

Bimbi Flood Study

Final Report

Volume 2

November 2022



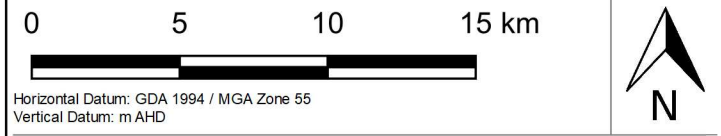
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- Hydrologic Model Area
- Hydraulic Model Area
- Major Waterways
- Minor Waterways

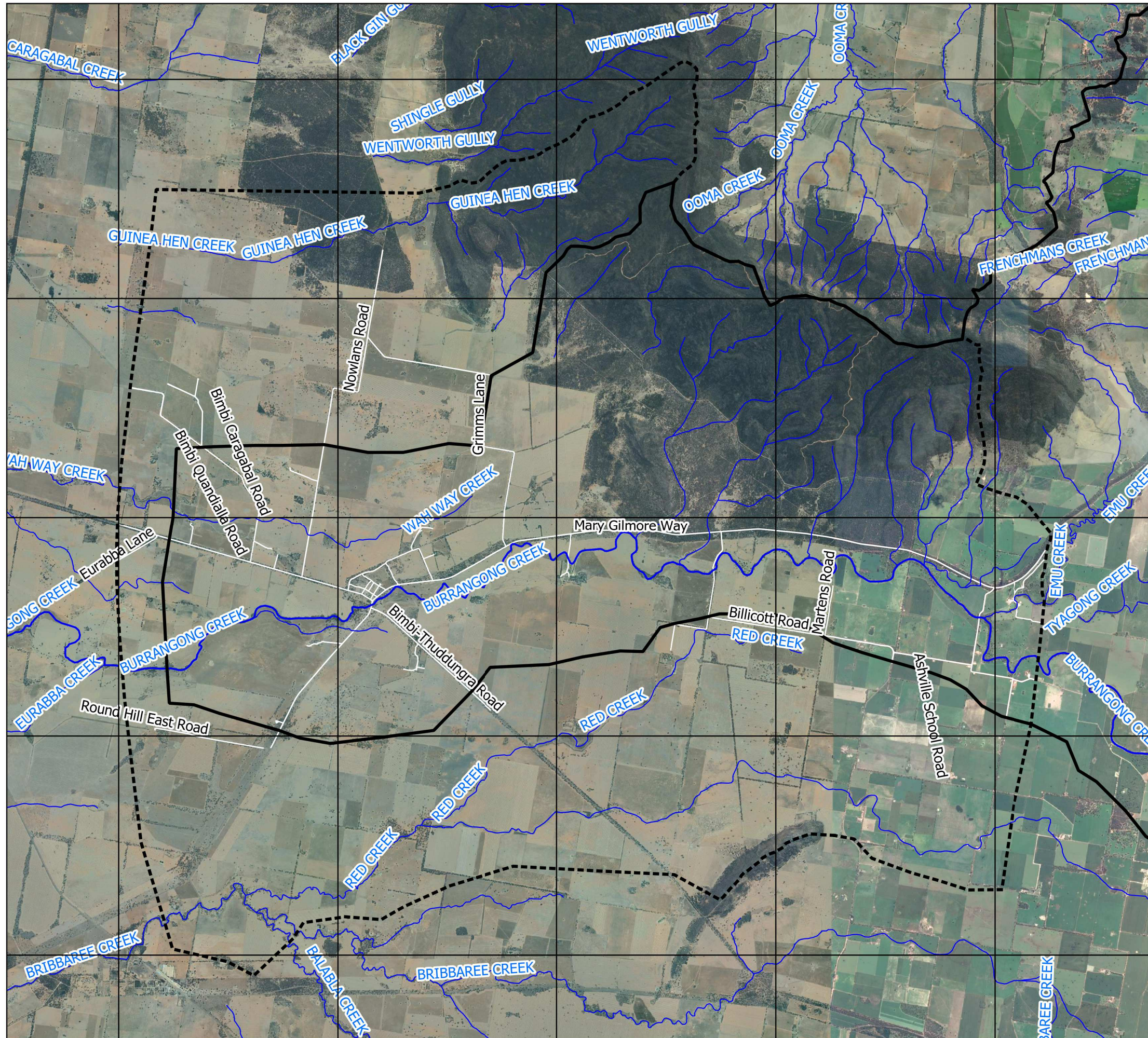
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BIMBI FLOOD STUDY

Map Location: 20003 Bimbi FS FRMSP\GIS\Maps\FS

FIGURE 1A
STUDY AREA



-  Hydrologic Model Area
-  Hydraulic Model Area
-  Major Waterways
-  Minor Waterways

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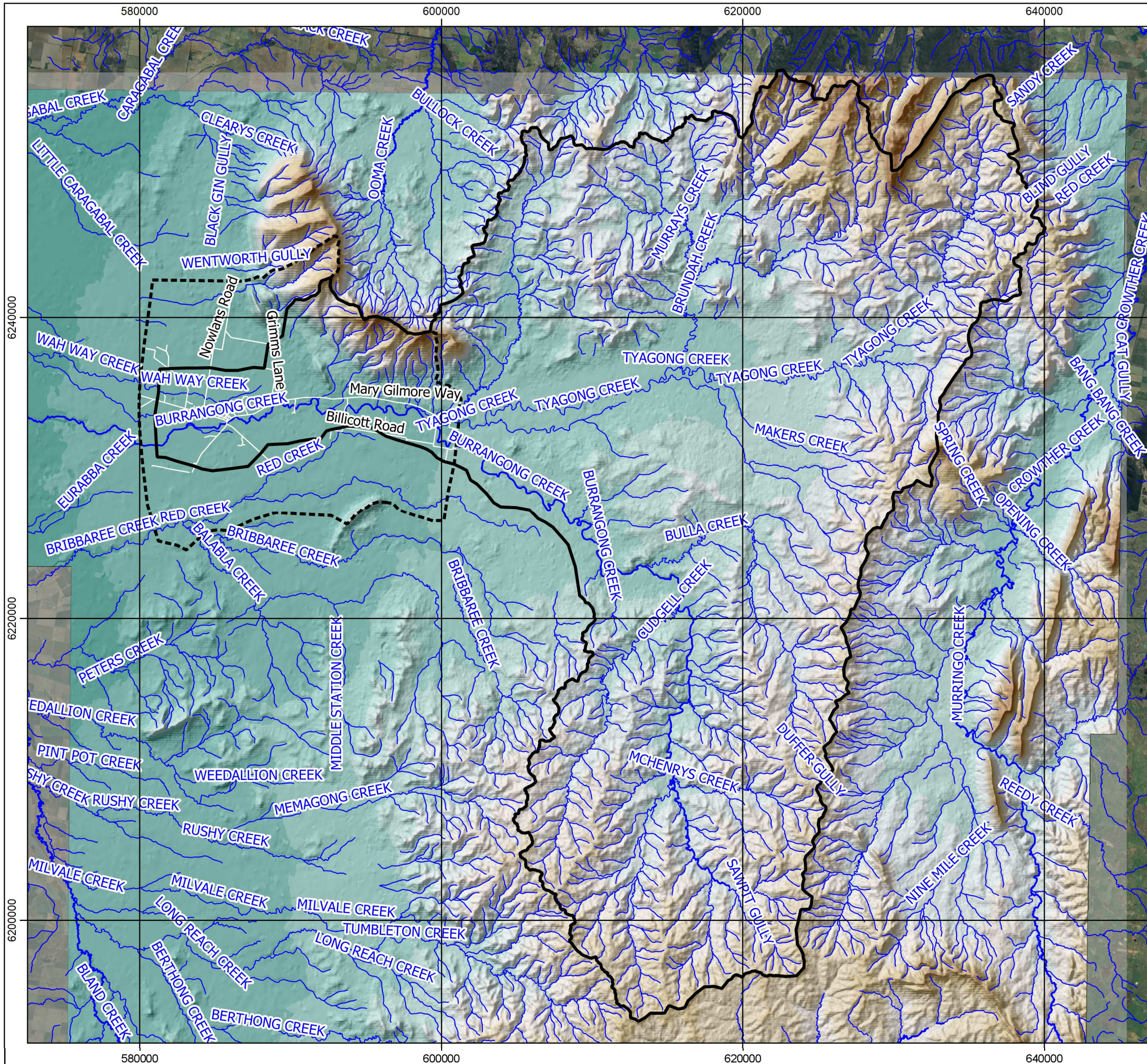
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY

Map Location: 20003 Bimbi FS FRMSP\GIS\Maps\FS

FIGURE 1B
STUDY AREA



- Hydrologic Model Area
 - Hydraulic Model Area
 - Major Waterways
 - Minor Waterways
- Ground Elevation (m AHD)
- <= 250
 - 250 - 300
 - 300 - 350
 - 350 - 400
 - 400 - 450
 - 450 - 500
 - 500 - 550
 - 550 - 600
 - 600 - 650
 - > 650

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0 5 10 15 km

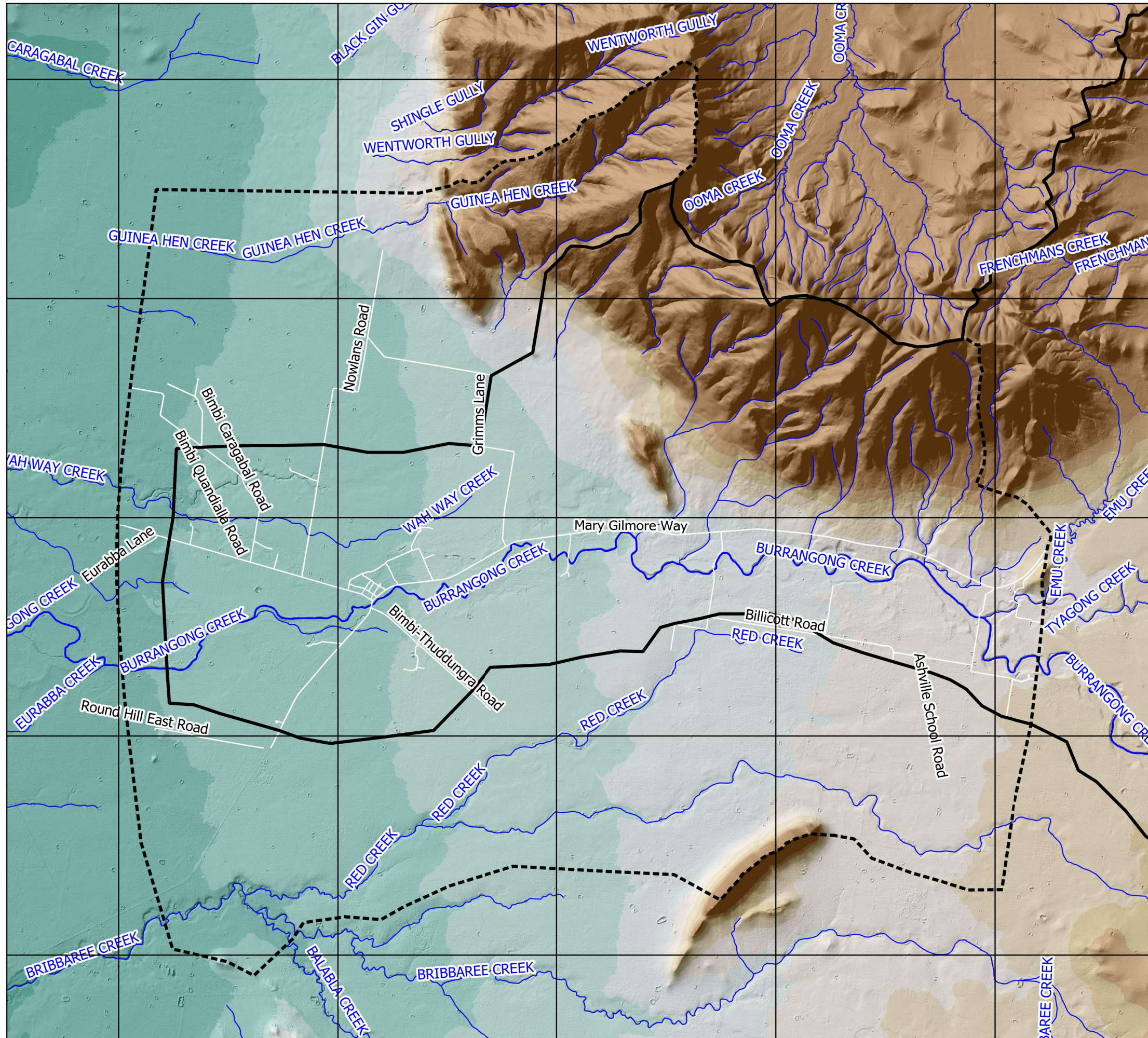
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY

Map Location: 20003 Bimbi FS FRMSP\GIS\Maps\FS

FIGURE 2A
AERIAL BASED SURVEY DATA



- Hydrologic Model Area
- Hydraulic Model Area

- Major Waterways
- Minor Waterways

- Ground Level (m AHD)
- <= 250
 - 250 - 260
 - 260 - 270
 - 270 - 280
 - 280 - 290
 - 290 - 300
 - 300 - 310
 - 310 - 320
 - 320 - 330
 - >= 330

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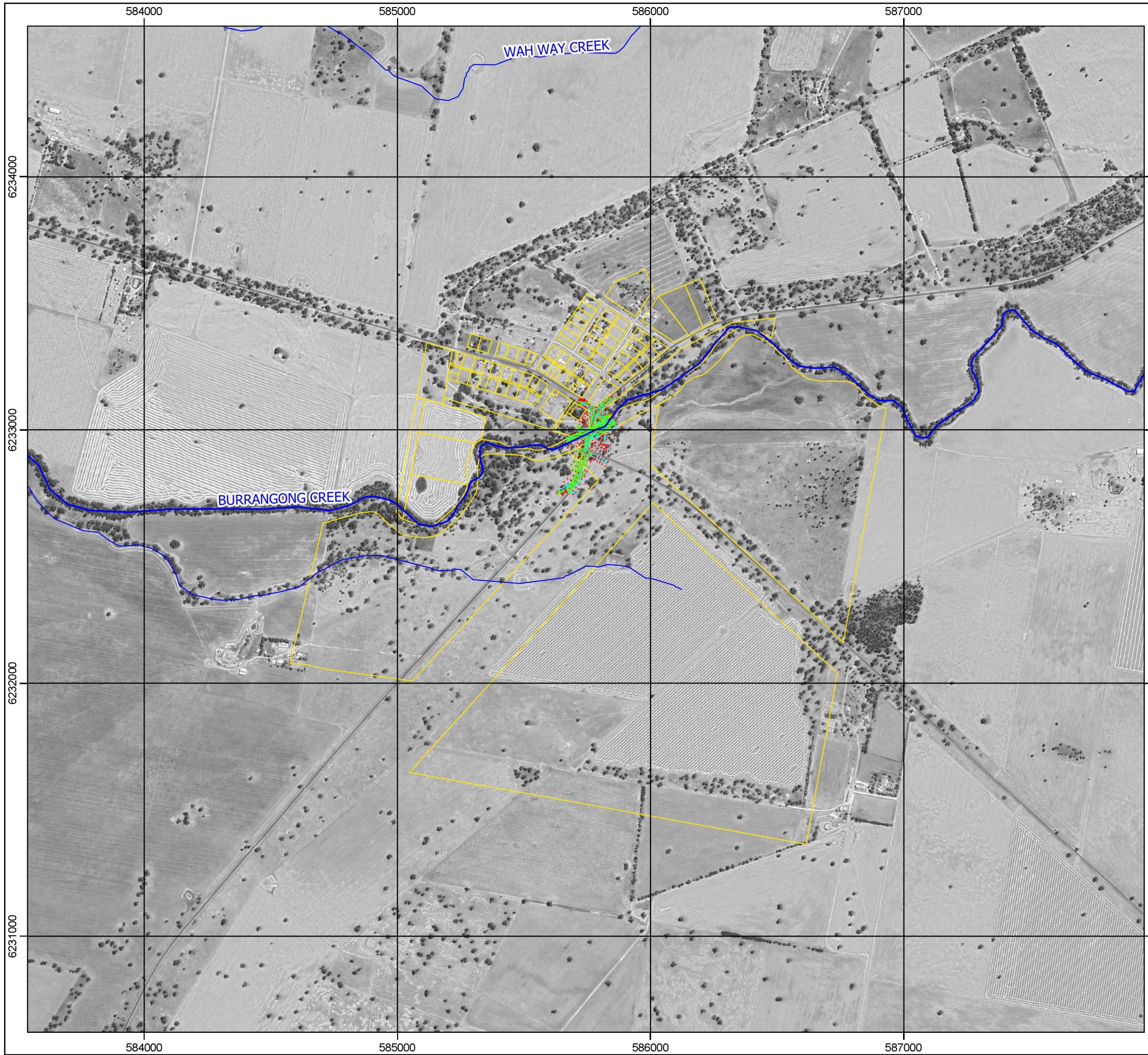


Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD

BIMBI FLOOD STUDY

Map Location: 20003 Bimbi FS FRMSP\GIS\Maps\FS

FIGURE 2B
AERIAL BASED SURVEY DATA



- Major Waterways
- Minor Waterways
- Allotment Boundaries
- Major Contour Lines
- Minor Contour Lines
- Survey Spot Heights

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0 250 500 750 1000 m





Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD

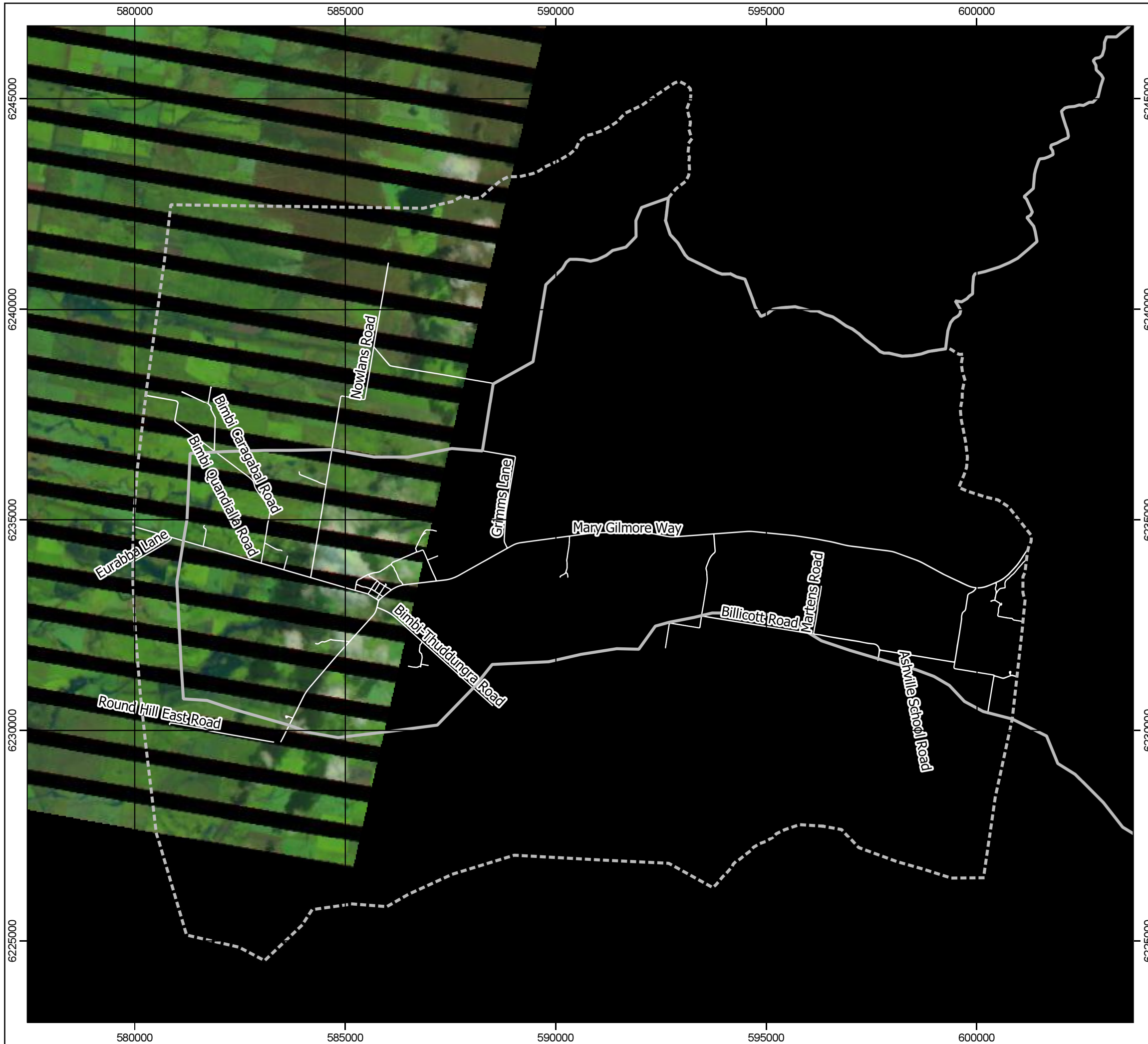


BIMBI FLOOD STUDY

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 3
GROUND BASED SURVEY DATA

-  Hydrologic Model Area
-  Hydraulic Model Area



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Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD

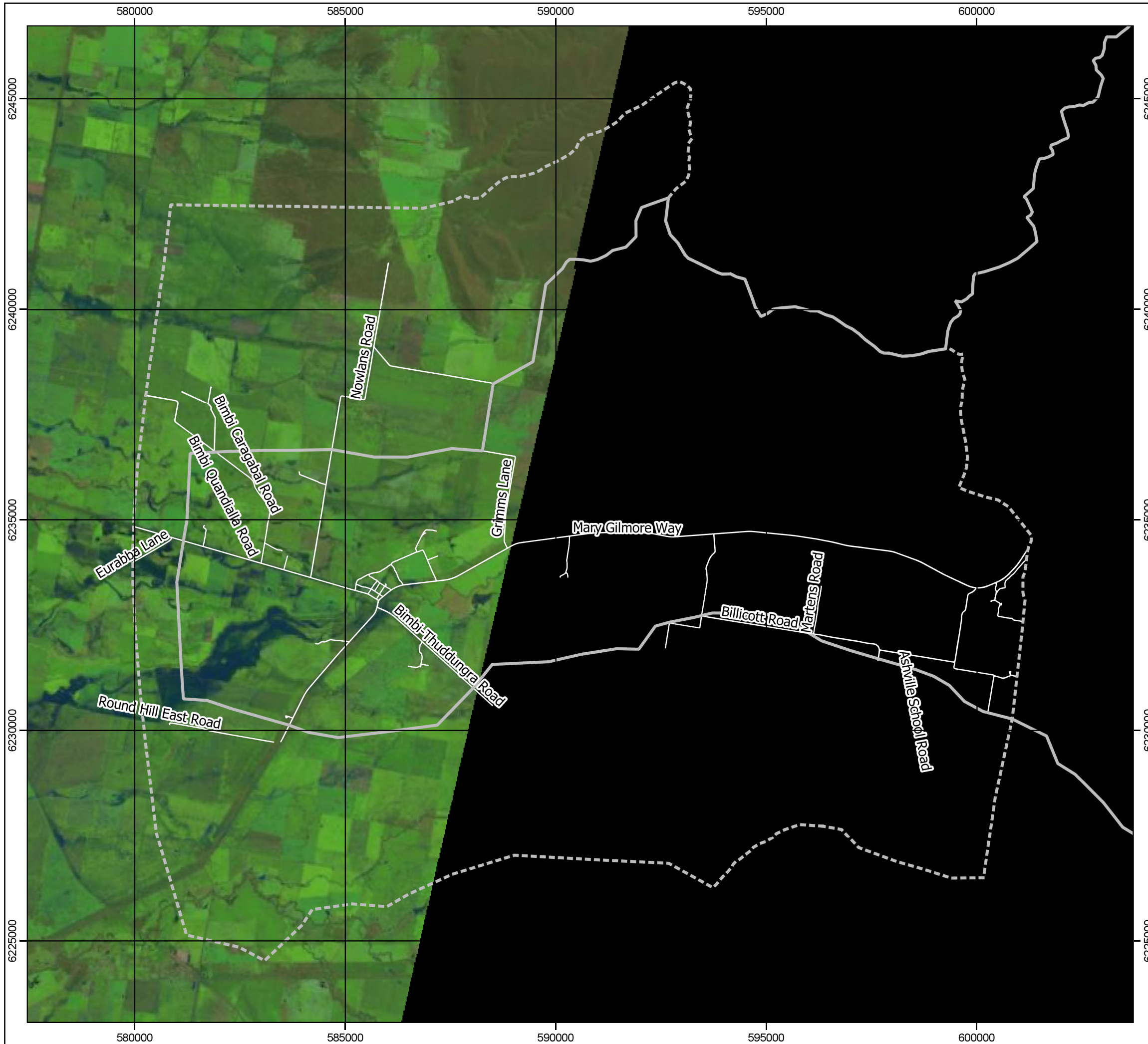


BIMBI FLOOD STUDY

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 4A
LANDSAT IMAGE
24 SEPTEMBER 2016

-  Hydrologic Model Area
-  Hydraulic Model Area



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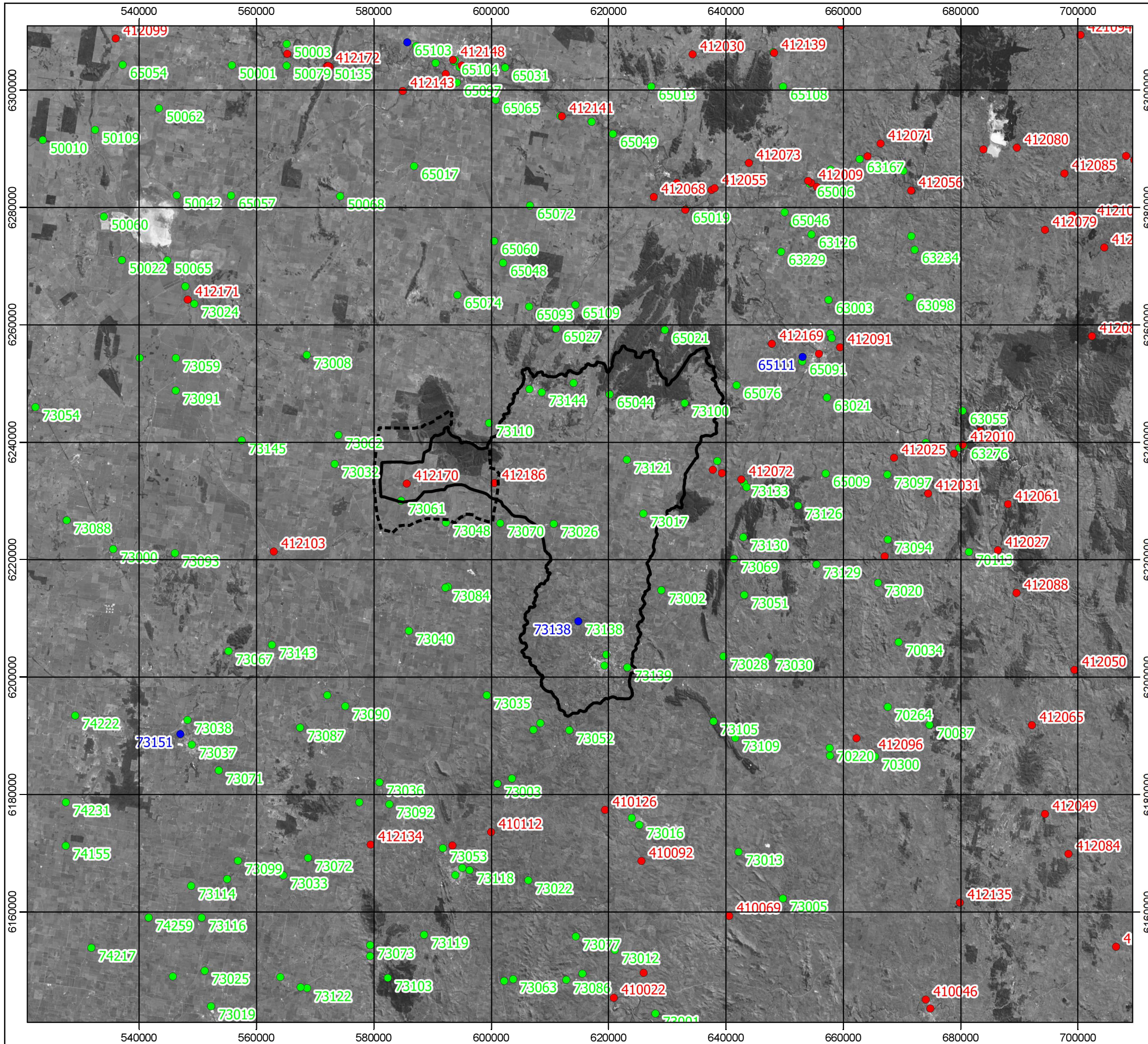
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 4B
LANDSAT IMAGE
2 OCTOBER 2016



- Hydrologic Model Area
- Hydraulic Model Area
- Stream Gauges
- Daily Rainfall Gauges
- Continuous Rainfall Gauges

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0 10 20 30 40 km






Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD

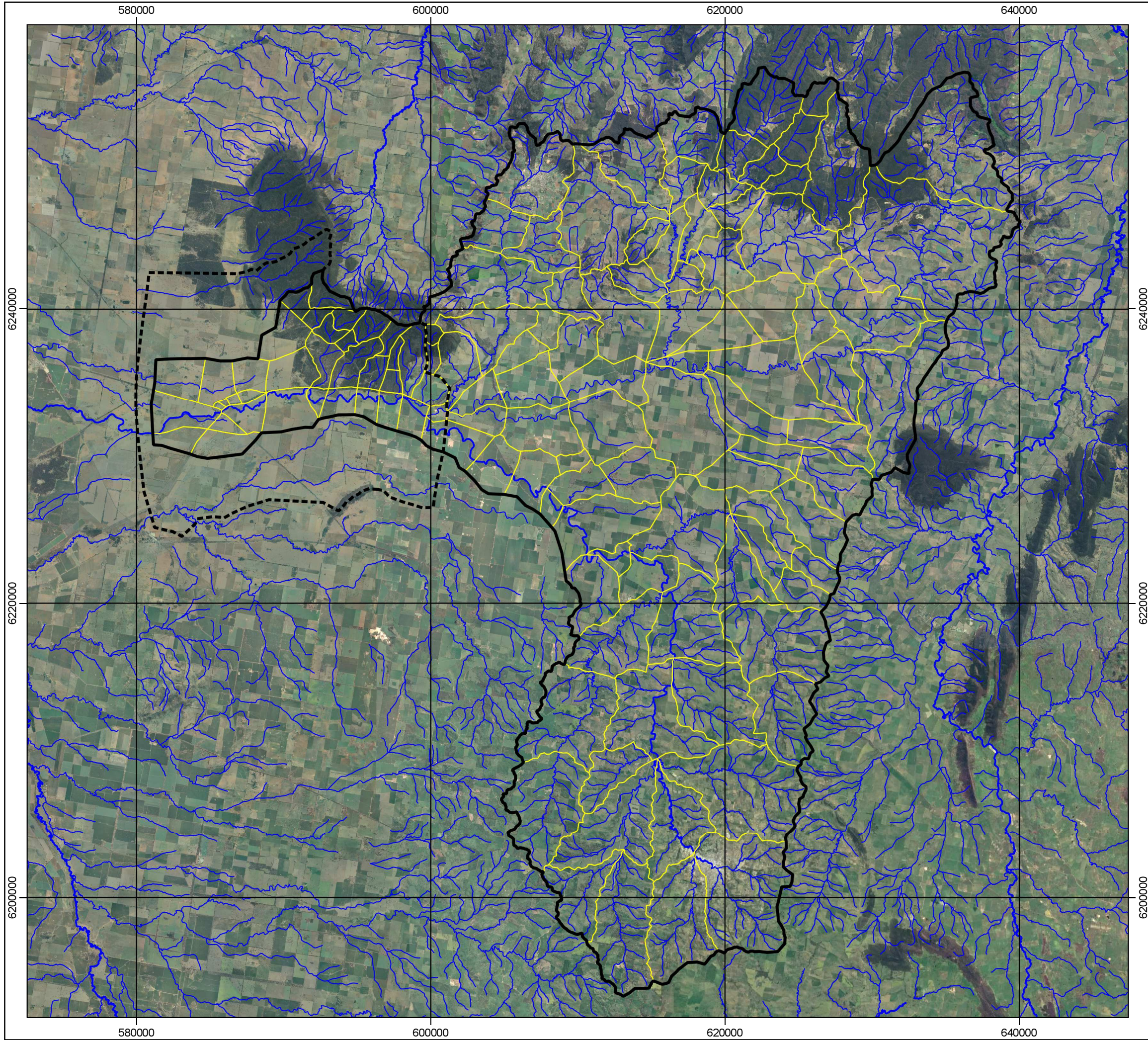


BIMBI FLOOD STUDY

Map Location: 20003 Bimbi FS FRMSP\GIS\Maps\FS

FIGURE 5
HISTORIC GAUGE LOCATIONS

-  Hydrologic Model Area
-  Hydraulic Model Area
-  Major Waterways
-  Minor Waterways
-  Subcatchments



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0 5 10 15 km



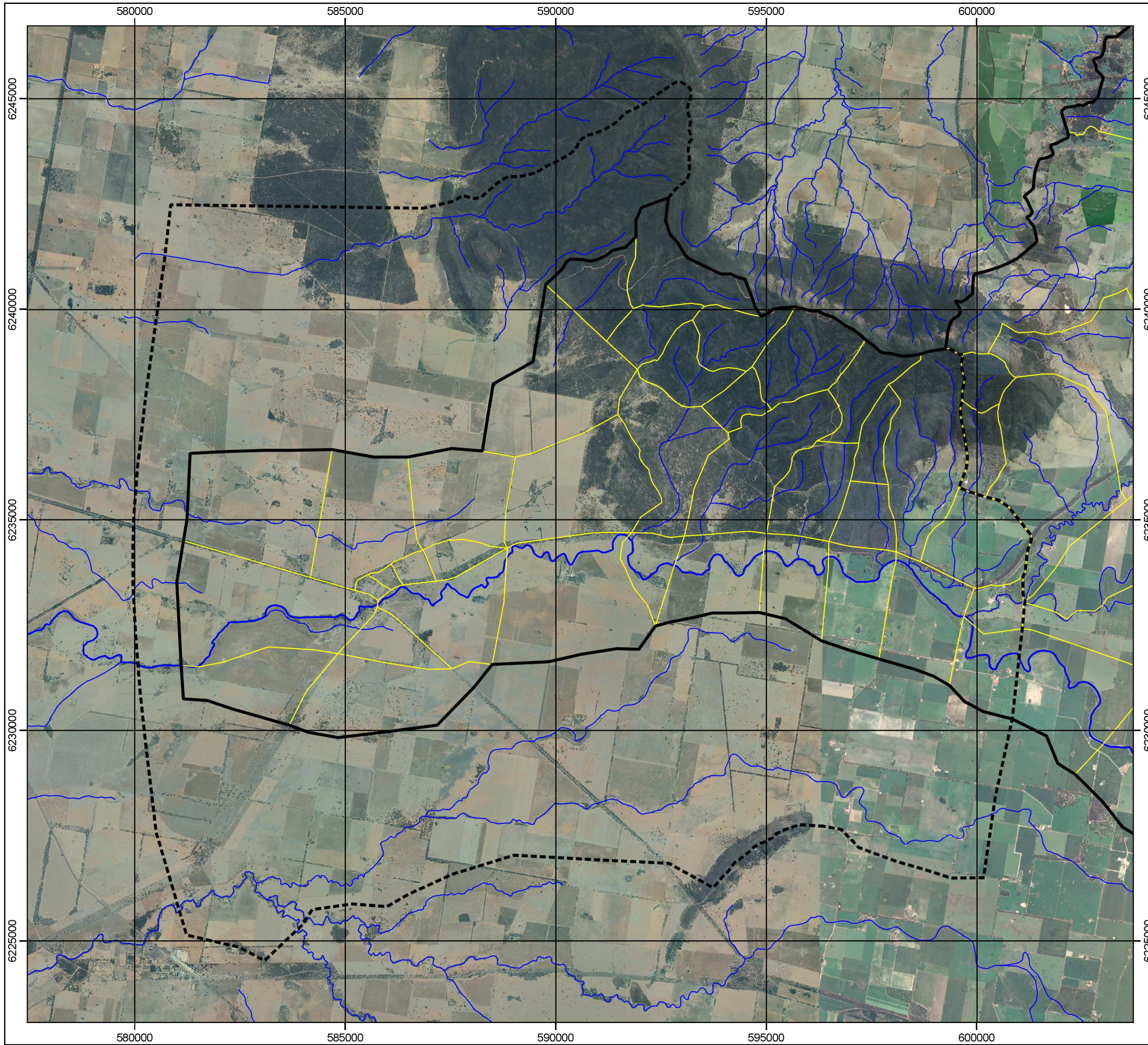
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD








BIMBI FLOOD STUDY

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 6A
HYDROLOGIC MODEL SCHEMATISATION



-  Hydrologic Model Area
-  Hydraulic Model Area
-  Major Waterways
-  Minor Waterways
-  Subcatchments

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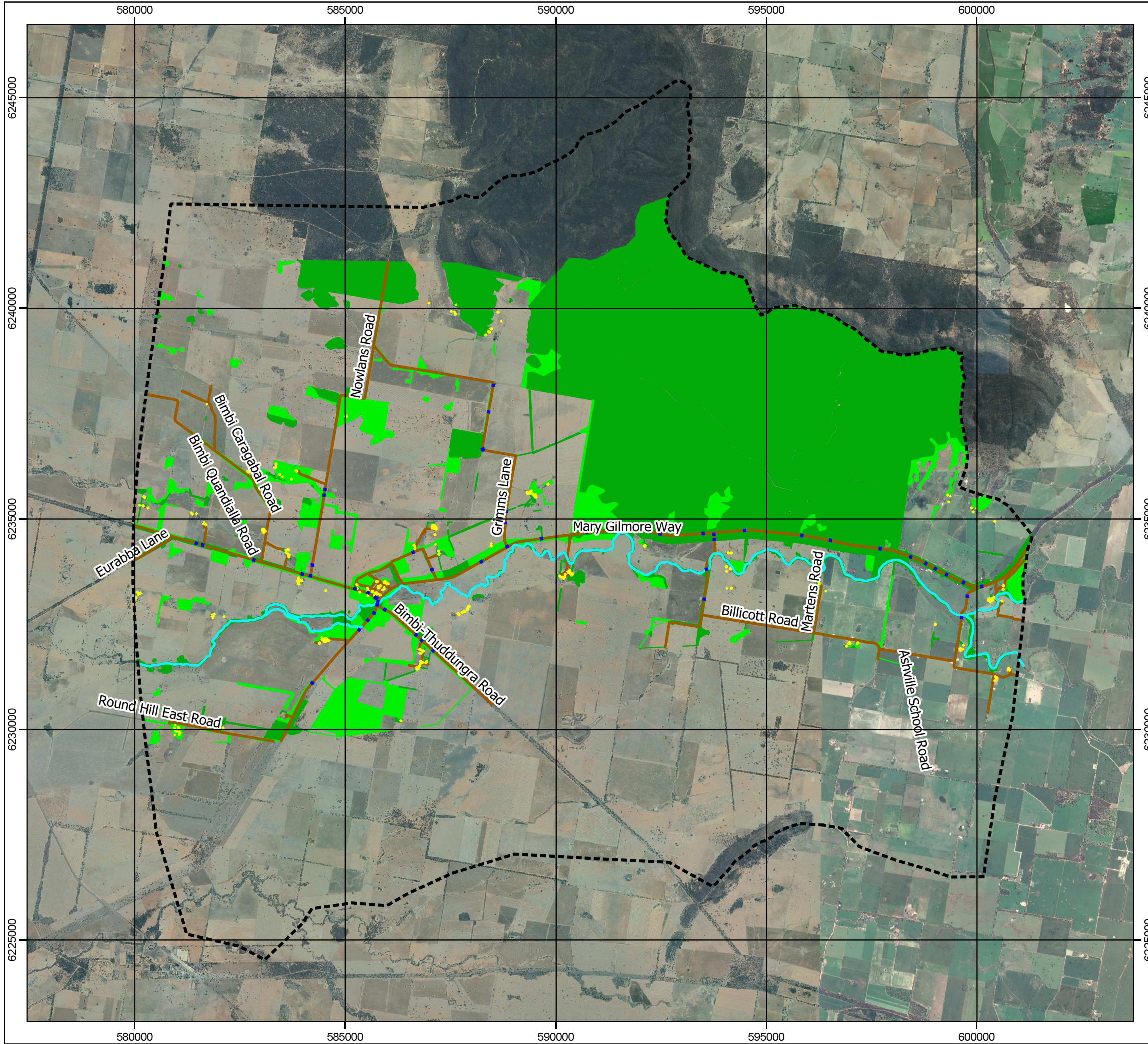
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 6B
HYDROLOGIC MODEL SCHEMATISATION



- Hydraulic Model Area
- Buildings
- Bridges and Culverts
- Creeks
- Hydraulic Roughness:
Default - Light Vegetation (Manning's "n" Value = 0.04)
- Medium Vegetation (Manning's "n" Value = 0.05)
- Heavy Vegetation (Manning's "n" Value = 0.08)
- Roads (Manning's "n" Value = 0.02)

