



PARKES SHIRE COUNCIL

BOGAN GATE FLOOD STUDY

DECEMBER 2024

VOLUME 2 – FIGURES

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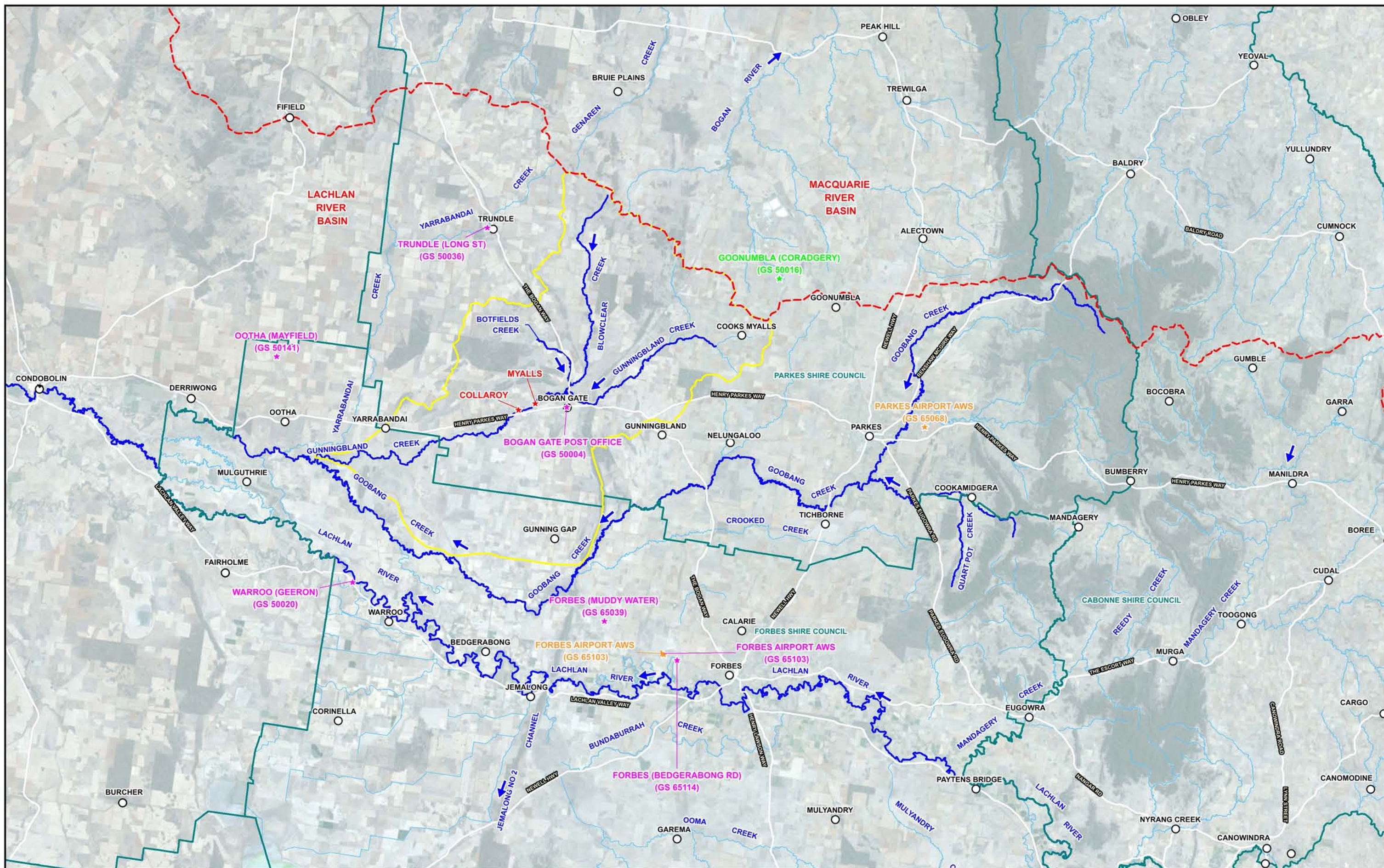
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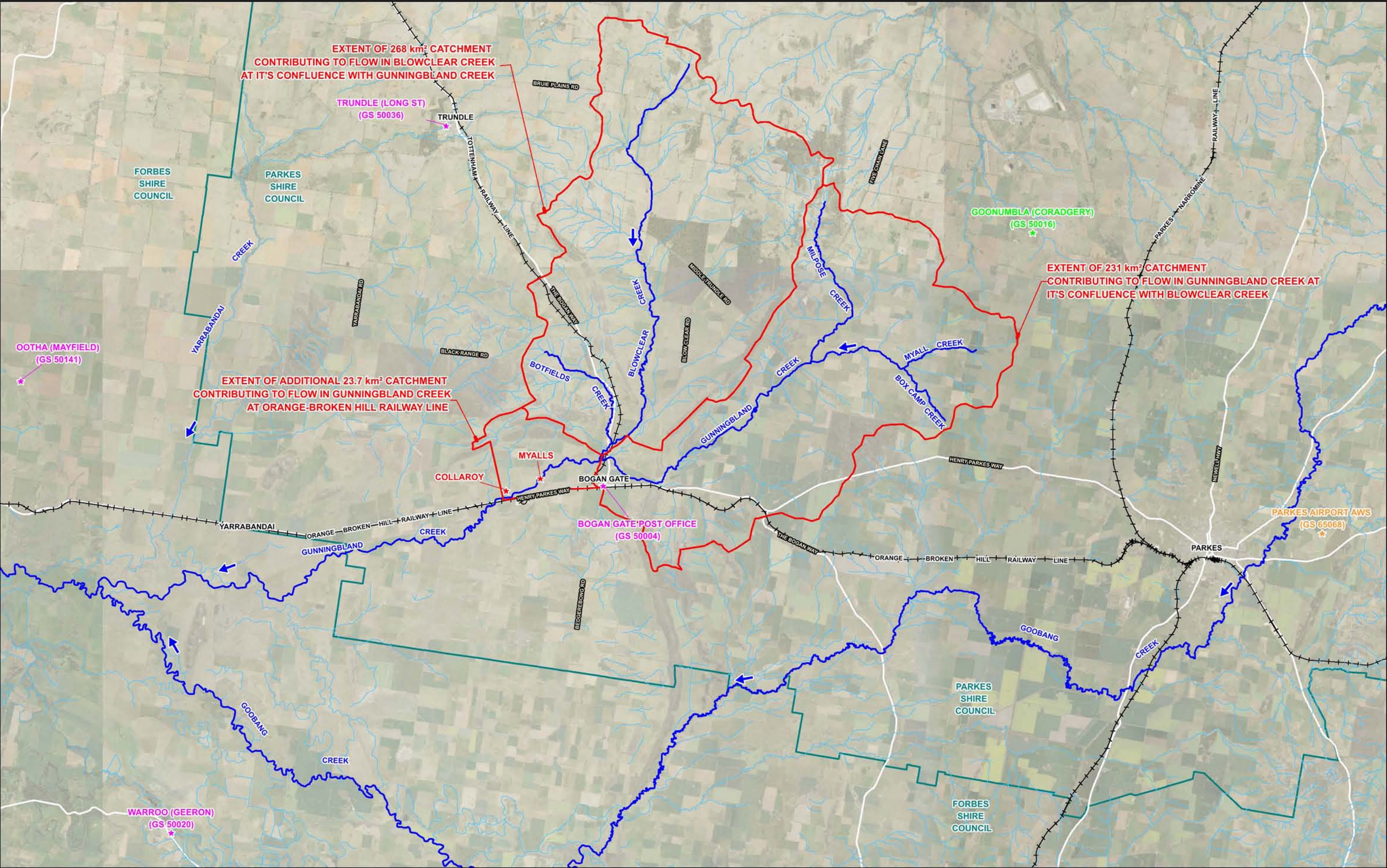
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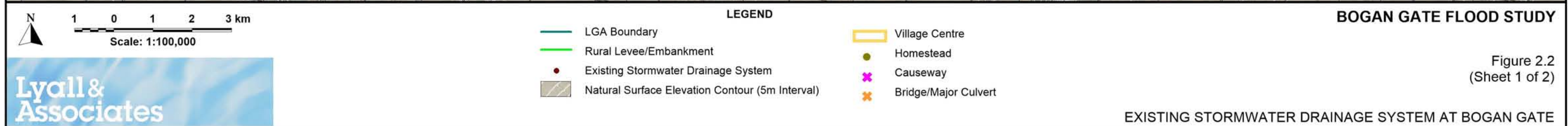
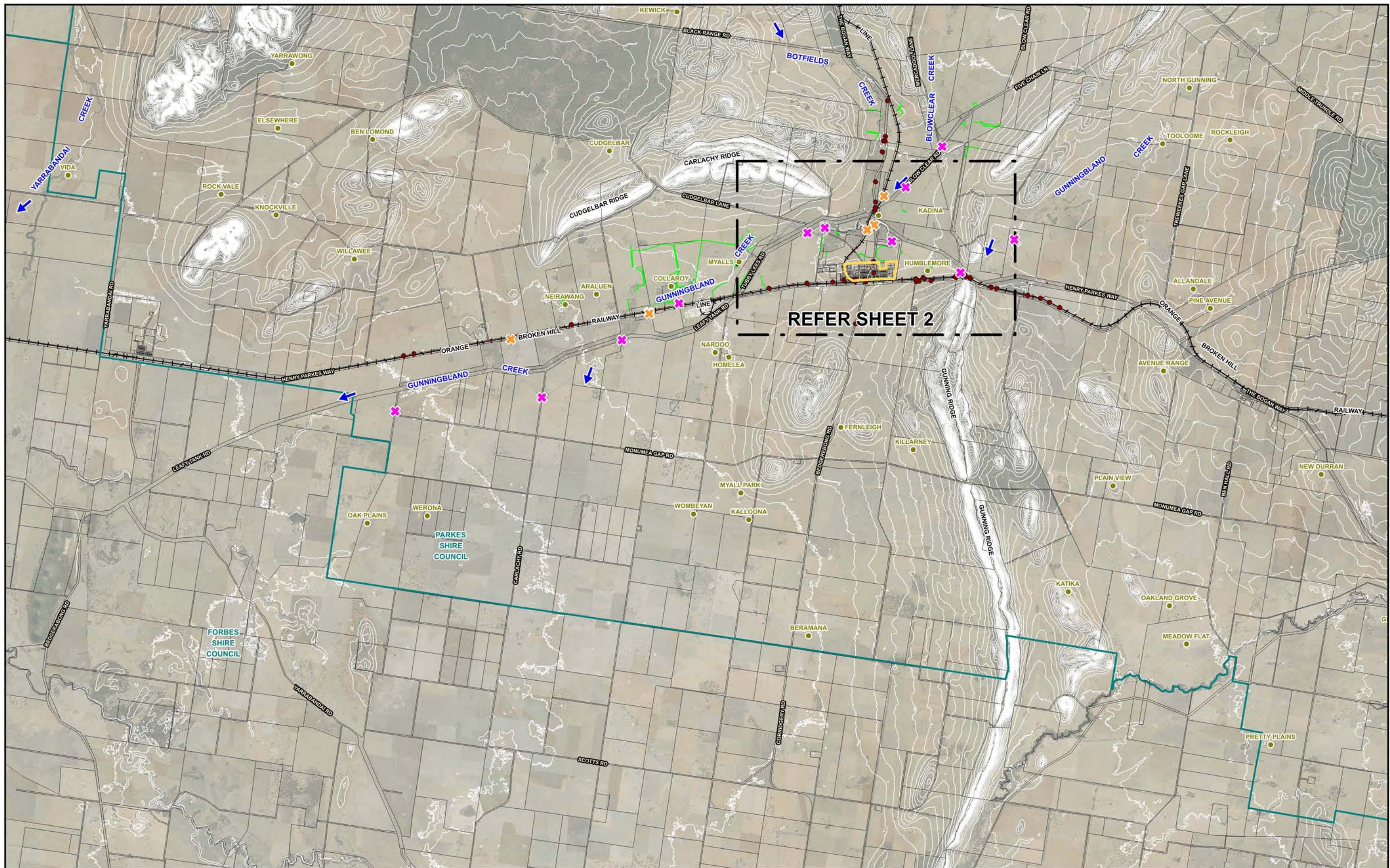
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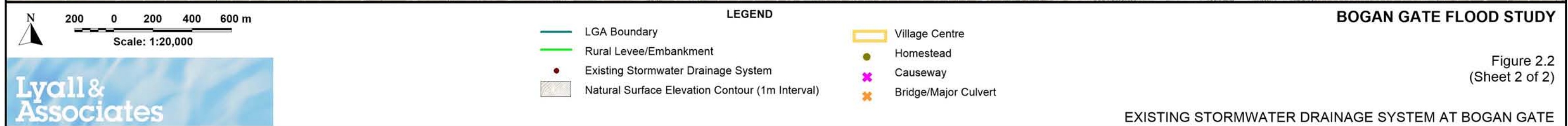
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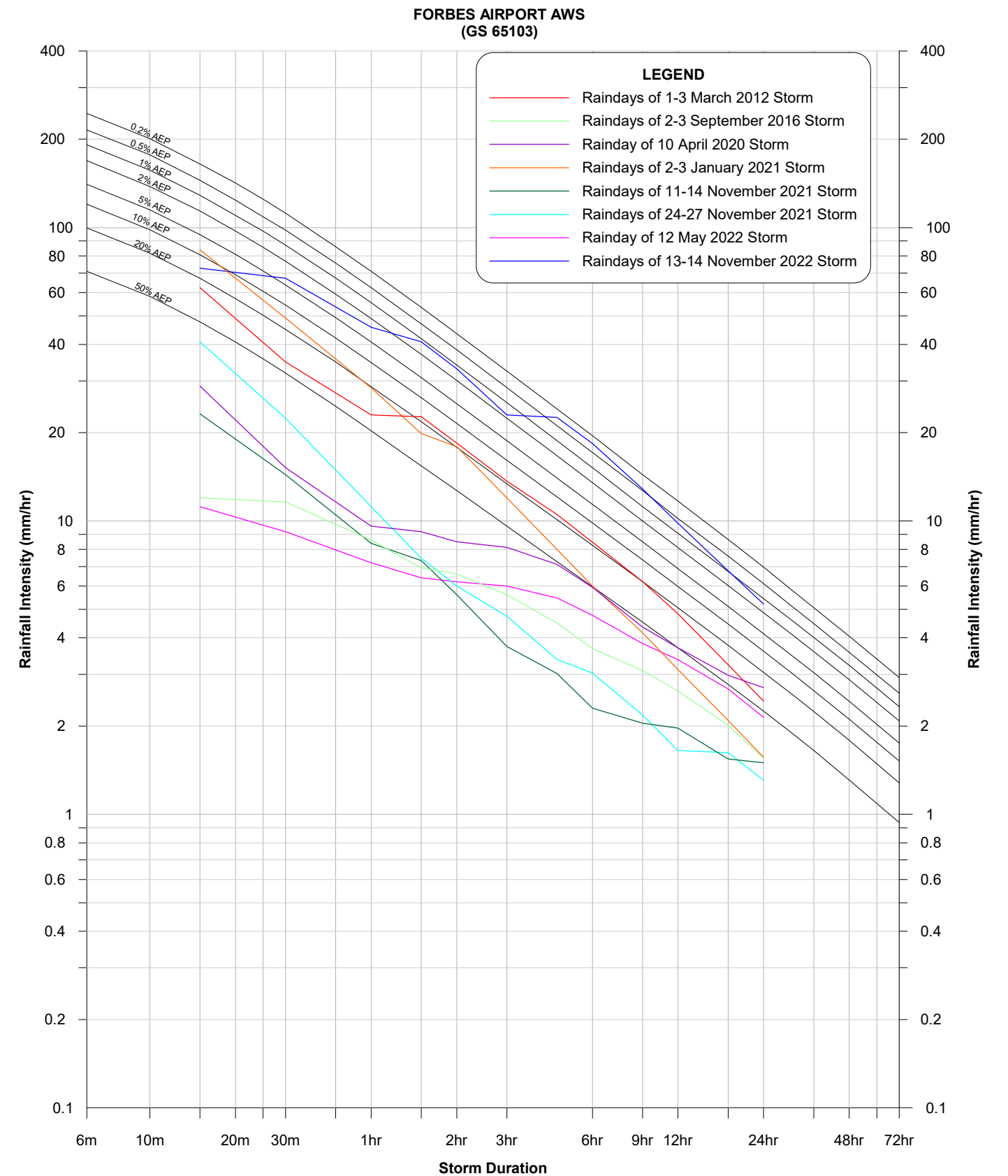
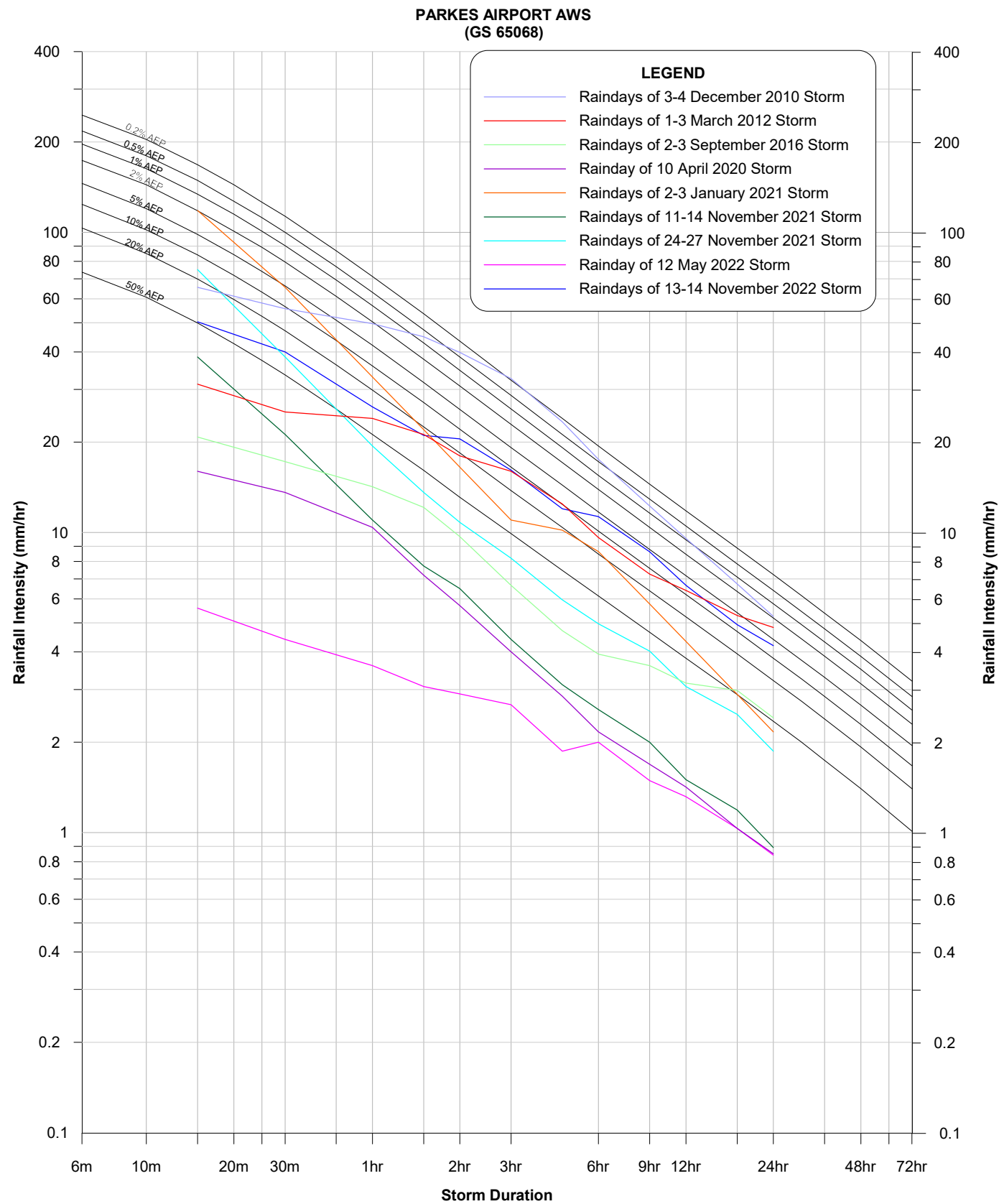








