Randwick City Council
a sense of community

Bayside Council
Serving Our Community

BIRDS GULLY AND BUNNERONG ROAD FLOOD STUDY

VOLUME 2 – APPENDIX B & C

wma water

FEBRUARY 2018

Appendix B


FIGURE B1A
BIRDS GULLY AND BUNNERONG ROAD
LOCATIONS OF RECORDED FLOOD DEPTHS
AND OBSEREVED FLOOD BEHAVIOUR
BG052
BG049
BG051
BG040
BG144
BG044
BG173
BG054
BG151
BG039
BG174
BG031
BG033
BG012
BG043
BG136
BG139
BG145
BG010
BG045
BG037
BG148
Recorded Flood Depths and Behaviour
Study Area
0
0.125
0.25
0.5
0.75
1
Km
J:\Jobs\116083\Arc\Maps\ReportFigures\AppendixB\FigureB01A_LocationsRecordedFloodDepthObservedBehaviour.mxd


FIGURE B1B
BIRDS GULLY AND BUNNERONG ROAD
LOCATIONS OF RECORDED FLOOD DEPTHS
AND OBSEREVED FLOOD BEHAVIOUR
BG052
BG051
BG054
BG151
BG150
BG016
BG063
BG064
BG011
BG065
BG066
Recorded Flood Depths and Behaviour
Study Area
0
0.125
0.25
0.5
0.75
1
Km
N
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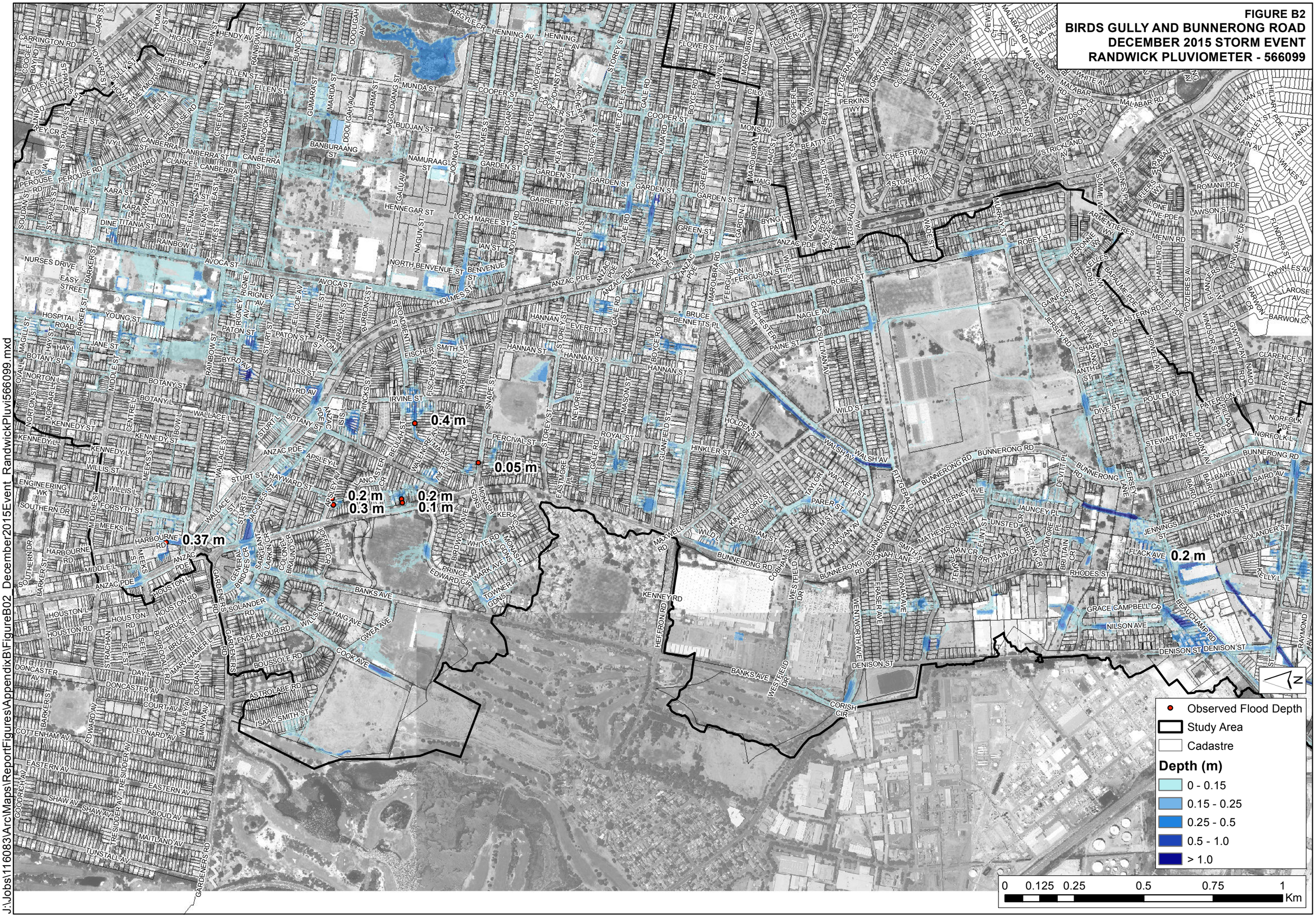
FIGURE B2
BIRDS GULLY AND BUNNERONG ROAD
DECEMBER 2015 STORM EVENT
RANDWICK PLUVIOMETER - 566099
0.4 m
0.05 m
0.2 m
0.3 m
0.2 m
0.1 m
0.37 m
0.2 m
Observed Flood Depth
Study Area
Cadastre
Depth (m)
0 - 0.15
0.15 - 0.25
0.25 - 0.5
0.5 - 1.0
> 1.0
0 0.125 0.25 0.5 0.75 1
Km
N
J:\Jobs\116083\Arc\Maps\ReportFigures\AppendixB\FigureB02_December2015Event_RandwickPluvi566099.mxd

FIGURE B3
BIRDS GULLY AND BUNNERONG ROAD
DECEMBER 2015 STORM EVENT
RANDWICK PLUVIOMETER - 566099
PHOTOS BG016

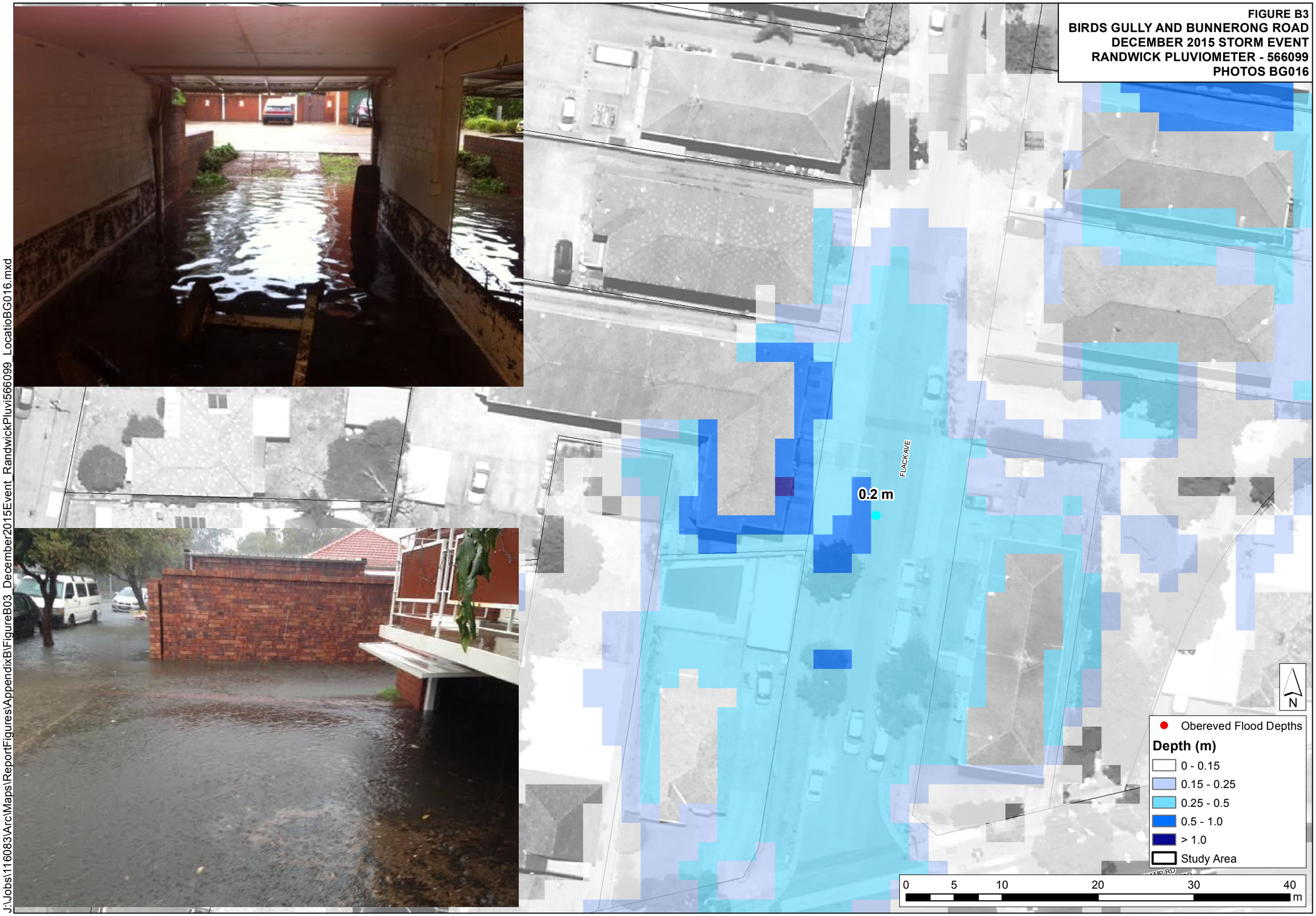

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FIGURE B4
BIRDS GULLY AND BUNNERONG ROAD
DECEMBER 2015 STORM EVENT
RANDWICK PLUVIOMETER - 566099
PHOTOS BG031

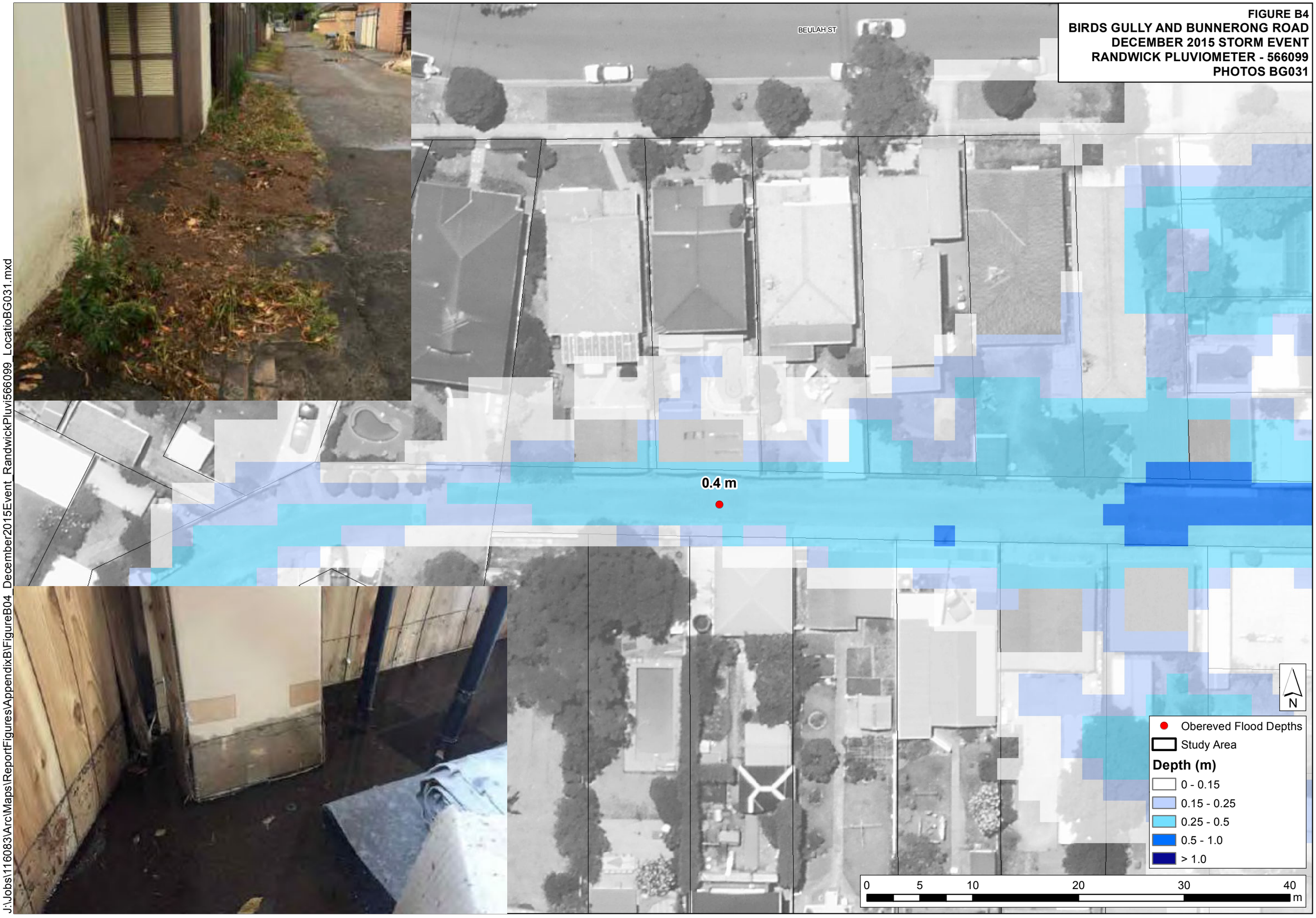

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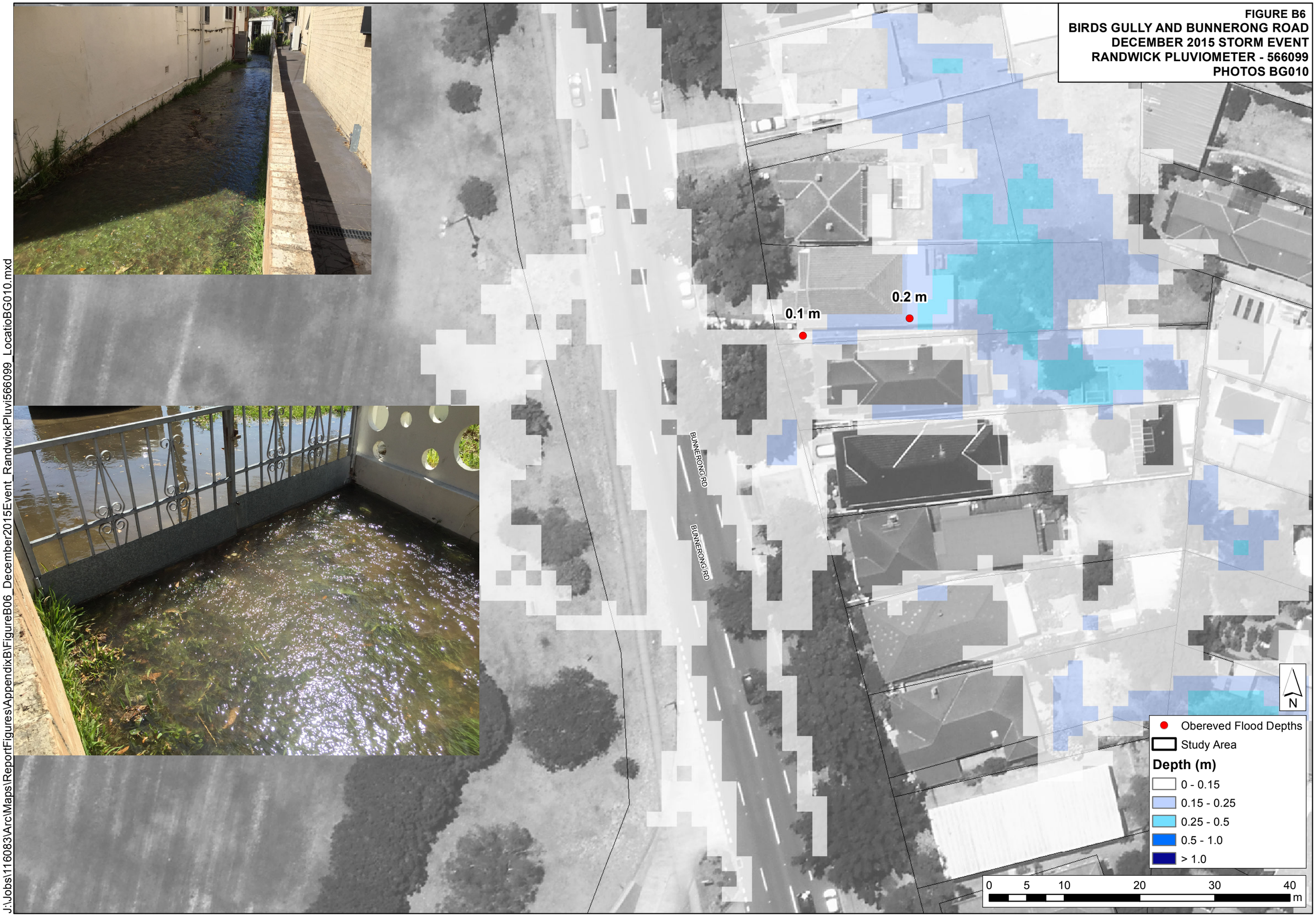
FIGURE B5
BIRDS GULLY AND BUNNERONG ROAD
DECEMBER 2015 STORM EVENT
RANDWICK PLUVIOMETER - 566099
PHOTOS BG139

J:\Jobs\116083\Arc\Maps\ReportFigures\AppendixB\FigureB05_December2015Event_RandwickPluvi566099_LocatioBG139.mxd

FIGURE B6
BIRDS GULLY AND BUNNERONG ROAD
DECEMBER 2015 STORM EVENT
RANDWICK PLUVIOMETER - 566099
PHOTOS BG010



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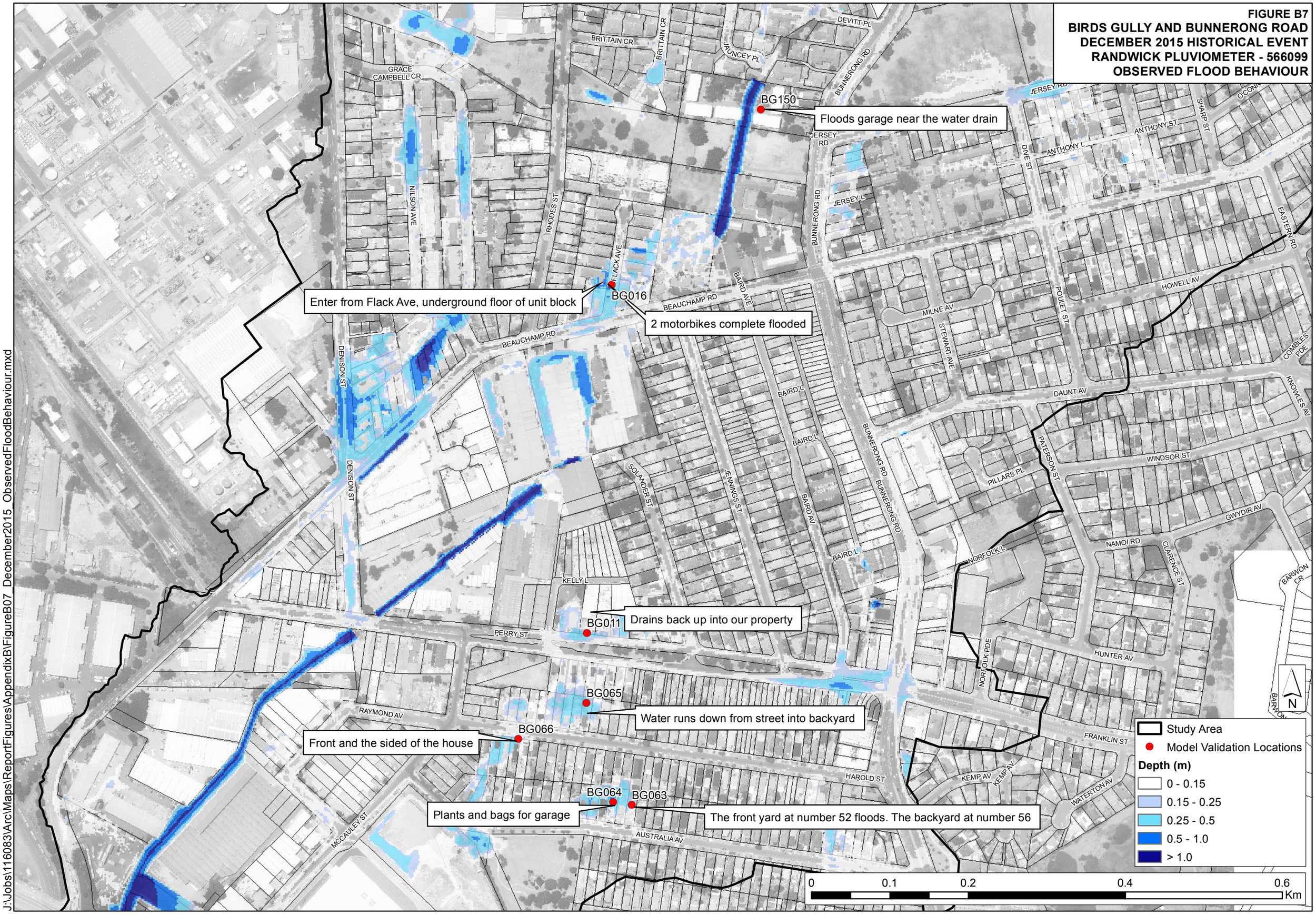


FIGURE B7
BIRDS GULLY AND BUNNERONG ROAD
DECEMBER 2015 HISTORICAL EVENT
RANDWICK PLUVIOMETER - 566099
OBSERVED FLOOD BEHAVIOUR
BG150
Floods garage near the water drain
BG016
Enter from Flack Ave, underground floor of unit block
2 motorbikes complete flooded
BG011
Drains back up into our property
BG065
Water runs down from street into backyard
BG066
Front and the sided of the house
BG064
BG063
Plants and bags for garage
The front yard at number 52 floods. The backyard at number 56
BRITTAIN CR
GRACE CAMPBELL CR
DEVITT PL
JAUNCEY PL
BUNNERONG RD
JERSEY RD
JERSEY L
ANTHONY ST
ANTHONY L
SHARP ST
DIVE ST
EASTERN RD
NILSON AVE
RHODES ST
FLACK AVE
BEAUCHAMP RD
BAIRD AVE
MILNE AV
STEWART AVE
POULET ST
HOWELL AV
DENISON ST
BAIRD L
DAUNT AV
KNOWLES AV
COMBLES PDE
SOLANDER ST
JENNINGS ST
BAIRD AV
PATERSON ST
WINDSOR ST
PILLARS PL
GWYDIR AV
NAMOI RD
CLARENCE ST
NORFOLK L
NORFOLK PDE
BARWON CR
KELLY L
PERRY ST
HUNTER AV
RAYMOND AV
FRANKLIN ST
HAROLD ST
KEMP AV
WATERTON AV
MCCAULEY ST
AUSTRALIA AV
N
Study Area
Model Validation Locations
Depth (m)
0 - 0.15
0.15 - 0.25
0.25 - 0.5
0.5 - 1.0
> 1.0
0
0.1
0.2
0.4
0.6
Km
J:\Jobs\116083\Arc\Maps\ReportFigures\AppendixB\FigureB07_December2015_ObservedFloodBehaviour.mxd

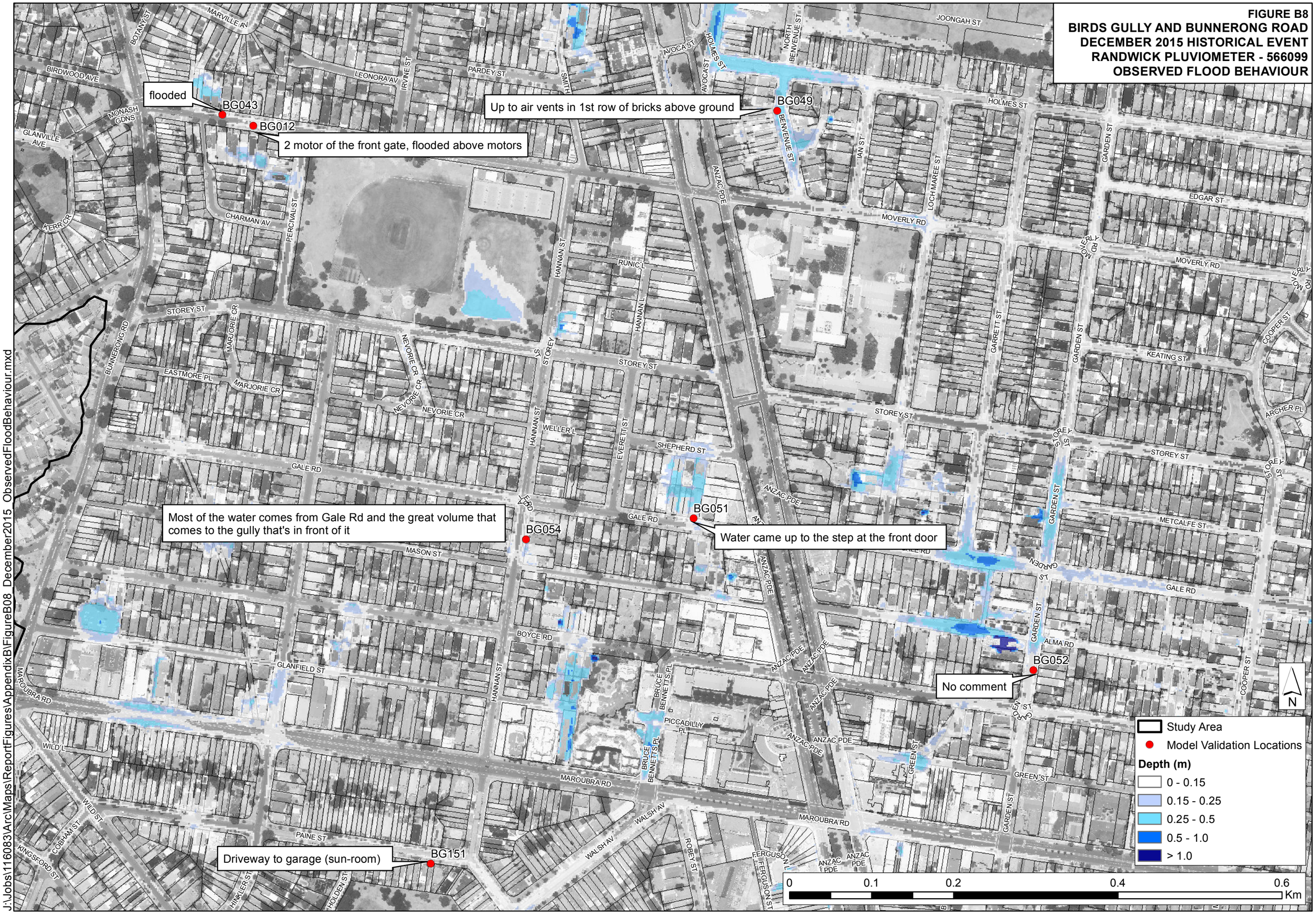
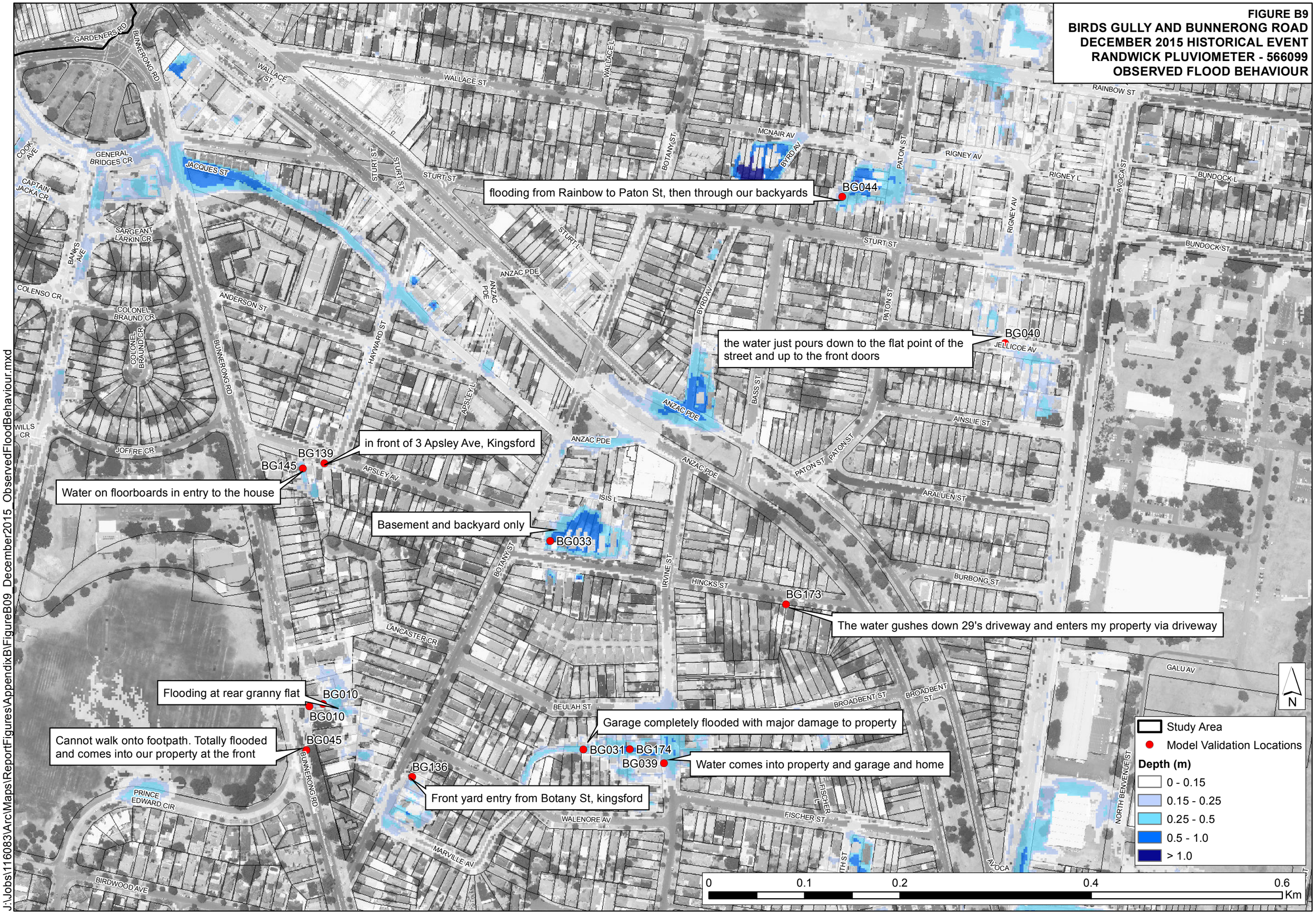


FIGURE B8
BIRDS GULLY AND BUNNERONG ROAD
DECEMBER 2015 HISTORICAL EVENT
RANDWICK PLUVIOMETER - 566099
OBSERVED FLOOD BEHAVIOUR
flooded
BG043
BG012
2 motor of the front gate, flooded above motors
Up to air vents in 1st row of bricks above ground
BG049
Most of the water comes from Gale Rd and the great volume that comes to the gully that's in front of it
BG054
BG051
Water came up to the step at the front door
BG052
No comment
Driveway to garage (sun-room)
BG151
Study Area
Model Validation Locations
Depth (m)
0 - 0.15
0.15 - 0.25
0.25 - 0.5
0.5 - 1.0
> 1.0
0
0.1
0.2
0.4
0.6
Km
N
J:\Jobs\116083\Arc\Maps\ReportFigures\AppendixB\FigureB08_December2015_ObservedFloodBehaviour.mxd



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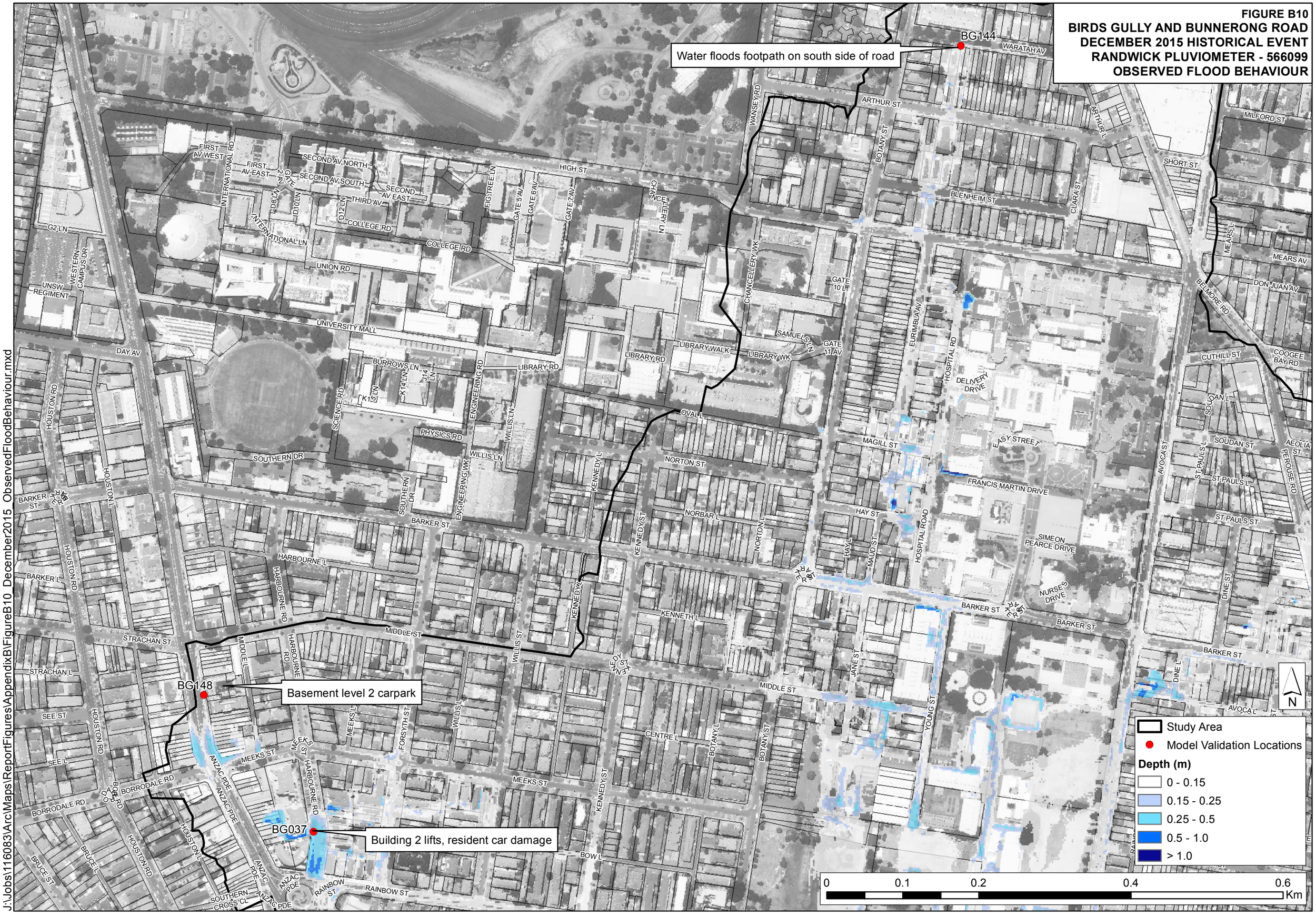


FIGURE B10
BIRDS GULLY AND BUNNERONG ROAD
DECEMBER 2015 HISTORICAL EVENT
RANDWICK PLUVIOMETER - 566099
OBSERVED FLOOD BEHAVIOUR
BG144
Water floods footpath on south side of road
BG148
Basement level 2 carpark
BG037
Building 2 lifts, resident car damage
Study Area
Model Validation Locations
Depth (m)
0 - 0.15
0.15 - 0.25
0.25 - 0.5
0.5 - 1.0
> 1.0
0
0.1
0.2
0.4
0.6
Km
N
J:\Jobs\116083\Arc\Maps\ReportFigures\AppendixB\FigureB10_December2015_ObservedFloodBehaviour.mxd

