

Bimbi Village Flood Risk Management Study and Plan

Final Report

Volume 2

November 2022

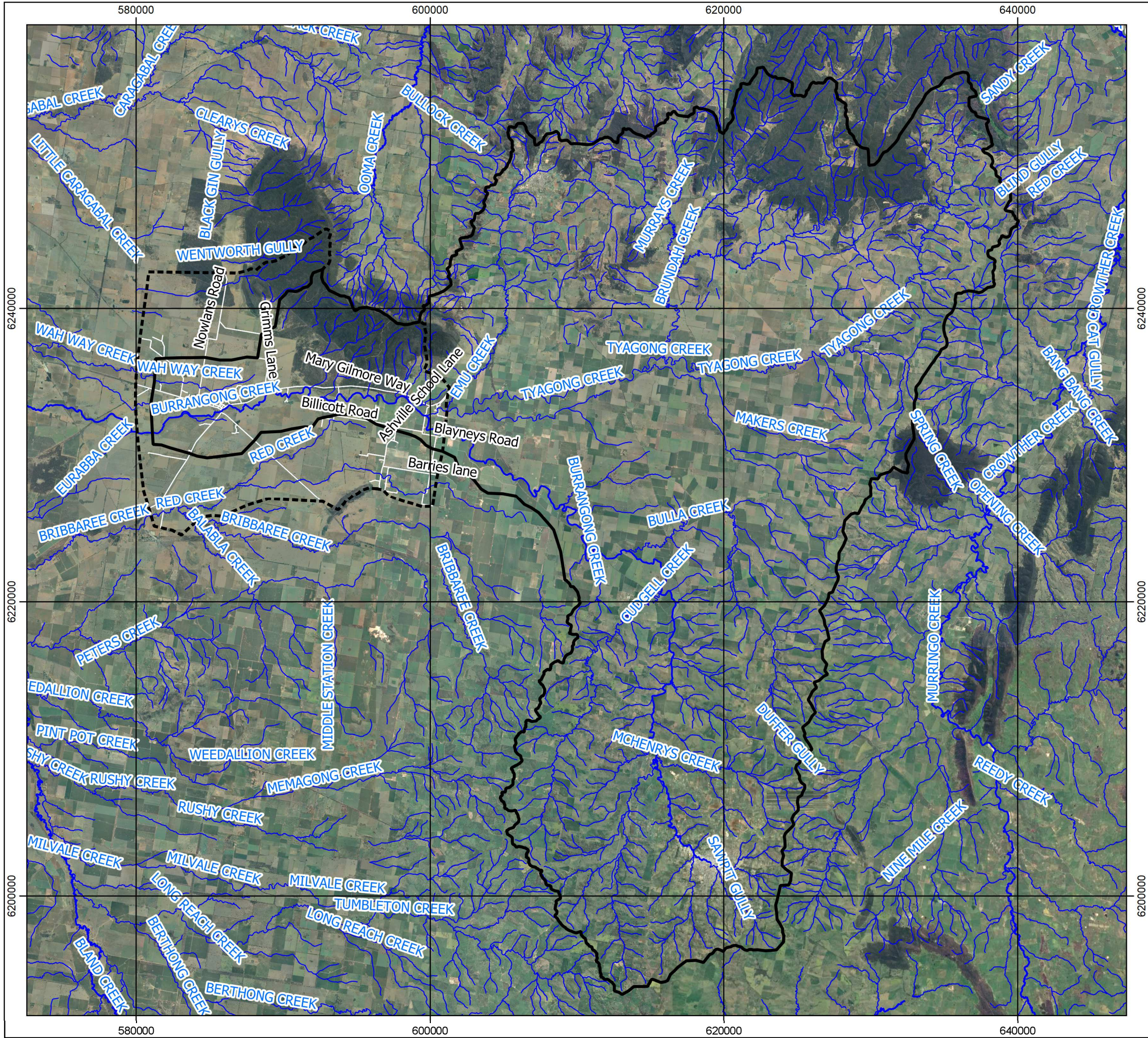


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APPENDIX B

EXISTING CATCHMENT CHARACTERISTICS



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

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0 5 10 15 km

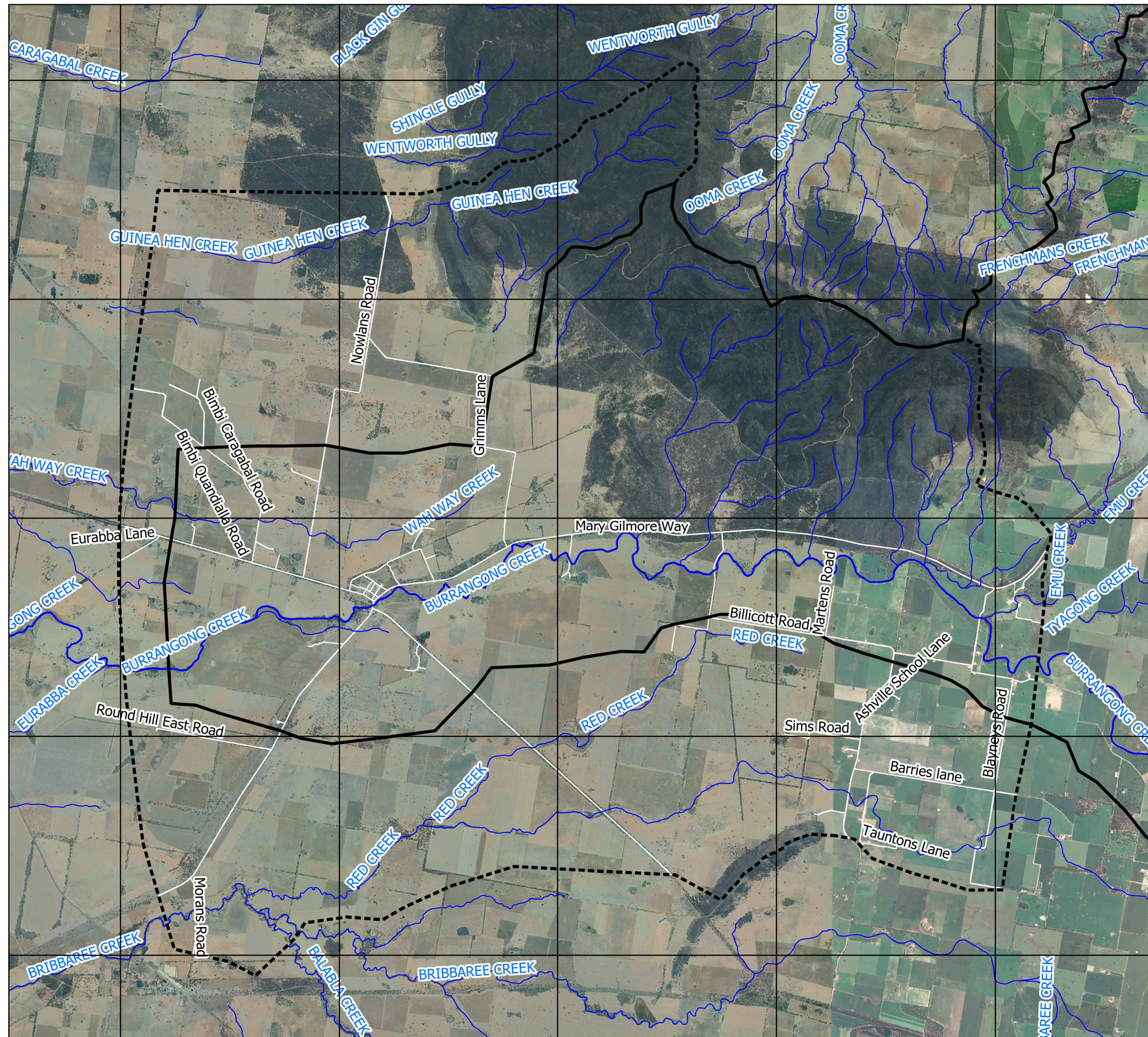
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Vertical Datum: m AHD







BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

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

FIGURE B01A STUDY AREA



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

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0 2 4 6 km

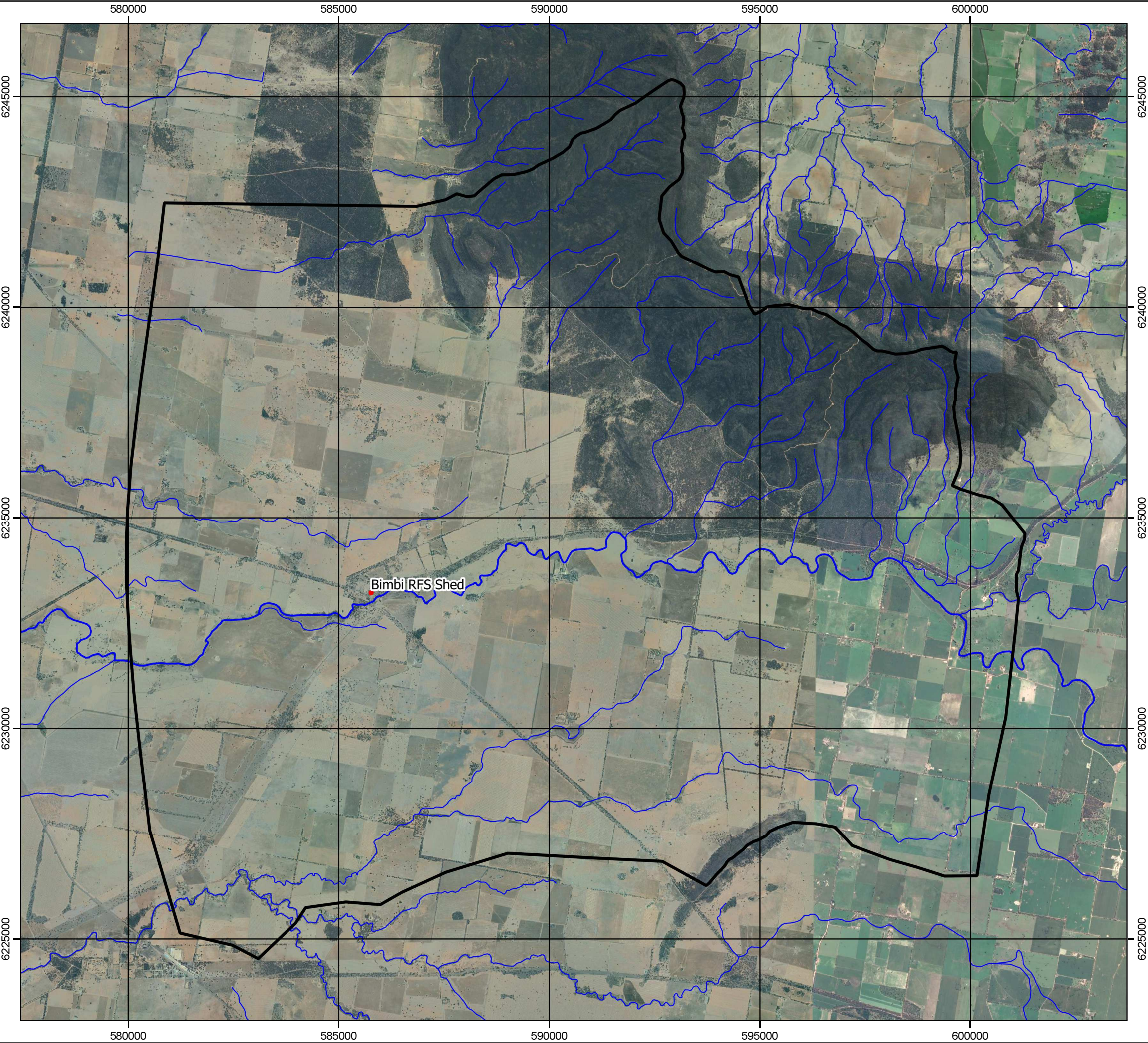
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FIGURE B01B STUDY AREA



- Study Area
- Waterways
- Vulnerable and Infrastructure Sites

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0 2 4 6 km

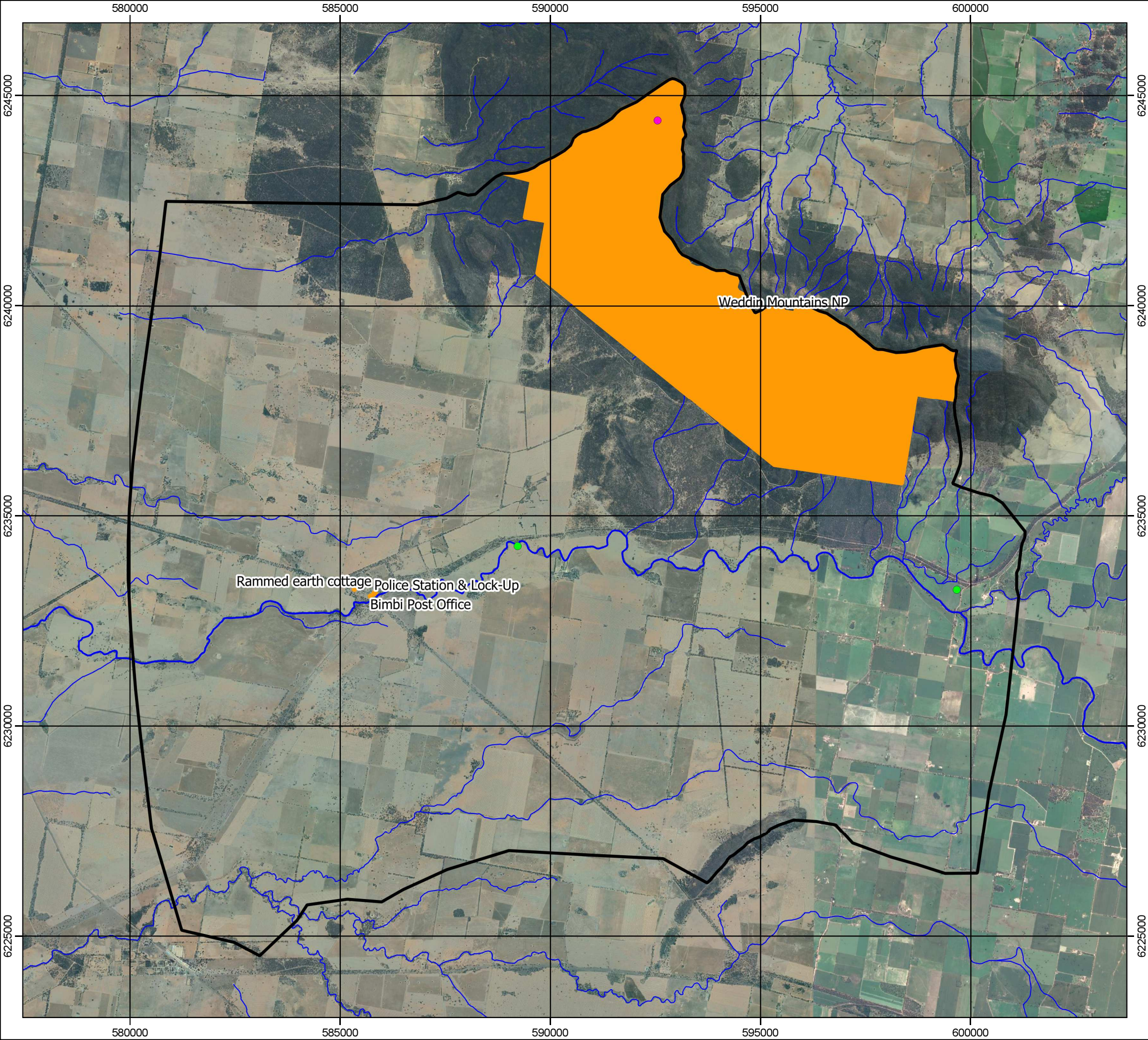
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Vertical Datum: m AHD



**BIMBI FLOODPLAIN RISK MANAGEMENT
STUDY AND PLAN**

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**FIGURE B02
VULNERABLE FACILITIES AND
INFRASTRUCTURE LOCATIONS**



-  Study Area
-  Waterways
- Indigenous Australian Heritage Sites
 -  Modified Tree
 -  Artefact
-  Non-Indigenous Australian Heritage Sites

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0 2 4 6 km

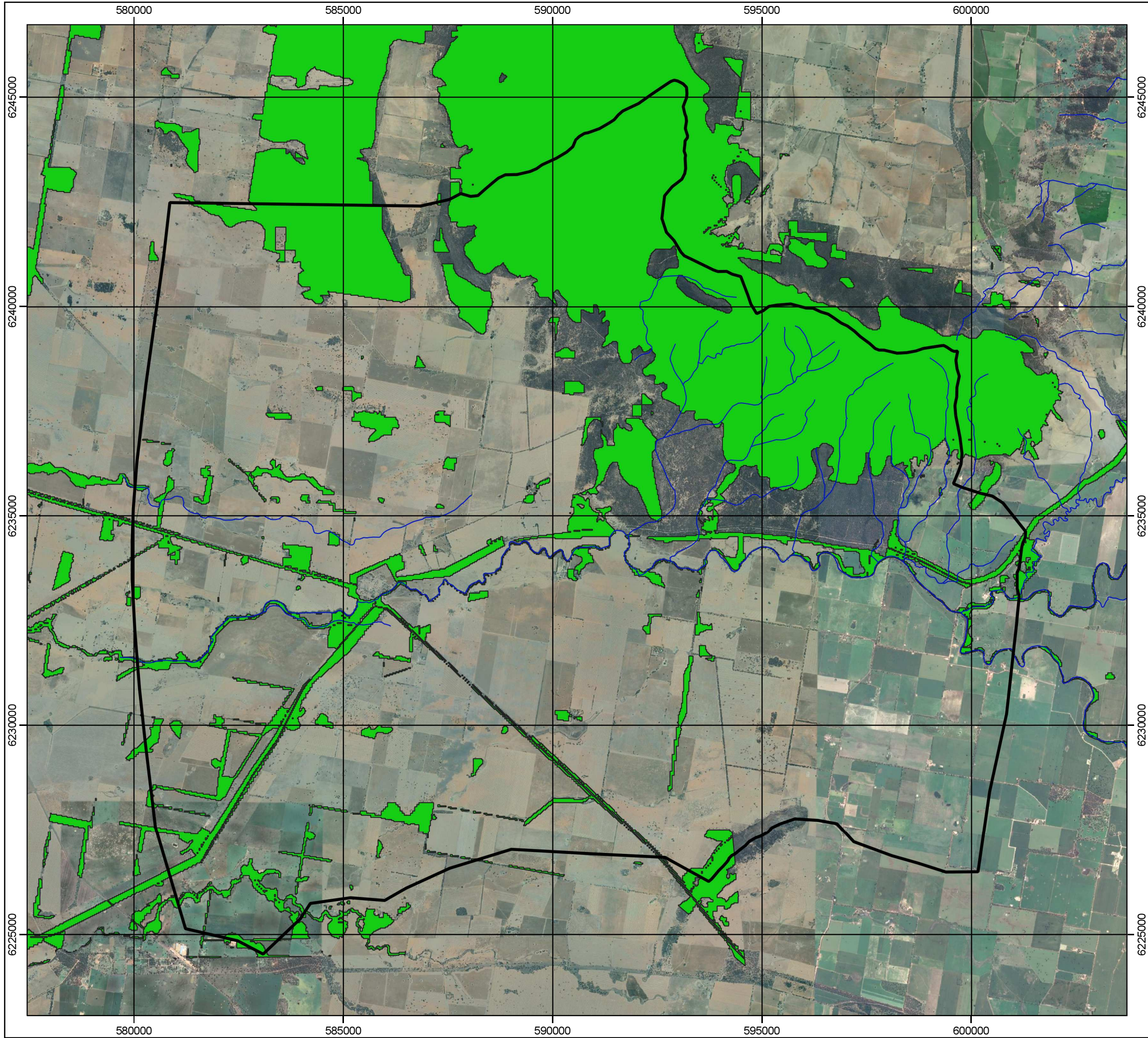
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Vertical Datum: m AHD



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**FIGURE B03
CULTURALLY AND HISTORICALLY
SIGNIFICANT AREAS**



- Study Area
- Waterways
- Environmentally Sensitive Areas

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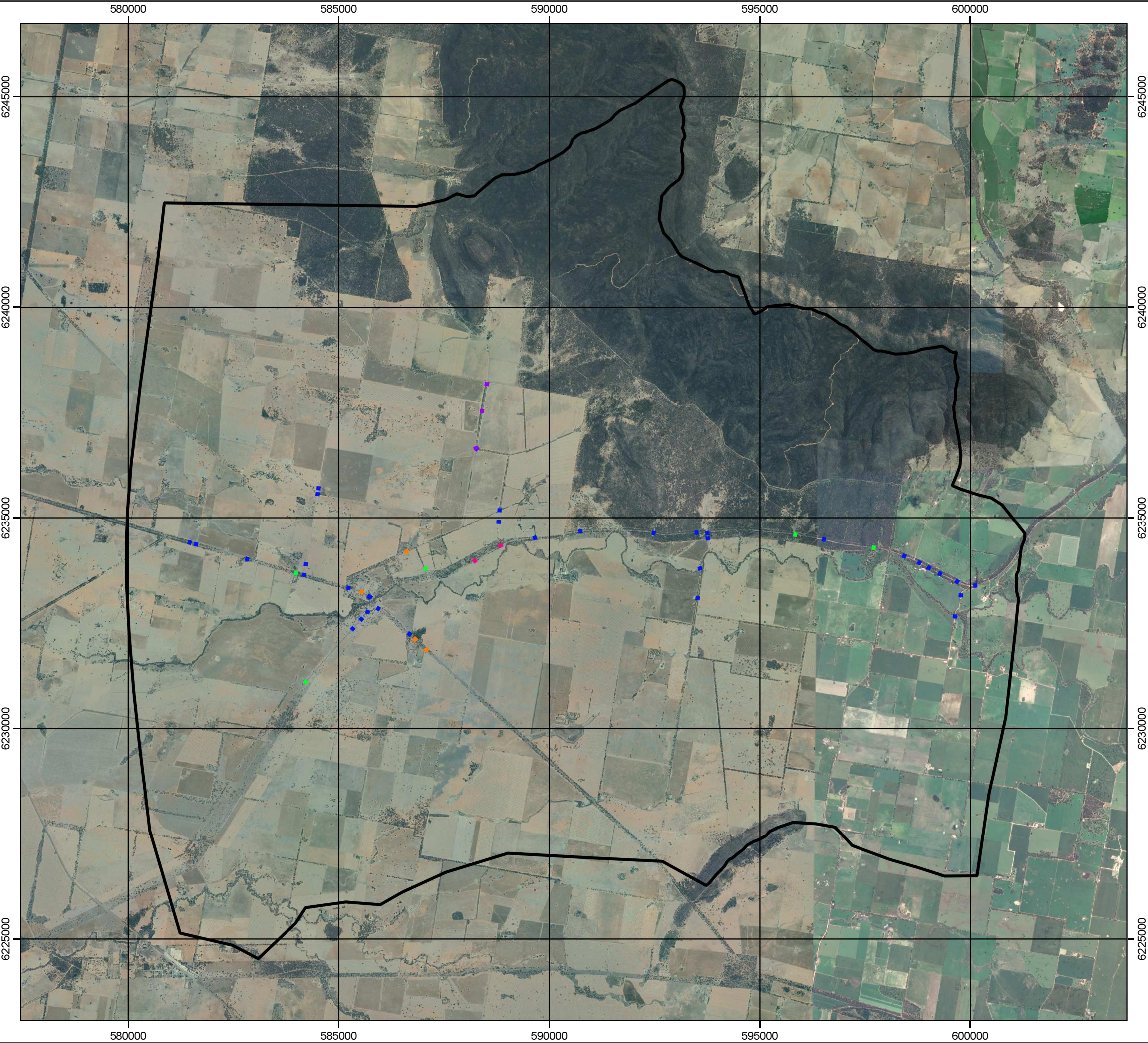
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Vertical Datum: m AHD



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FIGURE B04 ENVIRONMENTALLY SENSITIVE AREAS



- Study Area
- Structural Capacity
- > 20% AEP
 - > 10% AEP
 - > 5% AEP
 - > 2% AEP
 - > 1% AEP
 - > 0.5% AEP
 - > PMF
 - < PMF

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0 2 4 6 km

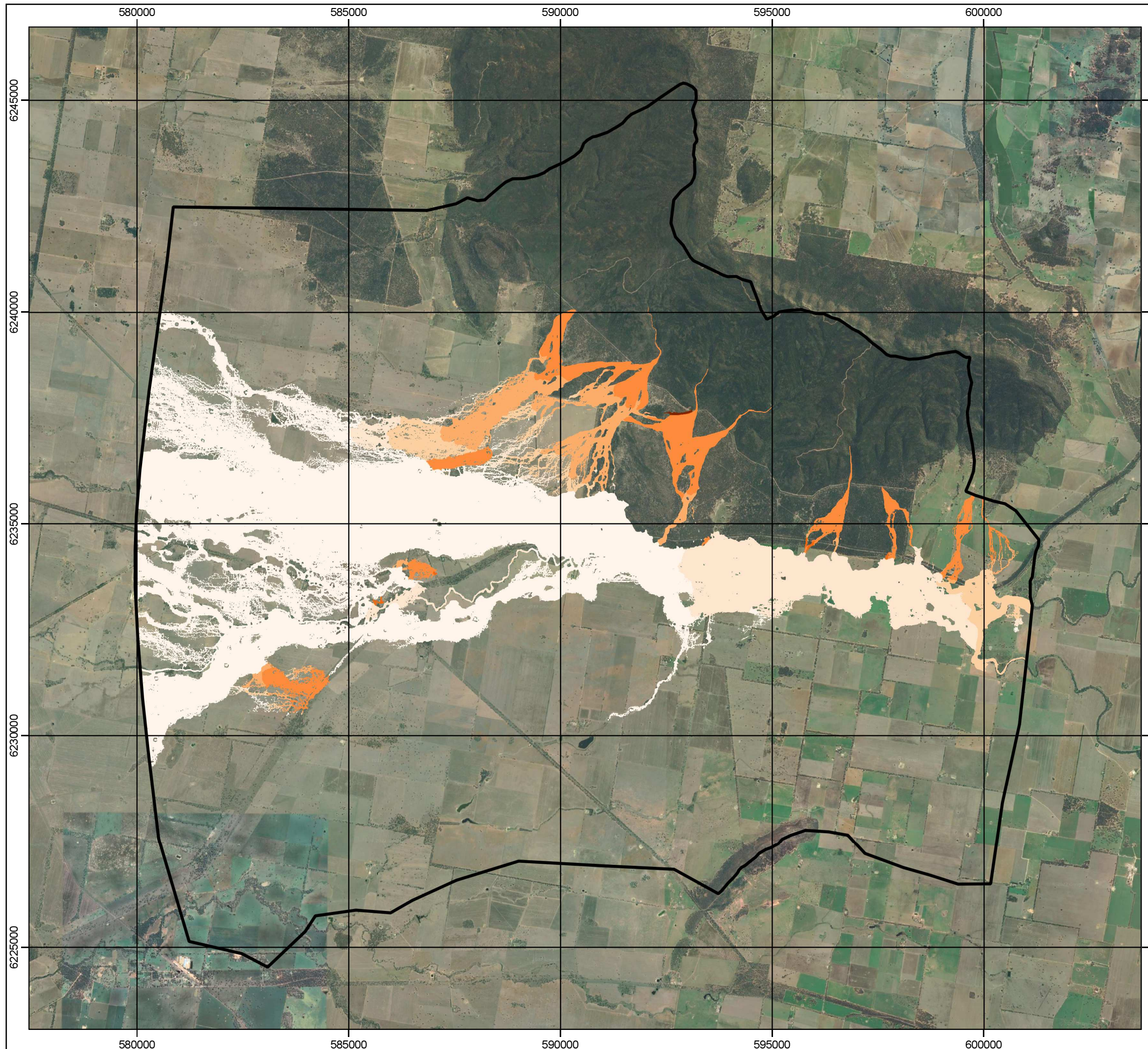
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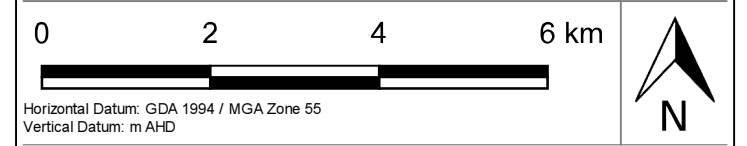
Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE B05
BRIDGE AND CULVERT CAPACITY



- Study Area
- Time to Peak
- <2.00 hours
 - <4.00 hours
 - <6.00 hours
 - <8.00 hours
 - <10.00 hours
 - <12.00 hours
 - <14.00 hours
 - <16.00 hours
 - >16.00 hours