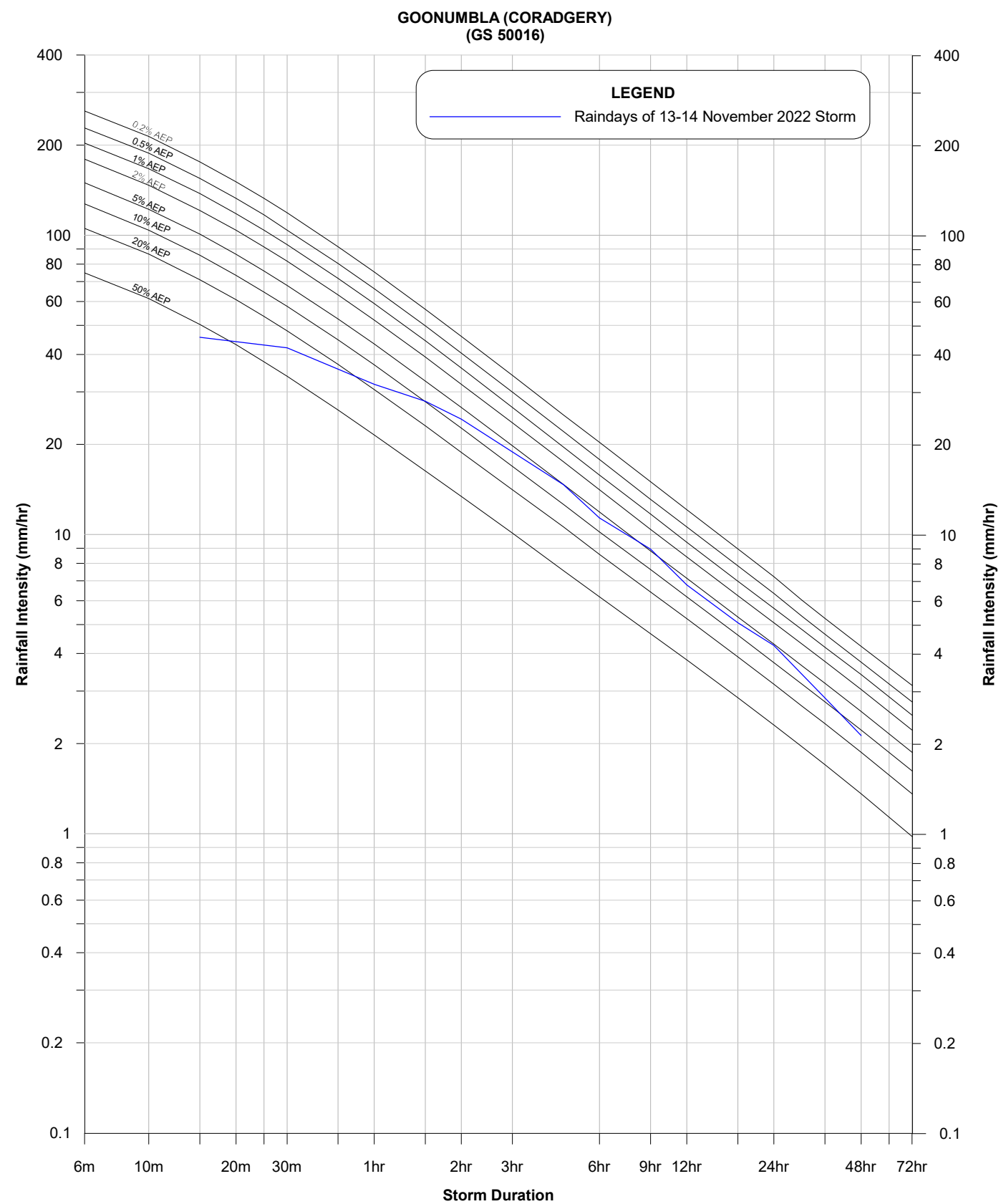
EXISTING STORMWATER DRAINAGE SYSTEM AT BOGAN GATE

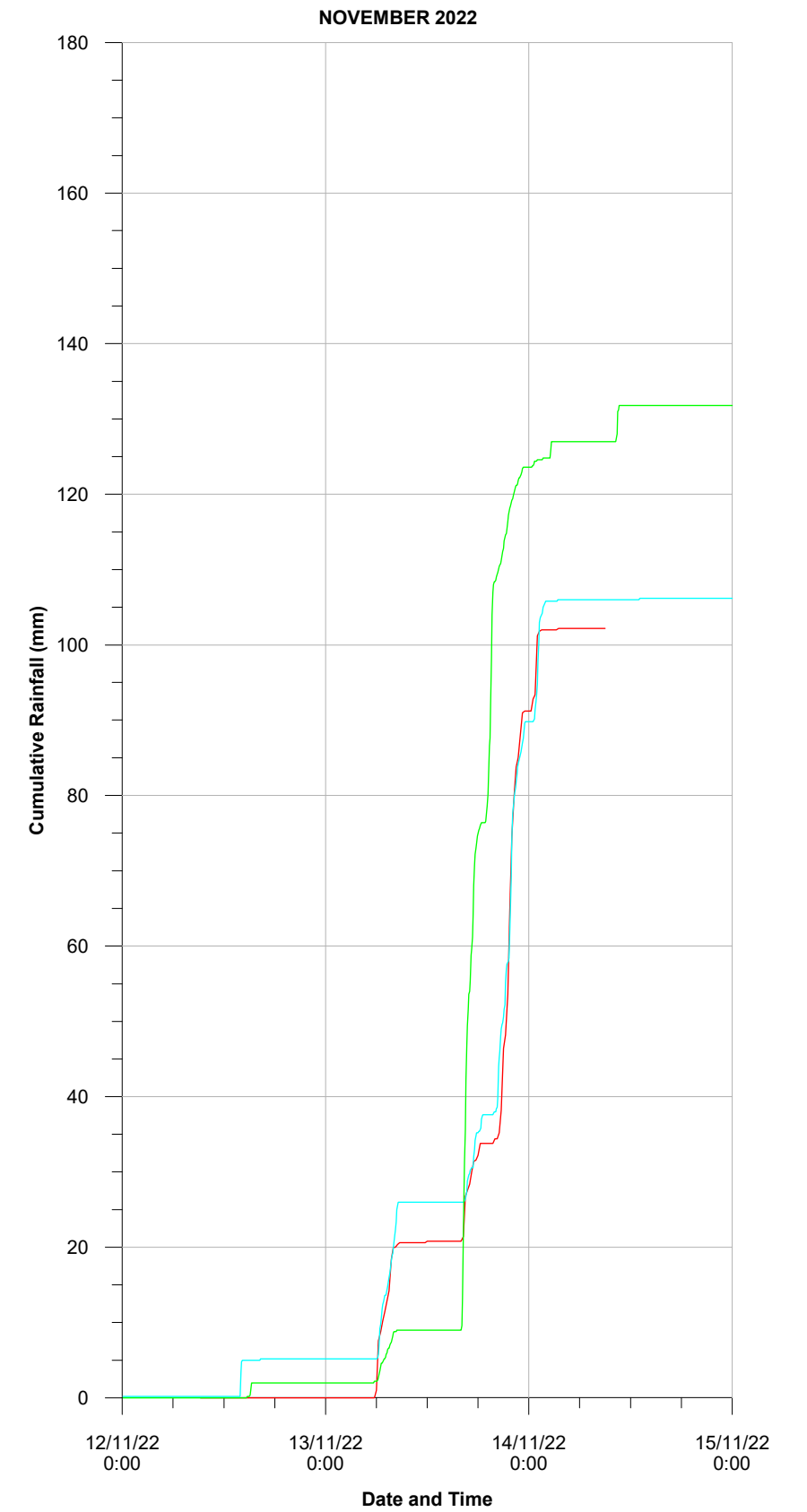
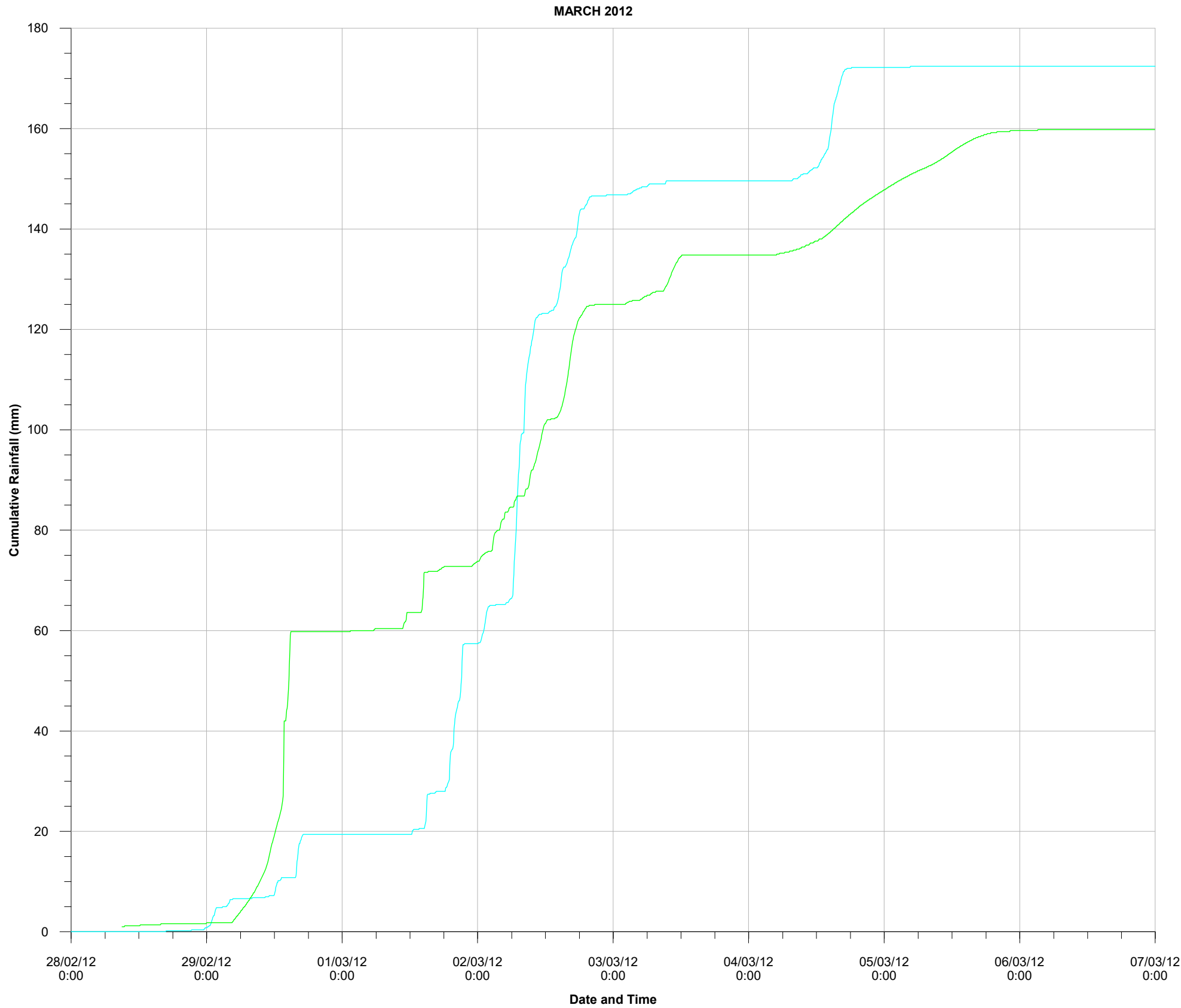


BOGAN GATE FLOOD STUDY

Figure 2.3
(Sheet 1 of 2)

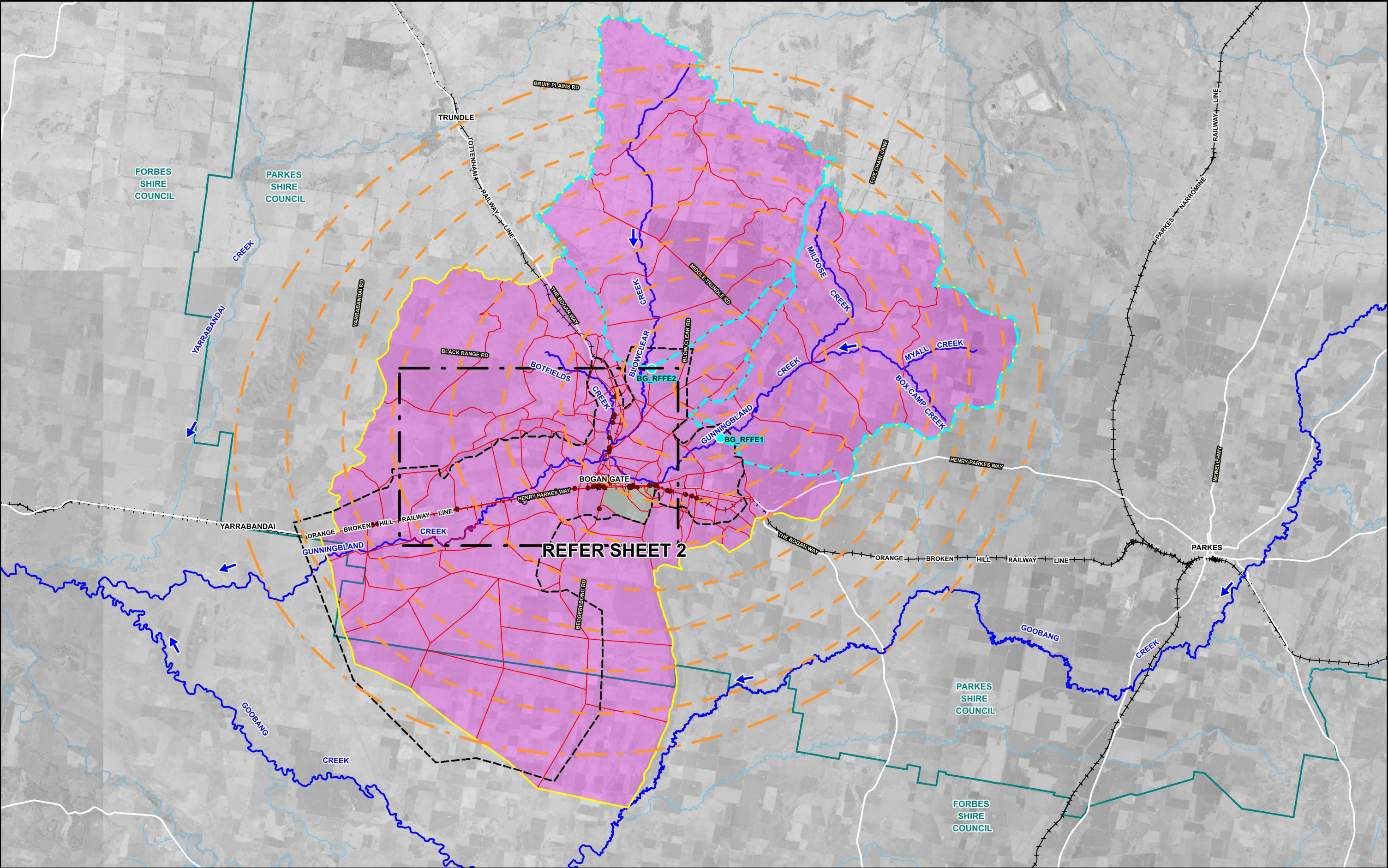
INTENSITY-FREQUENCY-DURATION CURVES
AND HISTORIC RAINFALL





LEGEND

- Forbes Airport AWS (GS 65103)
- Parkes Airport AWS (GS 65068)
- Goonumbla (Coradgery) (GS 50016)





