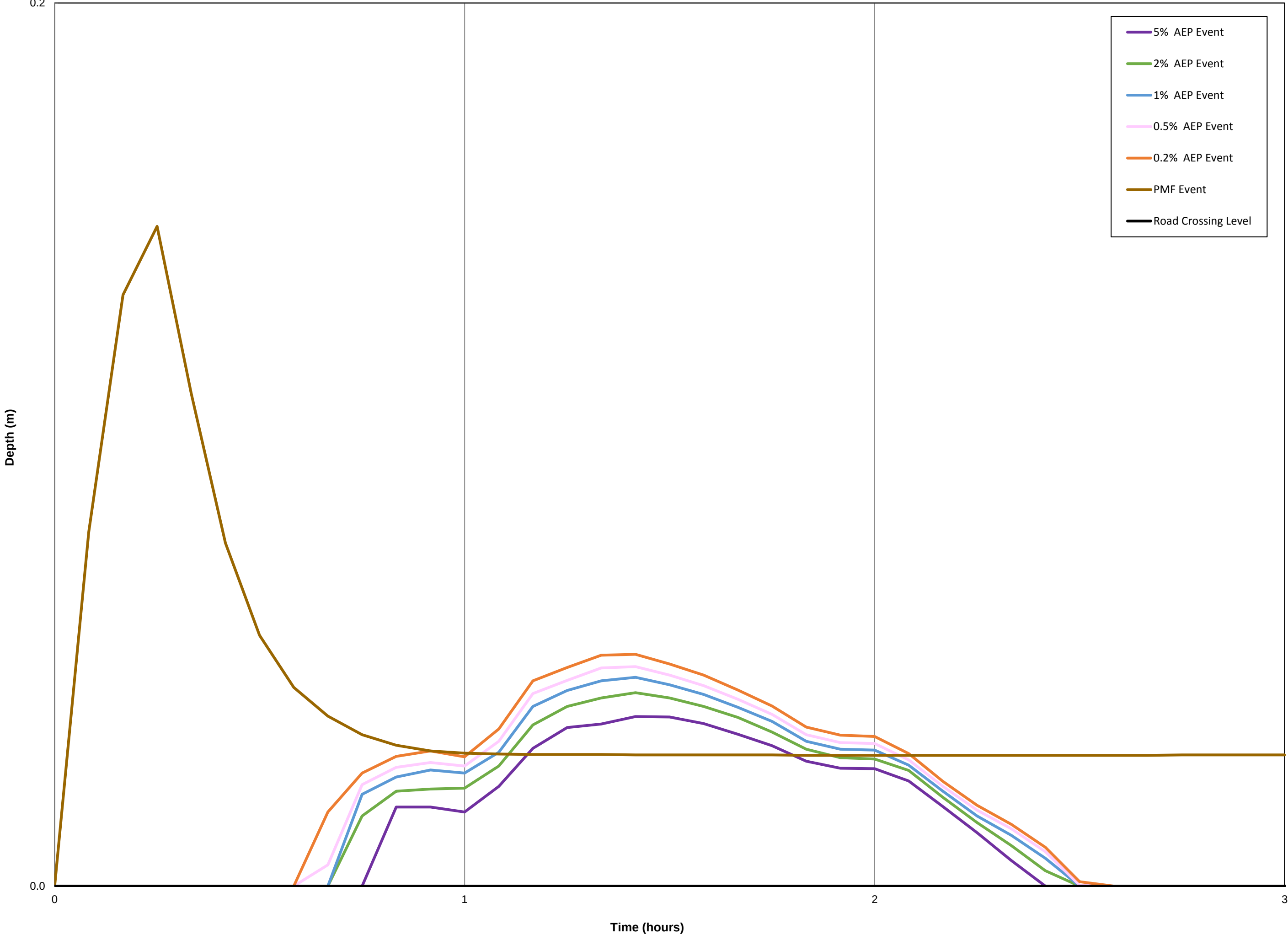


FIGURE F8
FLOOD DEPTH ABOVE ROAD HYDROGRAPH
LOCATION SES7 - ALBURY ST (INTERSECTION WITH SHORT STREET)