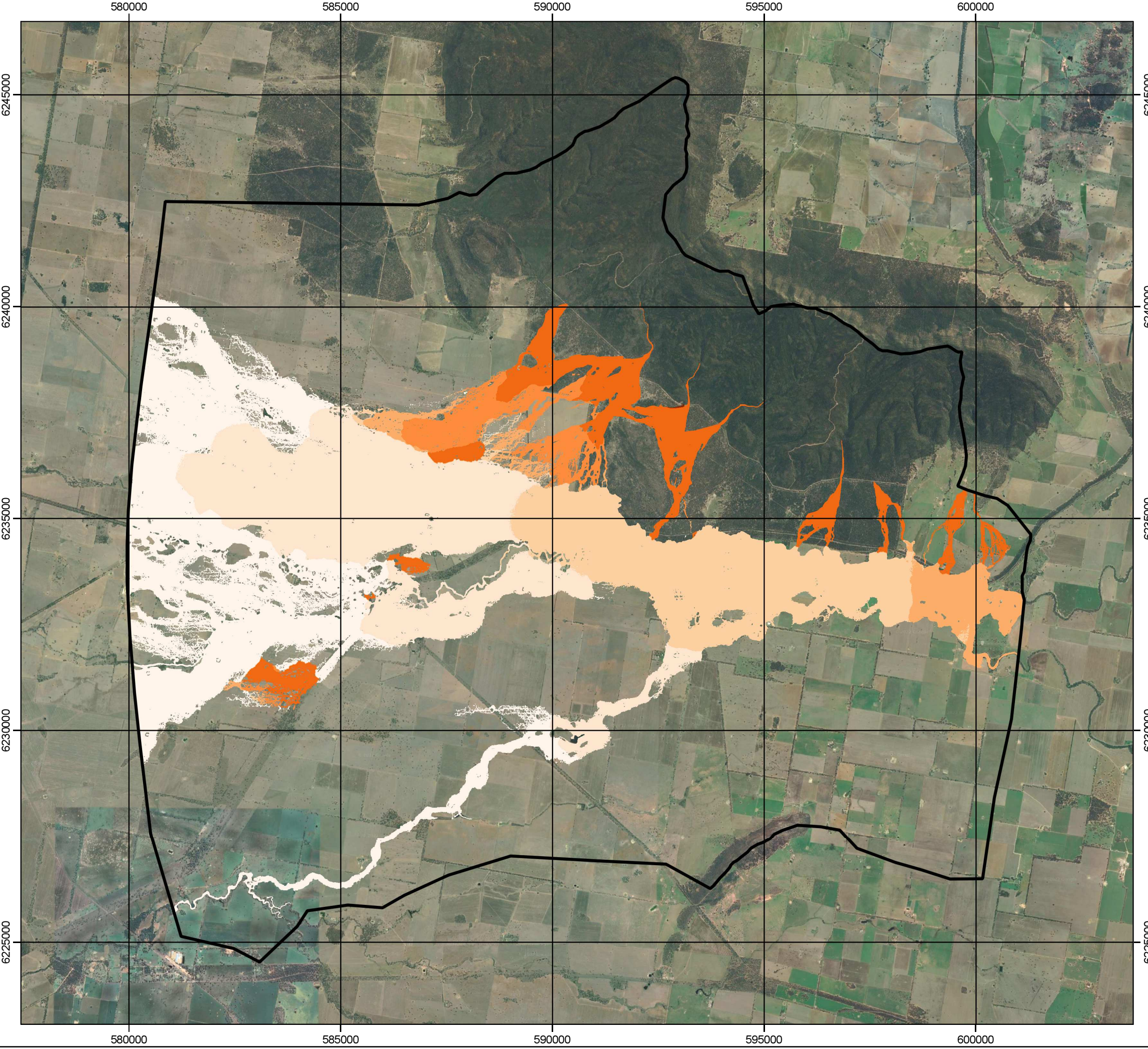
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FIGURE B06A
TIME TO PEAK
20% AEP EVENT

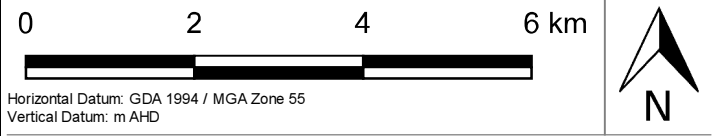


Study Area

Time to Peak

- <2.00 hours
- <4.00 hours
- <6.00 hours
- <8.00 hours
- <10.00 hours
- <12.00 hours
- <14.00 hours
- <16.00 hours
- >16.00 hours

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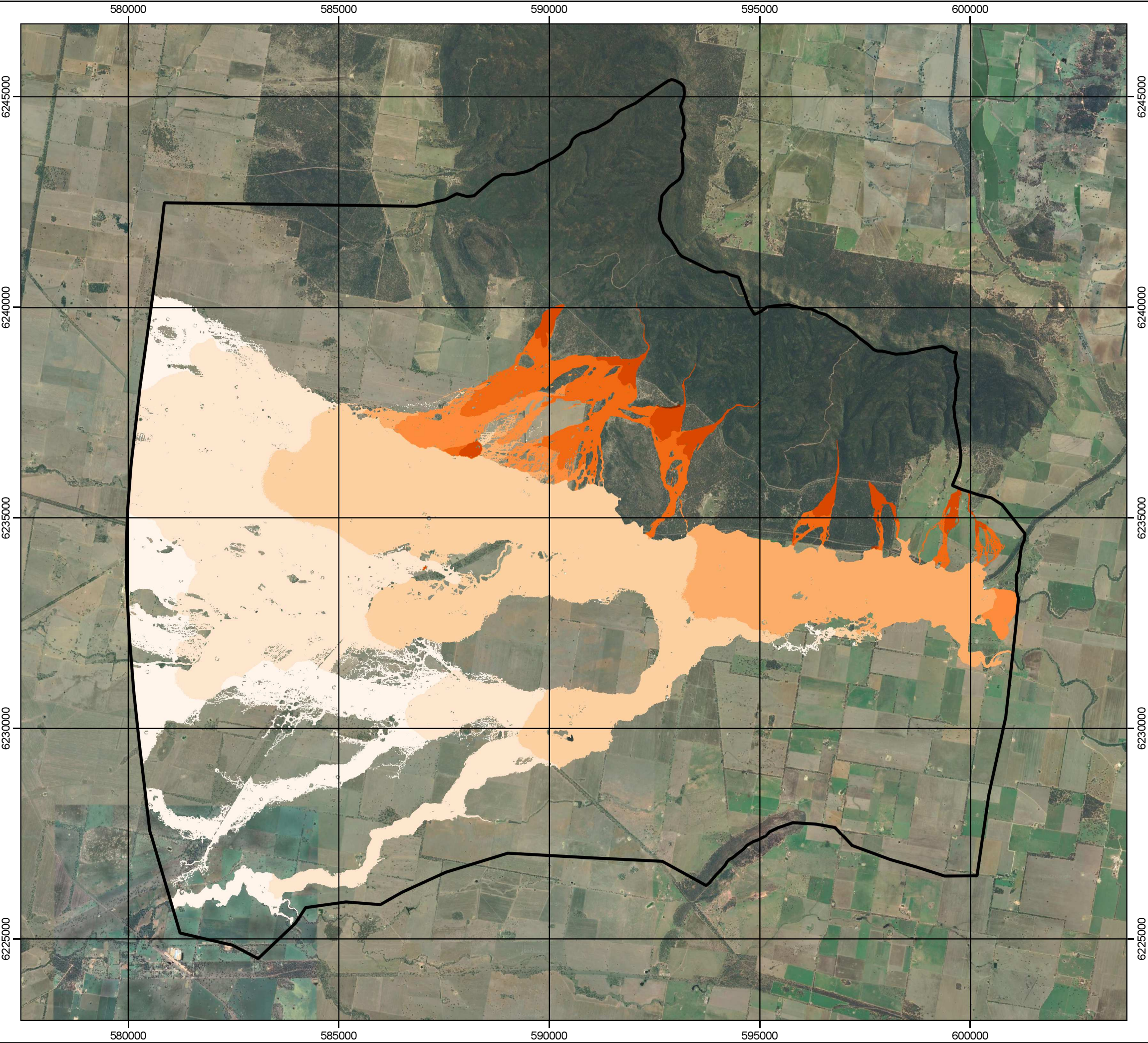


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Vertical Datum: m AHD

BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE B06B
TIME TO PEAK
5% AEP EVENT



Study Area

Time to Peak

- <2.00 hours
- <4.00 hours
- <6.00 hours
- <8.00 hours
- <10.00 hours
- <12.00 hours
- <14.00 hours
- <16.00 hours
- >16.00 hours

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0 2 4 6 km

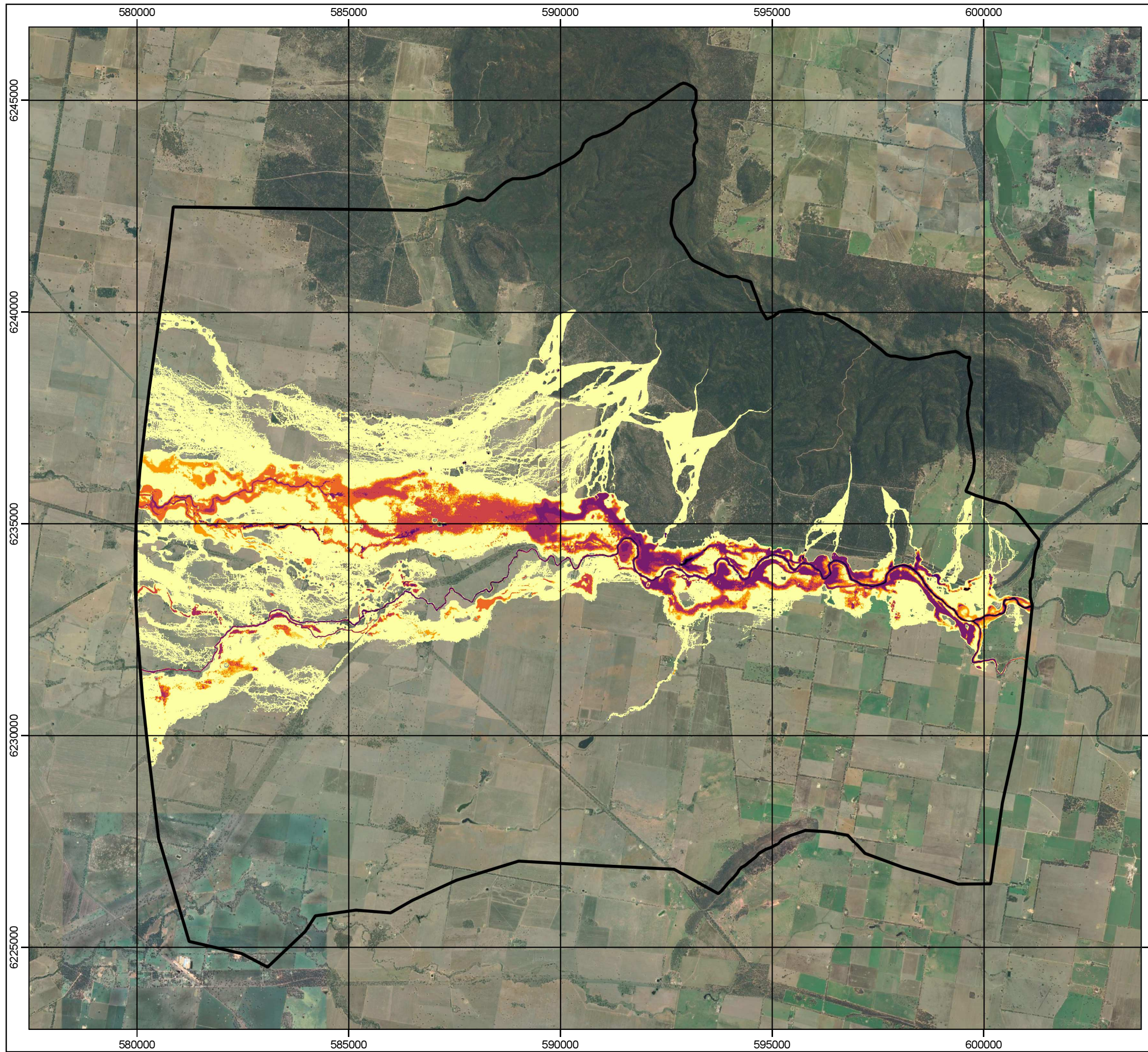
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Vertical Datum: m AHD



BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE B06C
TIME TO PEAK
1% AEP EVENT



- Study Area
- Duration of Inundation
- <8 hours
 - <10 hours
 - <12 hours
 - <14 hours
 - <16 hours
 - <18 hours
 - <20 hours
 - <22 hours
 - <24 hours
 - >24 hours

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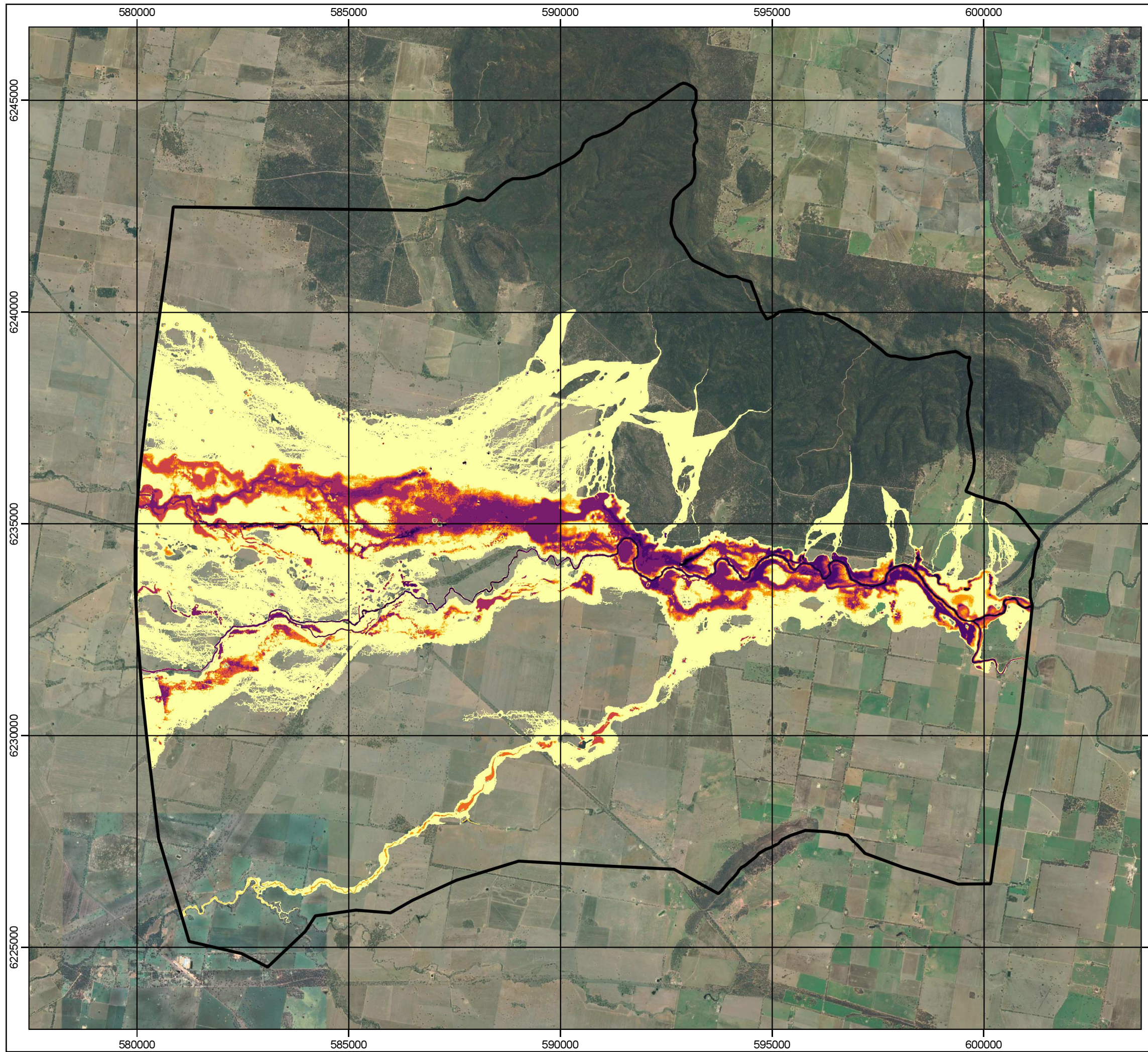
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Vertical Datum: m AHD



BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

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FIGURE B07A
DURATION OF INUNDATION
20% AEP EVENT



- Study Area
- Duration of Inundation
- <8 hours
 - <10 hours
 - <12 hours
 - <14 hours
 - <16 hours
 - <18 hours
 - <20 hours
 - <22 hours
 - <24 hours
 - >24 hours

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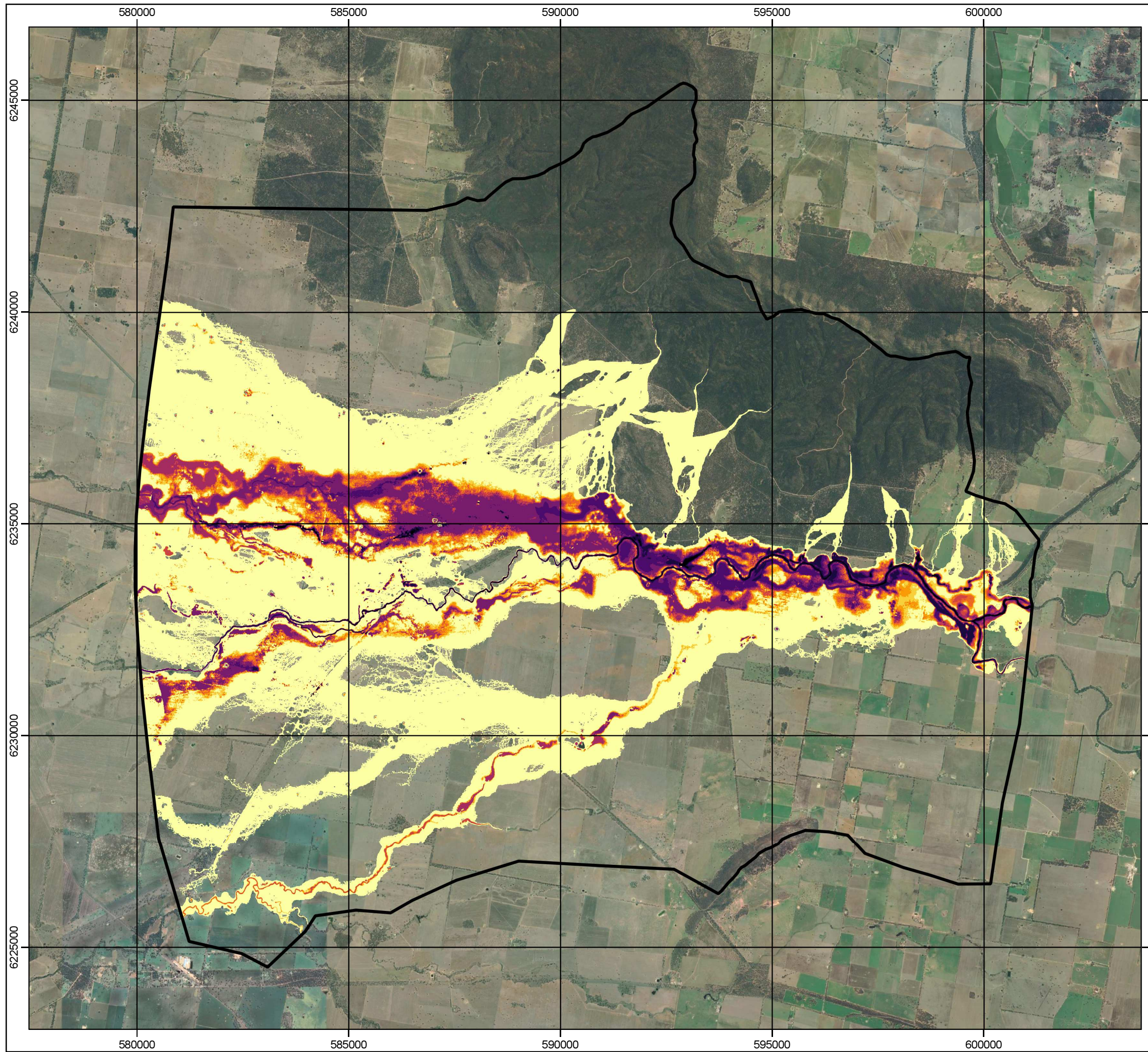
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











BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

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FIGURE B07B
DURATION OF INUNDATION
5% AEP EVENT



-  Study Area
- Duration of Inundation
-  <8 hours
 -  <10 hours
 -  <12 hours
 -  <14 hours
 -  <16 hours
 -  <18 hours
 -  <20 hours
 -  <22 hours
 -  <24 hours
 -  >24 hours

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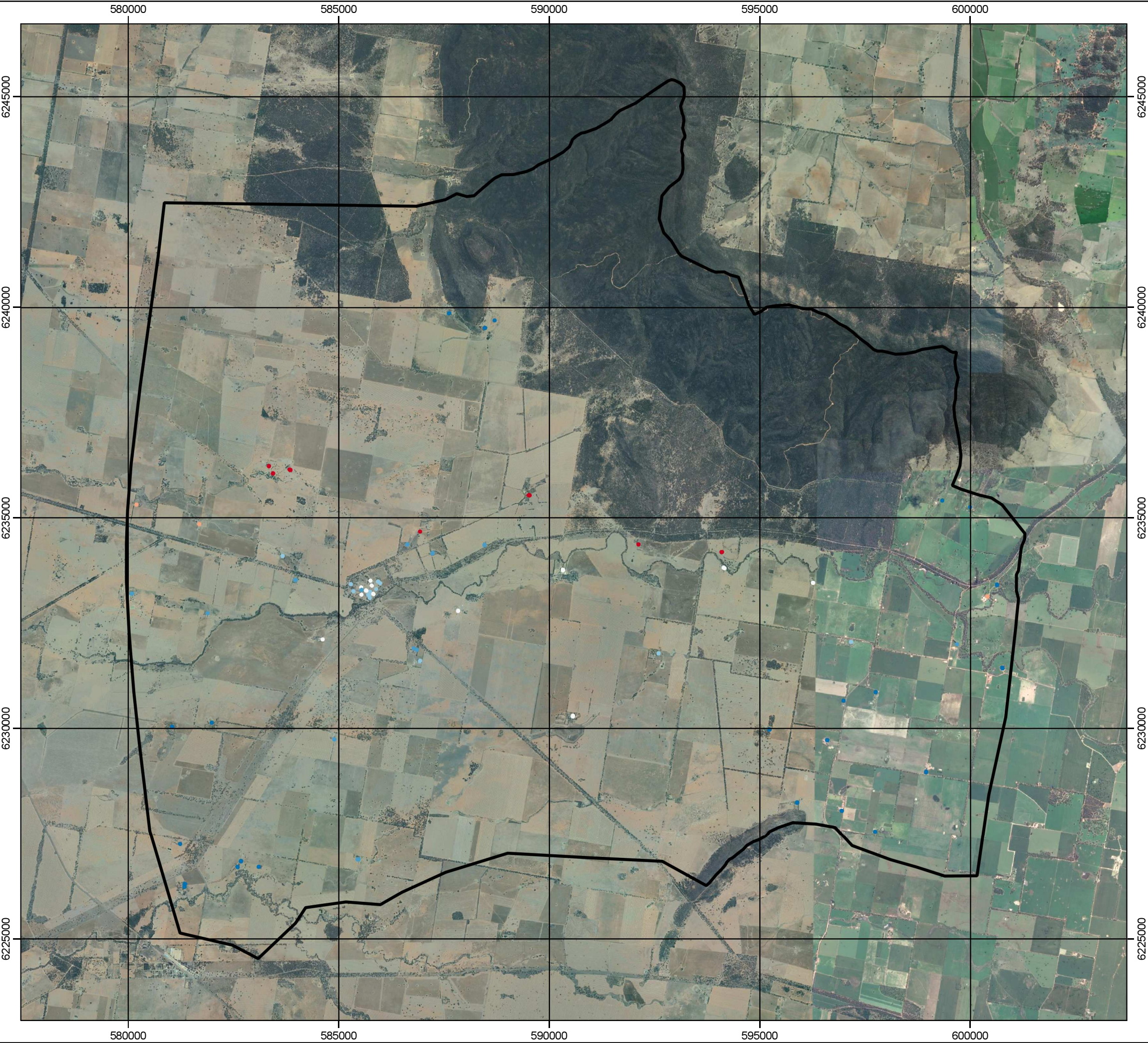
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Vertical Datum: m AHD



BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

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FIGURE B07C
DURATION OF INUNDATION
1% AEP EVENT



- Study Area
- Above Floor Flooding First Event
- Not Flooded
 - PMF
 - 0.20% AEP
 - 0.50% AEP
 - 1.00% AEP
 - 2.00% AEP
 - 5.00% AEP
 - 10.00% AEP
 - 20.00% AEP

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0 2 4 6 km

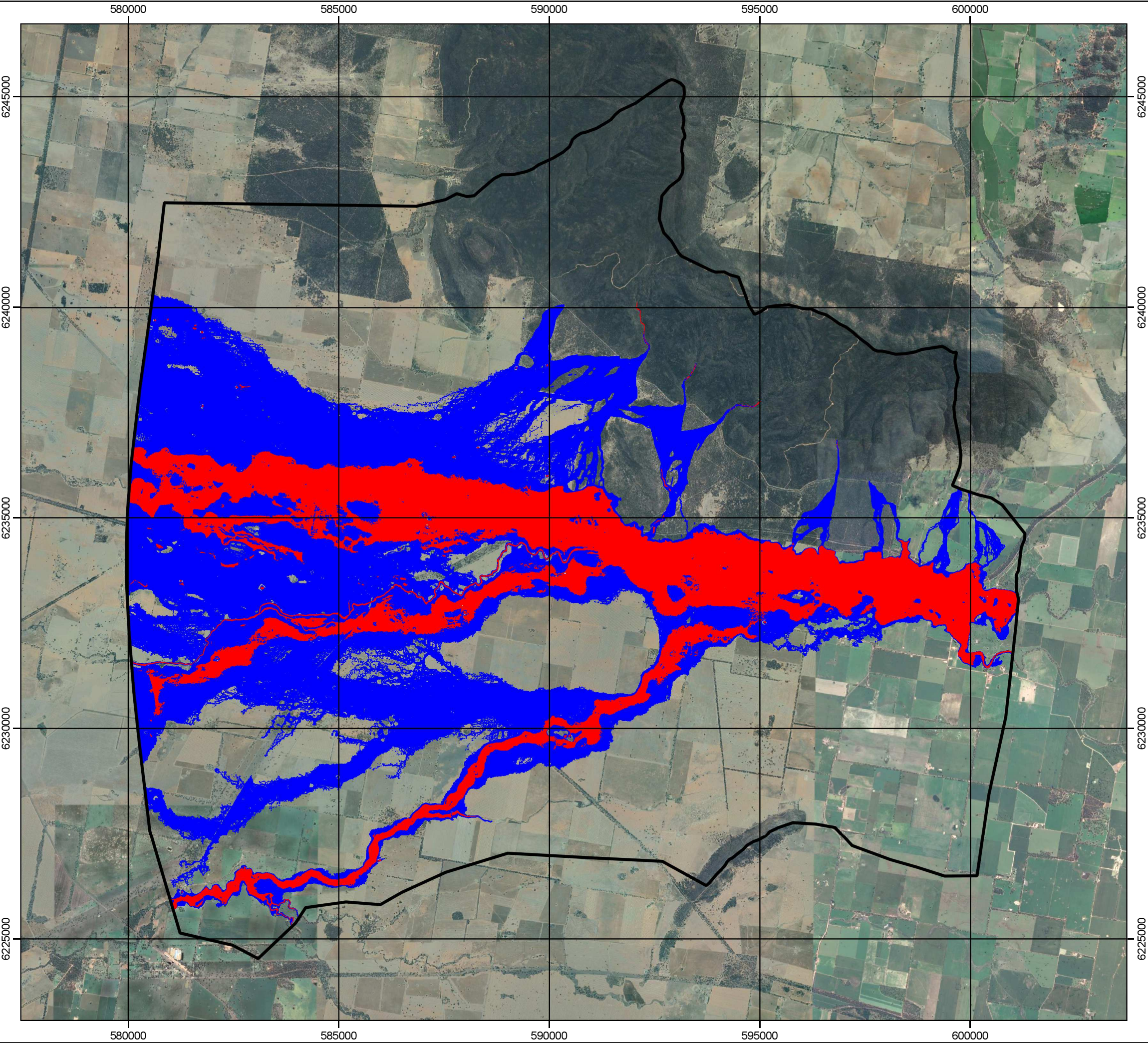
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Vertical Datum: m AHD