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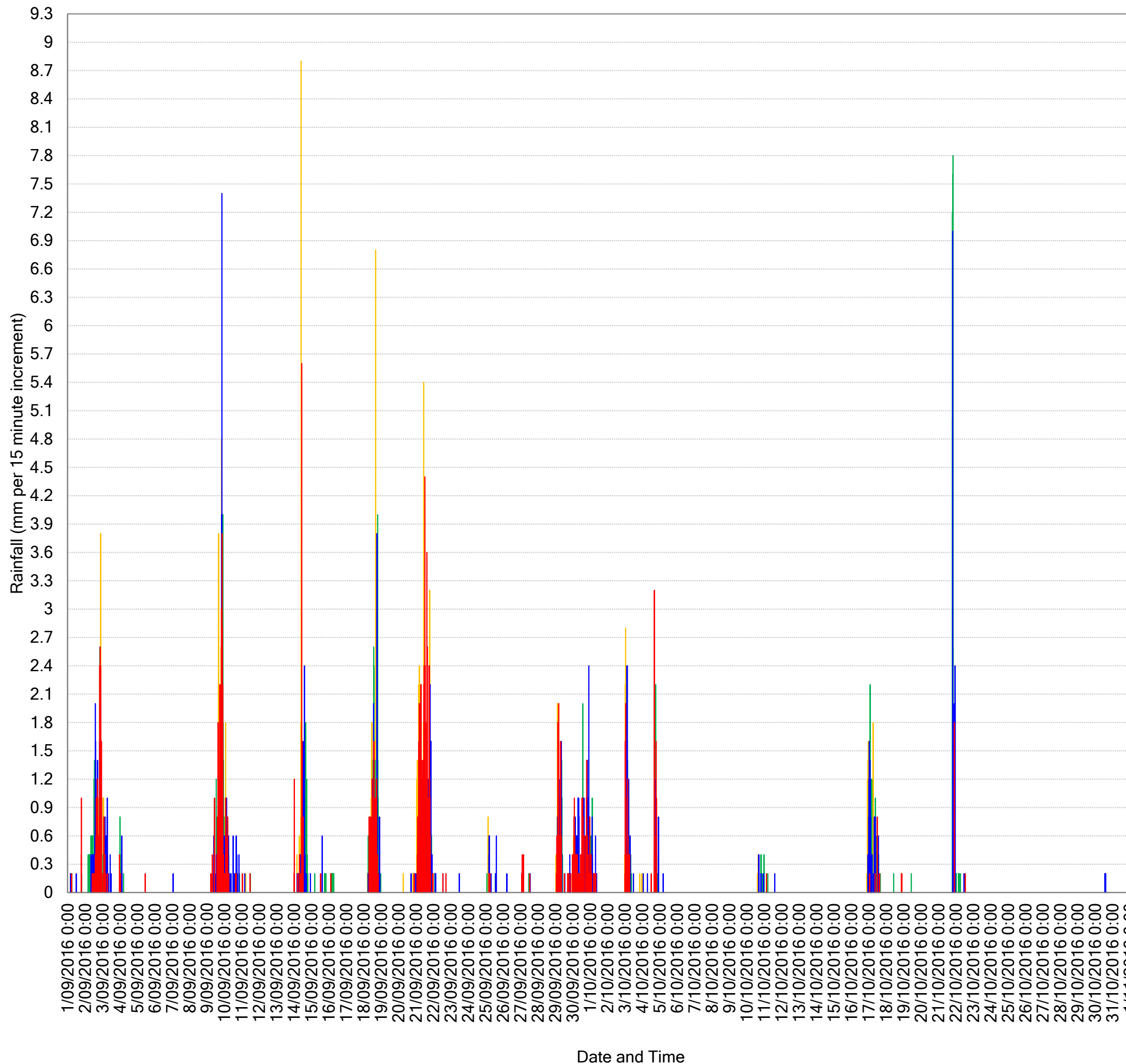
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 7
HYDRAULIC MODEL SCHEMATISATION

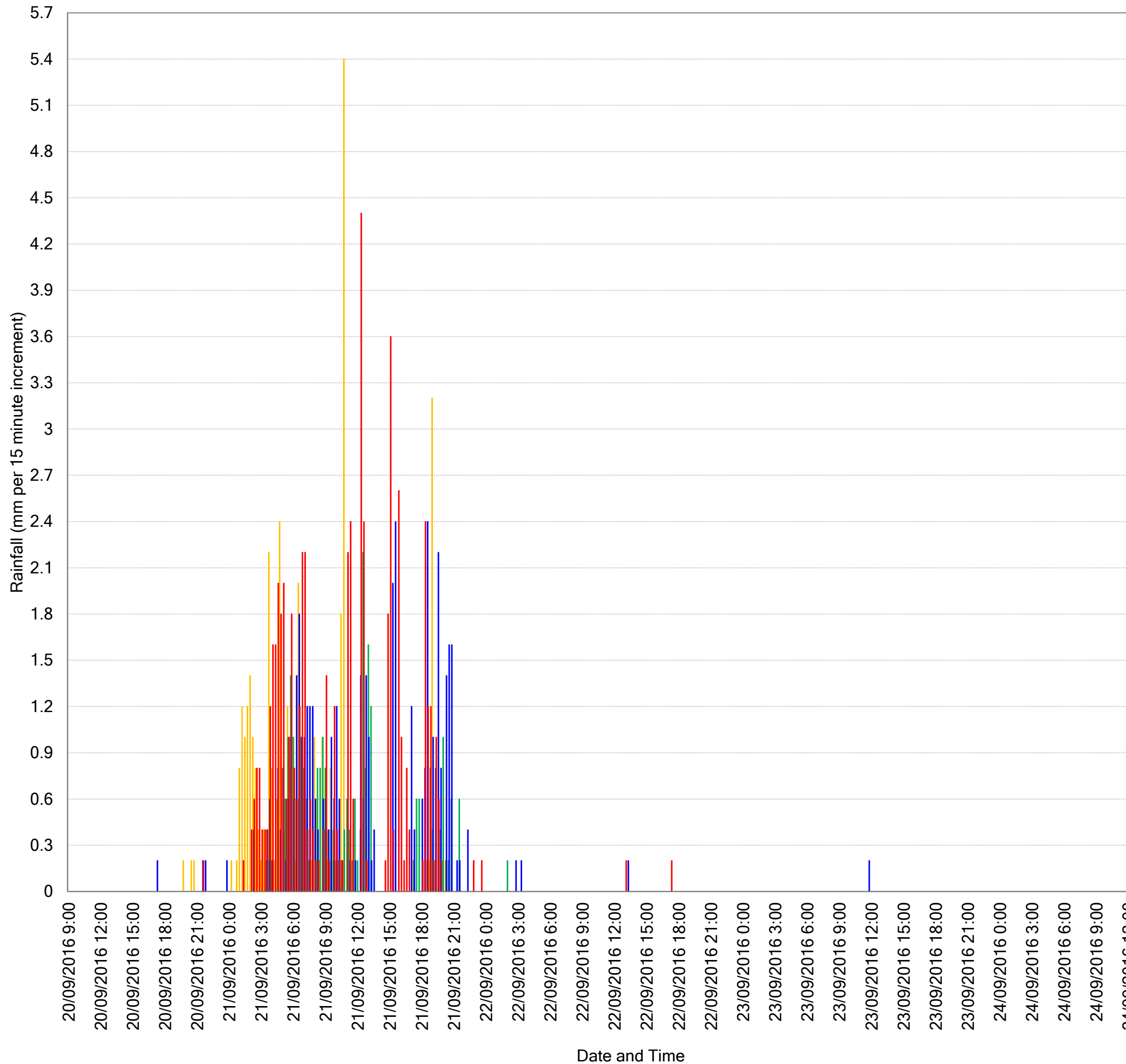


- Gauge 50017
- Gauge 65111
- Gauge 73138
- Gauge 73151

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BIMBI FLOOD STUDY

FIGURE 8A
ANALYSIS OF RECORDS
RAINFALL TEMPORAL PATTERN
SEPTEMBER AND OCTOBER 2016

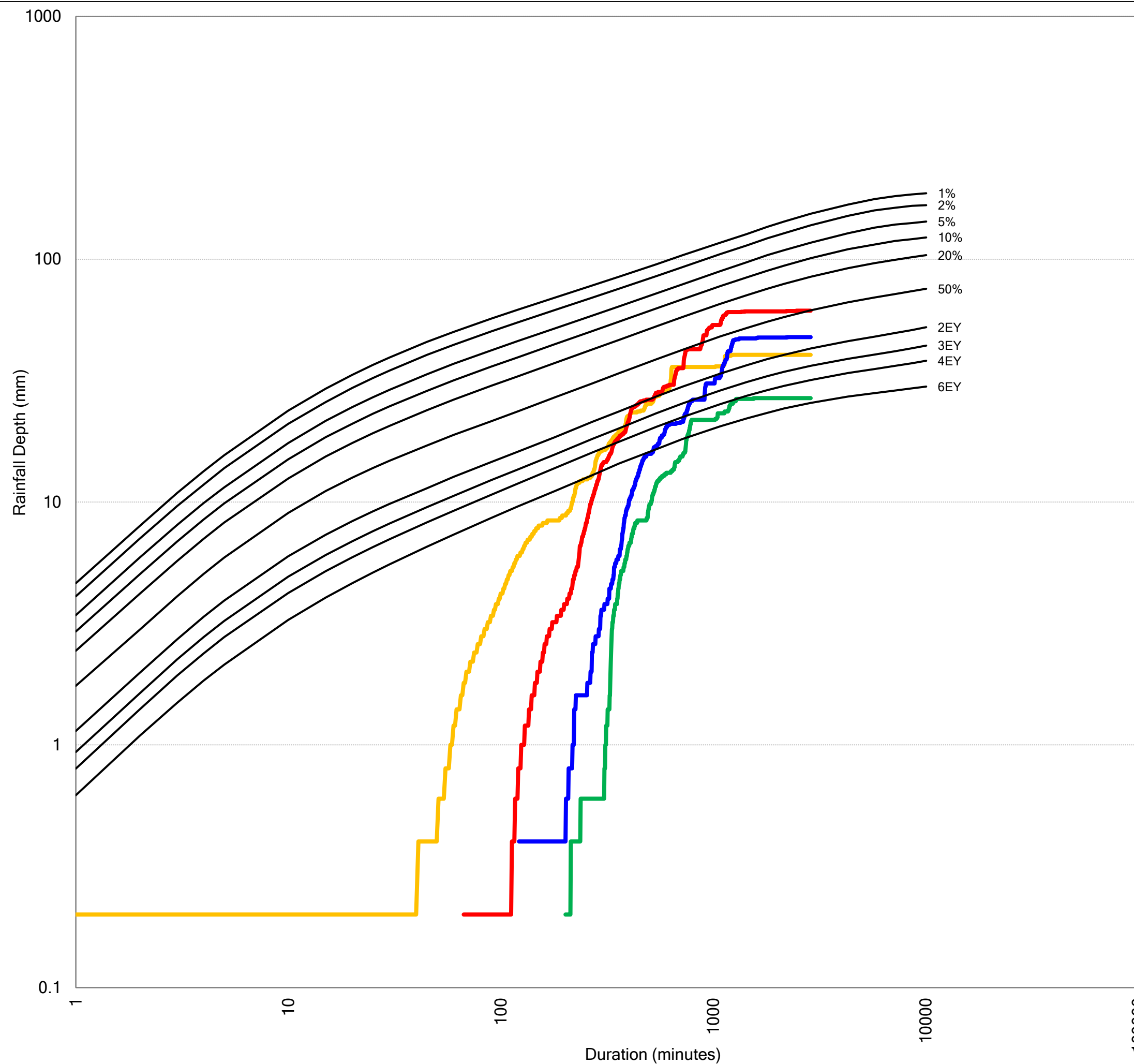


- Gauge 50017
- Gauge 65111
- Gauge 73138
- Gauge 73151

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BIMBI FLOOD STUDY

FIGURE 8B
ANALYSIS OF RECORDS
RAINFALL TEMPORAL PATTERN
20-24 SEPTEMBER 2016

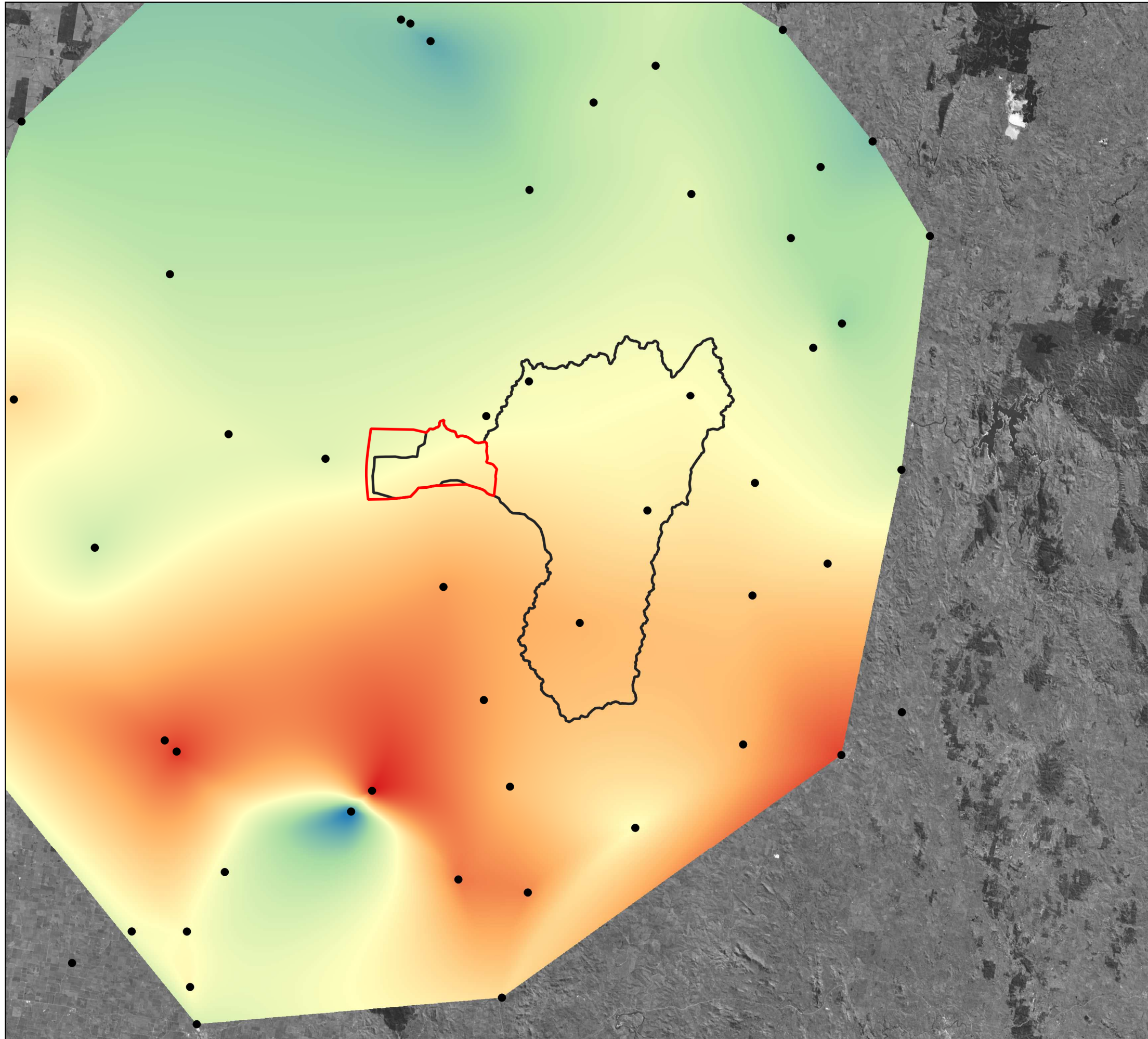





- Gauge 50017
- Gauge 65111
- Gauge 73138
- Gauge 73151

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

BIMBI FLOOD STUDY

FIGURE 8C
ANALYSIS OF RECORDS
RAINFALL IFD ESTIMATION
20-24 SEPTEMBER 2016



-  Hydrologic Model Area
-  Hydraulic Model Area
-  Rainfall Gauges

Rainfall Depth (mm) in the 48hrs prior to 9am on the 22 September 2016

-  < 3.25
-  3.25 to 20
-  20 to 35
-  35 to 50
-  > 50

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0 10 20 30 40 km



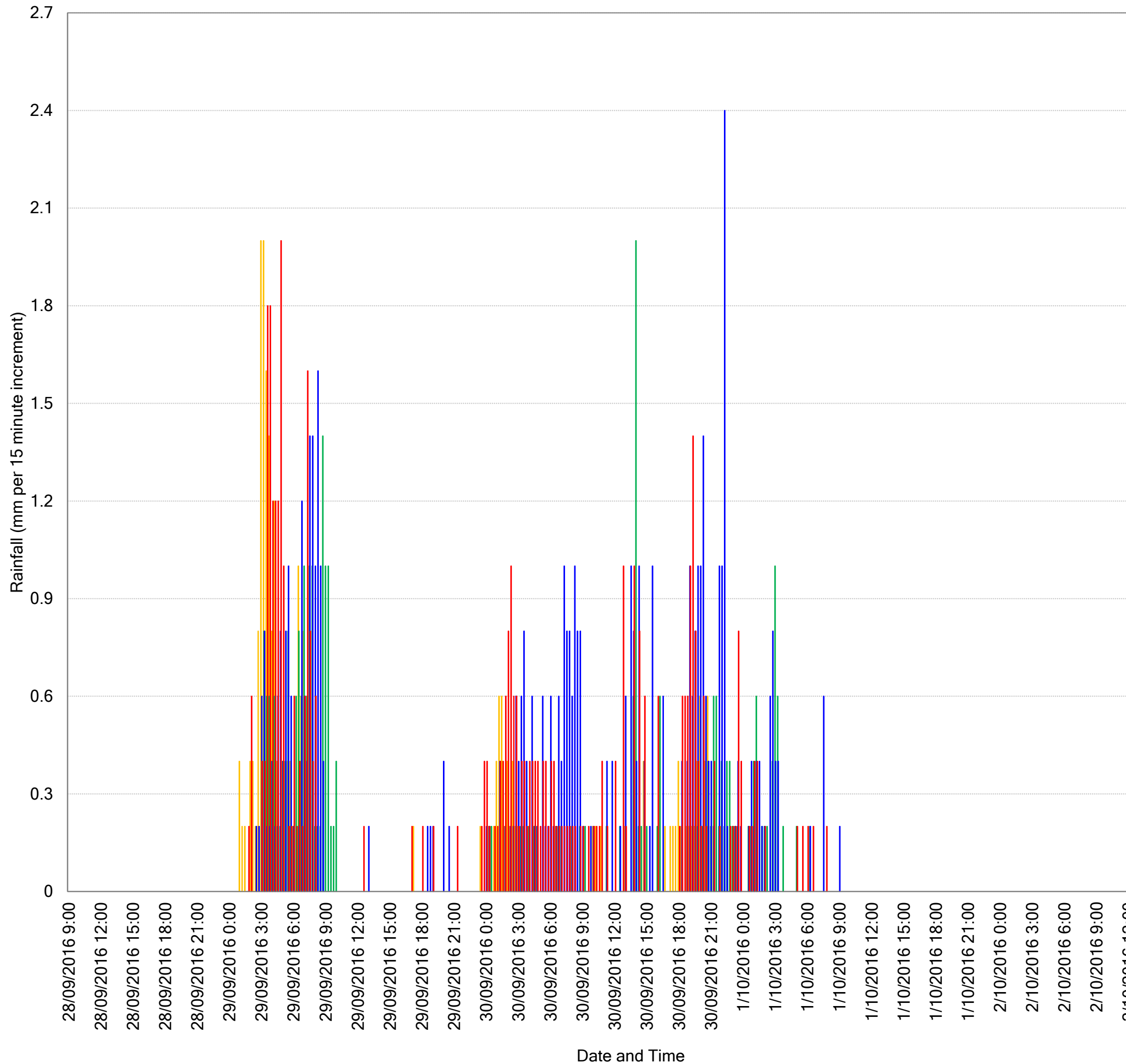
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 8D
ANALYSIS OF RECORDS
RAINFALL SPATIAL DISTRIBUTION
20-24 SEPTEMBER 2016