20246

km

Scale: 1:200,000

LGA Boundary

Study Catchment

RAFTS Modelled Sub-Catchment

ILSAX Modelled Sub-Catchment

TUFLOW Modelled Sub-Catchment

BG_RFFE1

Two-Dimensional Model Boundary

Peak Flow Comparison Catchment and Identifier

Modelled Stormwater Drainage System

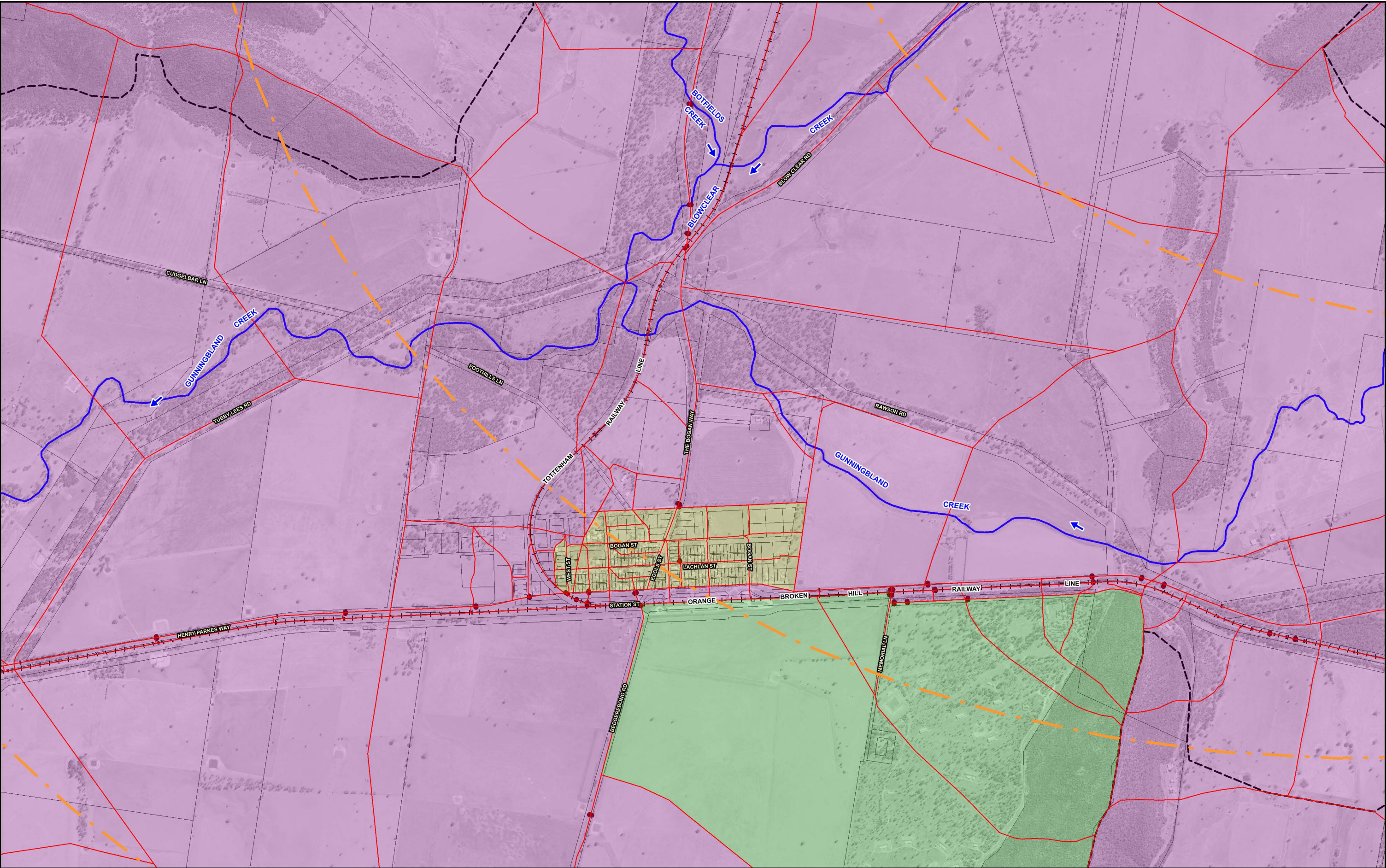
PMP Ellipses

BOGAN GATE FLOOD STUDY

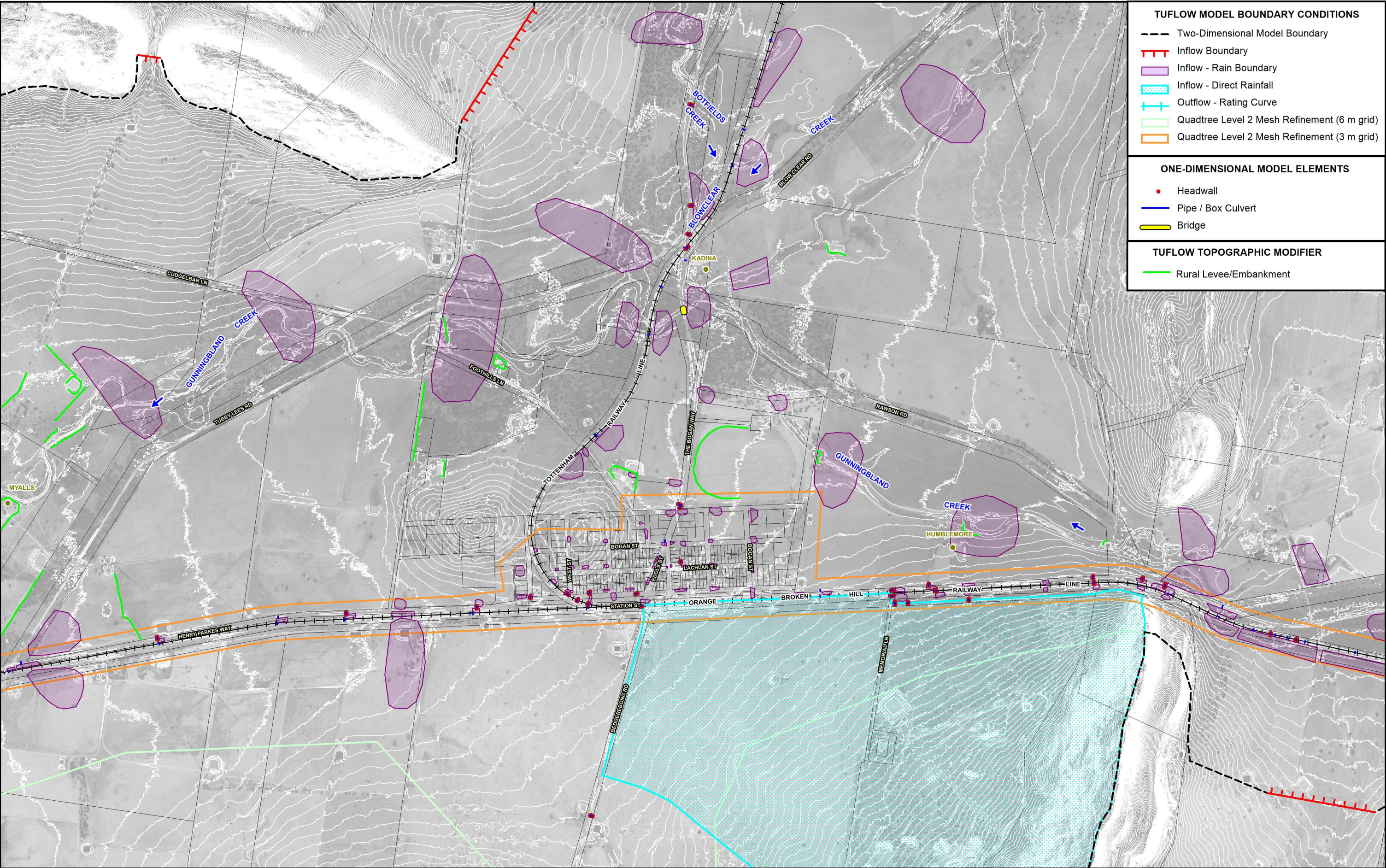
Figure 3.1
(Sheet 1 of 2)

BOGAN GATE DRAINS MODEL LAYOUT

Lyall & Associates







TUFLOW MODEL BOUNDARY CONDITIONS

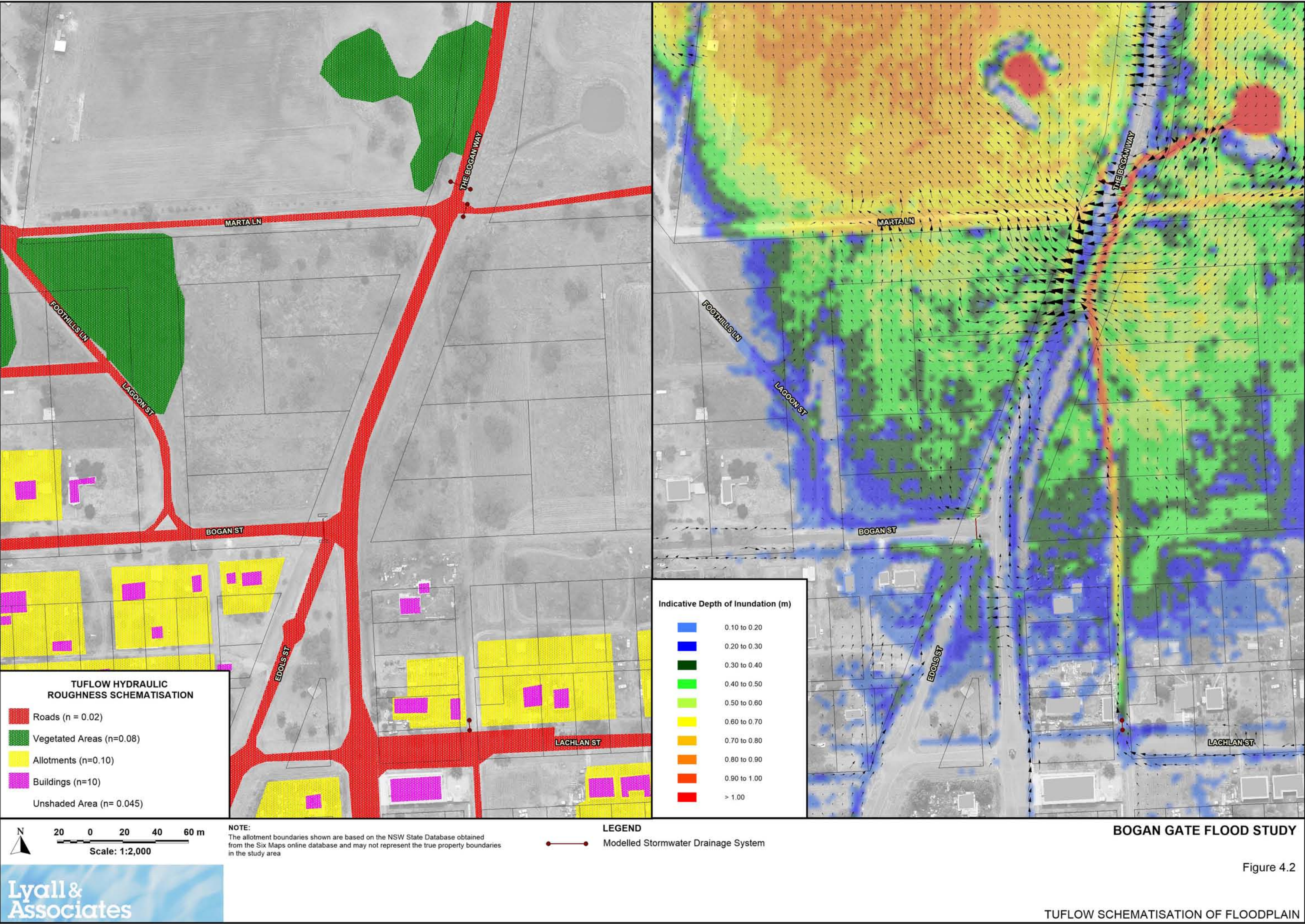
- Two-Dimensional Model Boundary
- Inflow Boundary
- Inflow - Rain Boundary
- Inflow - Direct Rainfall
- Outflow - Rating Curve
- Quadtree Level 2 Mesh Refinement (6 m grid)
- Quadtree Level 2 Mesh Refinement (3 m grid)

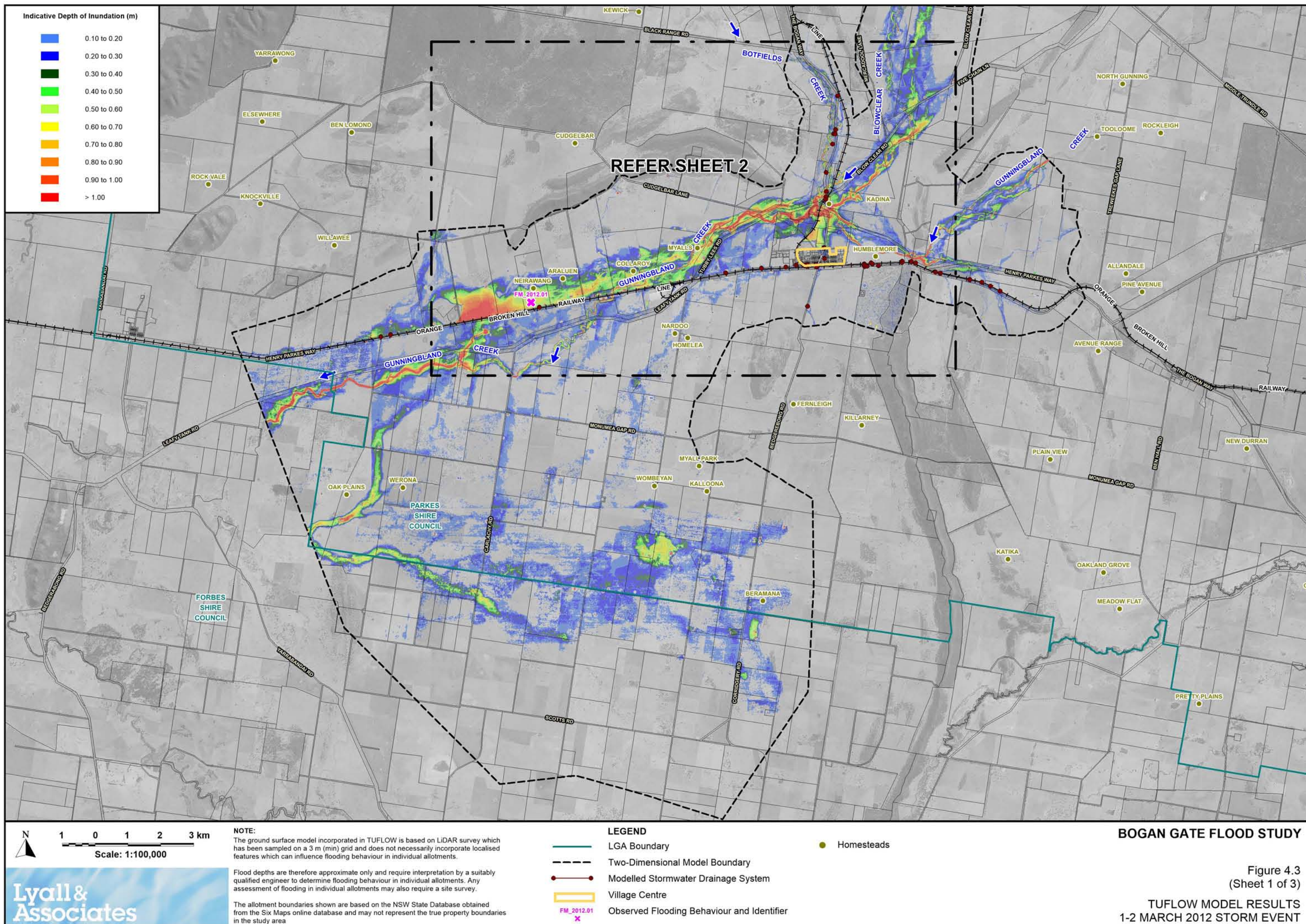
ONE-DIMENSIONAL MODEL ELEMENTS

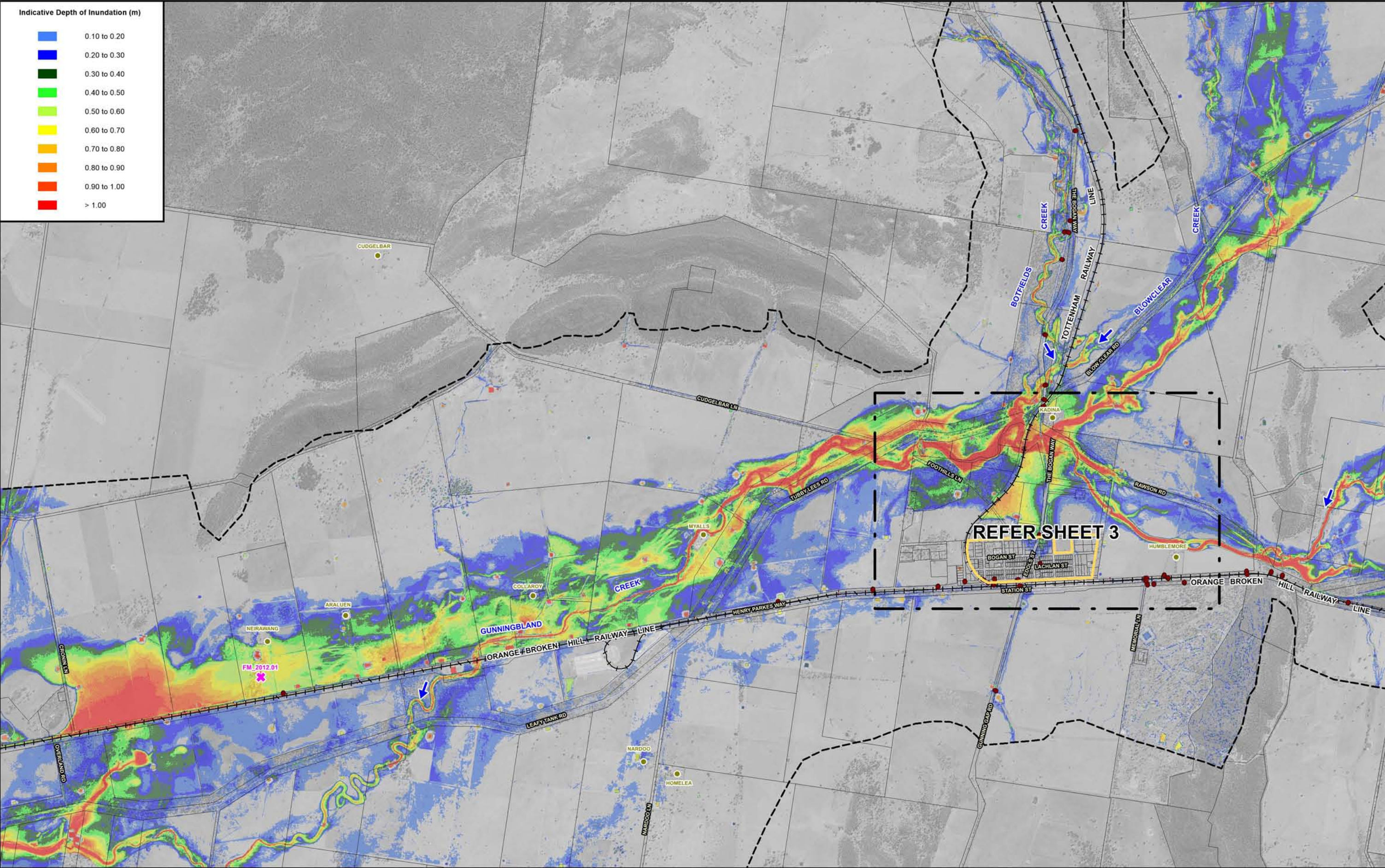
- Headwall
- Pipe / Box Culvert
- Bridge