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FIGURE B08
ABOVE FLOOR FLOODING FIRST EVENT



- Study Area
- True Flood Hazard
 - Low Hazard
 - High Hazard

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0 2 4 6 km

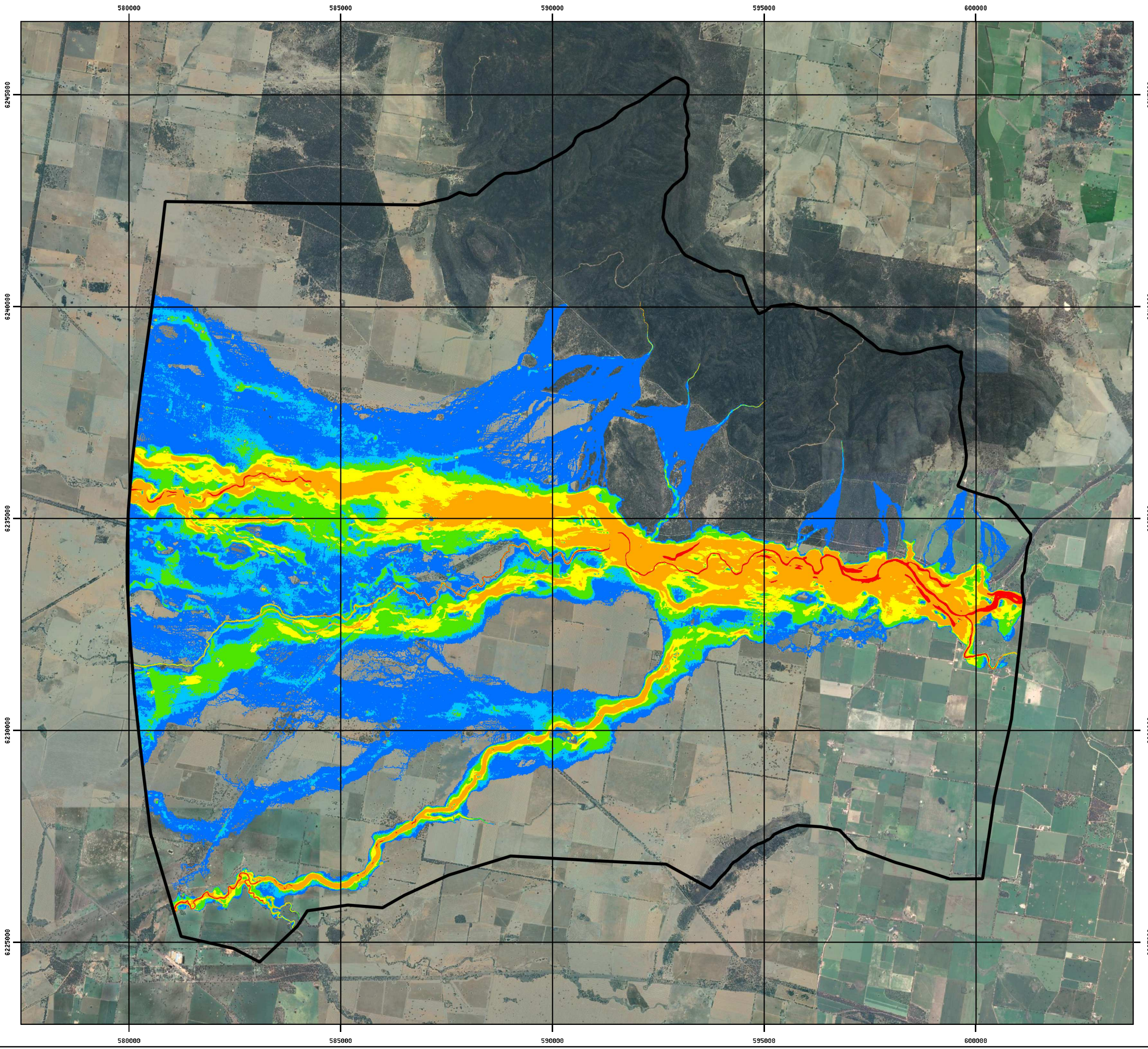
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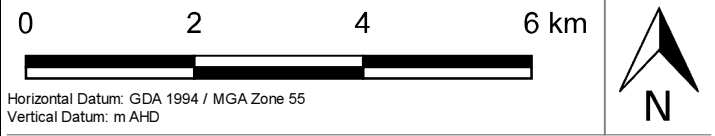
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**FIGURE B09
FDM FLOOD HAZARD
1% AEP EVENT**



- Study 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.

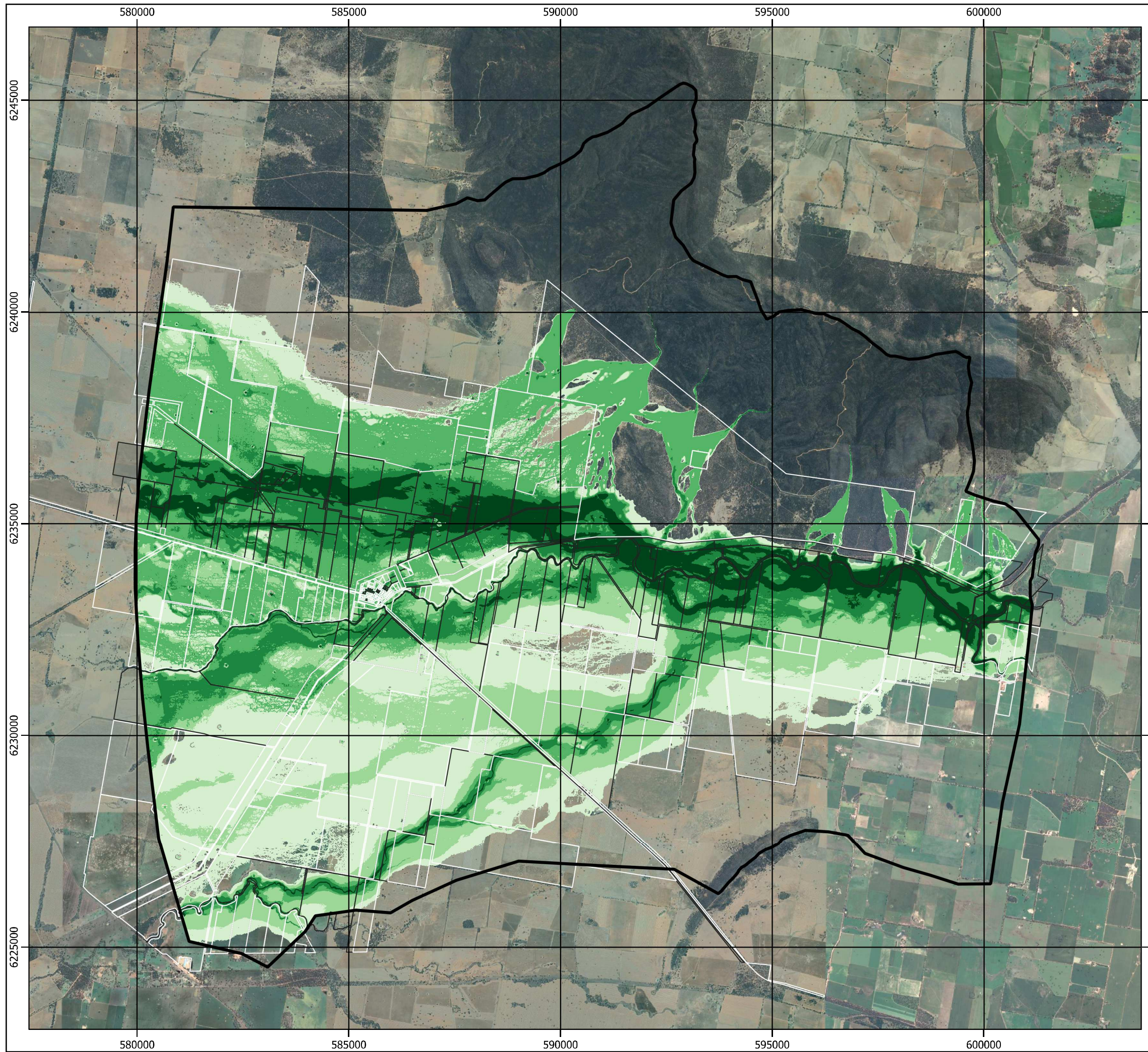
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FIGURE B10
ARR FLOOD HAZARD
1% AEP EVENT



Study Area

Properties

High Risk

Medium/Low Risk

Flood Risk

Z1 - Free from Flooding

Z2 - Very Low Flood Risk

Z3 - Low Flood Risk

Z4 - Medium Flood Risk

Z5 - High Flood Risk

Z6 - Extreme Flood Risk

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0 2 4 6 km

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



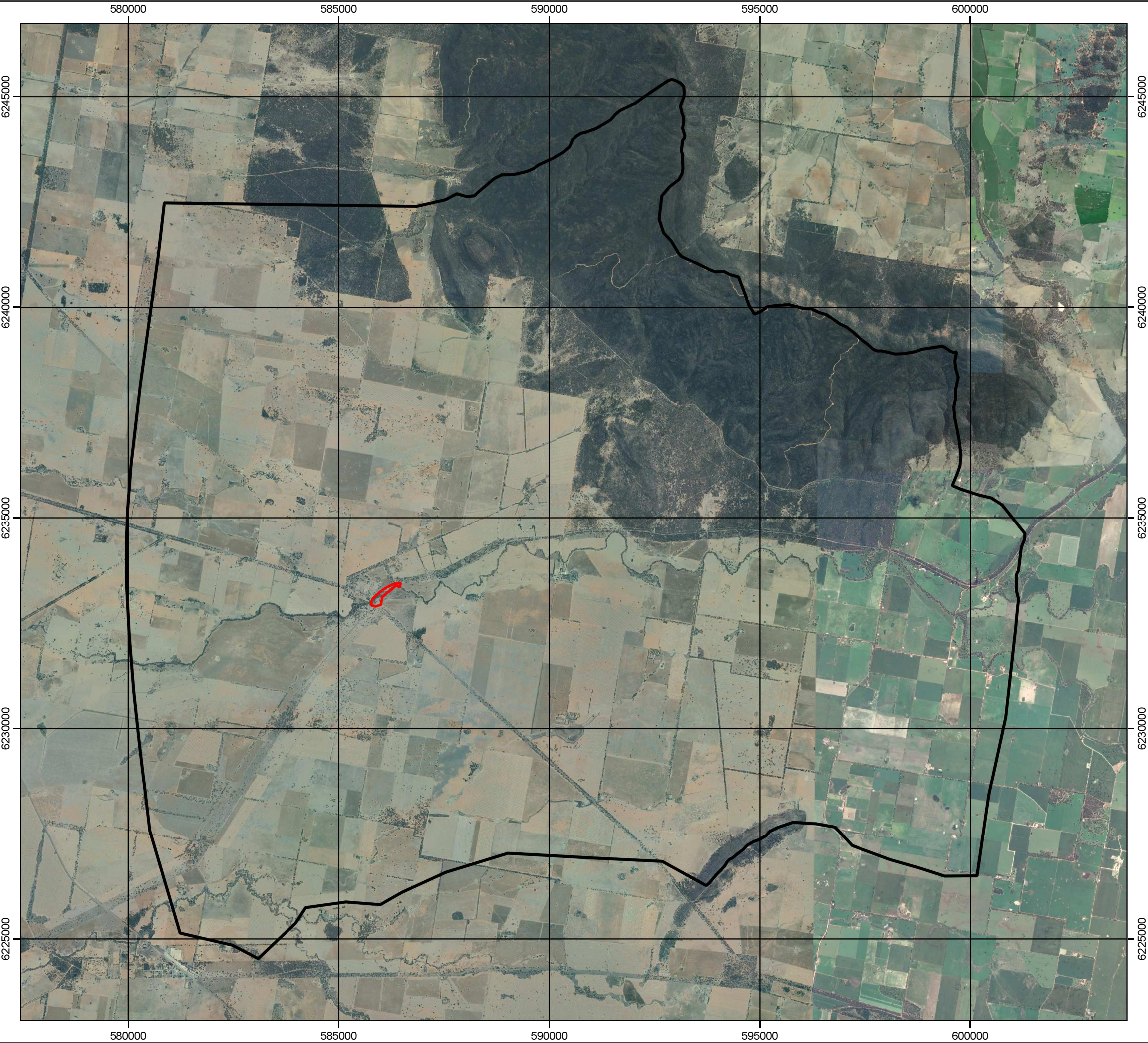
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FIGURE B11 FLOOD RISK PROPERTY AFFECTATION

APPENDIX C

POTENTIAL FLOODPLAIN RISK MANAGEMENT MEASURES



-  Study Area
-  Burrangong Creek TSR Fence

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0 2 4 6 km



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Vertical Datum: m AHD



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FIGURE C01 MODIFICATION MEASURE FM01 SCHEMATISATION

-  Study Area
-  Cleared Creek

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0 2 4 6 km

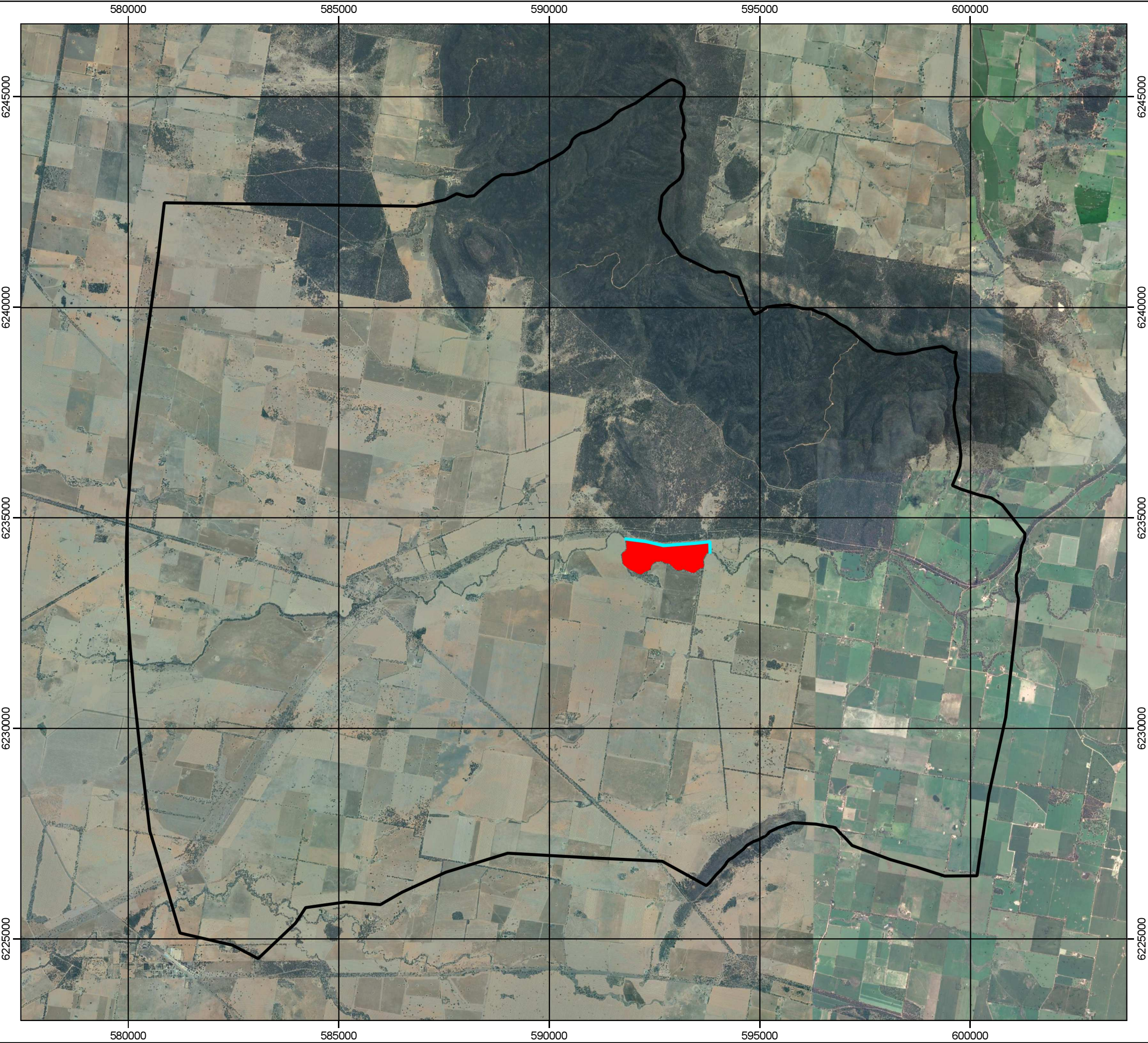
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Vertical Datum: m AHD



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FIGURE C02
MODIFICATION MEASURE FM02
SCHEMATISATION



- Study Area
- Detention Basin
- Earthen Levee

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0 2 4 6 km

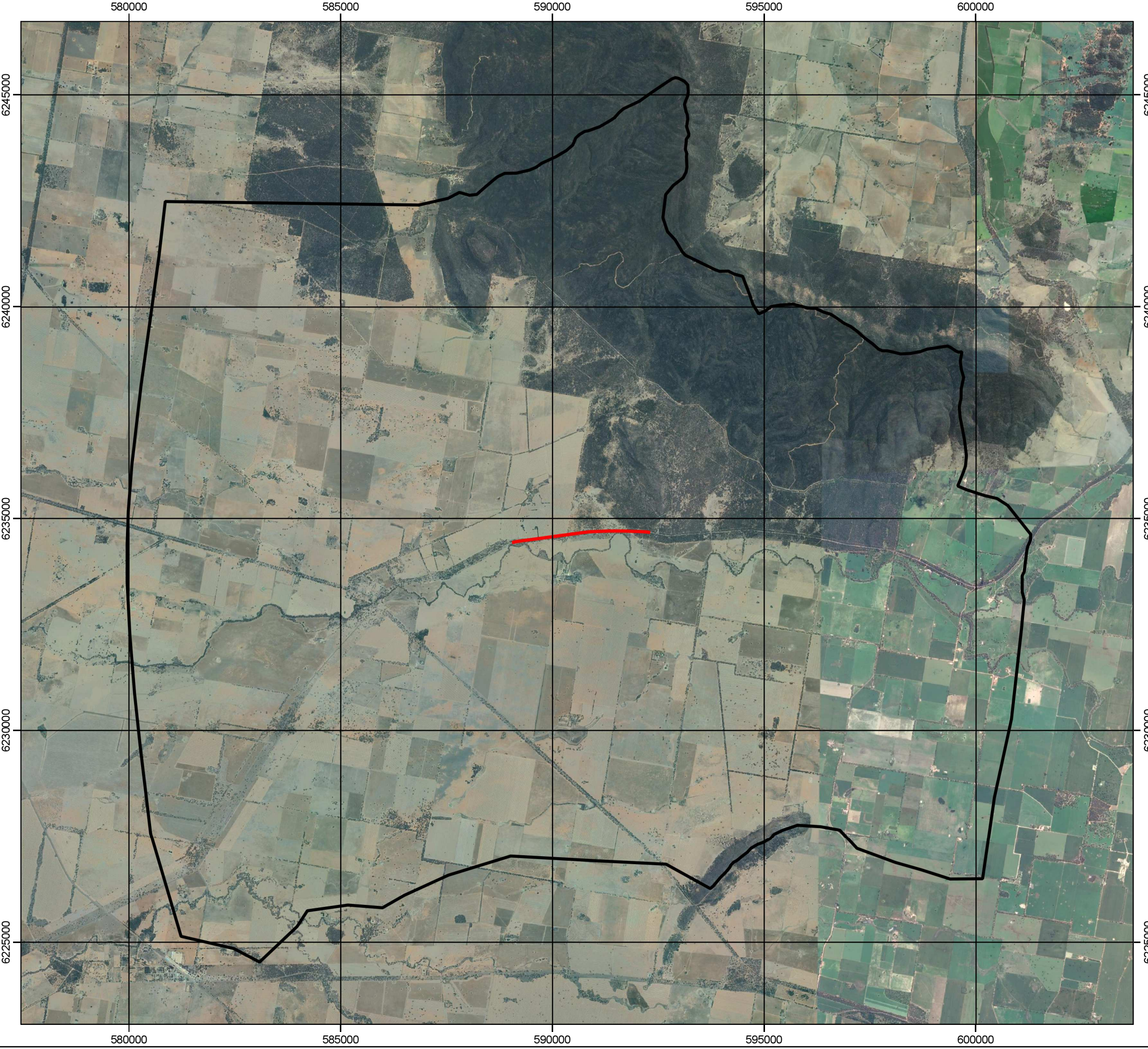
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Vertical Datum: m AHD





**BIMBI FLOODPLAIN RISK MANAGEMENT
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**FIGURE C03
MODIFICATION MEASURE FM03
SCHEMATISATION**



-  Study Area
-  Road Bridge

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0 2 4 6 km

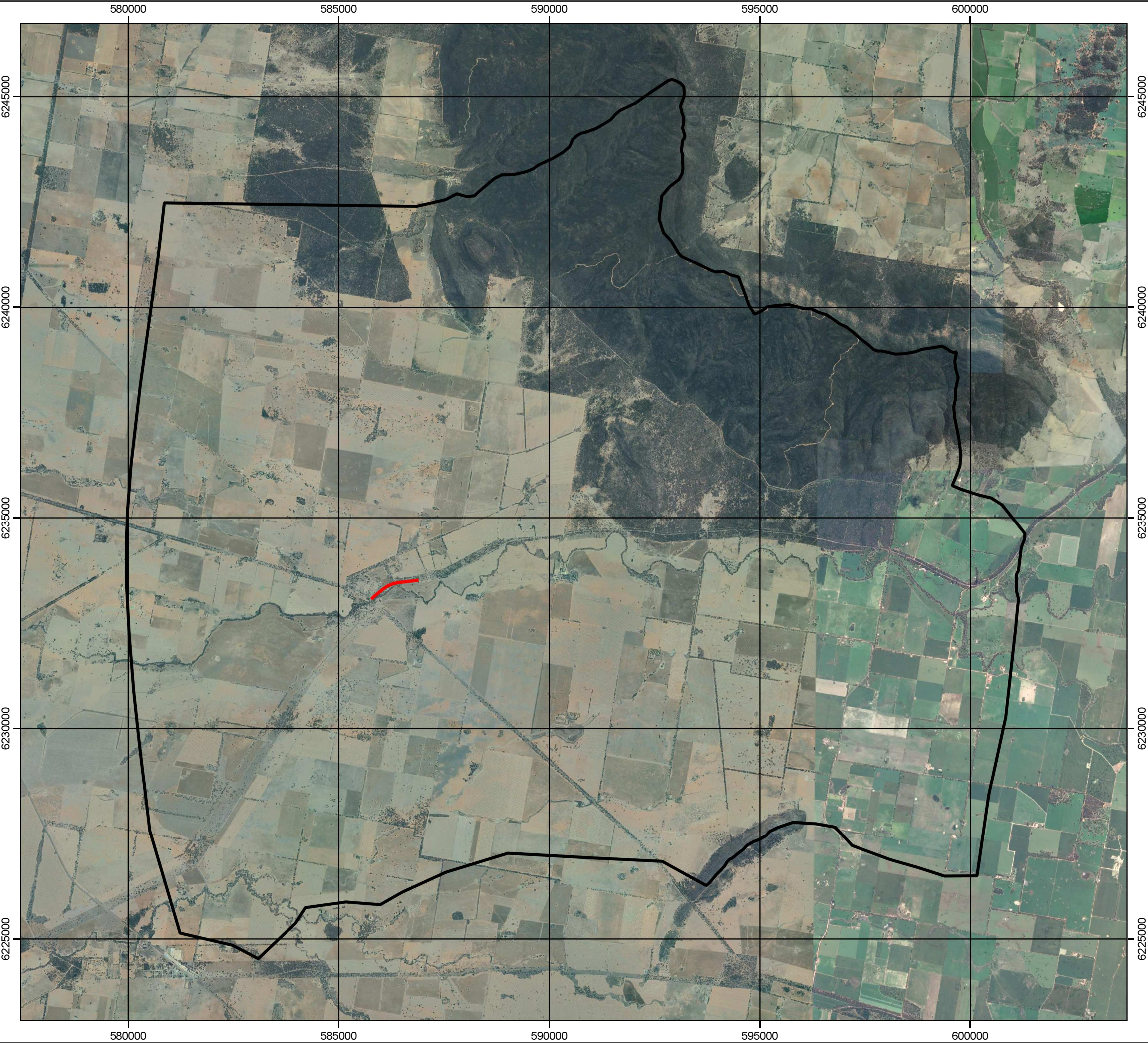
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Vertical Datum: m AHD





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FIGURE C04 MODIFICATION MEASURE FM04 SCHEMATISATION



-  Study Area
-  Raised Road

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0 2 4 6 km

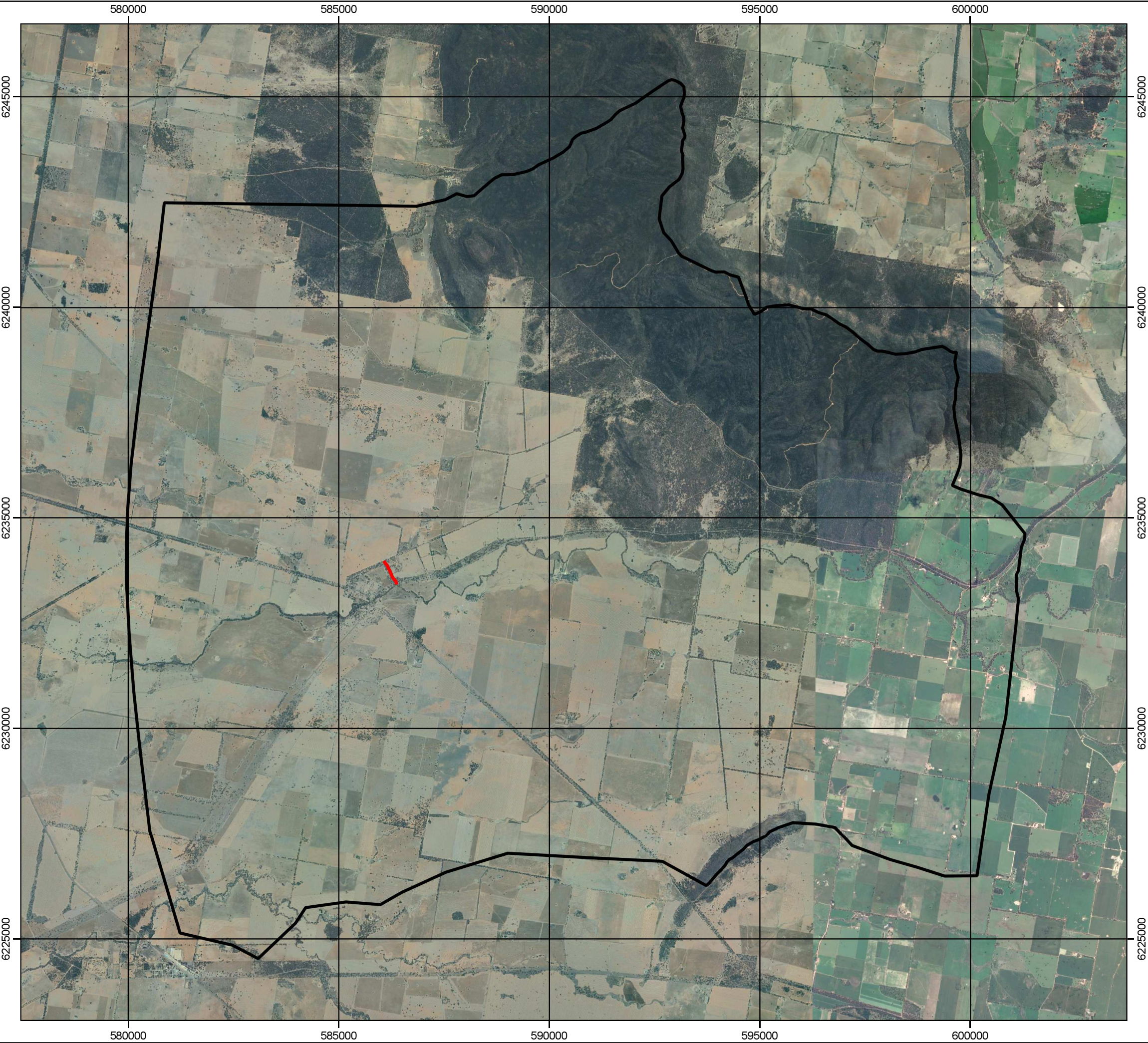
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**BIMBI FLOODPLAIN RISK MANAGEMENT
STUDY AND PLAN**