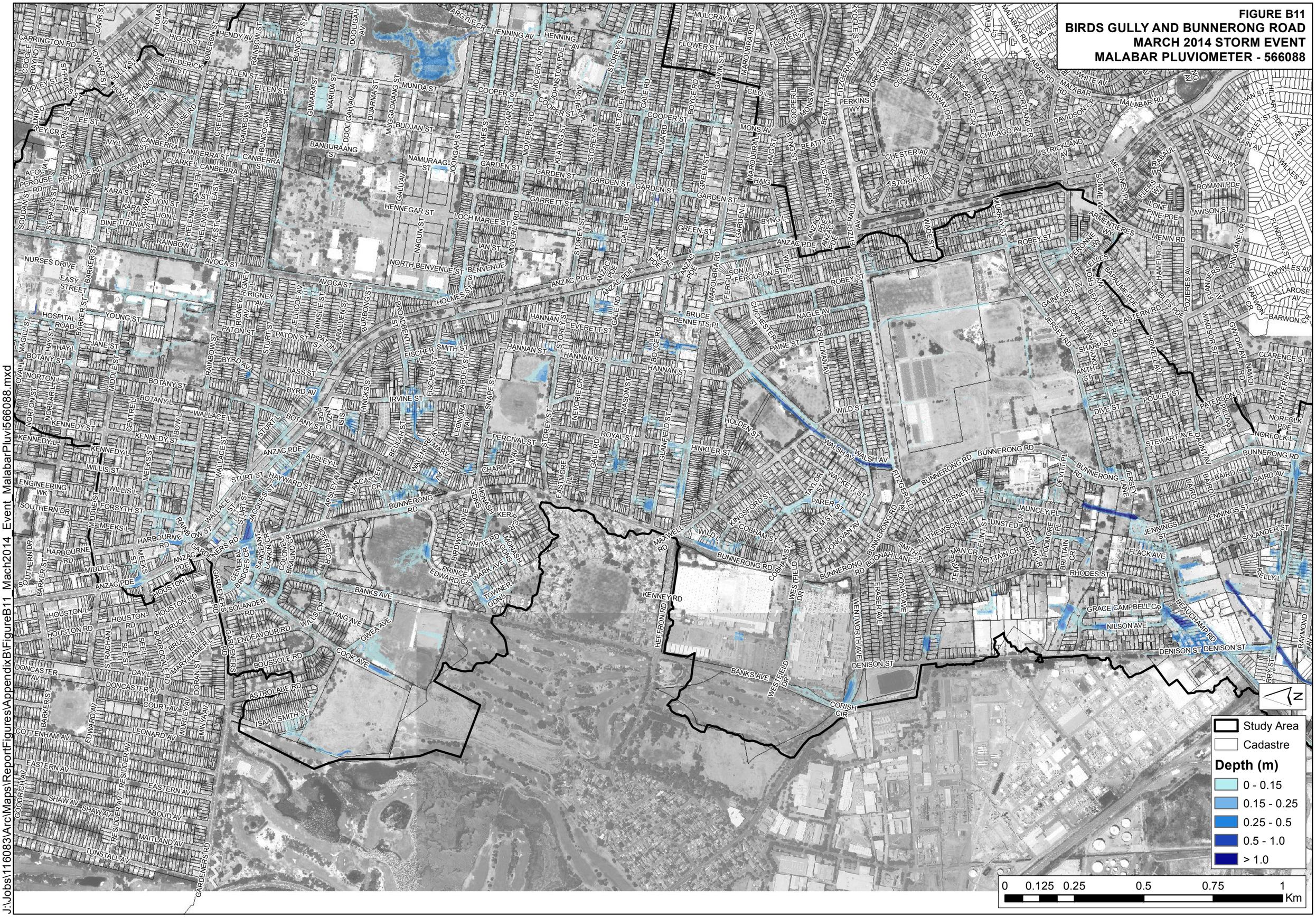
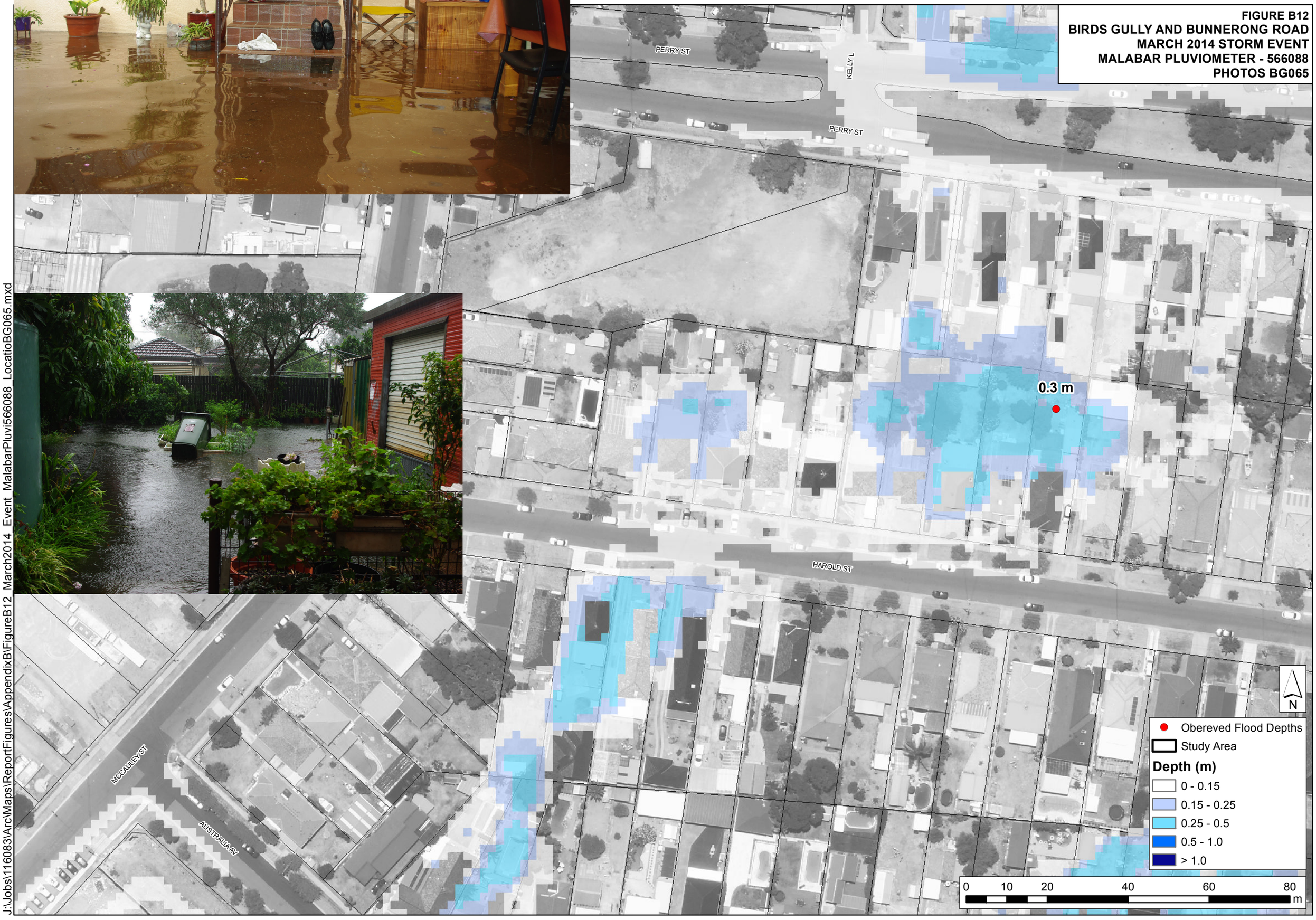


FIGURE B11
BIRDS GULLY AND BUNNERONG ROAD
MARCH 2014 STORM EVENT
MALABAR PLUVIOMETER - 566088
Study Area
Cadastre
Depth (m)
0 - 0.15
0.15 - 0.25
0.25 - 0.5
0.5 - 1.0
> 1.0
0
0.125
0.25
0.5
0.75
1
Km
N
J:\Jobs\116083\Arc\Maps\ReportFigures\AppendixB\FigureB11_Mach2014_Event_MalabarPluvi566088.mxd

FIGURE B12
BIRDS GULLY AND BUNNERONG ROAD
MARCH 2014 STORM EVENT
MALABAR PLUVIOMETER - 566088
PHOTOS BG065



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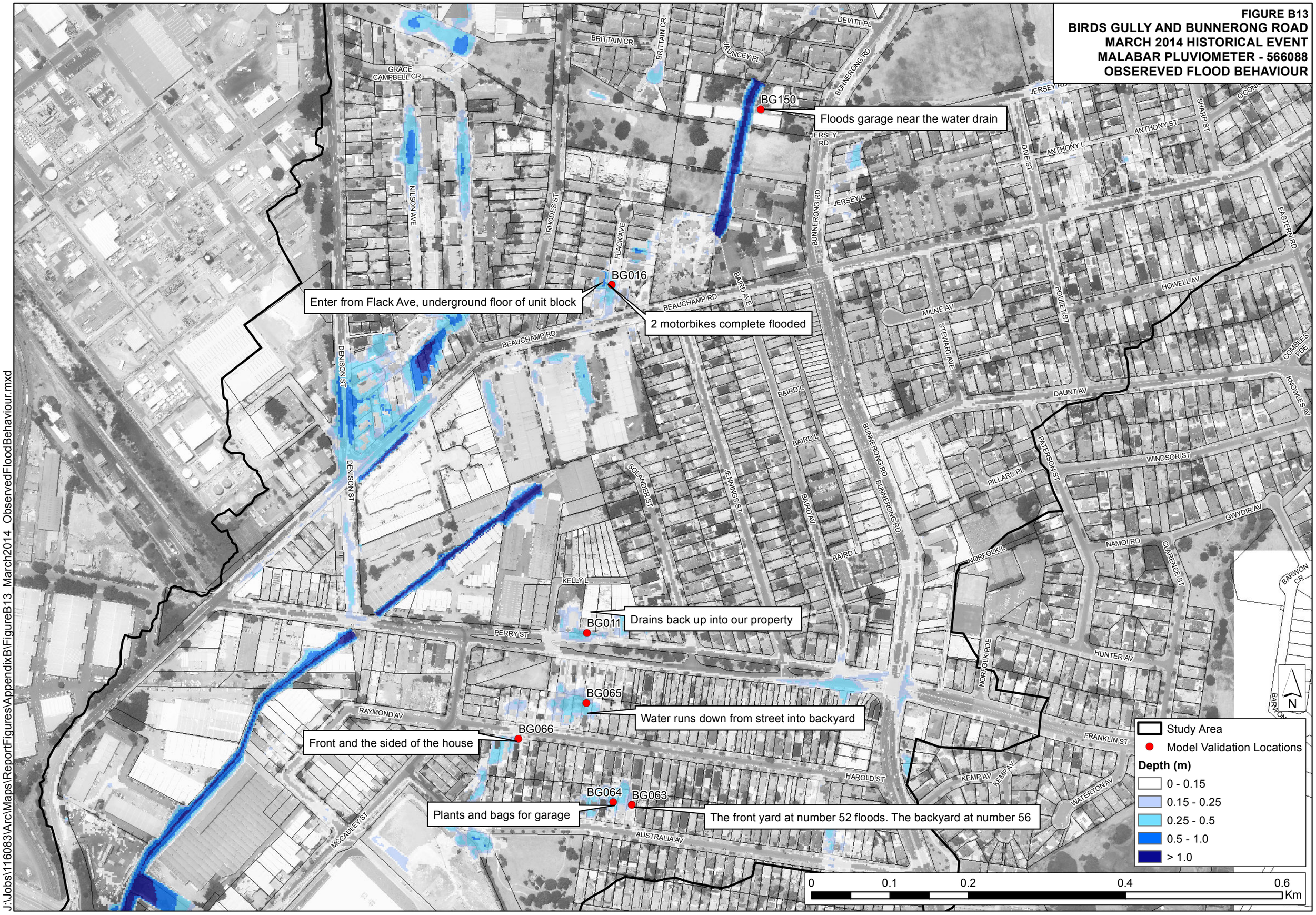
FIGURE B13
BIRDS GULLY AND BUNNERONG ROAD
MARCH 2014 HISTORICAL EVENT
MALABAR PLUVIOMETER - 566088
OBSEREVED FLOOD BEHAVIOUR
BG150
Floods garage near the water drain
BG016
Enter from Flack Ave, underground floor of unit block
2 motorbikes complete flooded
BG011
Drains back up into our property
BG065
Water runs down from street into backyard
BG066
Front and the sided of the house
BG064
BG063
Plants and bags for garage
The front yard at number 52 floods. The backyard at number 56
BRITTAIN CR
DEVITT PL
JAUNCEY PL
BUNNERONG RD
GRACE CAMPBELL CR
NILSON AVE
RHODES ST
FLACK AVE
JERSEY RD
JERSEY L
ANTHONY ST
ANTHONY L
DIVE ST
SHARP ST
EASTERN RD
HOWELL AV
BEAUCHAMP RD
BAIRD AVE
MILNE AV
STEWART AVE
POULET ST
COMBLES PDE
KNOWLES AV
DAUNT AV
DENISON ST
BAIRD L
SOLANDER ST
JENNINGS ST
BAIRD AV
PATERSON ST
WINDSOR ST
PILLARS PL
GWYDIR AV
NAMOI RD
CLARENCE ST
NORFOLK L
NORFOLK PDE
BARWON CR
KELLY L
PERRY ST
HUNTER AV
RAYMOND AV
FRANKLIN ST
HAROLD ST
KEMP AV
WATERTON AV
MCCAULEY ST
AUSTRALIA AV
N
Study Area
Model Validation Locations
Depth (m)
0 - 0.15
0.15 - 0.25
0.25 - 0.5
0.5 - 1.0
> 1.0
0
0.1
0.2
0.4
0.6
Km
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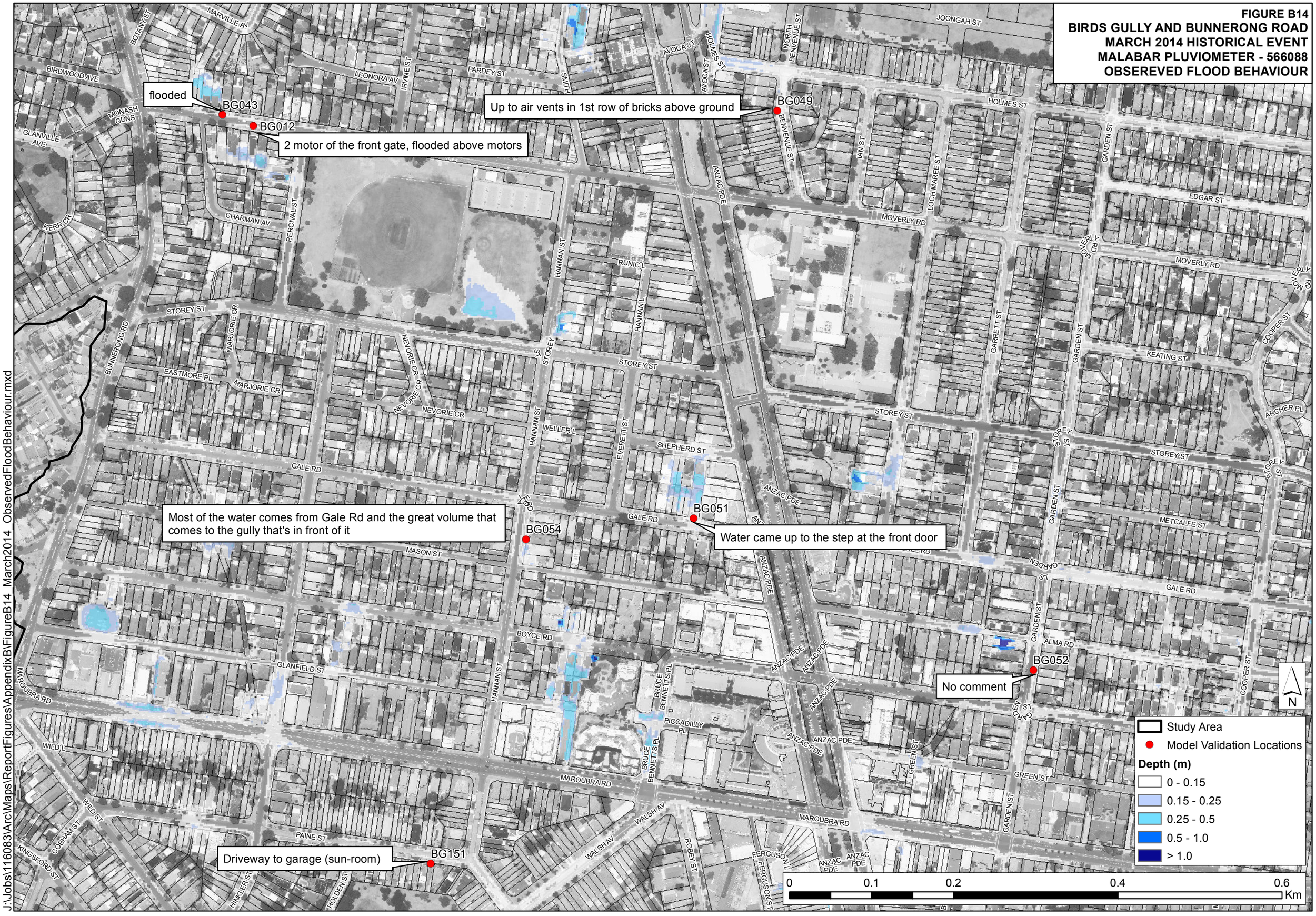
FIGURE B14
BIRDS GULLY AND BUNNERONG ROAD
MARCH 2014 HISTORICAL EVENT
MALABAR PLUVIOMETER - 566088
OBSEREVED FLOOD BEHAVIOUR
flooded
BG043
BG012
2 motor of the front gate, flooded above motors
Up to air vents in 1st row of bricks above ground
BG049
Most of the water comes from Gale Rd and the great volume that comes to the gully that's in front of it
BG054
BG051
Water came up to the step at the front door
BG052
No comment
Driveway to garage (sun-room)
BG151
Study Area
Model Validation Locations
Depth (m)
0 - 0.15
0.15 - 0.25
0.25 - 0.5
0.5 - 1.0
> 1.0
0
0.1
0.2
0.4
0.6
Km
N
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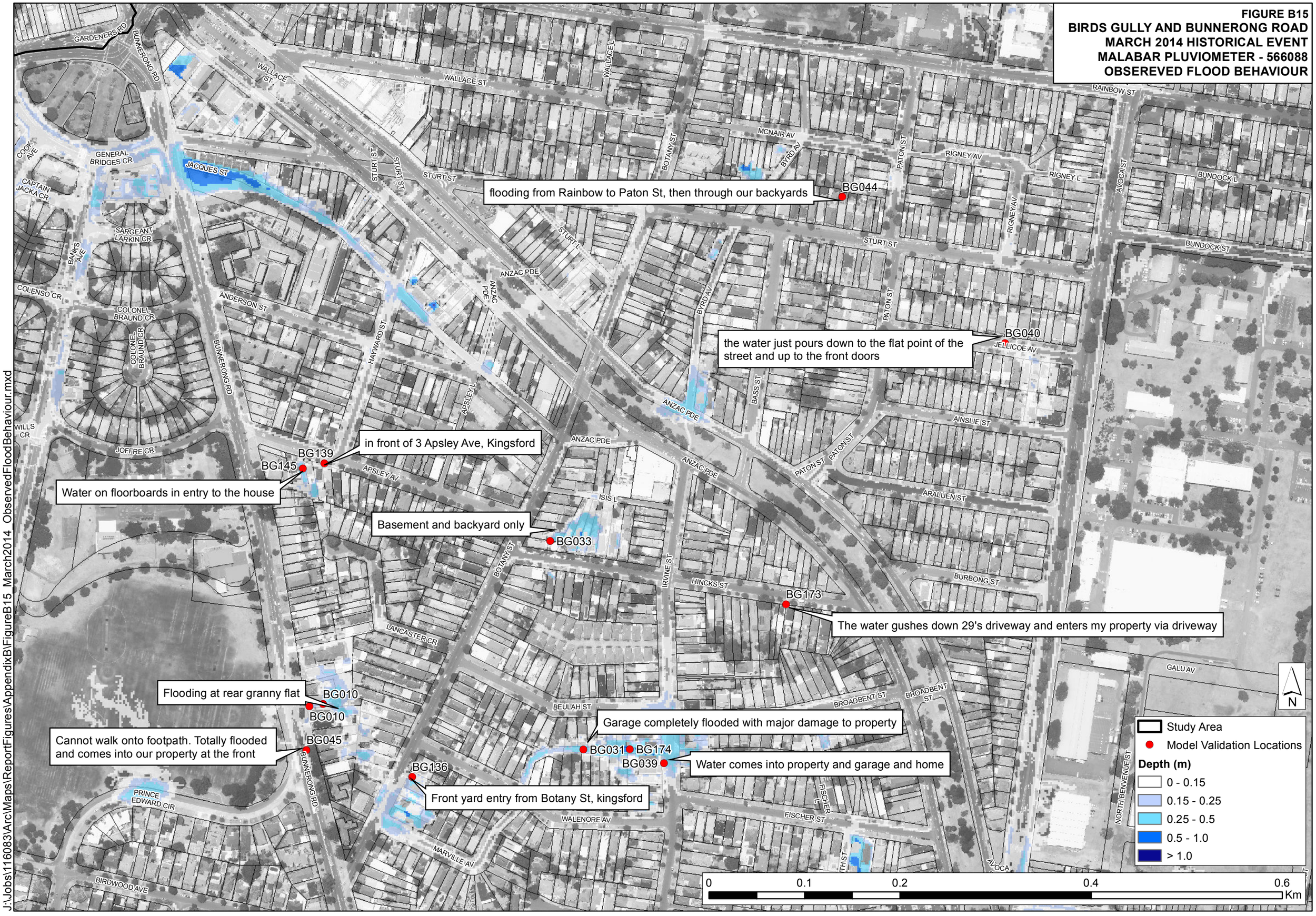
FIGURE B15
BIRDS GULLY AND BUNNERONG ROAD
MARCH 2014 HISTORICAL EVENT
MALABAR PLUVIOMETER - 566088
OBSEREVED FLOOD BEHAVIOUR
flooding from Rainbow to Paton St, then through our backyards
BG044
the water just pours down to the flat point of the street and up to the front doors
BG040
in front of 3 Apsley Ave, Kingsford
BG139
BG145
Water on floorboards in entry to the house
Basement and backyard only
BG033
BG173
The water gushes down 29's driveway and enters my property via driveway
Flooding at rear granny flat
BG010
BG010
Cannot walk onto footpath. Totally flooded and comes into our property at the front
BG045
Garage completely flooded with major damage to property
BG031
BG174
BG039
Water comes into property and garage and home
BG136
Front yard entry from Botany St, kingsford
GARDENERS RD
BUNNERONG RD
WALLACE ST
WALLACE L
MCNAIR AV
BOTANY ST
BYRD AV
PATON ST
RIGNEY AV
RIGNEY L
RAINBOW ST
AVOCA ST
BUNDOCK L
BUNDOCK ST
STURT ST
STURT L
COOK AVE
GENERAL BRIDGES CR
JACQUES ST
CAPTAIN JACKA CR
SARGEANT LARKIN CR
BANKS AVE
COLENSO CR
COLONEL BRAUND CR
ANDERSON ST
HAYWARD ST
ANZAC PDE
APSLEY L
APSLEY AV
BASS ST
AINSLIE ST
WILLS CR
JOFFRE CR
ISIS L
ARALUEN ST
IRVINE ST
HINCKS ST
BURBONG ST
LANCASTER CR
BEULAH ST
BROADBENT ST
GALU AV
FISCHER L
FISCHER ST
WALENORE AV
MARVILLE AV
PRINCE EDWARD CIR
BIRDWOOD AVE
NORTH BENVENUE ST
N
Study Area
Model Validation Locations
Depth (m)
0 - 0.15
0.15 - 0.25
0.25 - 0.5
0.5 - 1.0
> 1.0
0
0.1
0.2
0.4
0.6
Km
J:\Jobs\116083\Arc\Maps\ReportFigures\AppendixB\FigureB15_March2014_ObservedFloodBehaviour.mxd


FIGURE B16
BIRDS GULLY AND BUNNERONG ROAD
MARCH 2014 HISTORICAL EVENT
MALABAR PLUVIOMETER - 566088
OBSEREVED FLOOD BEHAVIOUR
BG144
Water floods footpath on south side of road
BG148
Basement level 2 carpark
BG037
Building 2 lifts, resident car damage
Study Area
Model Validation Locations
Depth (m)
0 - 0.15
0.15 - 0.25
0.25 - 0.5
0.5 - 1.0
> 1.0
0
0.1
0.2
0.4
0.6
Km
N
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Appendix C

FIGURE C1
PEAK FLOOD DEPTHS
BIRDS GULLY AND BUNNERONG ROAD
1 EY EVENT

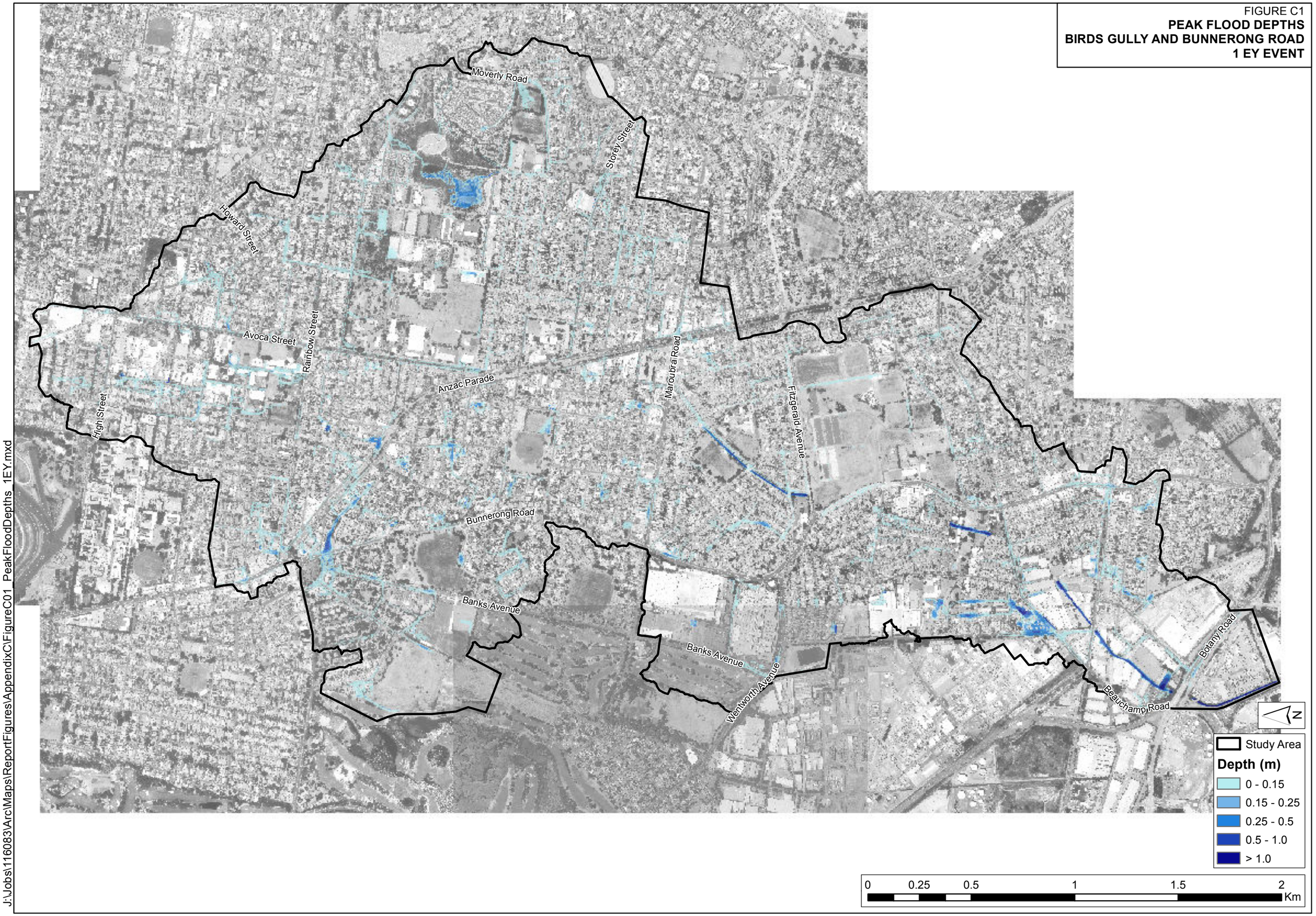

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FIGURE C2
PEAK FLOOD DEPTHS
BIRDS GULLY AND BUNNERONG ROAD
0.5 EY EVENT

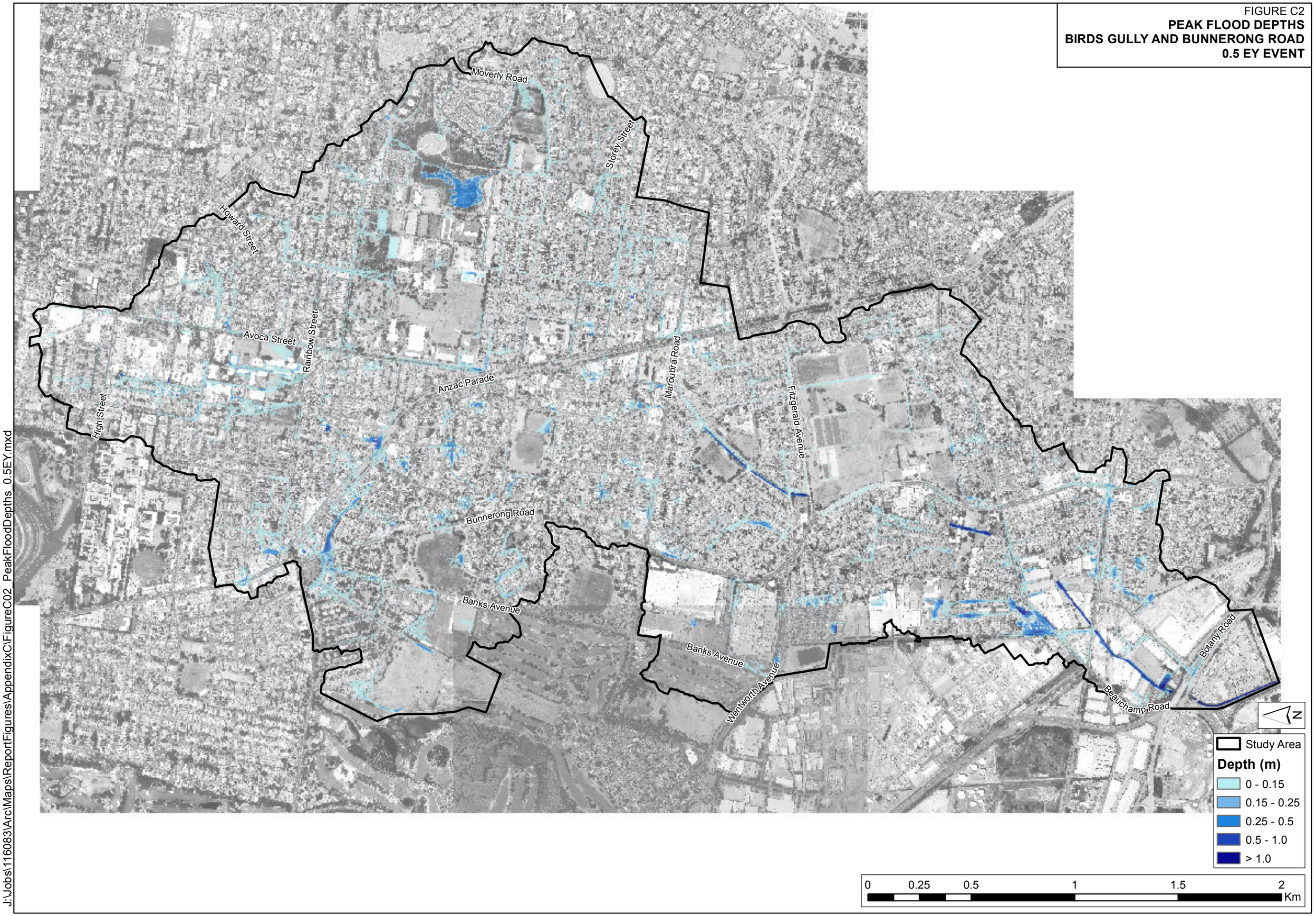

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FIGURE C3
PEAK FLOOD DEPTHS
BIRDS GULLY AND BUNNERONG ROAD
20% AEP EVENT

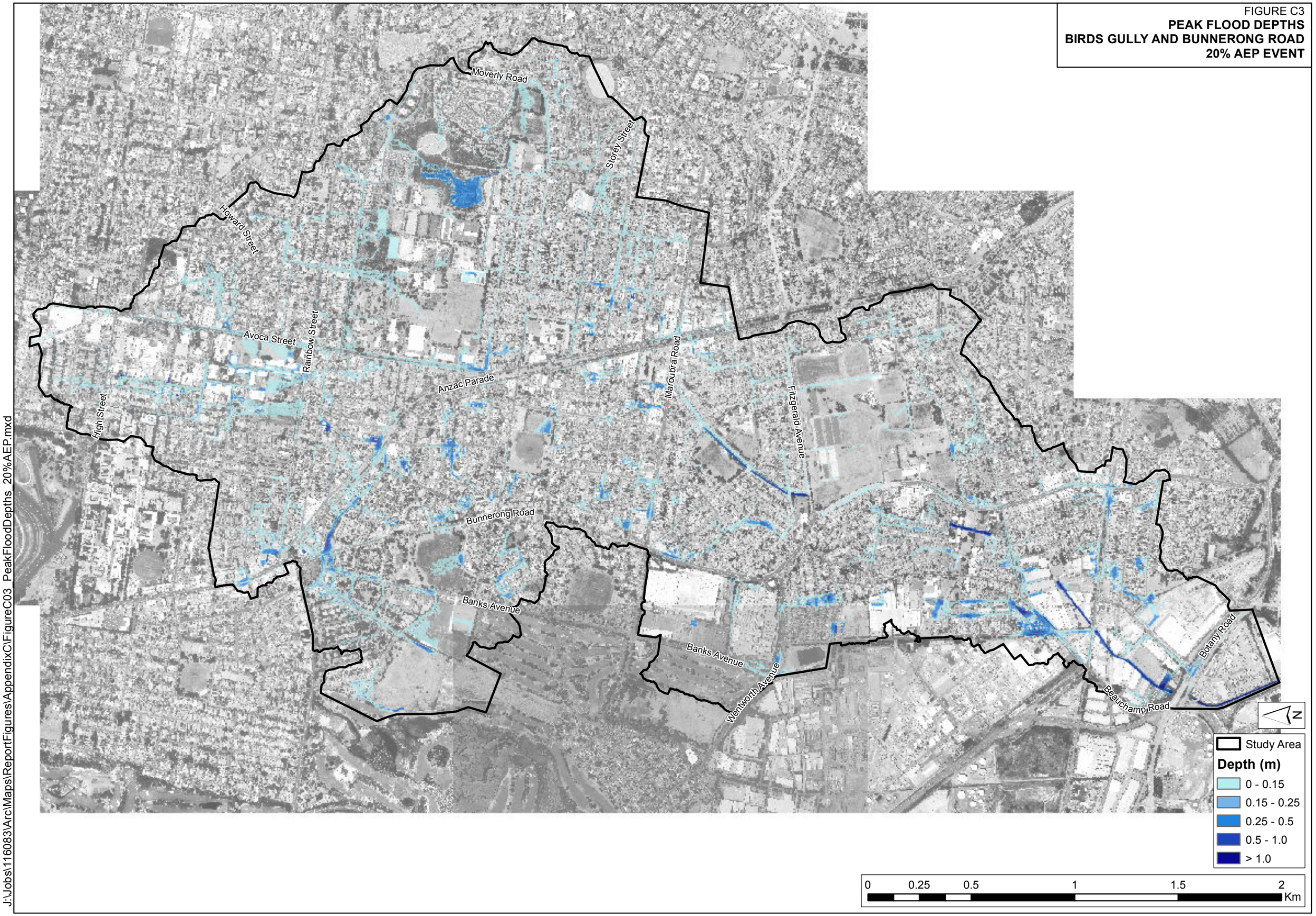

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FIGURE C4
PEAK FLOOD DEPTHS
BIRDS GULLY AND BUNNERONG ROAD
10% AEP EVENT

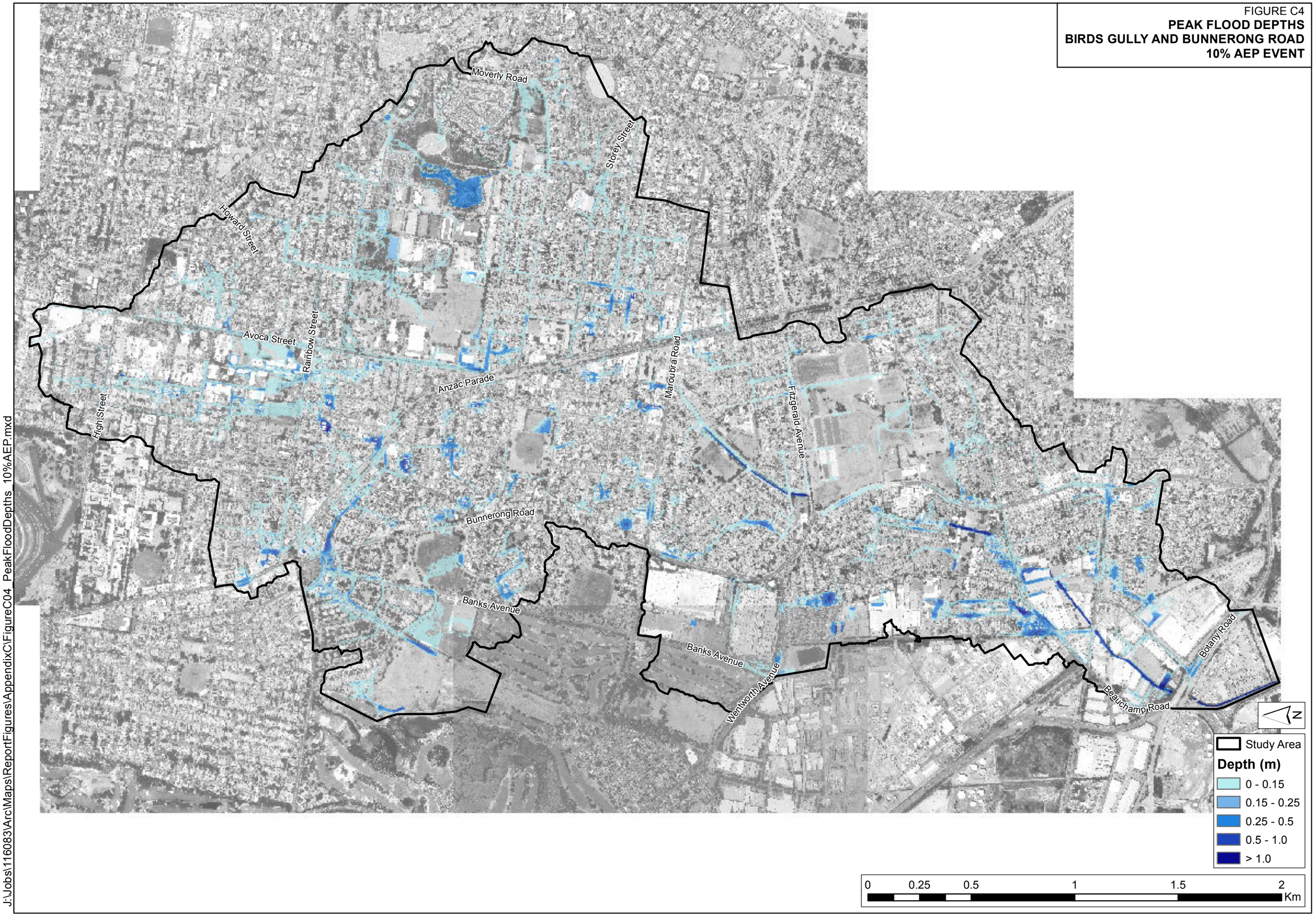

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FIGURE C5
PEAK FLOOD DEPTHS
BIRDS GULLY AND BUNNERONG ROAD
5% AEP EVENT