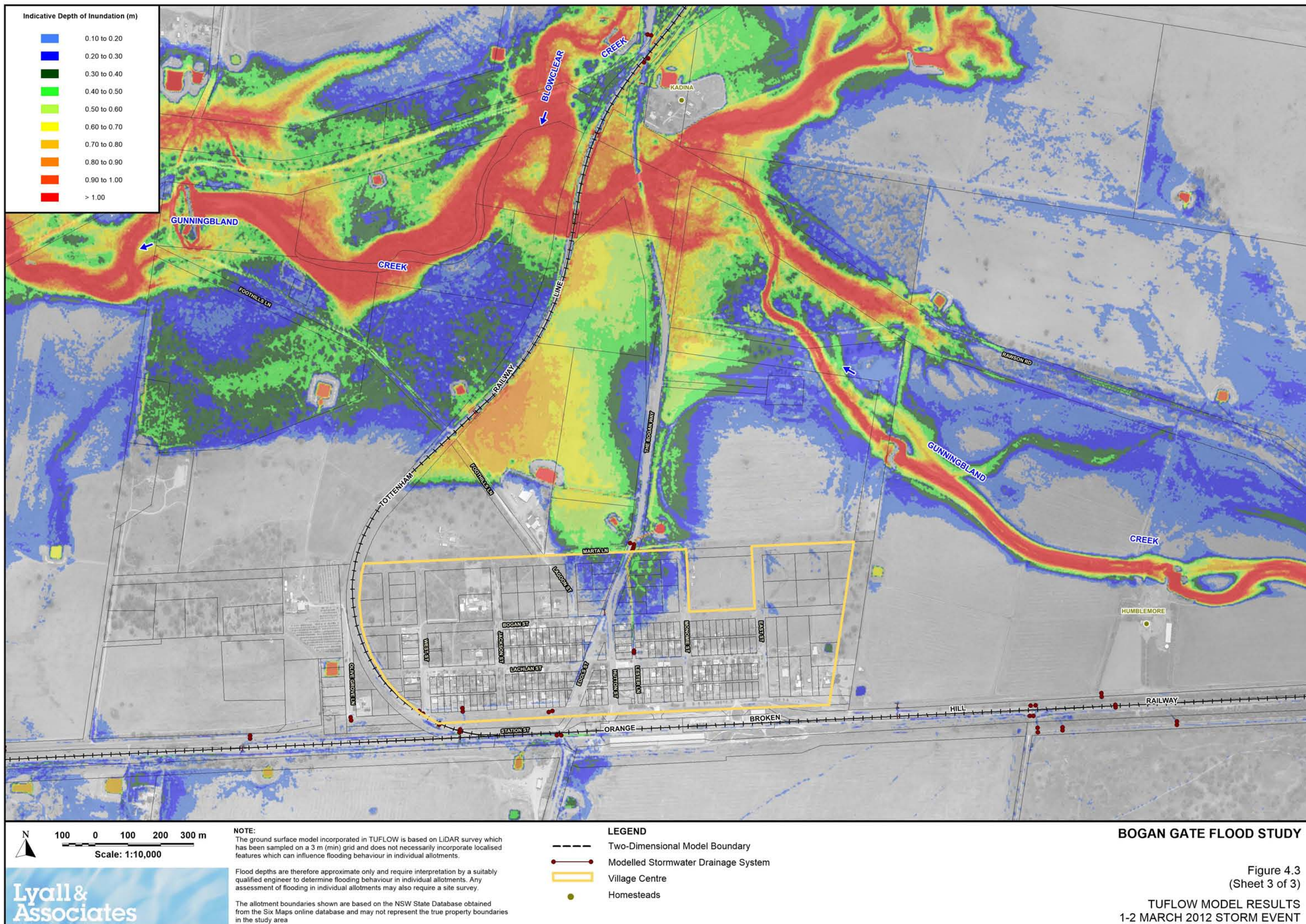
TUFLOW TOPOGRAPHIC MODIFIER

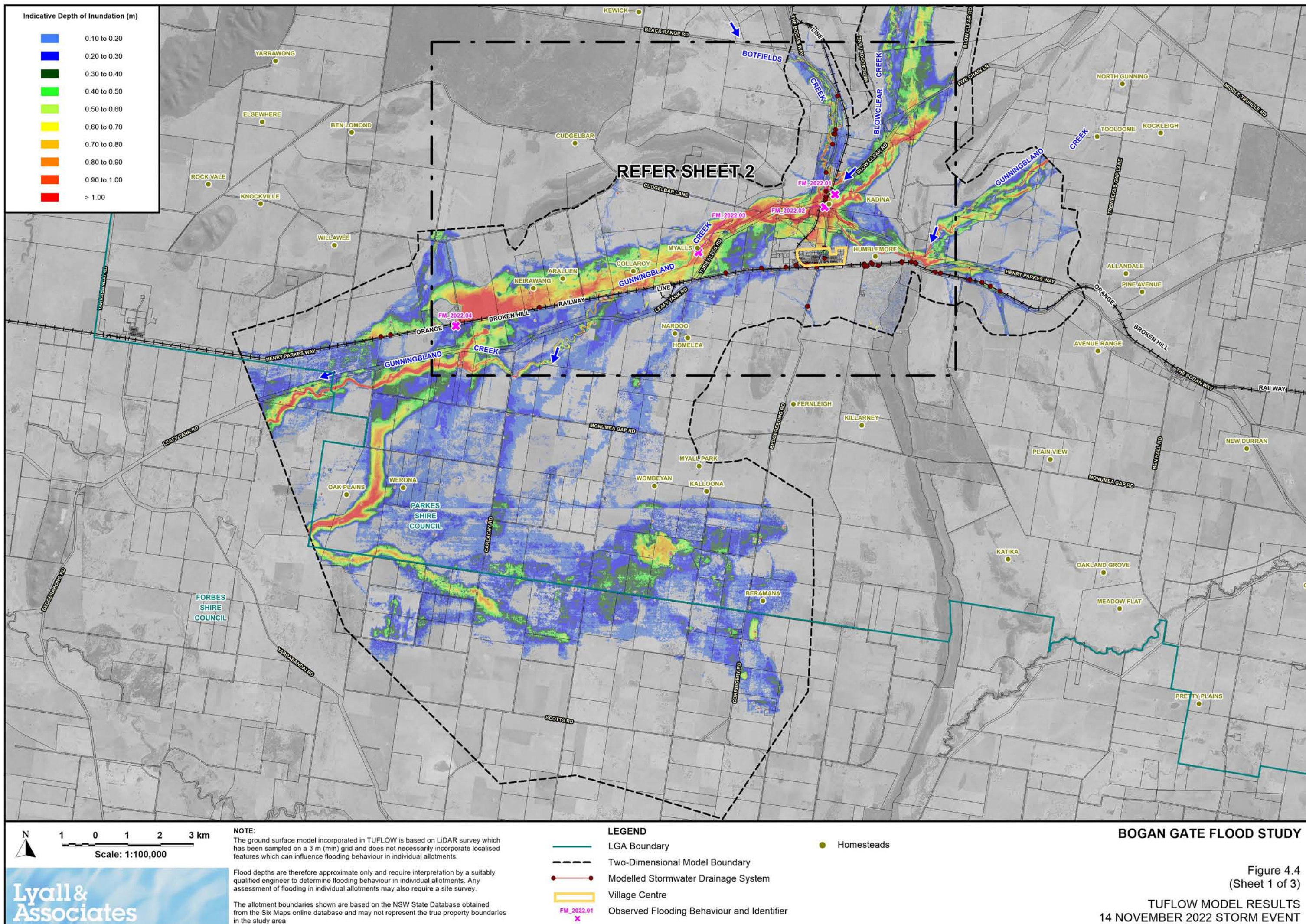
- Rural Levee/Embankment

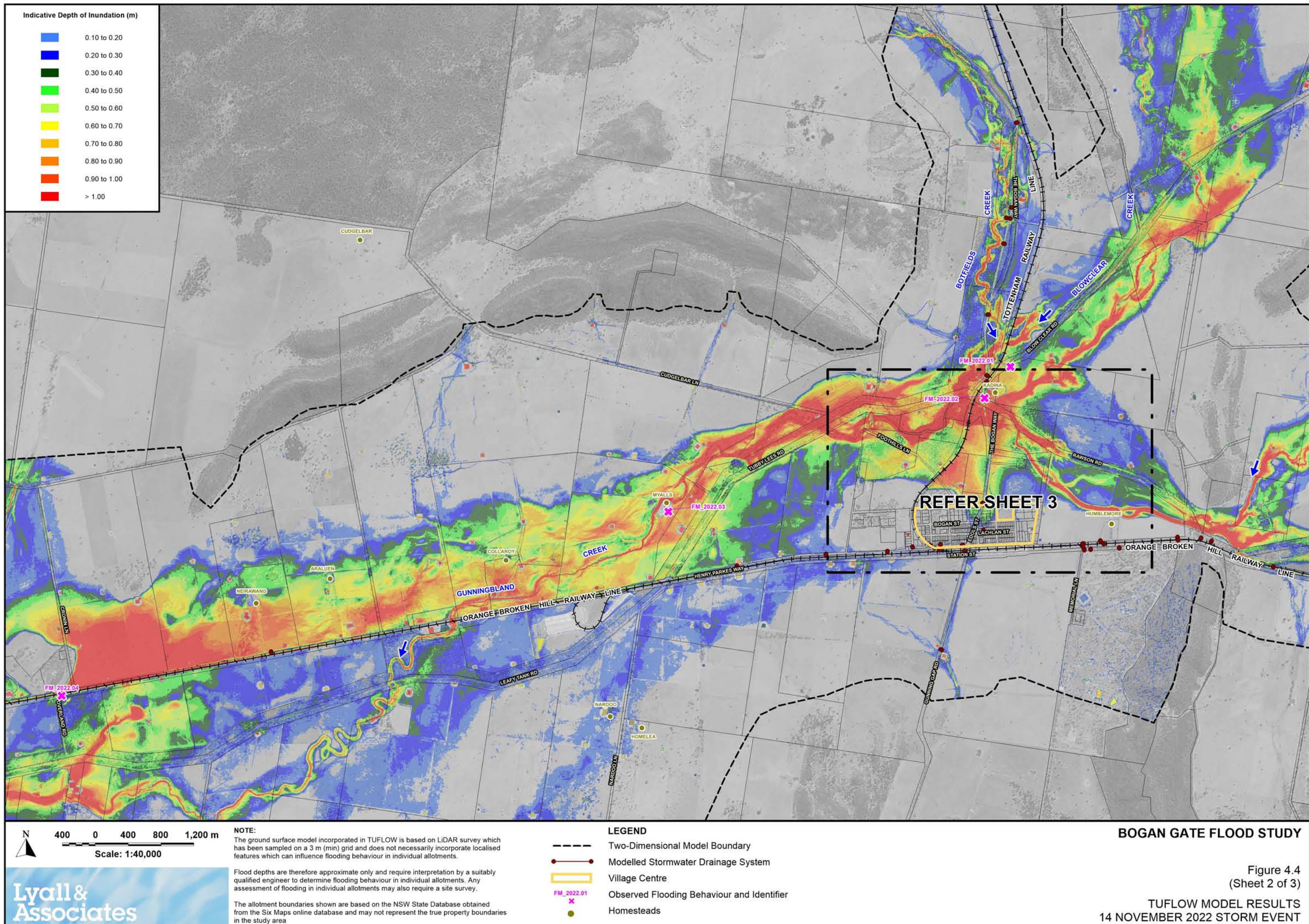


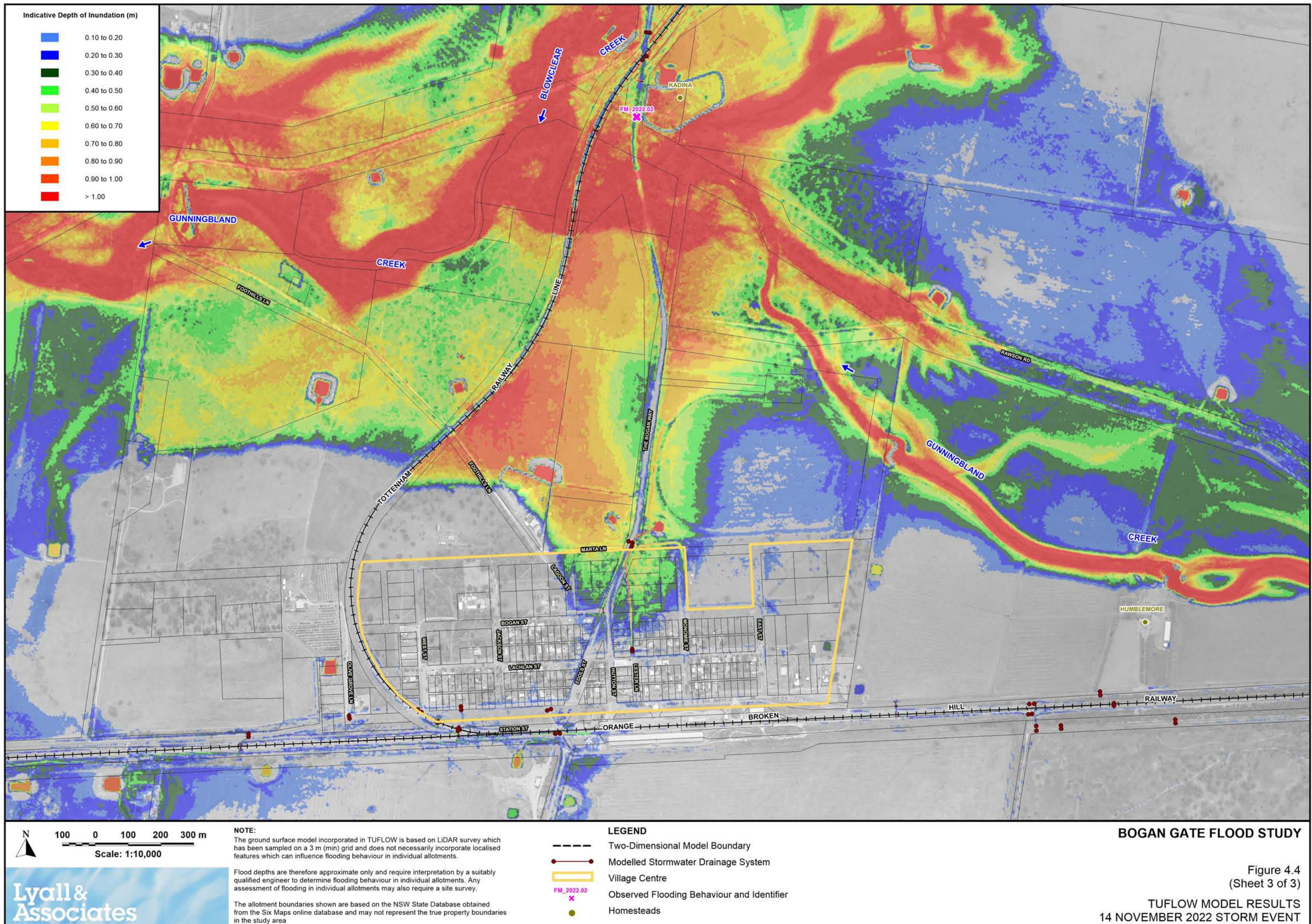


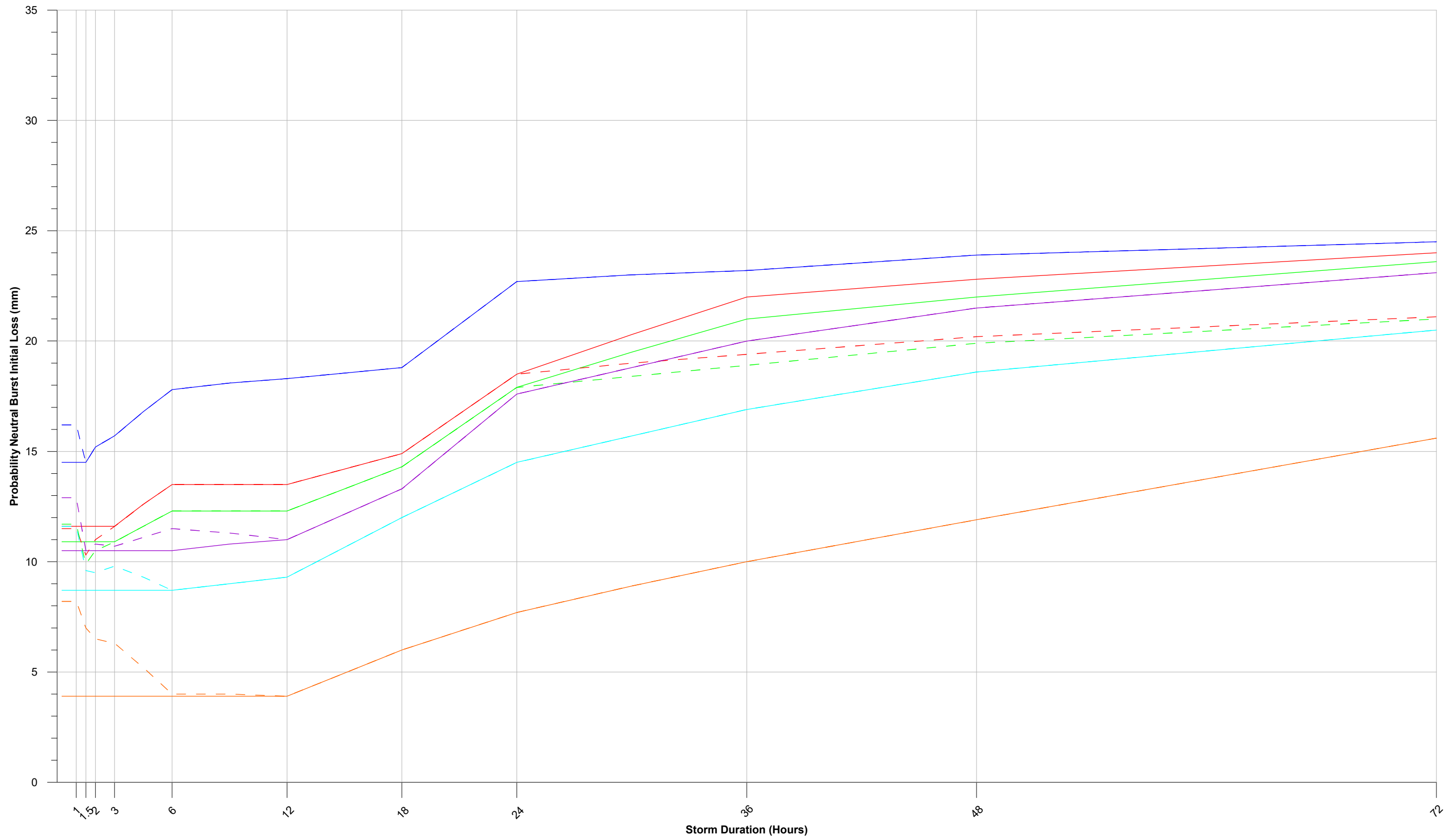












LEGEND

Raw (Unadjusted) ARR Data Hub Loss Values

Adjusted ARR Data Hub Loss Values

50% AEP

—

20% AEP

—

10% AEP

—

5% AEP

—

2% AEP

—

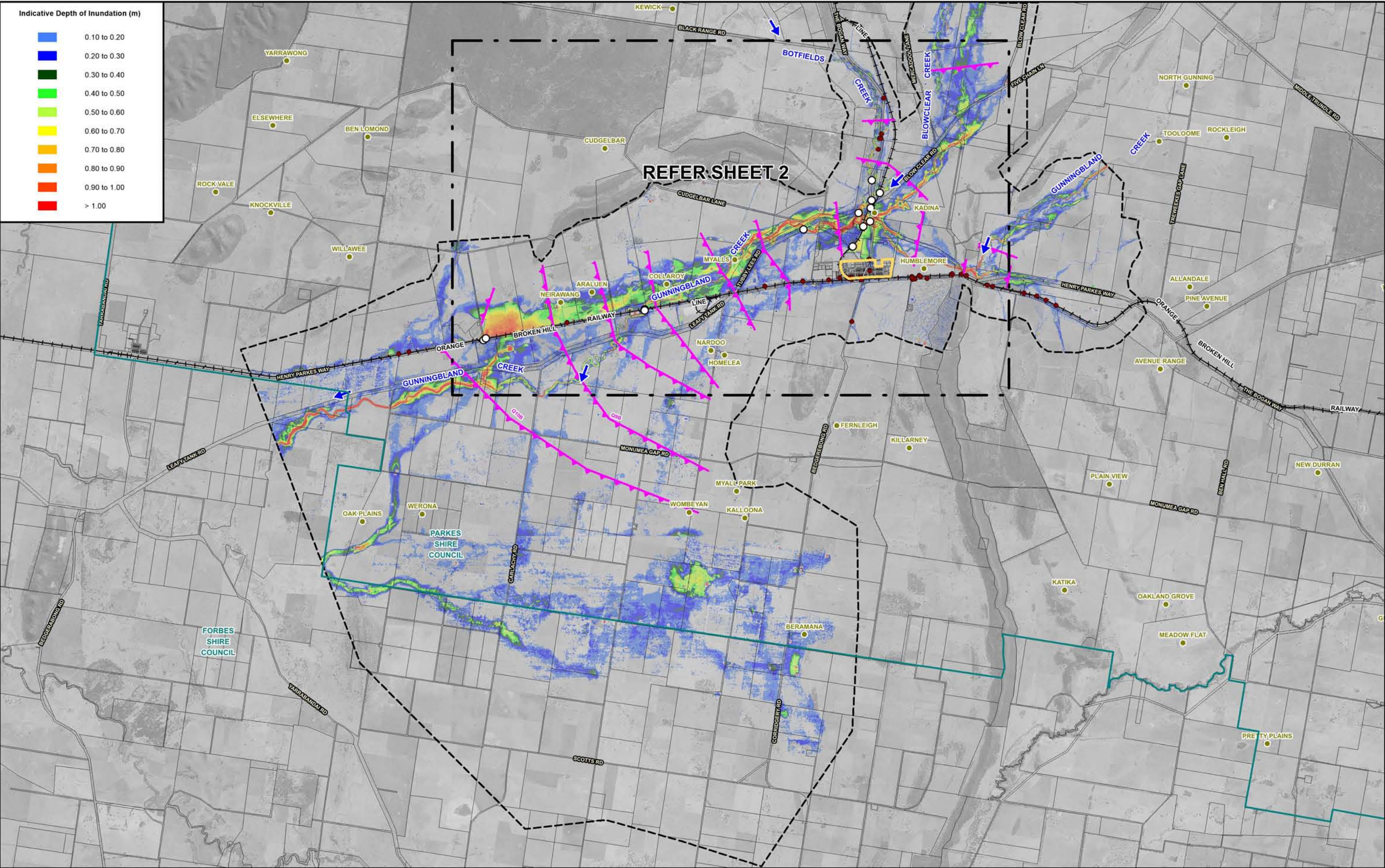
1% AEP

—

BOGAN GATE FLOOD STUDY

Figure 5.1

ADJUSTED PROBABILITY NEUTRAL BURST INITIAL LOSS VALUES



Indicative Depth of Inundation (m)



REFER SHEET 2

LEGEND

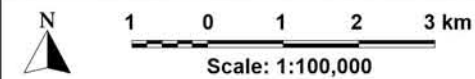
- LGA Boundary
- - - Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

- Q01 Peak Flow Location and Identifier
- Q00 Peak Flood Level Location and Identifier

BOGAN GATE FLOOD STUDY

Figure 6.1
(Sheet 1 of 3)

TUFLOW MODEL RESULTS
20% AEP

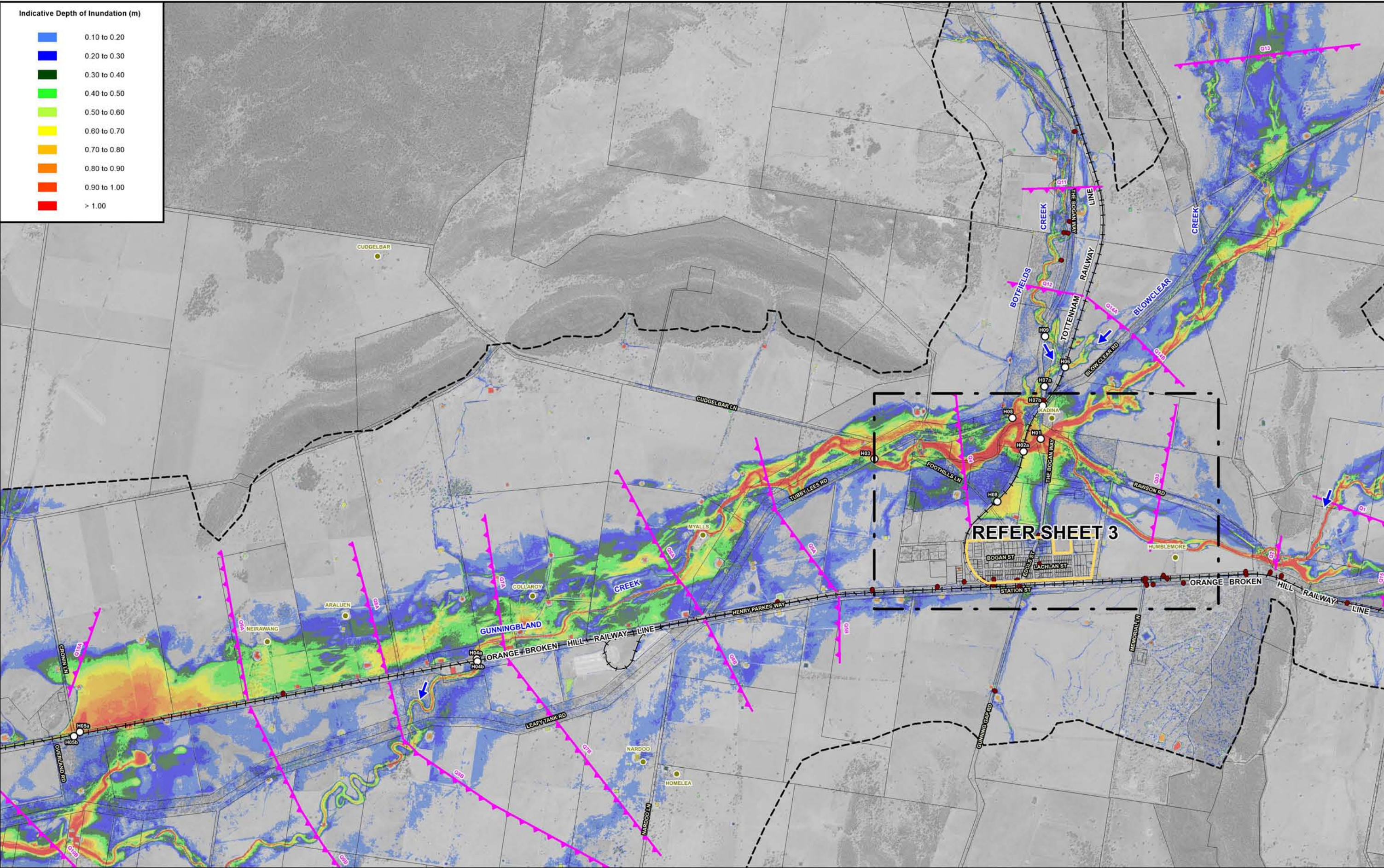


NOTE:
The ground surface model incorporated in TUFLOW is based on LiDAR survey which has been sampled on a 3 m (min) grid and does not necessarily incorporate localised features which can influence flooding behaviour in individual allotments.