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**FIGURE C05
MODIFICATION MEASURE FM05
SCHEMATISATION**



-  Study Area
-  Road Levee

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0 2 4 6 km

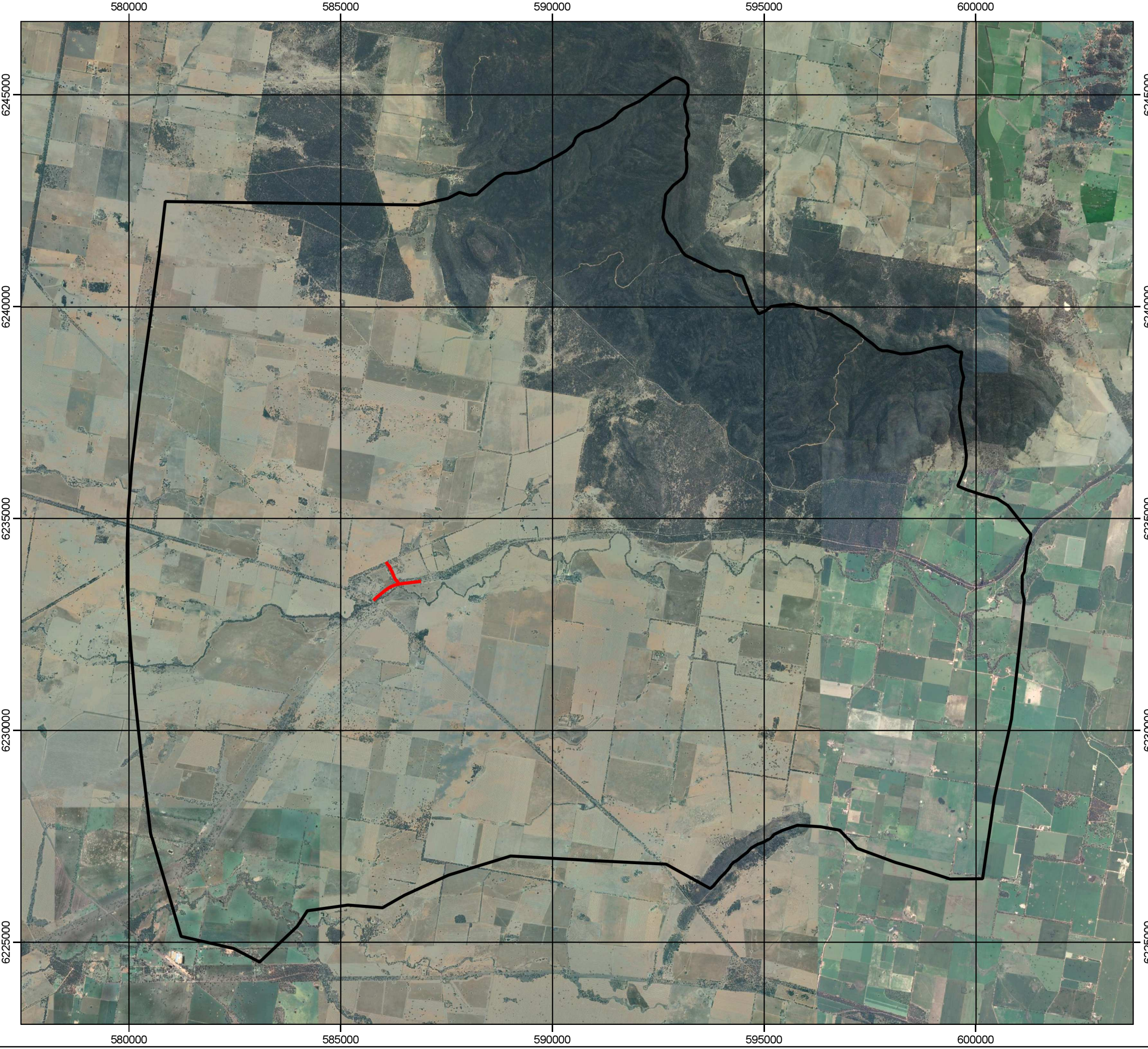
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Vertical Datum: m AHD



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STUDY AND PLAN**

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**FIGURE C06
MODIFICATION MEASURE FM06
SCHEMATISATION**



- Study Area
- Road Levee

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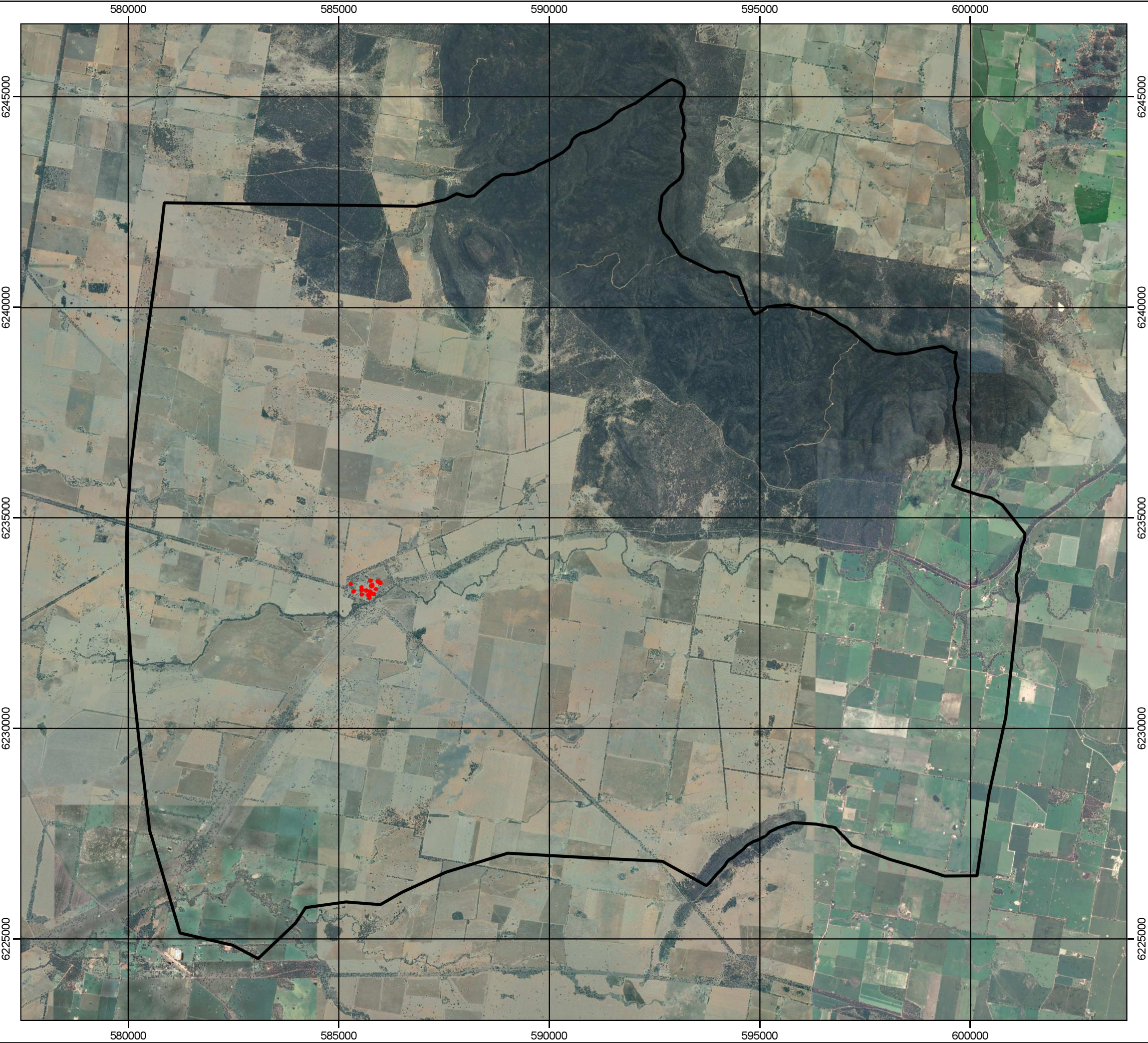
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Vertical Datum: m AHD





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**FIGURE C07
MODIFICATION MEASURE FM07
SCHEMATISATION**



-  Study Area
-  Residential Levees

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0 2 4 6 km

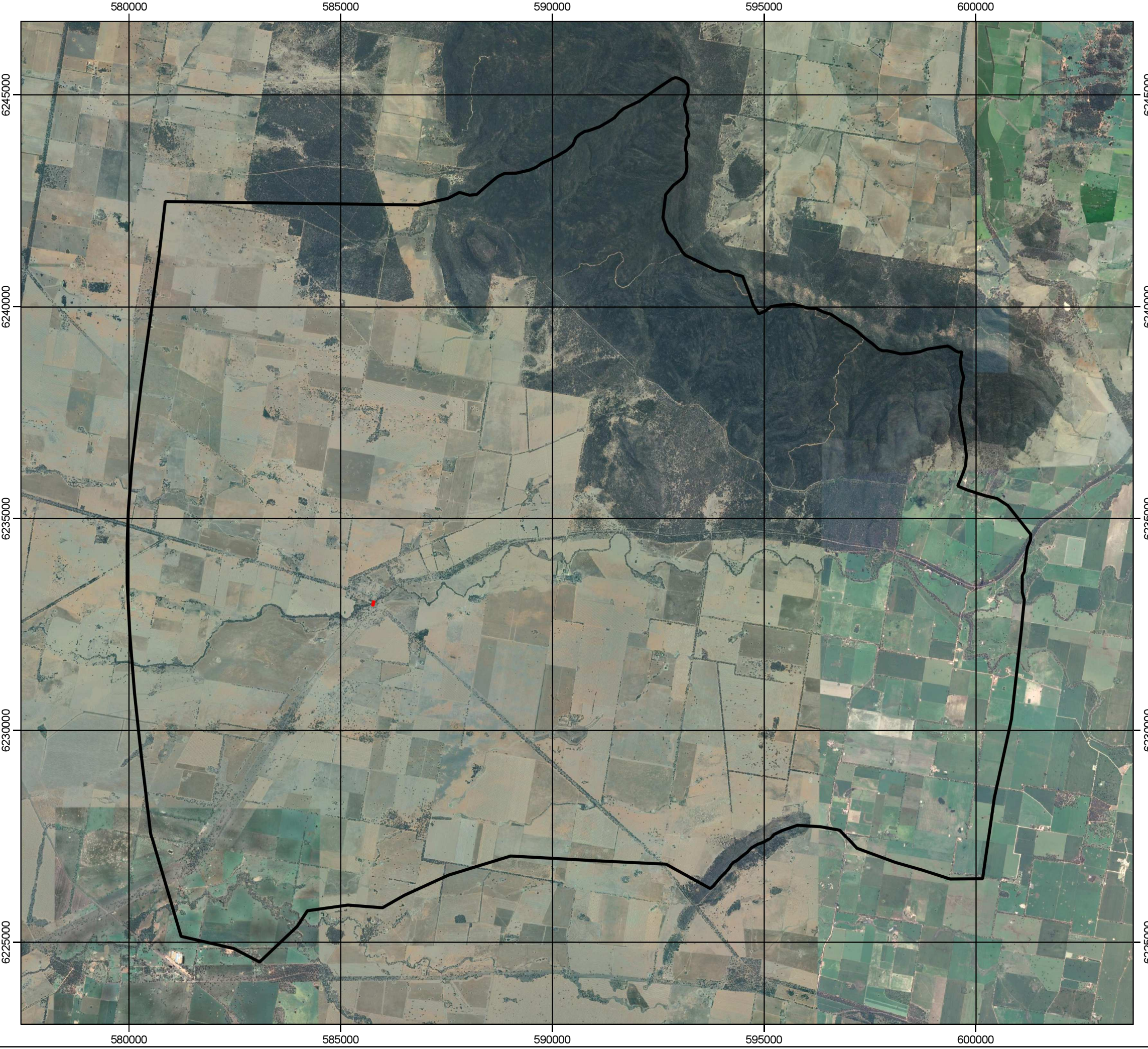
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FIGURE C08
MODIFICATION MEASURE FM08
SCHEMATISATION



-  Study Area
-  Single Span Bridge

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0 2 4 6 km

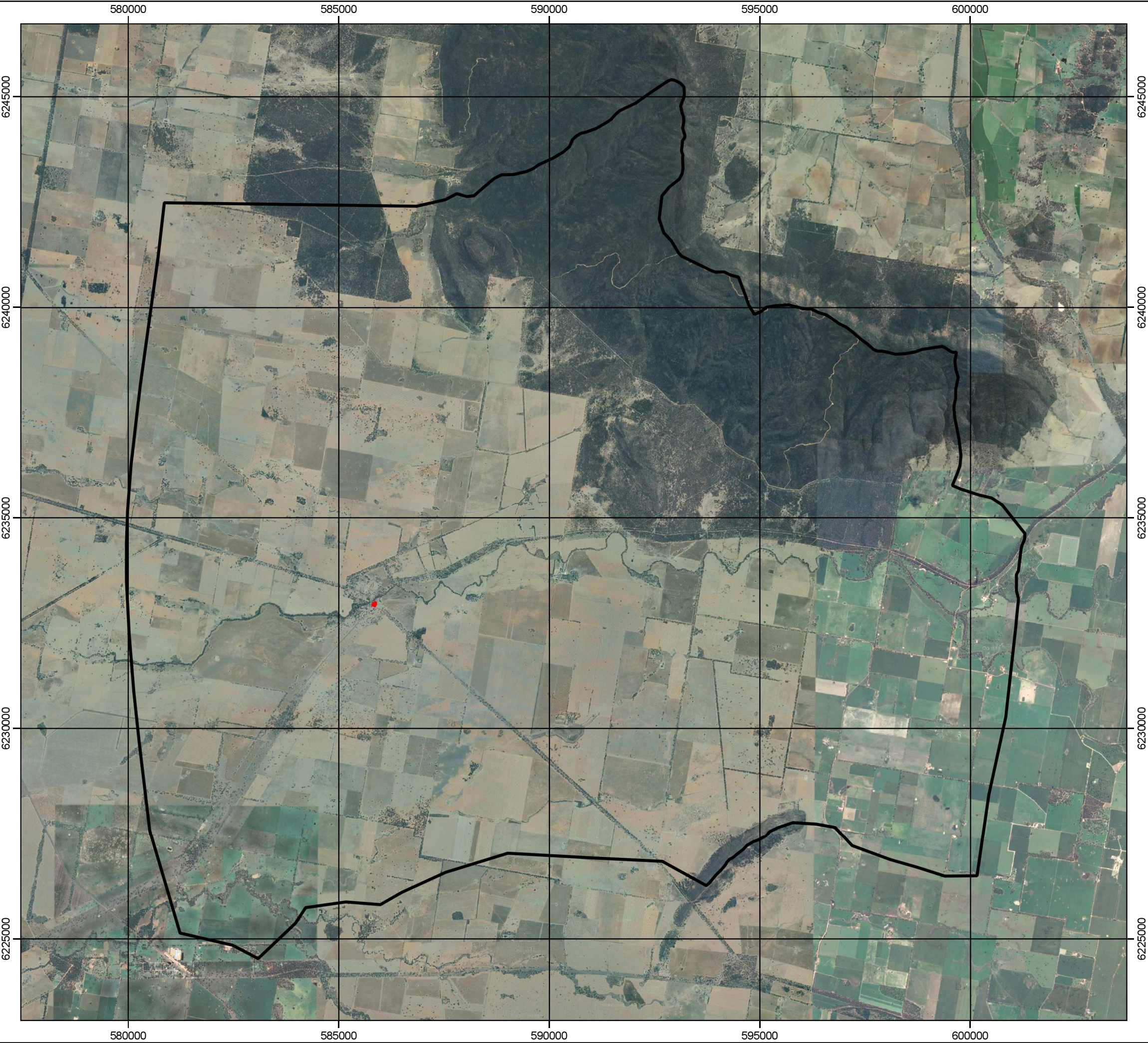
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Vertical Datum: m AHD





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**FIGURE C09
MODIFICATION MEASURE FM09
SCHEMATISATION**



-  Study Area
-  Levelled Mound

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0 2 4 6 km

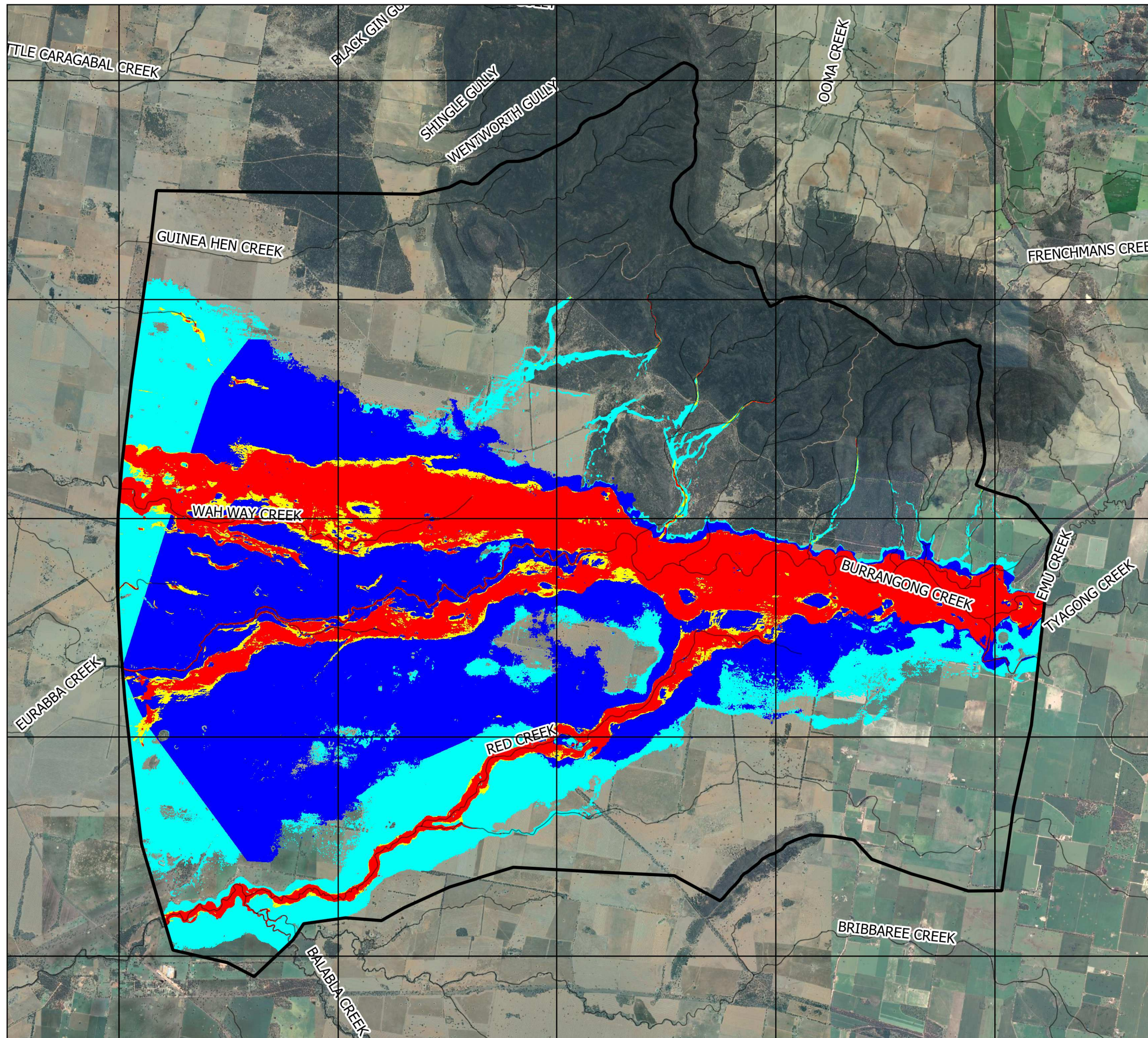
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Vertical Datum: m AHD



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**FIGURE C10
MODIFICATION MEASURE FM10
SCHEMATISATION**



- Study Area
- High Hazard Floodway
- Low Hazard Floodway
- Intermediate Floodplain
- Outer Floodplain

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0 2 4 6 km

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Vertical Datum: m AHD



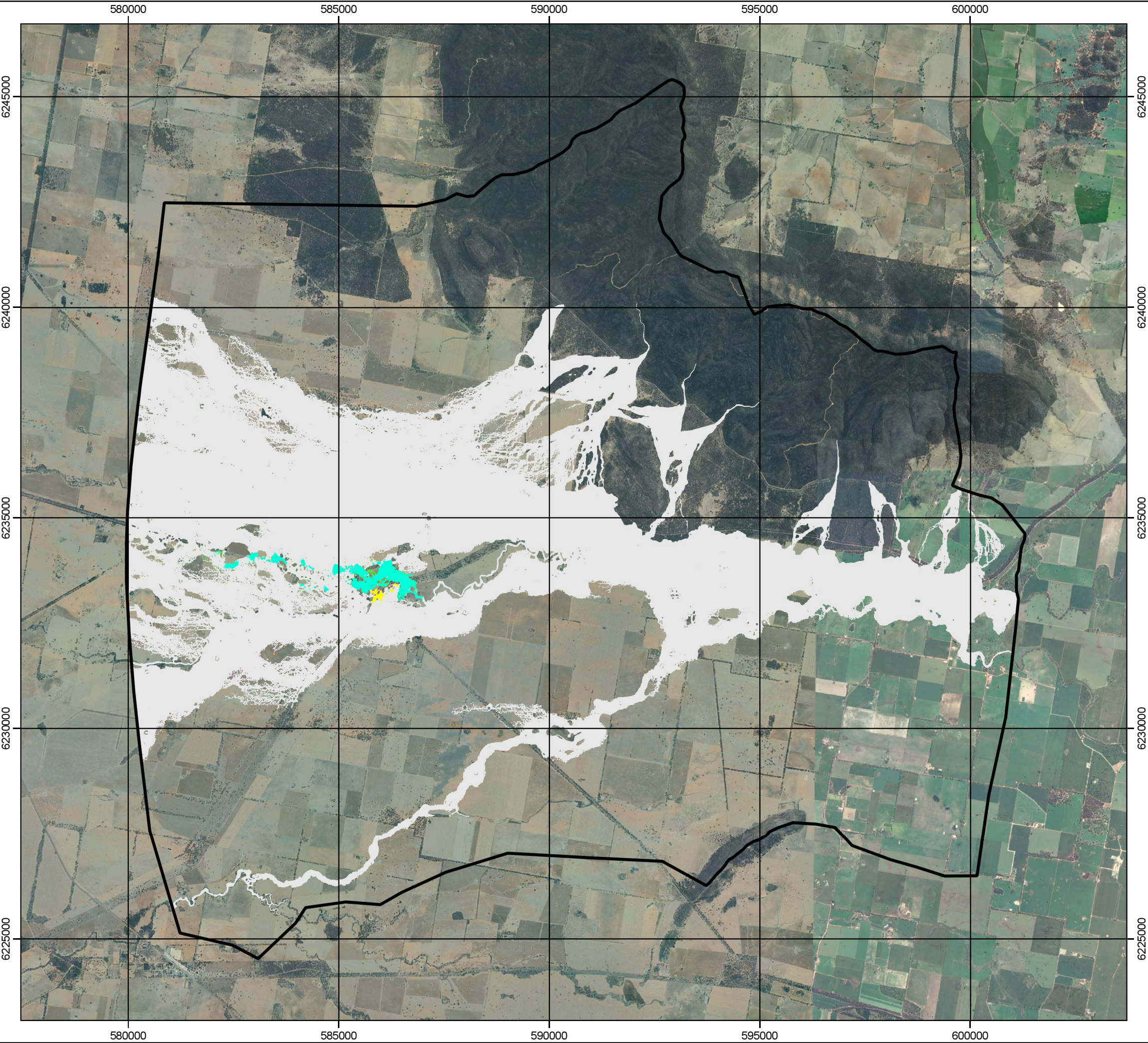
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FIGURE C11 MODIFICATION MEASURE PM01 SCHEMATISATION

APPENDIX D

ESTIMATE OF BENEFITS



- Study Area
- Peak Flood Level Difference (m)
- ≤ -0.10
 - 0.10 to -0.05
 - 0.05 to -0.01
 - 0.01 to 0.01
 - 0.01 to 0.05
 - 0.05 to 0.10
 - 0.10 to 0.30
 - > 0.30
- No Longer Flooded
- Newly Flooded

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0 2 4 6 km

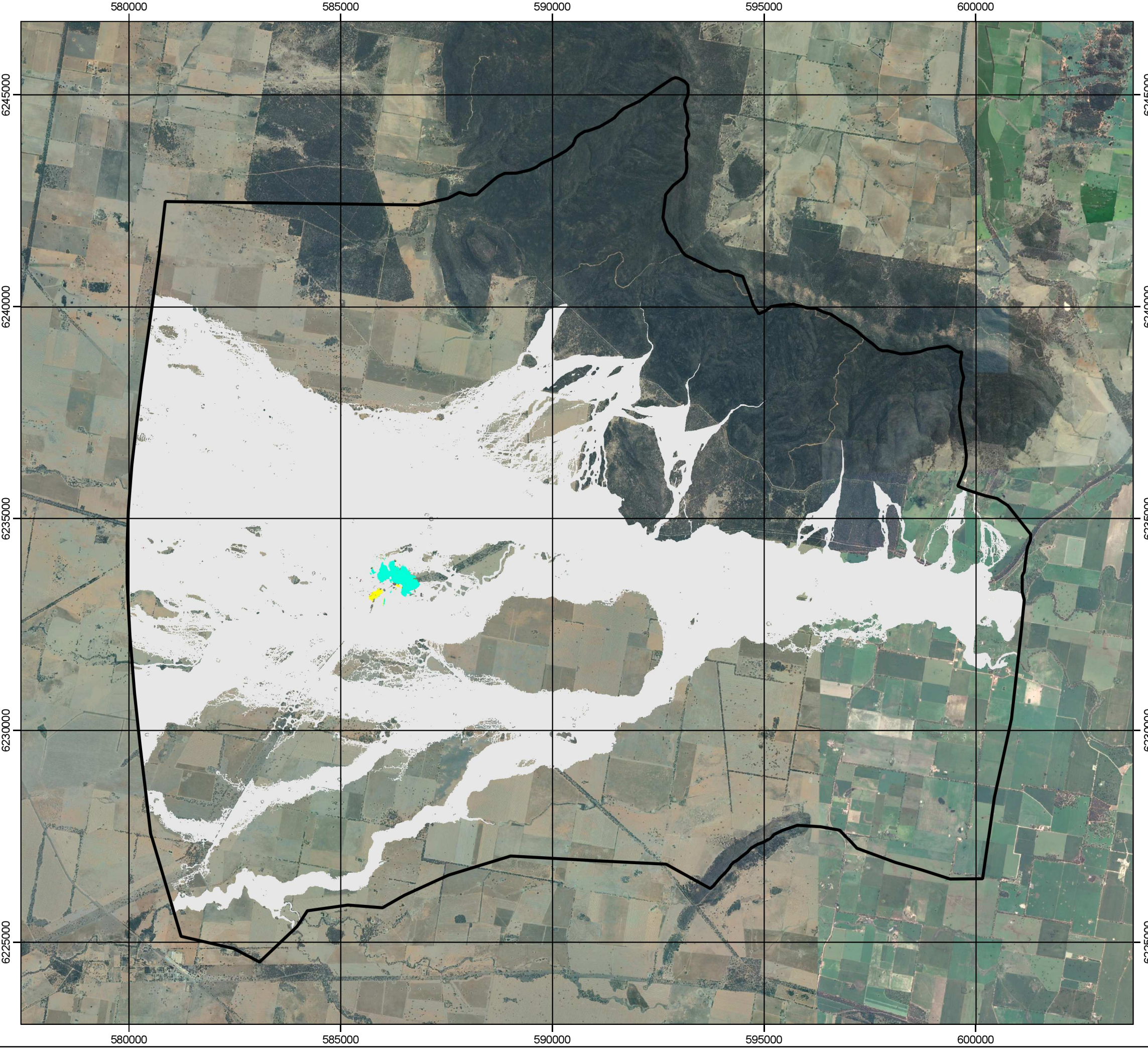
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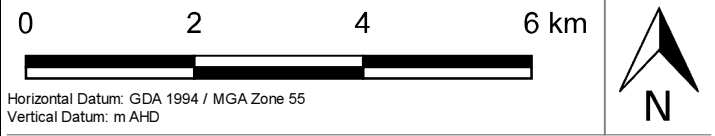
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FIGURE D01
MODIFICATION MEASURE FM01
PEAK FLOOD LEVEL DIFFERENCE
5% AEP EVENT