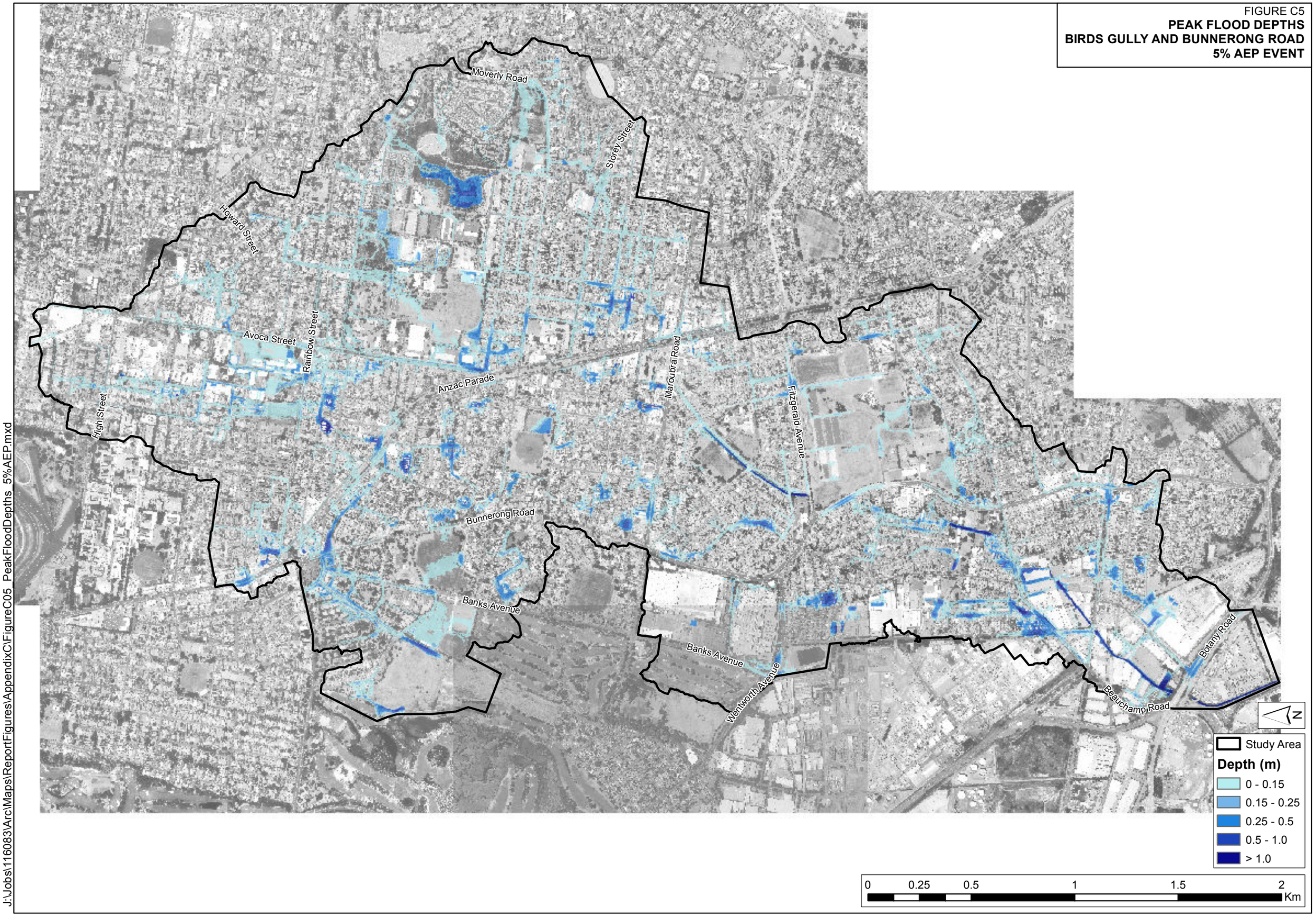

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FIGURE C6
PEAK FLOOD DEPTHS
BIRDS GULLY AND BUNNERONG ROAD
2% AEP EVENT

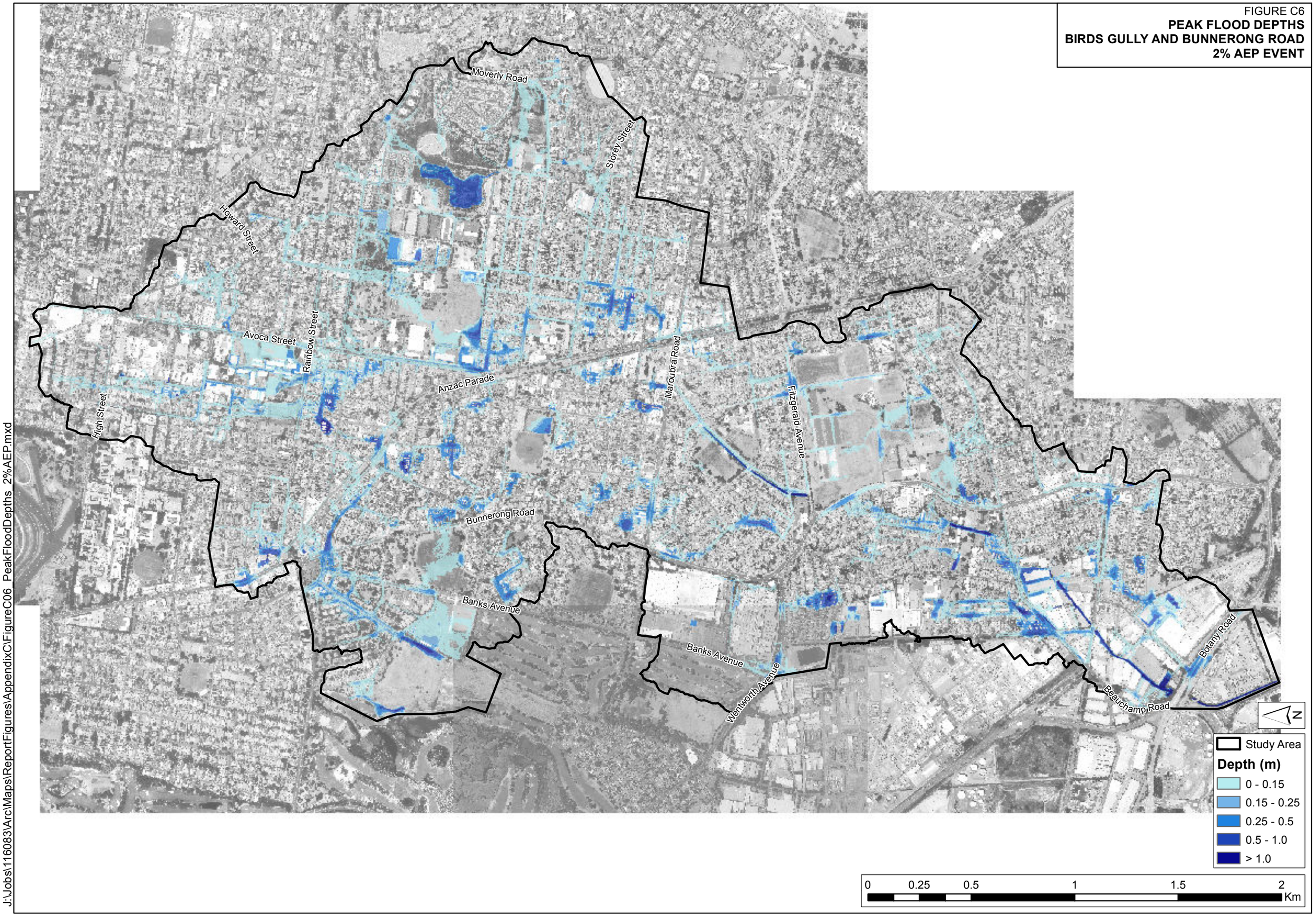

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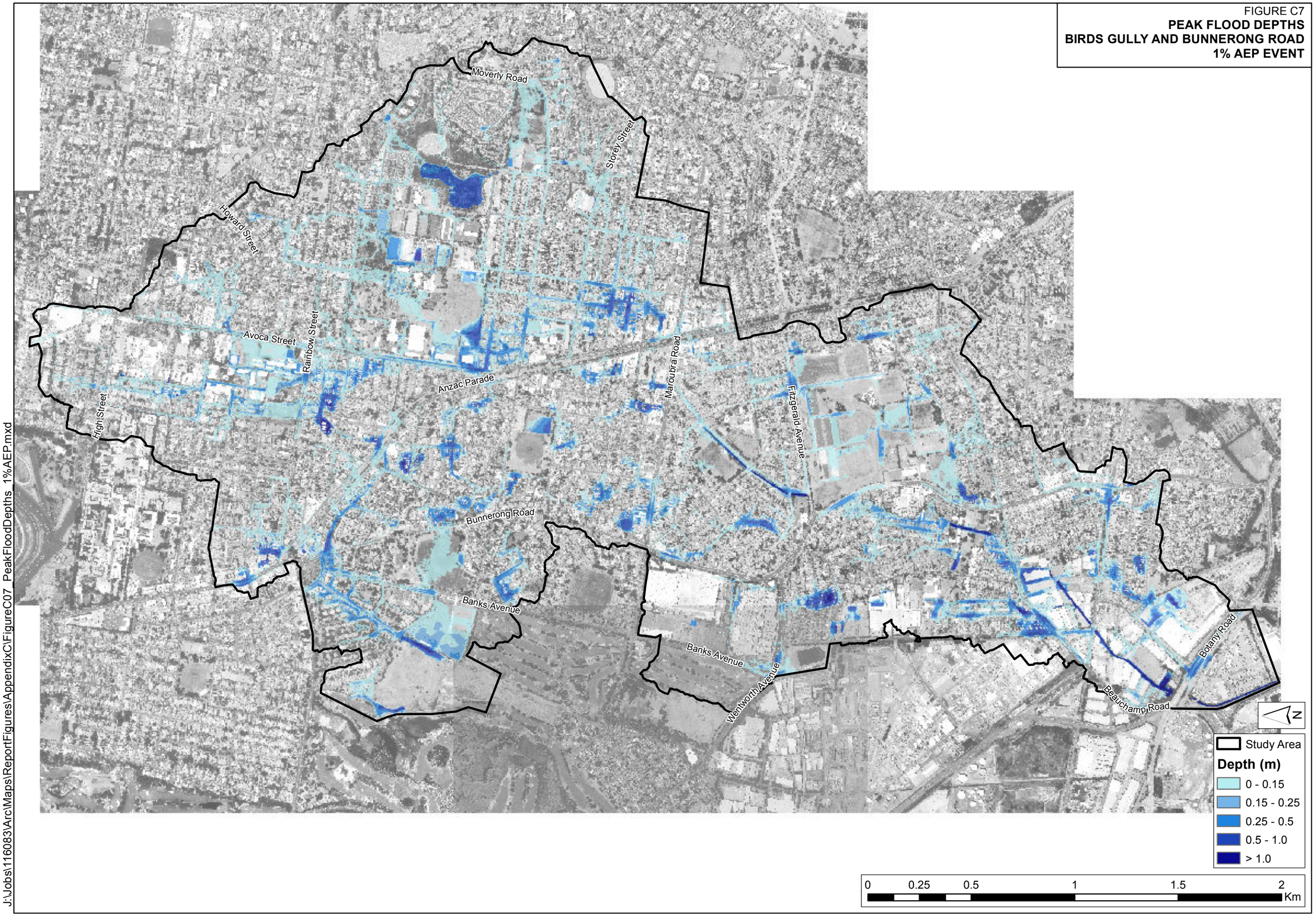
FIGURE C7
PEAK FLOOD DEPTHS
BIRDS GULLY AND BUNNERONG ROAD
1% AEP EVENT



J:\Jobs\116083\Arc\Maps\ReportFigures\AppendixC\FigureC07_PeakFloodDepths_1%AEP.mxd

FIGURE C8
PEAK FLOOD DEPTHS
BIRDS GULLY AND BUNNERONG ROAD
0.5% AEP EVENT

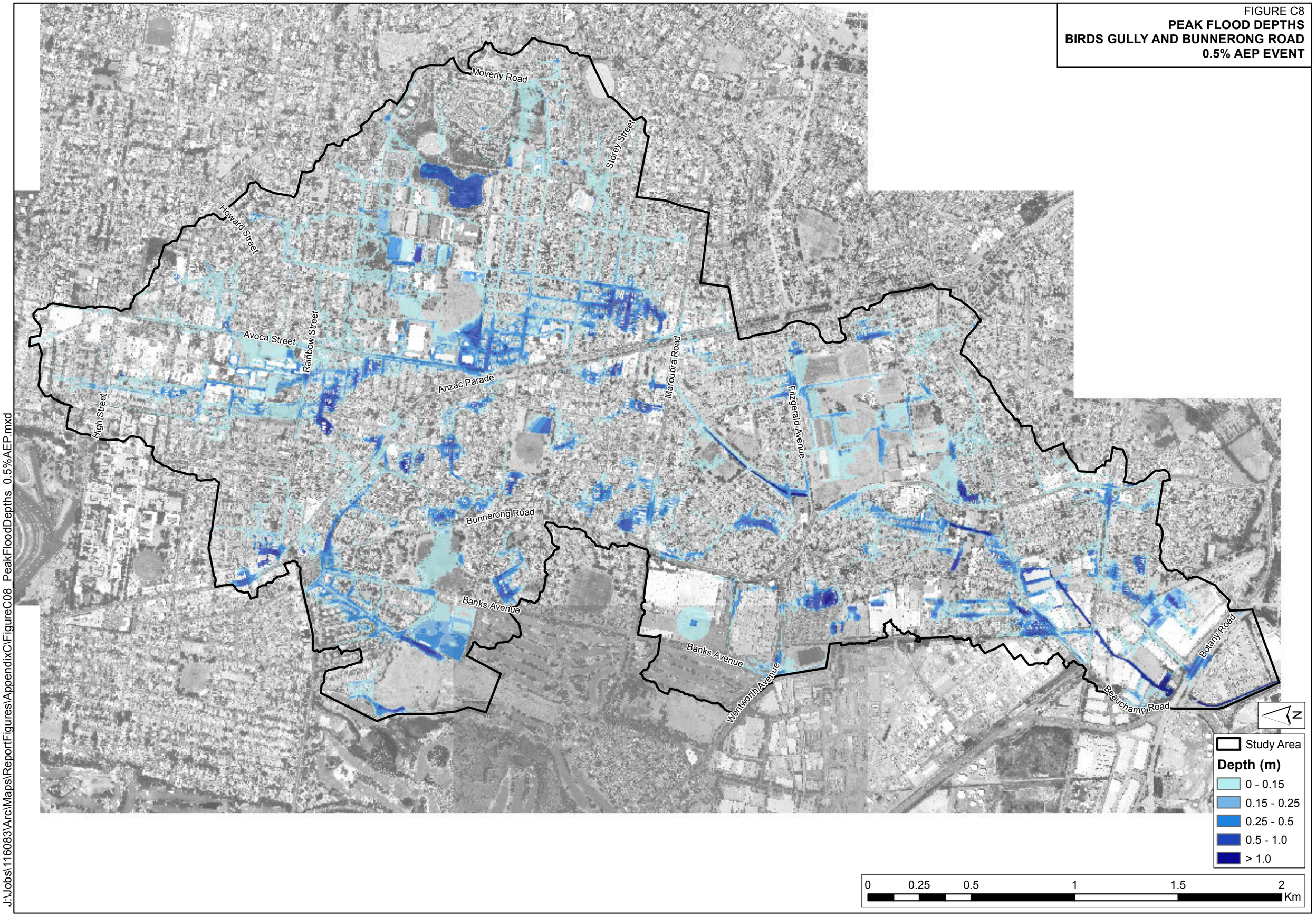


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FIGURE C9
PEAK FLOOD DEPTHS
BIRDS GULLY AND BUNNERONG ROAD
PMF EVENT

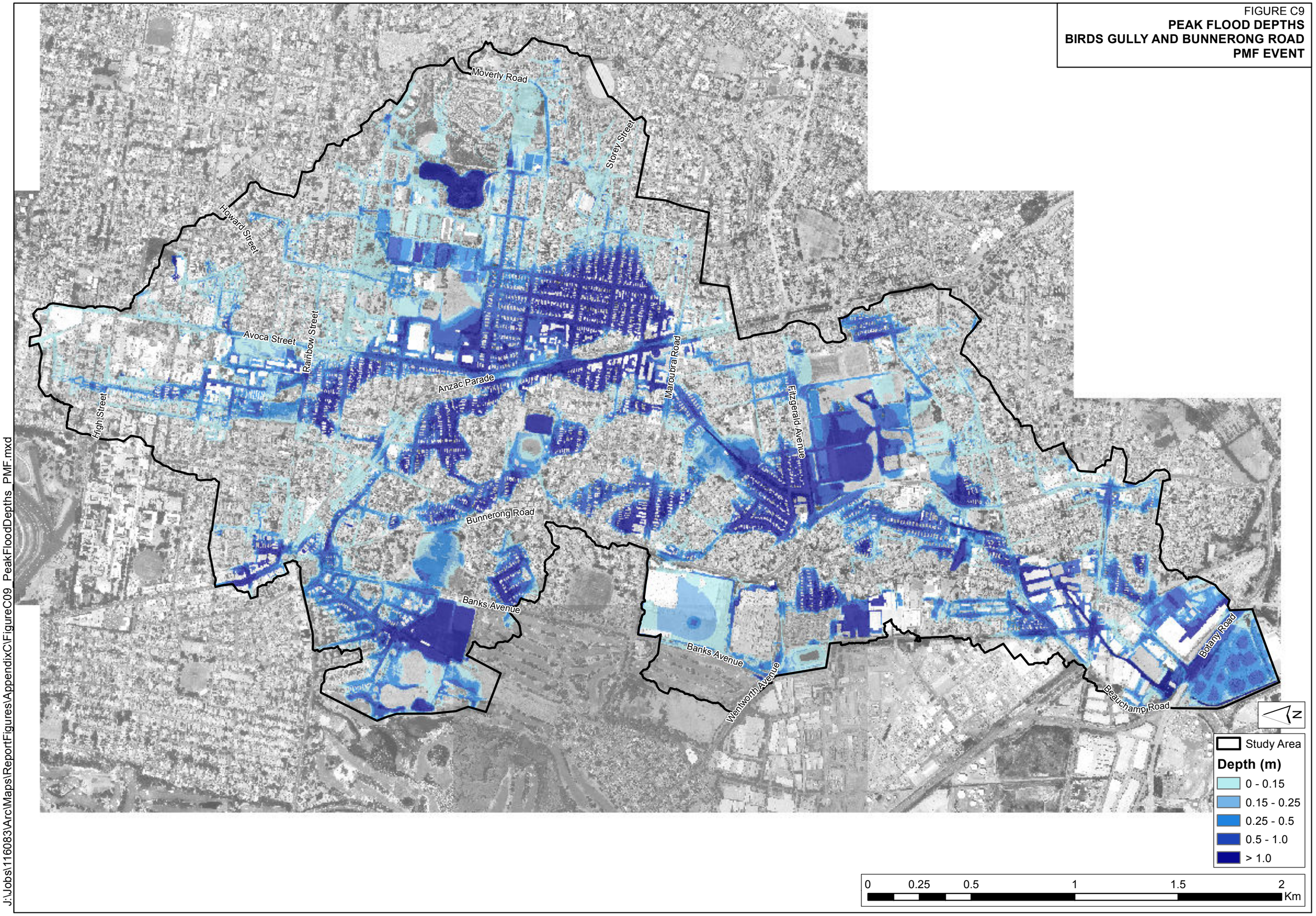

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FIGURE C10
PEAK VELOCITIES
BIRDS GULLY AND BUNNERONG ROAD
1 EY EVENT

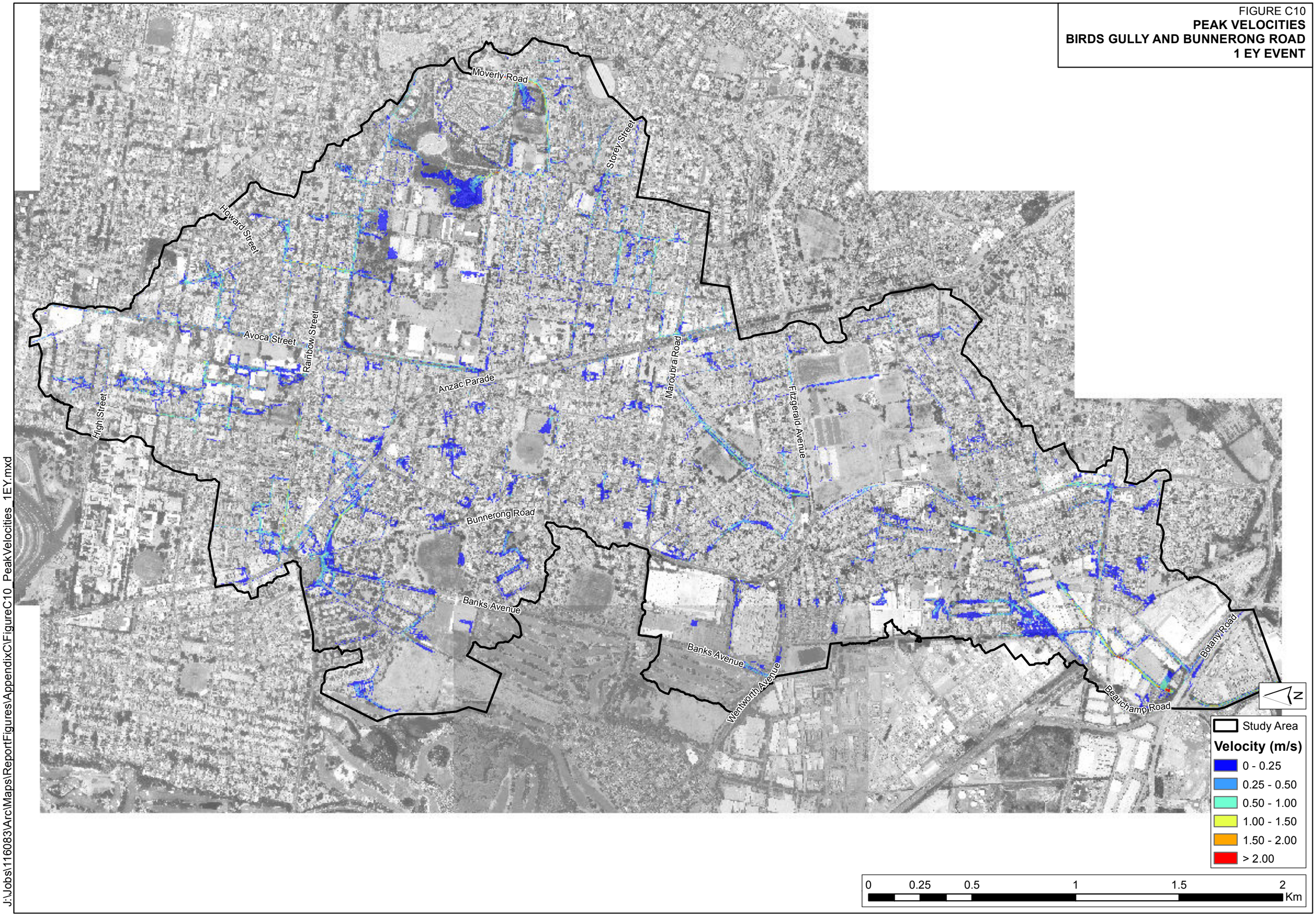

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FIGURE C11
PEAK VELOCITIES
BIRDS GULLY AND BUNNERONG ROAD
0.5 EY EVENT

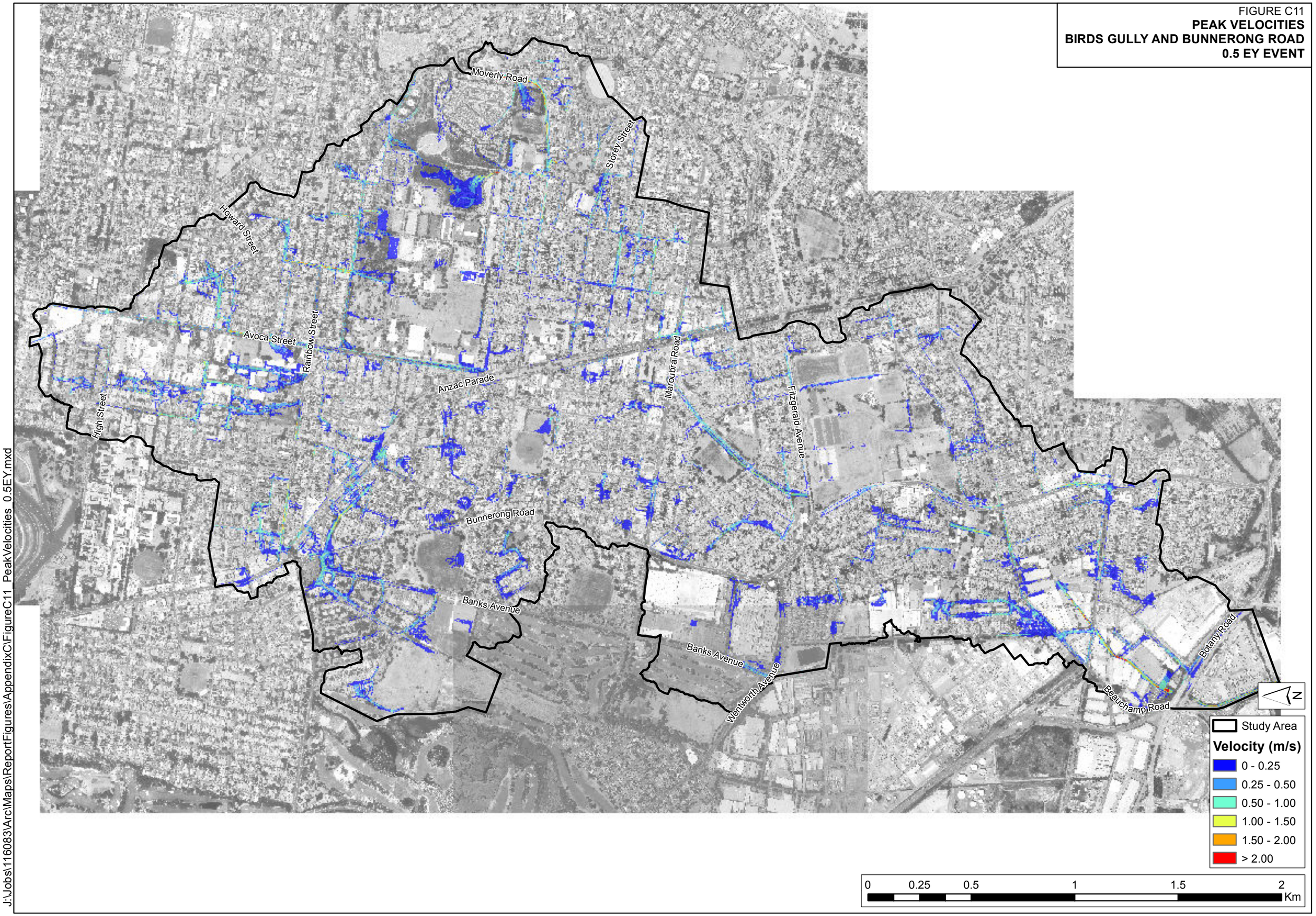

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FIGURE C12
PEAK VELOCITIES
BIRDS GULLY AND BUNNERONG ROAD
20% AEP EVENT

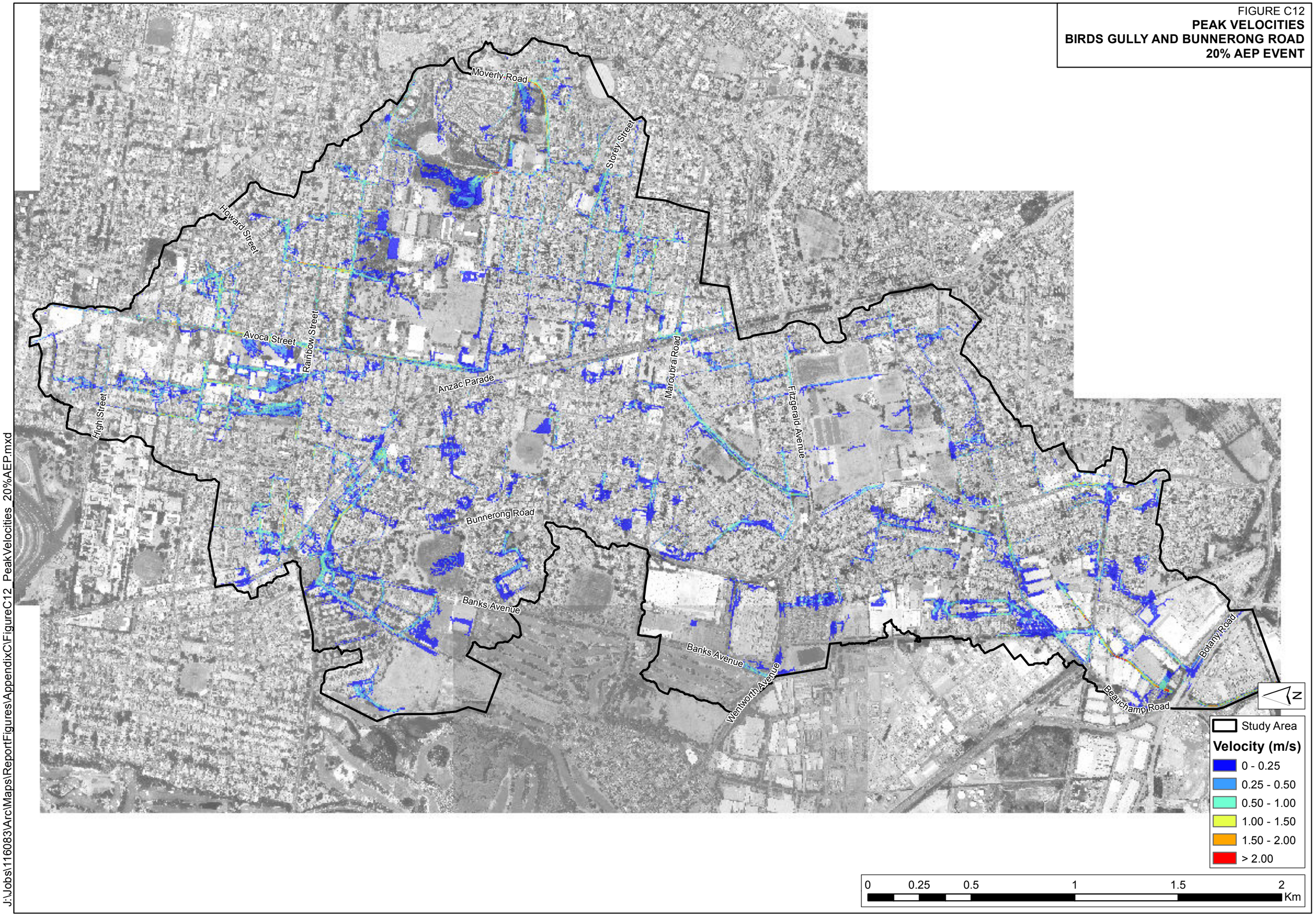

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FIGURE C13
PEAK VELOCITIES
BIRDS GULLY AND BUNNERONG ROAD
10% AEP EVENT

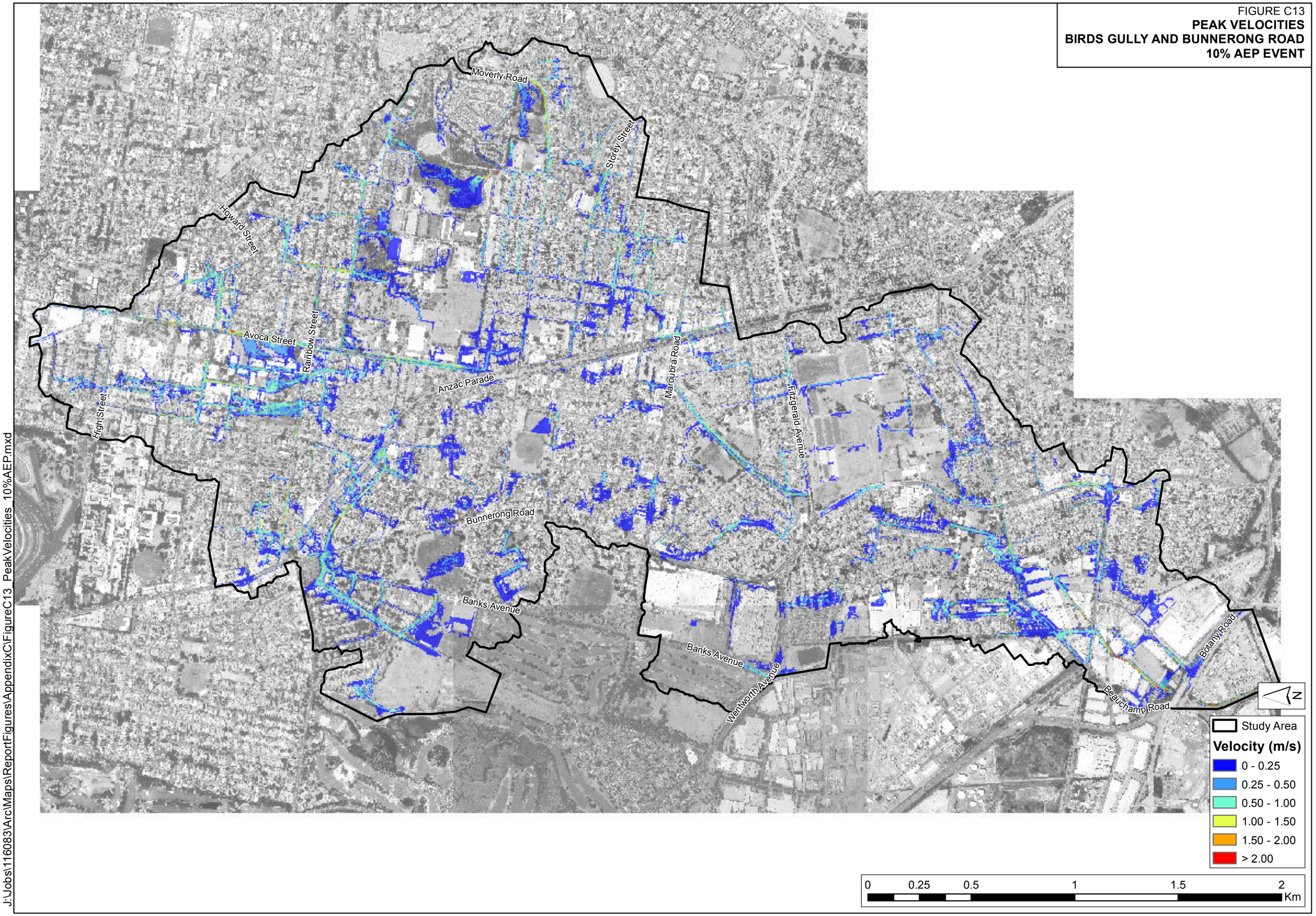

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FIGURE C14
PEAK VELOCITIES
BIRDS GULLY AND BUNNERONG ROAD
5% AEP EVENT

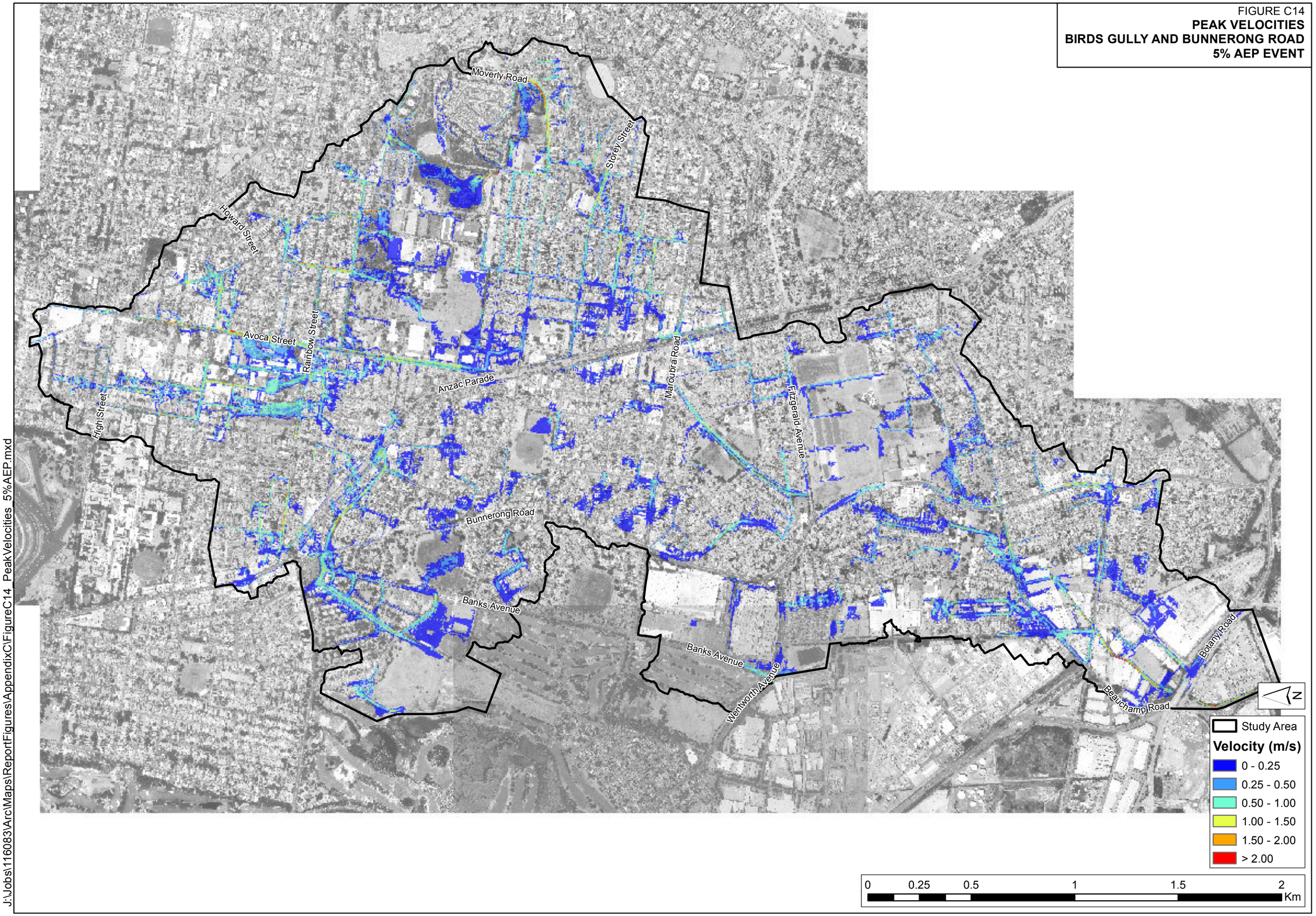

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FIGURE C15
PEAK VELOCITIES
BIRDS GULLY AND BUNNERONG ROAD
2% AEP EVENT