Flood depths are therefore approximate only and require interpretation by a suitably qualified engineer to determine flooding behaviour in individual allotments. Any assessment of flooding in individual allotments may also require a site survey.

The allotment boundaries shown are based on the NSW State Database obtained from the Six Maps online database and may not represent the true property boundaries in the study area

Lyall & Associates



Indicative Depth of Inundation (m)

0.10 to 0.20
0.20 to 0.30
0.30 to 0.40
0.40 to 0.50
0.50 to 0.60
0.60 to 0.70
0.70 to 0.80
0.80 to 0.90
0.90 to 1.00
> 1.00

NOTE:

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Scale: 1:40,000

400 0 400 800 1,200 m

Lyall & Associates

LEGEND

- LGA Boundary
- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

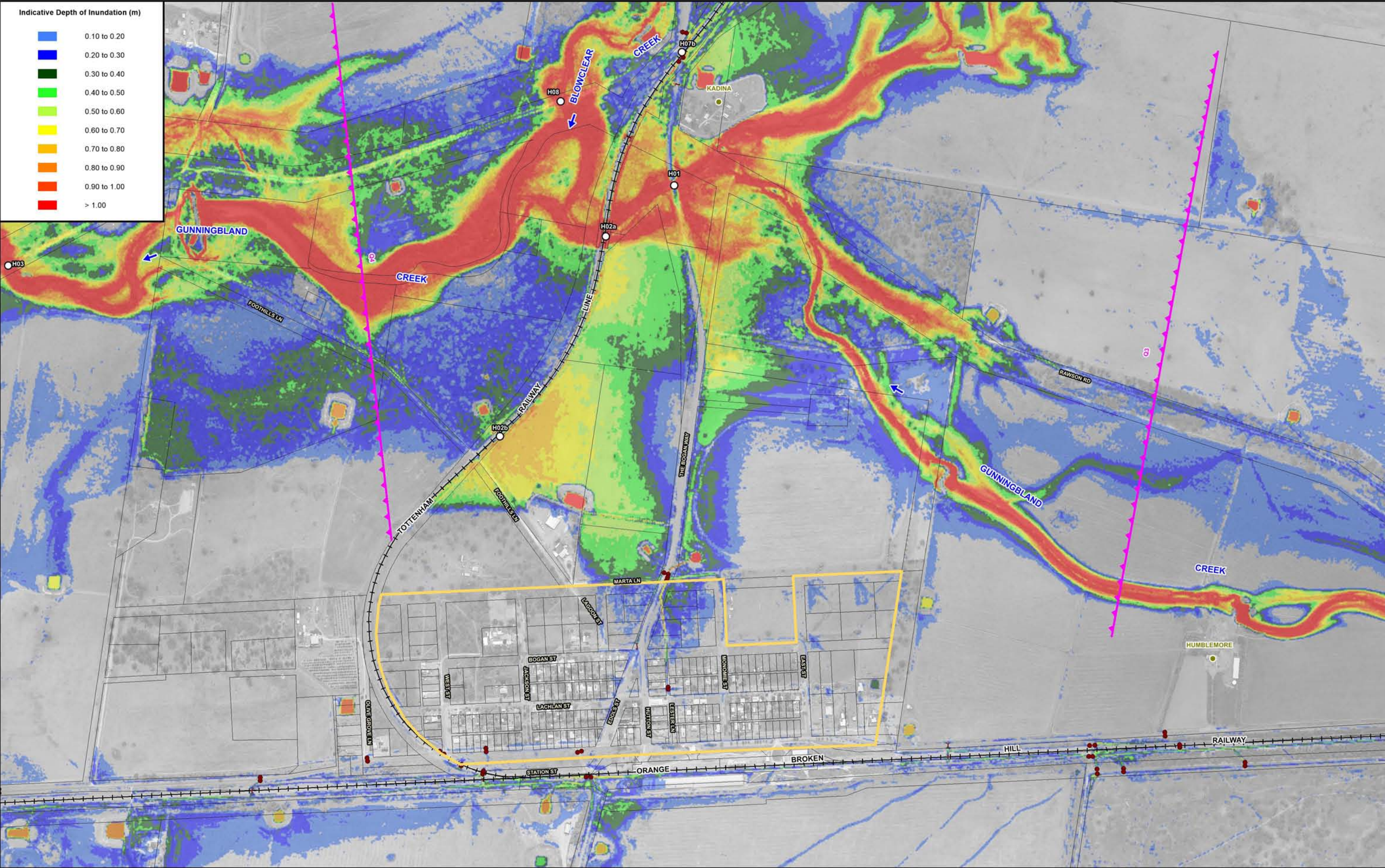
Q01 Peak Flow Location and Identifier

H01 Peak Flood Level Location and Identifier

BOGAN GATE FLOOD STUDY

Figure 6.1
(Sheet 2 of 3)

TUFLOW MODEL RESULTS
20% AEP



Indicative Depth of Inundation (m)

Blue	0.10 to 0.20
Dark Blue	0.20 to 0.30
Green	0.30 to 0.40
Light Green	0.40 to 0.50
Yellow	0.50 to 0.60
Orange	0.60 to 0.70
Dark Orange	0.70 to 0.80
Red	0.80 to 0.90
Dark Red	0.90 to 1.00
Red	> 1.00

NOTE:

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LEGEND

- LGA Boundary
- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

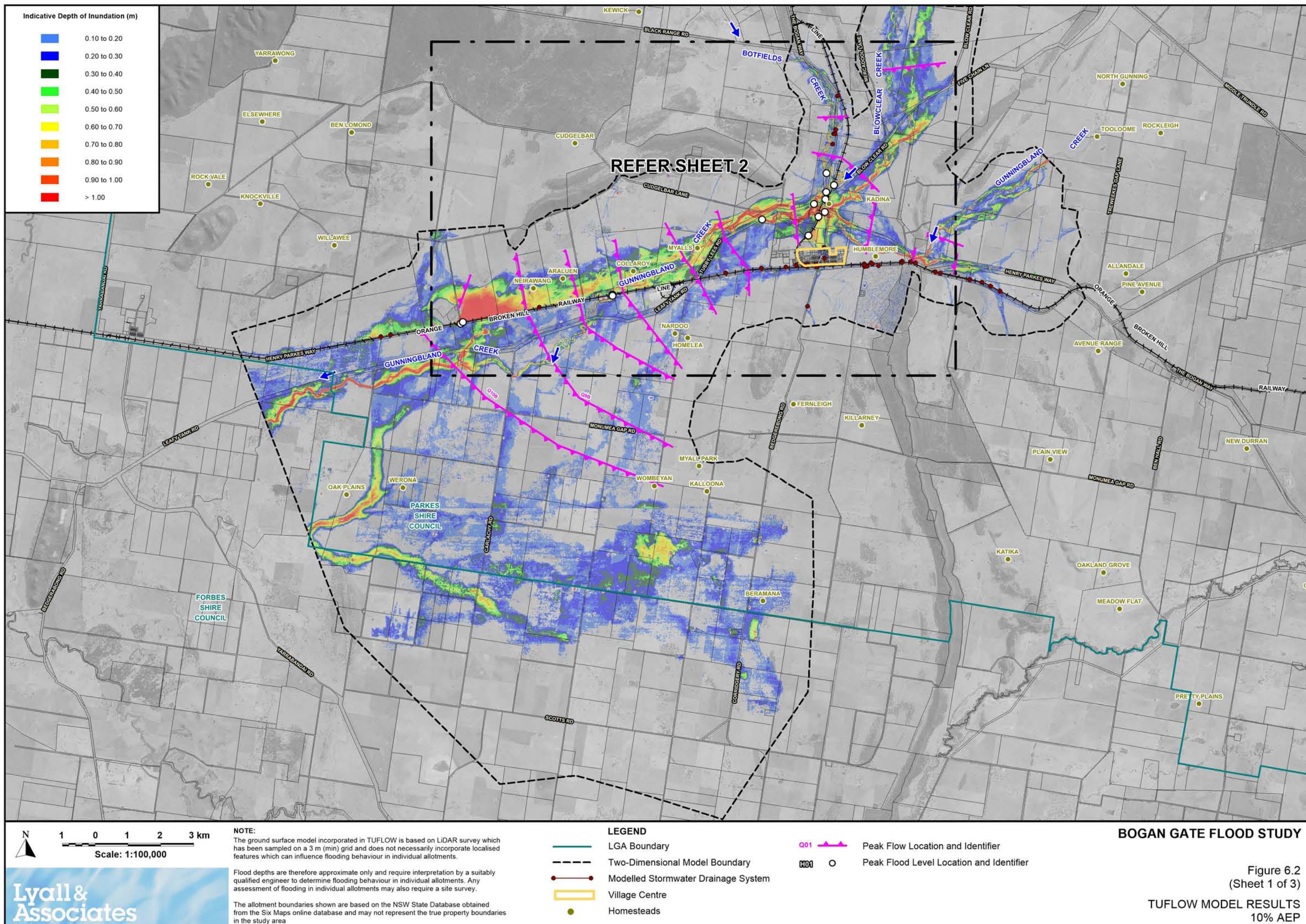
Q01 Peak Flow Location and Identifier

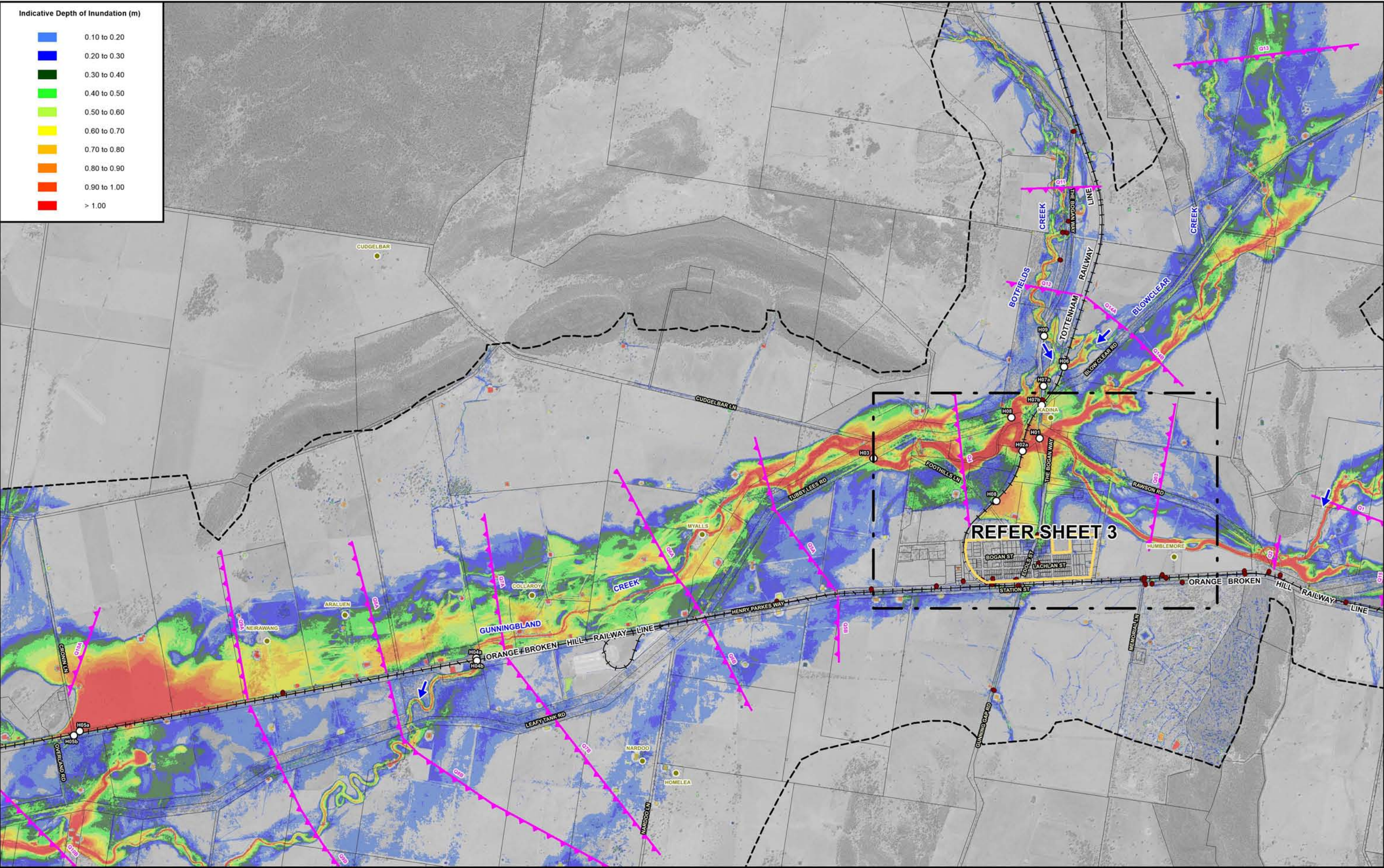
H01 Peak Flood Level Location and Identifier

BOGAN GATE FLOOD STUDY

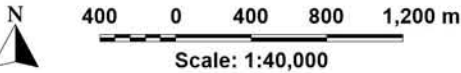
Figure 6.1
(Sheet 3 of 3)

TUFLOW MODEL RESULTS
20% AEP





Indicative Depth of Inundation (m)



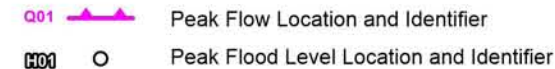
Lyall & Associates

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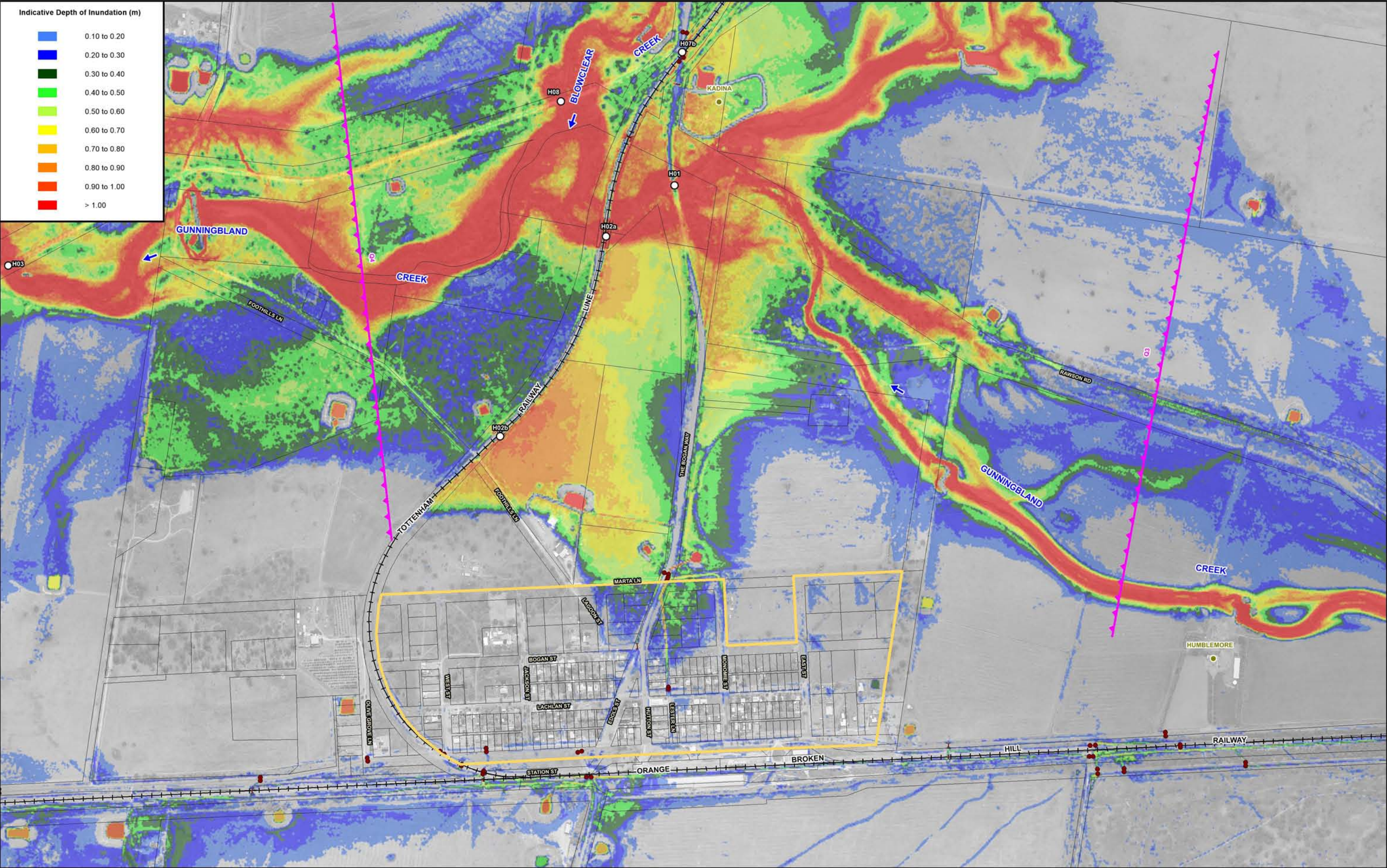
LEGEND



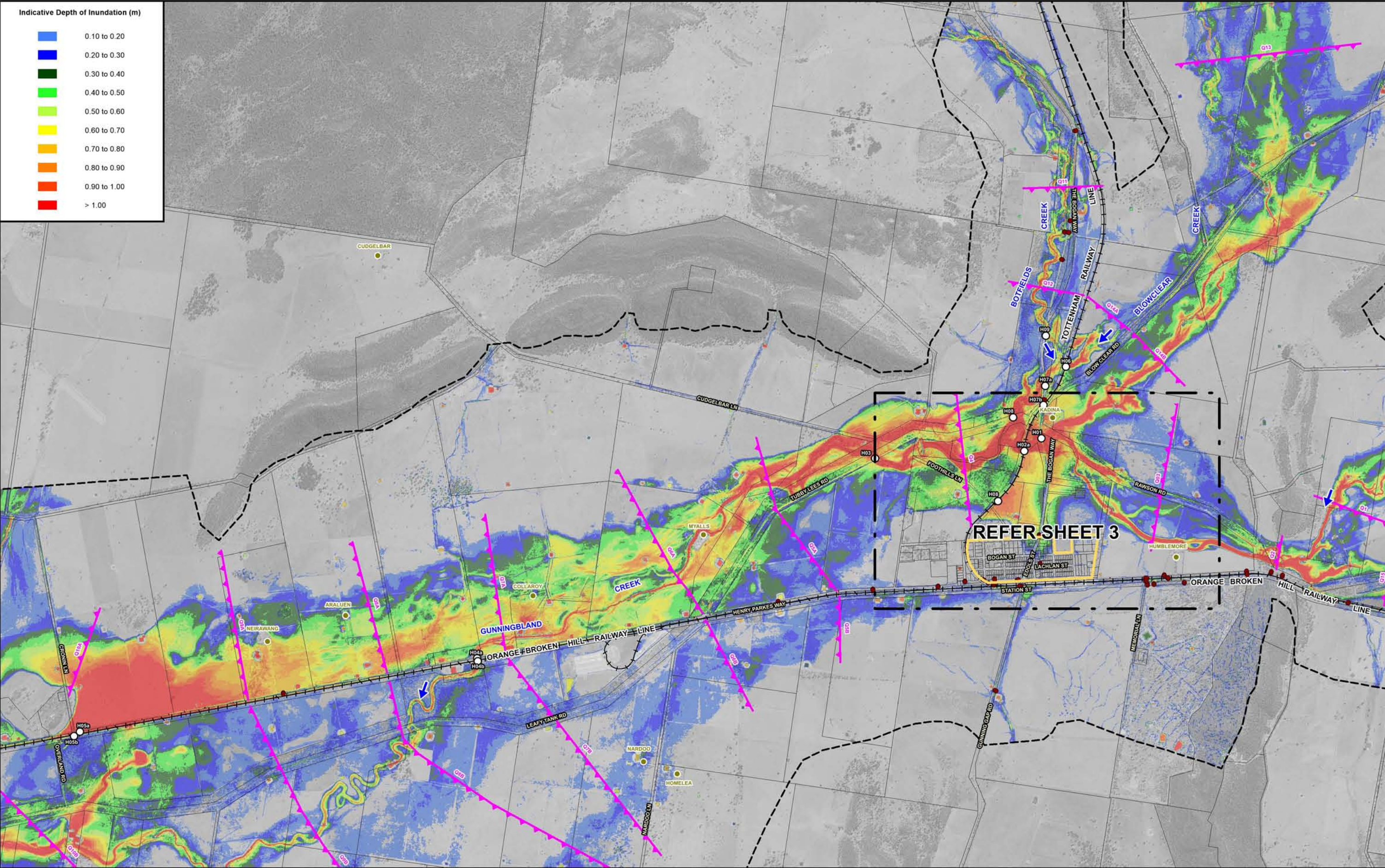
BOGAN GATE FLOOD STUDY

Figure 6.2
(Sheet 2 of 3)

TUFLOW MODEL RESULTS
10% AEP







Indicative Depth of Inundation (m)

- 0.10 to 0.20
- 0.20 to 0.30
- 0.30 to 0.40
- 0.40 to 0.50
- 0.50 to 0.60
- 0.60 to 0.70
- 0.70 to 0.80
- 0.80 to 0.90
- 0.90 to 1.00
- > 1.00

Scale: 1:40,000

NOTE:
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LEGEND

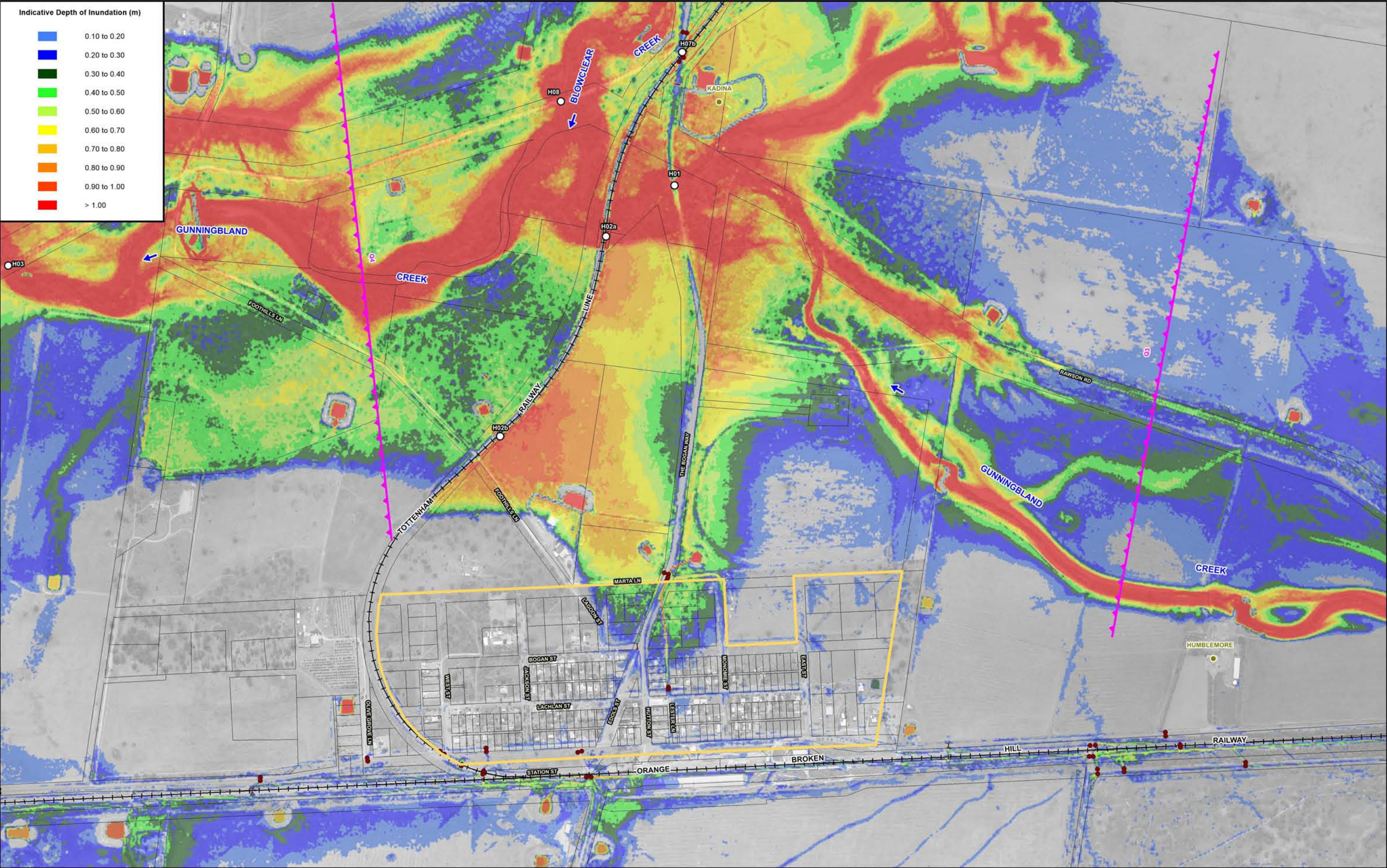
- LGA Boundary
- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

- Q01 Peak Flow Location and Identifier
- H00 Peak Flood Level Location and Identifier

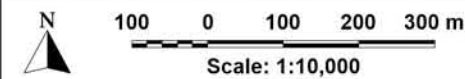
BOGAN GATE FLOOD STUDY

Figure 6.3
(Sheet 2 of 3)

TUFLOW MODEL RESULTS
5% AEP



Indicative Depth of Inundation (m)



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LEGEND

- LGA Boundary
- - - Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

- Q01 Peak Flow Location and Identifier
- H01 Peak Flood Level Location and Identifier