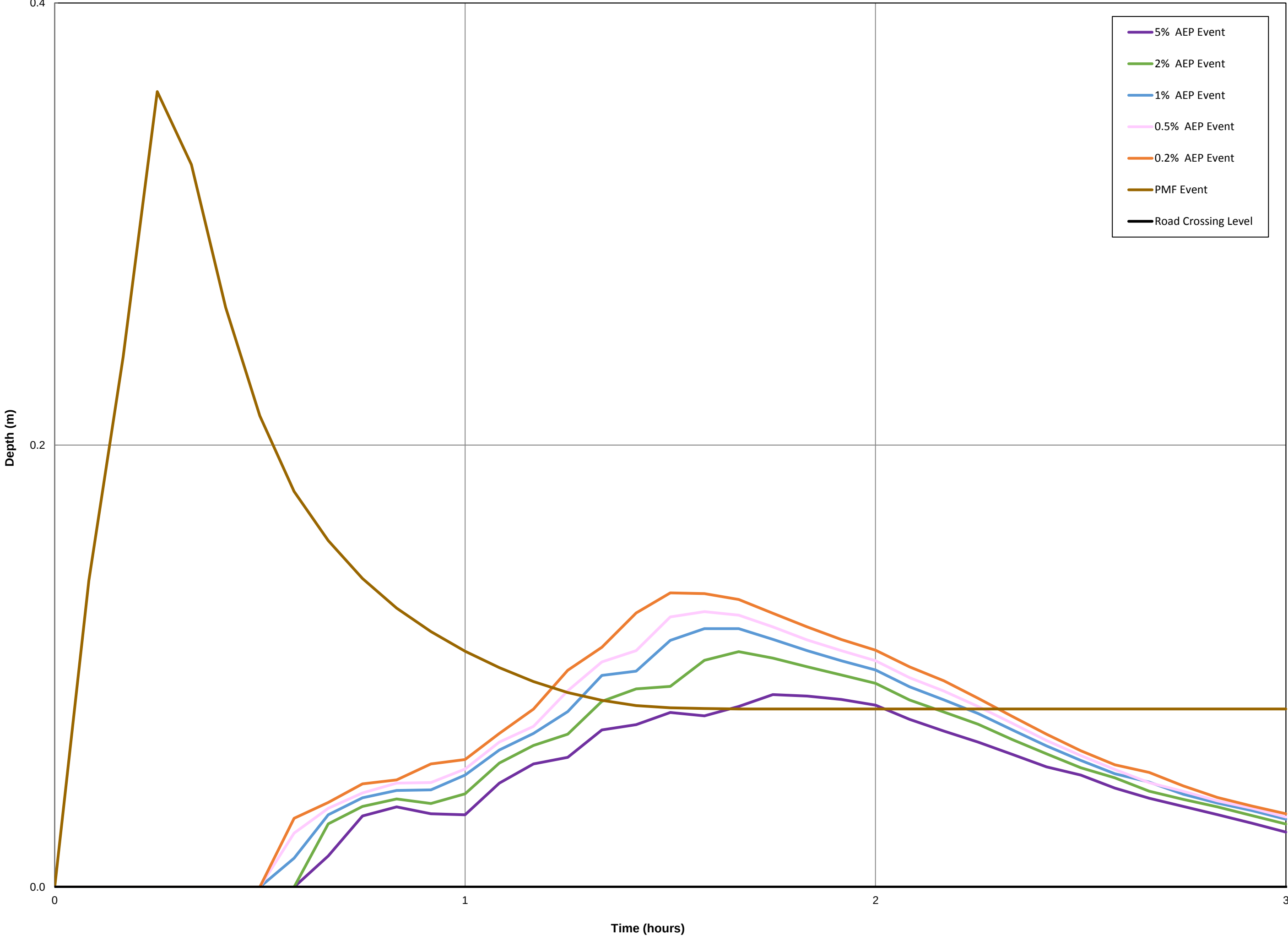


FIGURE F9
FLOOD DEPTH ABOVE ROAD HYDROGRAPH
LOCATION SES8 - ALBURY ST (INTERSECTION WITH WHITTON LANE)