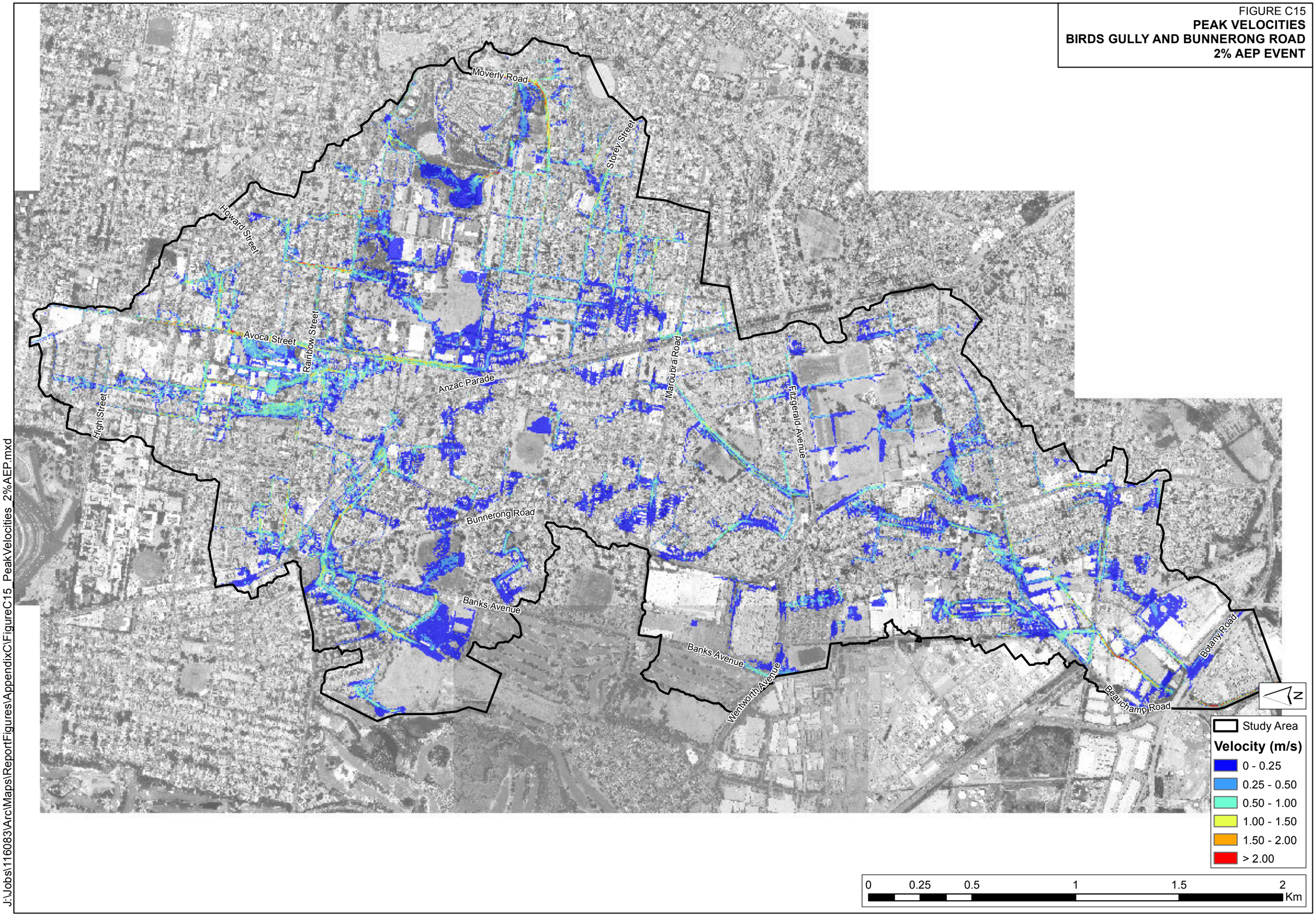

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FIGURE C16
PEAK VELOCITIES
BIRDS GULLY AND BUNNERONG ROAD
1% AEP EVENT

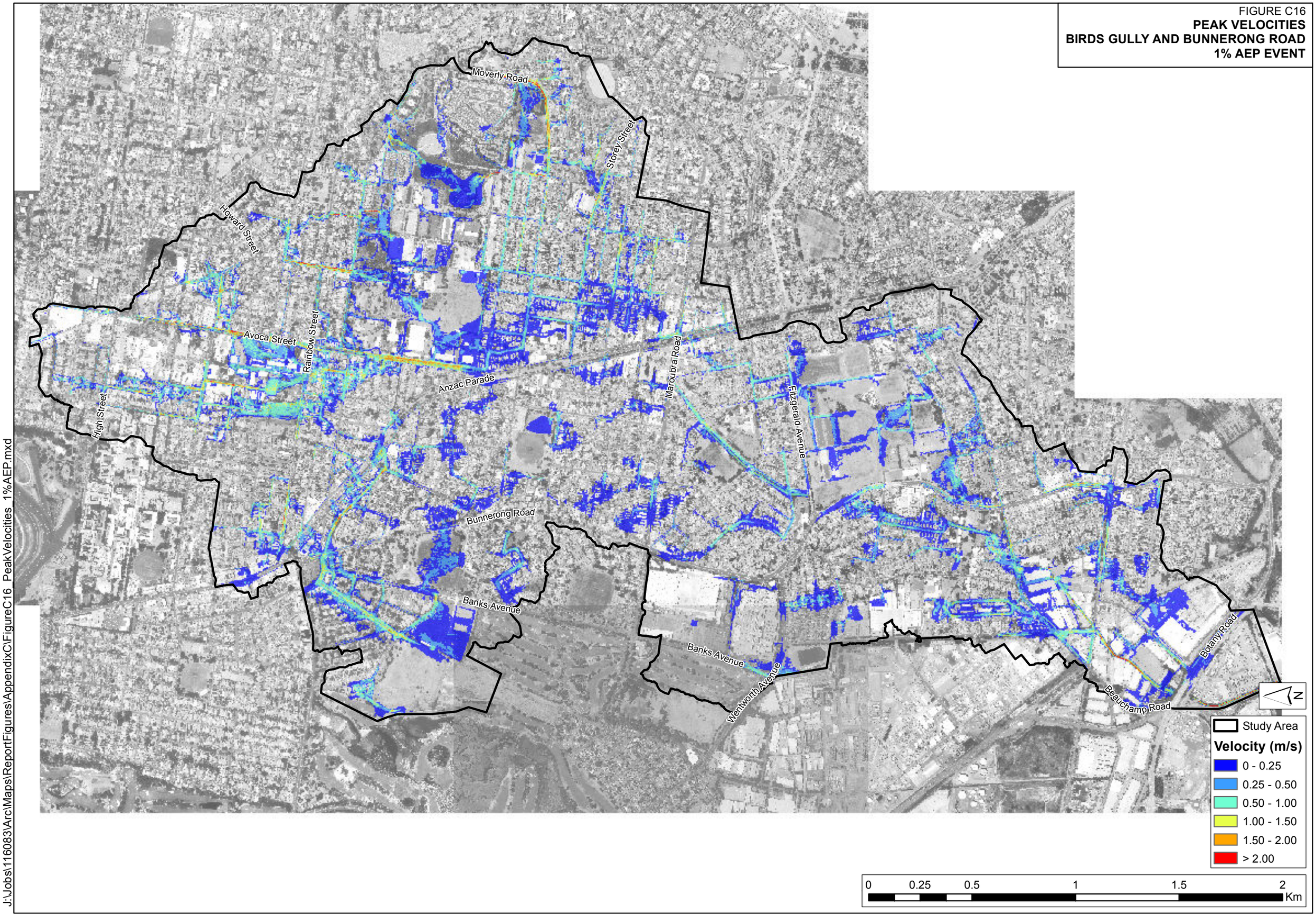

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FIGURE C17
PEAK VELOCITIES
BIRDS GULLY AND BUNNERONG ROAD
0.5% AEP EVENT

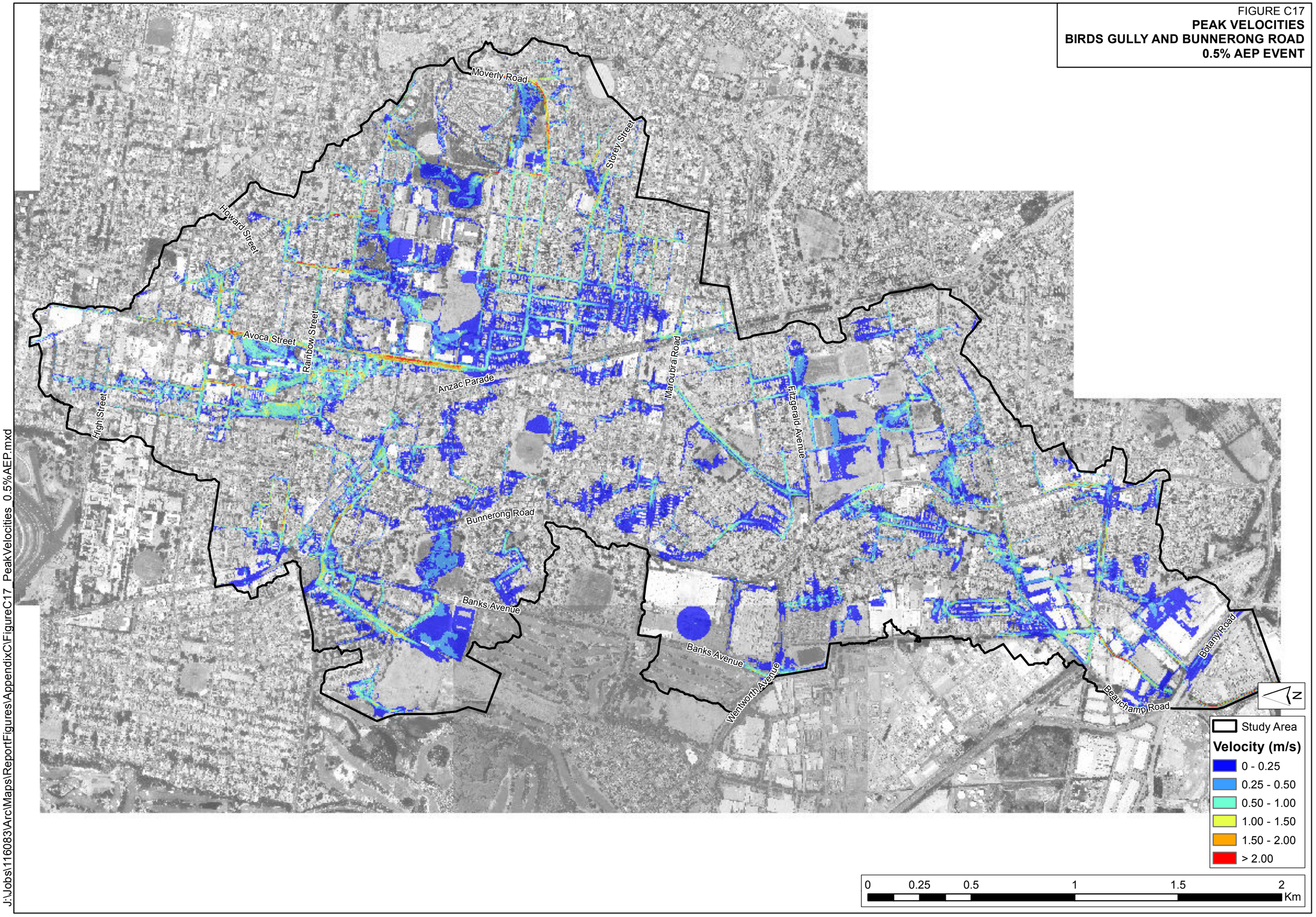

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FIGURE C18
PEAK VELOCITIES
BIRDS GULLY AND BUNNERONG ROAD
PMF EVENT

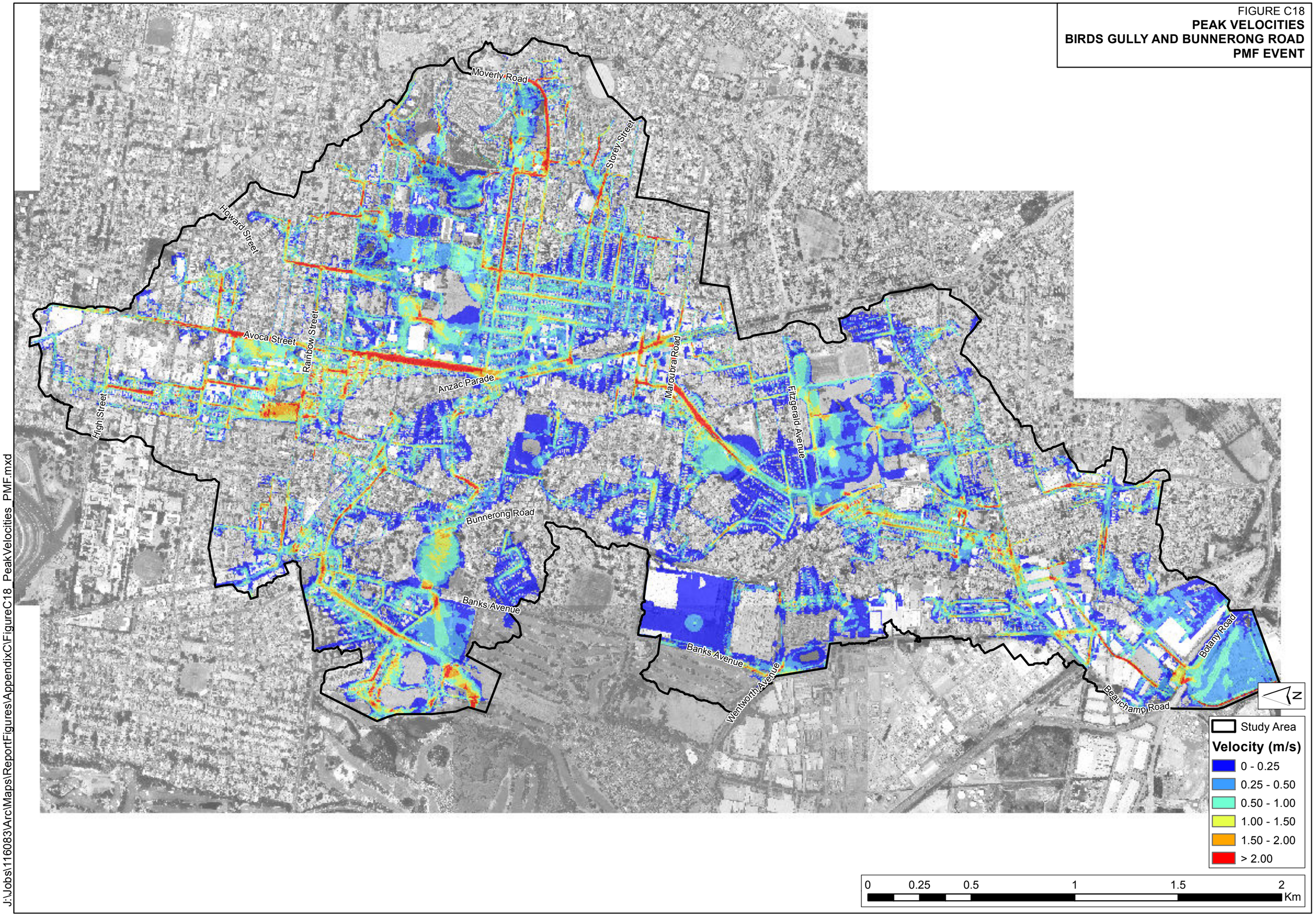

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FIGURE C19
PROVISIONAL HYDRAULIC HAZARD
BIRDS GULLY AND BUNNERONG ROAD
20% AEP EVENT

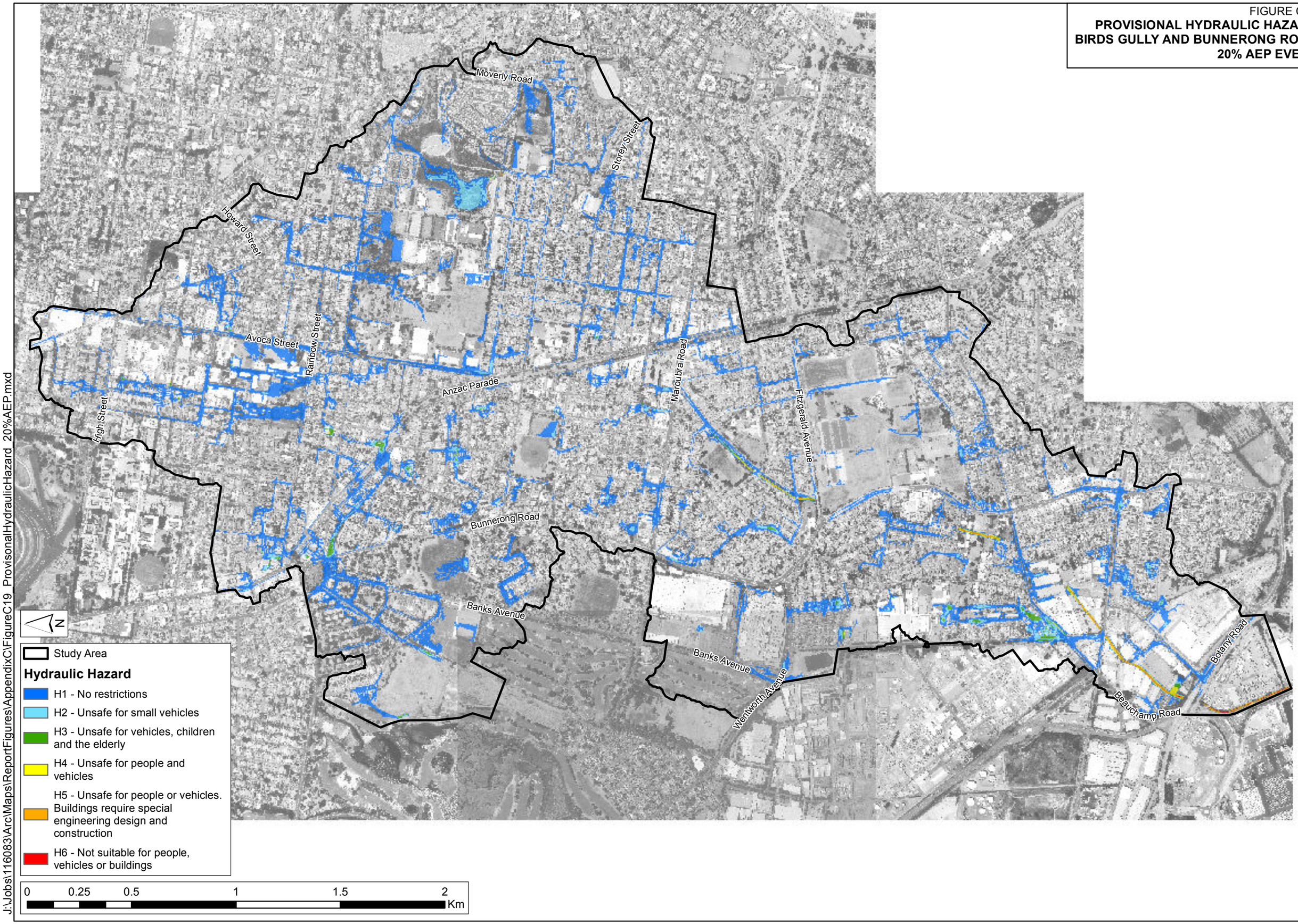

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FIGURE C20
PROVISIONAL HYDRAULIC HAZARD
BIRDS GULLY AND BUNNERONG ROAD
5% AEP EVENT

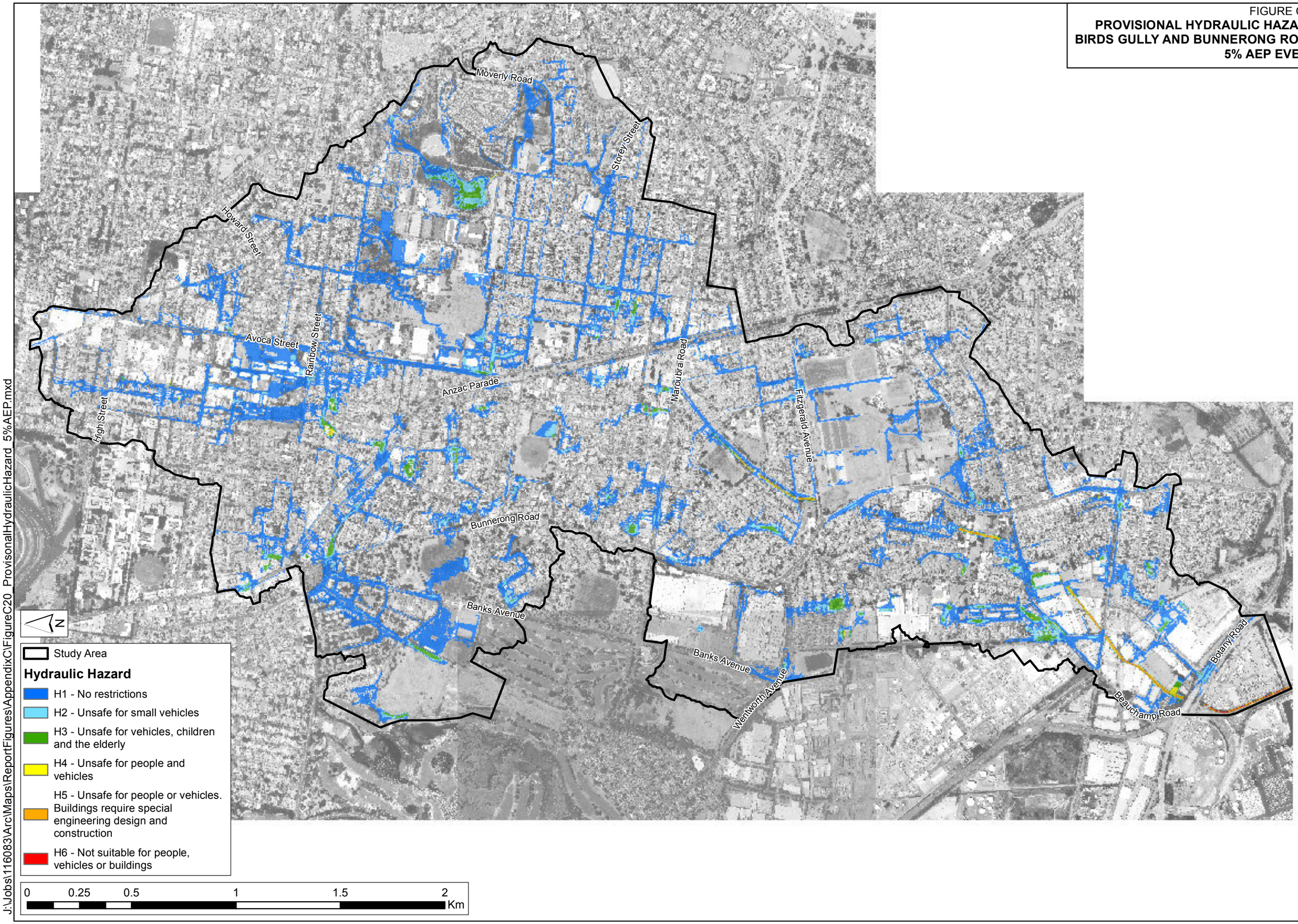

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FIGURE C21
PROVISIONAL HYDRAULIC HAZARD
BIRDS GULLY AND BUNNERONG ROAD
1% AEP EVENT

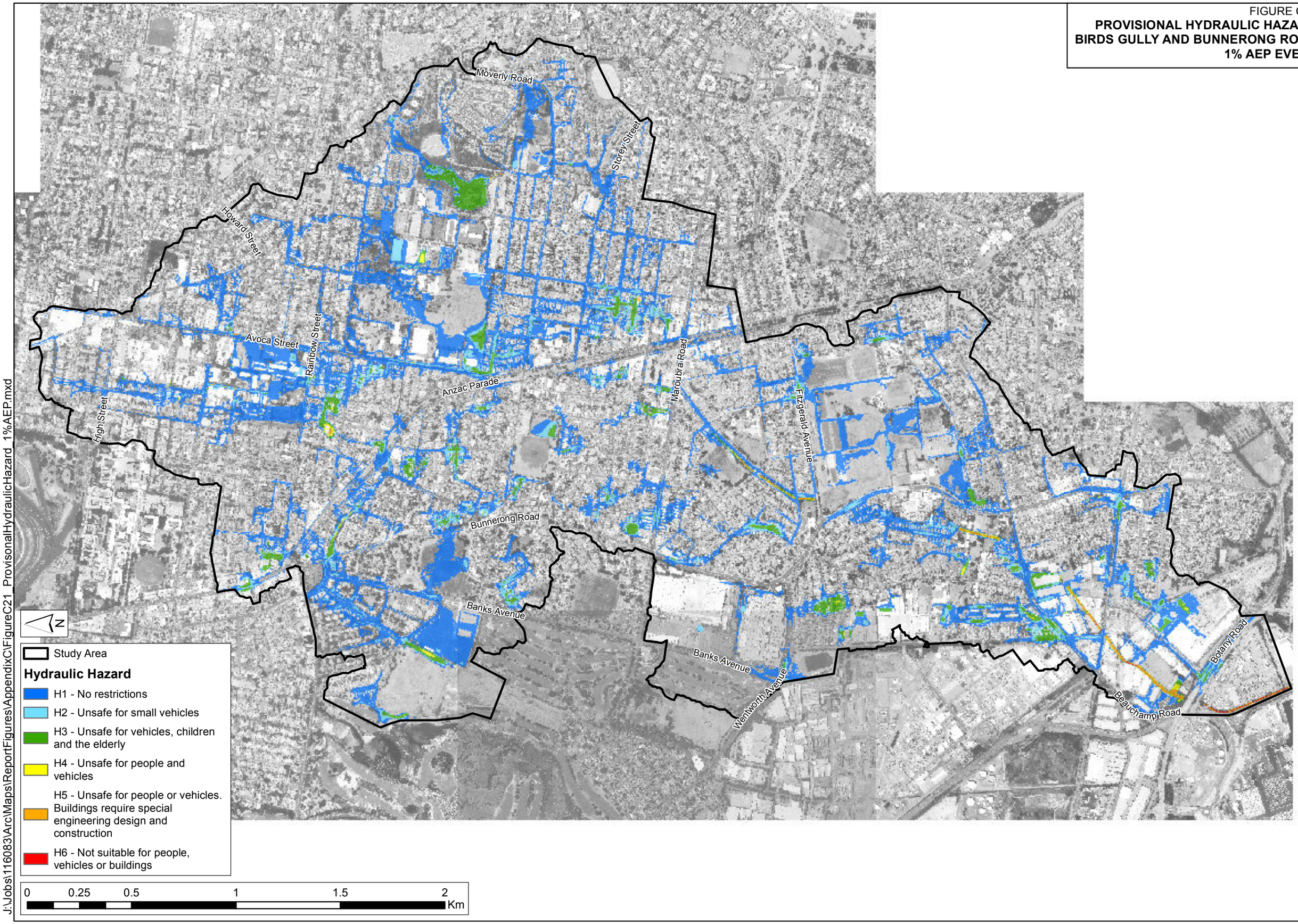

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FIGURE C22
PROVISIONAL HYDRAULIC HAZARD
BIRDS GULLY AND BUNNERONG ROAD
PMF EVENT

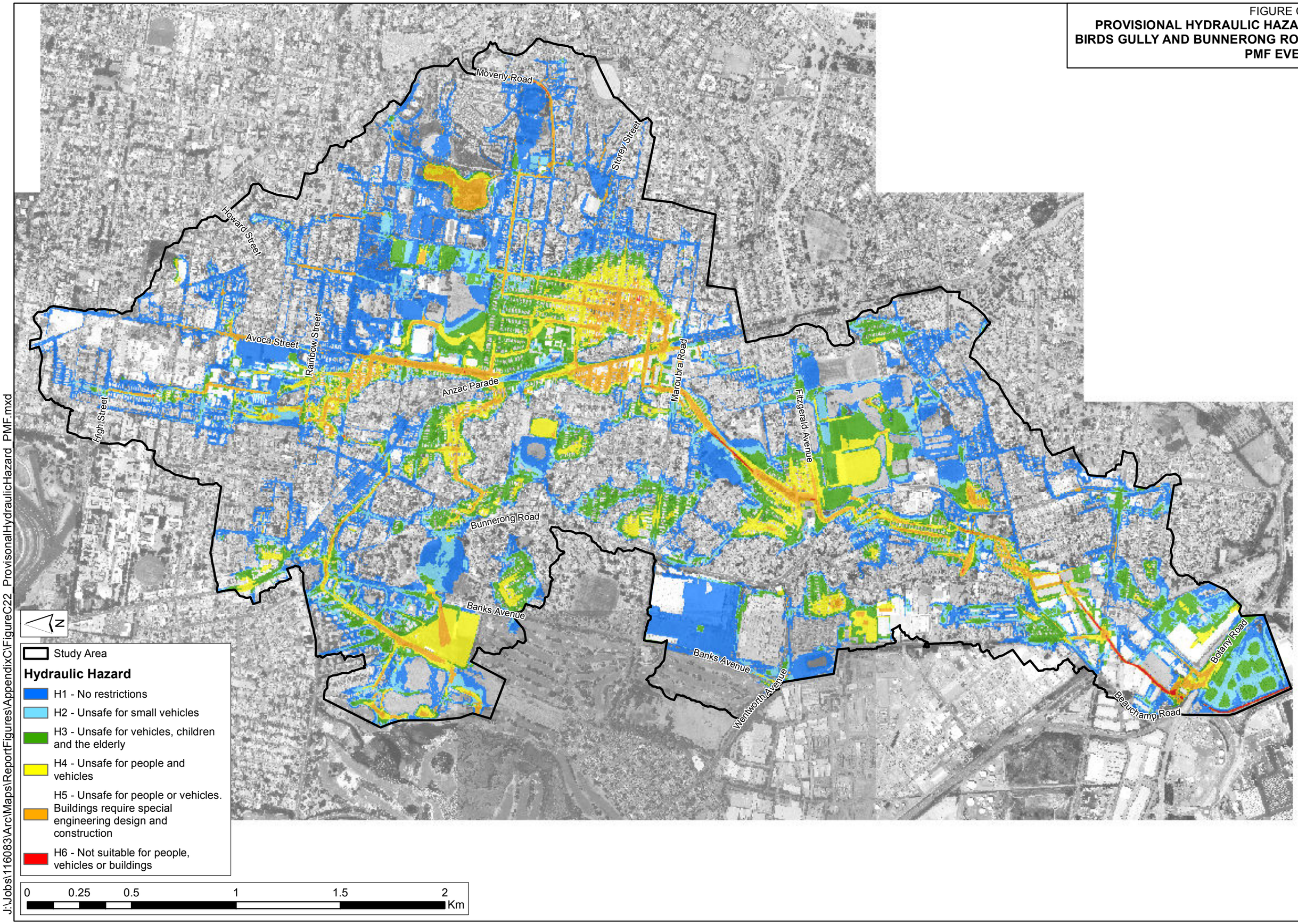

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FIGURE C23
HYDRAULIC CATEGORISATION
BIRDS GULLY AND BUNNERONG ROAD
1% AEP EVENT

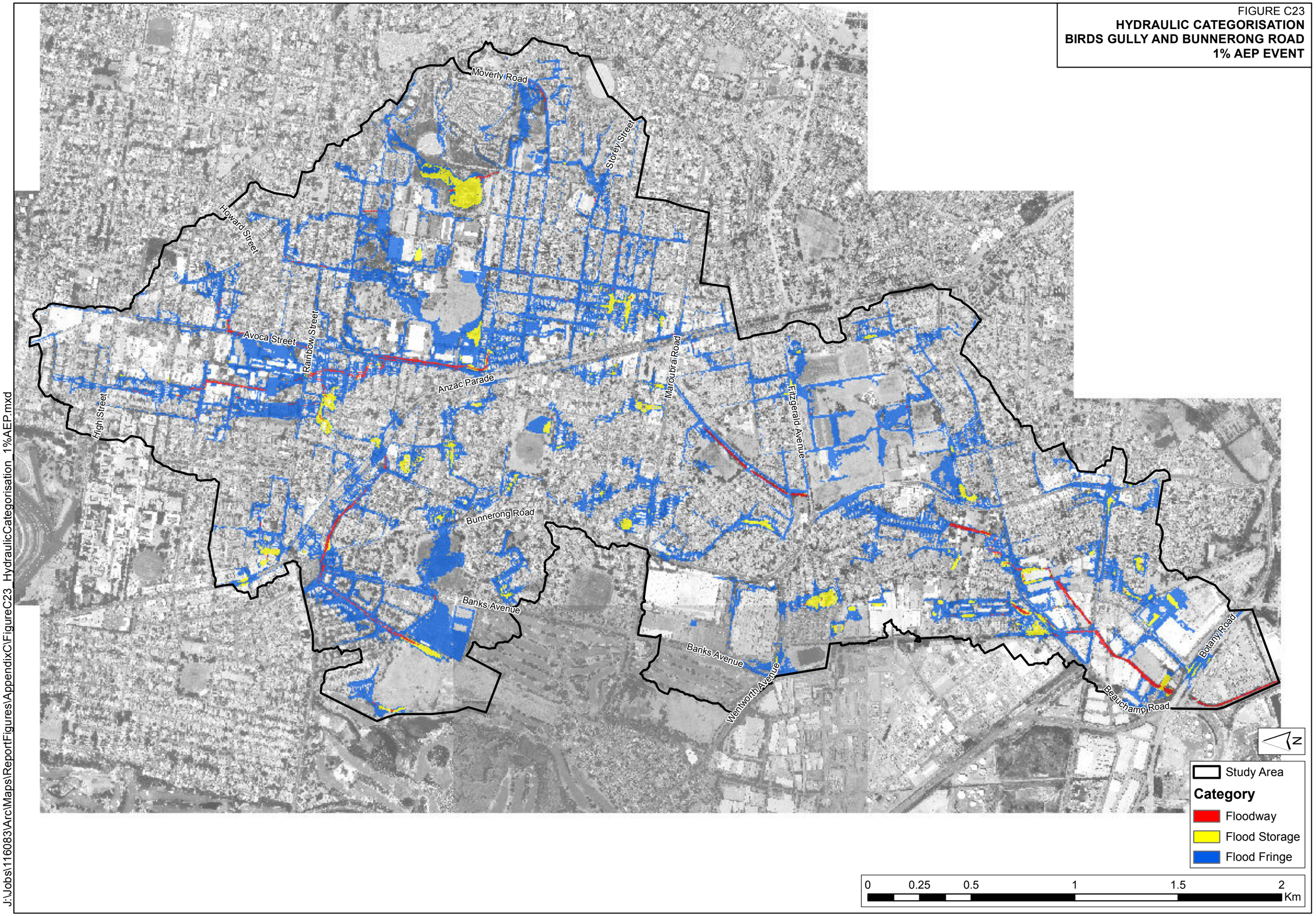

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FIGURE C24
HYDRAULIC CATEGORISATION
BIRDS GULLY AND BUNNERONG ROAD
PMF EVENT

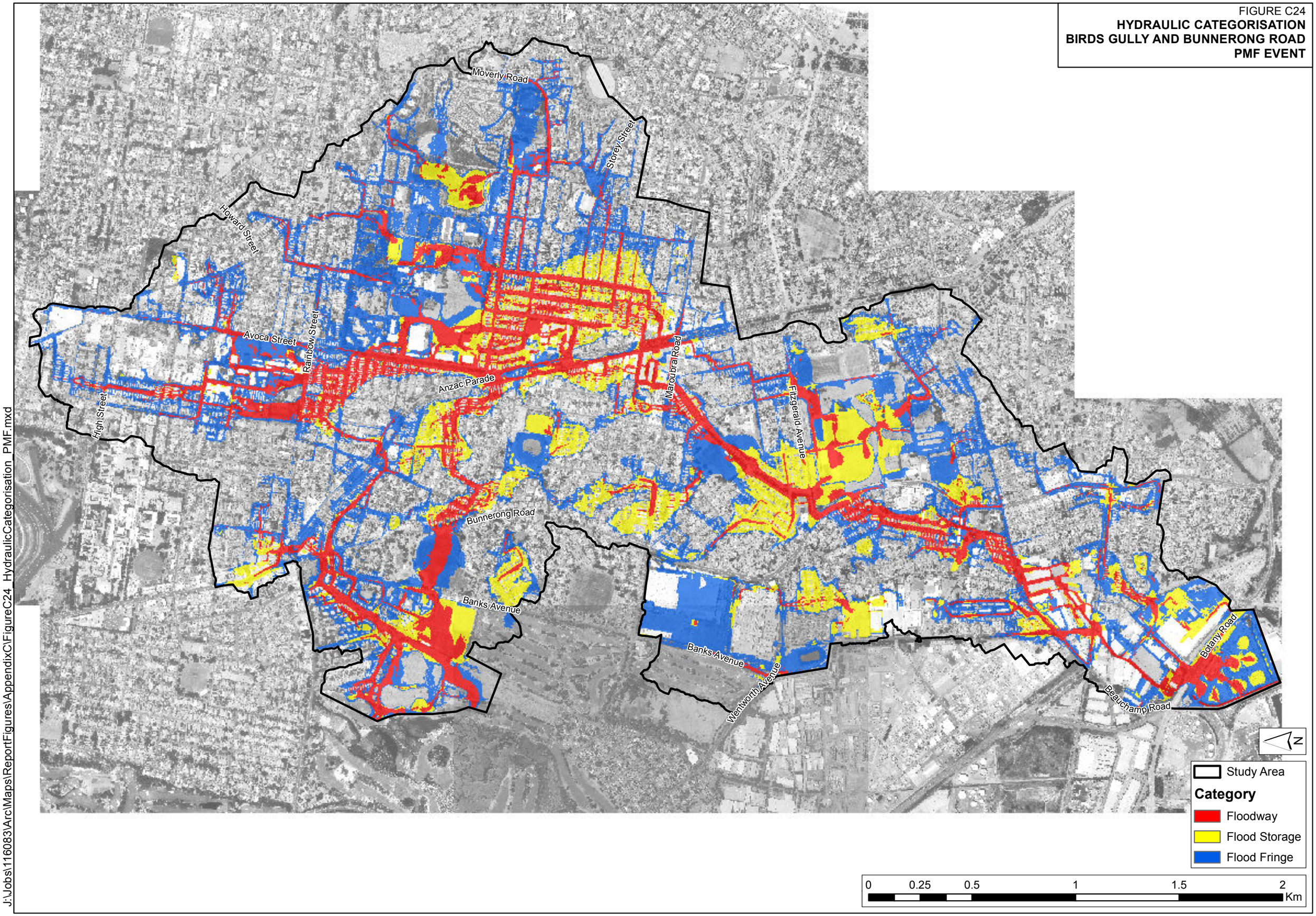

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FIGURE C1
PEAK FLOOD DEPTHS
BIRDS GULLY AND BUNNERONG ROAD
1 EY EVENT

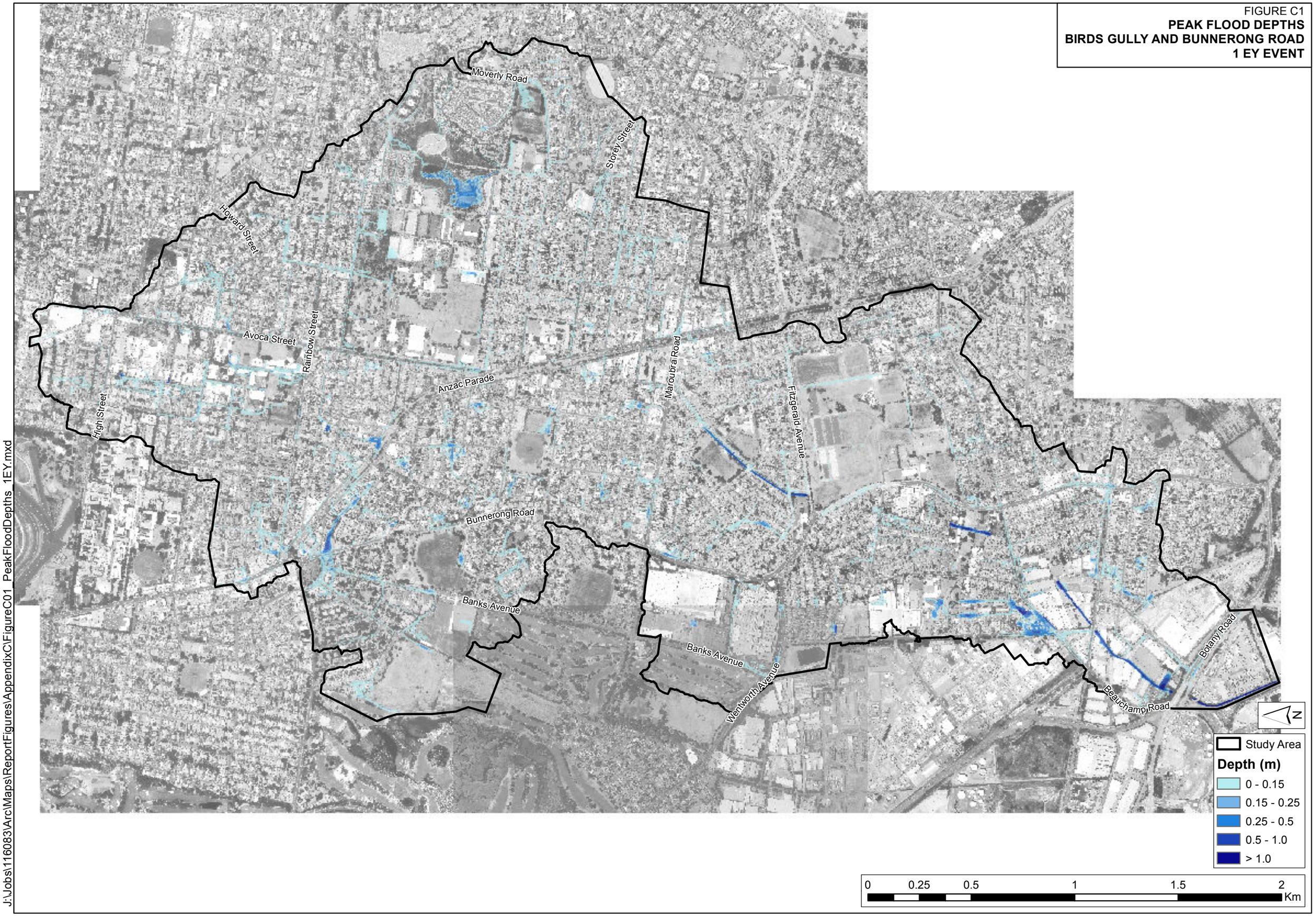

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FIGURE C2
PEAK FLOOD DEPTHS
BIRDS GULLY AND BUNNERONG ROAD
0.5 EY EVENT