BOGAN GATE FLOOD STUDY

Figure 6.3
(Sheet 3 of 3)
TUFLOW MODEL RESULTS
5% AEP



N

1

0

1

2

3

Scale: 1:100,000

Lyall & Associates

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LEGEND

LGA Boundary

Two-Dimensional Model Boundary

Modelled Stormwater Drainage System

Village Centre

Homesteads

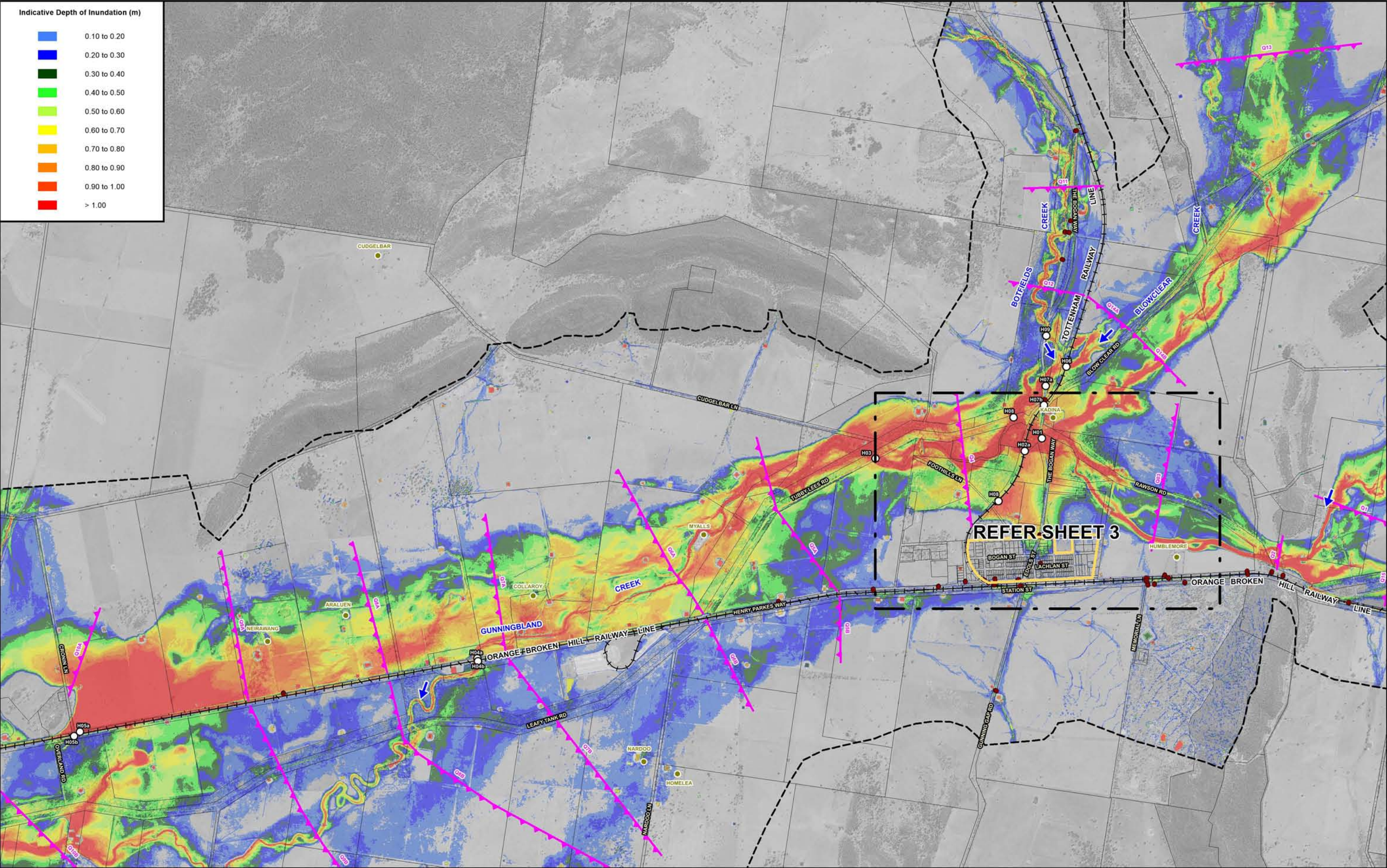
Q01

Peak Flow Location and Identifier

Peak Flood Level Location and Identifier

BOGAN GATE FLOOD STUDY

Figure 6.4
(Sheet 1 of 3)
TUFLOW MODEL RESULTS
2% AEP



Indicative Depth of Inundation (m)

0.10 to 0.20
0.20 to 0.30
0.30 to 0.40
0.40 to 0.50
0.50 to 0.60
0.60 to 0.70
0.70 to 0.80
0.80 to 0.90
0.90 to 1.00
> 1.00

NOTE:

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LEGEND

—	LGA Boundary
- - -	Two-Dimensional Model Boundary
—●—	Modelled Stormwater Drainage System
—	Village Centre
●	Homesteads

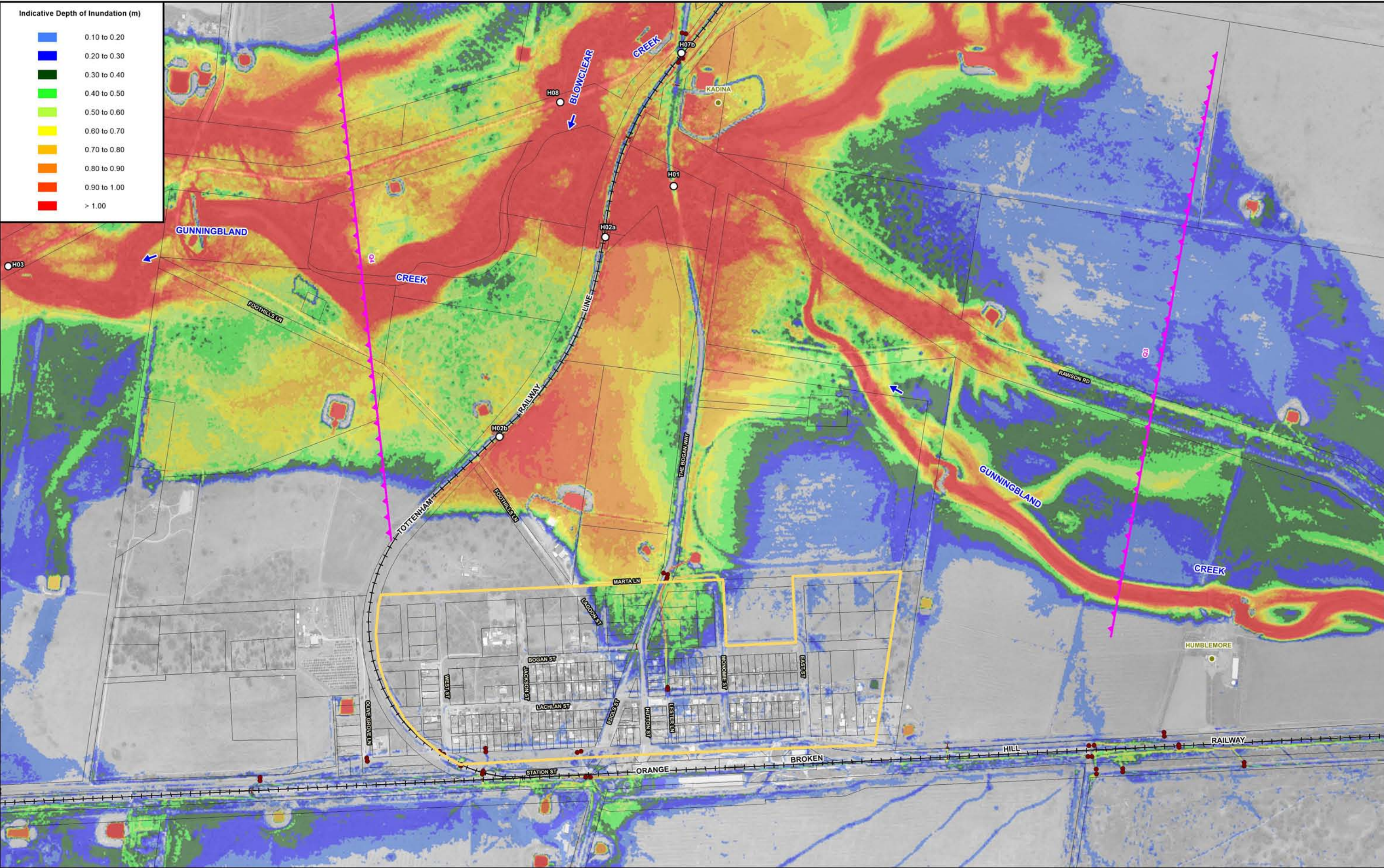
Q01 — Peak Flow Location and Identifier

H001 ○ Peak Flood Level Location and Identifier

BOGAN GATE FLOOD STUDY

Figure 6.4
(Sheet 2 of 3)

TUFLOW MODEL RESULTS
2% AEP



Indicative Depth of Inundation (m)

- 0.10 to 0.20
- 0.20 to 0.30
- 0.30 to 0.40
- 0.40 to 0.50
- 0.50 to 0.60
- 0.60 to 0.70
- 0.70 to 0.80
- 0.80 to 0.90
- 0.90 to 1.00
- > 1.00

Scale: 1:10,000

Lyll & Associates

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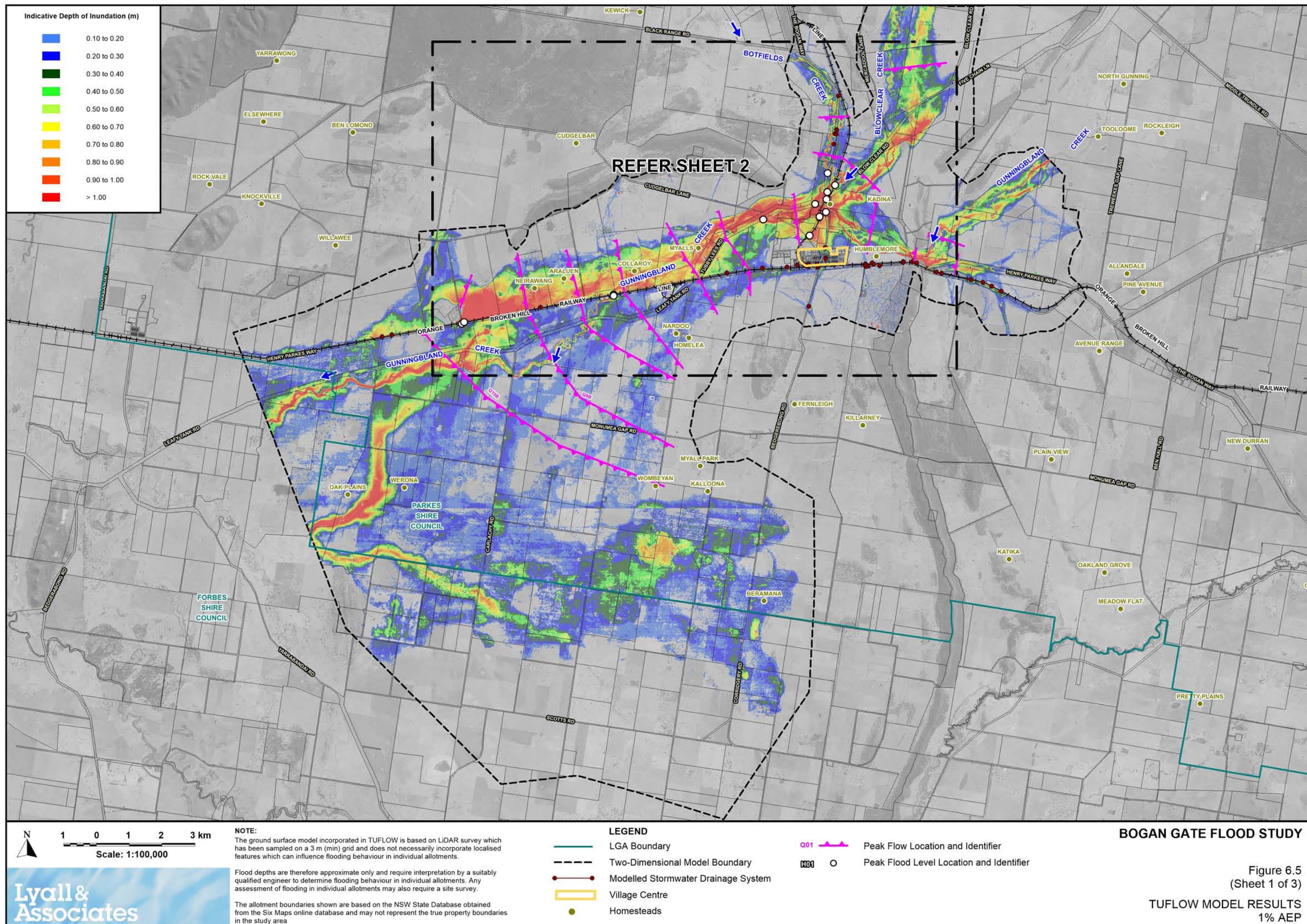
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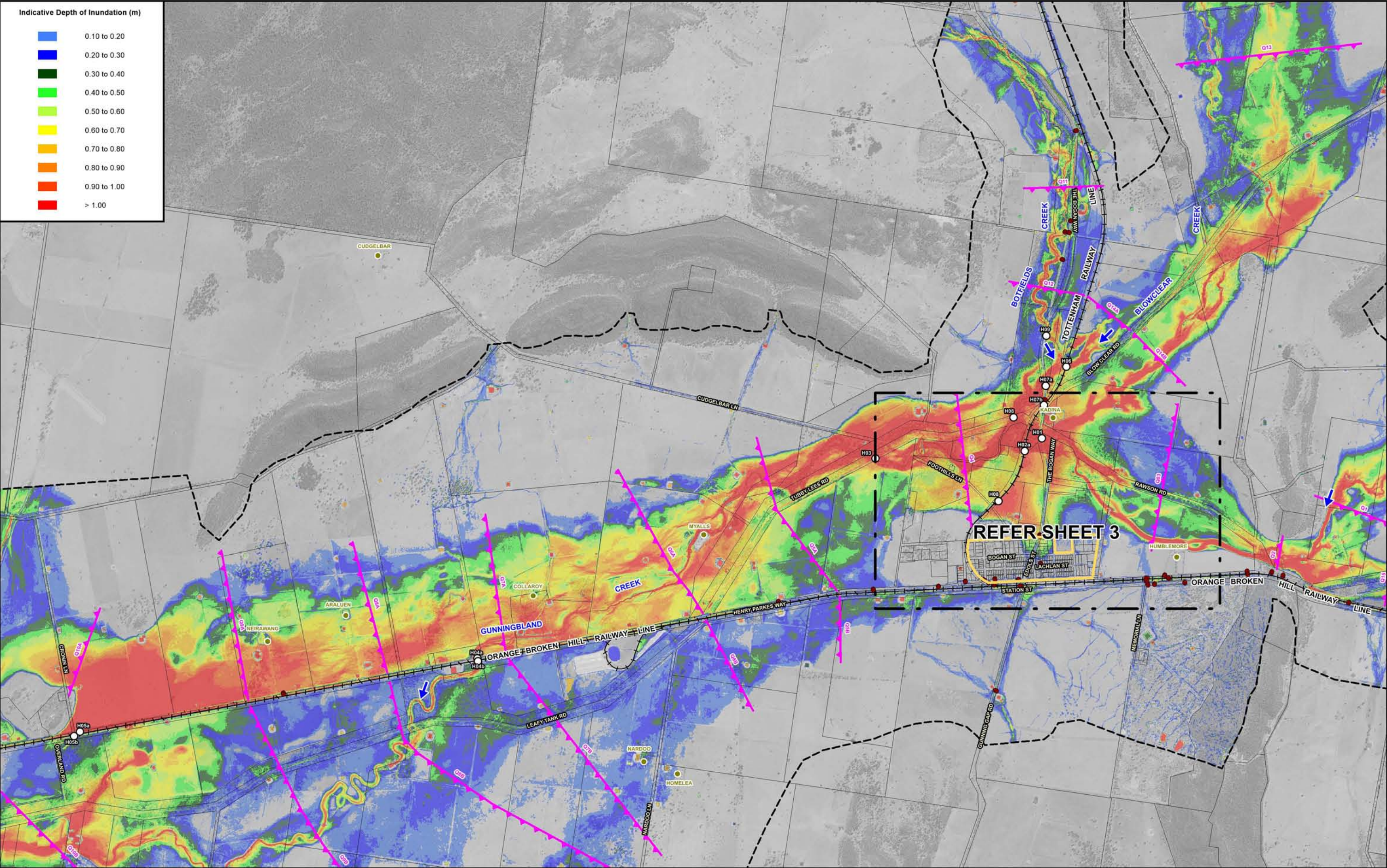
- LGA Boundary
- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
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- Q01 Peak Flow Location and Identifier
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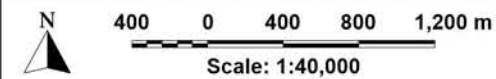
BOGAN GATE FLOOD STUDY

Figure 6.4
(Sheet 3 of 3)
TUFLOW MODEL RESULTS
2% AEP





Indicative Depth of Inundation (m)



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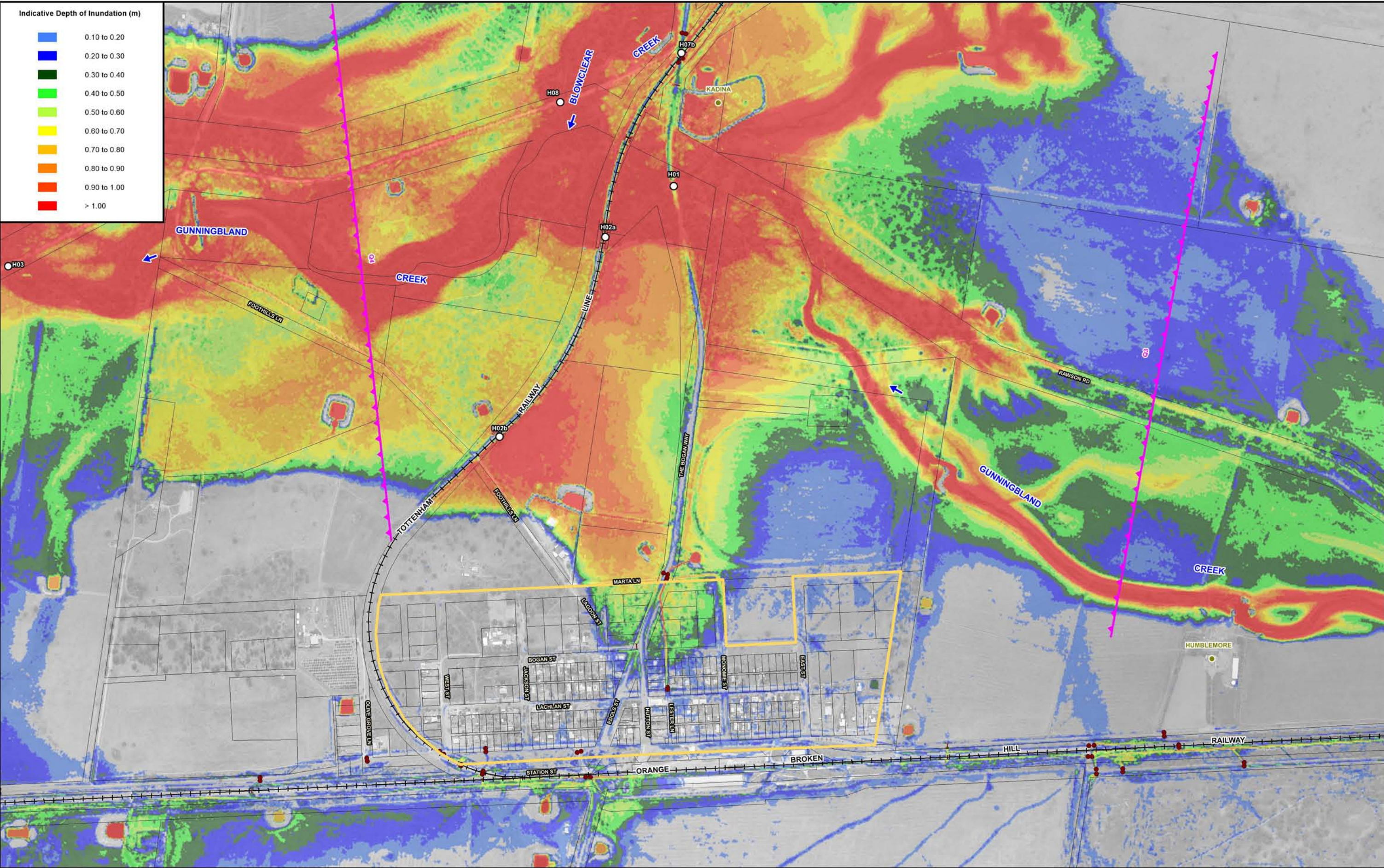
LEGEND

- LGA Boundary
- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

- Q01 Peak Flow Location and Identifier
- H001 Peak Flood Level Location and Identifier

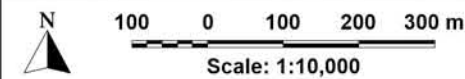
BOGAN GATE FLOOD STUDY

Figure 6.5
(Sheet 2 of 3)
TUFLOW MODEL RESULTS
1% AEP



Indicative Depth of Inundation (m)

- 0.10 to 0.20
- 0.20 to 0.30
- 0.30 to 0.40
- 0.40 to 0.50
- 0.50 to 0.60
- 0.60 to 0.70
- 0.70 to 0.80
- 0.80 to 0.90
- 0.90 to 1.00
- > 1.00



Lyall & Associates

NOTE:

The ground surface model incorporated in TUFLOW is based on LiDAR survey which has been sampled on a 3 m (min) grid and does not necessarily incorporate localised features which can influence flooding behaviour in individual allotments.