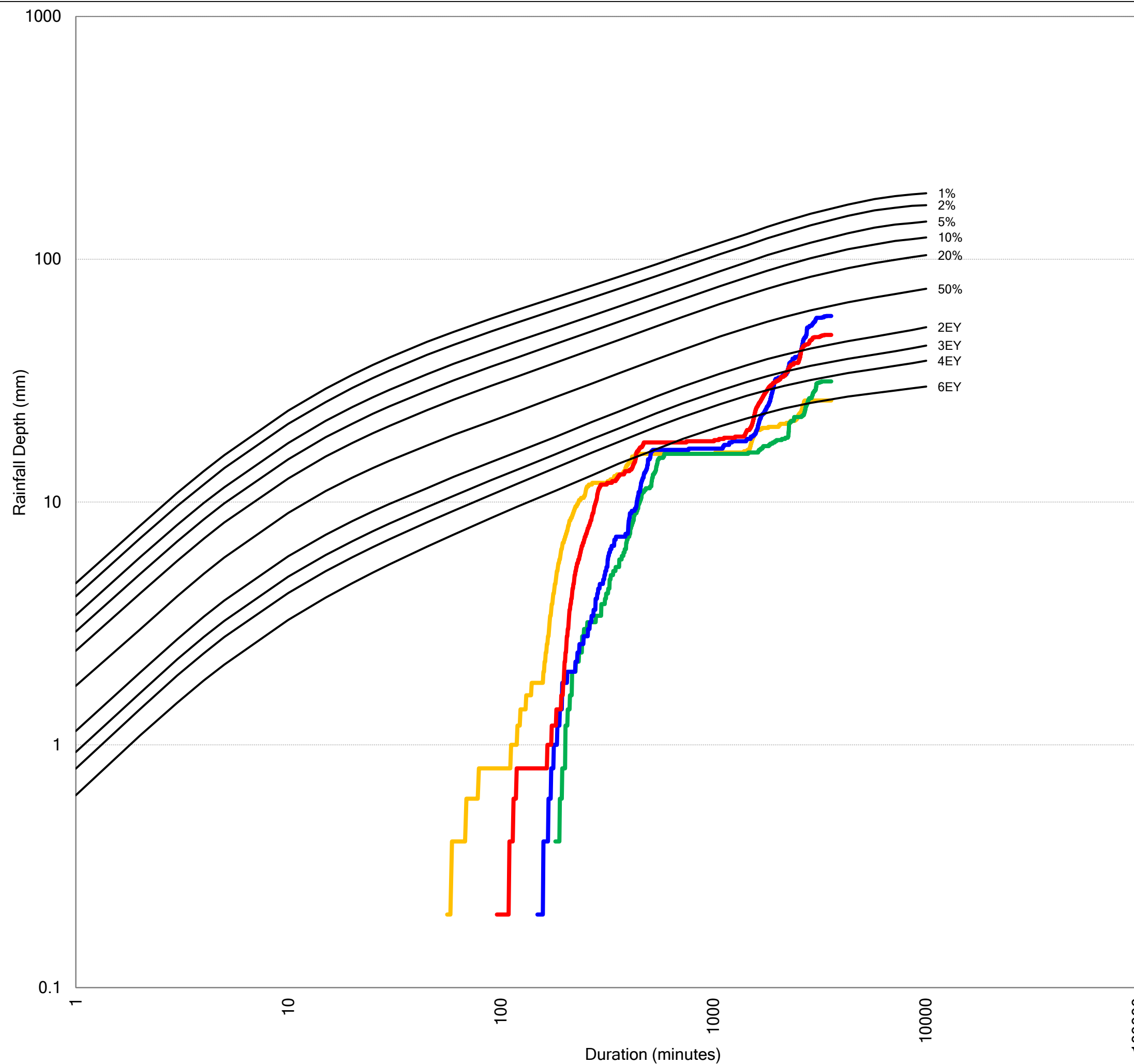


- Gauge 50017
- Gauge 65111
- Gauge 73138
- Gauge 73151

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BIMBI FLOOD STUDY

FIGURE 8E
ANALYSIS OF RECORDS
RAINFALL TEMPORAL PATTERN
28 SEPTEMBER - 2 OCTOBER 2016

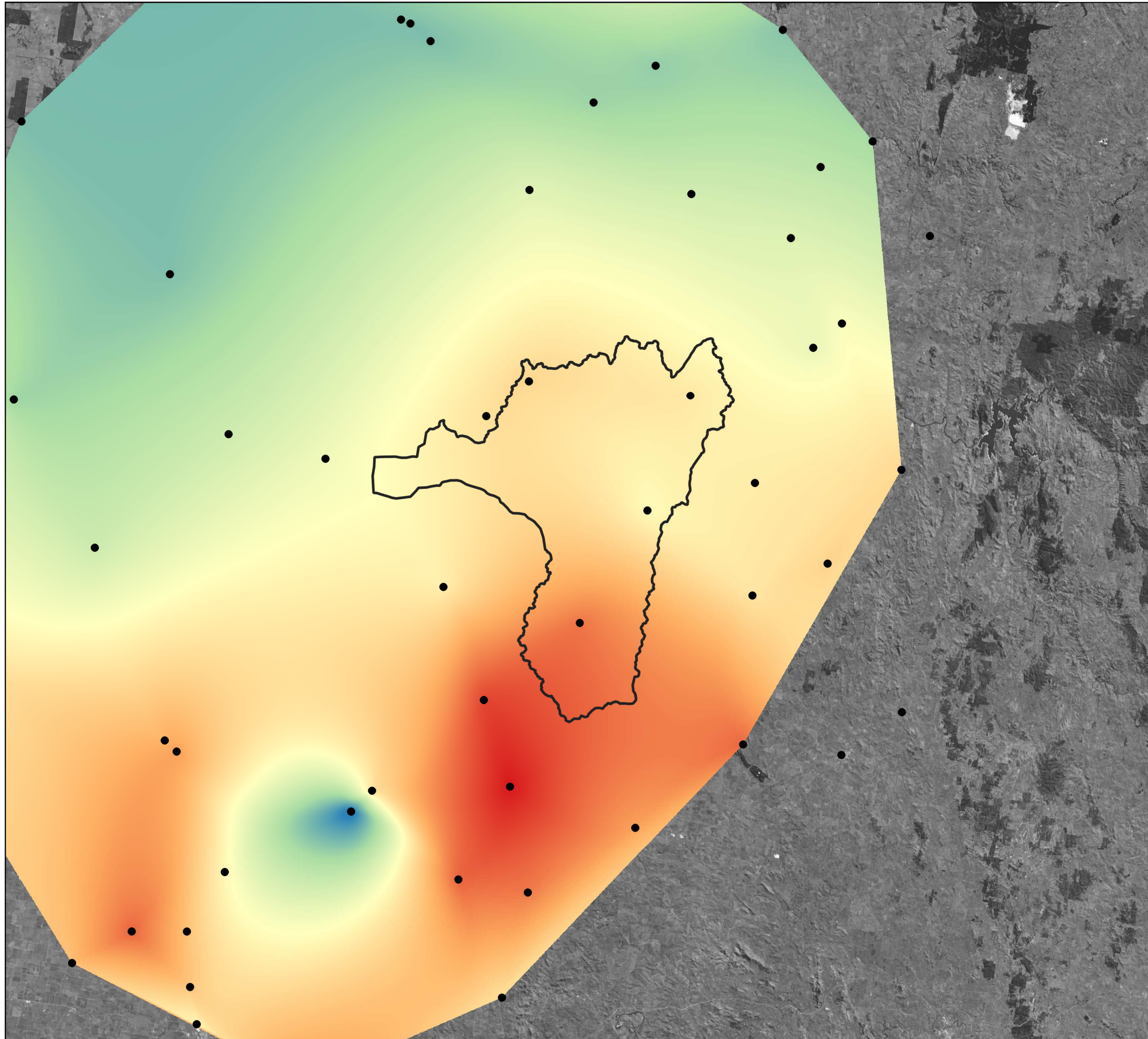


- Gauge 50017
- Gauge 65111
- Gauge 73138
- Gauge 73151

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BIMBI FLOOD STUDY

FIGURE 8F
ANALYSIS OF RECORDS
RAINFALL IFD ESTIMATION
28 SEPTEMBER - 2 OCTOBER 2016



□ Hydrologic Model Area

● Rainfall Gauges

Rainfall Depth (mm) in the
72hrs prior to 9am on the 2 October 2016

■ < 3.25

■ 3.25 to 20

■ 20 to 35

■ 35 to 50

■ > 50

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0 10 20 30 40 km



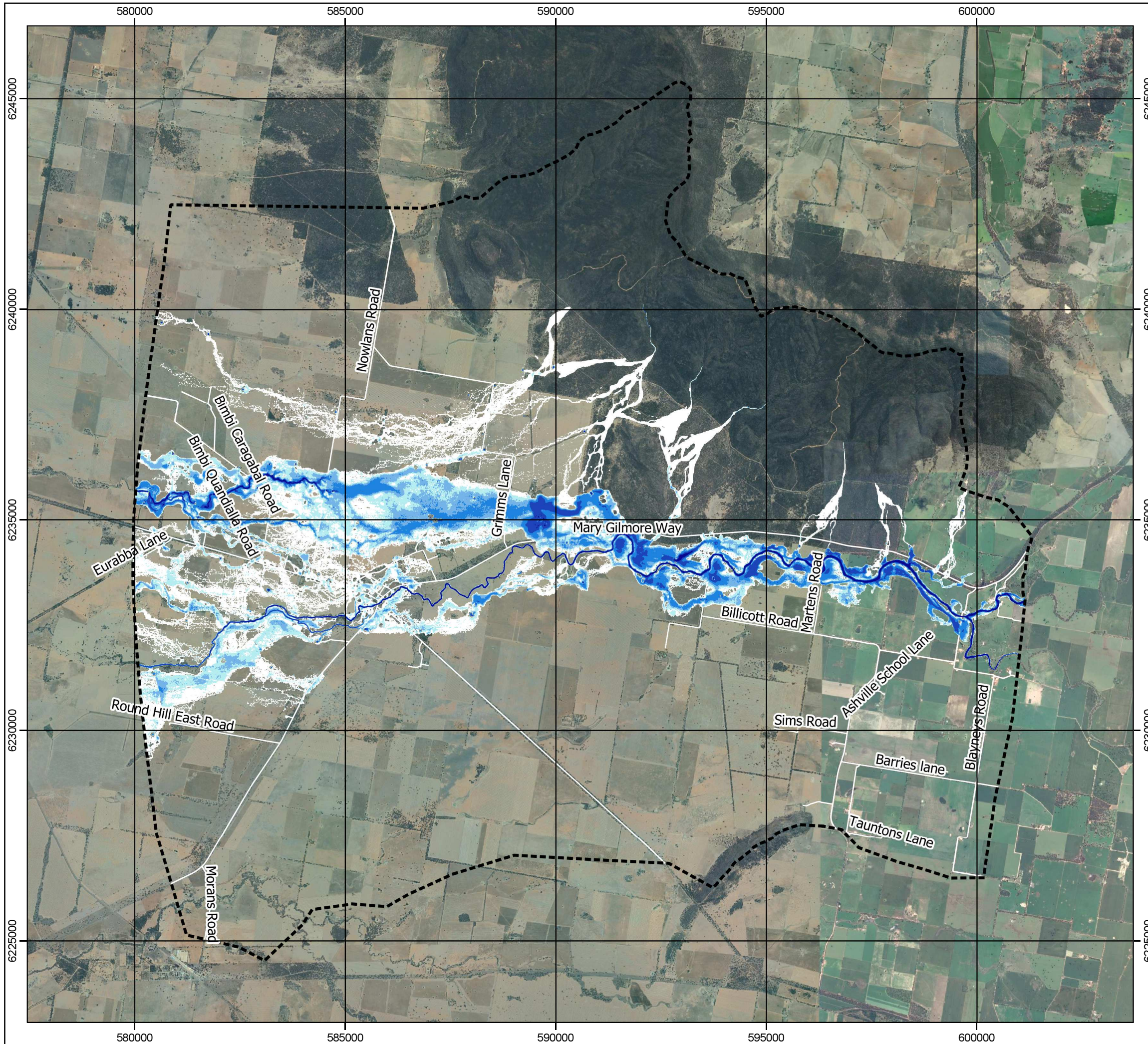
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 8G
ANALYSIS OF RECORDS
RAINFALL SPATIAL DISTRIBUTION
29 SEPTEMBER - 2 OCTOBER 2016



Hydraulic Model Area

Peak Flood Depths (m)

- <= 0.15
- 0.15 to 0.30
- 0.30 to 0.50
- 0.50 to 1.00
- 1.00 to 2.00
- > 2.00

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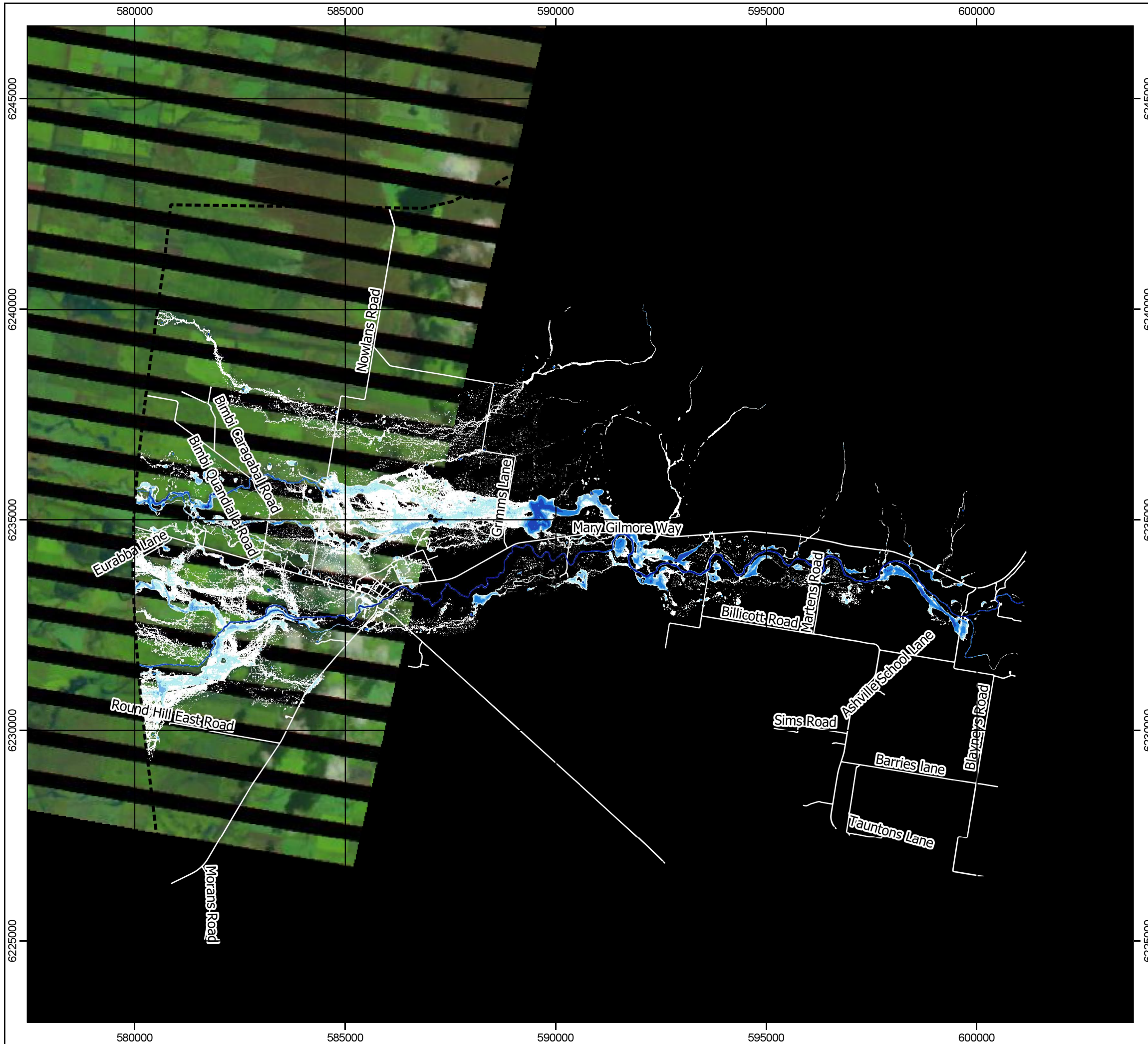
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 9A
PEAK FLOOD DEPTHS
21 SEPTEMBER - 22 SEPTEMBER 2016



Hydraulic Model Area

Flood Depths (m)

- <= 0.15
- 0.15 to 0.30
- 0.30 to 0.50
- 0.50 to 1.00
- 1.00 to 2.00
- > 2.00

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0 2 4 6 km

Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 9B
FLOOD DEPTHS AND LANDSAT
24 SEPTEMBER 2016 12:00 PM



Hydraulic Model Area

Peak Flood Depths (m)

- <= 0.15
- 0.15 to 0.30
- 0.30 to 0.50
- 0.50 to 1.00
- 1.00 to 2.00
- > 2.00

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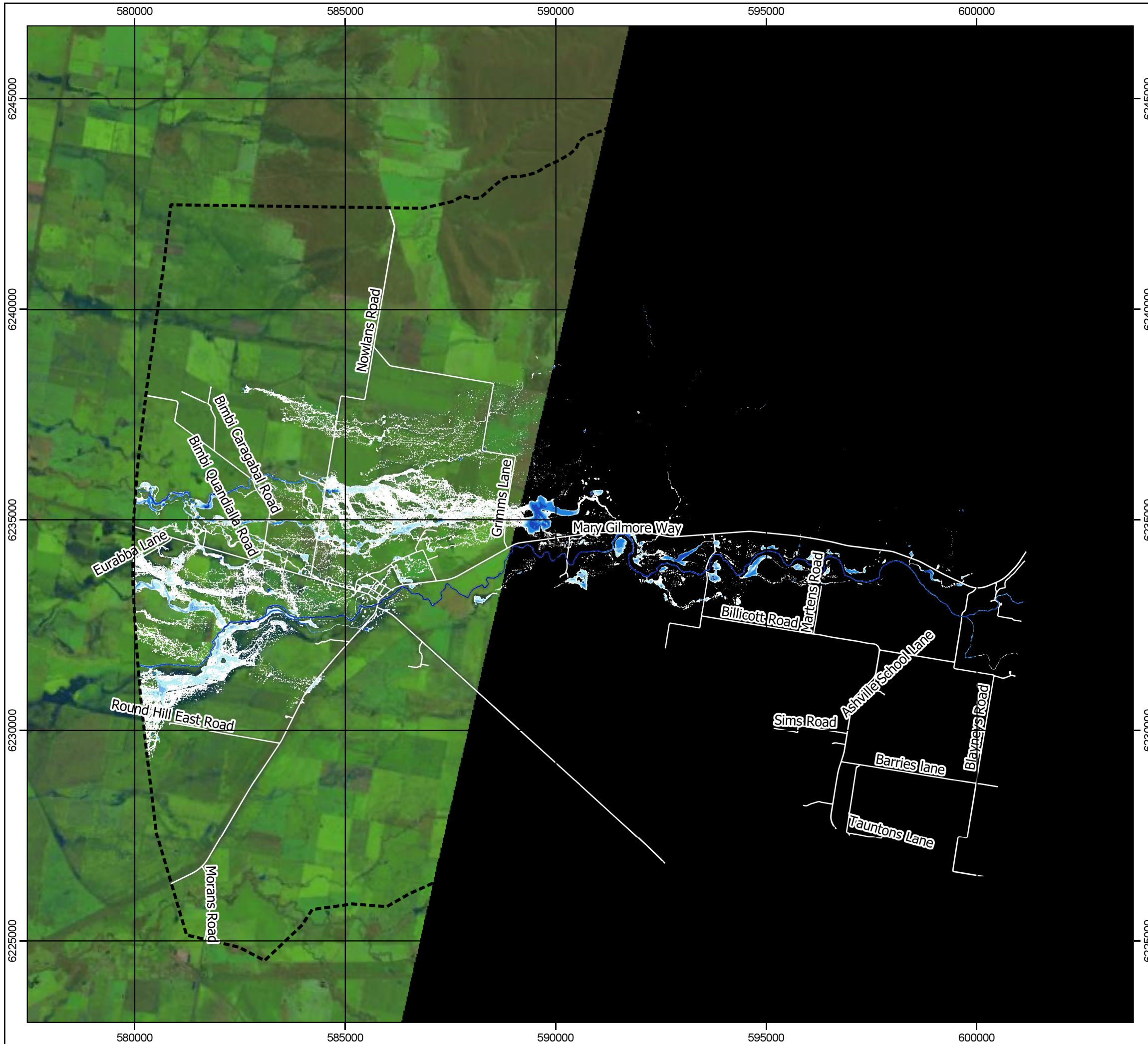
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY







Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 9C
PEAK FLOOD DEPTHS
29 SEPTEMBER - 2 OCTOBER 2016



 Hydraulic Model Area

Flood Depths (m)

-  ≤ 0.15
-  0.15 to 0.30
-  0.30 to 0.50
-  0.50 to 1.00
-  1.00 to 2.00
-  > 2.00

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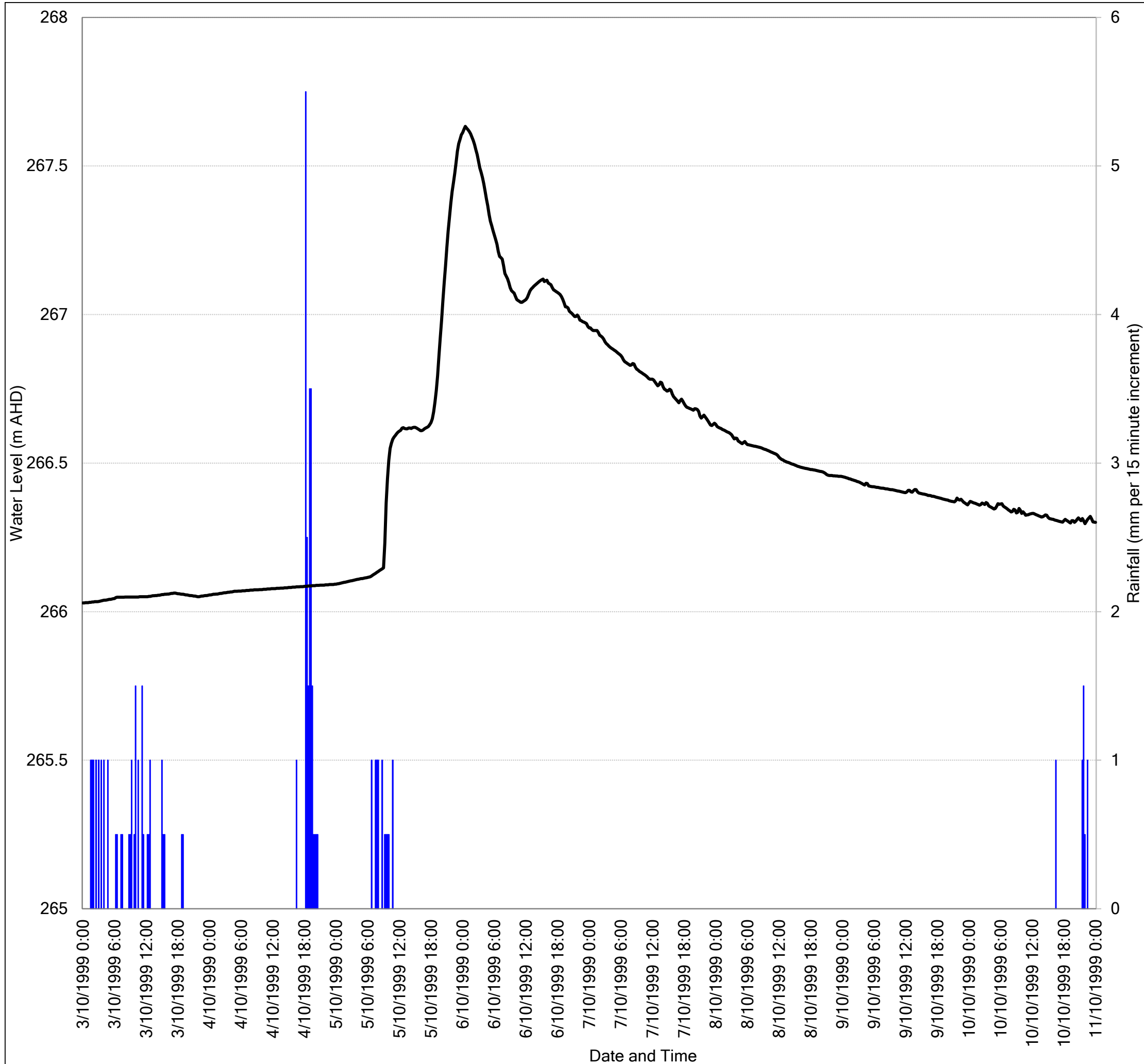
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 9B
FLOOD DEPTHS AND LANDSAT
2 OCTOBER 2016 12:00 PM