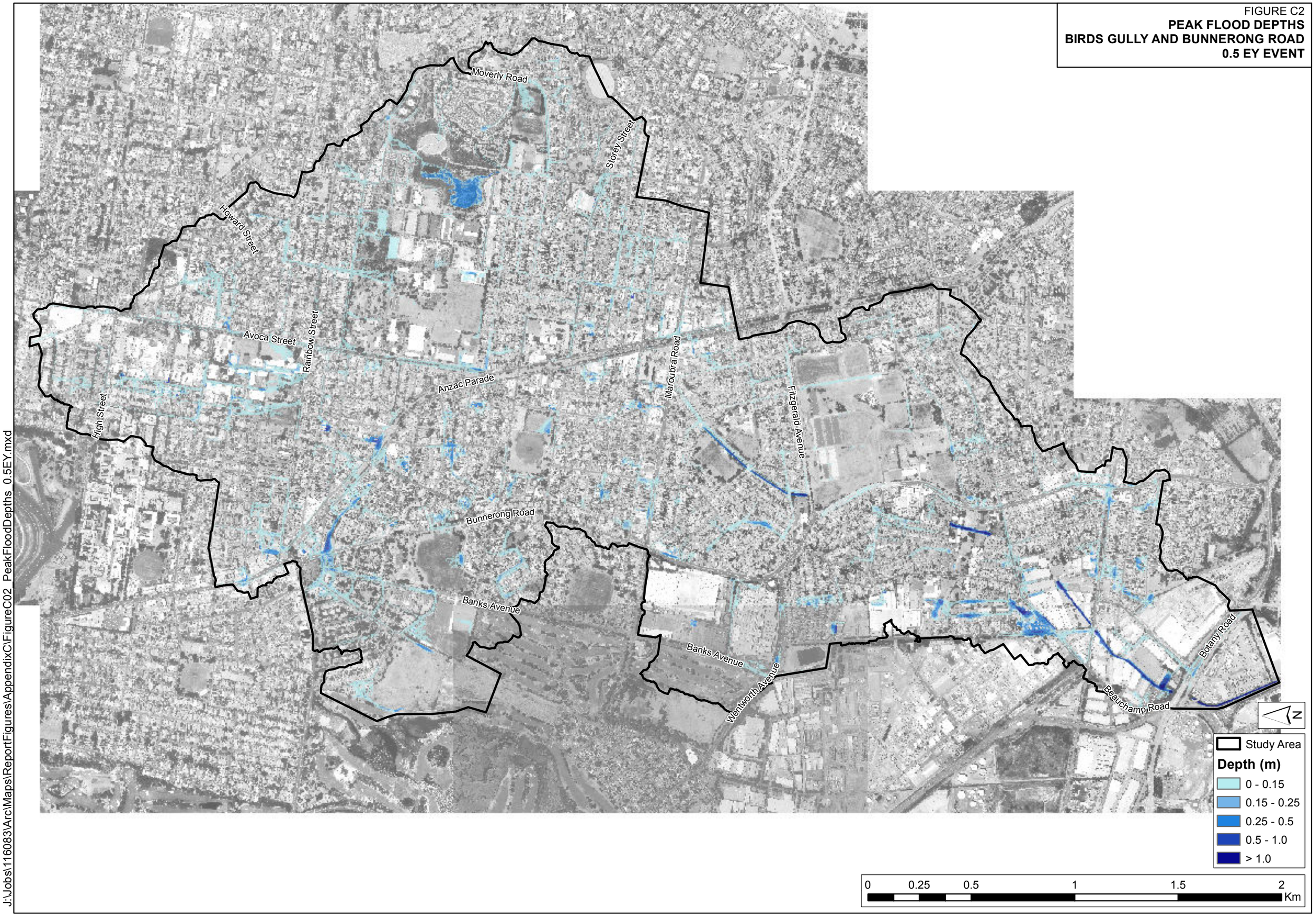

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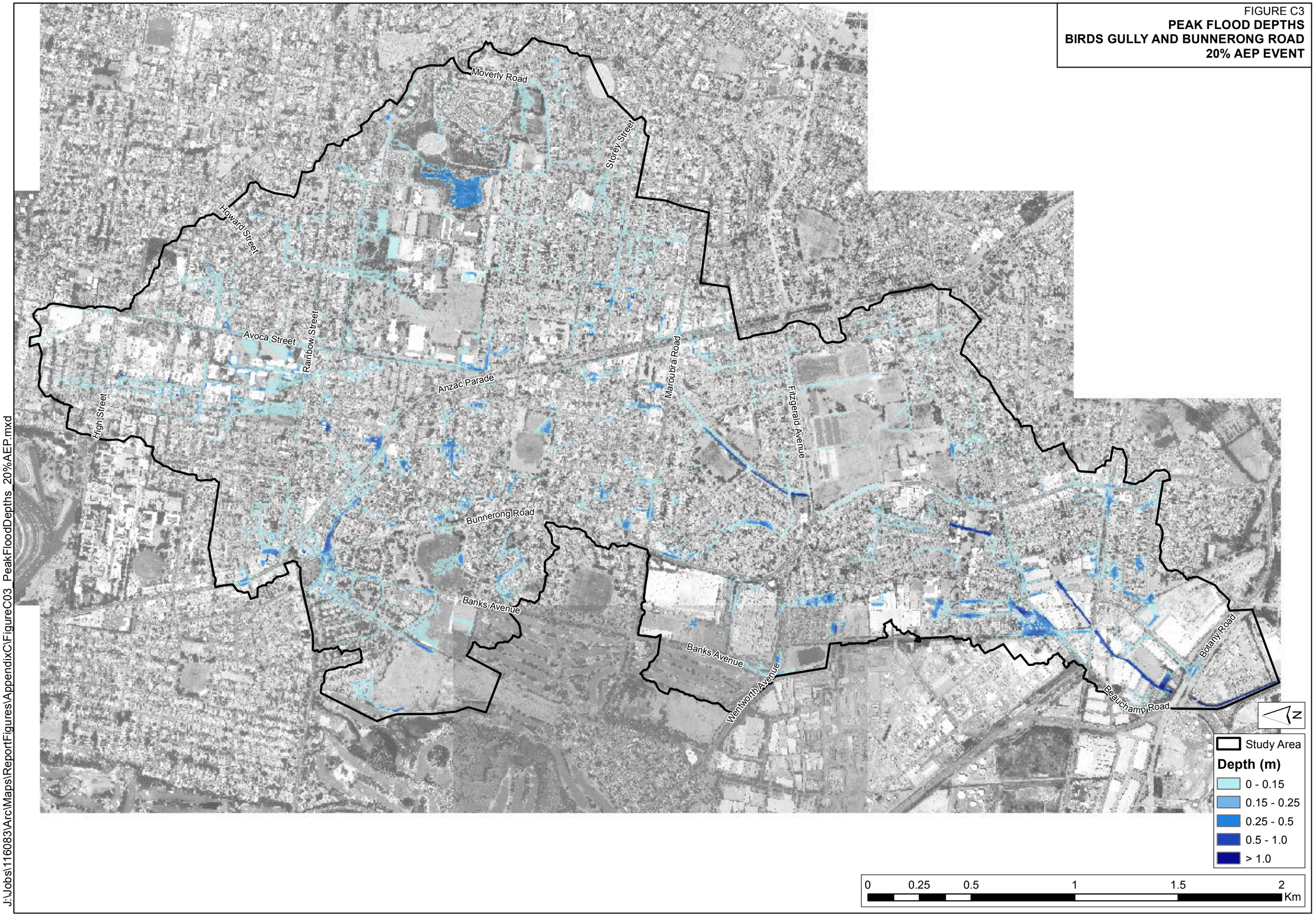
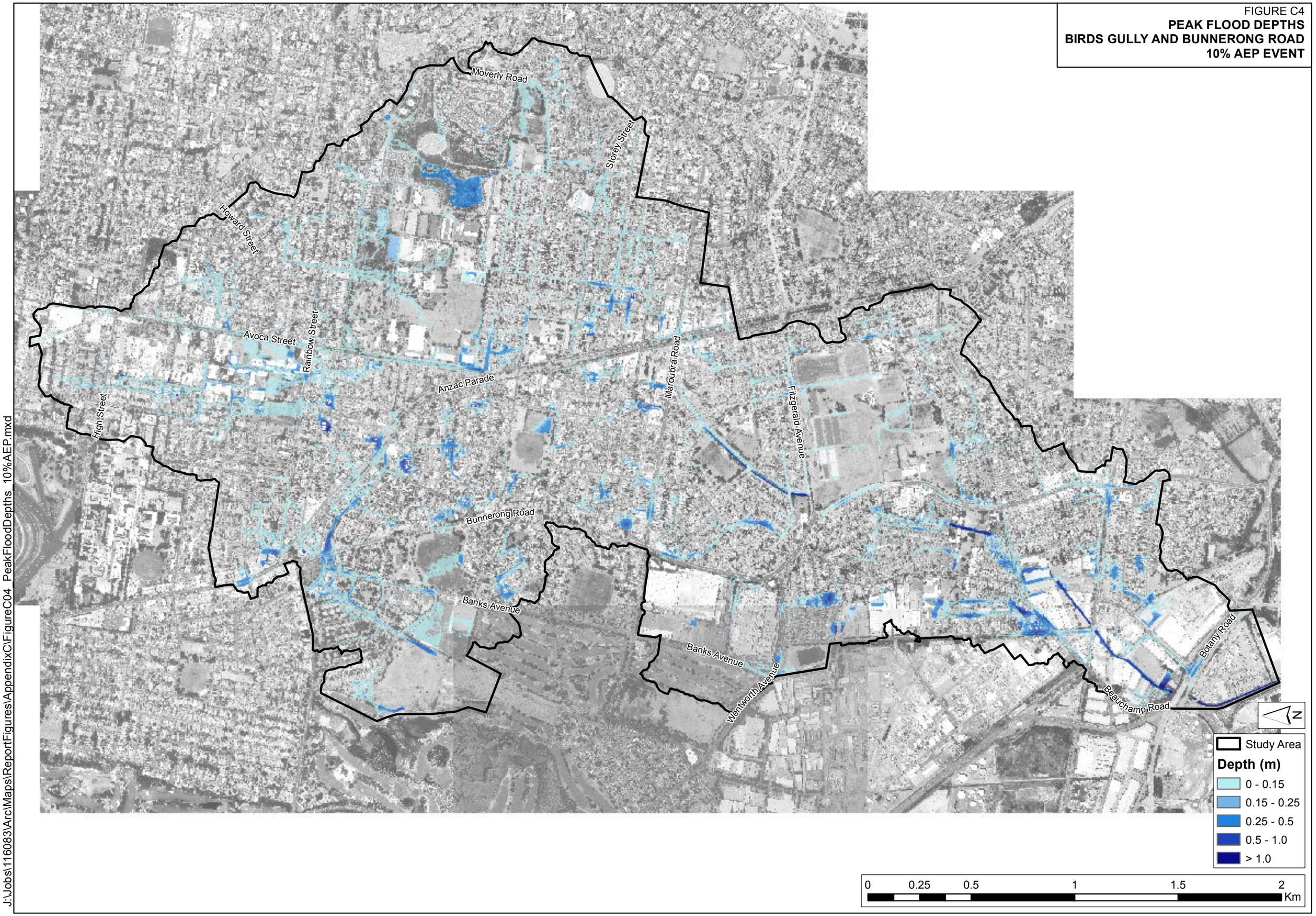
FIGURE C3
PEAK FLOOD DEPTHS
BIRDS GULLY AND BUNNERONG ROAD
20% AEP EVENT



J:\Jobs\116083\Arc\Maps\ReportFigures\AppendixC\FigureC03_PeakFloodDepths_20%AEP.mxd

FIGURE C4
PEAK FLOOD DEPTHS
BIRDS GULLY AND BUNNERONG ROAD
10% AEP EVENT



J:\Jobs\116083\Arc\Maps\ReportFigures\AppendixC\FigureC04_PeakFloodDepths_10%AEP.mxd

FIGURE C5
PEAK FLOOD DEPTHS
BIRDS GULLY AND BUNNERONG ROAD
5% AEP EVENT

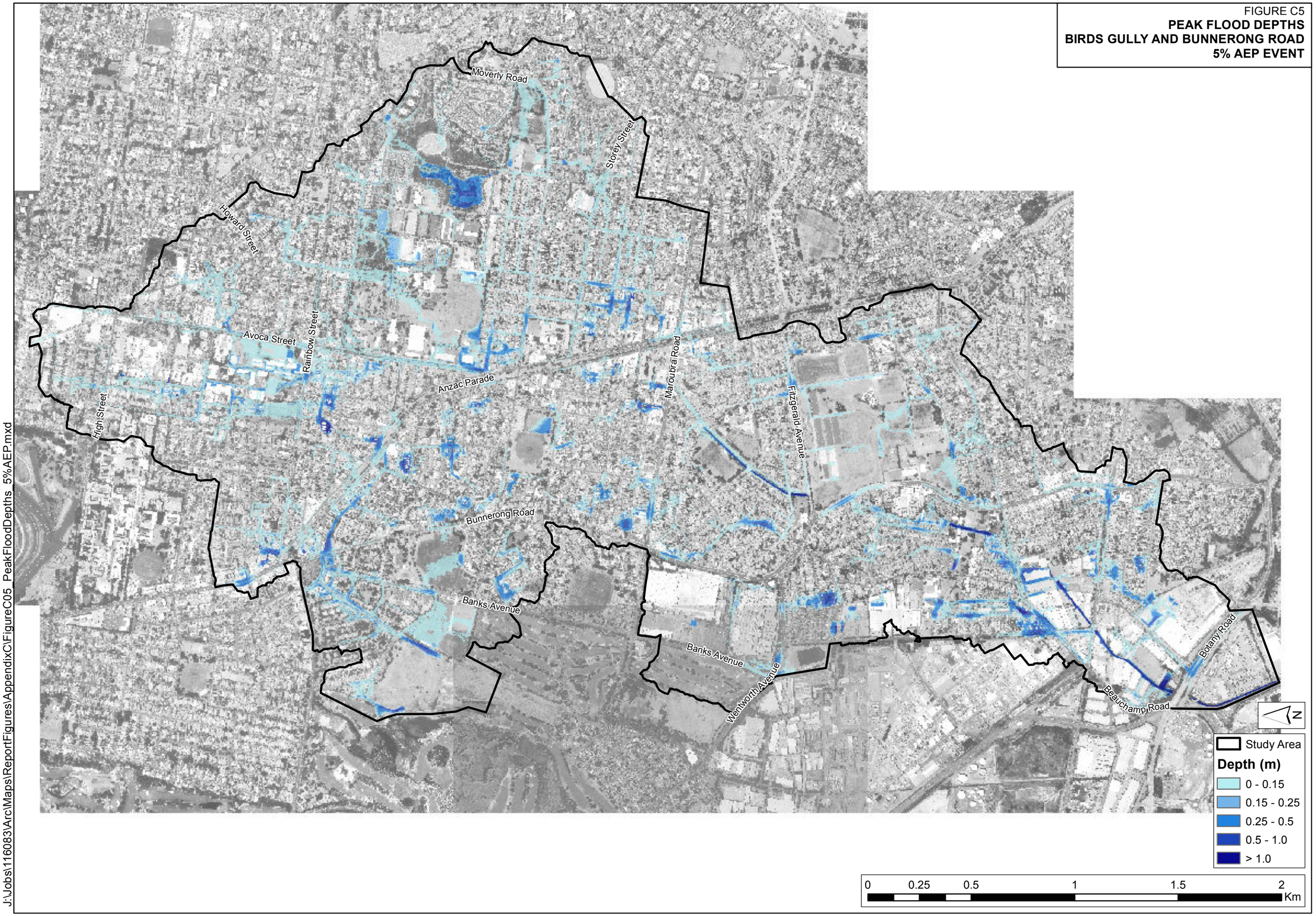


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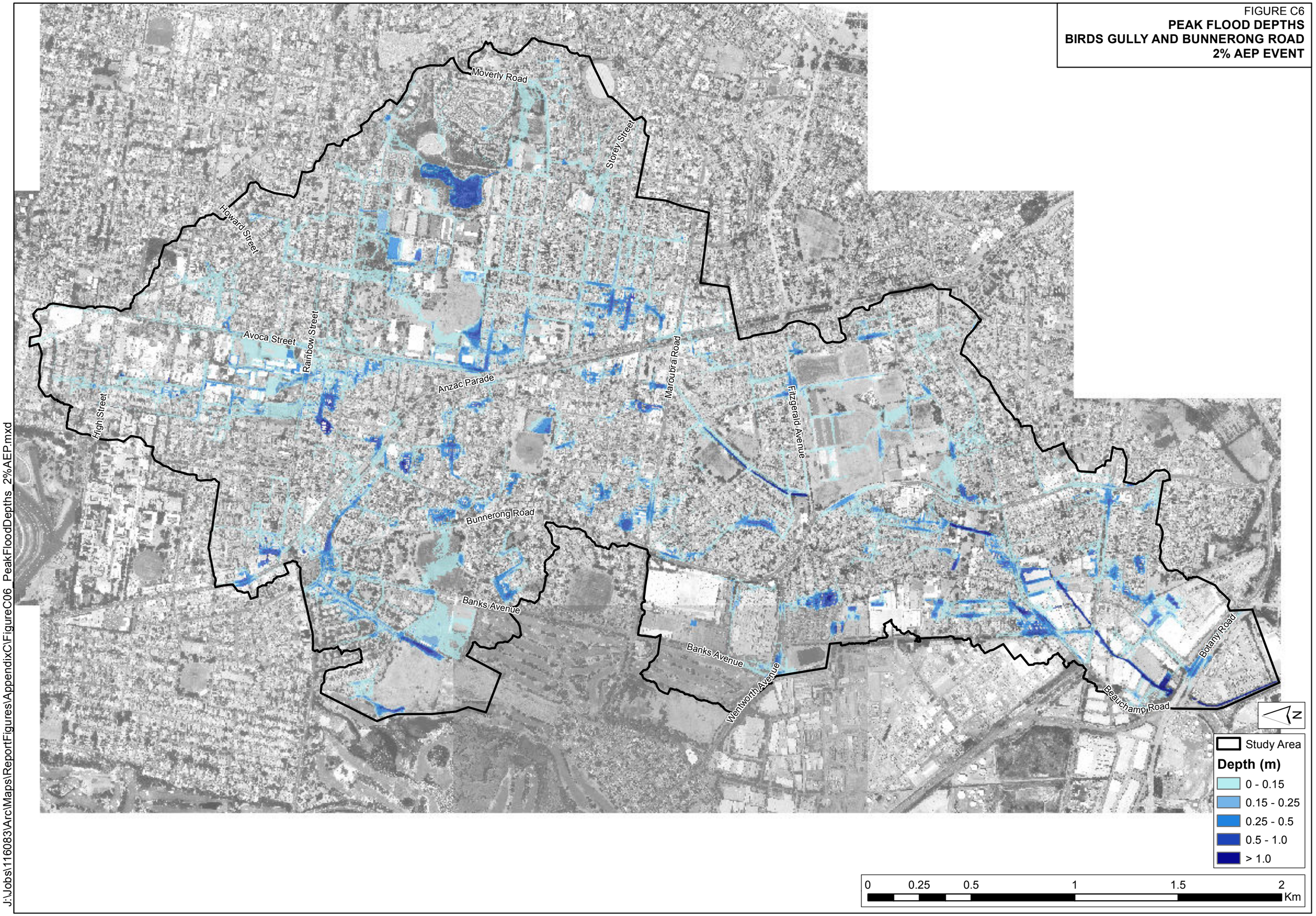
FIGURE C6
PEAK FLOOD DEPTHS
BIRDS GULLY AND BUNNERONG ROAD
2% AEP EVENT



J:\Jobs\116083\Arc\Maps\ReportFigures\AppendixC\FigureC06_PeakFloodDepths_2%AEP.mxd

FIGURE C7
PEAK FLOOD DEPTHS
BIRDS GULLY AND BUNNERONG ROAD
1% AEP EVENT

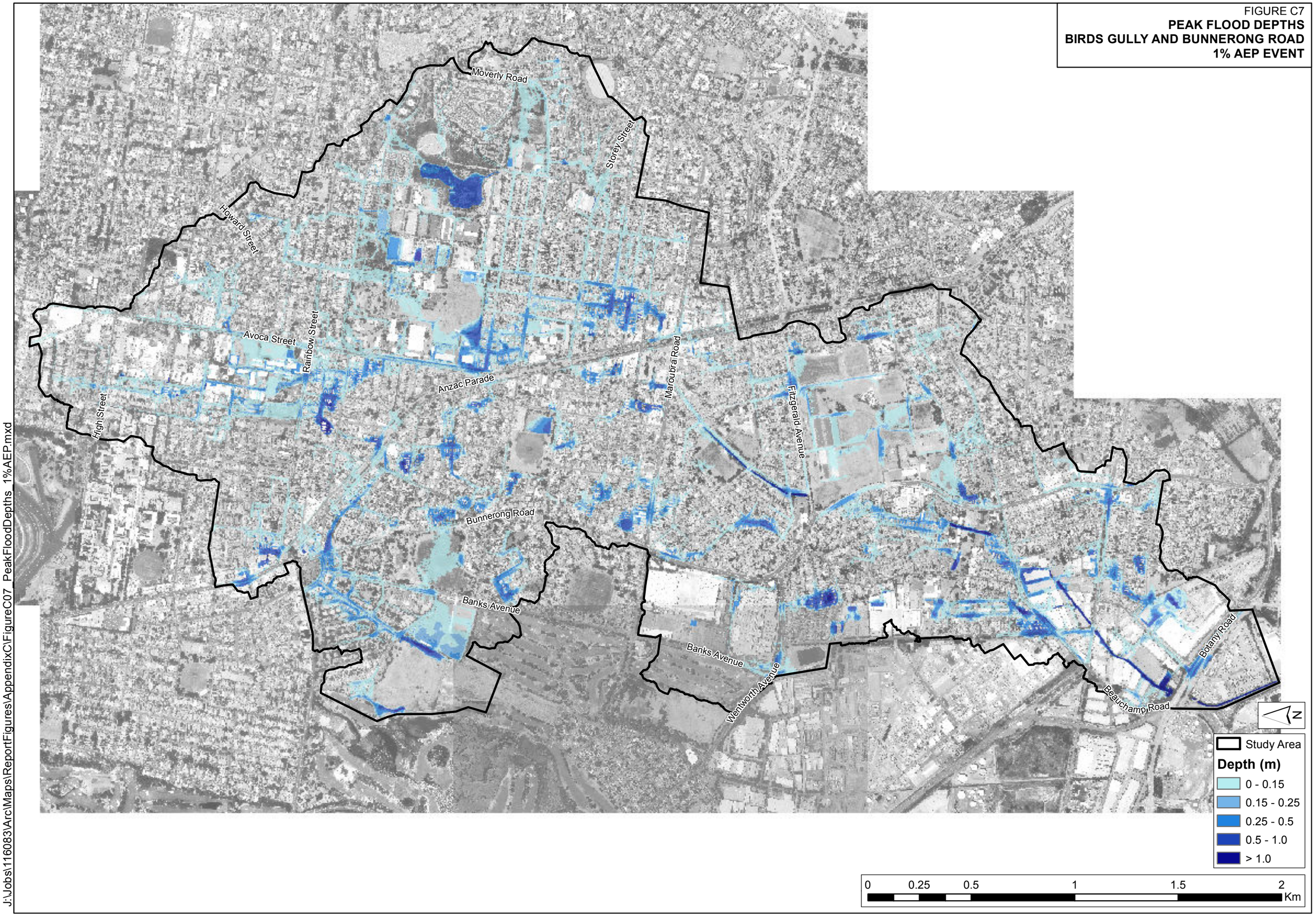


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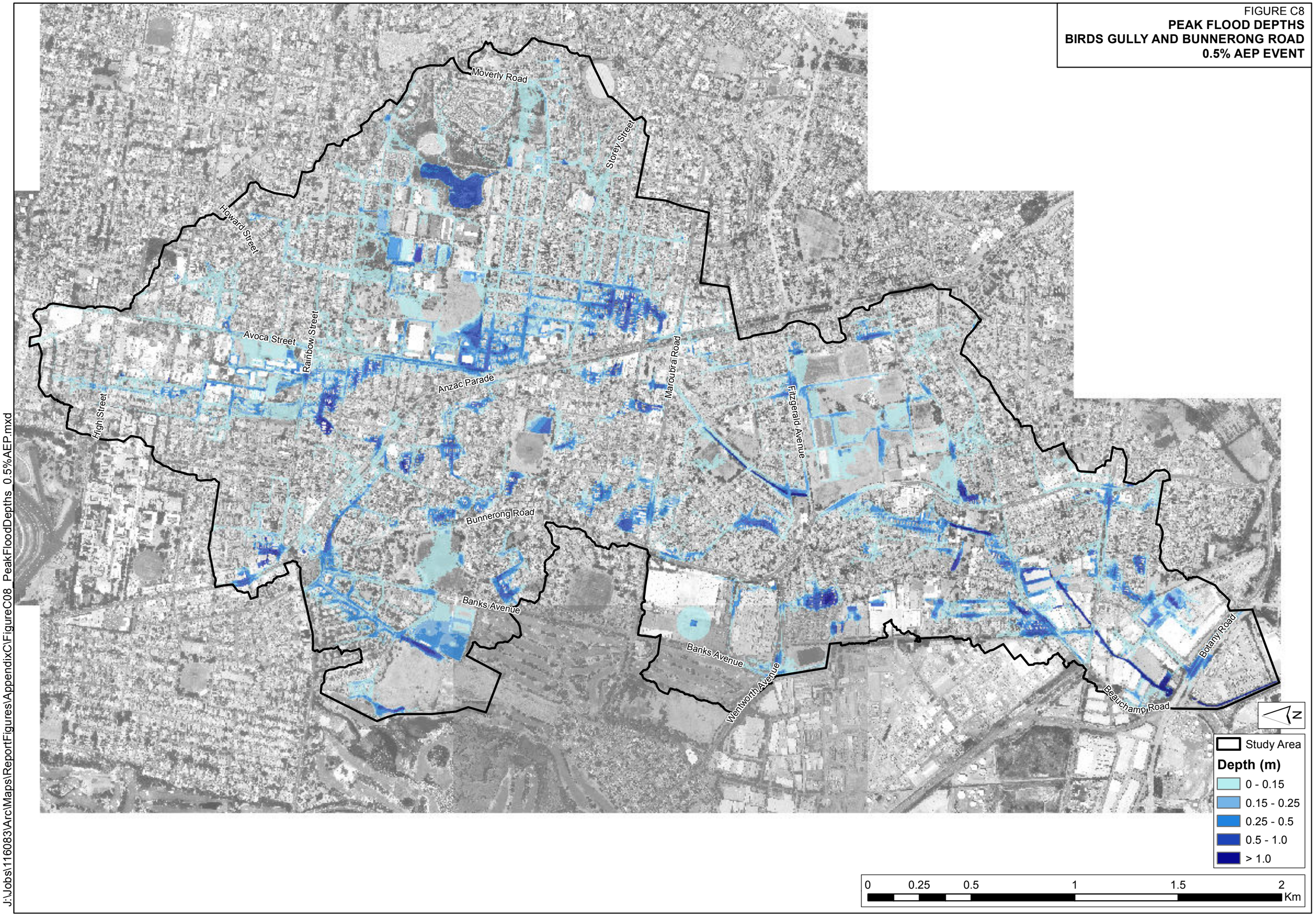
FIGURE C8
PEAK FLOOD DEPTHS
BIRDS GULLY AND BUNNERONG ROAD
0.5% AEP EVENT



J:\Jobs\116083\Arc\Maps\ReportFigures\AppendixC\FigureC08_PeakFloodDepths_0.5%AEP.mxd

FIGURE C9
PEAK FLOOD DEPTHS
BIRDS GULLY AND BUNNERONG ROAD
PMF EVENT

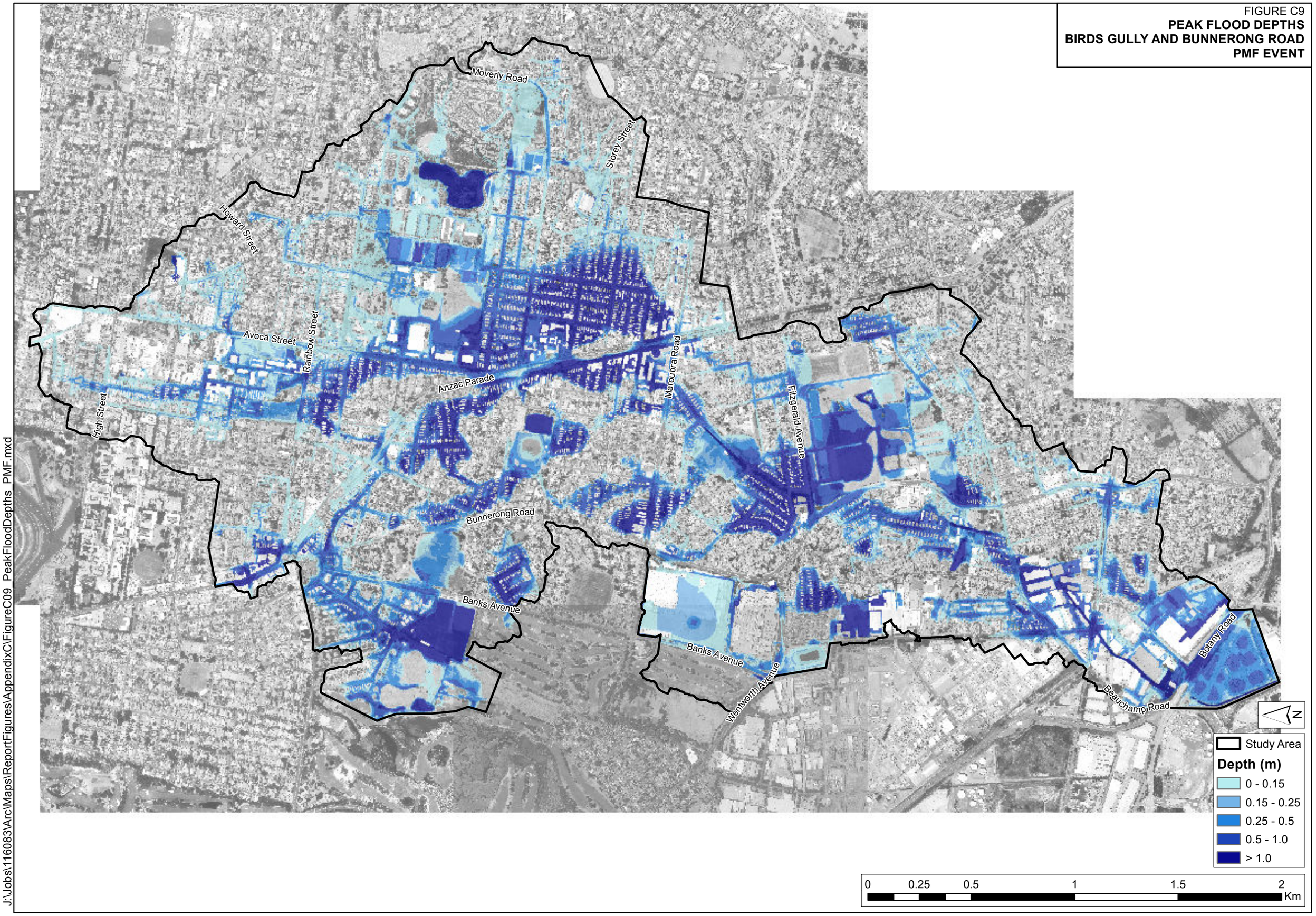


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FIGURE C10
PEAK VELOCITIES
BIRDS GULLY AND BUNNERONG ROAD
1 EY EVENT

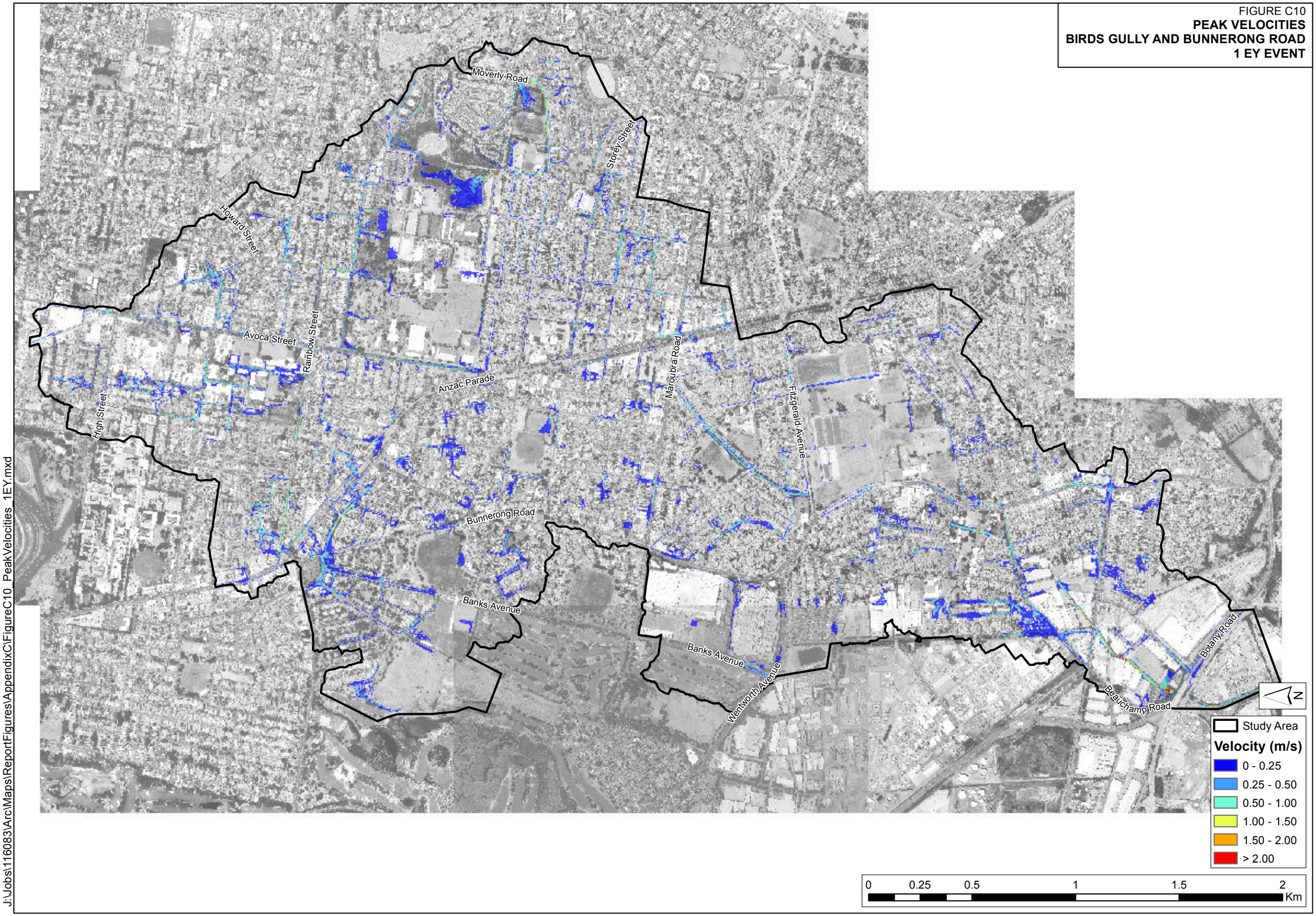

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FIGURE C11
PEAK VELOCITIES
BIRDS GULLY AND BUNNERONG ROAD
0.5 EY EVENT