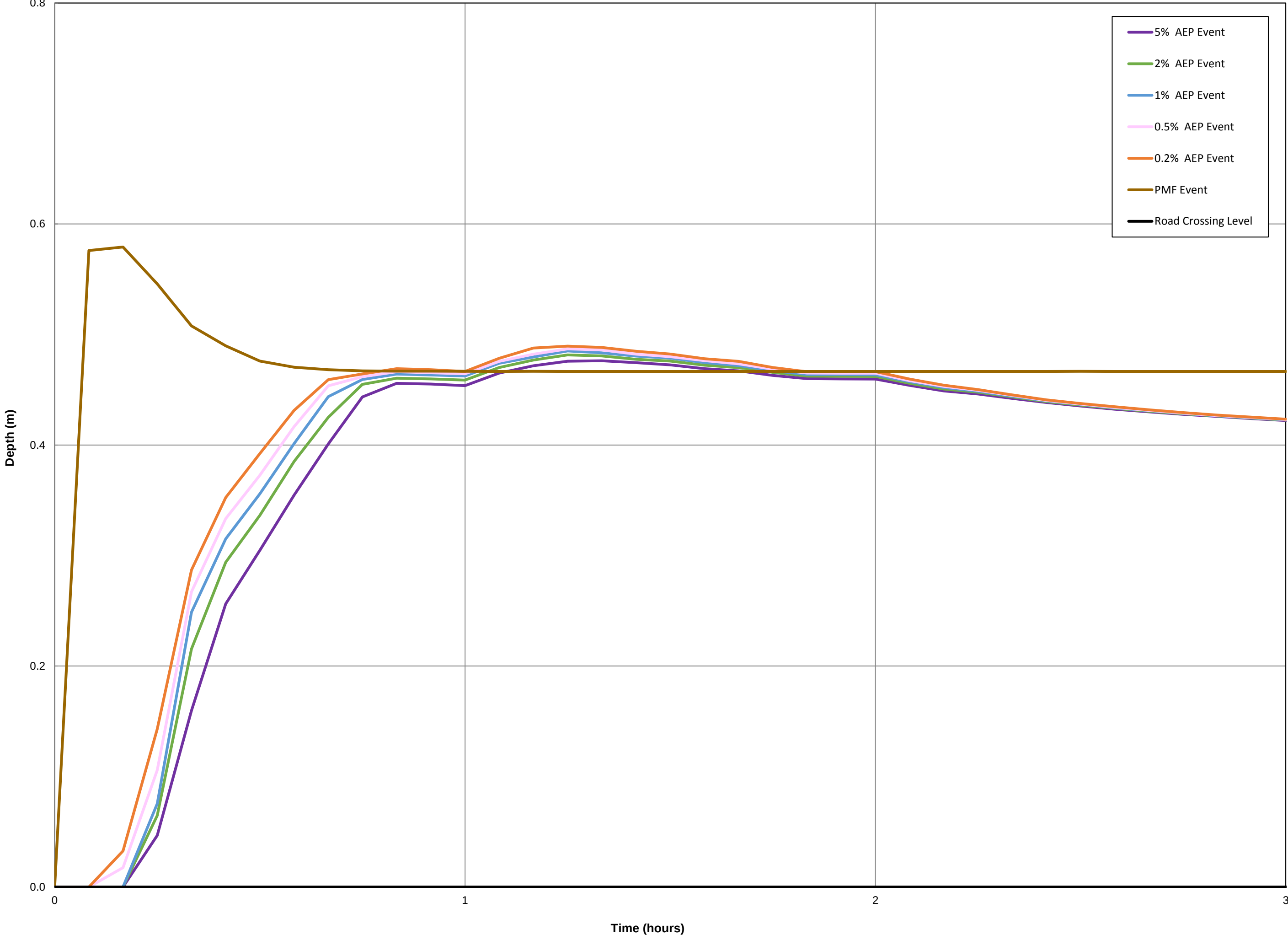


FIGURE F10
FLOOD DEPTH ABOVE ROAD HYDROGRAPH
LOCATION SES - ALBURY STREET (NEAR REDBANK STREET)