■ Rainfall Gauge 412029
 — Stream Gauge 412170

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BIMBI FLOOD STUDY

FIGURE 10A
ANALYSIS OF RECORDS
RAINFALL PATTERN AND RIVER LEVEL
OCTOBER 1999



Hydraulic Model Area

Flood Depths (m)

- <= 0.15
- 0.15 to 0.30
- 0.30 to 0.50
- 0.50 to 1.00
- 1.00 to 2.00
- > 2.00

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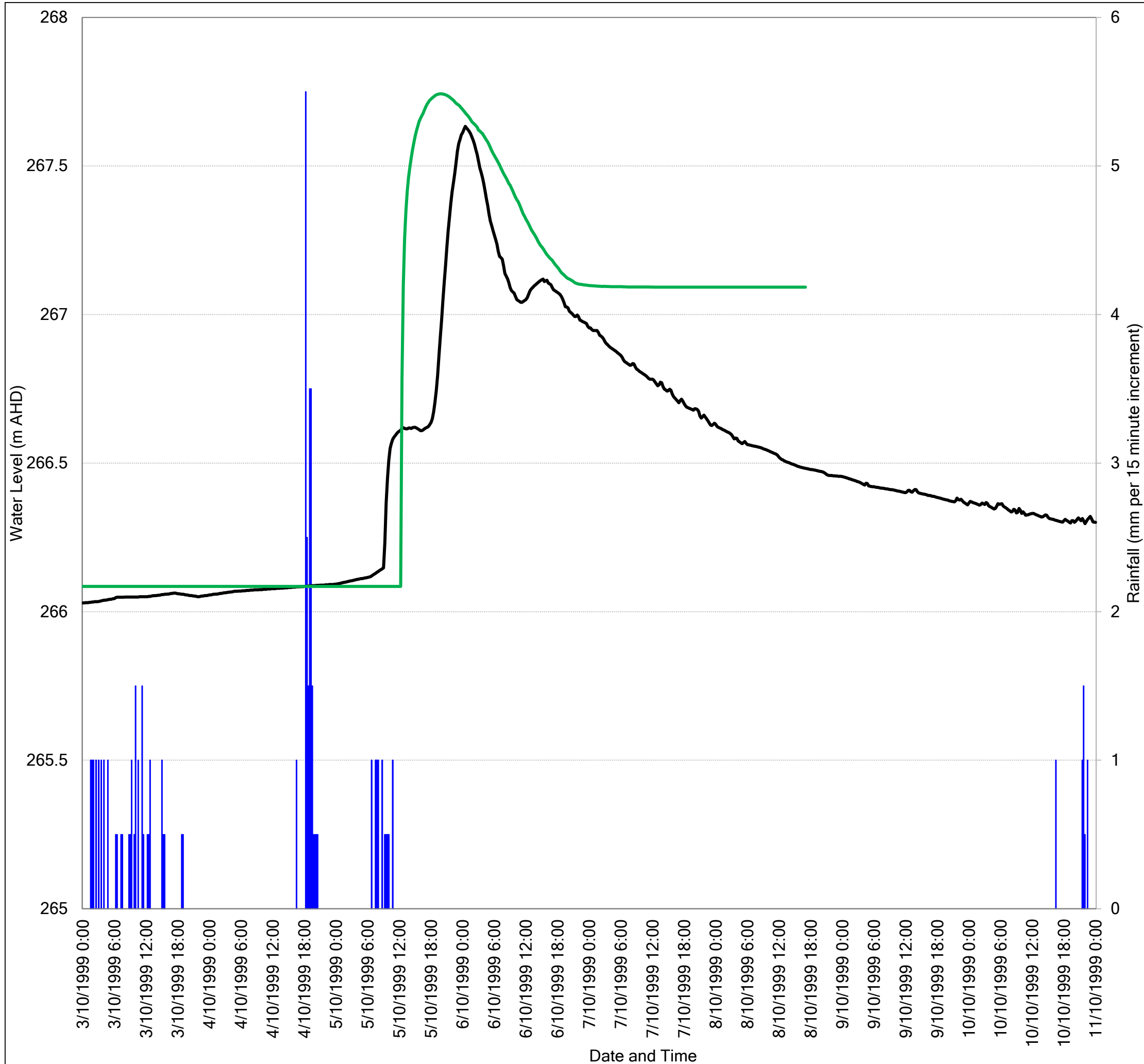
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 11A
PEAK FLOOD DEPTHS
4 OCTOBER - 5 OCTOBER 1999





■ Rainfall Gauge 412029
— Stream Gauge 412170
— Modelled Flood Level

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BIMBI FLOOD STUDY

**FIGURE 11B
ANALYSIS OF RESULTS
OCTOBER 1999**

-  Hydraulic Model Area
-  Result Locations



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Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD





BIMBI FLOOD STUDY

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 12A
REPORTED RESULT LOCATIONS



-  Hydraulic Model Area
-  Result Locations

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0 100 200 300 m



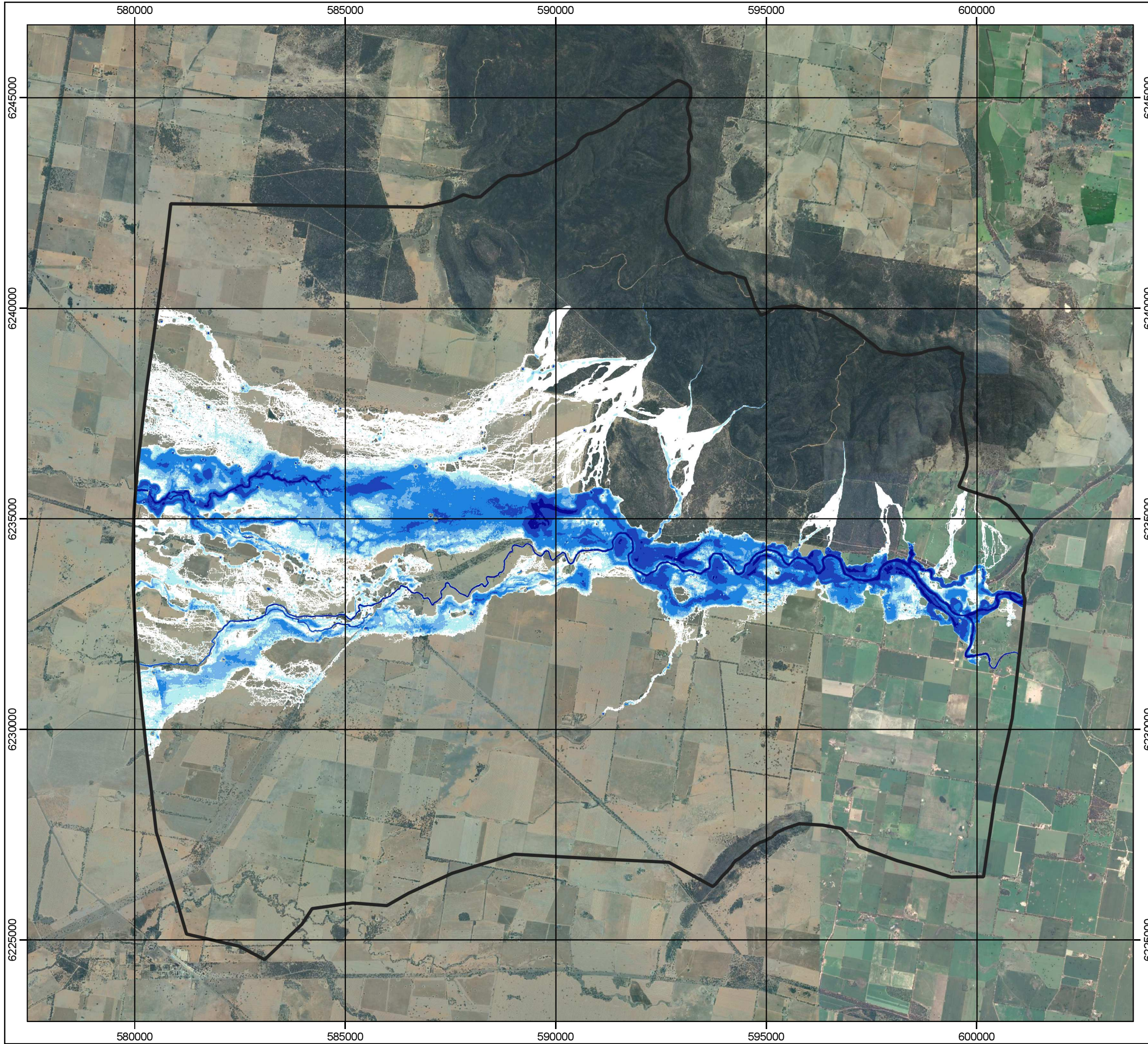
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY







Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 12B
REPORTED RESULT LOCATIONS



 Hydraulic Model Area

Peak Flood Depths

-  <= 0.15
-  0.15 to 0.30
-  0.30 to 0.50
-  0.50 to 1.00
-  1.00 to 2.00
-  > 2.00

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0 2 4 6 km



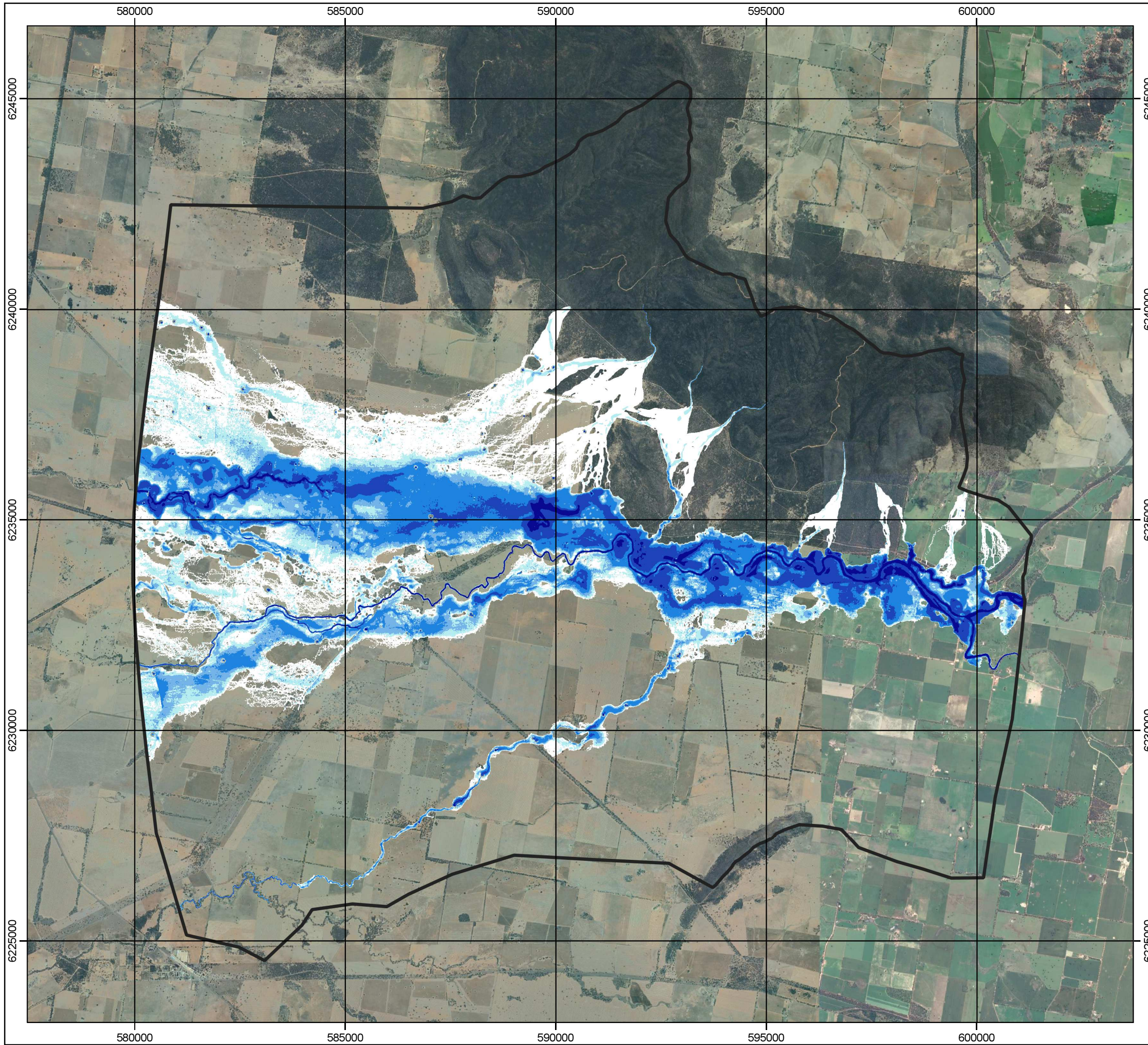
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY







Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 13
PEAK FLOOD DEPTHS
20% AEP EVENT



 Hydraulic Model Area

Peak Flood Depths

-  <= 0.15
-  0.15 to 0.30
-  0.30 to 0.50
-  0.50 to 1.00
-  1.00 to 2.00
-  > 2.00

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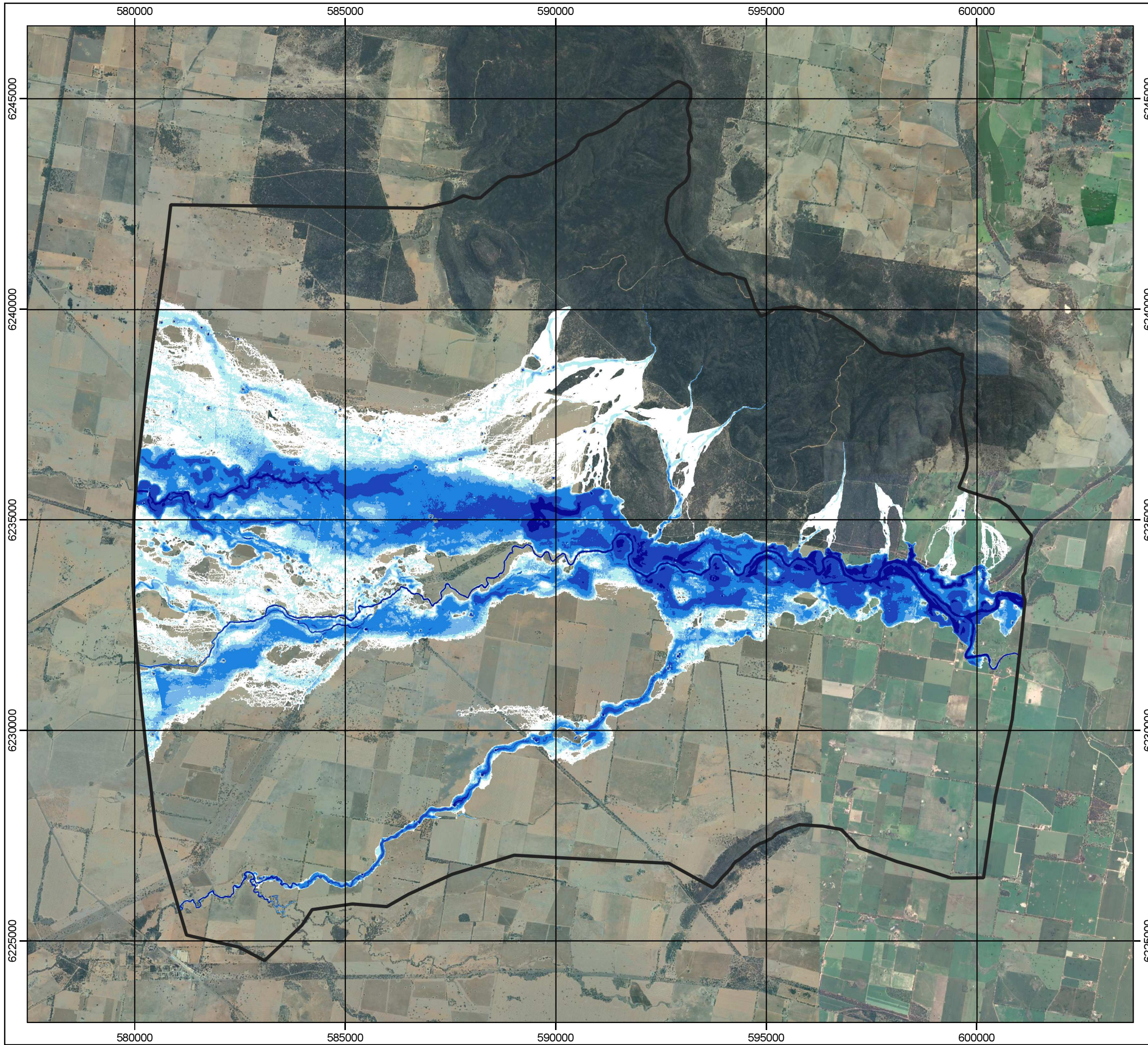
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY







Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 14
PEAK FLOOD DEPTHS
10% AEP EVENT



 Hydraulic Model Area

Peak Flood Depths

-  ≤ 0.15
-  0.15 to 0.30
-  0.30 to 0.50
-  0.50 to 1.00
-  1.00 to 2.00
-  > 2.00

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0 2 4 6 km



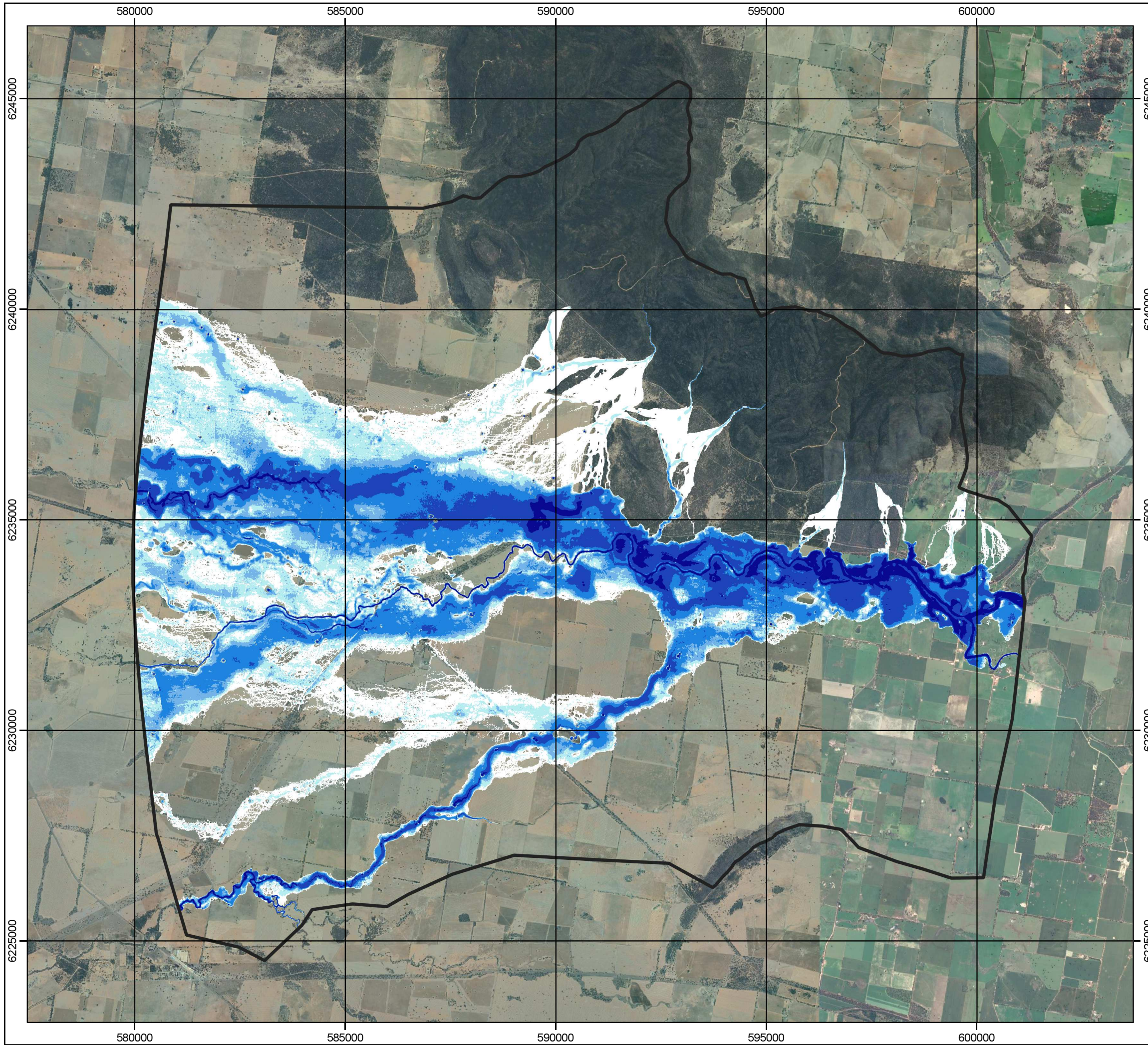
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY







Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 15
PEAK FLOOD DEPTHS
5% AEP EVENT



 Hydraulic Model Area

Peak Flood Depths

-  ≤ 0.15
-  0.15 to 0.30
-  0.30 to 0.50
-  0.50 to 1.00
-  1.00 to 2.00
-  > 2.00