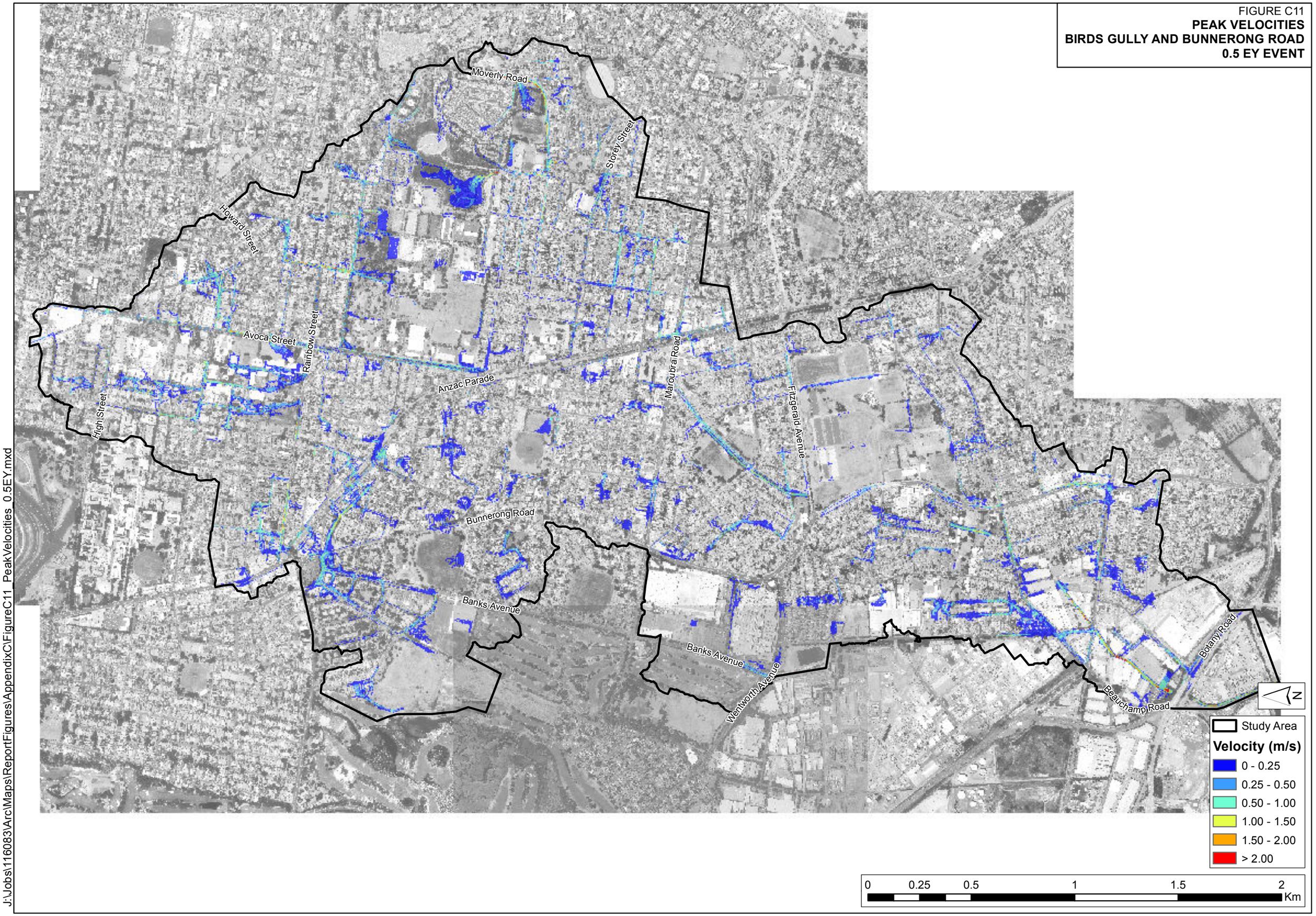

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FIGURE C12
PEAK VELOCITIES
BIRDS GULLY AND BUNNERONG ROAD
20% AEP EVENT

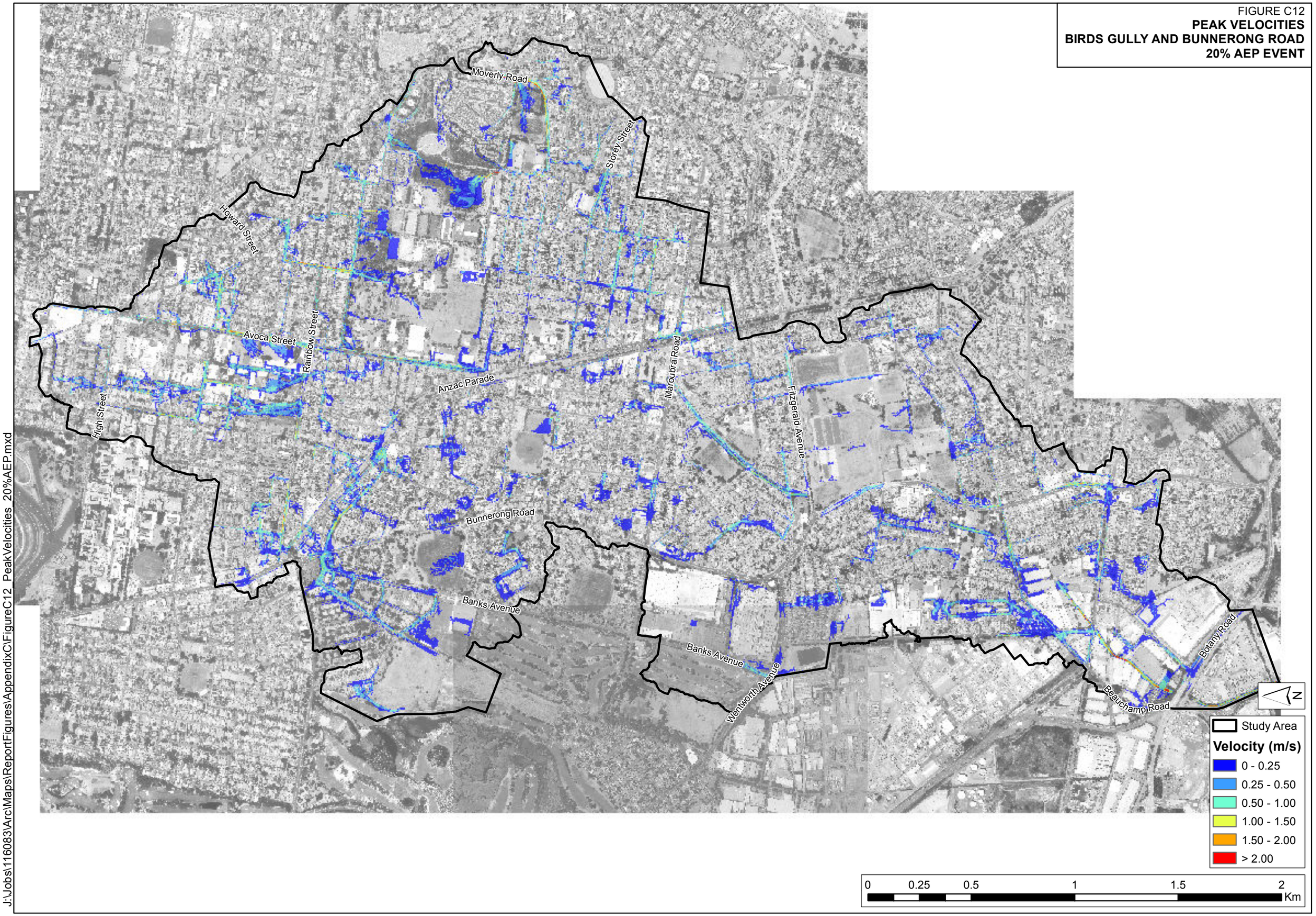

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FIGURE C13
PEAK VELOCITIES
BIRDS GULLY AND BUNNERONG ROAD
10% AEP EVENT

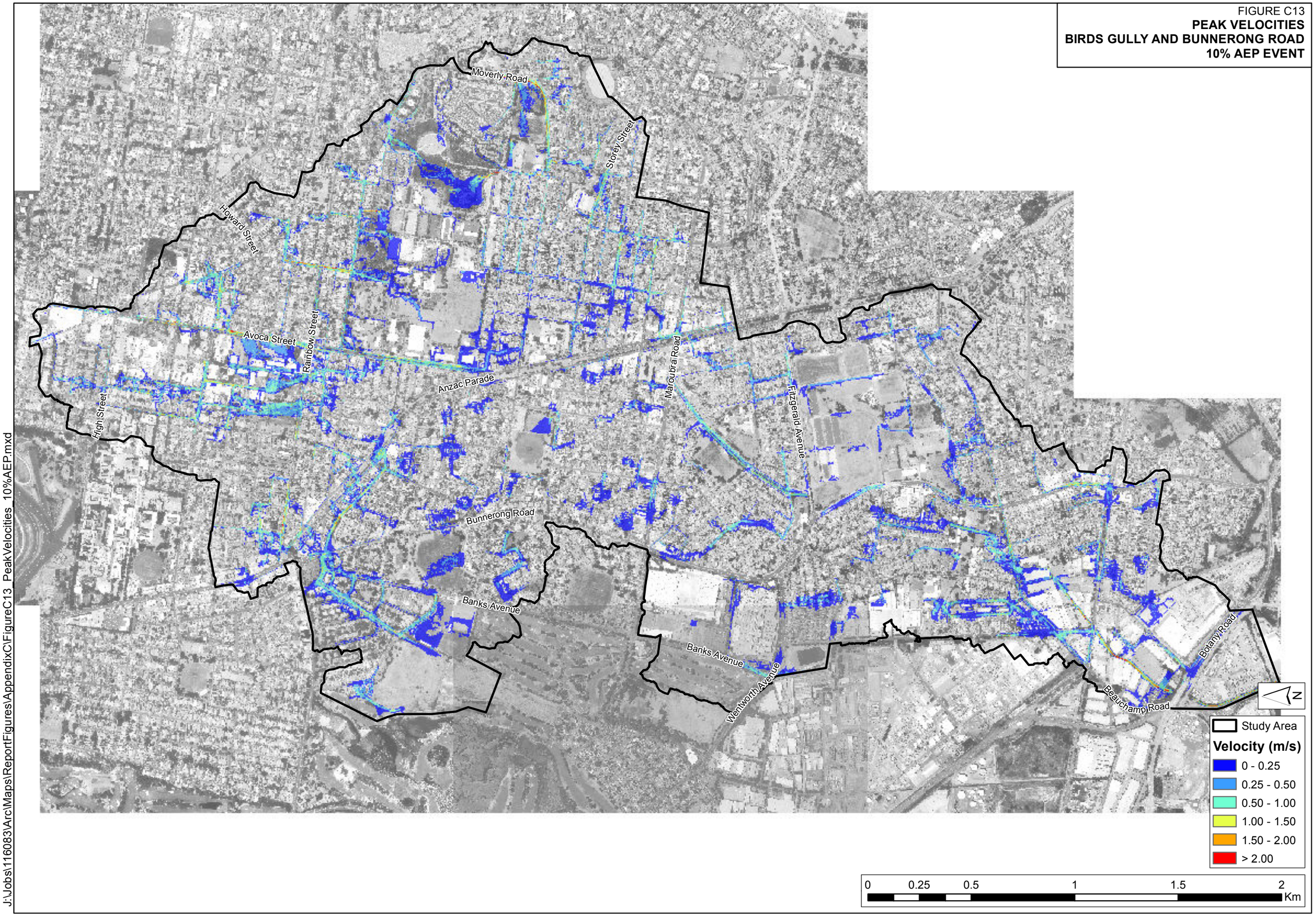

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FIGURE C14
PEAK VELOCITIES
BIRDS GULLY AND BUNNERONG ROAD
5% AEP EVENT

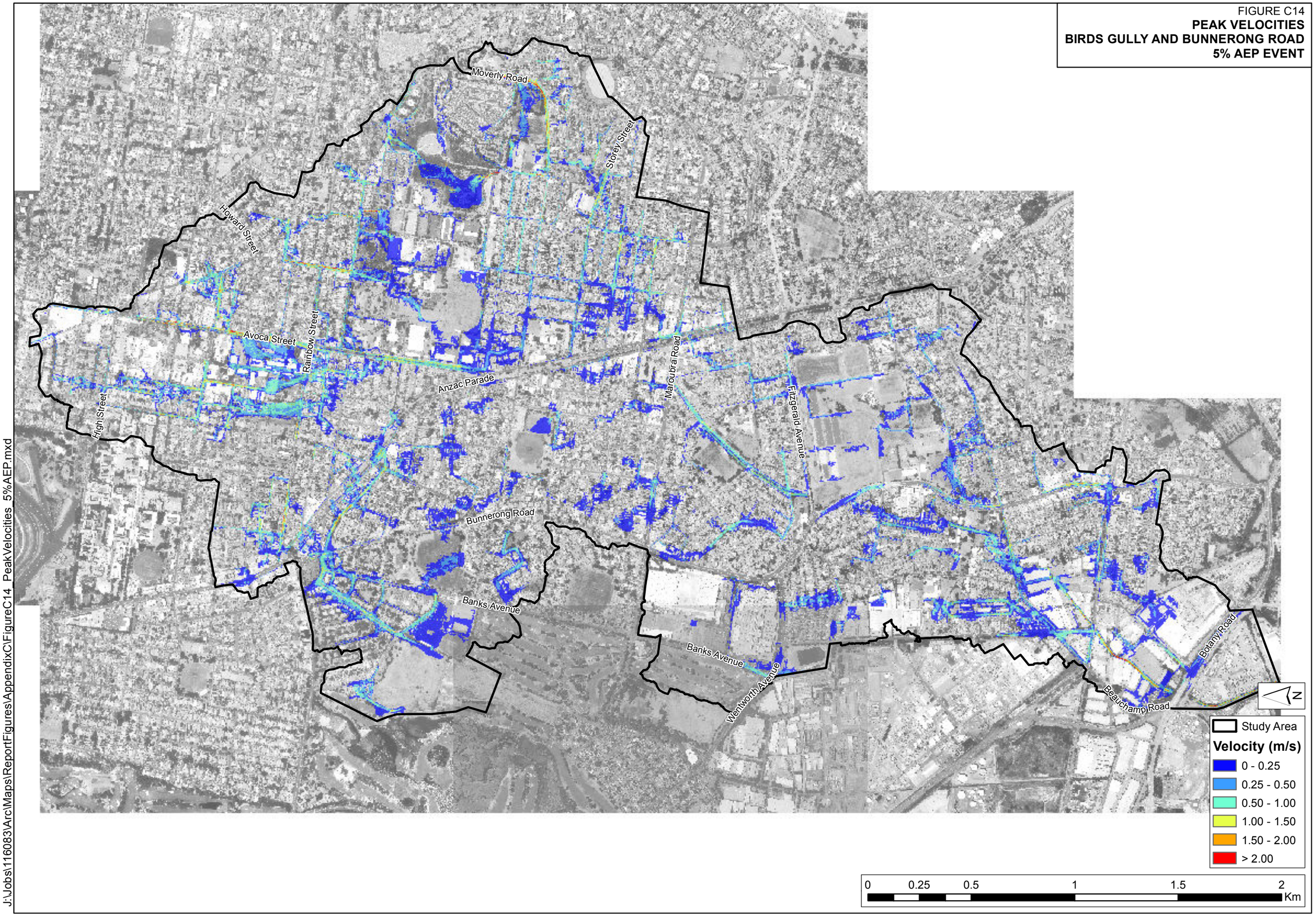

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FIGURE C15
PEAK VELOCITIES
BIRDS GULLY AND BUNNERONG ROAD
2% AEP EVENT

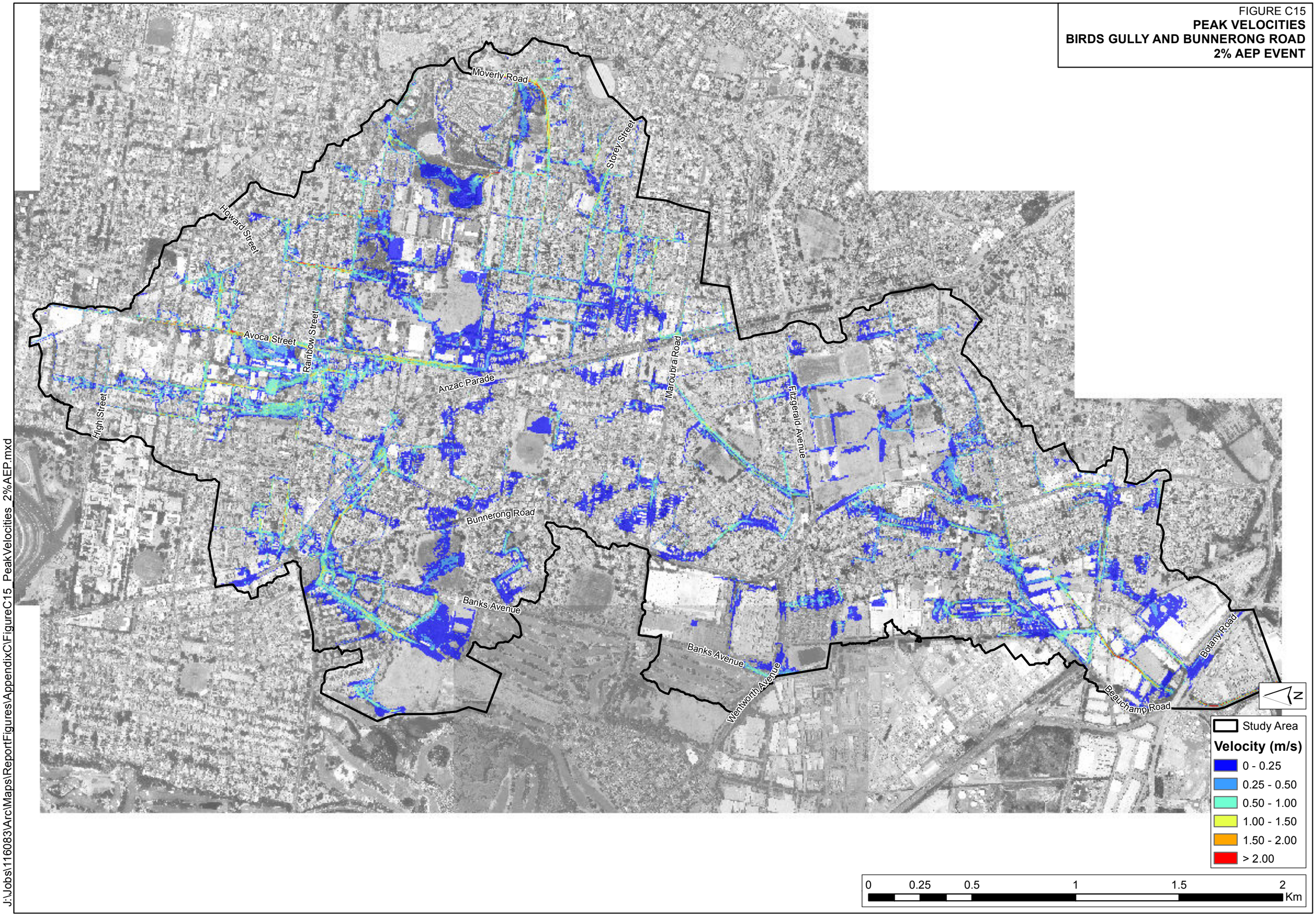

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FIGURE C16
PEAK VELOCITIES
BIRDS GULLY AND BUNNERONG ROAD
1% AEP EVENT

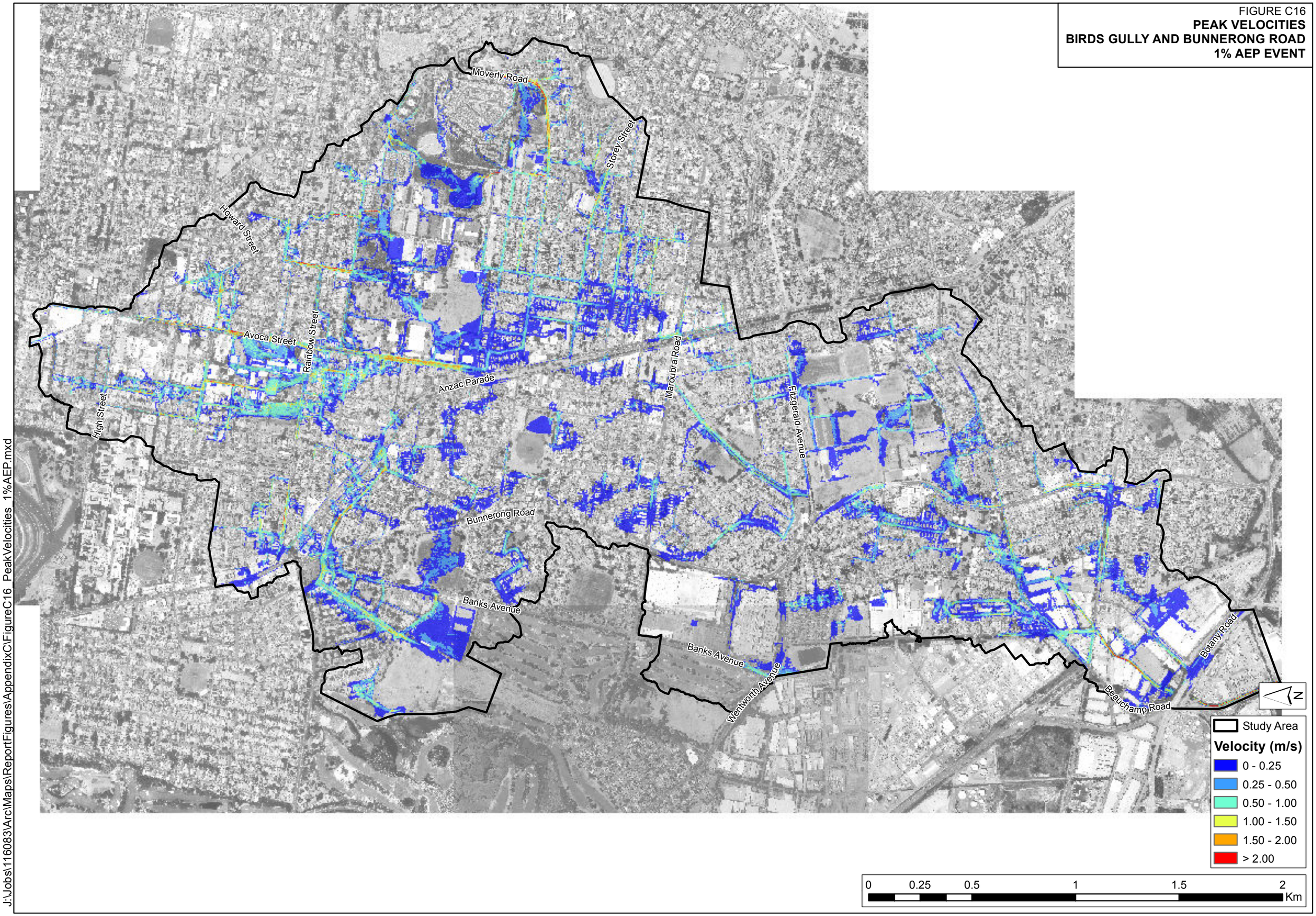

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FIGURE C17
PEAK VELOCITIES
BIRDS GULLY AND BUNNERONG ROAD
0.5% AEP EVENT

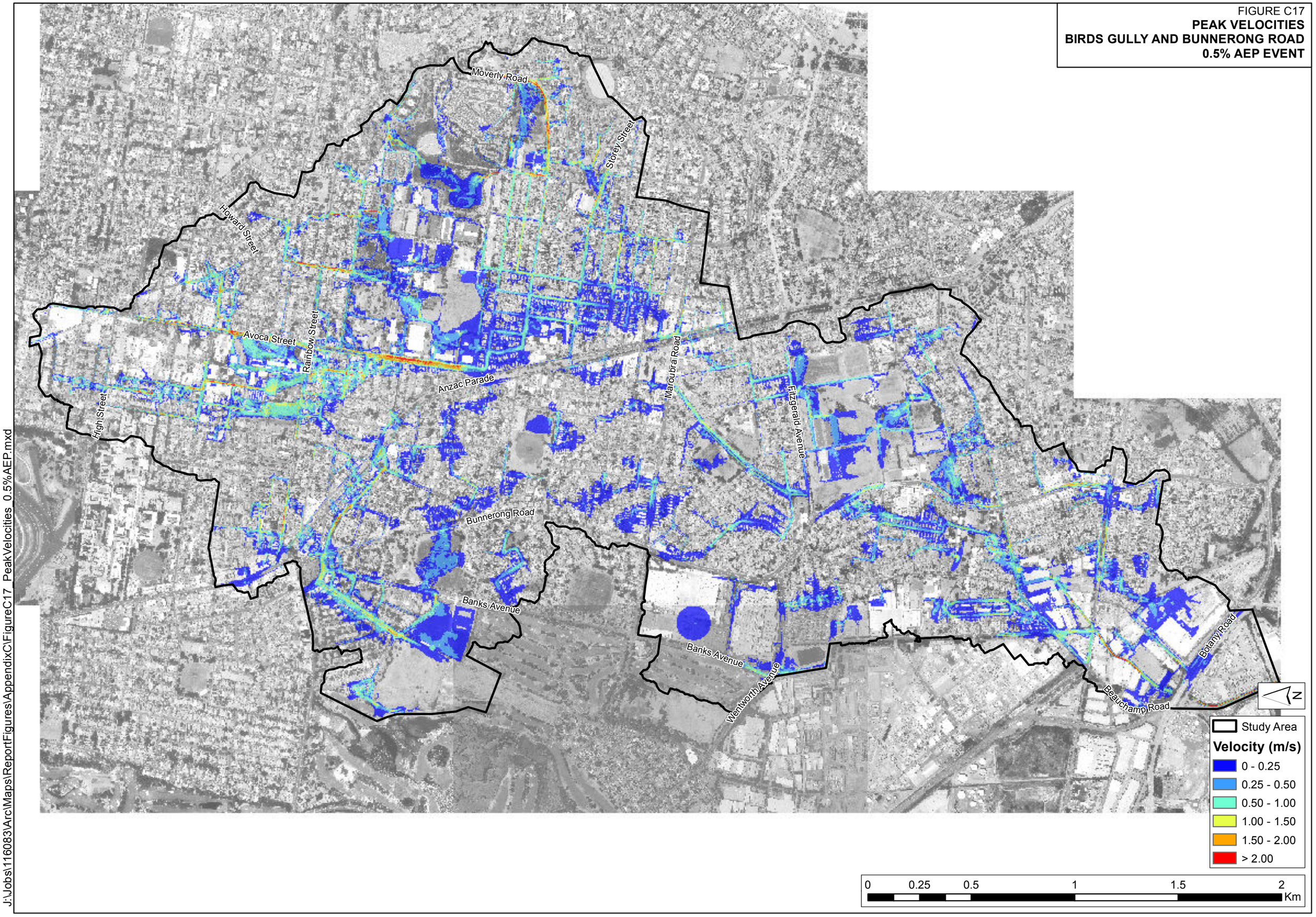

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FIGURE C18
PEAK VELOCITIES
BIRDS GULLY AND BUNNERONG ROAD
PMF EVENT

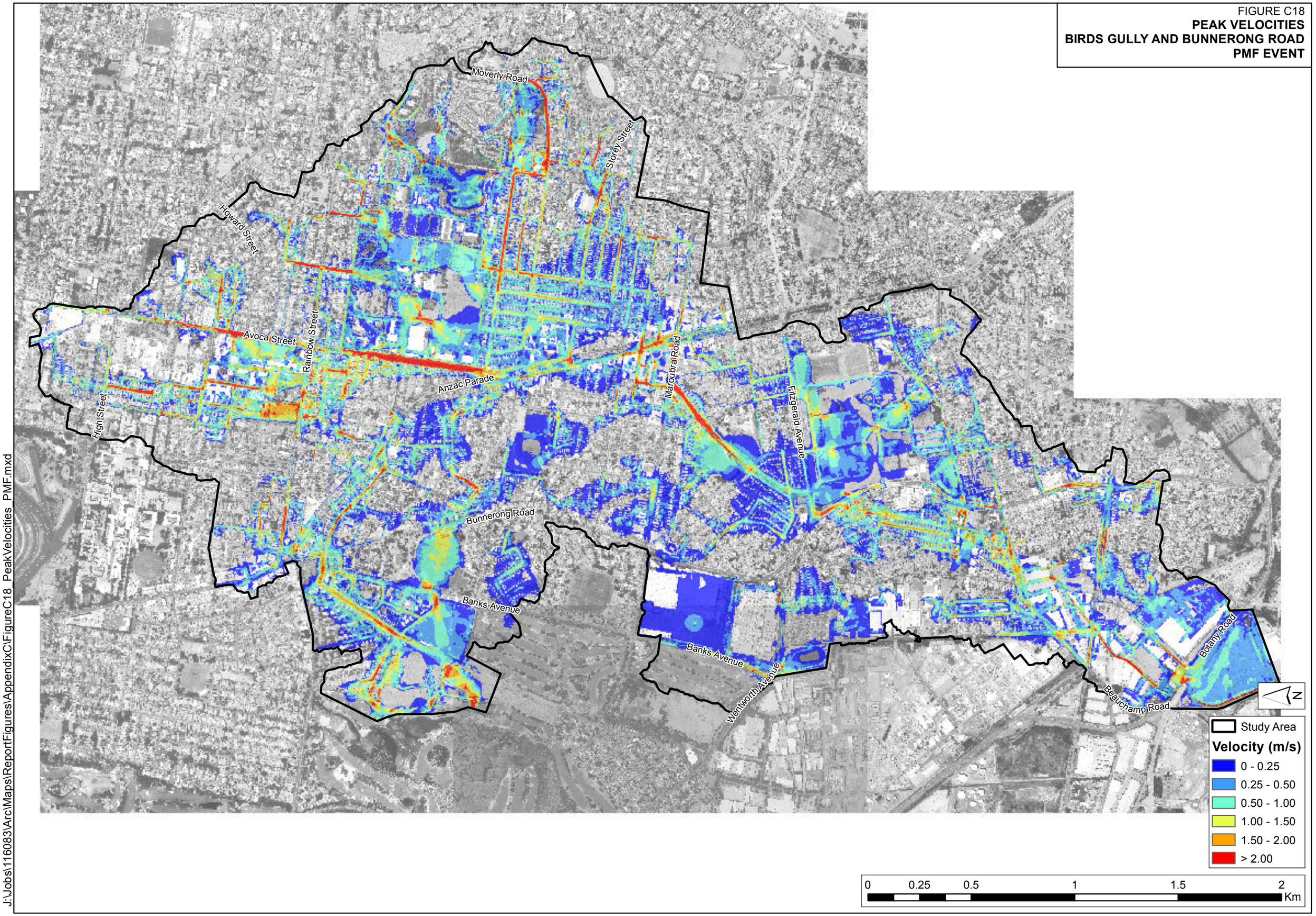

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FIGURE C19
PROVISIONAL HYDRAULIC HAZARD
BIRDS GULLY AND BUNNERONG ROAD
20% AEP EVENT

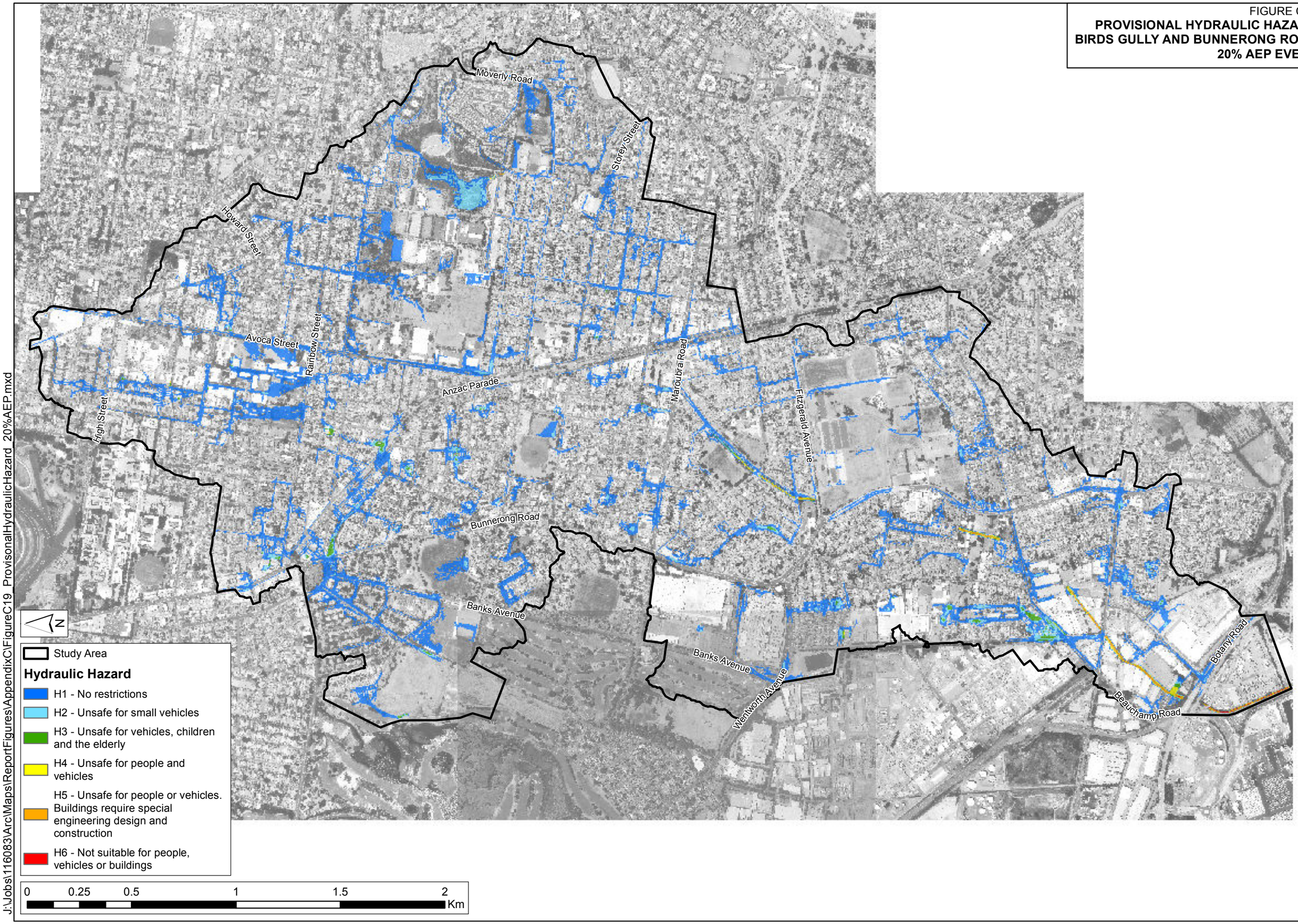

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FIGURE C20
PROVISIONAL HYDRAULIC HAZARD
BIRDS GULLY AND BUNNERONG ROAD
5% AEP EVENT

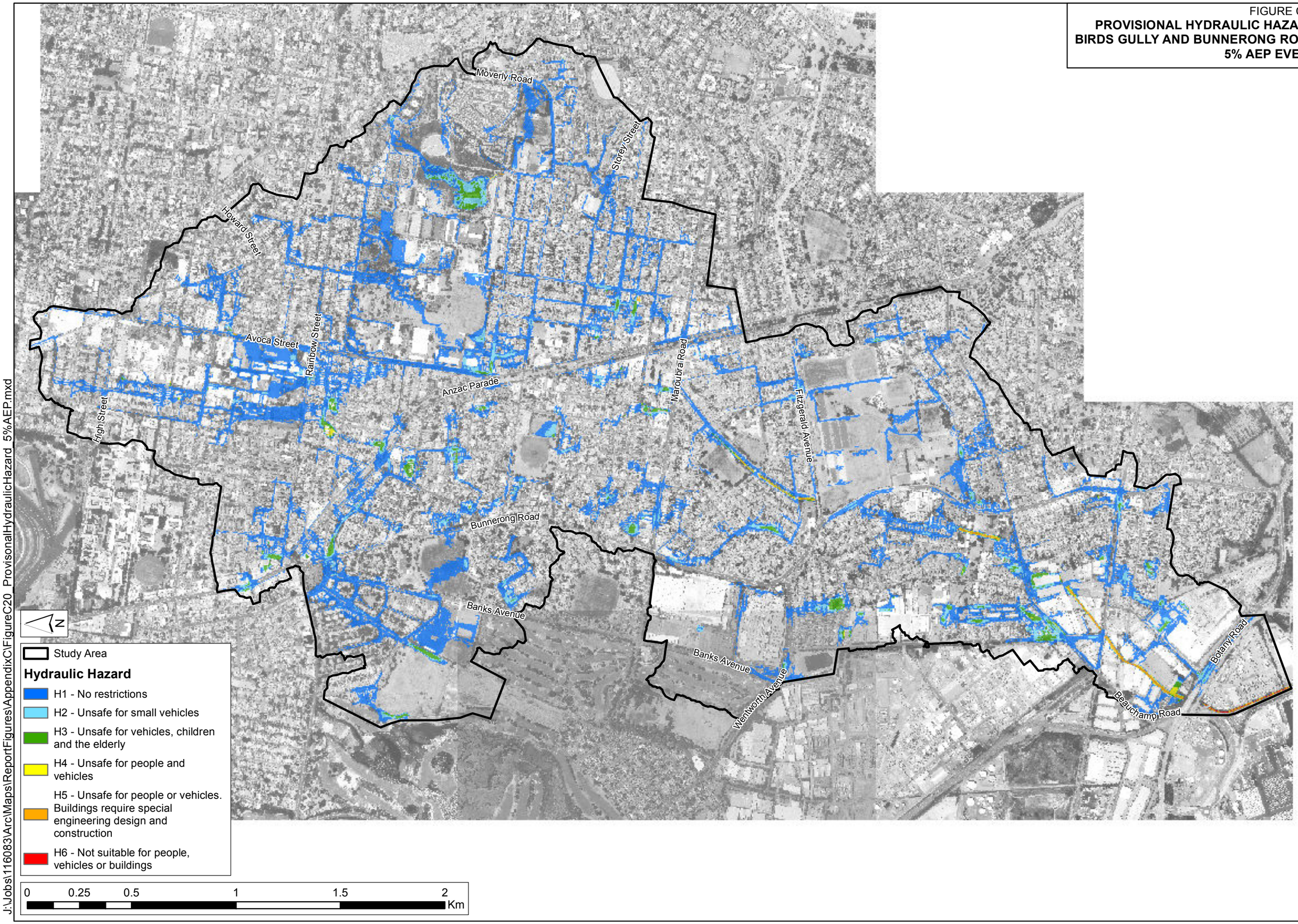

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FIGURE C21
PROVISIONAL HYDRAULIC HAZARD
BIRDS GULLY AND BUNNERONG ROAD
1% AEP EVENT

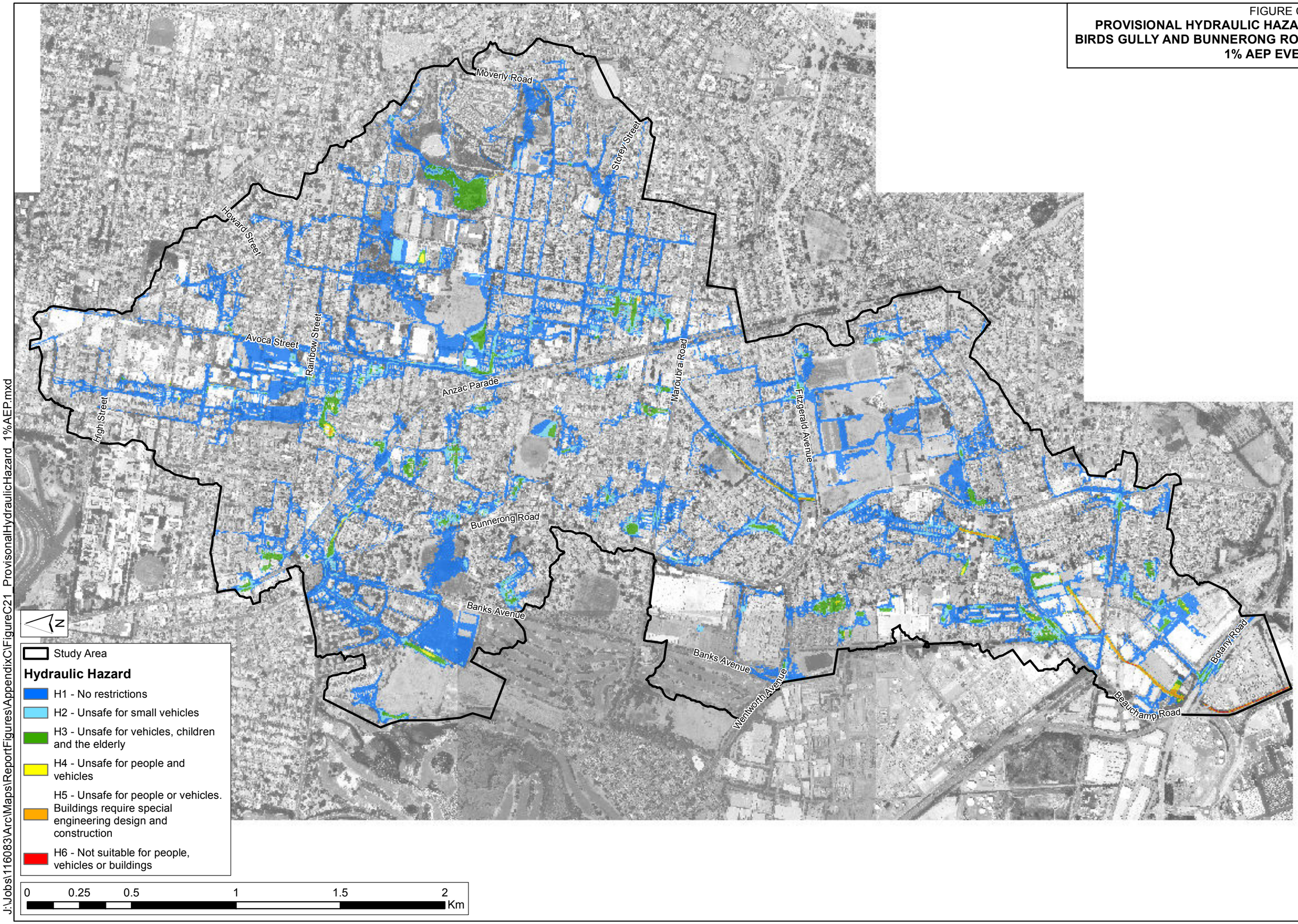

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FIGURE C22
PROVISIONAL HYDRAULIC HAZARD
BIRDS GULLY AND BUNNERONG ROAD
PMF EVENT