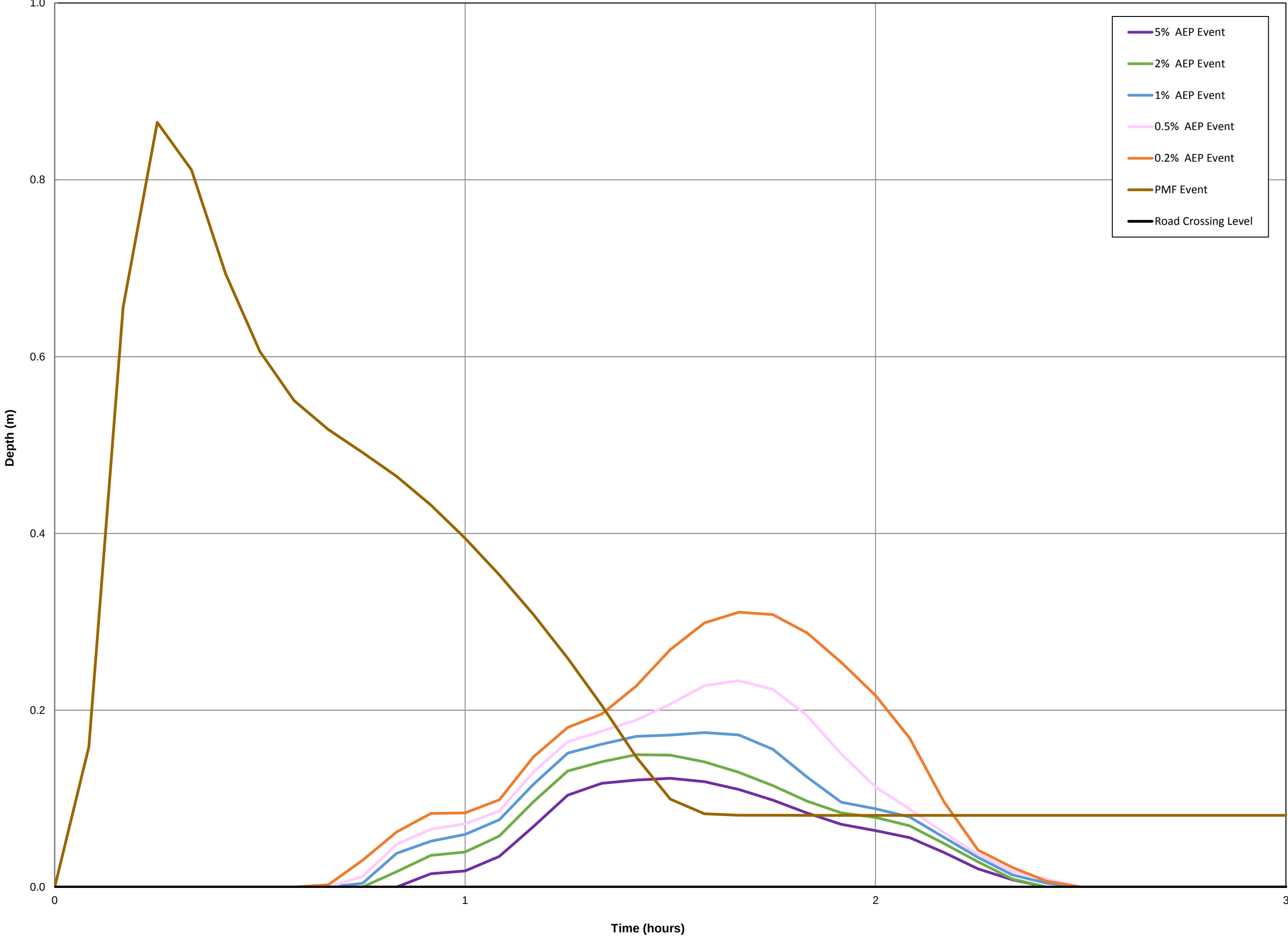


FIGURE F11
FLOOD DEPTH ABOVE ROAD HYDROGRAPH
LOCATION SES10 - WHITTON LANE

FIGURE F12