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0 2 4 6 km



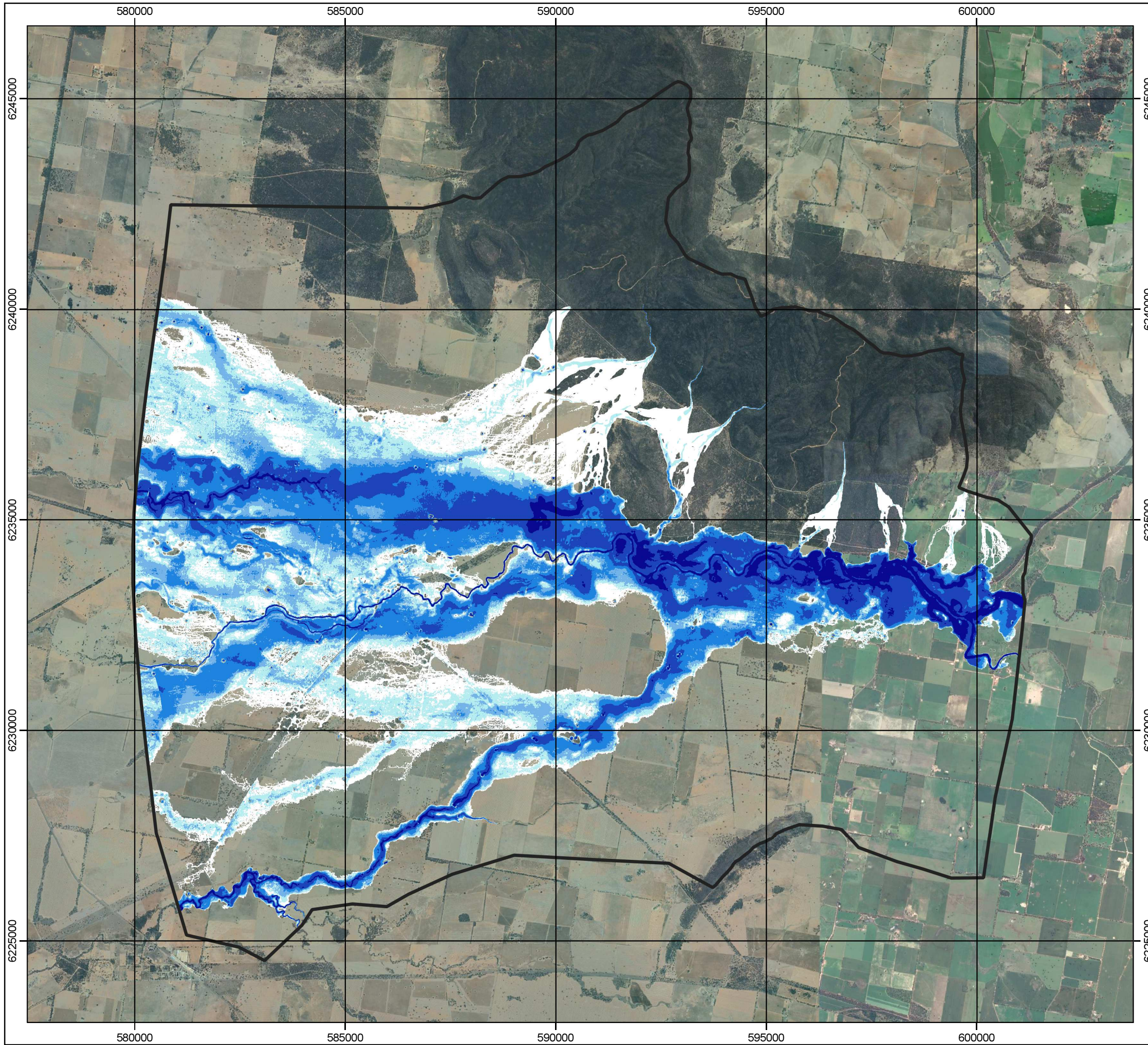
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY







Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 16
PEAK FLOOD DEPTHS
2% AEP EVENT



 Hydraulic Model Area

Peak Flood Depths

-  ≤ 0.15
-  0.15 to 0.30
-  0.30 to 0.50
-  0.50 to 1.00
-  1.00 to 2.00
-  > 2.00

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0 2 4 6 km



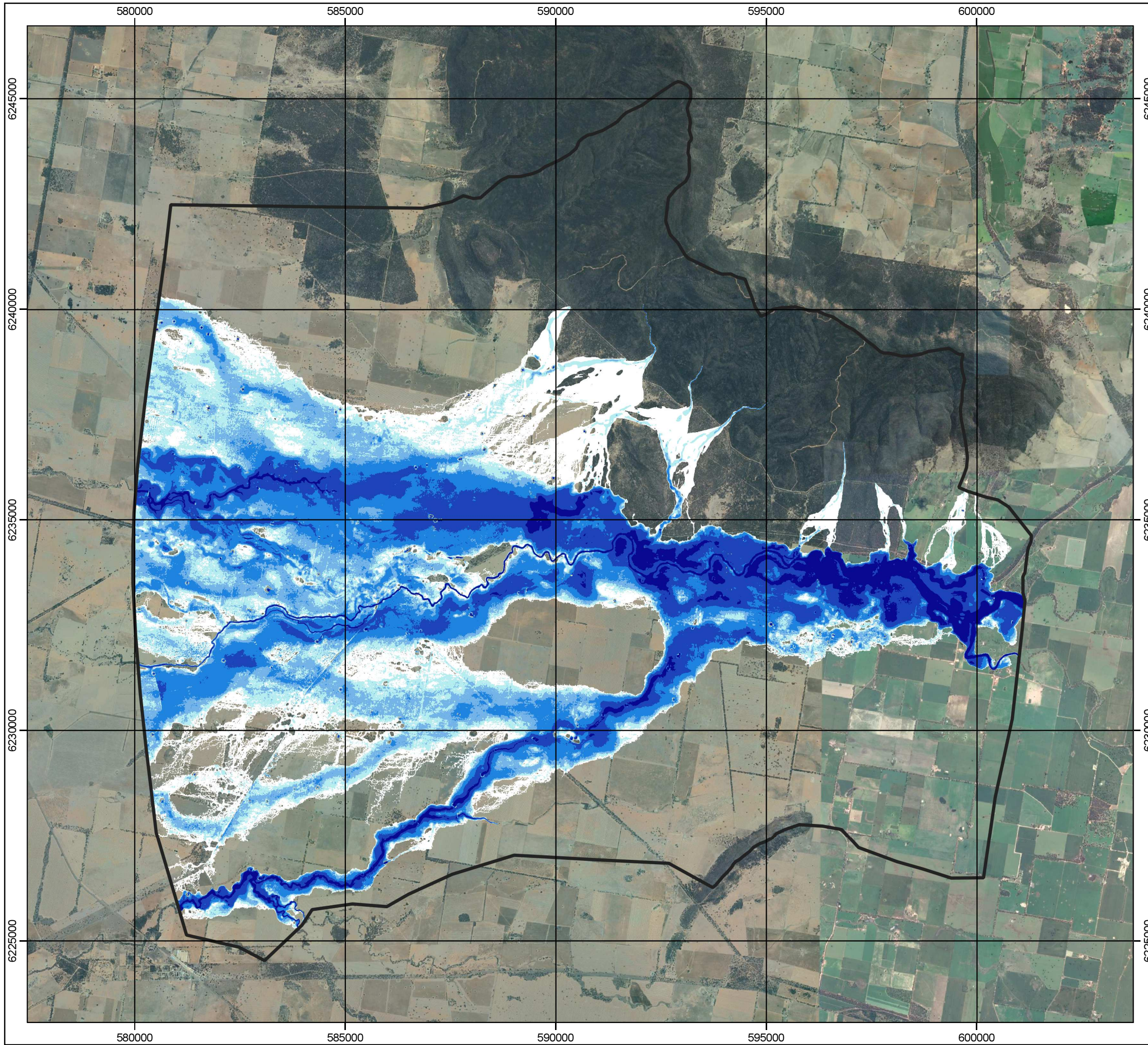
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY







Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 17
PEAK FLOOD DEPTHS
1% AEP EVENT



 Hydraulic Model Area

Peak Flood Depths

-  <= 0.15
-  0.15 to 0.30
-  0.30 to 0.50
-  0.50 to 1.00
-  1.00 to 2.00
-  > 2.00

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0 2 4 6 km



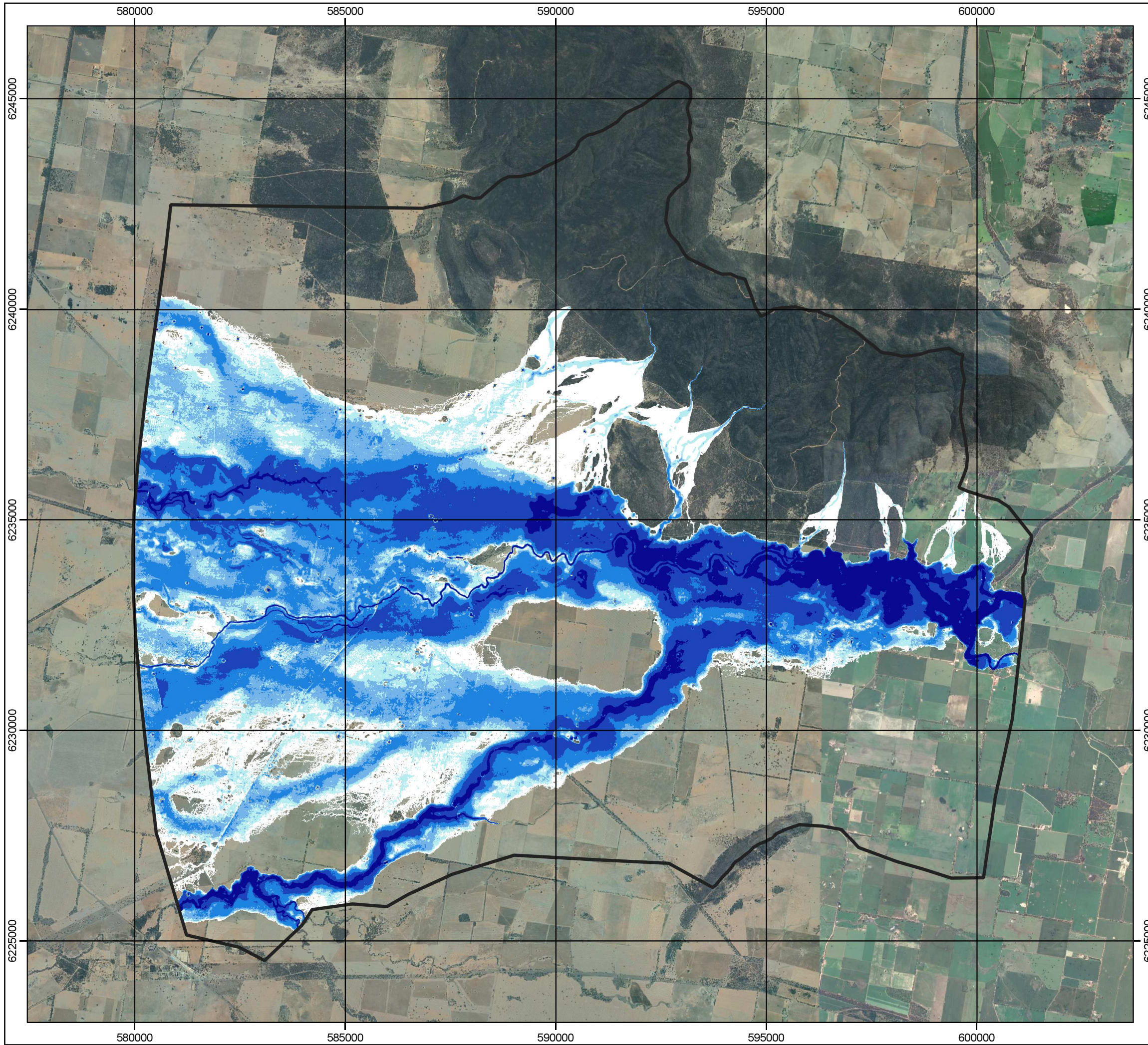
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY







Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 18
PEAK FLOOD DEPTHS
0.5% AEP EVENT



 Hydraulic Model Area

Peak Flood Depths

-  ≤ 0.15
-  0.15 to 0.30
-  0.30 to 0.50
-  0.50 to 1.00
-  1.00 to 2.00
-  > 2.00

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0 2 4 6 km



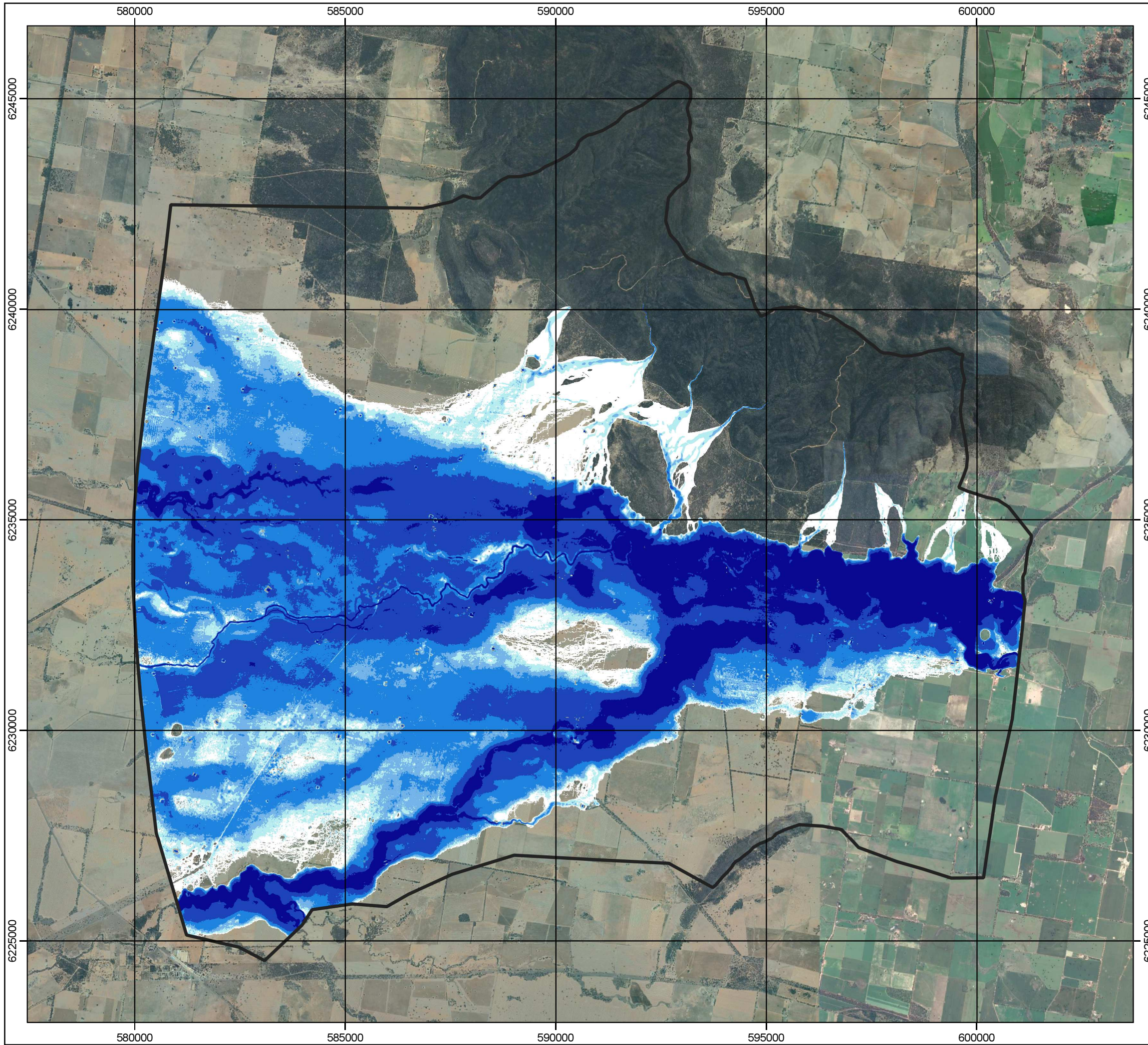
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY







Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 19
PEAK FLOOD DEPTHS
0.2% AEP EVENT



 Hydraulic Model Area

Peak Flood Depths

-  <= 0.15
-  0.15 to 0.30
-  0.30 to 0.50
-  0.50 to 1.00
-  1.00 to 2.00
-  > 2.00

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0 2 4 6 km



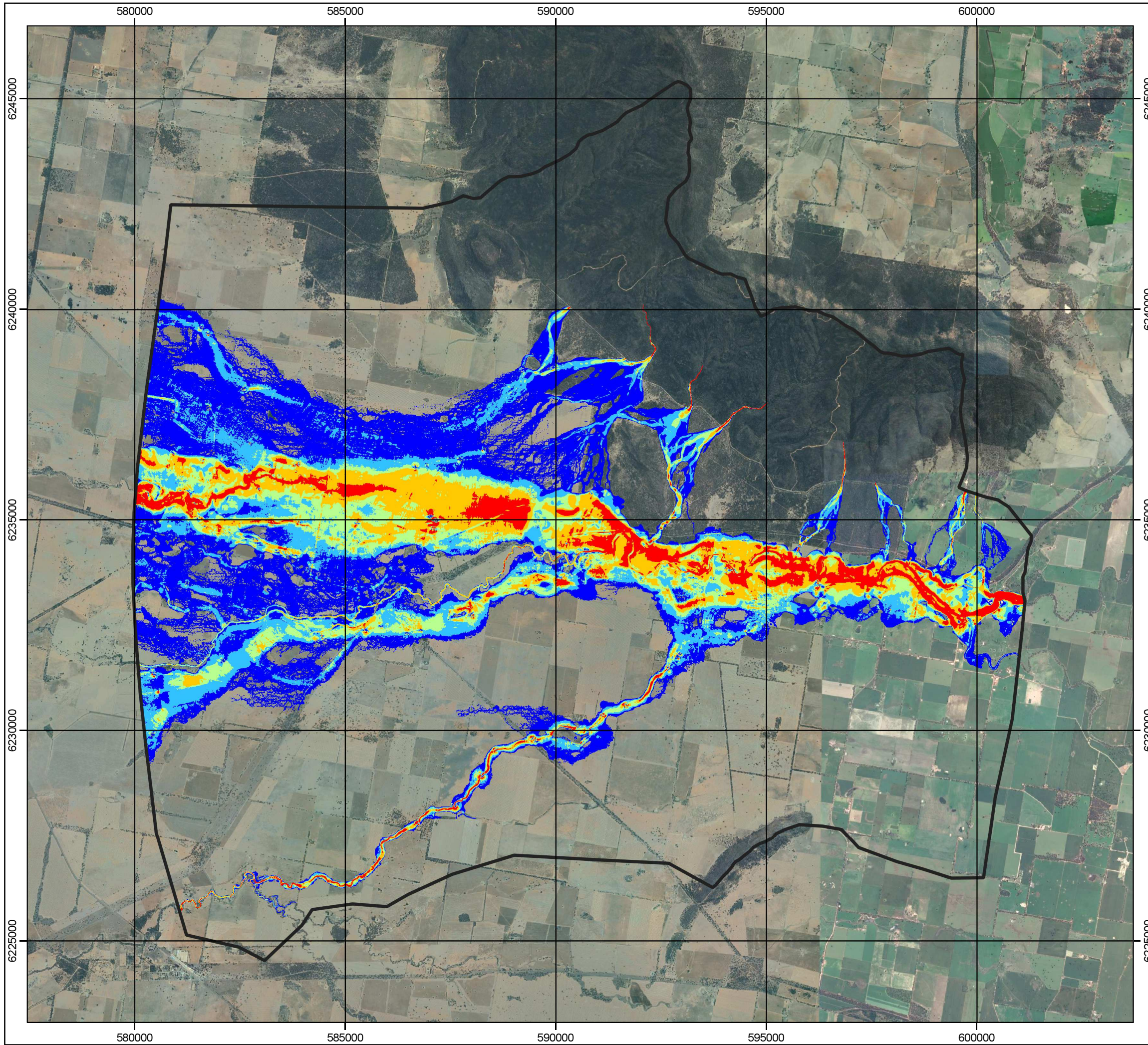
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 20
PEAK FLOOD DEPTHS
PMF EVENT