- Study Area
- Peak Flood Level Difference (m)
- <= -0.10
 - 0.10 to -0.05
 - 0.05 to -0.01
 - 0.01 to 0.01
 - 0.01 to 0.05
 - 0.05 to 0.10
 - 0.10 to 0.30
 - > 0.30
- No Longer Flooded
- Newly Flooded

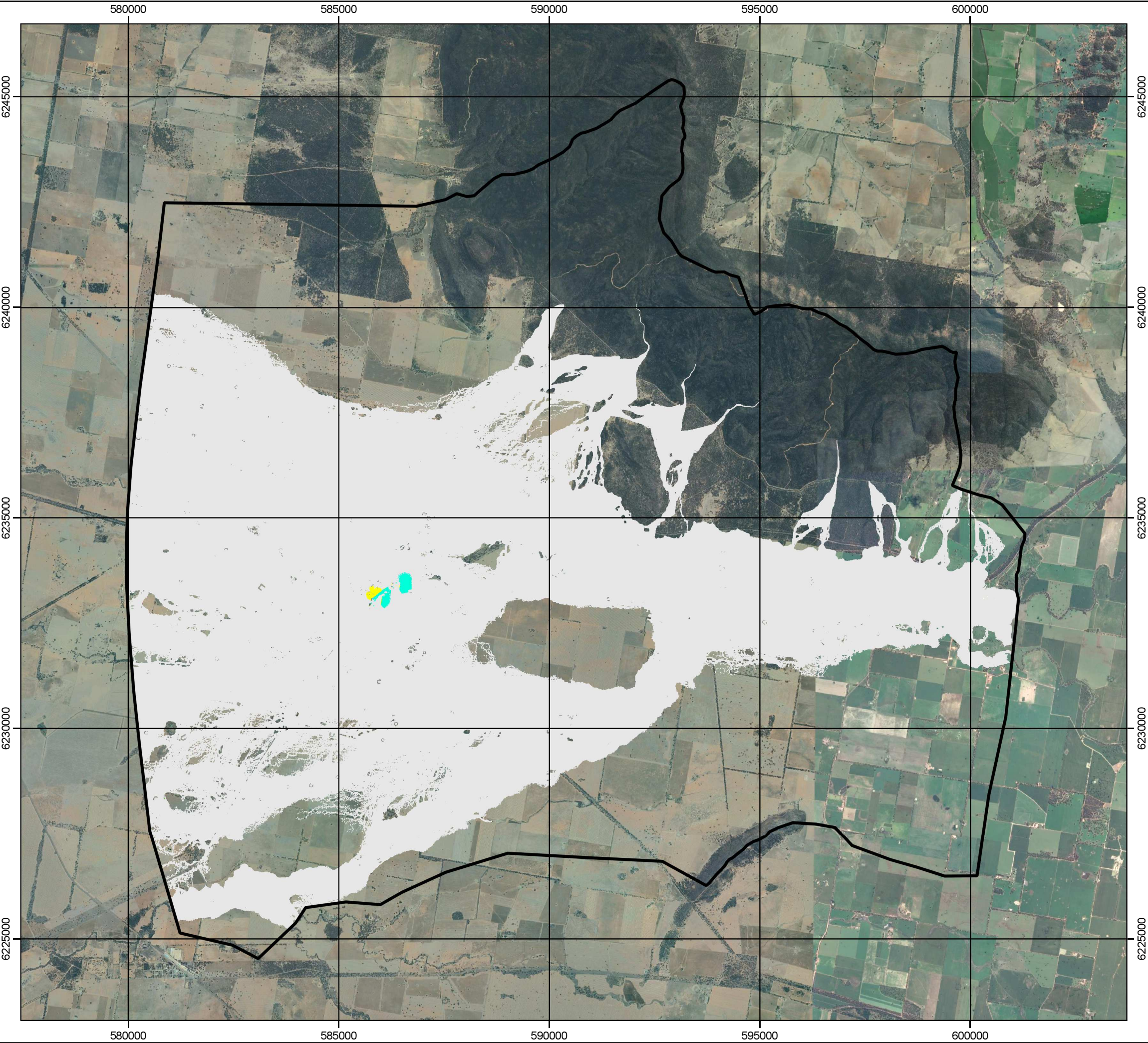
Disclaimer: The material contained herein is provided for general information purposes only. Any action you take based upon the information contained herein is strictly at your own risk. Professional advice should be sought in relation to your own specific circumstances.



BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D02
MODIFICATION MEASURE FM01
PEAK FLOOD LEVEL DIFFERENCE
1% AEP EVENT



- Study Area
- Peak Flood Level Difference (m)
- <= -0.10
 - 0.10 to -0.05
 - 0.05 to -0.01
 - 0.01 to 0.01
 - 0.01 to 0.05
 - 0.05 to 0.10
 - 0.10 to 0.30
 - > 0.30
- No Longer Flooded
- Newly Flooded

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0 2 4 6 km

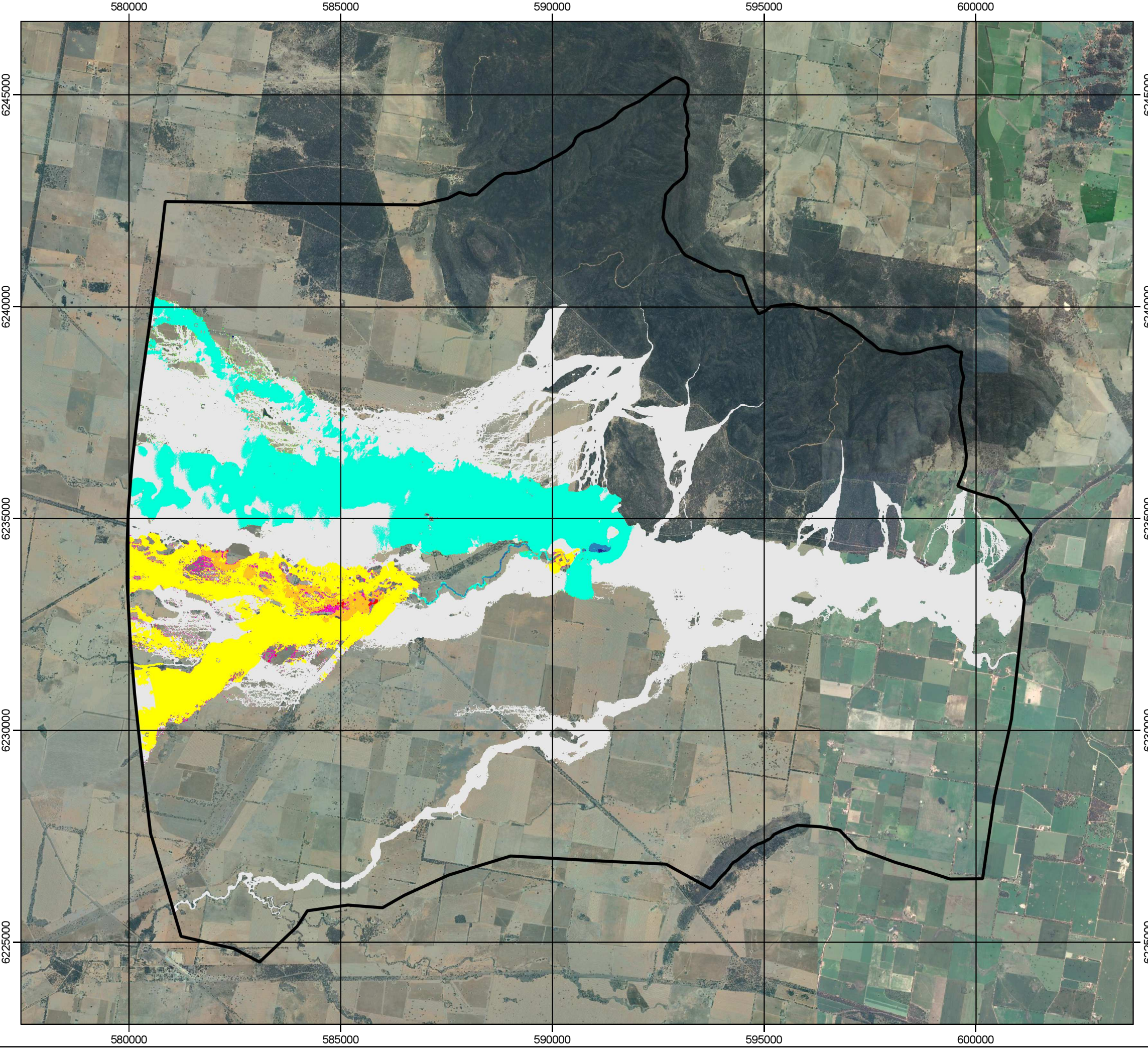
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

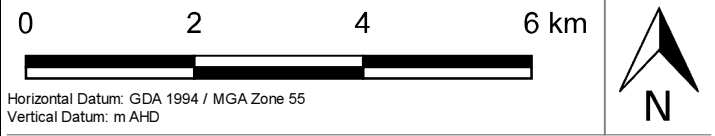
Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D03
MODIFICATION MEASURE FM01
PEAK FLOOD LEVEL DIFFERENCE
0.2% AEP EVENT



- Study Area
- Peak Flood Level Difference (m)
 - <= -0.10
 - 0.10 to -0.05
 - 0.05 to -0.01
 - 0.01 to 0.01
 - 0.01 to 0.05
 - 0.05 to 0.10
 - 0.10 to 0.30
 - > 0.30
- No Longer Flooded
- Newly Flooded

Disclaimer: The material contained herein is provided for general information purposes only. Any action you take based upon the information contained herein is strictly at your own risk. Professional advice should be sought in relation to your own specific circumstances.

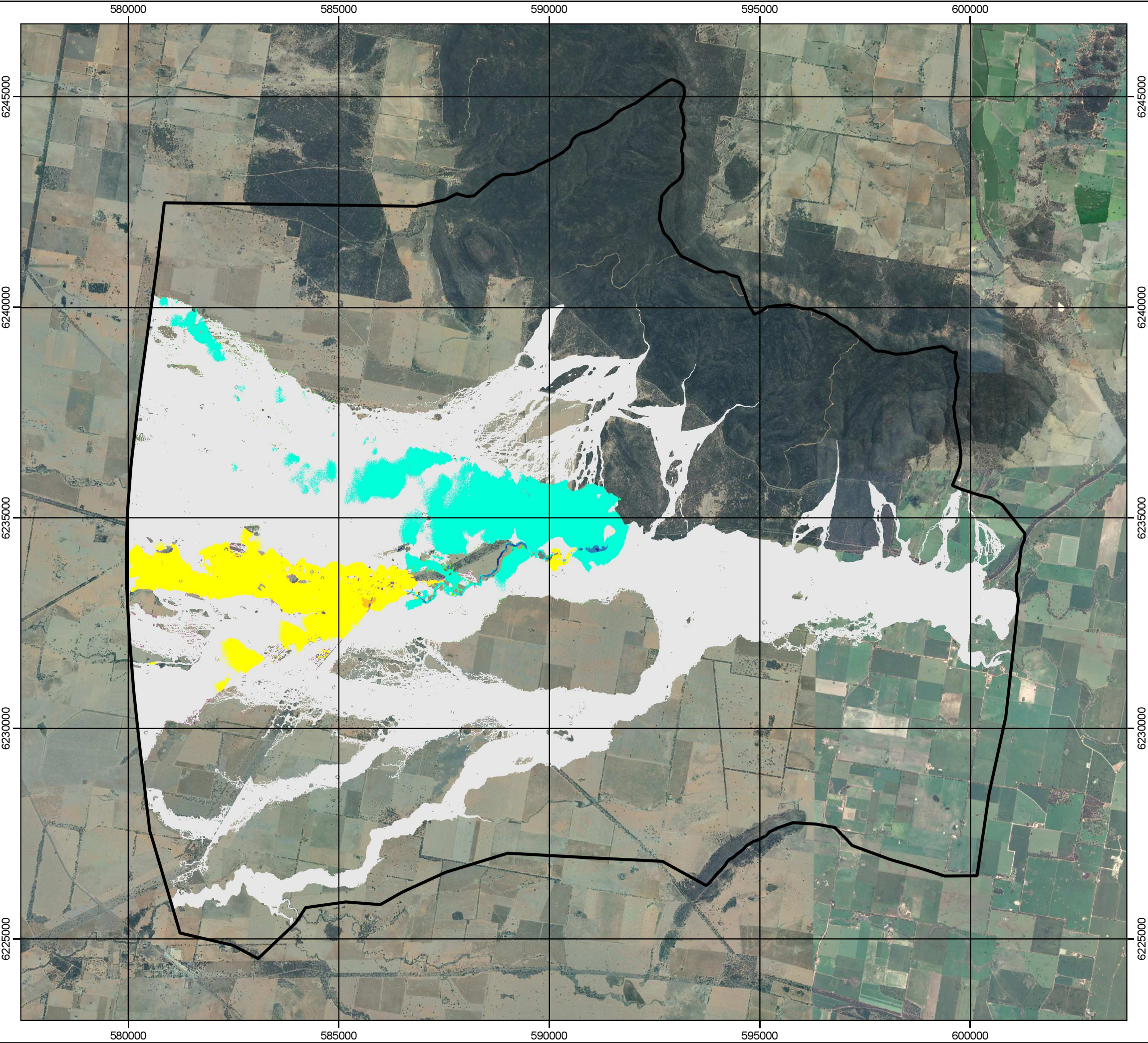


Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD

BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D04
MODIFICATION MEASURE FM02
PEAK FLOOD LEVEL DIFFERENCE
5% AEP EVENT



- Study Area
- Peak Flood Level Difference (m)
- <= -0.10
 - 0.10 to -0.05
 - 0.05 to -0.01
 - 0.01 to 0.01
 - 0.01 to 0.05
 - 0.05 to 0.10
 - 0.10 to 0.30
 - > 0.30
- No Longer Flooded
- Newly Flooded

Disclaimer: The material contained herein is provided for general information purposes only. Any action you take based upon the information contained herein is strictly at your own risk. Professional advice should be sought in relation to your own specific circumstances.

0 2 4 6 km

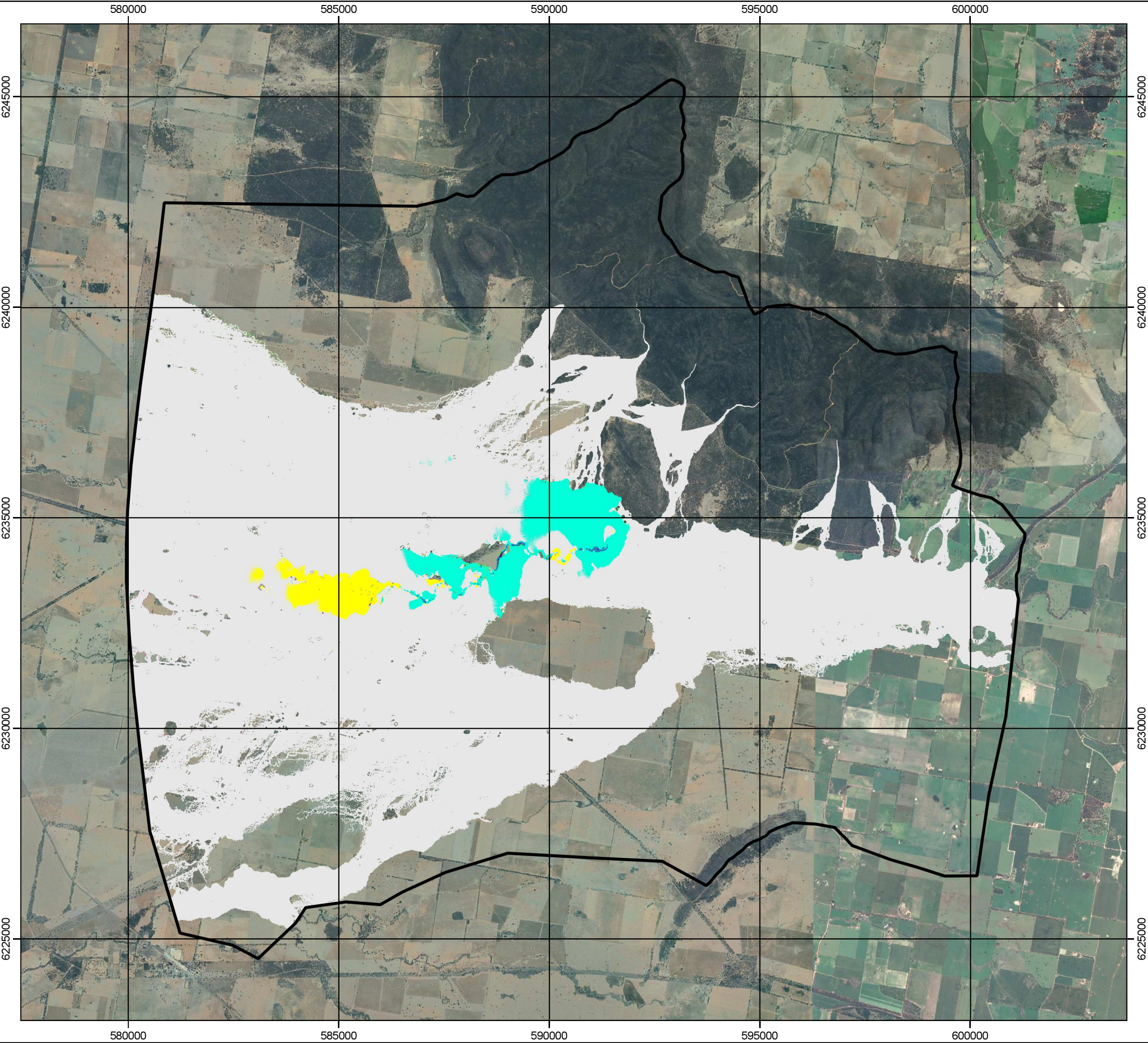
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D05
MODIFICATION MEASURE FM02
PEAK FLOOD LEVEL DIFFERENCE
1% AEP EVENT



- Study Area
- Peak Flood Level Difference (m)
- ≤ -0.10
 - 0.10 to -0.05
 - 0.05 to -0.01
 - 0.01 to 0.01
 - 0.01 to 0.05
 - 0.05 to 0.10
 - 0.10 to 0.30
 - > 0.30
- No Longer Flooded
- Newly Flooded

Disclaimer: The material contained herein is provided for general information purposes only. Any action you take based upon the information contained herein is strictly at your own risk. Professional advice should be sought in relation to your own specific circumstances.

0 2 4 6 km

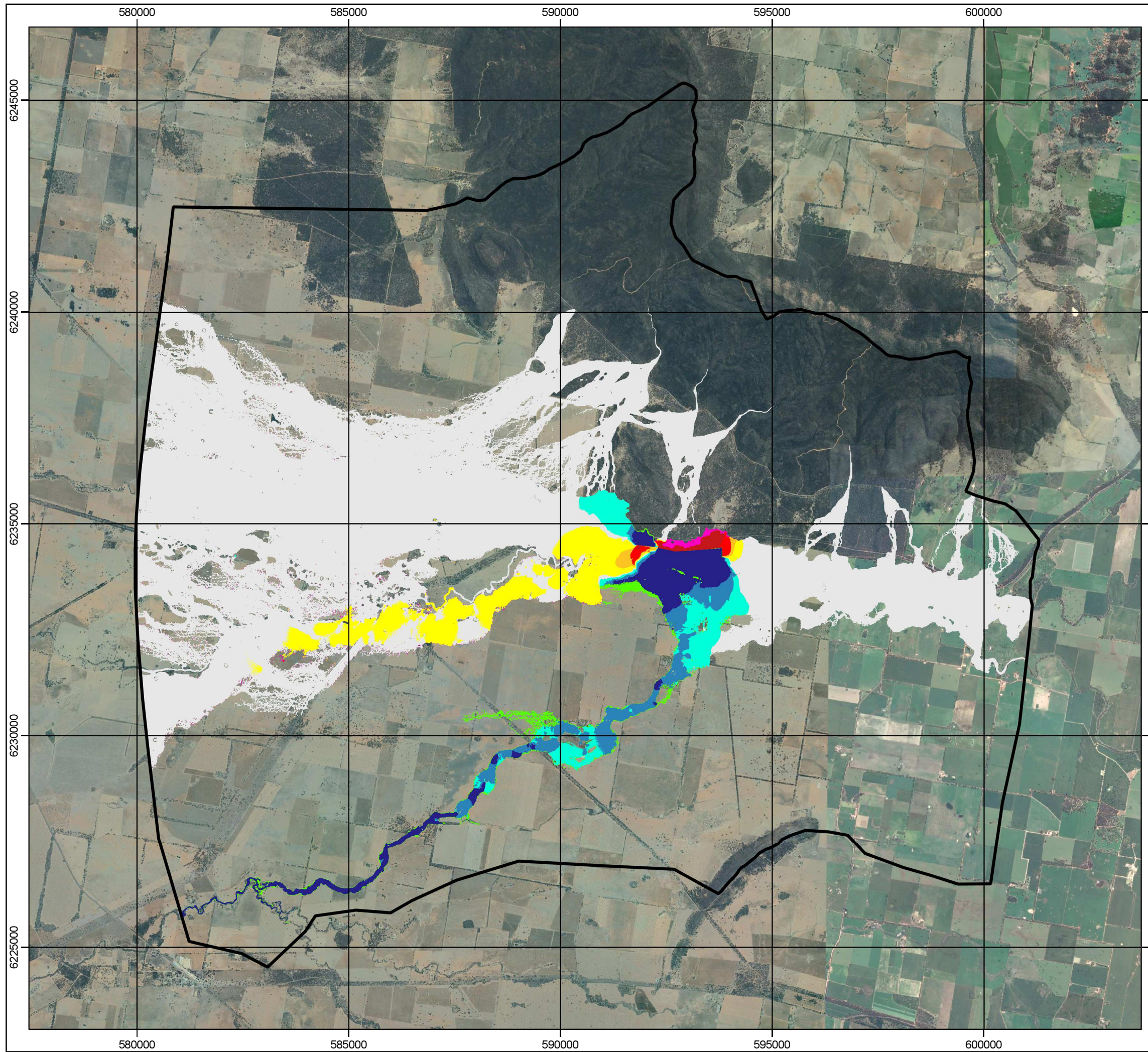
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

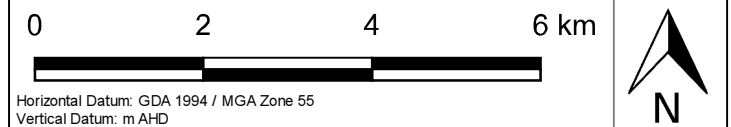
Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D06
MODIFICATION MEASURE FM02
PEAK FLOOD LEVEL DIFFERENCE
0.2% AEP EVENT



- Study Area
- Peak Flood Level Difference (m)
- <= -0.10
 - 0.10 to -0.05
 - 0.05 to -0.01
 - 0.01 to 0.01
 - 0.01 to 0.05
 - 0.05 to 0.10
 - 0.10 to 0.30
 - > 0.30
- No Longer Flooded
- Newly Flooded

Disclaimer: The material contained herein is provided for general information purposes only. Any action you take based upon the information contained herein is strictly at your own risk. Professional advice should be sought in relation to your own specific circumstances.

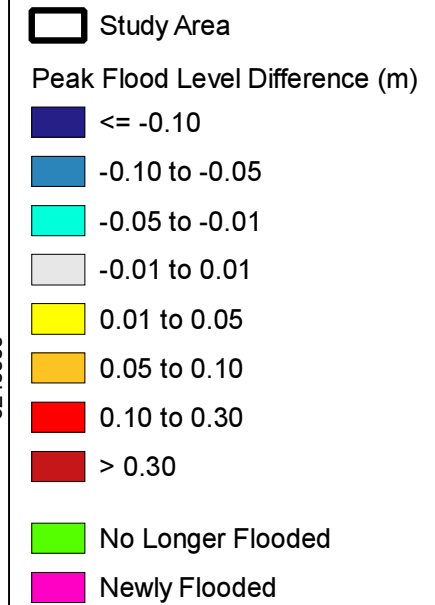
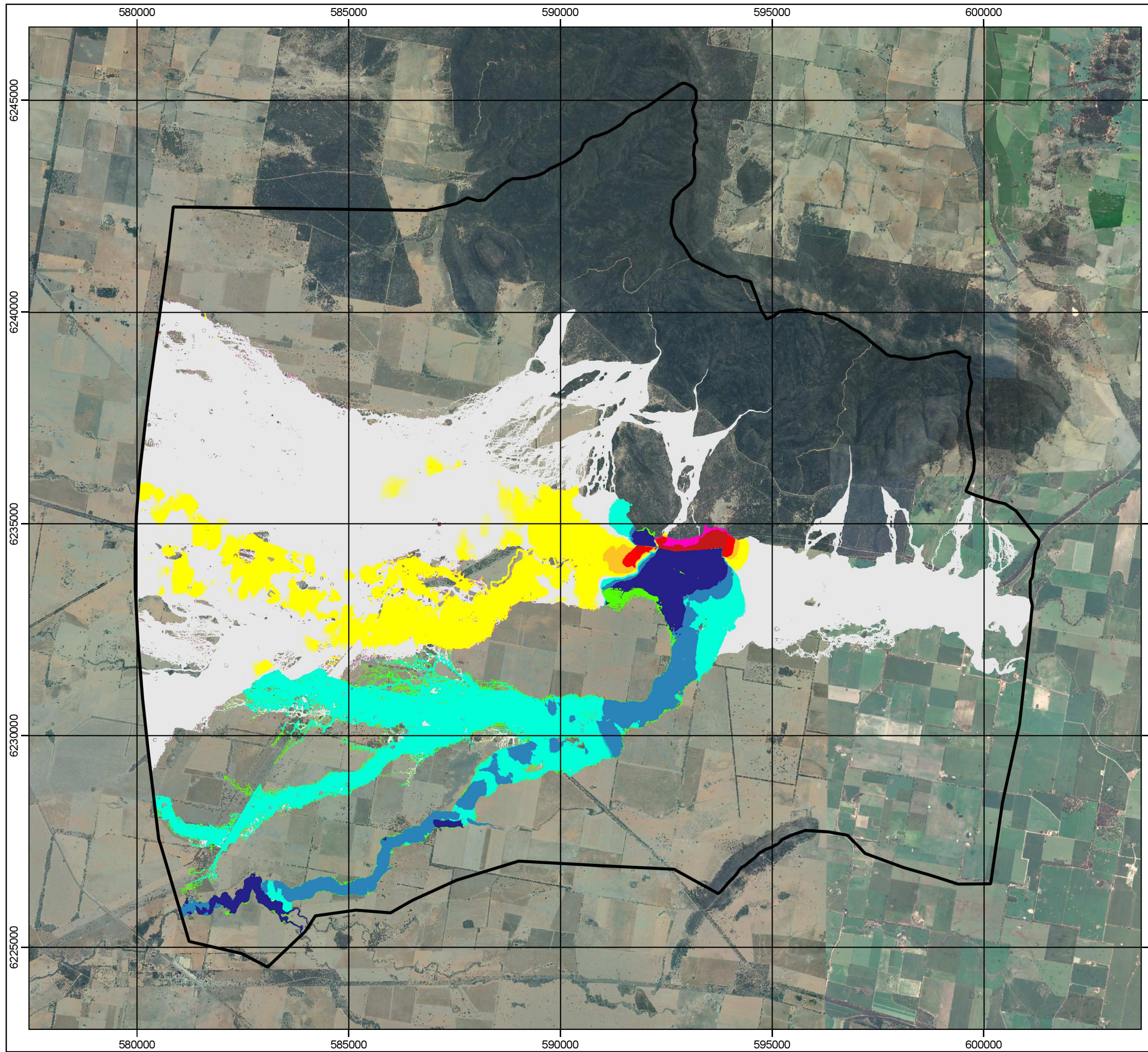


Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD

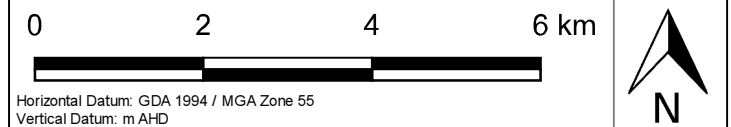
BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D07
MODIFICATION MEASURE FM03
PEAK FLOOD LEVEL DIFFERENCE
5% AEP EVENT



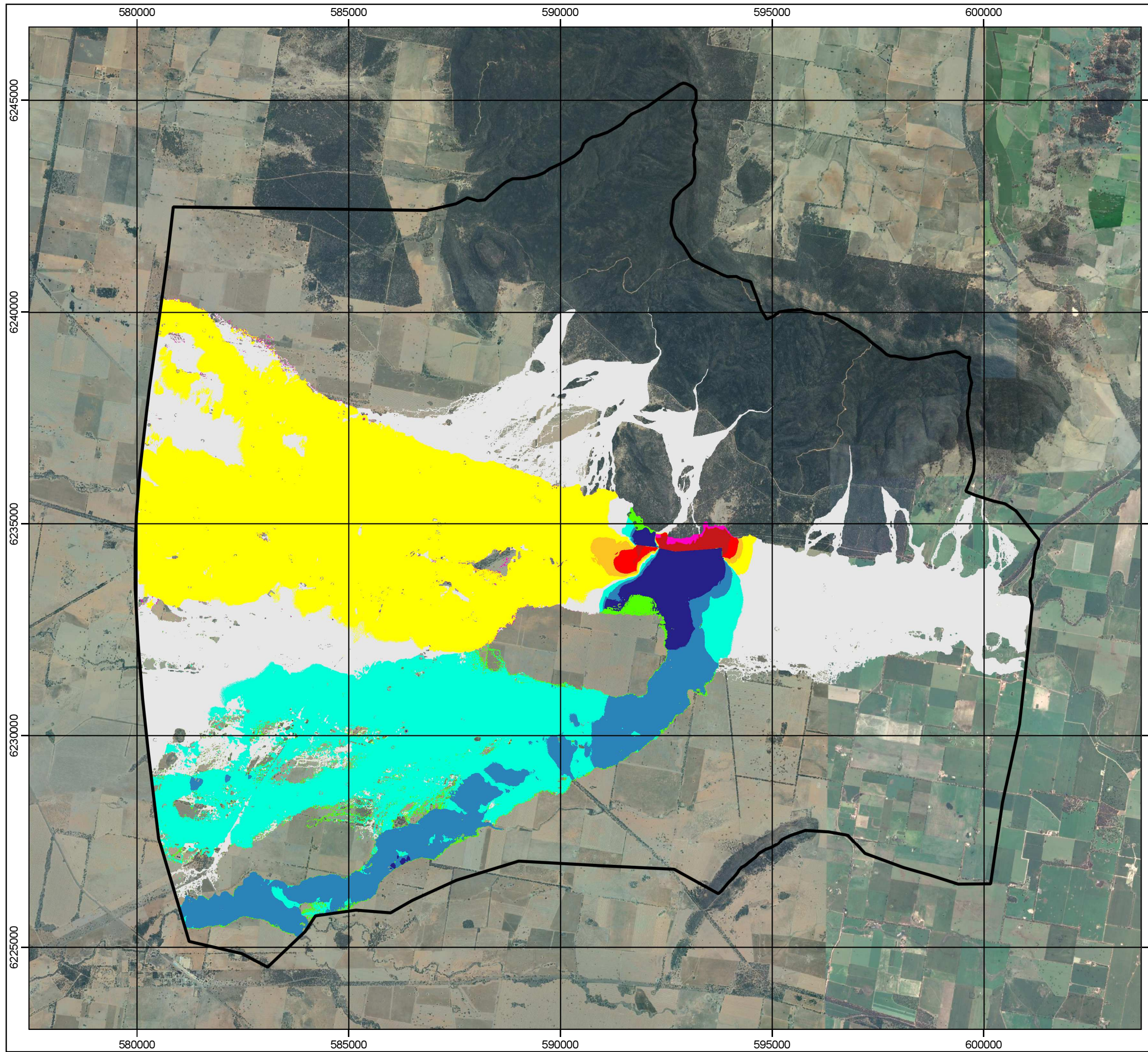
Disclaimer: The material contained herein is provided for general information purposes only. Any action you take based upon the information contained herein is strictly at your own risk. Professional advice should be sought in relation to your own specific circumstances.



BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

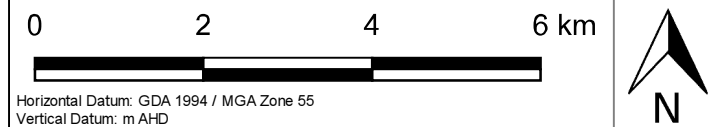
Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D08
MODIFICATION MEASURE FM03
PEAK FLOOD LEVEL DIFFERENCE
1% AEP EVENT



- Study Area
- Peak Flood Level Difference (m)
- <= -0.10
 - 0.10 to -0.05
 - 0.05 to -0.01
 - 0.01 to 0.01
 - 0.01 to 0.05
 - 0.05 to 0.10
 - 0.10 to 0.30
 - > 0.30
 - No Longer Flooded
 - Newly Flooded

Disclaimer: The material contained herein is provided for general information purposes only. Any action you take based upon the information contained herein is strictly at your own risk. Professional advice should be sought in relation to your own specific circumstances.

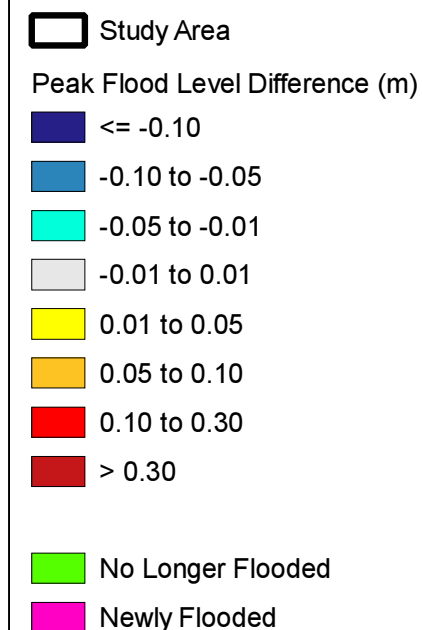


Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD

BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D9
MODIFICATION MEASURE FM03
PEAK FLOOD LEVEL DIFFERENCE
0.2% AEP EVENT



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0 2 4 6 km

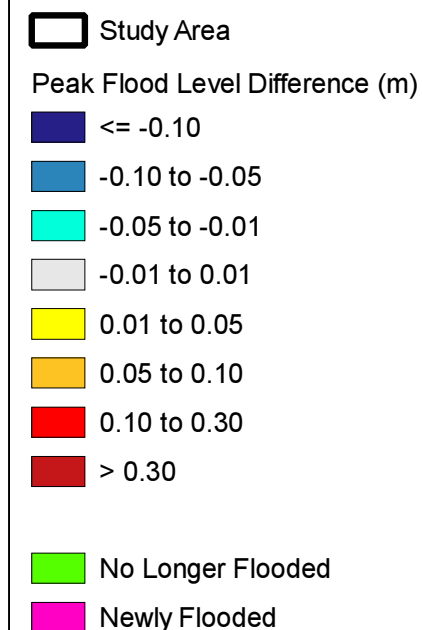
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D10
MODIFICATION MEASURE FM04
PEAK FLOOD LEVEL DIFFERENCE
5% AEP EVENT



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0 2 4 6 km


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




BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN


Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP


FIGURE D11
MODIFICATION MEASURE FM04
PEAK FLOOD LEVEL DIFFERENCE
1% AEP EVENT


 Study Area


Peak Flood Level Difference (m)


 ≤ -0.10


 -0.10 to -0.05

 -0.05 to -0.01

 -0.01 to 0.01


 0.01 to 0.05

 0.05 to 0.10

 0.10 to 0.30

 > 0.30

BIM_E002_RF500YR_0540m_TP06_FM01A_h_dif_wd

 No Longer Flooded

 Newly Flooded

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0 2 4 6 km

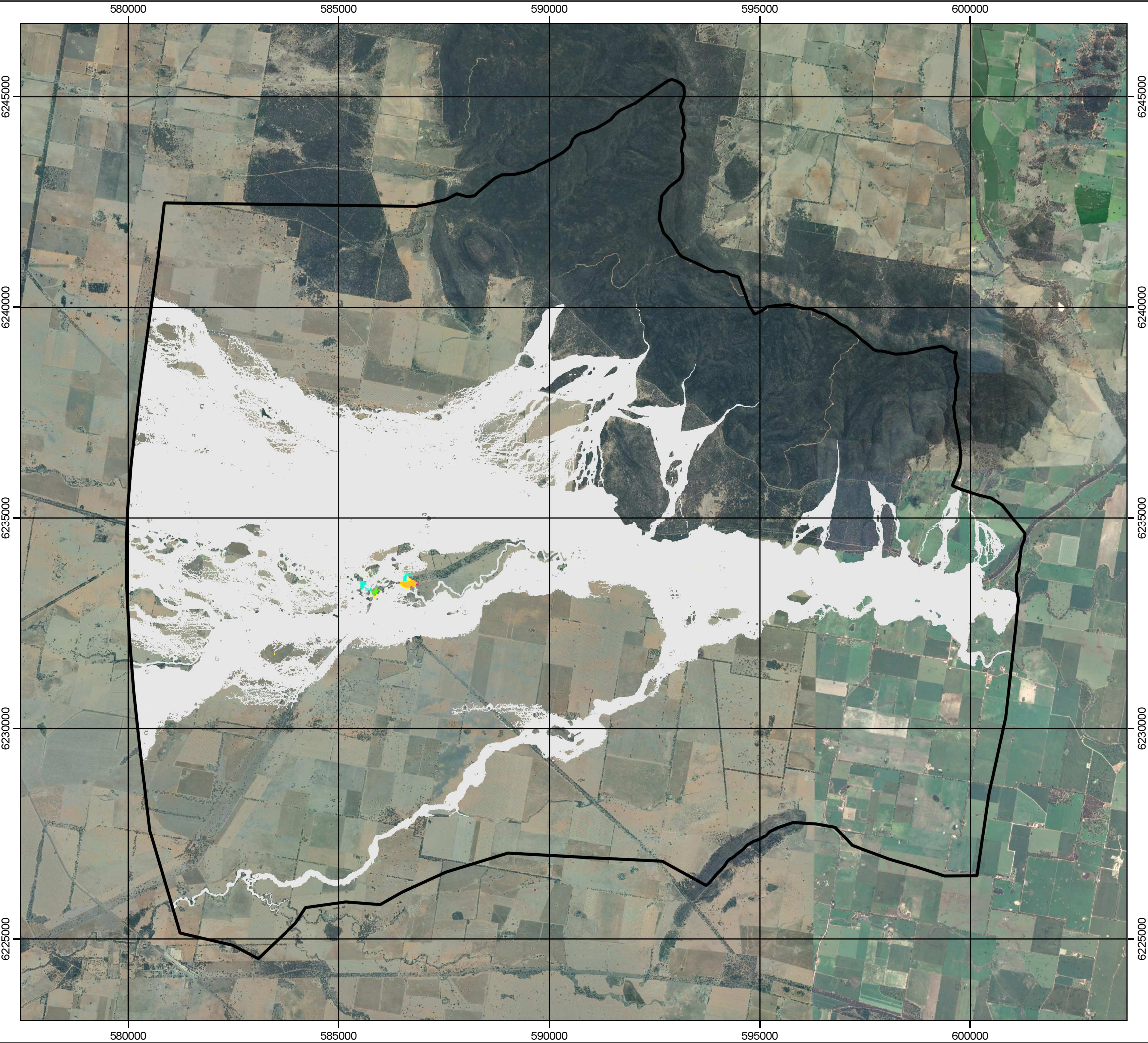
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D12
MODIFICATION MEASURE FM04
PEAK FLOOD LEVEL DIFFERENCE
0.2% AEP EVENT



- Study Area
- Peak Flood Level Difference (m)
- ≤ -0.10
 - 0.10 to -0.05
 - 0.05 to -0.01
 - 0.01 to 0.01
 - 0.01 to 0.05
 - 0.05 to 0.10
 - 0.10 to 0.30
 - > 0.30
- No Longer Flooded
- Newly Flooded

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0 2 4 6 km

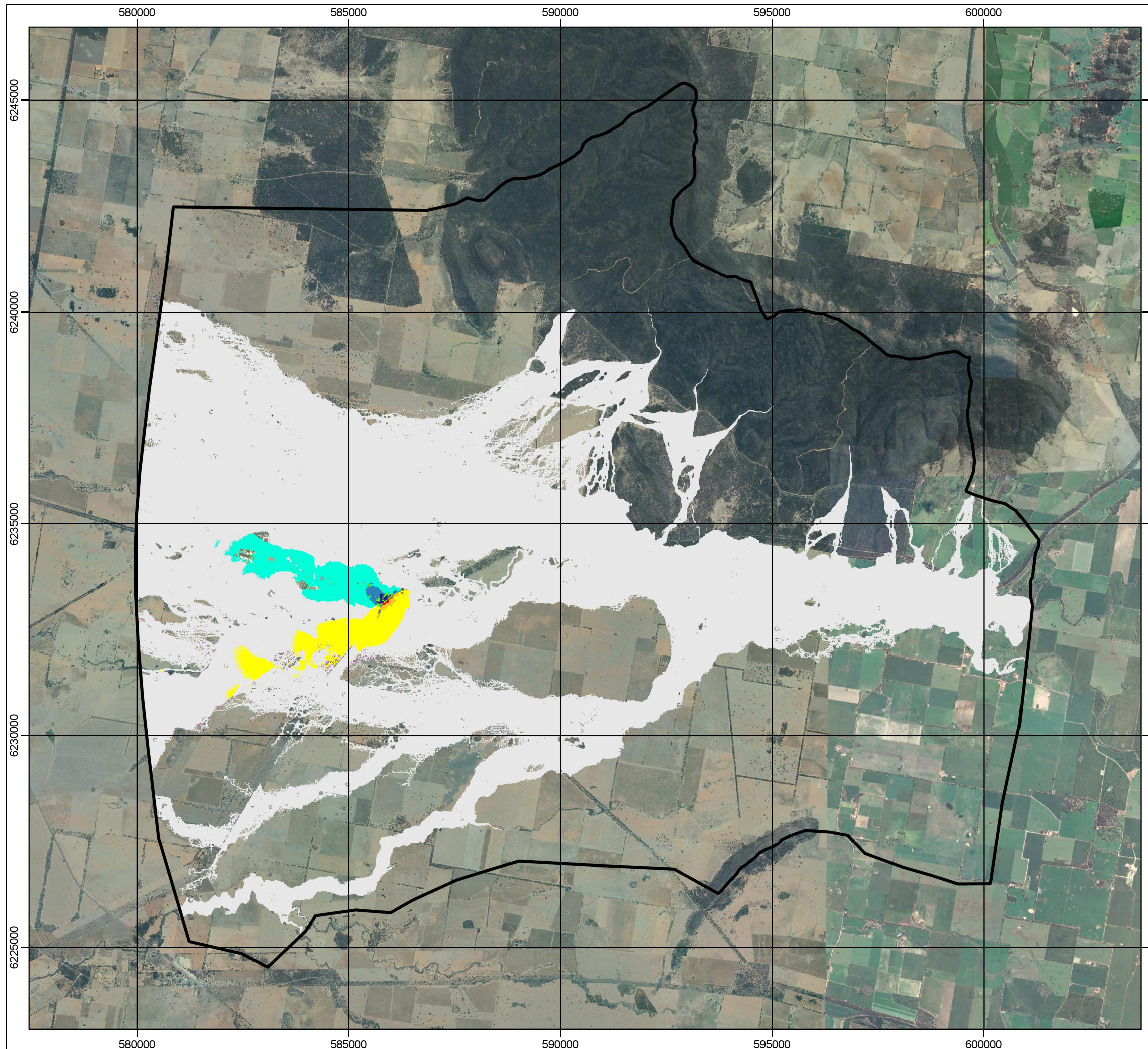
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

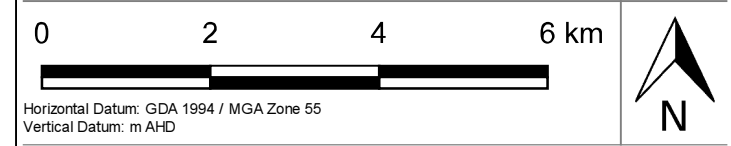
Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D13
MODIFICATION MEASURE FM05
PEAK FLOOD LEVEL DIFFERENCE
5% AEP EVENT



- Study Area
- Peak Flood Level Difference (m)
- <= -0.10
 - 0.10 to -0.05
 - 0.05 to -0.01
 - 0.01 to 0.01
 - 0.01 to 0.05
 - 0.05 to 0.10
 - 0.10 to 0.30
 - > 0.30
- No Longer Flooded
- Newly Flooded

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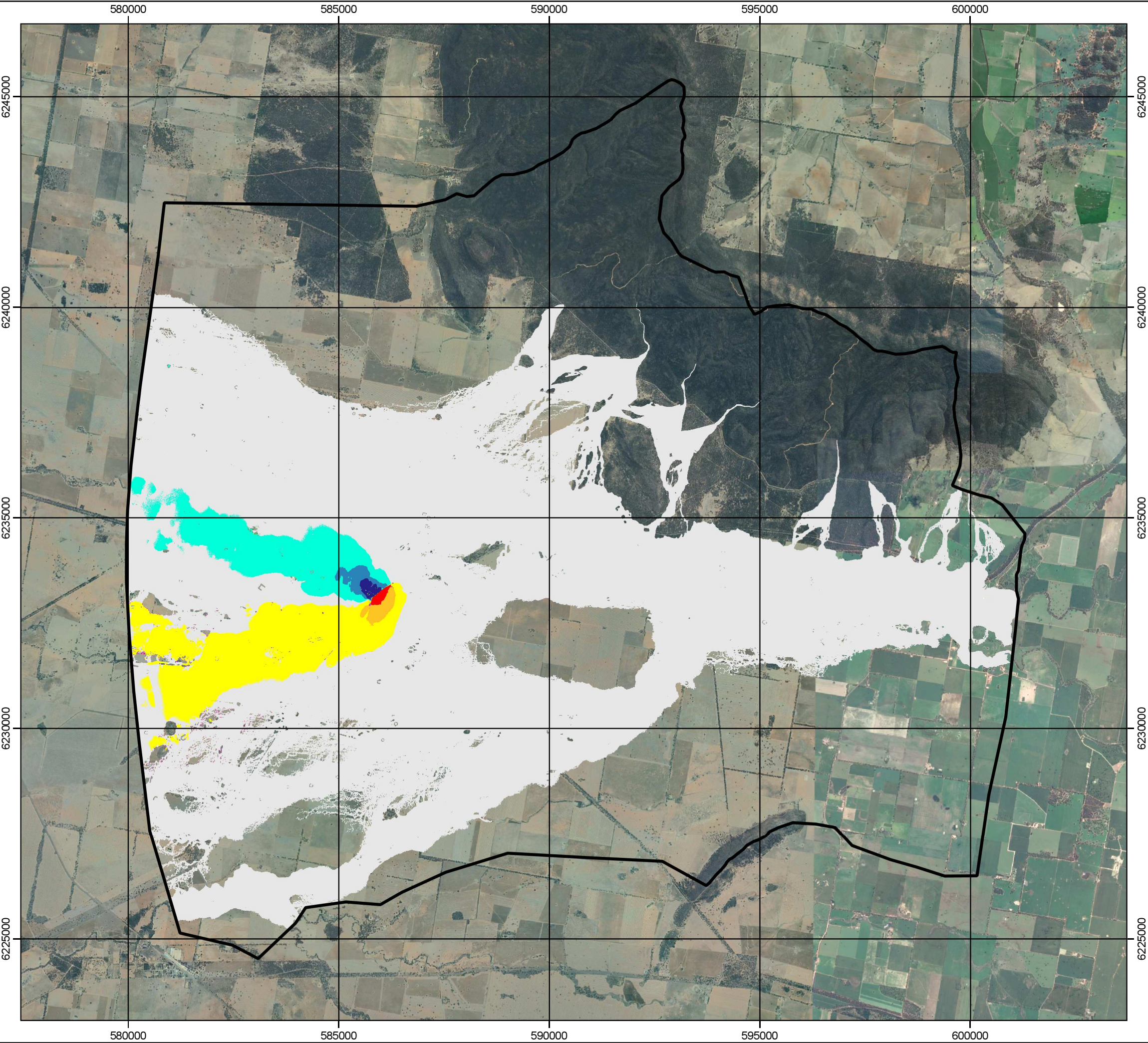


Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD

BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D14
MODIFICATION MEASURE FM05
PEAK FLOOD LEVEL DIFFERENCE
1% AEP EVENT



- Study Area
- Peak Flood Level Difference (m)
- <= -0.10
 - 0.10 to -0.05
 - 0.05 to -0.01
 - 0.01 to 0.01
 - 0.01 to 0.05
 - 0.05 to 0.10
 - 0.10 to 0.30
 - > 0.30
- No Longer Flooded
- Newly Flooded

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0 2 4 6 km

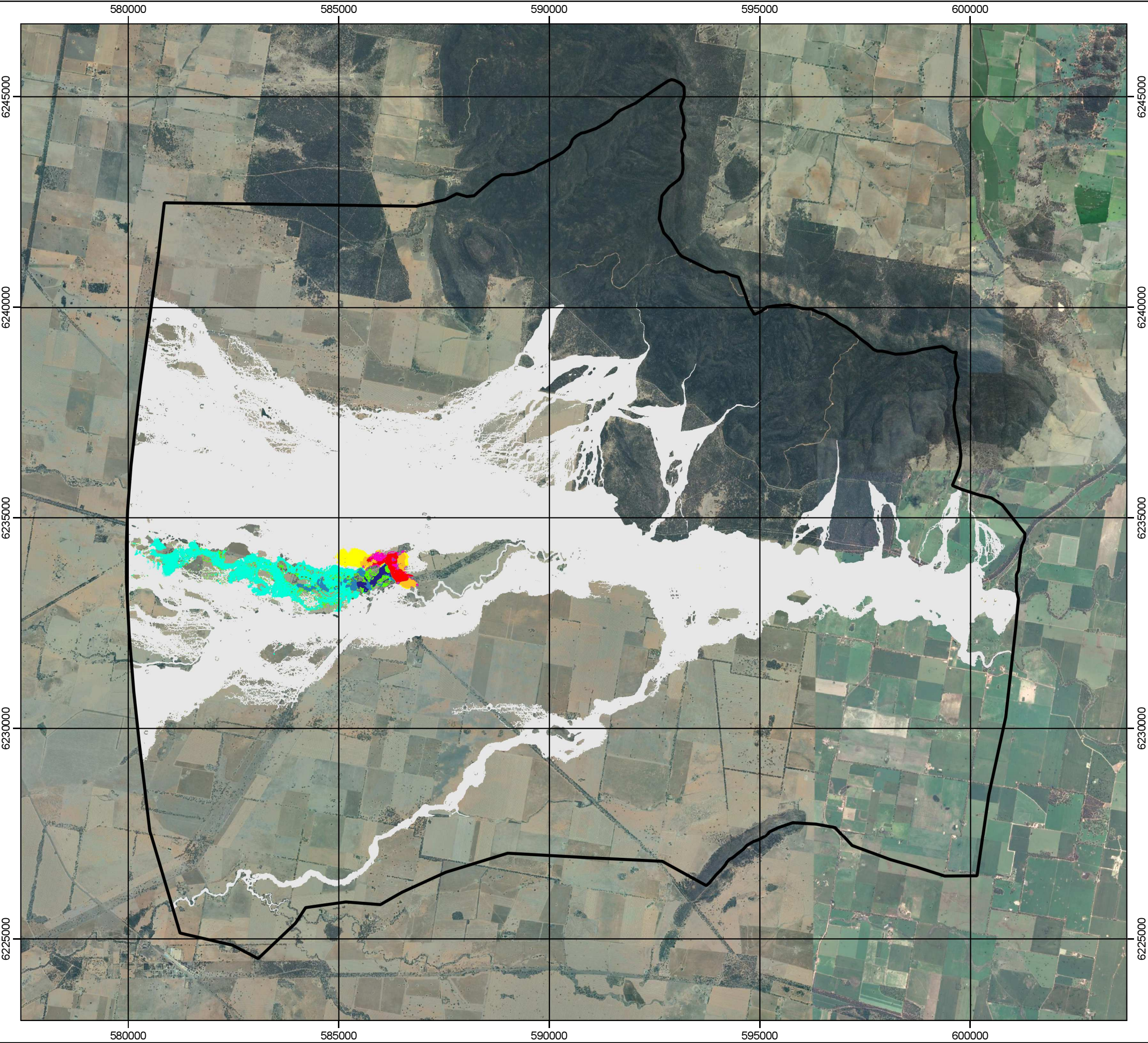
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D15
MODIFICATION MEASURE FM05
PEAK FLOOD LEVEL DIFFERENCE
0.2% AEP EVENT



- Study Area
- Peak Flood Level Difference (m)
- ≤ -0.10
 - 0.10 to -0.05
 - 0.05 to -0.01
 - 0.01 to 0.01
 - 0.01 to 0.05
 - 0.05 to 0.10
 - 0.10 to 0.30
 - > 0.30
- No Longer Flooded
- Newly Flooded

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0 2 4 6 km

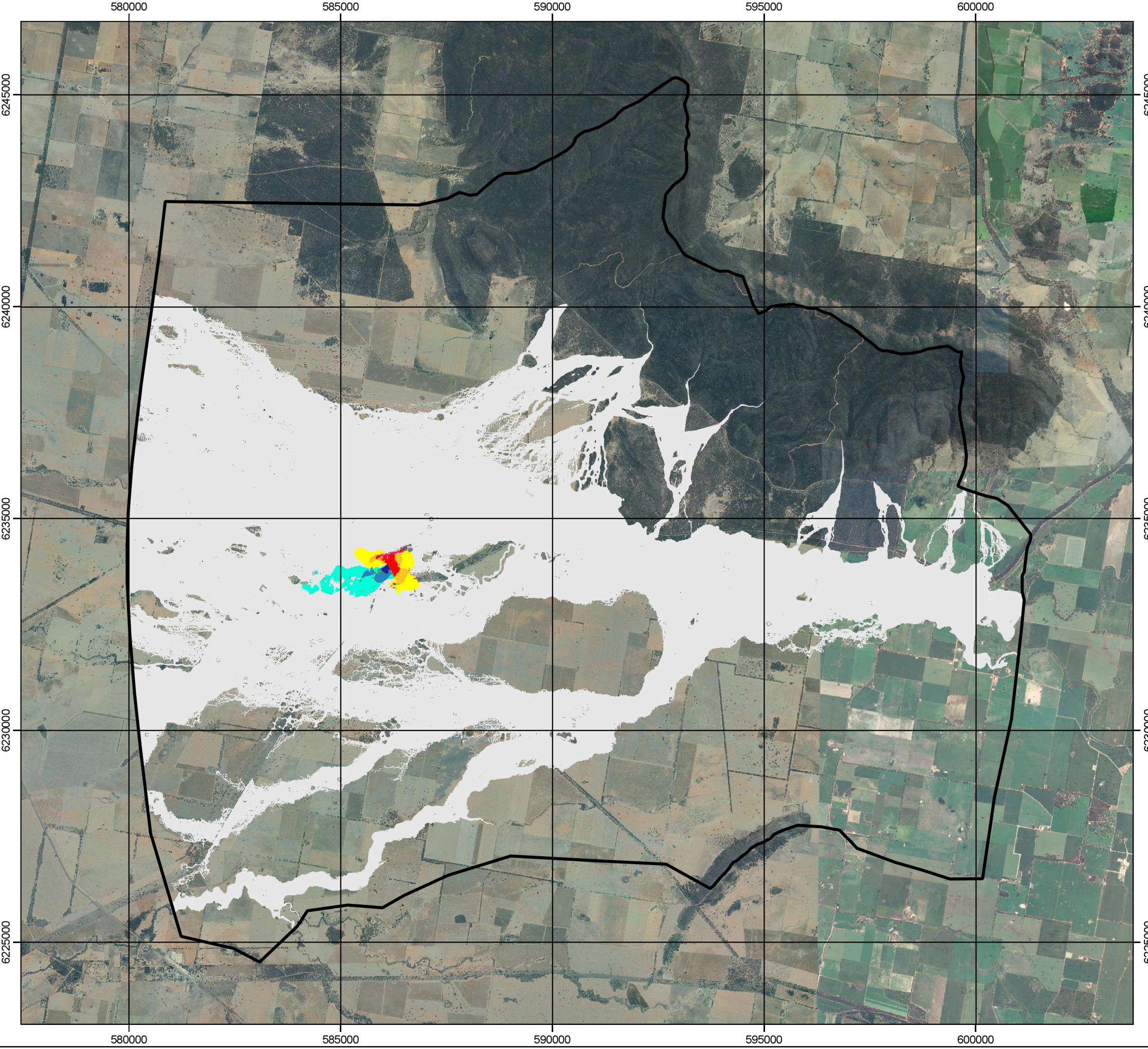
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