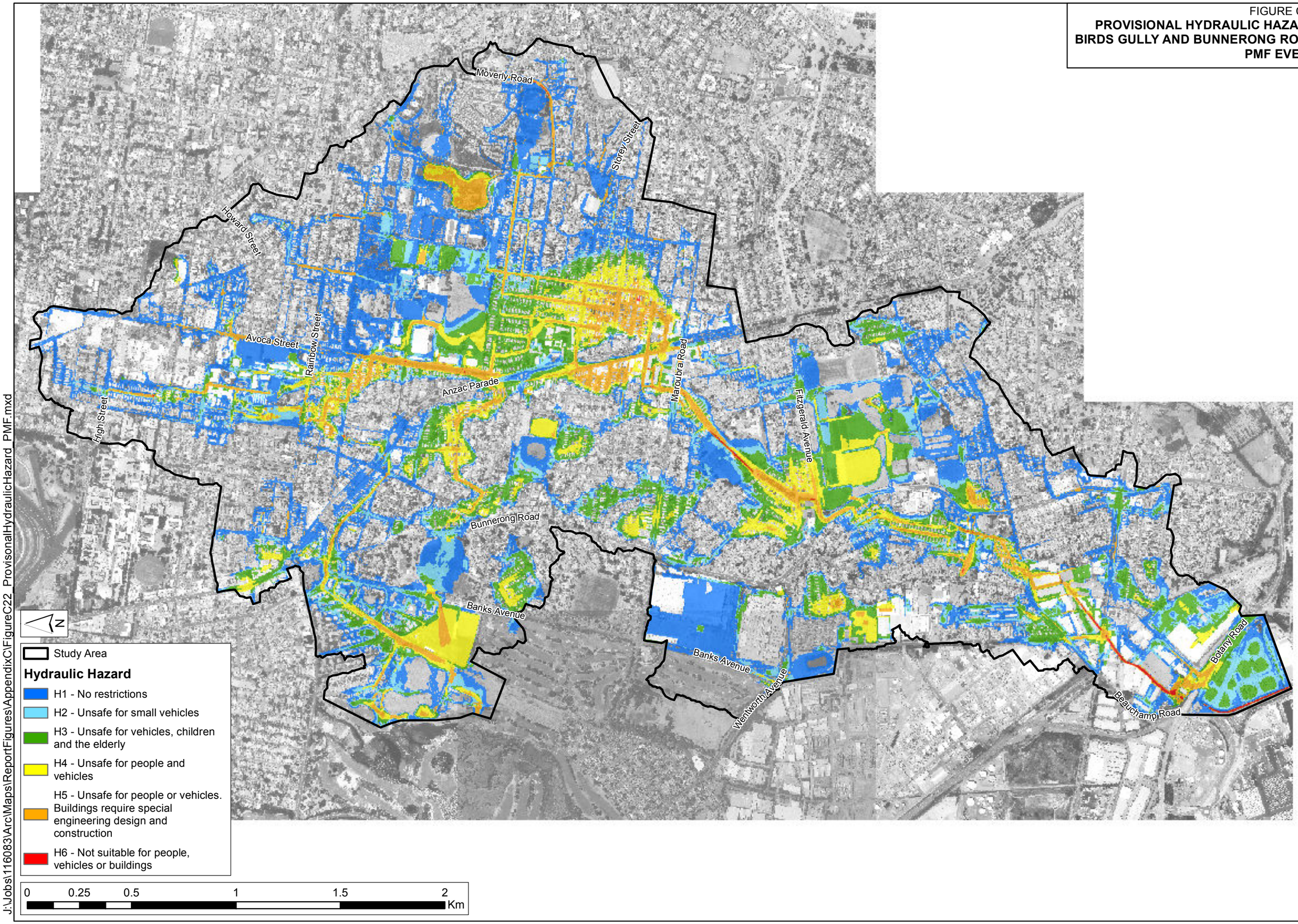

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FIGURE C23
HYDRAULIC CATEGORISATION
BIRDS GULLY AND BUNNERONG ROAD
1% AEP EVENT

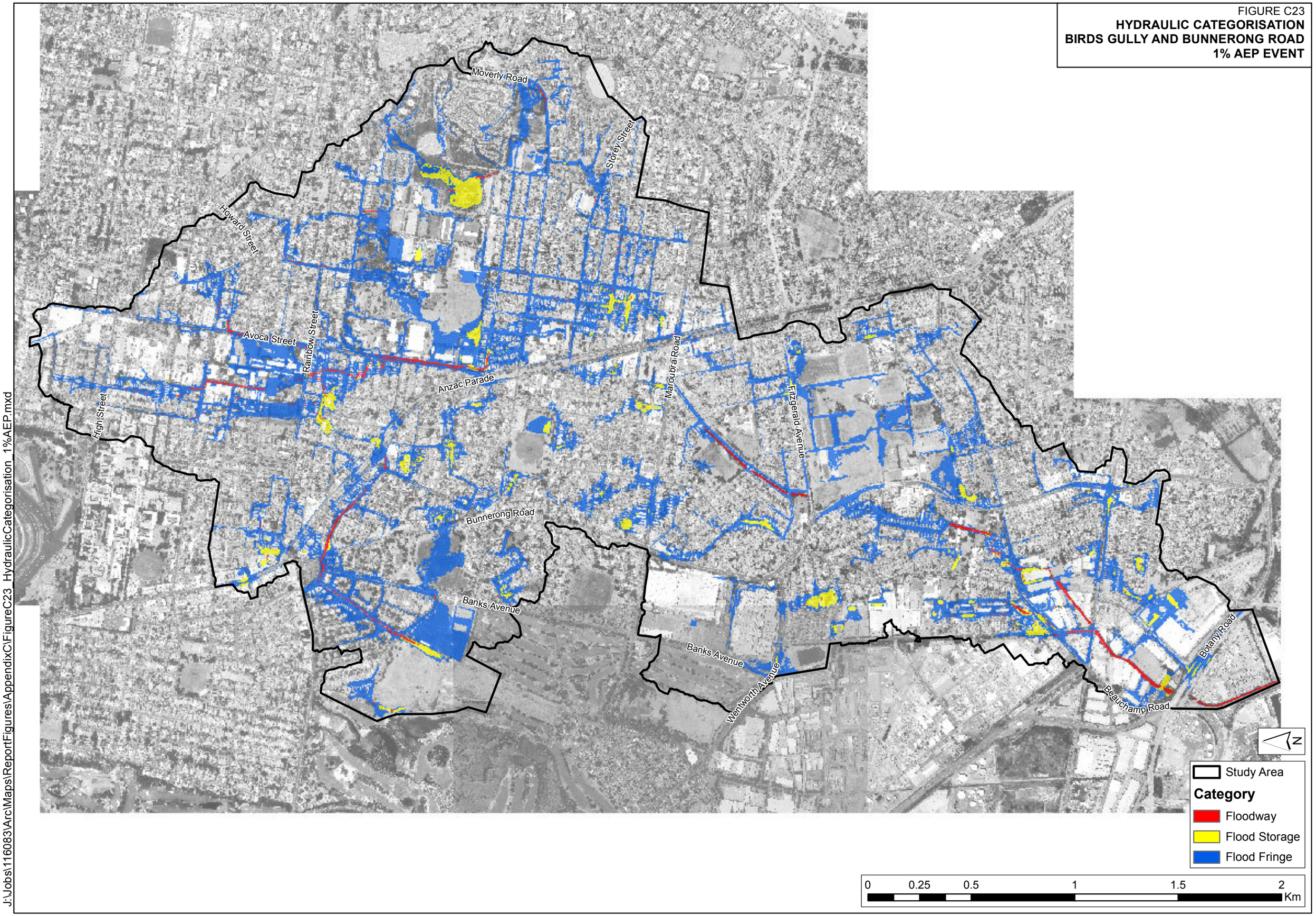

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FIGURE C24
HYDRAULIC CATEGORISATION
BIRDS GULLY AND BUNNERONG ROAD
PMF EVENT

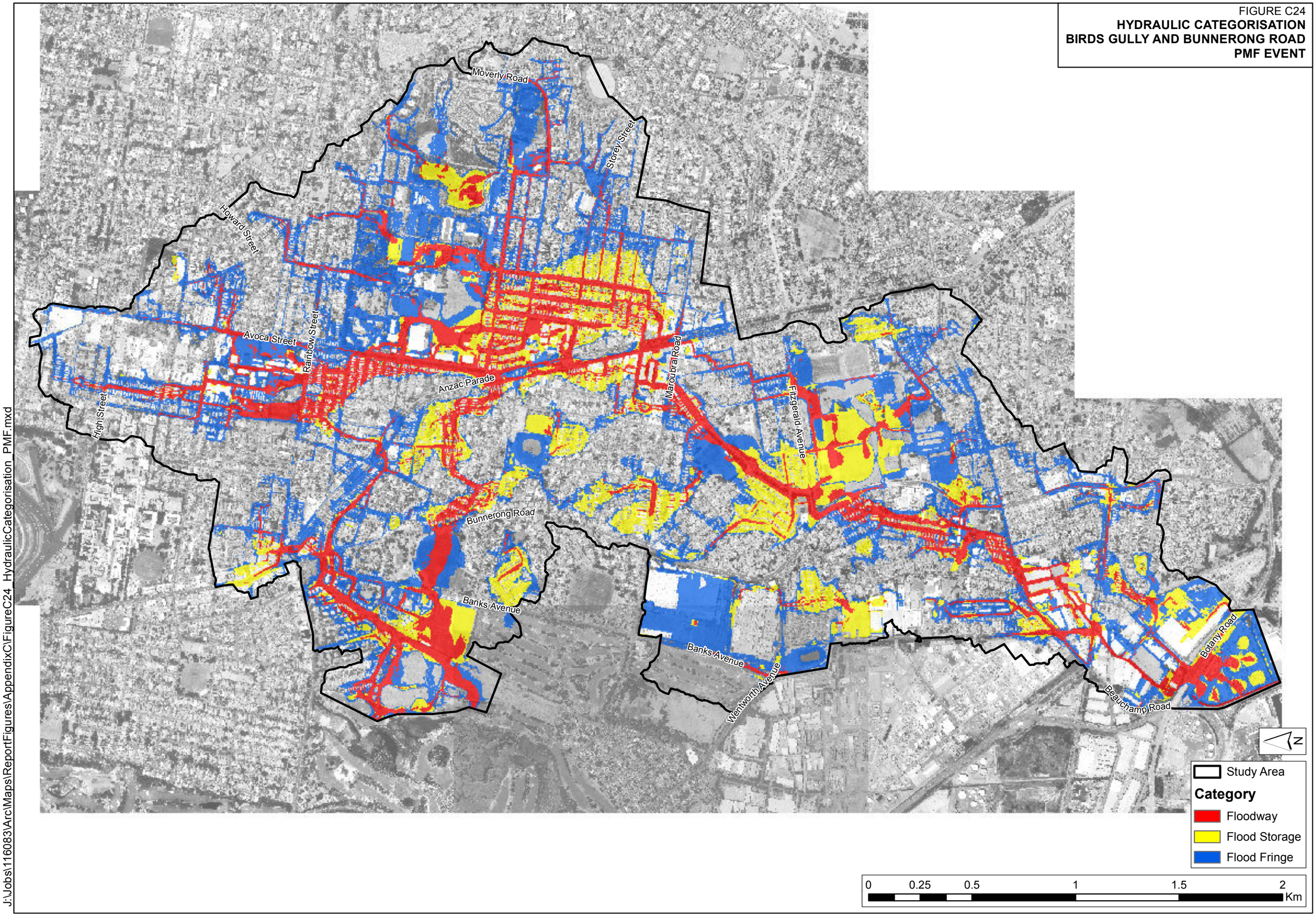

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FIGURE C25
HOTSPOTS
BIRDS GULLY AND BUNNERONG ROAD
1% AEP EVENT

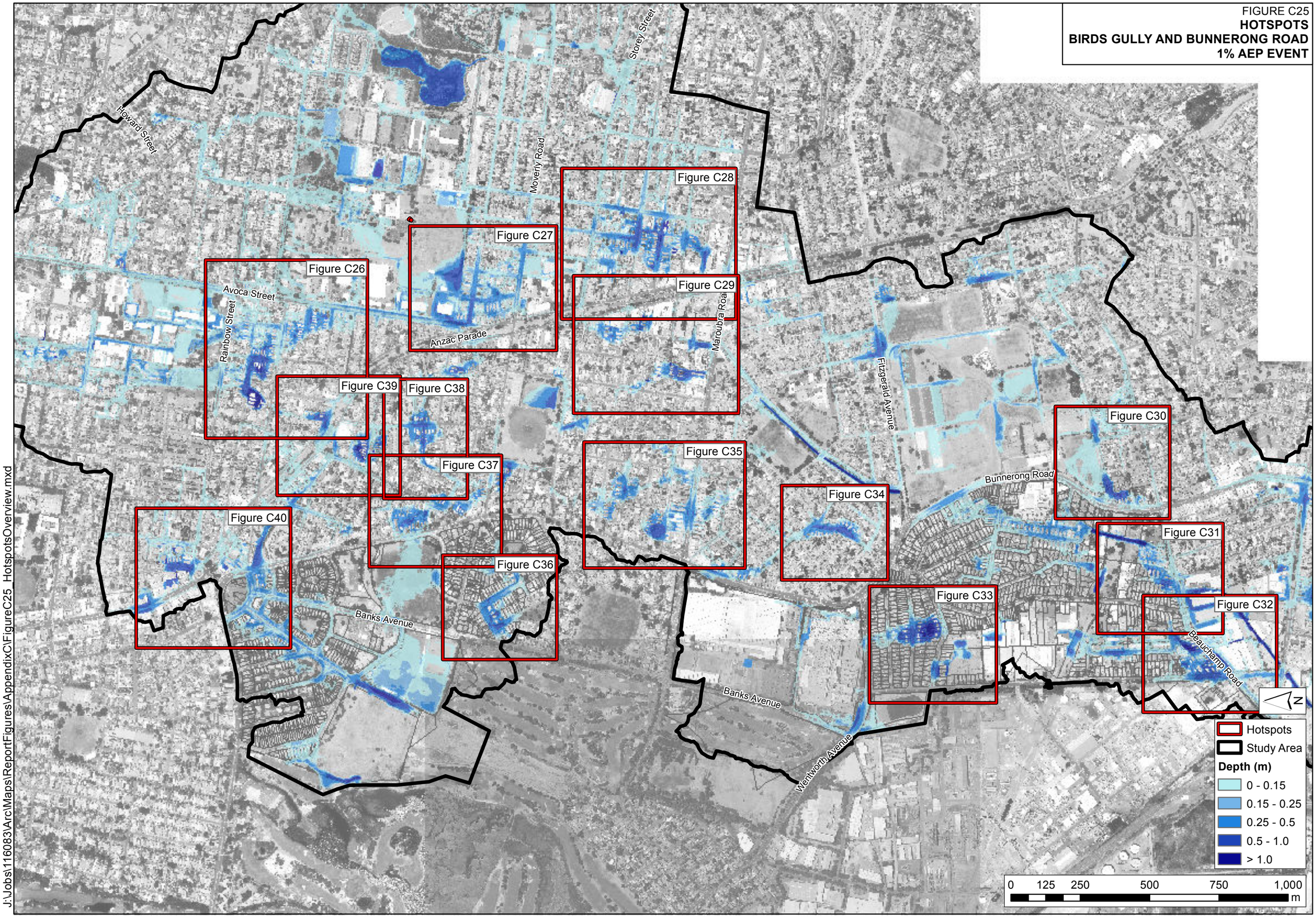

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FIGURE C26
PATON STREET AND BYRD STREET LOW POINT

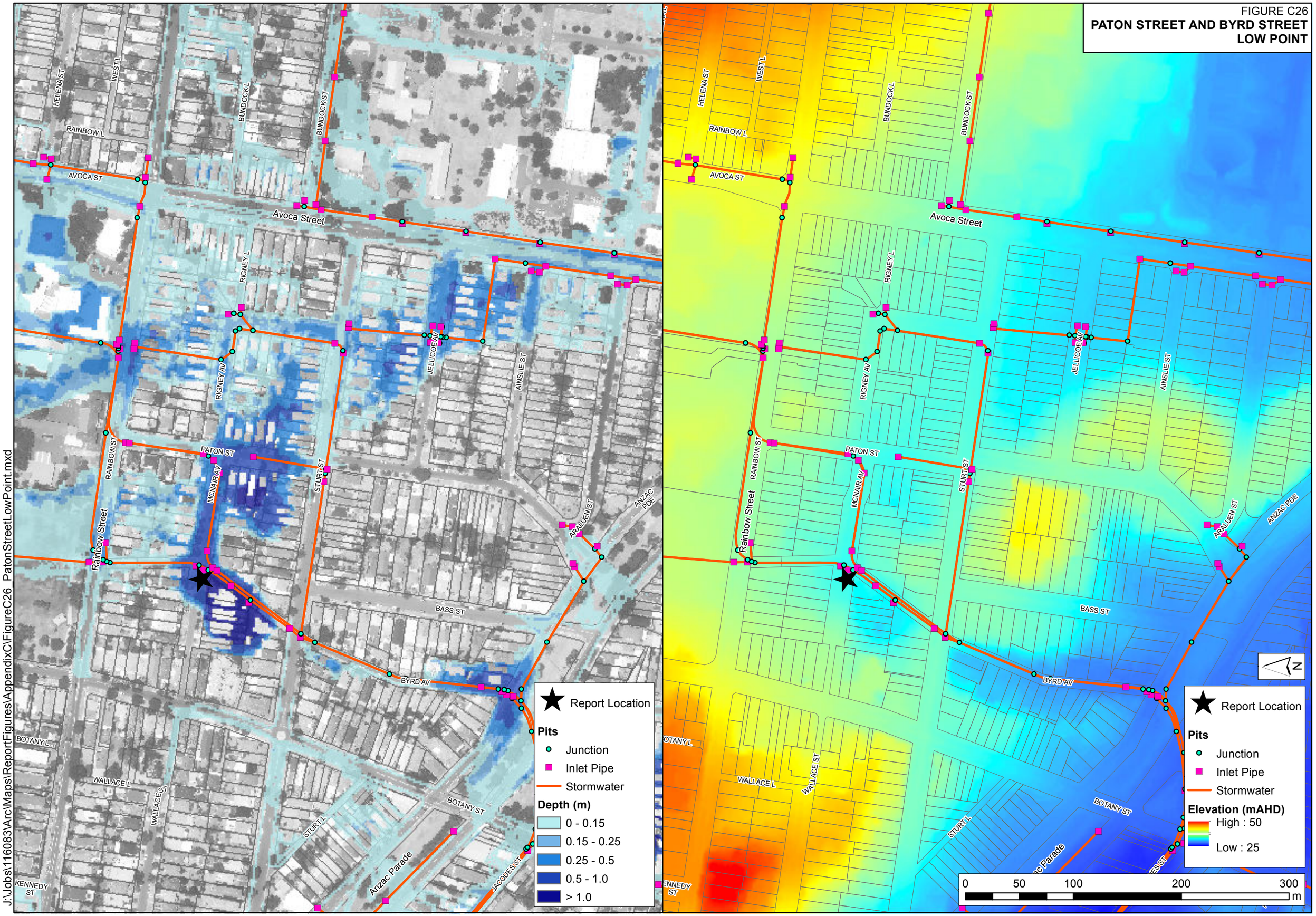

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FIGURE C27

HOLMES STREET AND BENVENUE STREET LOW POINT

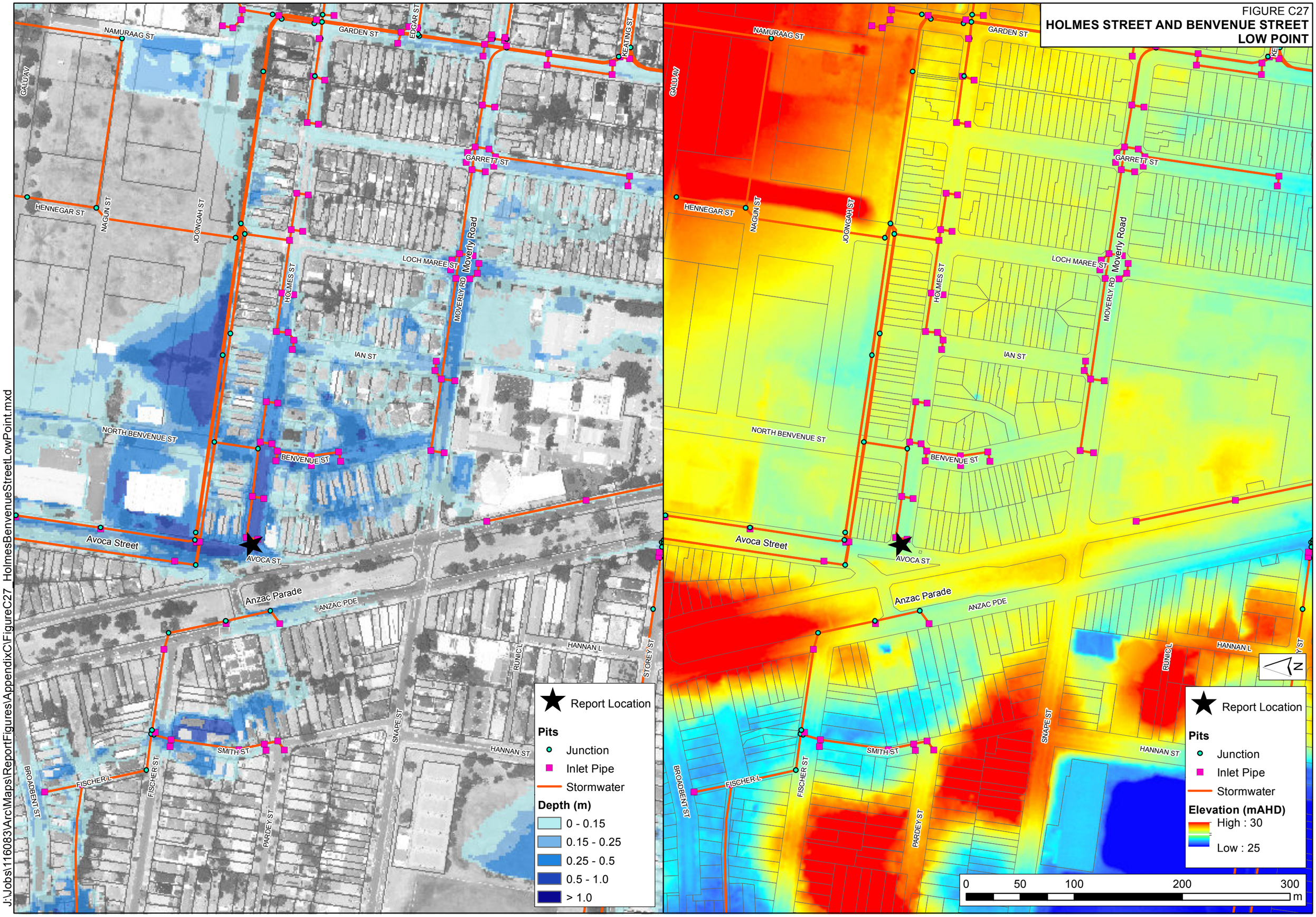

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FIGURE C28
ALMA ROAD LOW POINT

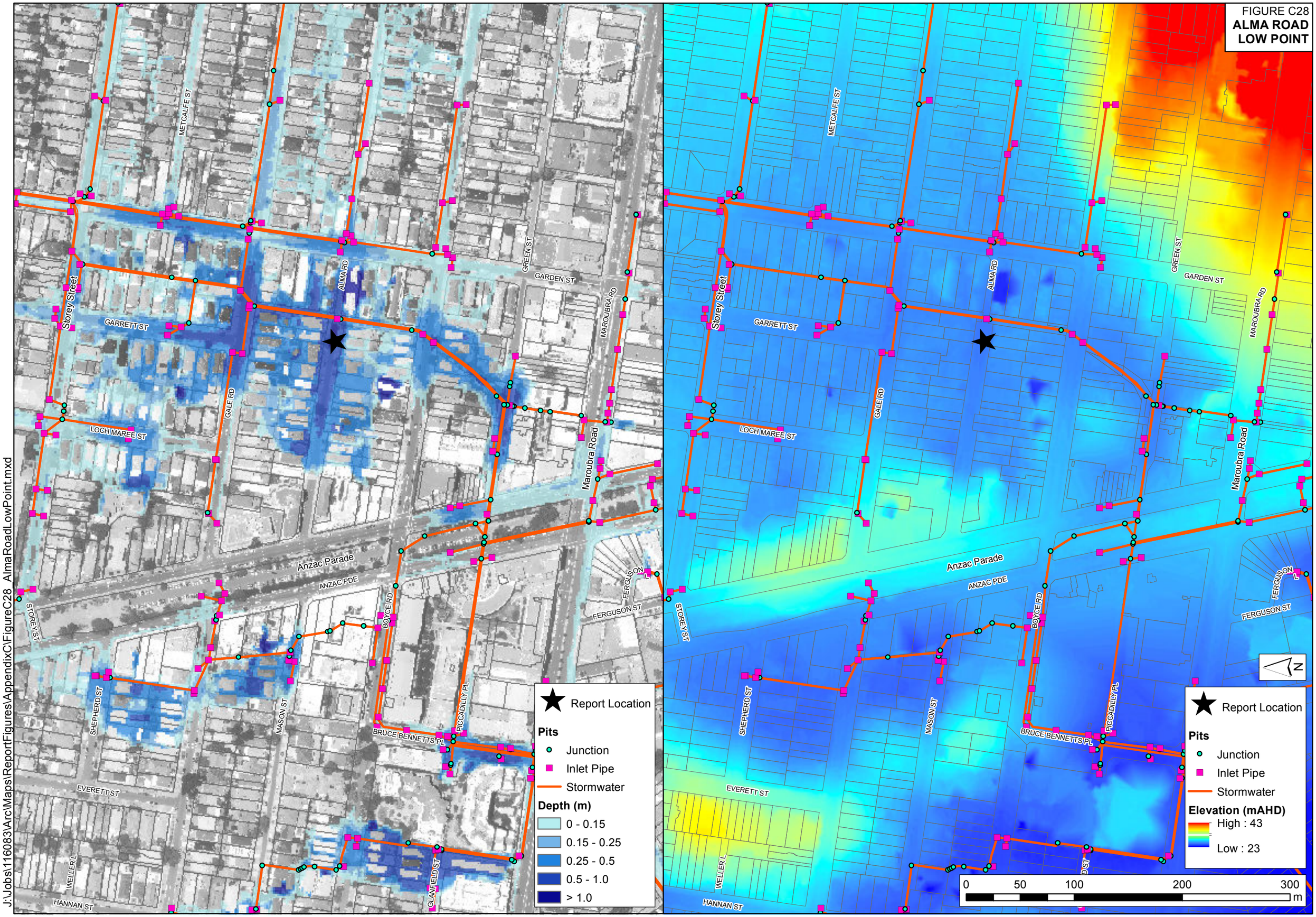

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FIGURE C29
GLANFIELD STREET LOW POINT

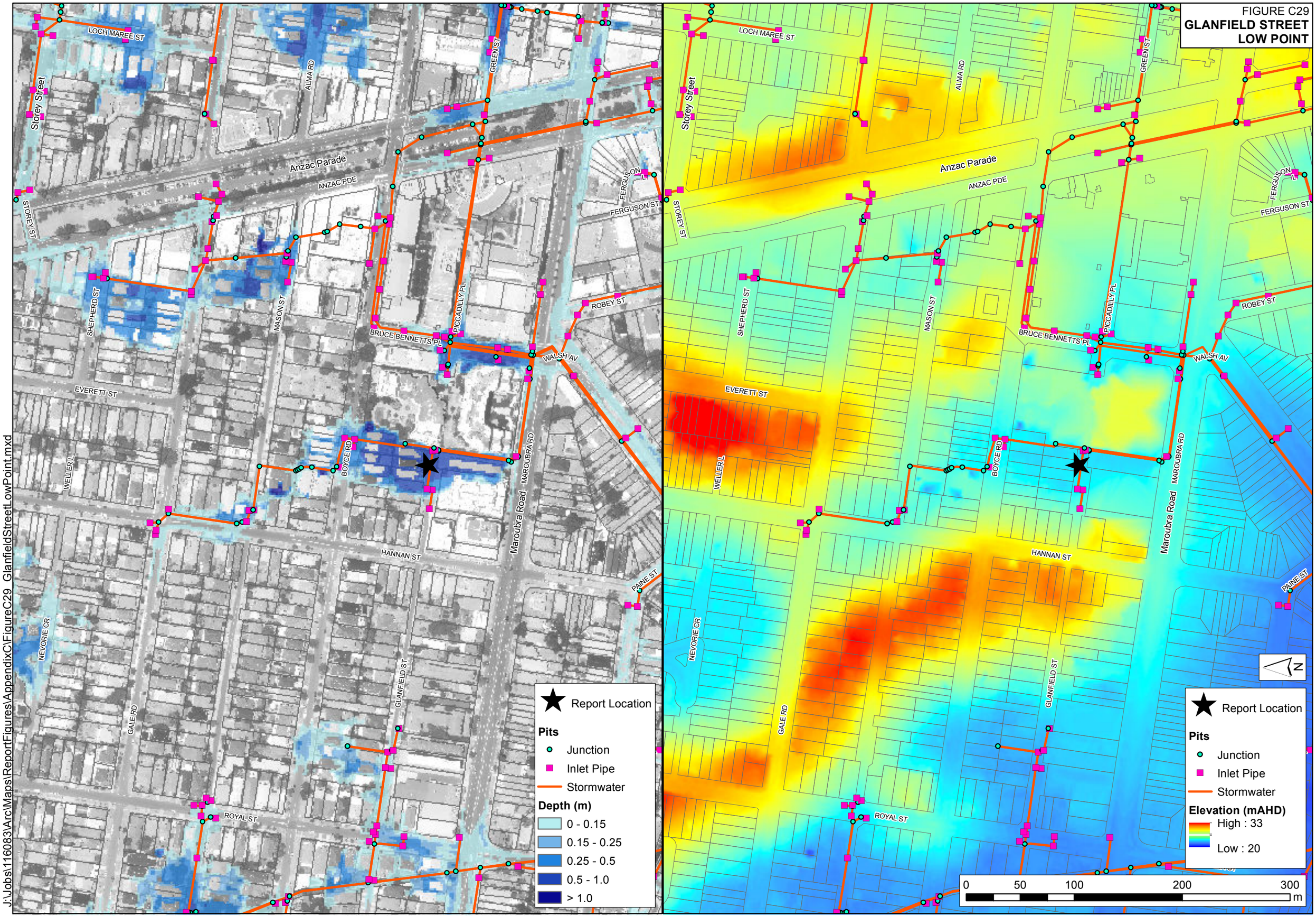

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FIGURE C30
JERSEY ROAD LOW POINT

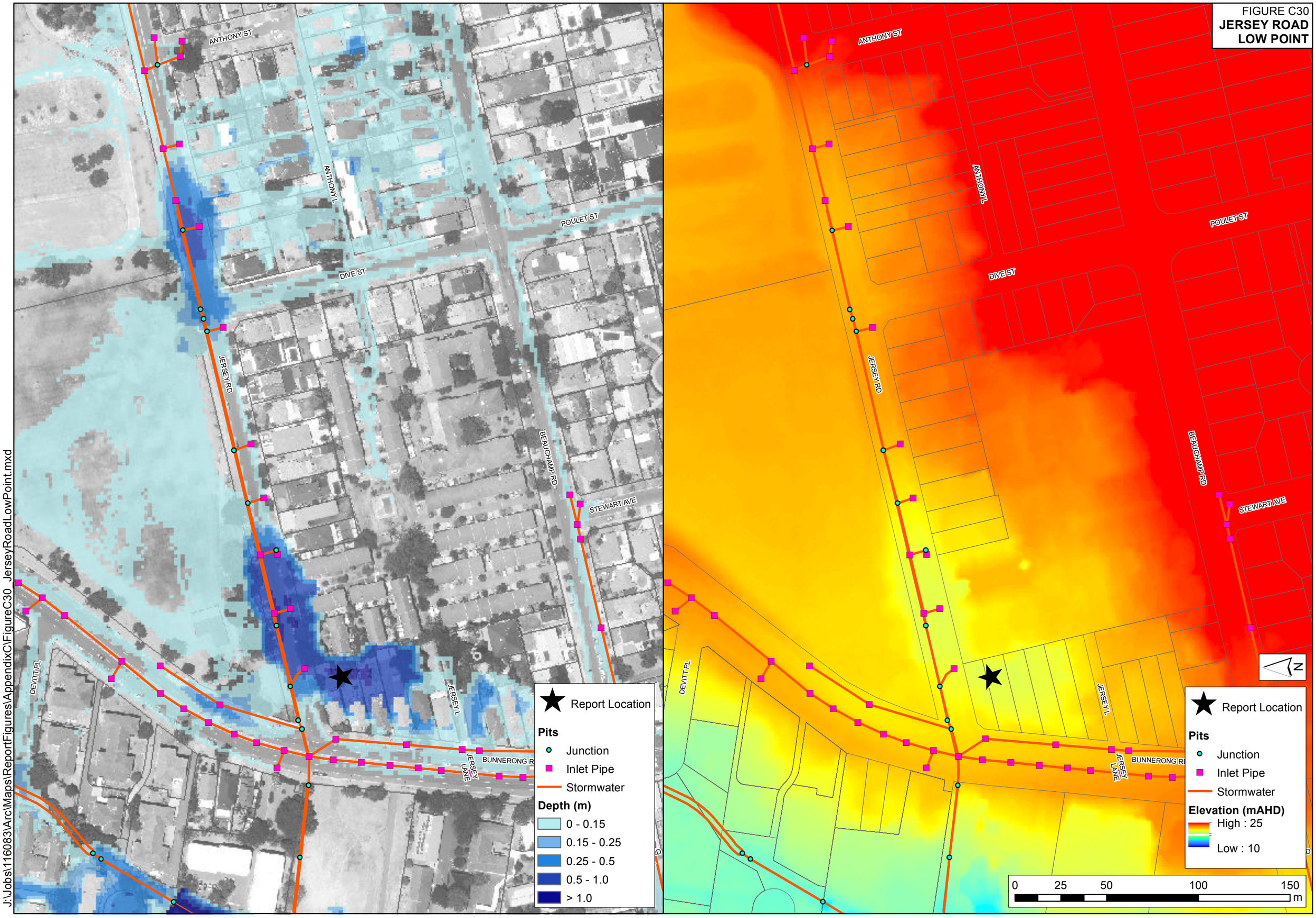

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FIGURE C31
FLACK AVENUE LOW POINT