Hydraulic Model Area

Peak Flood Velocities

- <= 0.3
- 0.30 to 0.50
- 0.50 to 0.70
- 0.70 to 1.00
- > 1.00

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0 2 4 6 km



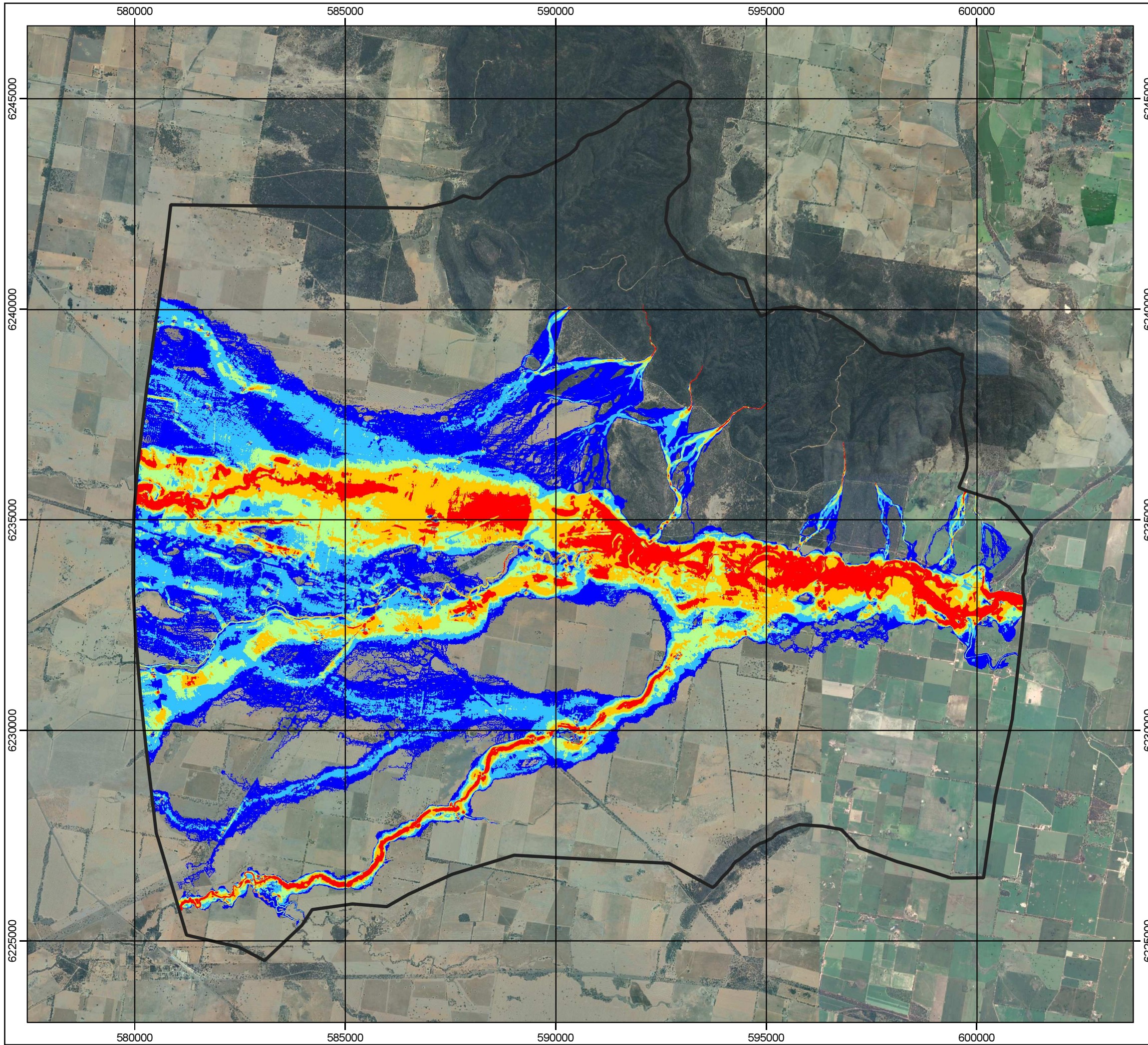
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 21
PEAK FLOOD VELOCITY
5% AEP EVENT



Hydraulic Model Area

Peak Flood Velocities

- <= 0.3
- 0.30 to 0.50
- 0.50 to 0.70
- 0.70 to 1.00
- > 1.00

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0 2 4 6 km



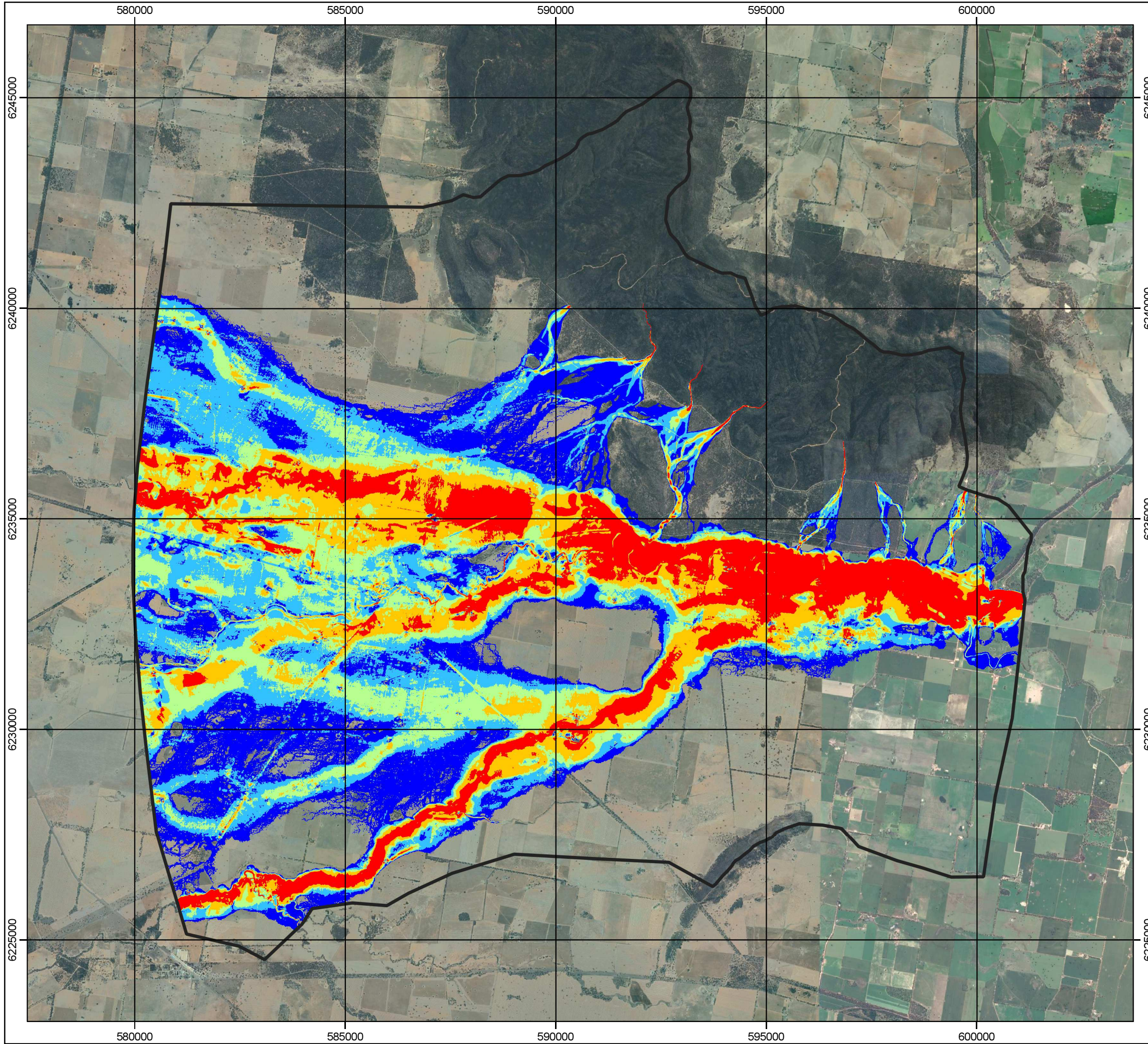
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 22
PEAK FLOOD VELOCITY
1% AEP EVENT



Hydraulic Model Area

Peak Flood Velocities

- <= 0.3
- 0.30 to 0.50
- 0.50 to 0.70
- 0.70 to 1.00
- > 1.00

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0 2 4 6 km



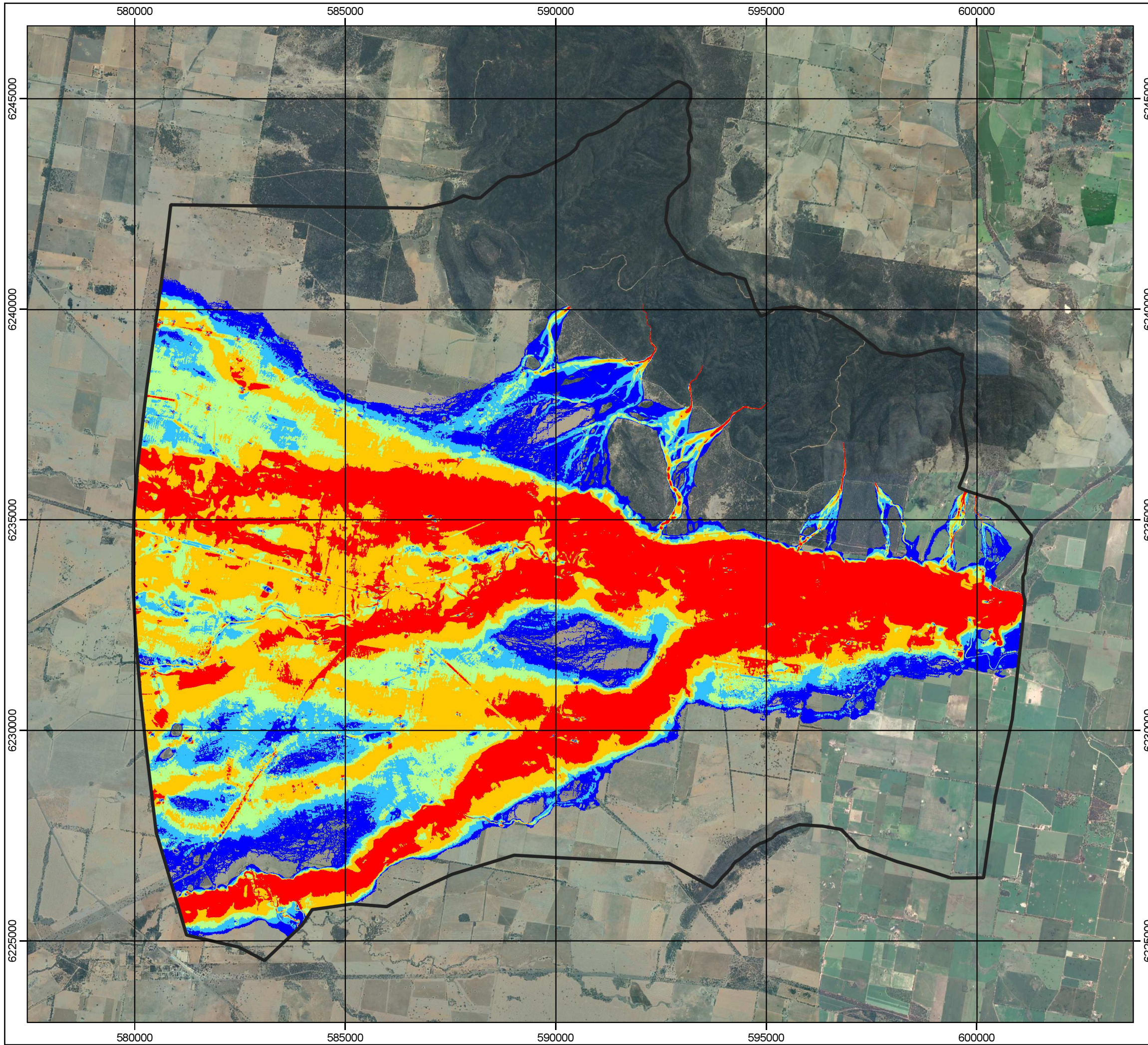
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 23
PEAK FLOOD VELOCITY
0.2% AEP EVENT



Hydraulic Model Area

Peak Flood Velocities

- <= 0.3
- 0.30 to 0.50
- 0.50 to 0.70
- 0.70 to 1.00
- > 1.00

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0 2 4 6 km



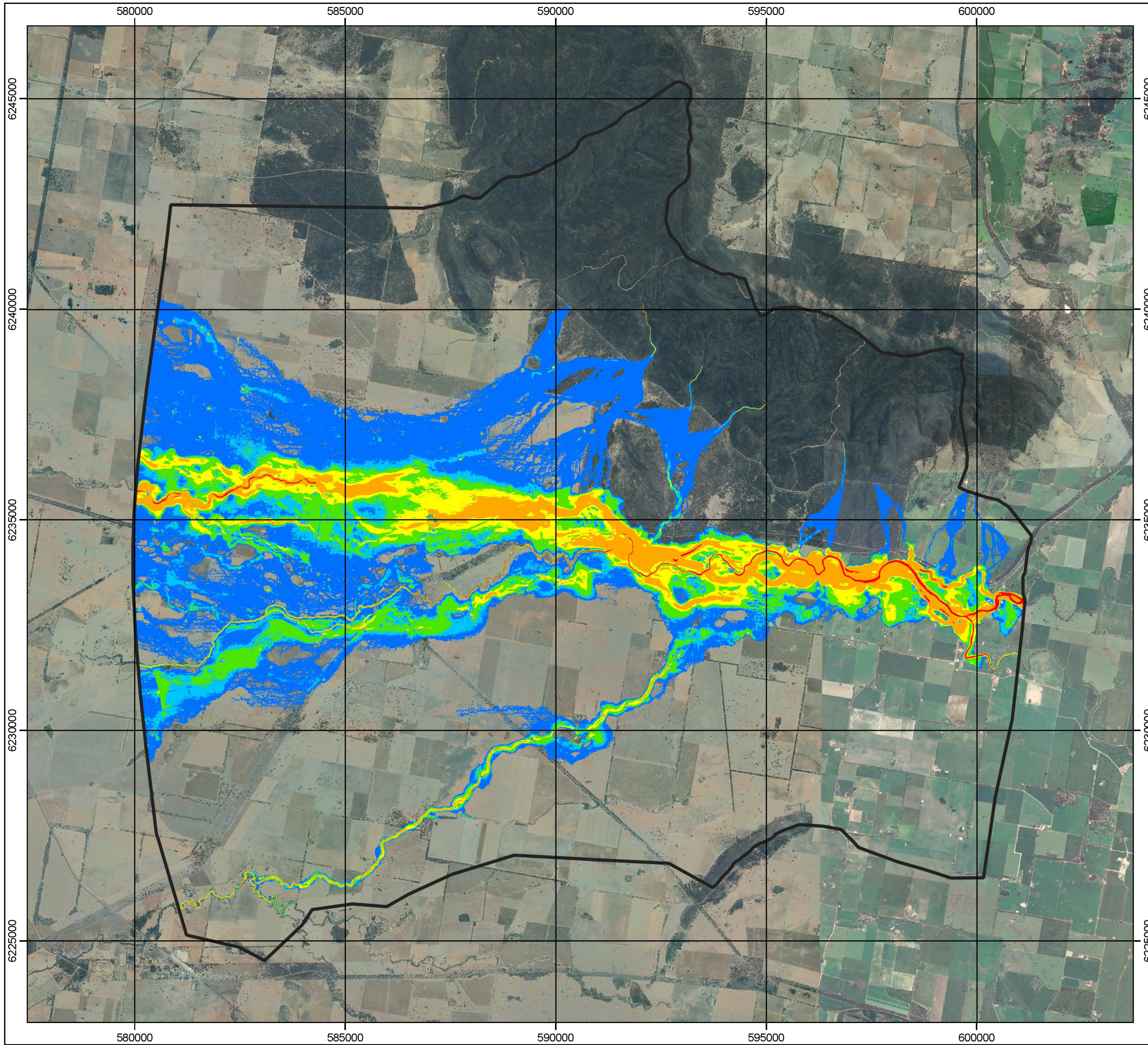
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY







Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 24
PEAK FLOOD VELOCITY
PMF EVENT



 Hydraulic Model Area

Flood Hazard

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

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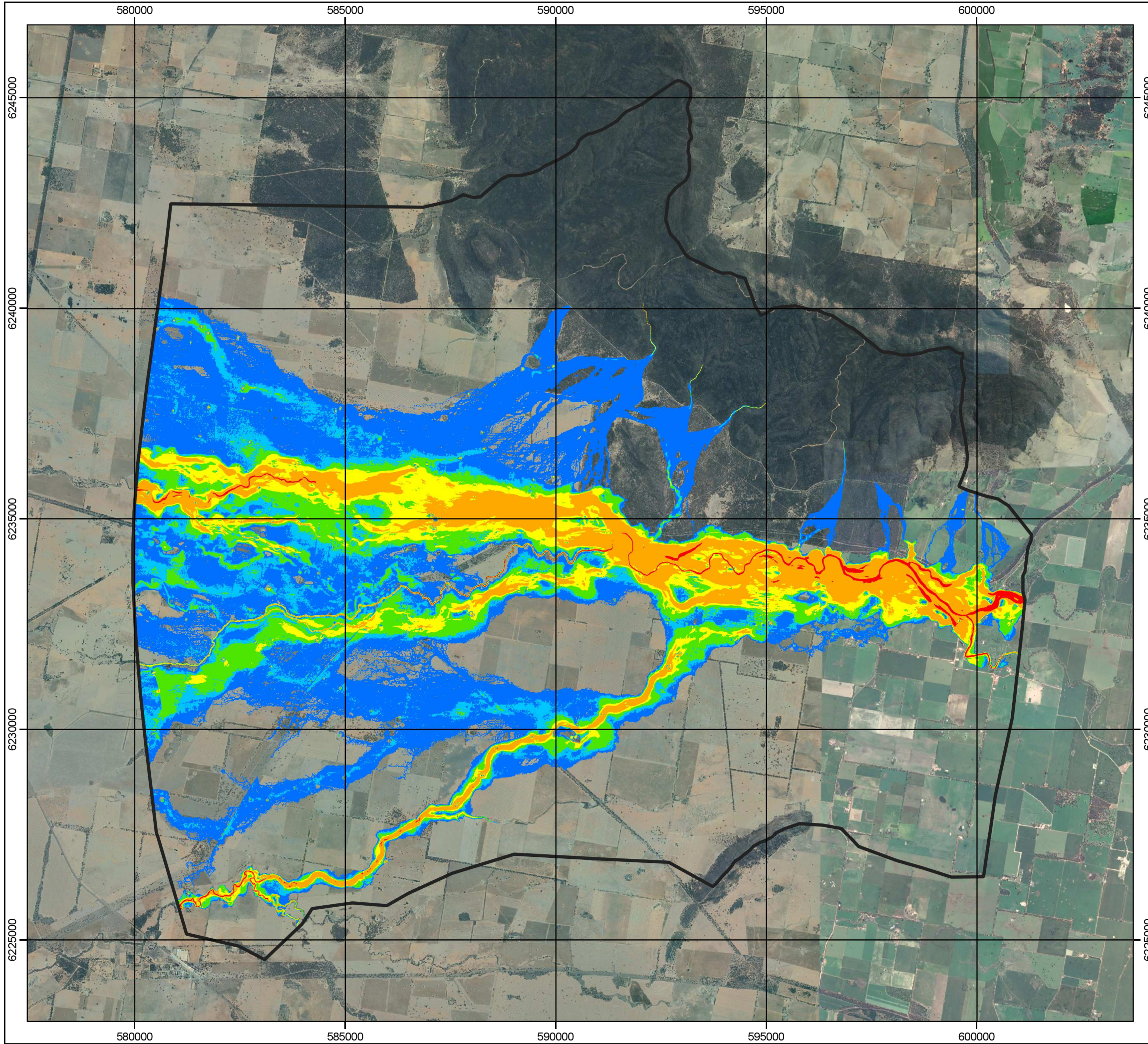
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD










BIMBI FLOOD STUDY

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 25
FLOOD HAZARD
5% AEP EVENT



-  Hydraulic Model Area
- Flood Hazard**
-  H1 - Generally safe for vehicles people and buildings.
-  H2 - Unsafe for small vehicles.
-  H3 - Unsafe for vehicles children and the elderly.
-  H4 - Unsafe for vehicles and people.
-  H5 - Unsafe for vehicles and people. All building types vulnerable to structural damage.
-  H6 - Unsafe for vehicles and people. All building types vulnerable to failure.