EMERGENCY RESPONSE CLASSIFICATION
1% AEP EVENT

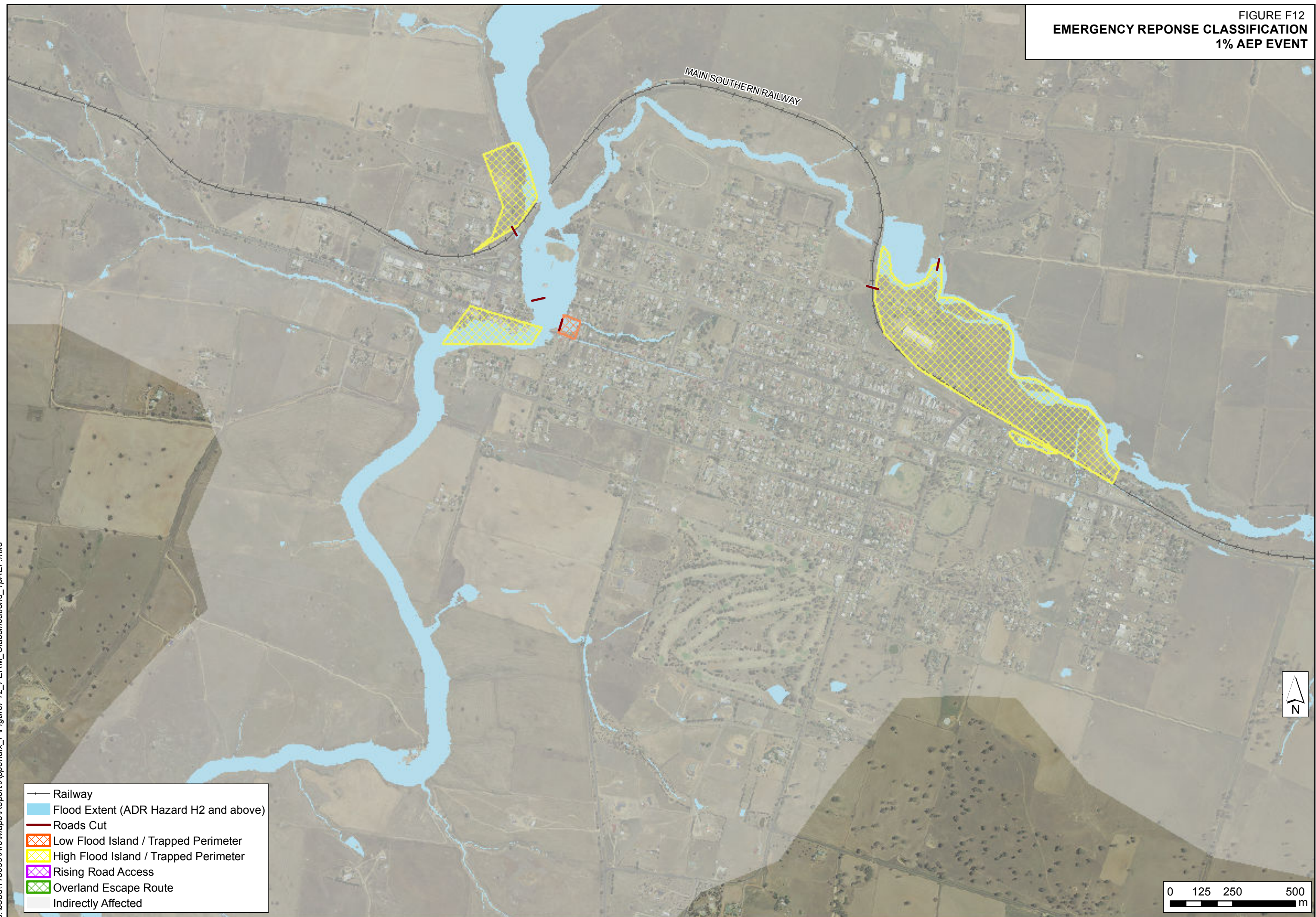


FIGURE F13
EMERGENCY RESPONSE CLASSIFICATION
PMF EVENT