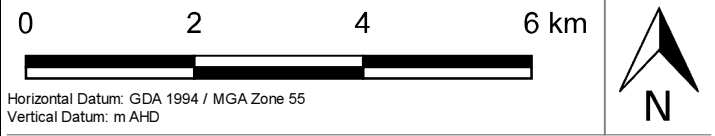
Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D16
MODIFICATION MEASURE FM06
PEAK FLOOD LEVEL DIFFERENCE
5% AEP EVENT



- Study Area
- Peak Flood Level Difference (m)
- <= -0.10
 - 0.10 to -0.05
 - 0.05 to -0.01
 - 0.01 to 0.01
 - 0.01 to 0.05
 - 0.05 to 0.10
 - 0.10 to 0.30
 - > 0.30
- No Longer Flooded
- Newly Flooded

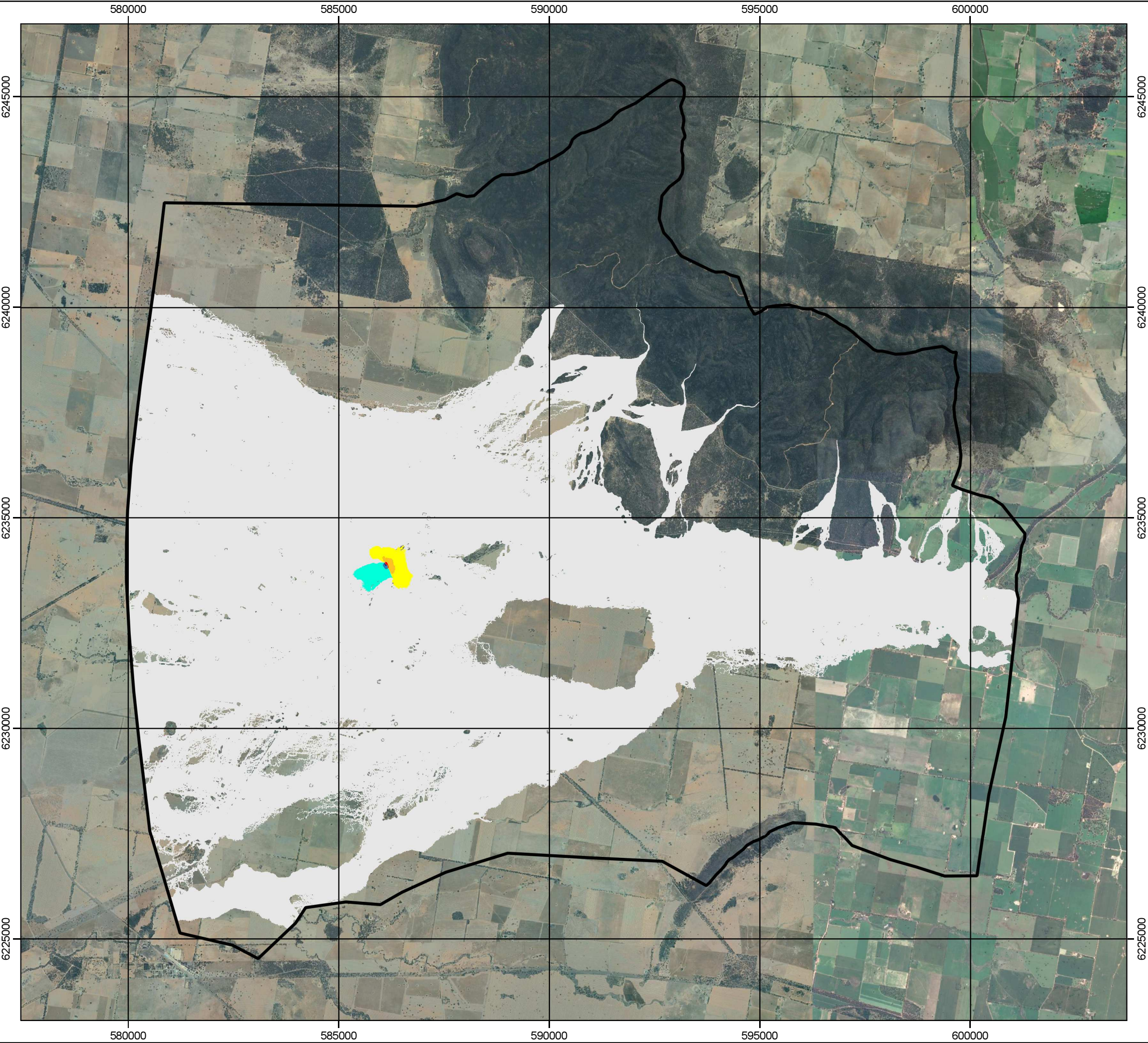
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BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D17
MODIFICATION MEASURE FM06
PEAK FLOOD LEVEL DIFFERENCE
1% AEP EVENT



- Study Area
- Peak Flood Level Difference (m)
- ≤ -0.10
 - 0.10 to -0.05
 - 0.05 to -0.01
 - 0.01 to 0.01
 - 0.01 to 0.05
 - 0.05 to 0.10
 - 0.10 to 0.30
 - > 0.30
- No Longer Flooded
- Newly Flooded

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0 2 4 6 km

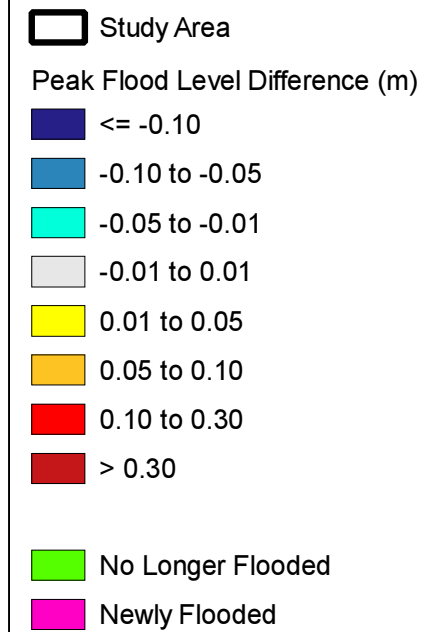
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



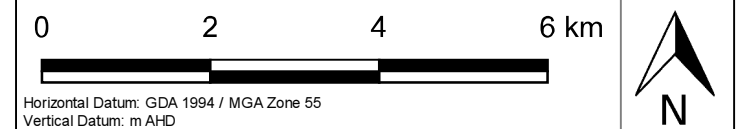
BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D18
MODIFICATION MEASURE FM06
PEAK FLOOD LEVEL DIFFERENCE
0.2% AEP EVENT



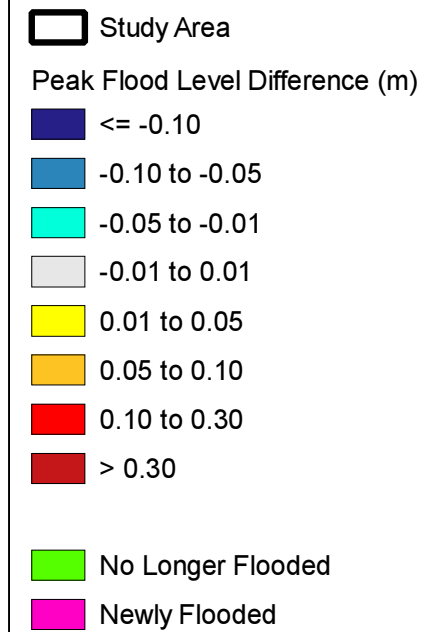
Disclaimer: The material contained herein is provided for general information purposes only. Any action you take based upon the information contained herein is strictly at your own risk. Professional advice should be sought in relation to your own specific circumstances.



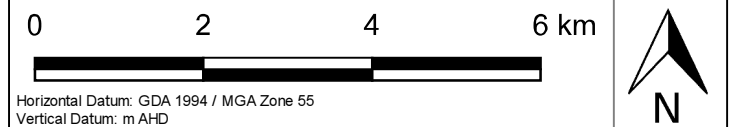
BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D19
MODIFICATION MEASURE FM07
PEAK FLOOD LEVEL DIFFERENCE
5% AEP EVENT



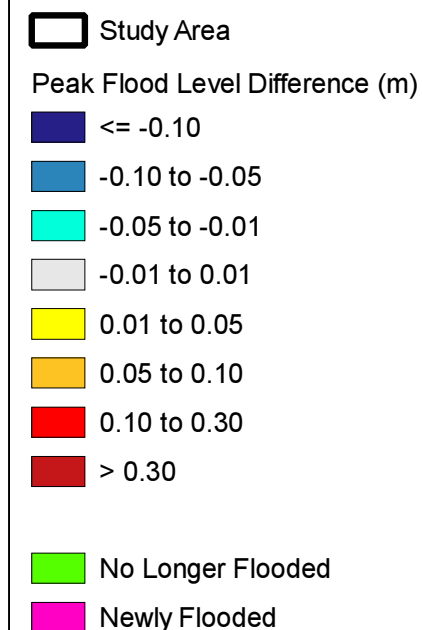
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BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D20
MODIFICATION MEASURE FM07
PEAK FLOOD LEVEL DIFFERENCE
1% AEP EVENT



Disclaimer: The material contained herein is provided for general information purposes only. Any action you take based upon the information contained herein is strictly at your own risk. Professional advice should be sought in relation to your own specific circumstances.

0 2 4 6 km

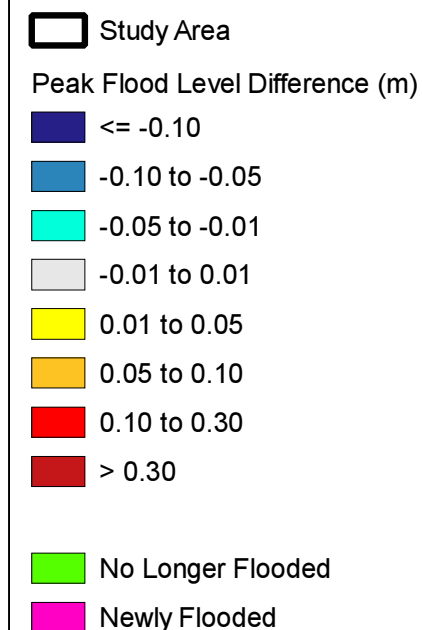
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D21
MODIFICATION MEASURE FM07
PEAK FLOOD LEVEL DIFFERENCE
0.2% AEP EVENT



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0 2 4 6 km

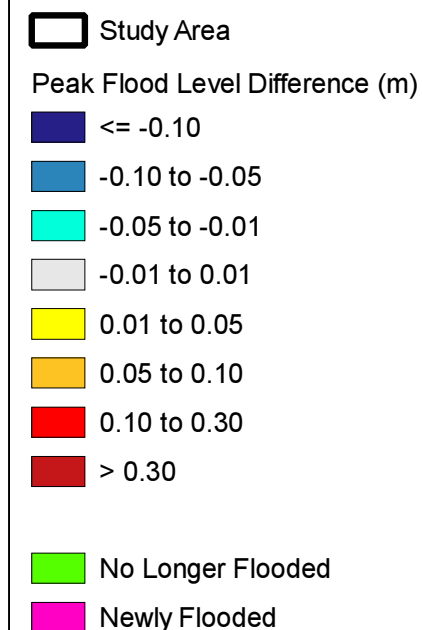
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D22
MODIFICATION MEASURE FM08
PEAK FLOOD LEVEL DIFFERENCE
5% AEP EVENT



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0 2 4 6 km

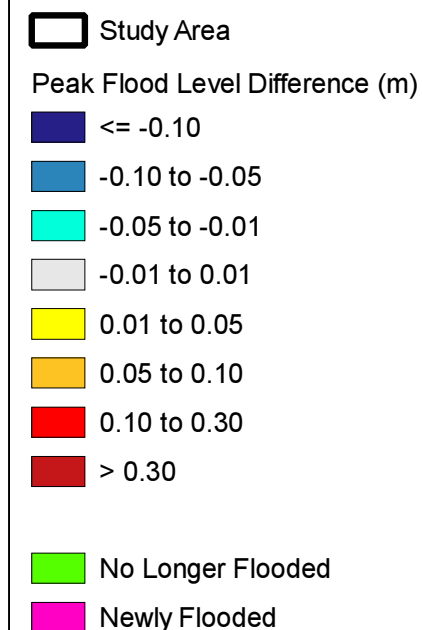
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D23
MODIFICATION MEASURE FM08
PEAK FLOOD LEVEL DIFFERENCE
1% AEP EVENT



Disclaimer: The material contained herein is provided for general information purposes only. Any action you take based upon the information contained herein is strictly at your own risk. Professional advice should be sought in relation to your own specific circumstances.

0 2 4 6 km

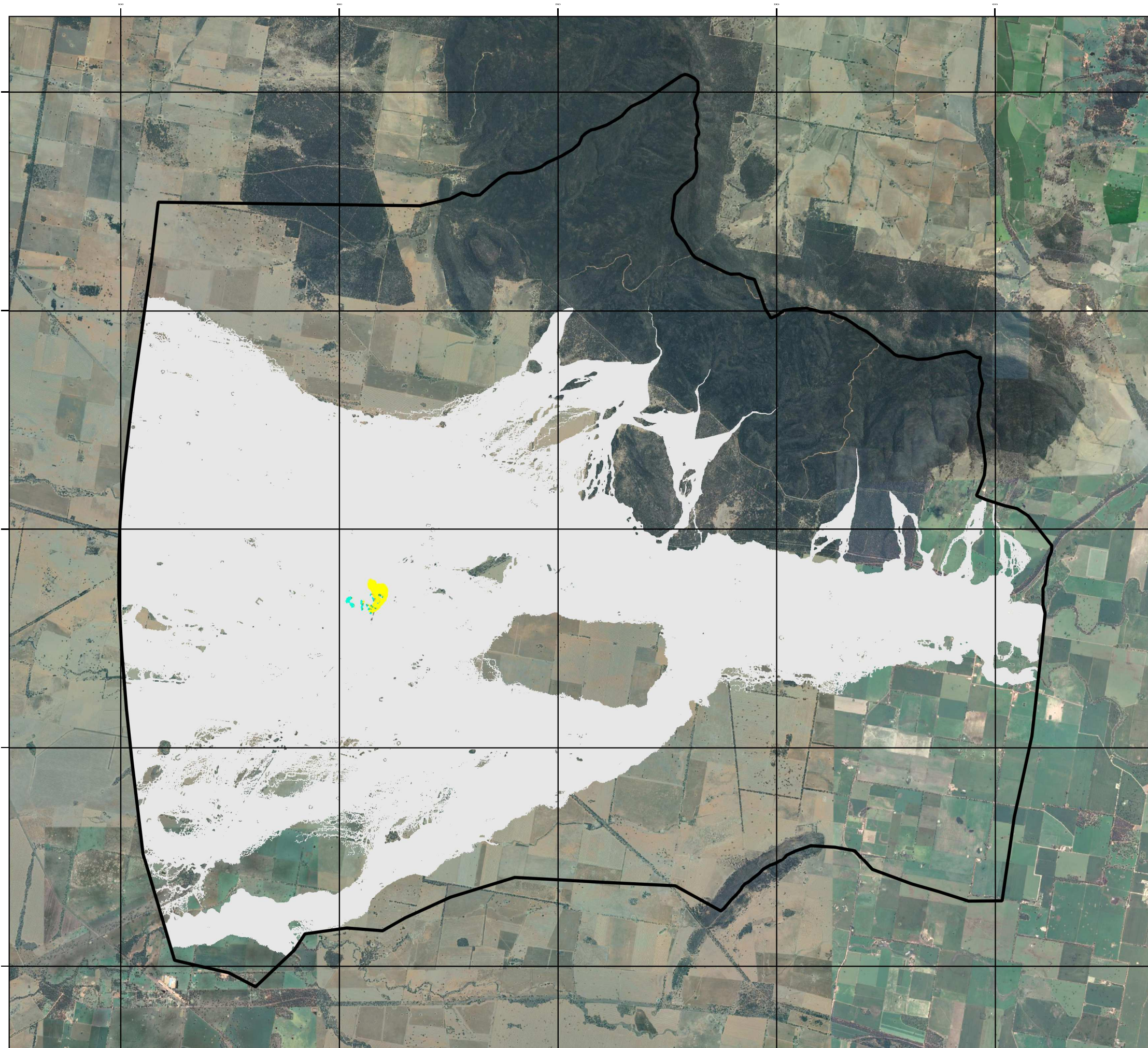
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD

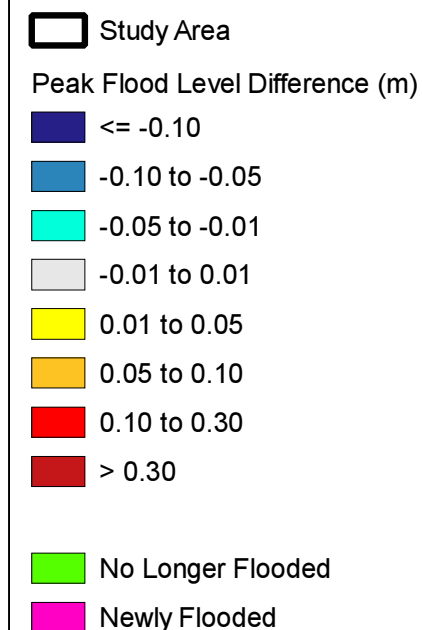


BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D24
MODIFICATION MEASURE FM08
PEAK FLOOD LEVEL DIFFERENCE
0.2% AEP EVENT





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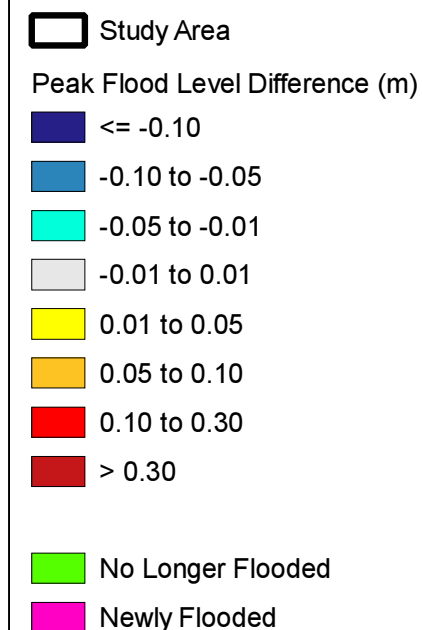
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D25
MODIFICATION MEASURE FM09
PEAK FLOOD LEVEL DIFFERENCE
5% AEP EVENT



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0 2 4 6 km

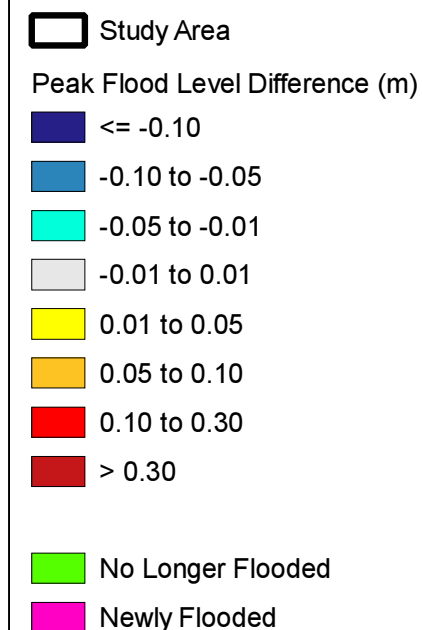
Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD



BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D26
MODIFICATION MEASURE FM09
PEAK FLOOD LEVEL DIFFERENCE
1% AEP EVENT



Disclaimer: The material contained herein is provided for general information purposes only. Any action you take based upon the information contained herein is strictly at your own risk. Professional advice should be sought in relation to your own specific circumstances.

0 2 4 6 km



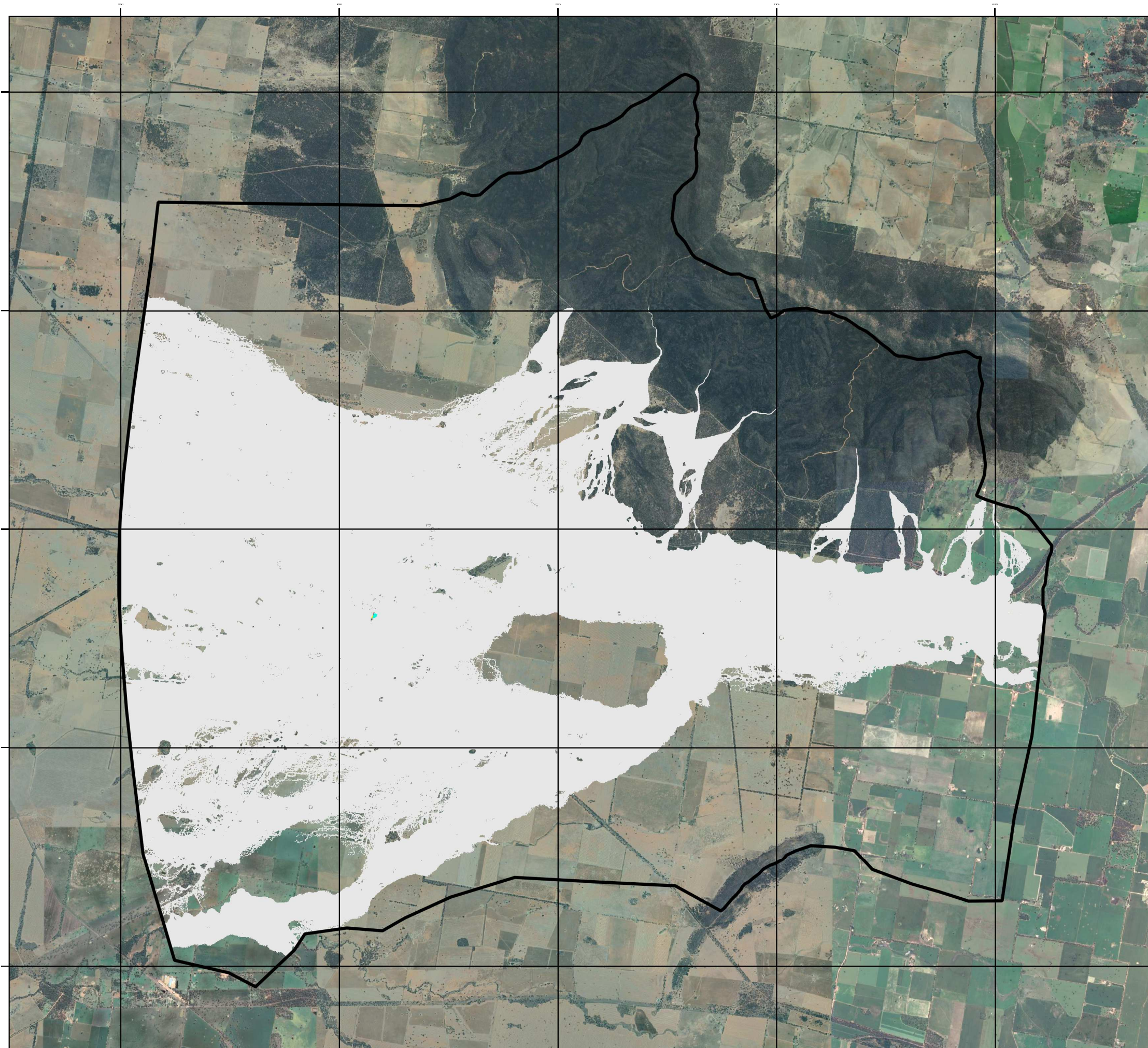
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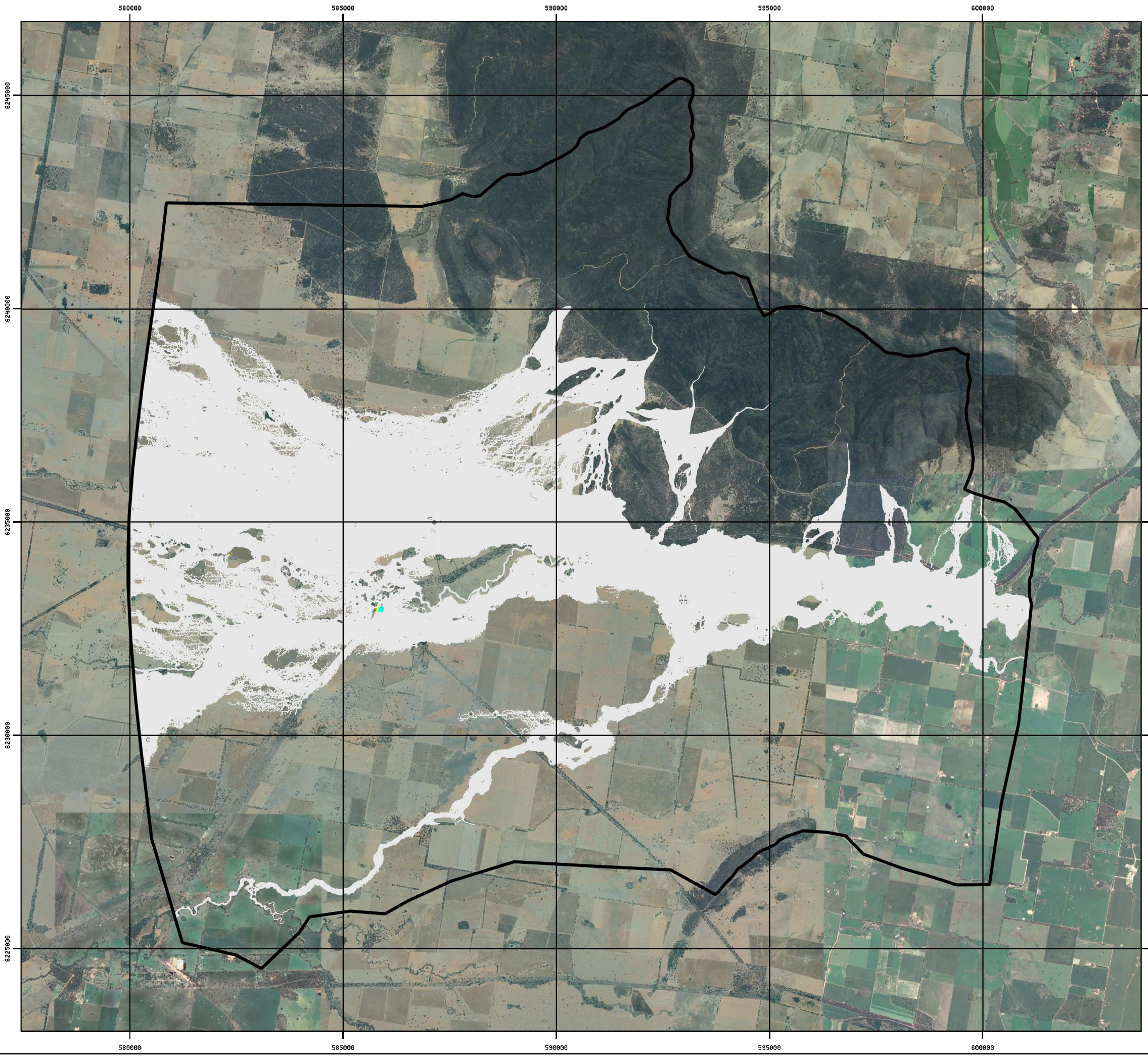













BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

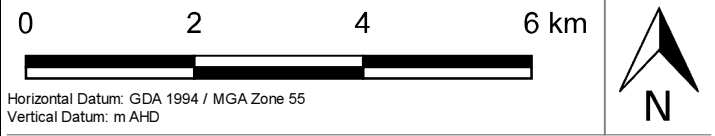
FIGURE D27
MODIFICATION MEASURE FM09
PEAK FLOOD LEVEL DIFFERENCE
0.2% AEP EVENT





-  Study Area
- Peak Flood Level Difference (m)
-  ≤ -0.10
 -  -0.10 to -0.05
 -  -0.05 to -0.01
 -  -0.01 to 0.01
 -  0.01 to 0.05
 -  0.05 to 0.10
 -  0.10 to 0.30
 -  > 0.30
-  No Longer Flooded
-  Newly Flooded

Disclaimer: The material contained herein is provided for general information purposes only. Any action you take based upon the information contained herein is strictly at your own risk. Professional advice should be sought in relation to your own specific circumstances.