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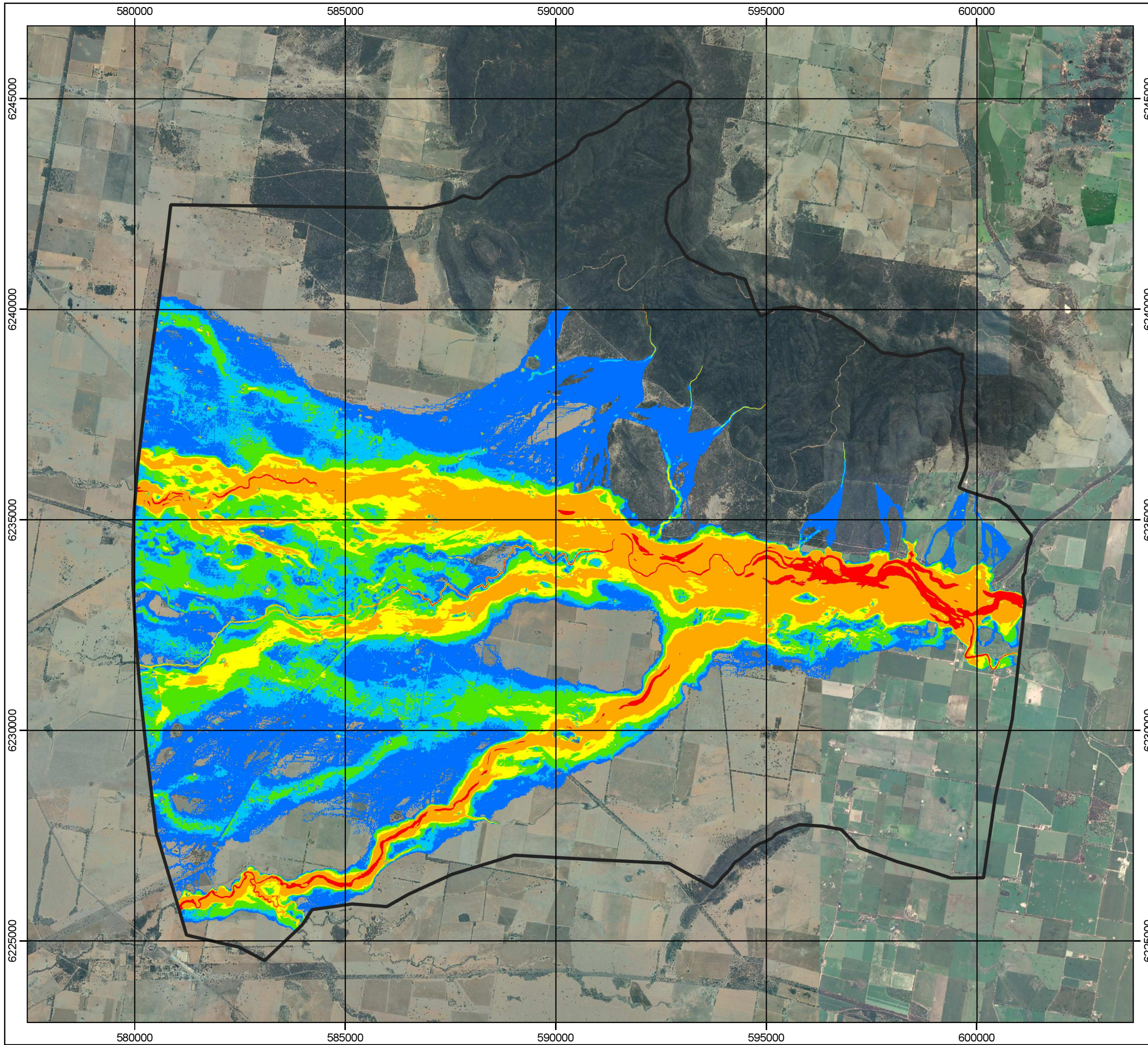
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY







Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 26
FLOOD HAZARD
1% AEP EVENT



 Hydraulic Model Area

Flood Hazard

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

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0 2 4 6 km



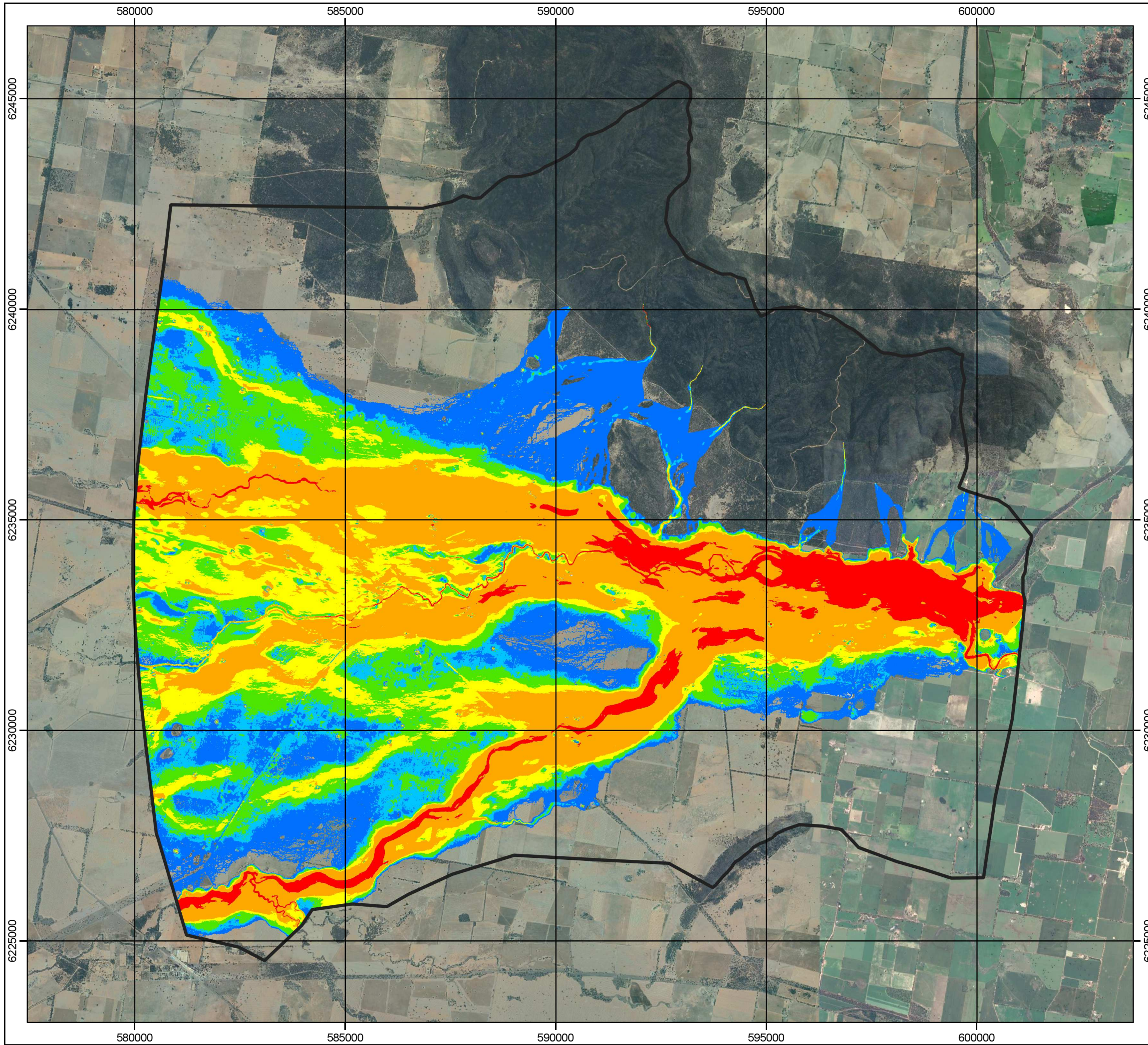
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY







Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 27
FLOOD HAZARD
0.2% AEP EVENT



 Hydraulic Model Area

Flood Hazard

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

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0 2 4 6 km



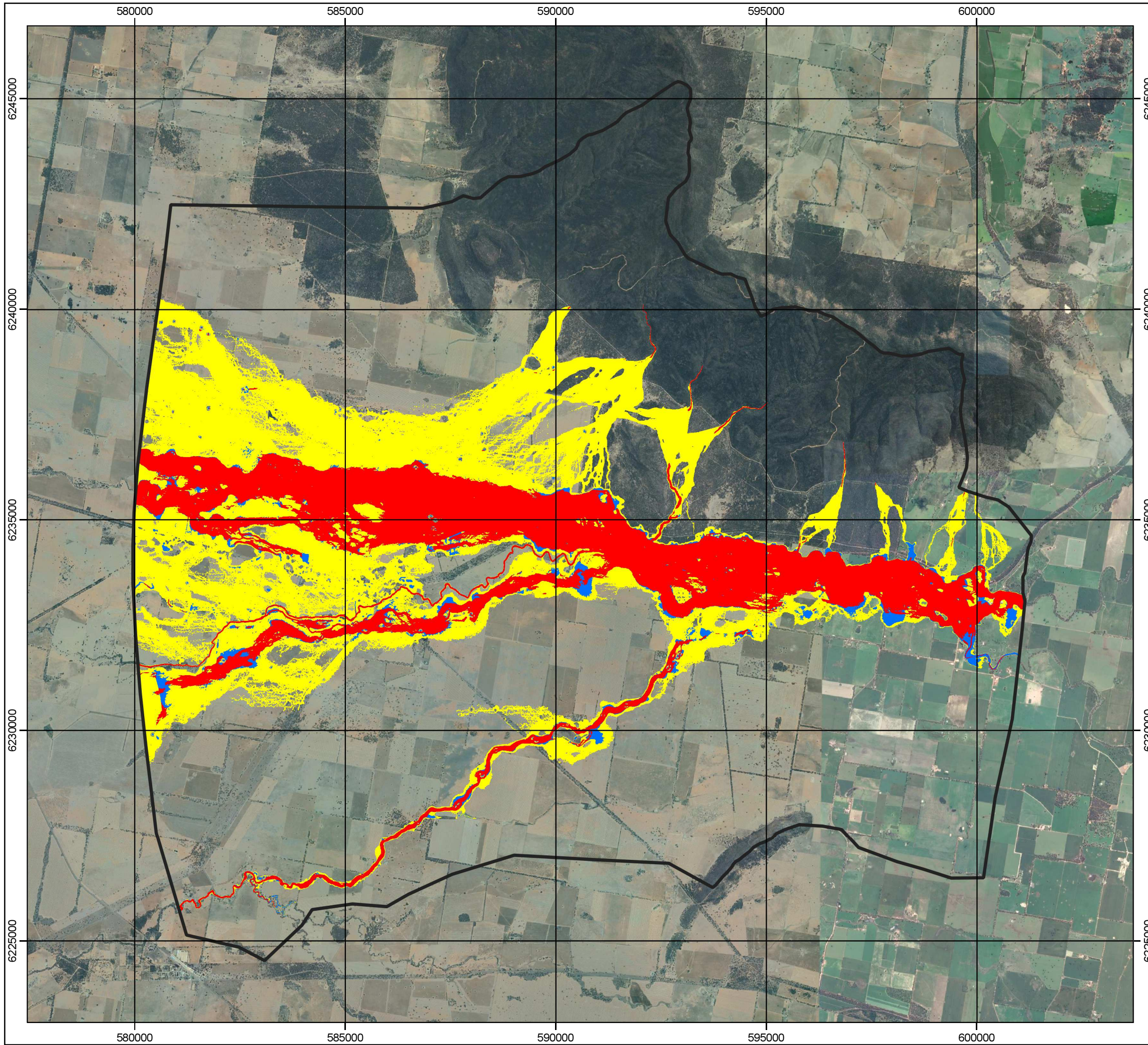
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 28
FLOOD HAZARD
PMF EVENT



Hydraulic Model Area

Flood Function

- Flood Fringe
- Flood Storage
- Floodway

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0 2 4 6 km

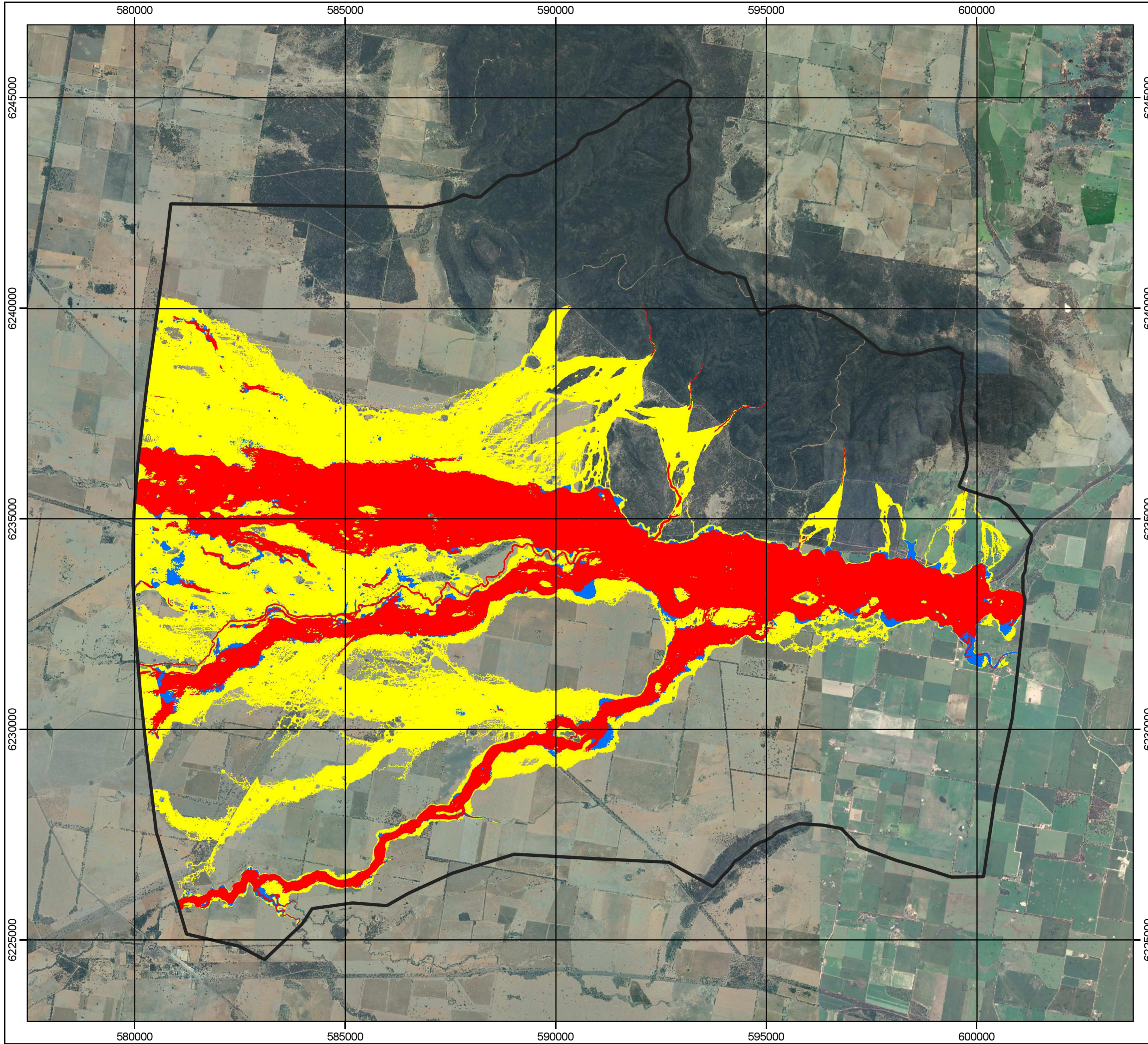
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 29
FLOOD FUNCTION
5% AEP EVENT



Hydraulic Model Area

Flood Function

- Flood Fringe
- Flood Storage
- Floodway

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0 2 4 6 km



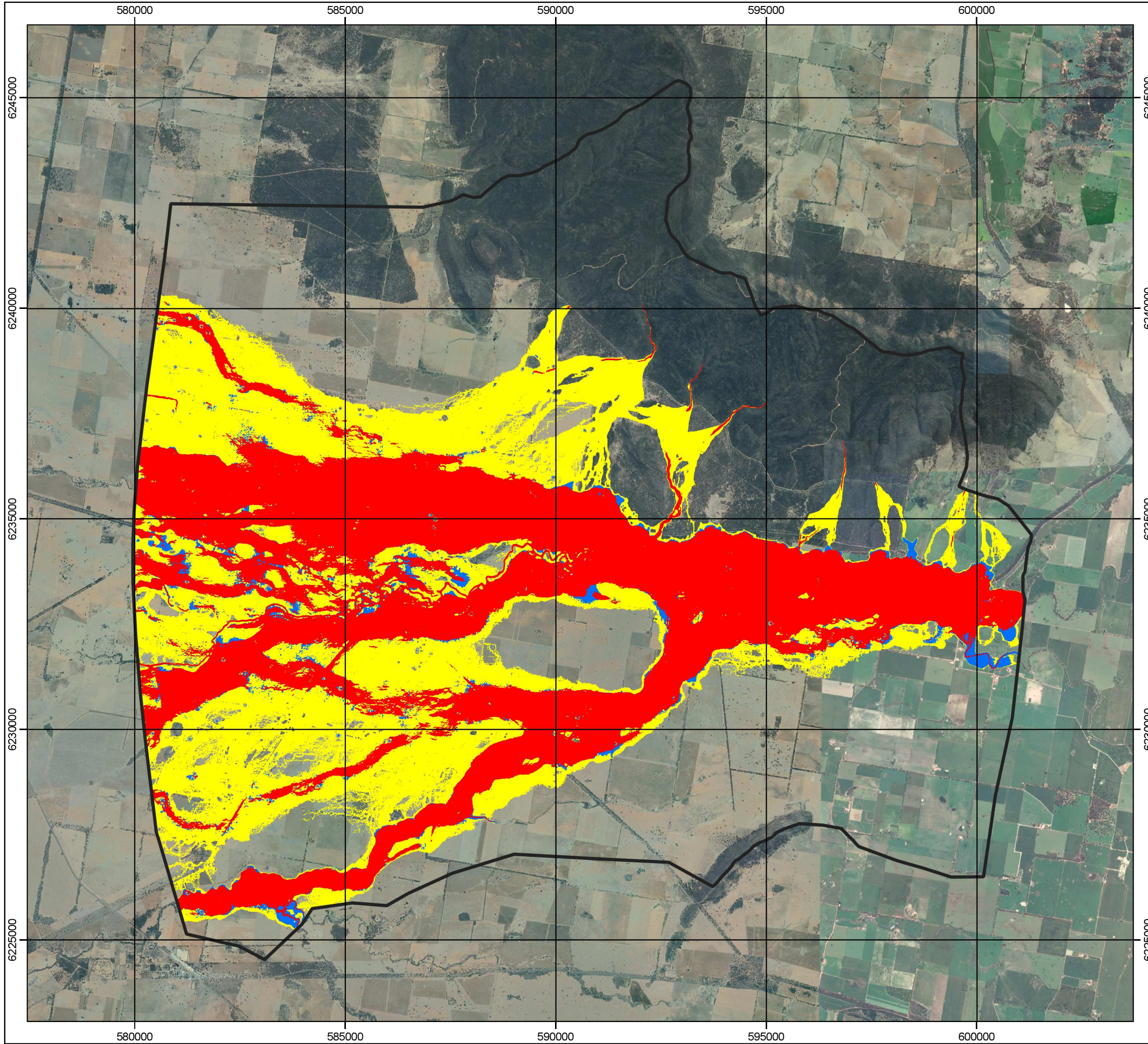
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 30
FLOOD FUNCTION
1% AEP EVENT



Hydraulic Model Area

Flood Function

- Flood Fringe
- Flood Storage
- Floodway

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0 2 4 6 km



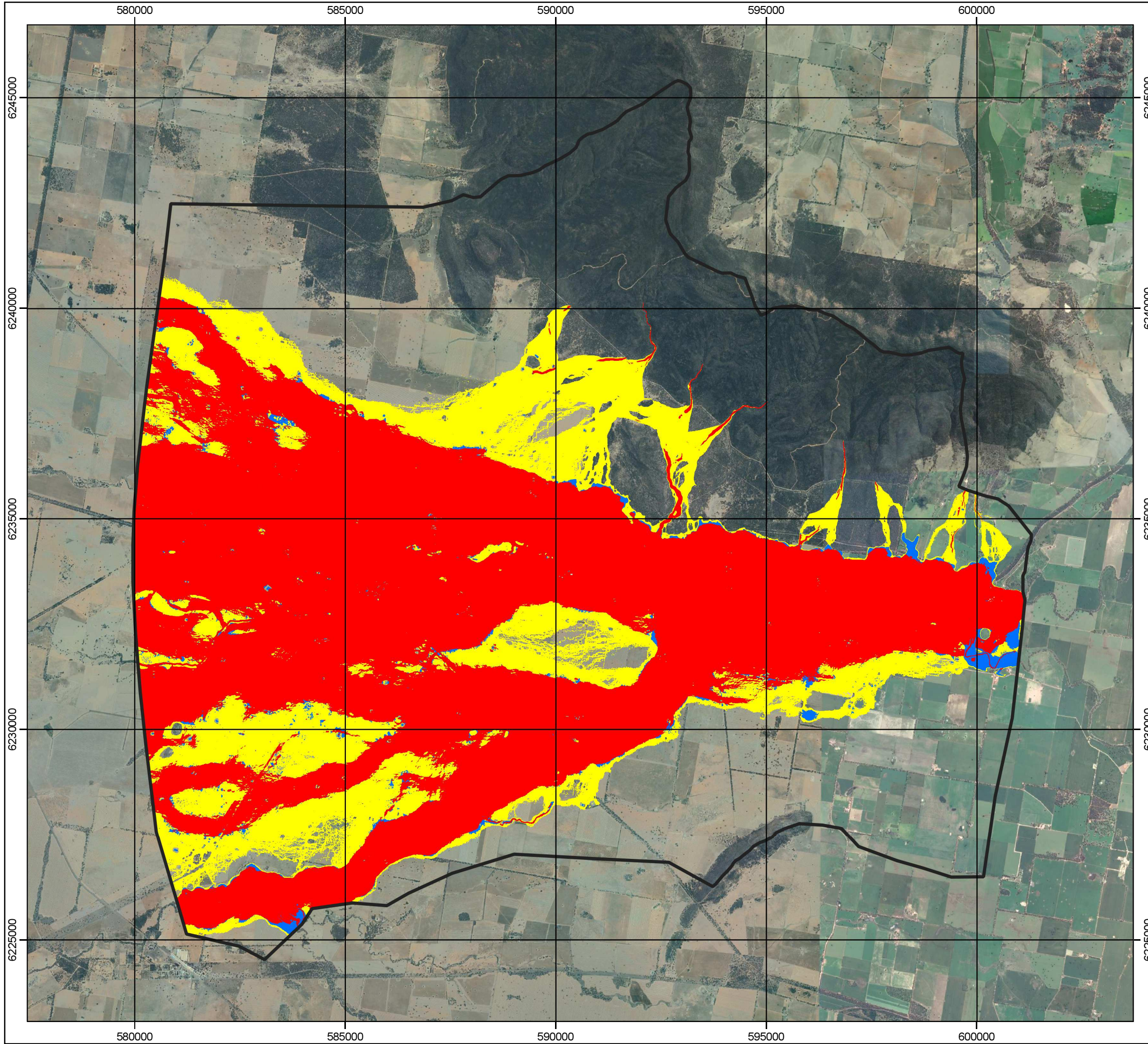
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 31
FLOOD FUNCTION
0.2% AEP EVENT



Hydraulic Model Area

Flood Function

- Flood Fringe
- Flood Storage
- Floodway

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0 2 4 6 km



Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOOD STUDY

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FS

FIGURE 32
FLOOD FUNCTION
PMF EVENT