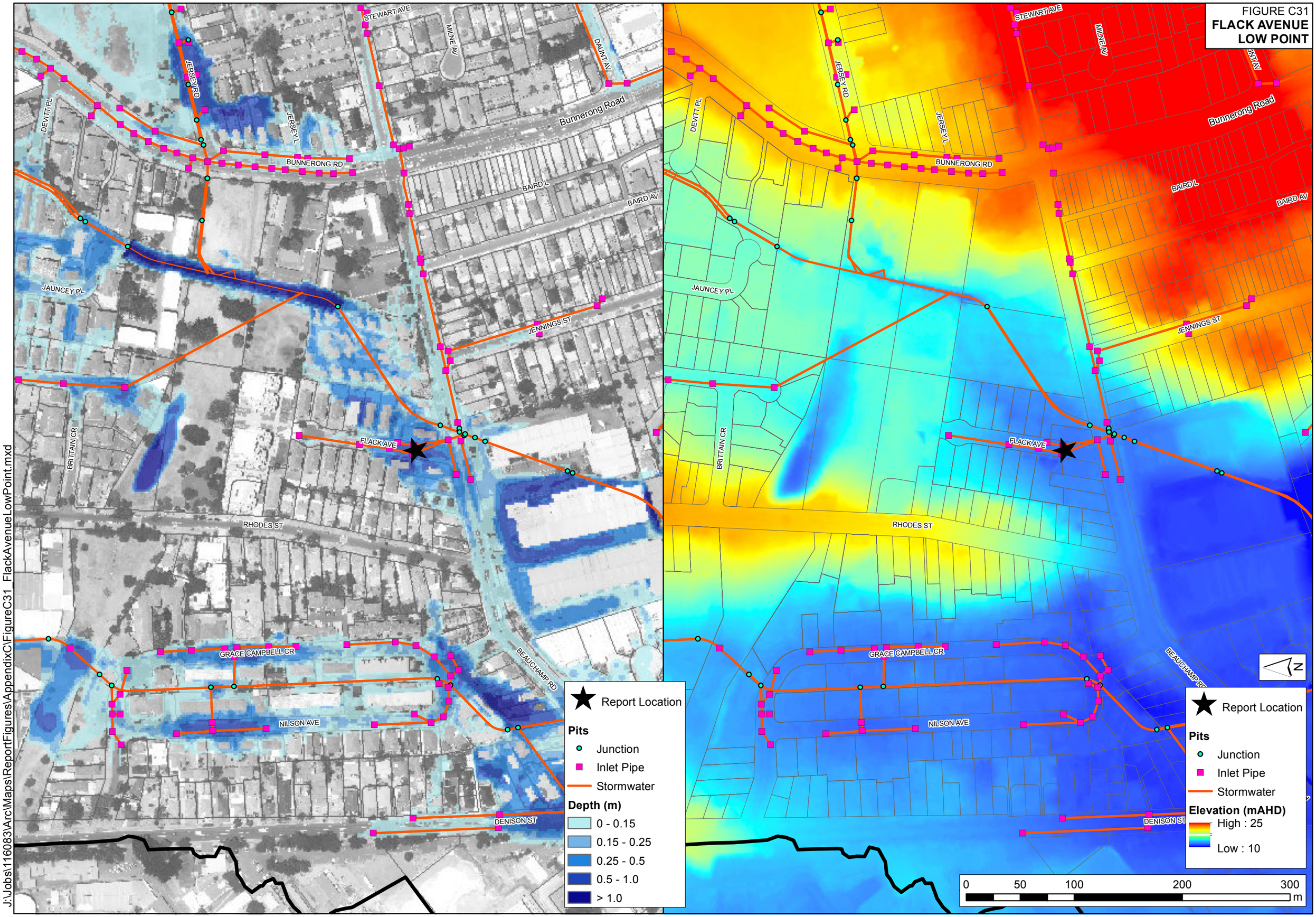

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FIGURE C32
DENISON STREET AND NILSON AVENUE LOW POINT

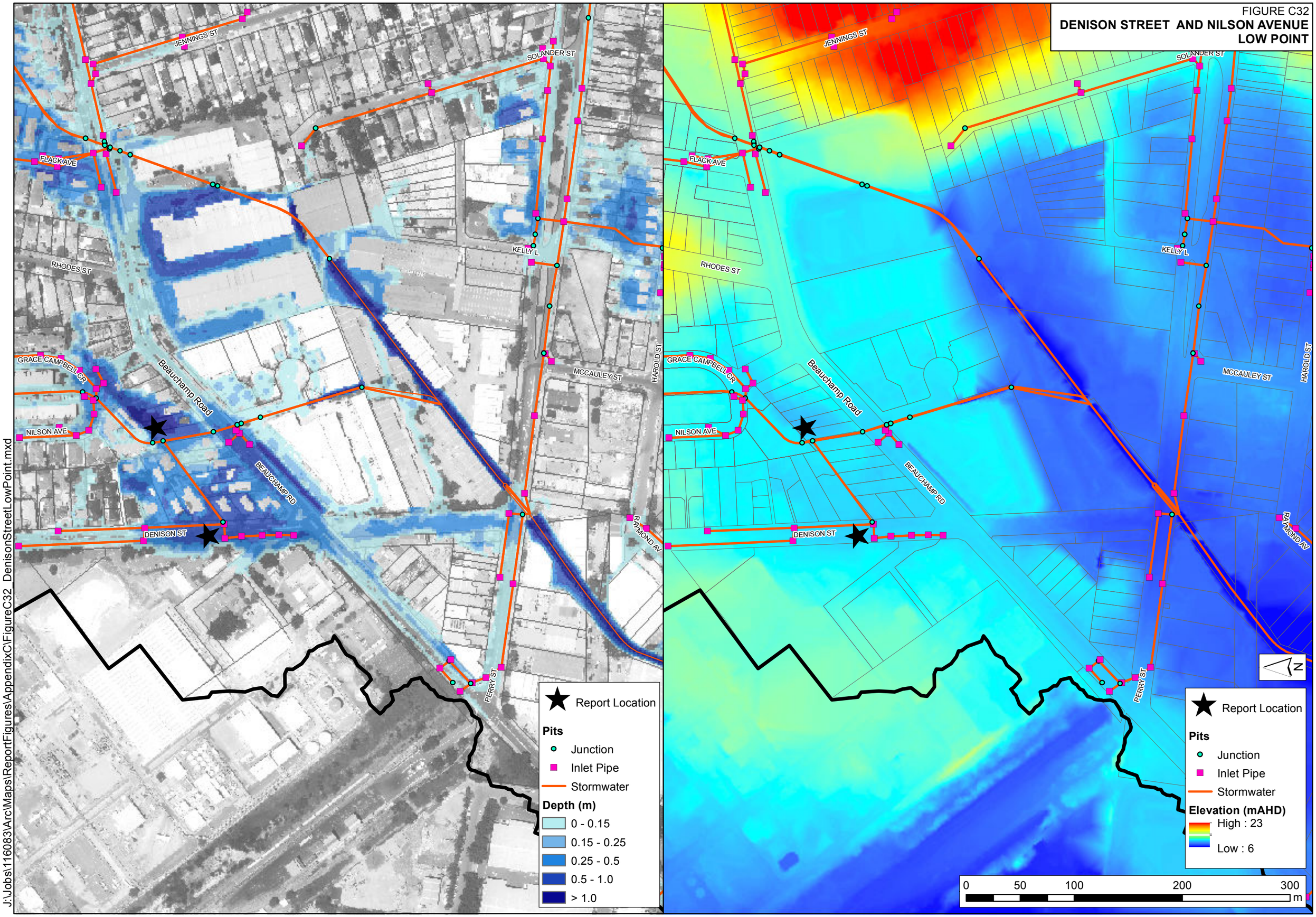

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FIGURE C33
BOONAH AVENUE LOW POINT

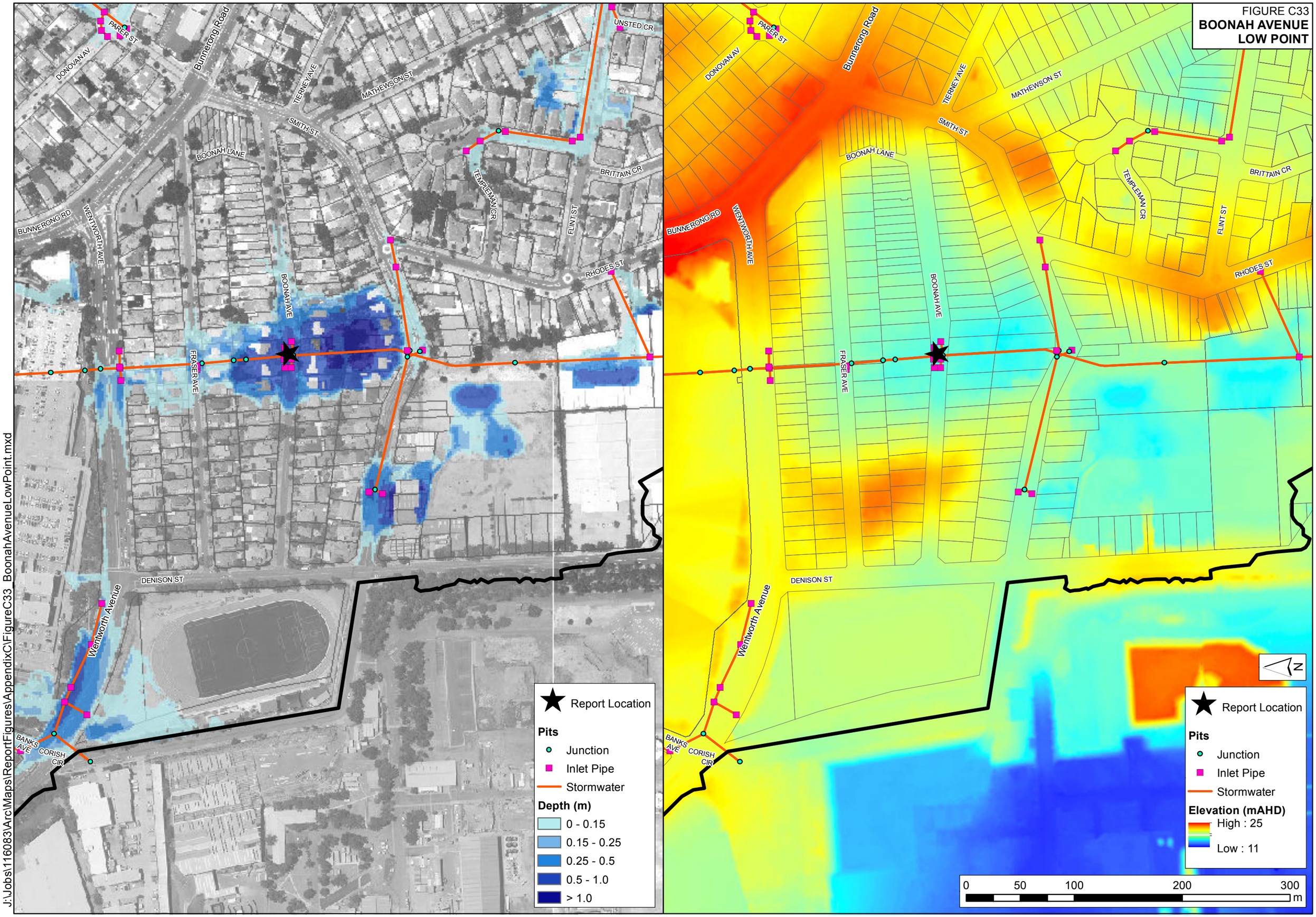

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FIGURE C34
PARER STREET LOW POINT

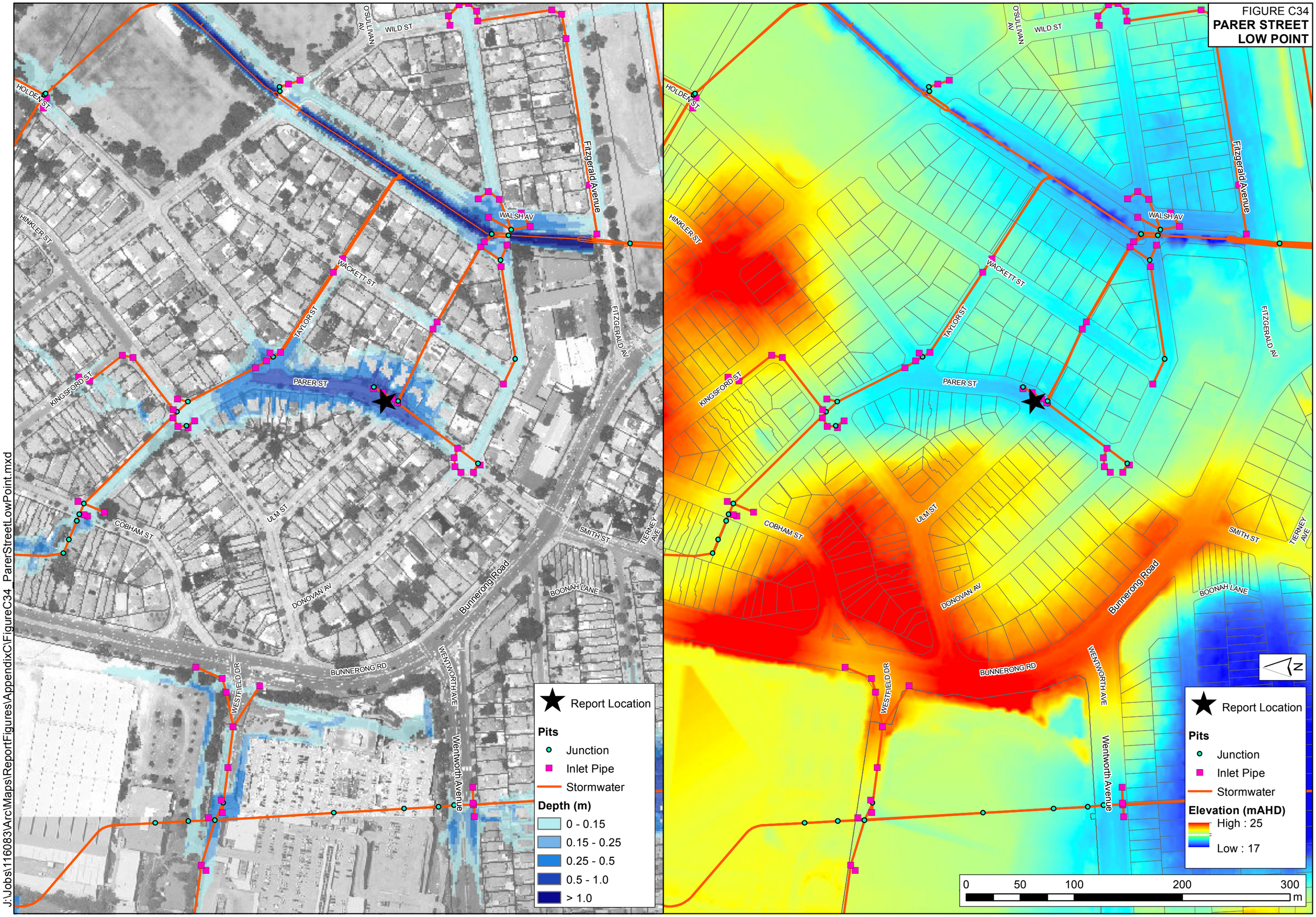

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FIGURE C35

GLANFIELD STREET AND MAROUBRA ROAD LOW POINT

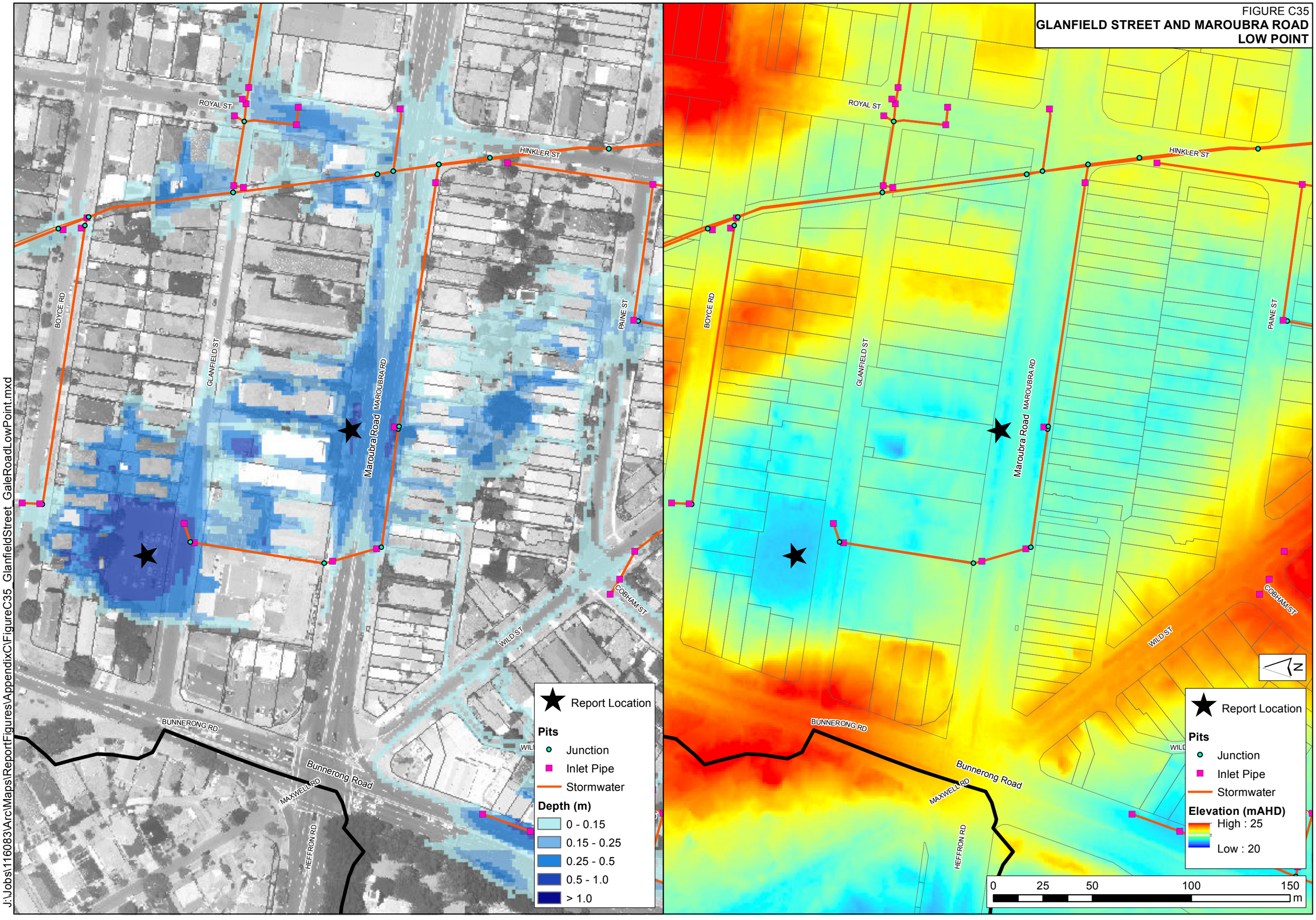

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FIGURE C36
EDWARD CIRCUIT LOW POINT

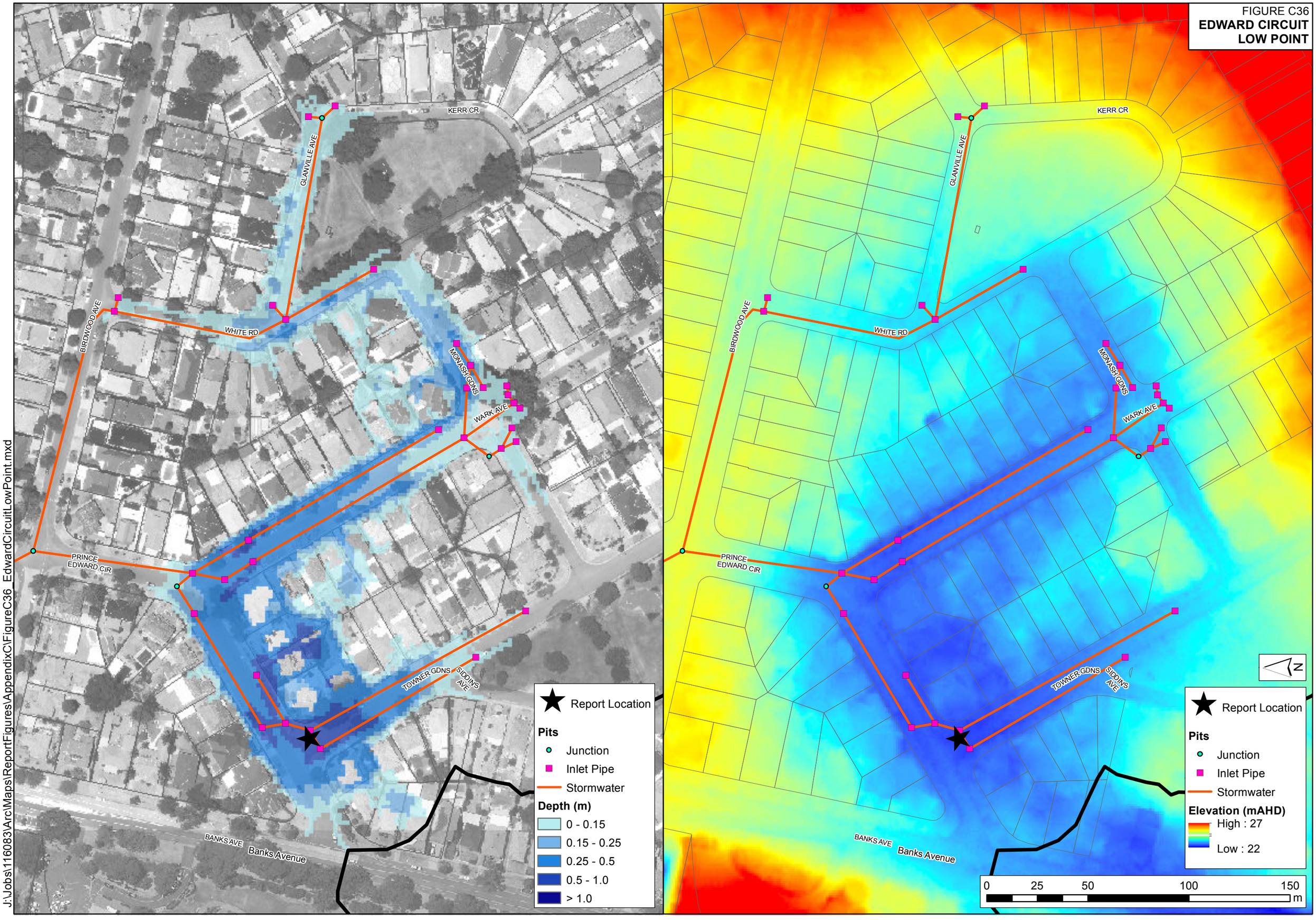

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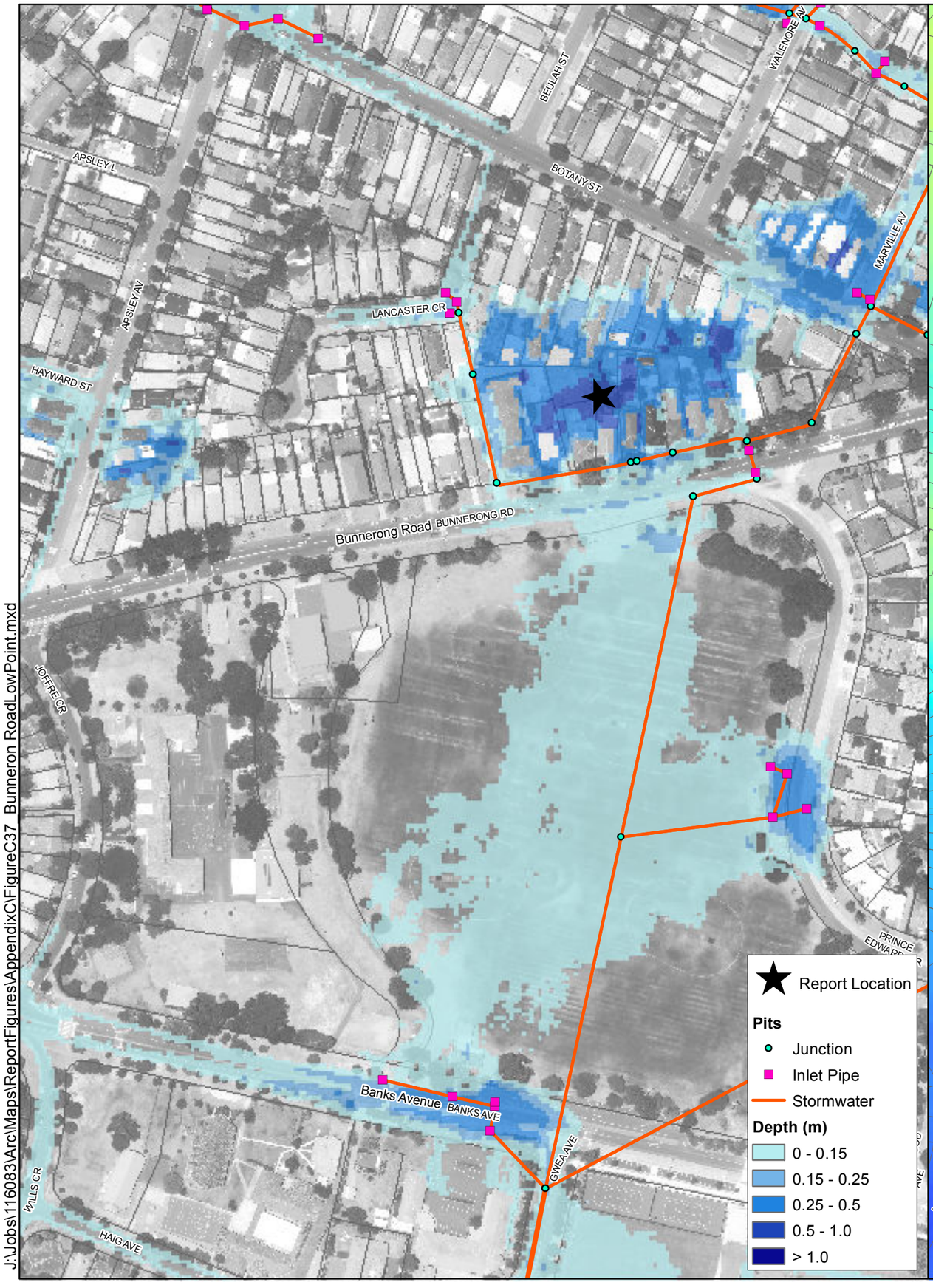
FIGURE C37
BUNNERONG ROAD LOW POINT



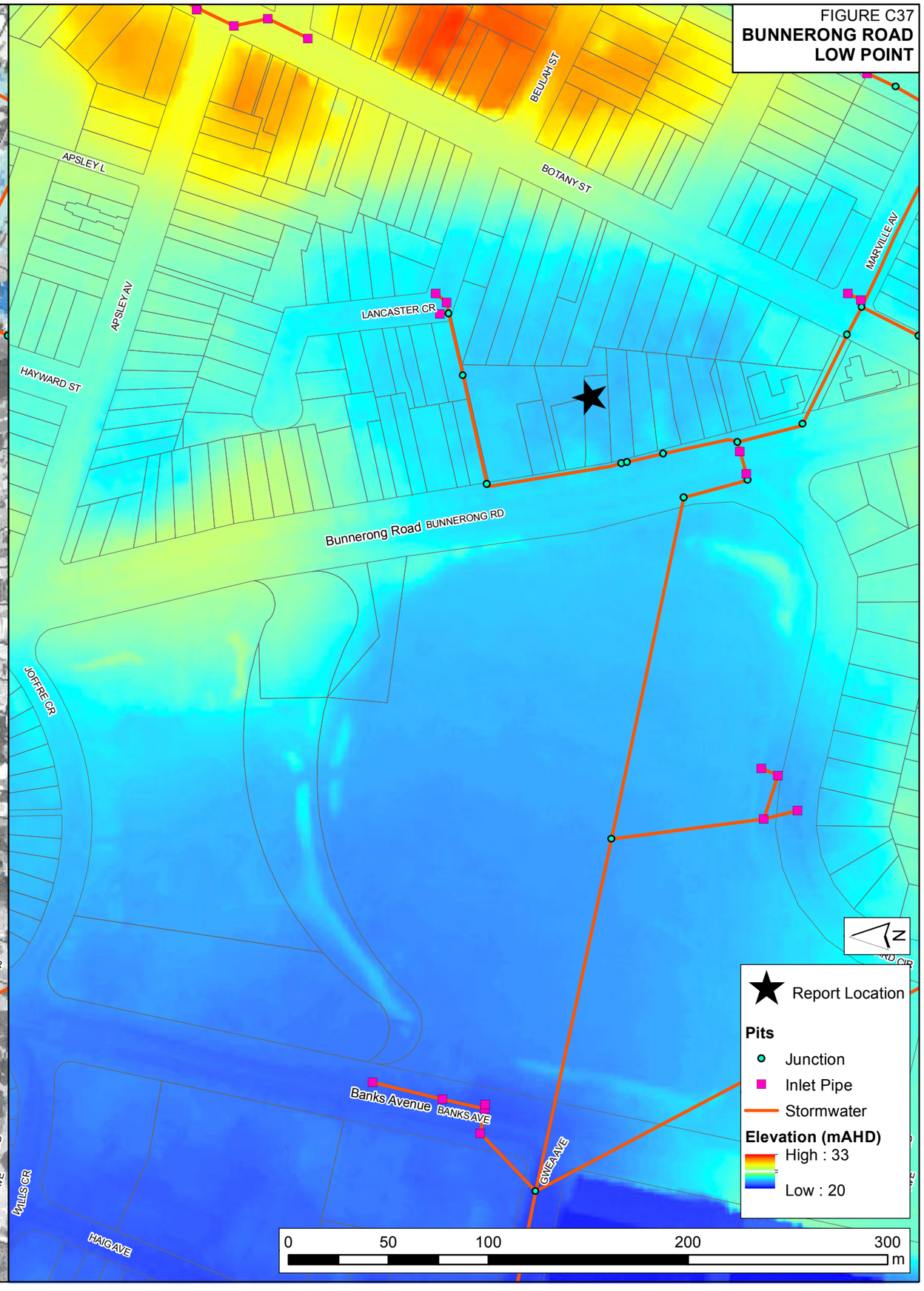


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FIGURE C38
IRVINE STREET LOW POINT

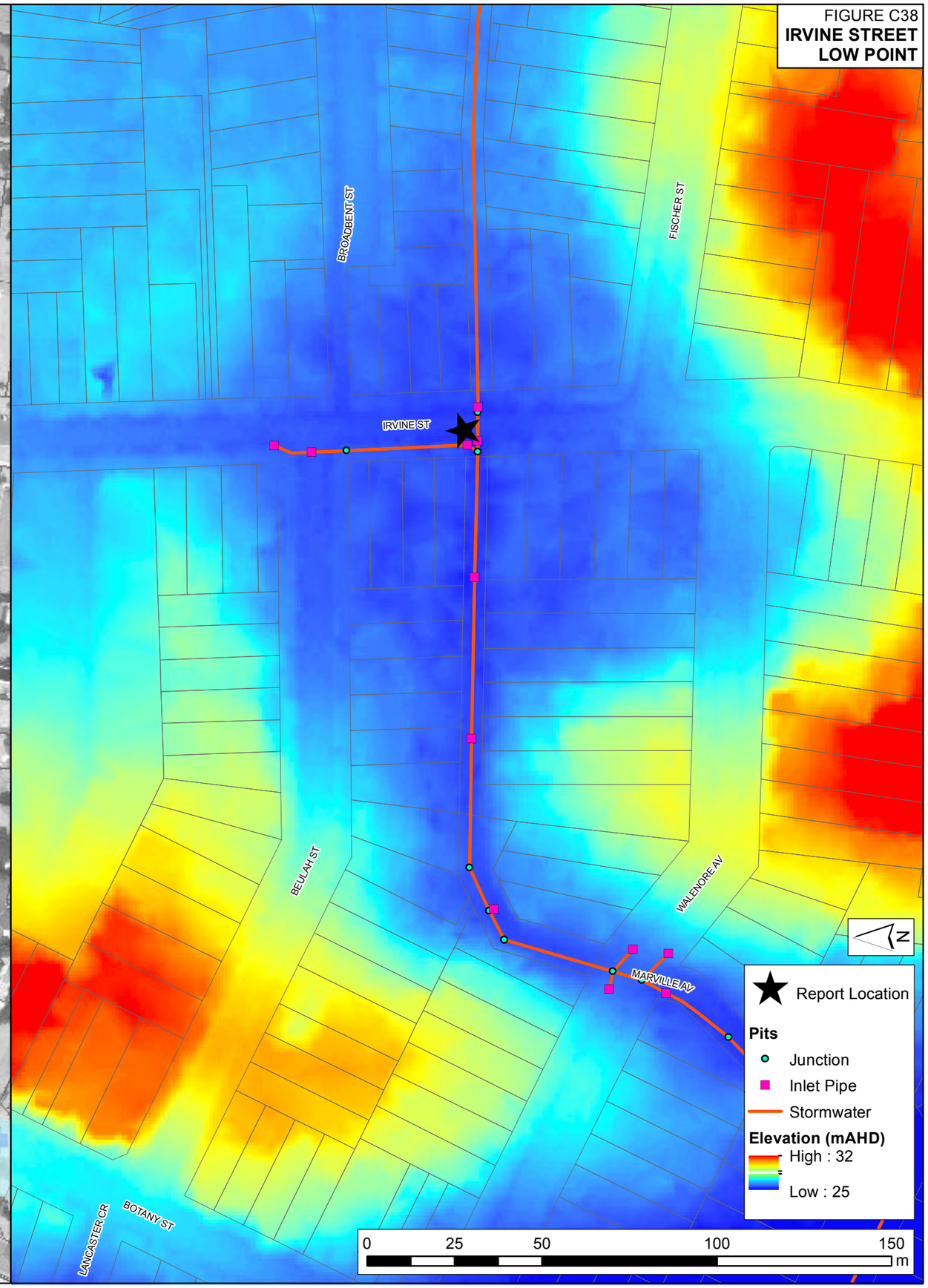

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FIGURE C39
HINCKS STREET LOW POINT

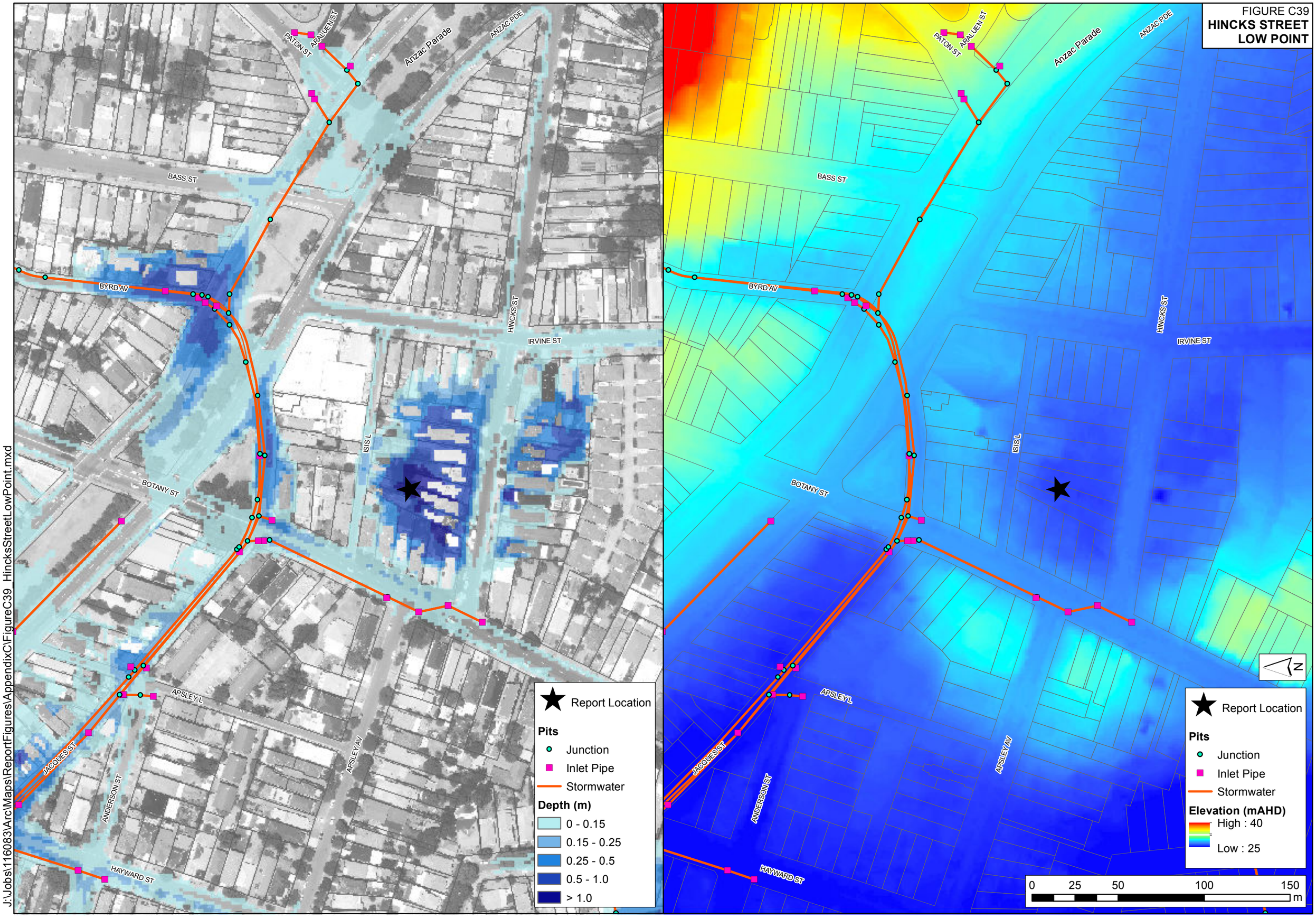

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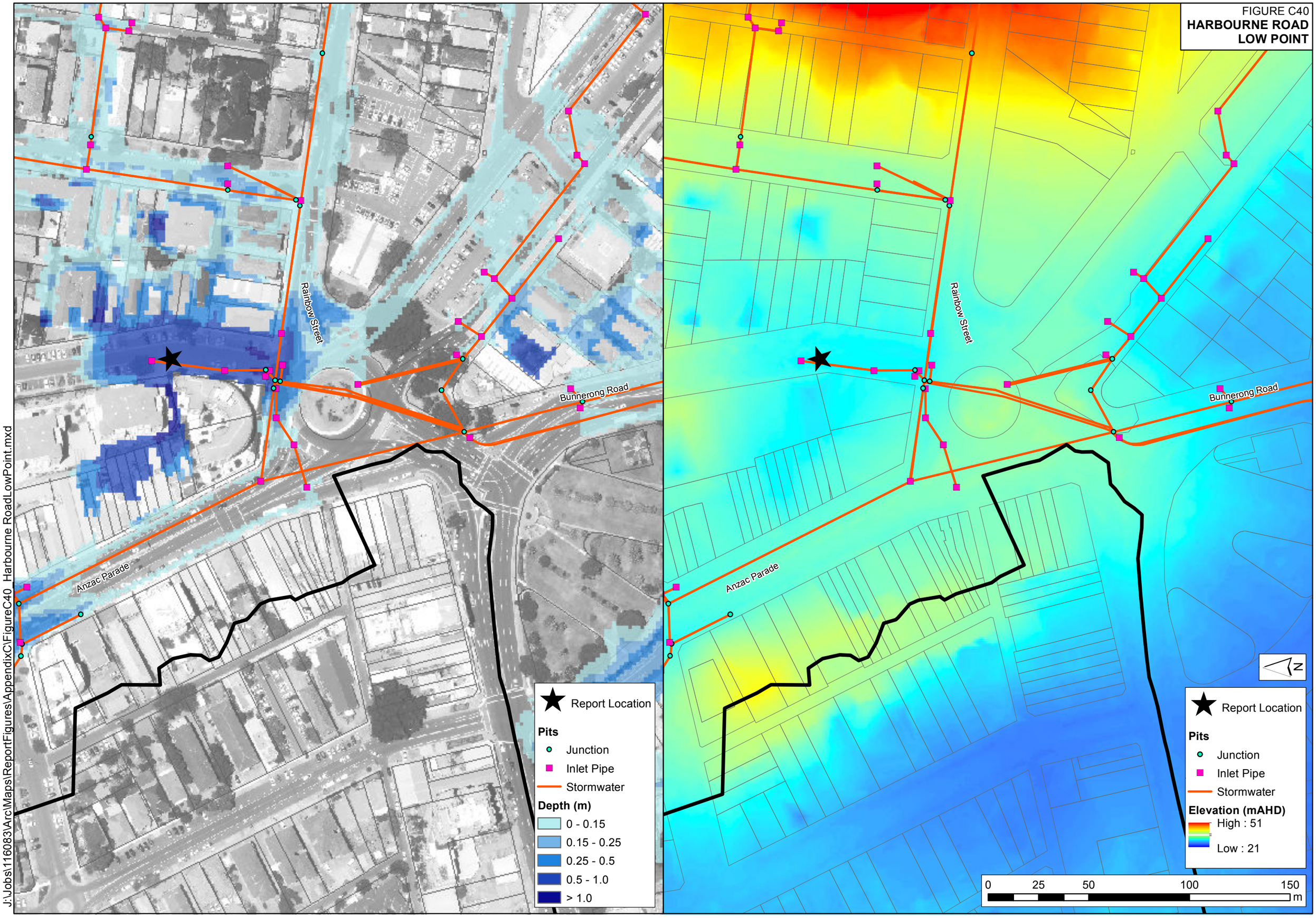
FIGURE C40
HARBOURNE ROAD LOW POINT



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