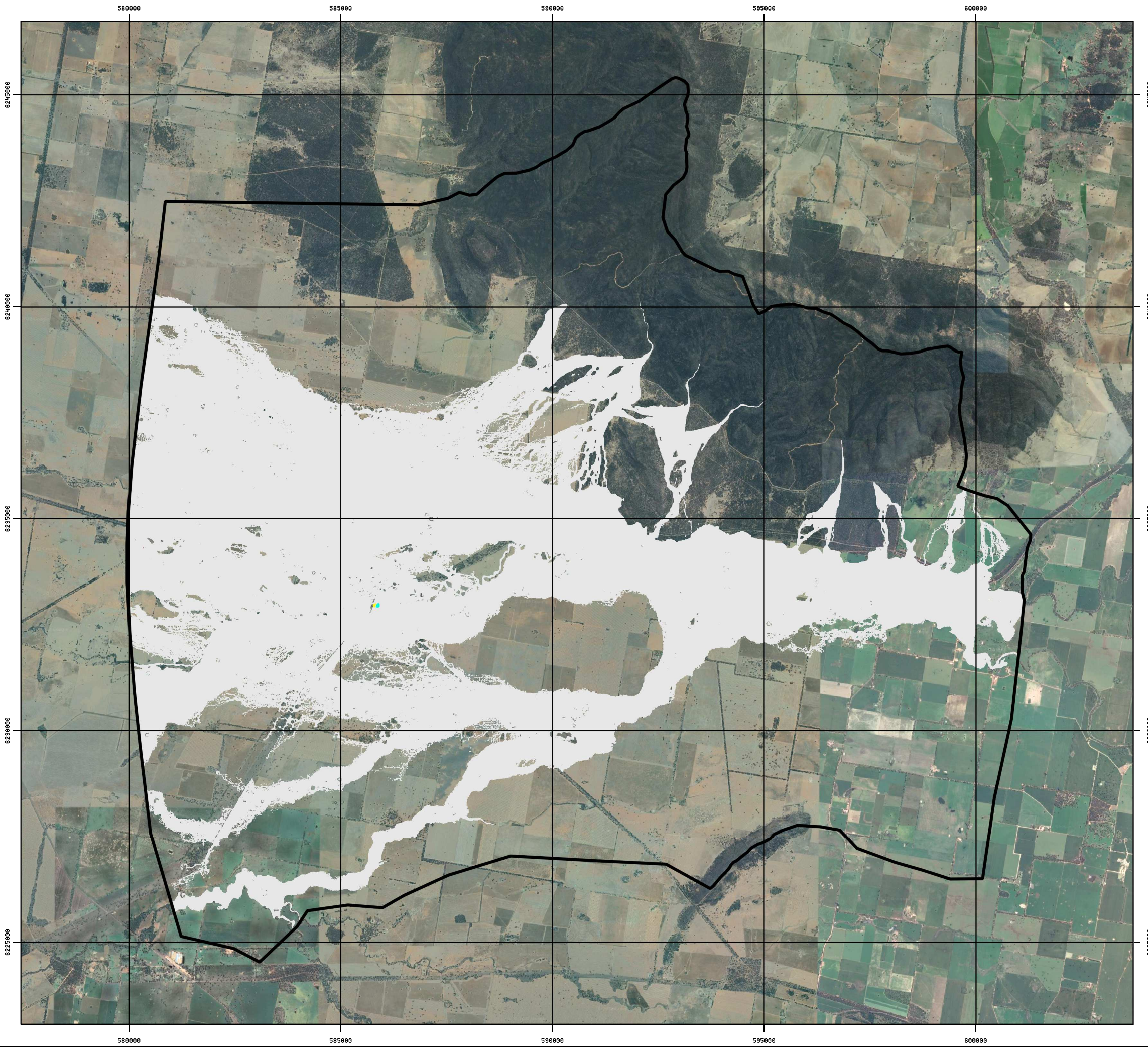


Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD

BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

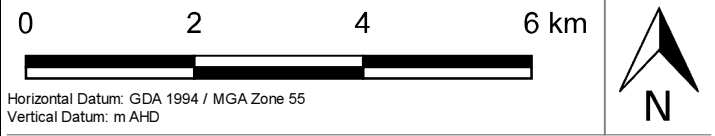
Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D28
MODIFICATION MEASURE FM10
PEAK FLOOD LEVEL DIFFERENCE
5% AEP EVENT



- Study Area
- Peak Flood Level Difference (m)
 - <= -0.10
 - 0.10 to -0.05
 - 0.05 to -0.01
 - 0.01 to 0.01
 - 0.01 to 0.05
 - 0.05 to 0.10
 - 0.10 to 0.30
 - > 0.30
- No Longer Flooded
- Newly Flooded

Disclaimer: The material contained herein is provided for general information purposes only. Any action you take based upon the information contained herein is strictly at your own risk. Professional advice should be sought in relation to your own specific circumstances.

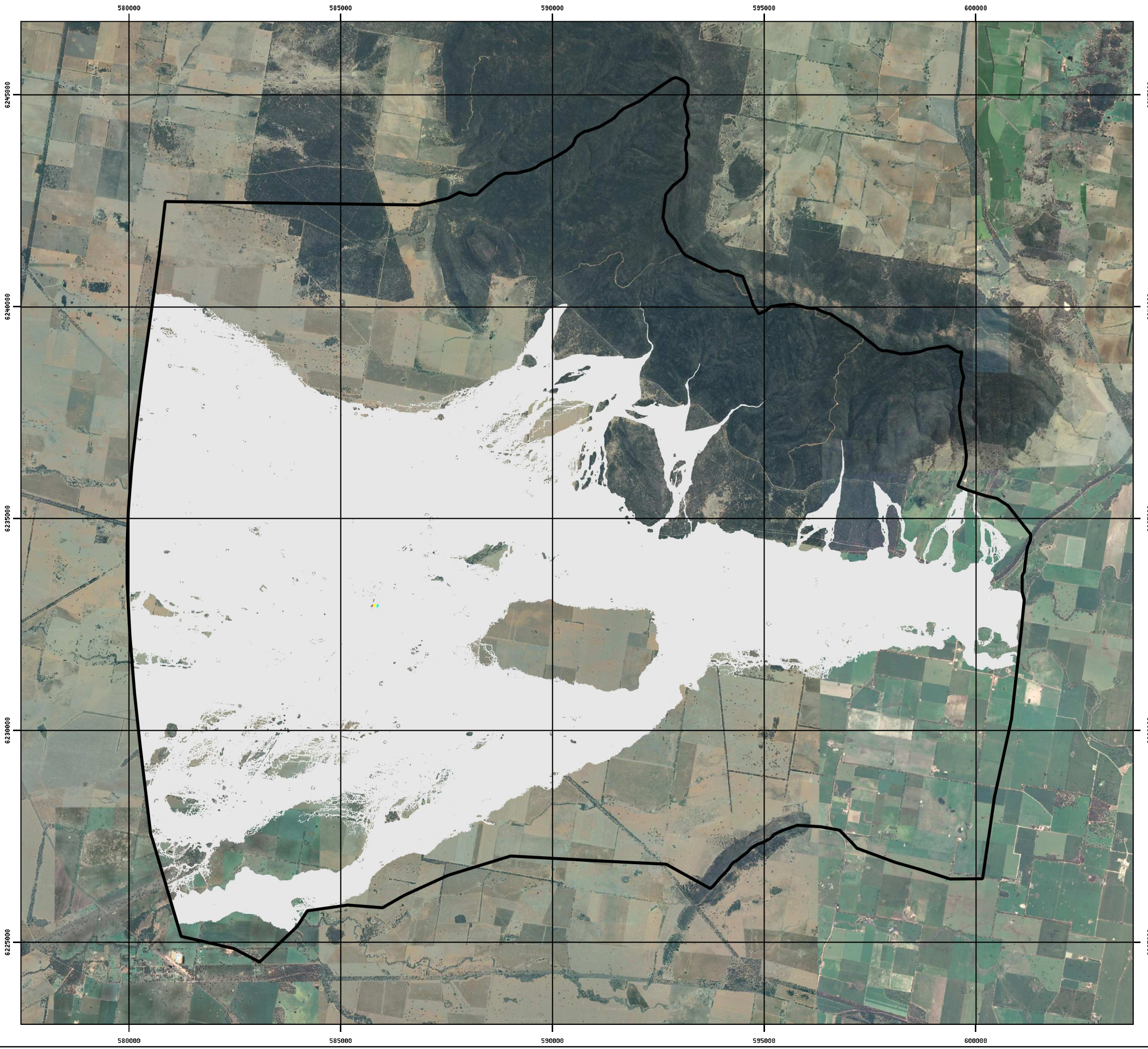


Horizontal Datum: GDA 1994 / MGA Zone 55
Vertical Datum: m AHD

BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

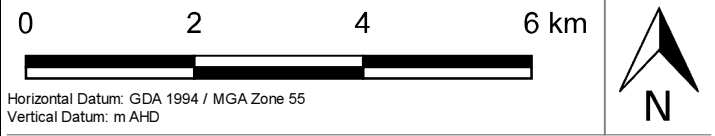
Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D29
MODIFICATION MEASURE FM10
PEAK FLOOD LEVEL DIFFERENCE
1% AEP EVENT



- Study Area
- Peak Flood Level Difference (m)
- <= -0.10
 - 0.10 to -0.05
 - 0.05 to -0.01
 - 0.01 to 0.01
 - 0.01 to 0.05
 - 0.05 to 0.10
 - 0.10 to 0.30
 - > 0.30
- No Longer Flooded
- Newly Flooded

Disclaimer: The material contained herein is provided for general information purposes only. Any action you take based upon the information contained herein is strictly at your own risk. Professional advice should be sought in relation to your own specific circumstances.



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

BIMBI FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Map Location: 20003_Bimbi_FS_FRMSP\GIS\Maps\FRMSP

FIGURE D30
MODIFICATION MEASURE FM10
PEAK FLOOD LEVEL DIFFERENCE
0.2% AEP EVENT

APPENDIX E

ESTIMATE OF COSTS

E.1 Flood Modification Measures

E.1.1 FM01 - Removal of Burrangong Creek TSR Fence

Item Number	Description of works	Quantity	Unit	Rate	Cost
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
	SUBTOTAL				\$7,740.78
2.0	Removal of Fence				
2.1	Removal of Fence	1984.82	m	\$21	\$41,681.12
	SUBTOTAL				\$41,681.12
3.0	MINOR LANDSCAPING				
3.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	992.41	sq.m	\$10.00	\$9,924.08
	SUBTOTAL				\$9,924.08
	CONSTRUCTION SUBTOTAL				\$59,345.97
4.0	CONTINGENCIES				
4.1	50% construction cost				\$29,672.98
	CONSTRUCTION TOTAL, excluding GST				\$89,018.95
	GST				\$8,901.90
	CONSTRUCTON TOTAL, including GST				\$97,920.85
	CONSTRUCTION TOTAL, rounded				\$100,000.00

* General and preliminary work subtotal was calculated as 15% of the construction value (excluding contingencies).

E.1.2 FM02 - Clearing Out Burrangong Creek

Item Number	Description of works	Quantity	Unit	Rate	Cost
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
	SUBTOTAL				\$443,653.56
2.0	CLEARING AND GRUBBING				
2.1	Clearing & grubbing	279290.88	sq.m	\$0.59	\$164,781.62
	SUBTOTAL				\$164,781.62
3.0	MINOR LANDSCAPING				
3.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	279290.88	sq.m	\$10.00	\$2,792,908.80
	SUBTOTAL				\$2,792,908.80
	CONSTRUCTION SUBTOTAL				\$3,401,343.98
4.0	CONTINGENCIES				
4.1	50% construction cost				\$1,700,671.99
	CONSTRUCTION TOTAL, excluding GST				\$5,102,015.97
	GST				\$510,201.60
	CONSTRUCTON TOTAL, including GST				\$5,612,217.57
	CONSTRUCTION TOTAL, rounded				\$5,620,000.00

* General and preliminary work subtotal was calculated as 15% of the construction value (excluding contingencies).

E.1.3 FM03 - On Creek Detention Basin along Burrangong Creek

Item Number	Description of works	Quantity	Unit	Rate	Cost
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
	SUBTOTAL				\$4,873,048.42
2.0	DEMOLITION, CLEARING AND GRUBBING				
2.1	Clearing & grubbing	1147345.24	sq.m	\$0.59	\$676,933.69
2.2	Strip topsoil & stockpile for re-use	648952.06	cu.m	\$1.67	\$1,083,749.94
2.3	Excavate clay layer	2683764.72	cu.m	\$3.67	\$9,852,982.35
2.4	Dispose of excess topsoil and clay	1120962.54	cu.m	\$1.22	\$1,371,807.30
	SUBTOTAL				\$12,985,473.28
3.0	LAND ACQUISITION				
3.2	Rural lots	1146952.533	sq.m	\$0.87	\$999,646.01
	SUBTOTAL				\$999,646.01
4.0	EARTHWORKS				
4.1	Build levee clay layer	23426.36	cu.m	\$1.67	\$39,122.02
4.2	Build levee topsoil layer	21918.15	sq.m	\$1.67	\$36,603.30
4.3	Level clay footing	1091785.40	sq.m	\$3.60	\$3,930,427.43
	SUBTOTAL				\$4,006,152.75
5.0	EROSION CONTROL				
5.1	Anchor turf reinforcement mesh	21918.15	sq.m	\$7.02	\$153,901.91
5.2	Plant erosion controlling turf seed	1147345.24	sq.m	\$2.50	\$2,868,363.10
					\$3,022,265.02
6.0	MINOR LANDSCAPING				
6.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	1147345.24	sq.m	\$10.00	\$11,473,452.41
	SUBTOTAL				\$11,473,452.41
	CONSTRUCTION SUBTOTAL				\$37,360,037.89
7.0	CONTINGENCIES				
7.1	50% construction cost				\$18,680,018.95
	CONSTRUCTION TOTAL, excluding GST				\$56,040,056.84

Item Number	Description of works	Quantity	Unit	Rate	Cost
	GST				\$5,604,005.68
	CONSTRUCTON TOTAL, including GST				\$61,644,062.52
	CONSTRUCTION TOTAL, rounded				\$61,650,000.00

* General and preliminary work subtotal was calculated as 15% of the construction value (excluding contingencies).

E.1.4 FM04 - Road Bridge along Mary Gilmore Way

ITEM NO.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	COST
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
	SUBTOTAL				\$1,049,415.19
2.0	DEMOLITION, CLEARING AND GRUBBING				
2.1	Clearing & grubbing	25687.67	sq.m	\$0.59	\$15,155.73
2.2	Demolish asphalt and gravel layers	3210.96	m	\$48.60	\$156,052.60
	SUBTOTAL				\$171,208.32
3.0	BOX CULVERTS				
3.1	Installation of culverts	3210.96	m	\$1,728.00	\$5,548,536.81
	SUBTOTAL				\$5,548,536.81
4.0	ROAD CONSTRUCTION				
4.1	Lay subbase	3210.96	m	\$129.00	\$414,213.69
4.2	Lay asphalt	3210.96	m	\$100.00	\$321,095.88
4.3	Prime Seal	3210.96	m	\$26.70	\$85,732.60
4.4	2 Coat Seal	3210.96	m	\$61.80	\$198,437.25
	SUBTOTAL				\$1,019,479.42
5.0	MINOR LANDSCAPING				
5.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	25687.67	sq.m	10	\$256,876.70
	SUBTOTAL				\$256,876.70
	CONSTRUCTION SUBTOTAL				\$8,045,516.44
6.0	CONTINGENCIES				
6.1	50% construction cost				\$4,022,758.22
	CONSTRUCTION TOTAL, excluding GST				\$12,068,274.66
	GST				\$1,206,827.47
	CONSTRUCTION TOTAL, including GST				\$13,275,102.13
	CONSTRUCTION TOTAL, rounded				\$13,280,000.00

* General and preliminary work subtotal was calculated as 15% of the construction value (excluding contingencies).

E.1.5 FM05 - Raising of Mary Gilmore Way at Bimbi

Item Number	Description of works	Quantity	Unit	Rate	Cost
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
	SUBTOTAL				\$109,102.24
2.0	DEMOLITION, CLEARING AND GRUBBING				
2.1	Clearing & grubbing	9411.55	sq.m	\$0.59	\$5,552.82
2.2	Demolish asphalt and gravel layers	1176.44	m	\$48.60	\$57,175.18
	SUBTOTAL				\$62,727.99
3.0	EARTHWORKS				
3.1	Increase height of soil foundation	4705.78	cu.m	\$17.94	\$84,421.62
3.2	Rebuild gravel layer	9411.55	sq.m	\$11.96	\$112,562.16
	SUBTOTAL				\$196,983.78
4.0	ROAD CONSTRUCTION				
4.1	Lay subbase	1176.44	m	\$129.00	\$151,761.28
4.2	Lay asphalt	1176.44	m	\$100.00	\$117,644.40
4.3	Prime Seal	1176.44	m	\$26.70	\$31,411.05
4.4	2 Coat Seal	1176.44	m	\$61.80	\$72,704.24
	SUBTOTAL				\$373,520.97
5.0	MINOR LANDSCAPING				
5.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	9411.55	sq.m	10	\$94,115.52
	SUBTOTAL				\$94,115.52
	CONSTRUCTION SUBTOTAL				\$836,450.51
6.0	CONTINGENCIES				
6.1	50% construction cost				\$418,225.25
	CONSTRUCTION TOTAL, excluding GST				\$1,254,675.76
	GST				\$125,467.58
	CONSTRUCTION TOTAL, including GST				\$1,380,143.34
	CONSTRUCTION TOTAL, rounded				\$1,390,000.00

* General and preliminary work subtotal was calculated as 15% of the construction value (excluding contingencies).

E.1.6 FM06 - Road Levee East of Bimbi

Item Number	Description of works	Quantity	Unit	Rate	Cost
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
	SUBTOTAL				\$24,025.01
2.0	DEMOLITION, CLEARING AND GRUBBING				
2.1	Clearing & grubbing	4572.24	sq.m	\$0.59	\$2,697.62
2.2	Demolish gravel layer	571.53	m	\$48.60	\$27,776.36
	SUBTOTAL				\$30,473.98
3.0	EARTHWORKS				
3.1	Increase height of soil foundation	1600.28	cu.m	\$17.94	\$28,709.09
	SUBTOTAL				\$28,709.09
4.0	ROAD CONSTRUCTION				
4.1	Rebuild gravel layer	4572.24	sq.m	\$11.96	\$54,683.99
4.2	Regrading	571.53	m	\$1.01	\$577.25
	SUBTOTAL				\$55,261.24
5.0	MINOR LANDSCAPING				
5.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	4572.24	sq.m	10	\$45,722.40
	SUBTOTAL				\$45,722.40
	CONSTRUCTION SUBTOTAL				\$184,191.72
6.0	CONTINGENCIES				
6.1	50% construction cost				\$92,095.86
	CONSTRUCTION TOTAL, excluding GST				\$276,287.58
	GST				\$27,628.76
	CONSTRUCTION TOTAL, including GST				\$303,916.33
	CONSTRUCTION TOTAL, rounded				\$310,000.00

* General and preliminary work subtotal was calculated as 15% of the construction value (excluding contingencies).

E.1.7 FM07 - Road levee along Mary Gilmore Way and road levee east of Bimbi

Item Number	Description of works	Quantity	Unit	Rate	Cost
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
	SUBTOTAL				\$133,127.25
2.0	DEMOLITION, CLEARING AND GRUBBING				
2.1	Clearing & grubbing	13983.79	sq.m	\$0.59	\$8,250.44
2.2	Demolish asphalt and gravel layers	1747.97	m	\$48.60	\$84,951.54
	SUBTOTAL				\$93,201.97
3.0	EARTHWORKS				
3.1	Increase height of soil foundation	6306.06	cu.m	\$17.94	\$113,130.72
3.2	Rebuild gravel layer	13983.79	sq.m	\$11.96	\$167,246.15
	SUBTOTAL				\$280,376.87
4.0	ROAD CONSTRUCTION				
4.1	Lay subbase	1176.44	m	\$129.00	\$151,761.28
4.2	Lay asphalt	1176.44	m	\$100.00	\$117,644.40
4.3	Prime Seal	1176.44	m	\$26.70	\$31,411.05
4.4	2 Coat Seal	1176.44	m	\$61.80	\$72,704.24
4.5	Regrading	571.53	m	\$1.01	\$577.25
	SUBTOTAL				\$374,098.22
5.0	MINOR LANDSCAPING				
5.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	13983.79	sq.m	10	\$139,837.92
	SUBTOTAL				\$139,837.92
	CONSTRUCTION SUBTOTAL				\$1,020,642.22
6.0	CONTINGENCIES				
6.1	50% construction cost				\$510,321.11
	CONSTRUCTION TOTAL, excluding GST				\$1,530,963.34
	GST				\$153,096.33
	CONSTRUCTION TOTAL, including GST				\$1,684,059.67
	CONSTRUCTION TOTAL, rounded				\$1,690,000.00

* General and preliminary work subtotal was calculated as 15% of the construction value (excluding contingencies).

E.1.8 FM08 - Individual residential earthen levees

Item Number	Description of works	Quantity	Unit	Rate	Cost
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
	SUBTOTAL				\$20,863.25
2.0	DEMOLITION, CLEARING AND GRUBBING				
2.1	Clearing & grubbing	5573.15	sq.m	\$0.59	\$3,288.16
2.2	Strip topsoil and stockpile for re-use	3343.89	cu.m	\$3.67	\$12,276.51
	SUBTOTAL				\$15,564.66
3.0	EARTHWORKS				
3.1	Level soil footing	5573.15	cu.m	\$3.60	\$20,063.32
3.2	Build clay layer	4366.06	cu.m	\$12.26	\$53,547.06
3.3	Place and compact backfill	511.08	cu.m	\$8.20	\$4,190.89
	SUBTOTAL				\$77,801.27
4.0	MINOR LANDSCAPING				
4.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	4572.24	sq.m	10	\$45,722.40
	SUBTOTAL				\$45,722.40
	CONSTRUCTION SUBTOTAL				\$159,951.59
5.0	CONTINGENCIES				
5.1	50% construction cost				\$79,975.79
	CONSTRUCTION TOTAL, excluding GST				\$239,927.38
	GST				\$23,992.74
	CONSTRUCTION TOTAL, including GST				\$263,920.12
	CONSTRUCTION TOTAL, rounded				\$270,000.00

* General and preliminary work subtotal was calculated as 15% of the construction value (excluding contingencies).

E.1.9 FM09 - Single Span Bridge at Mary Gilmore Way

Item Number	Description of works	Quantity	Unit	Rate	Cost
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
	SUBTOTAL				\$395,535.72
2.0	BRIDGE WORKS				
2.1	Bridge Demolition	444.82	sq.m	\$360	\$160,135.92
2.2	Single Span Bridge Construction	444.82	sq.m	\$5,558	\$2,472,320.68
	SUBTOTAL				\$2,632,456.60
3.0	MINOR LANDSCAPING				
3.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	444.82	sq.m	\$10.00	\$4,448.22
	SUBTOTAL				\$4,448.22
	CONSTRUCTION SUBTOTAL				\$3,032,440.54
4.0	CONTINGENCIES				
4.1	50% construction cost				\$1,516,220.27
	CONSTRUCTION TOTAL, excluding GST				\$4,548,660.81
	GST				\$454,866.08
	CONSTRUCTION TOTAL, including GST				\$5,003,526.89
	CONSTRUCTION TOTAL, rounded				\$5,010,000.00

* General and preliminary work subtotal was calculated as 15% of the construction value (excluding contingencies).

E.1.10 FM10 - Mound leveling at Mary Gilmore Way bridge

Item Number	Description of works	Quantity	Unit	Rate	Cost
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
	SUBTOTAL				\$16,439.18
2.0	MOUND REMOVAL				
2.1	Clearing & grubbing	9264.69	sq.m	\$0.59	\$5,466.17
2.2	Strip topsoil	3967.65	cu.m	\$1.67	\$6,625.97
2.3	Dispose of topsoil	3967.65	cu.m	\$1.22	\$4,855.51
	SUBTOTAL				\$16,947.65
3.0	MINOR LANDSCAPING				
3.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	9264.69	sq.m	\$10.00	\$92,646.89
	SUBTOTAL				\$92,646.89
	CONSTRUCTION SUBTOTAL				\$126,033.73
4.0	CONTINGENCIES				
4.1	50% construction cost				\$63,016.86
	CONSTRUCTION TOTAL, excluding GST				\$189,050.59
	GST				\$18,905.06
	CONSTRUCTION TOTAL, including GST				\$207,955.65
	CONSTRUCTION TOTAL, rounded				\$210,000.00

* General and preliminary work subtotal was calculated as 15% of the construction value (excluding contingencies).

E.1.12 PM02 - Voluntary Property Purchase

Item Number	Description of works	Quantity	Unit	Rate	Cost
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
	SUBTOTAL				\$960,535.02
2.0	CLEARING AND GRUBBING				
2.1	Rural lots	7347187.97	sq.m	\$0.87	\$6,403,566.80
	SUBTOTAL				\$6,403,566.80
	TOTAL				\$7,364,101.82
	TOTAL, rounded				\$7,370,000.00

* General and preliminary work subtotal was calculated as 15% of the total value.

E.1.13 PM03 - Voluntary House Raising

Item Number	Description of works	Quantity	Unit	Rate	Cost
1.0	GENERAL AND PRELIMINARIES				
1.1	Administrative Costs	1	item		
	SUBTOTAL				\$37,500.00
2.0	HOUSE RAISING				
2.1	House Raising	5.00	item	\$50,000.00	\$250,000.00
	SUBTOTAL				\$250,000.00
	TOTAL				\$287,500.00
	TOTAL, rounded				\$290,000.00

* General and preliminary work subtotal was calculated as 15% of the total value.

E.1.14 PM04 - Voluntary House Raising and road levee along Mary Gilmore Way and road levee east of Bimbi

Item Number	Description of works	Quantity	Unit	Rate	Cost
1.0	GENERAL AND PRELIMINARIES				
1.1	Site establishment, security fencing, facilities & disestablishment	1	item		
1.2	Provision of sediment & erosion control	1	item		
1.3	Construction setout & survey	1	item		
1.4	Work as executed survey & documentation	1	item		
1.5	Geotechnical supervision, testing & certification	1	item		
	SUBTOTAL				\$148,040.66
2.0	DEMOLITION, CLEARING AND GRUBBING				
2.1	Clearing & grubbing	13983.79	sq.m	\$0.59	\$8,250.44
2.2	Demolish asphalt and gravel layers	1747.97	m	\$48.60	\$84,951.54
	SUBTOTAL				\$93,201.97
3.0	EARTHWORKS				
3.1	Increase height of soil foundation	6306.06	cu.m	\$17.94	\$113,130.72
3.2	Rebuild gravel layer	13983.79	sq.m	\$11.96	\$167,246.15
	SUBTOTAL				\$280,376.87
4.0	ROAD CONSTRUCTION				
4.1	Lay subbase	1176.44	m	\$129.00	\$151,761.28
4.2	Lay asphalt	1176.44	m	\$100.00	\$117,644.40
4.3	Prime Seal	1176.44	m	\$26.70	\$31,411.05
4.4	2 Coat Seal	1176.44	m	\$61.80	\$72,704.24
4.5	Regrading	571.53	m	\$1.01	\$577.25
	SUBTOTAL				\$373,520.97
5.0	HOUSE RAISING				
5.1	House Raising	2.00	item	\$50,000.00	\$100,000.00
	SUBTOTAL				\$100,000.00
6.0	MINOR LANDSCAPING				
6.1	Repair disturbed areas in accordance with landscape architects requirements (nominal allowance)	13983.79	sq.m	10	\$139,837.92
	SUBTOTAL				\$139,837.92
	CONSTRUCTION SUBTOTAL				\$1,134,978.39
7.0	CONTINGENCIES				
7.1	50% construction cost				\$567,489.20
	CONSTRUCTION TOTAL, excluding GST				\$1,702,467.59

Item Number	Description of works	Quantity	Unit	Rate	Cost
	GST				\$170,246.76
	CONSTRUCTON TOTAL, including GST				\$1,872,714.35
	CONSTRUCTION TOTAL, rounded				\$1,880,000.00

* General and preliminary work subtotal was calculated as 15% of the construction value (excluding contingencies).