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LEGEND

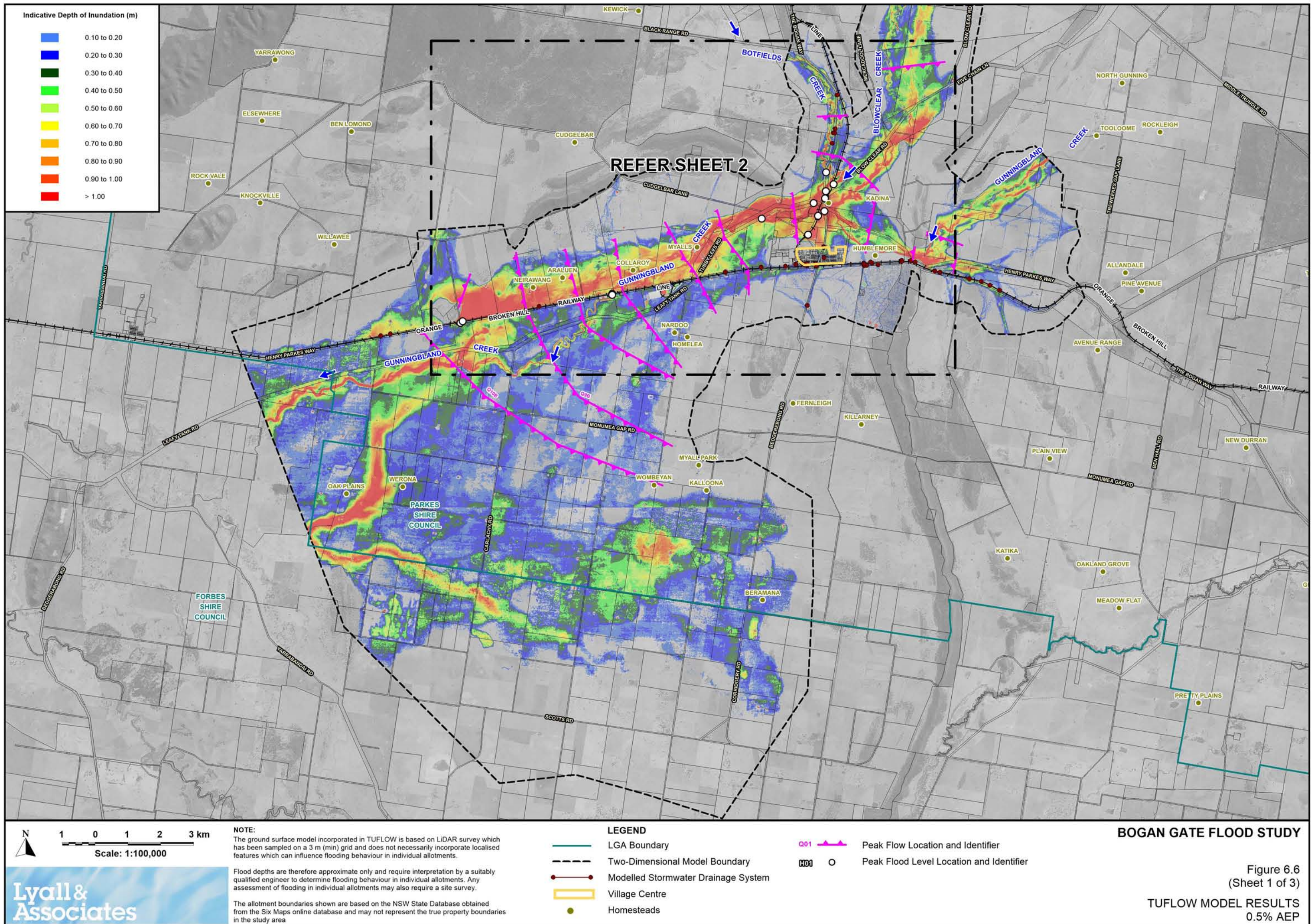
- LGA Boundary
- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

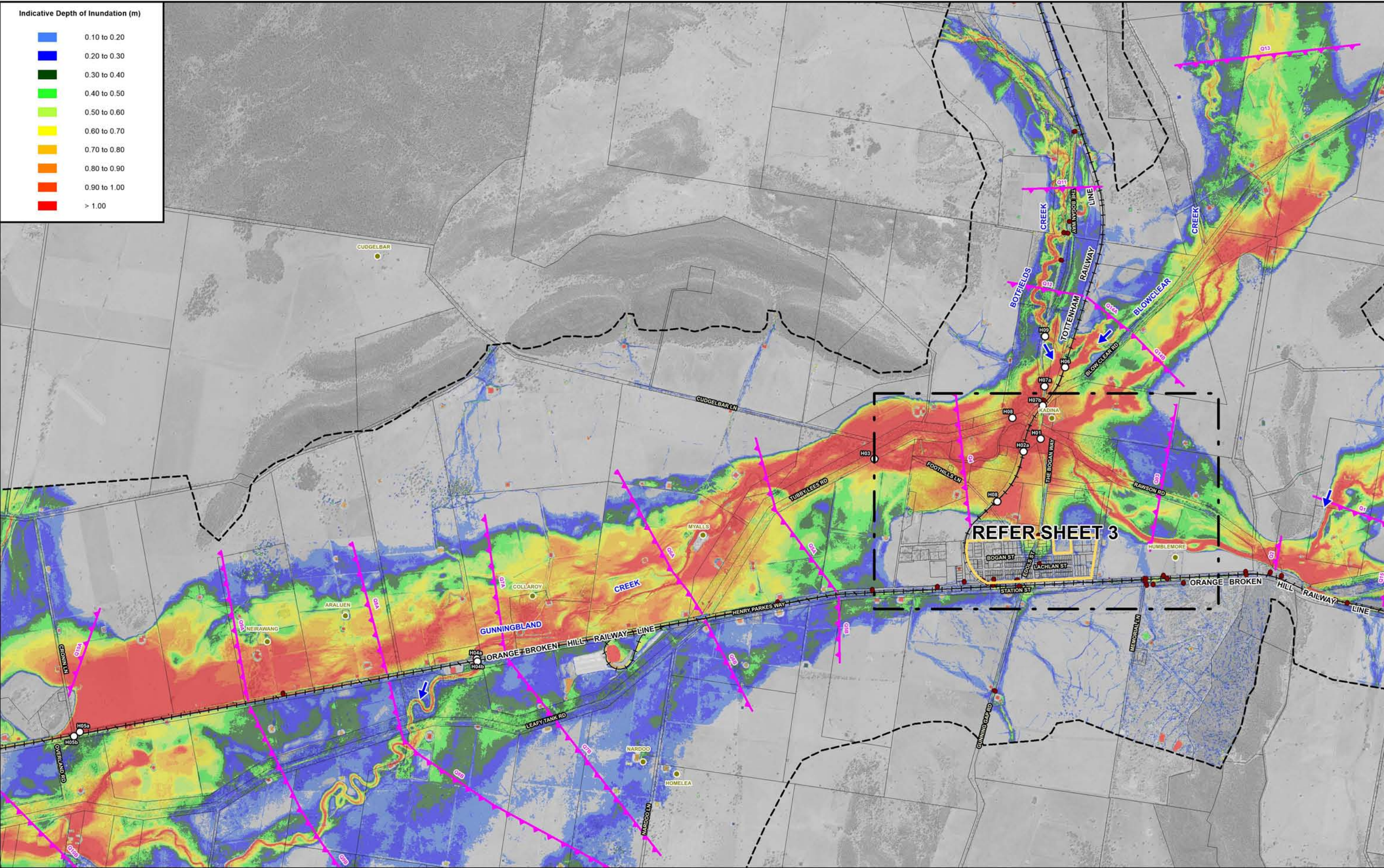
- Q01 Peak Flow Location and Identifier
- H00 Peak Flood Level Location and Identifier

BOGAN GATE FLOOD STUDY

Figure 6.5
(Sheet 3 of 3)

TUFLOW MODEL RESULTS
1% AEP





Indicative Depth of Inundation (m)

0.10 to 0.20
0.20 to 0.30
0.30 to 0.40
0.40 to 0.50
0.50 to 0.60
0.60 to 0.70
0.70 to 0.80
0.80 to 0.90
0.90 to 1.00
> 1.00

NOTE:
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LEGEND

	LGA Boundary
	Two-Dimensional Model Boundary
	Modelled Stormwater Drainage System
	Village Centre
	Homesteads

Q01

H001

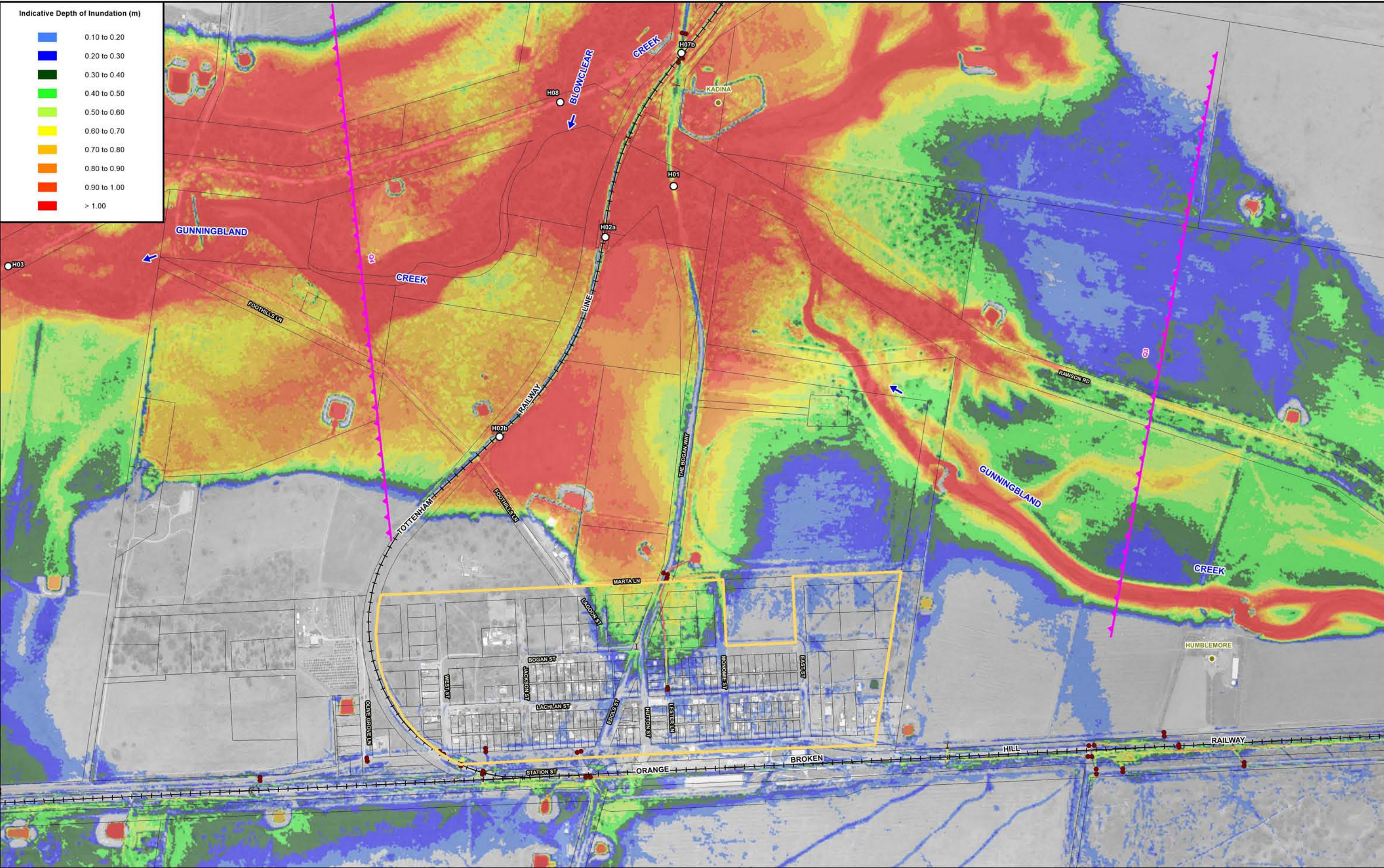
Peak Flow Location and Identifier

Peak Flood Level Location and Identifier

BOGAN GATE FLOOD STUDY

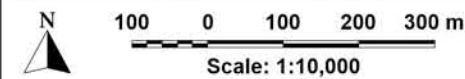
Figure 6.6
(Sheet 2 of 3)

TUFLOW MODEL RESULTS
0.5% AEP



Indicative Depth of Inundation (m)

- 0.10 to 0.20
- 0.20 to 0.30
- 0.30 to 0.40
- 0.40 to 0.50
- 0.50 to 0.60
- 0.60 to 0.70
- 0.70 to 0.80
- 0.80 to 0.90
- 0.90 to 1.00
- > 1.00



Lyall & Associates

NOTE:
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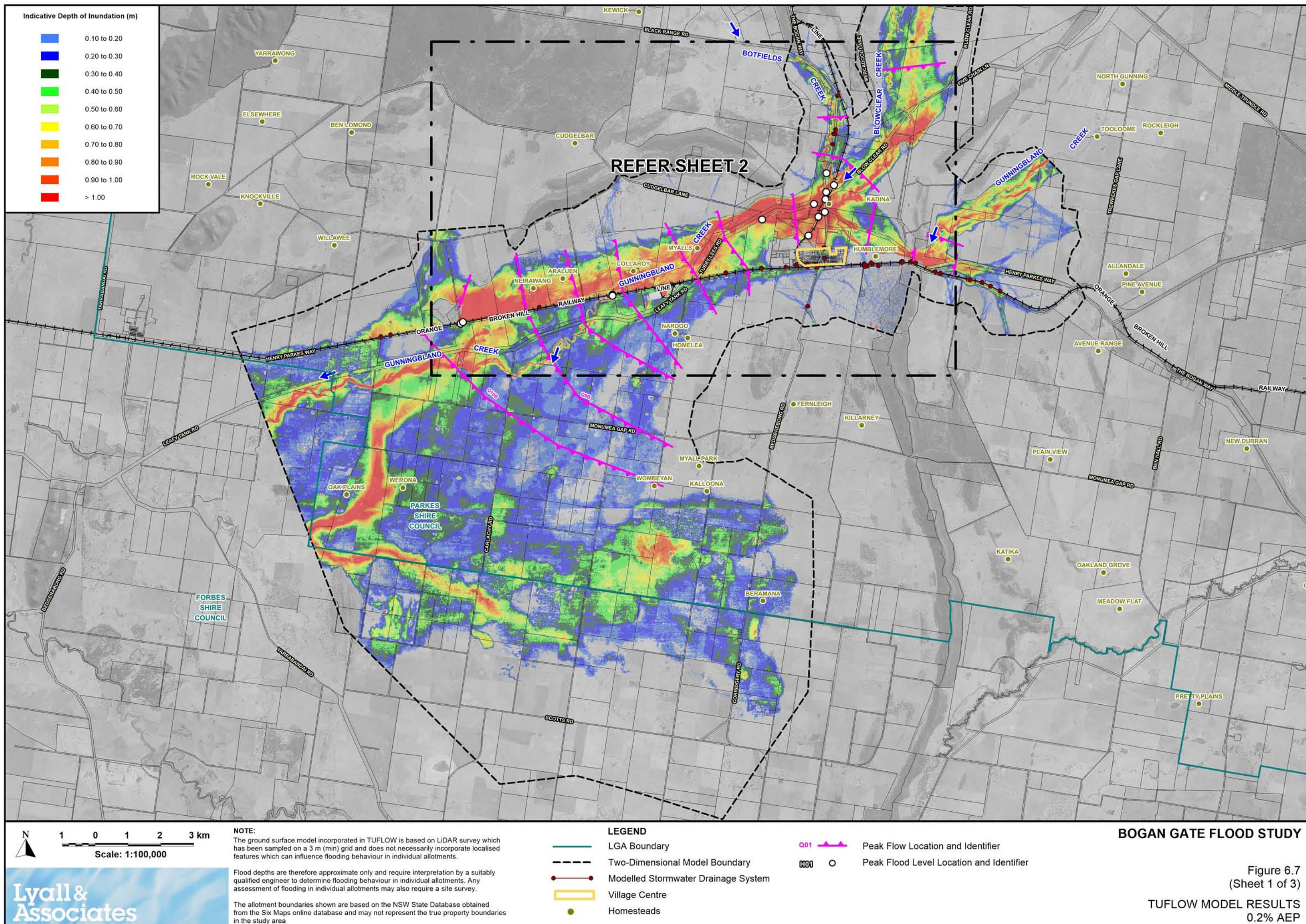
LEGEND

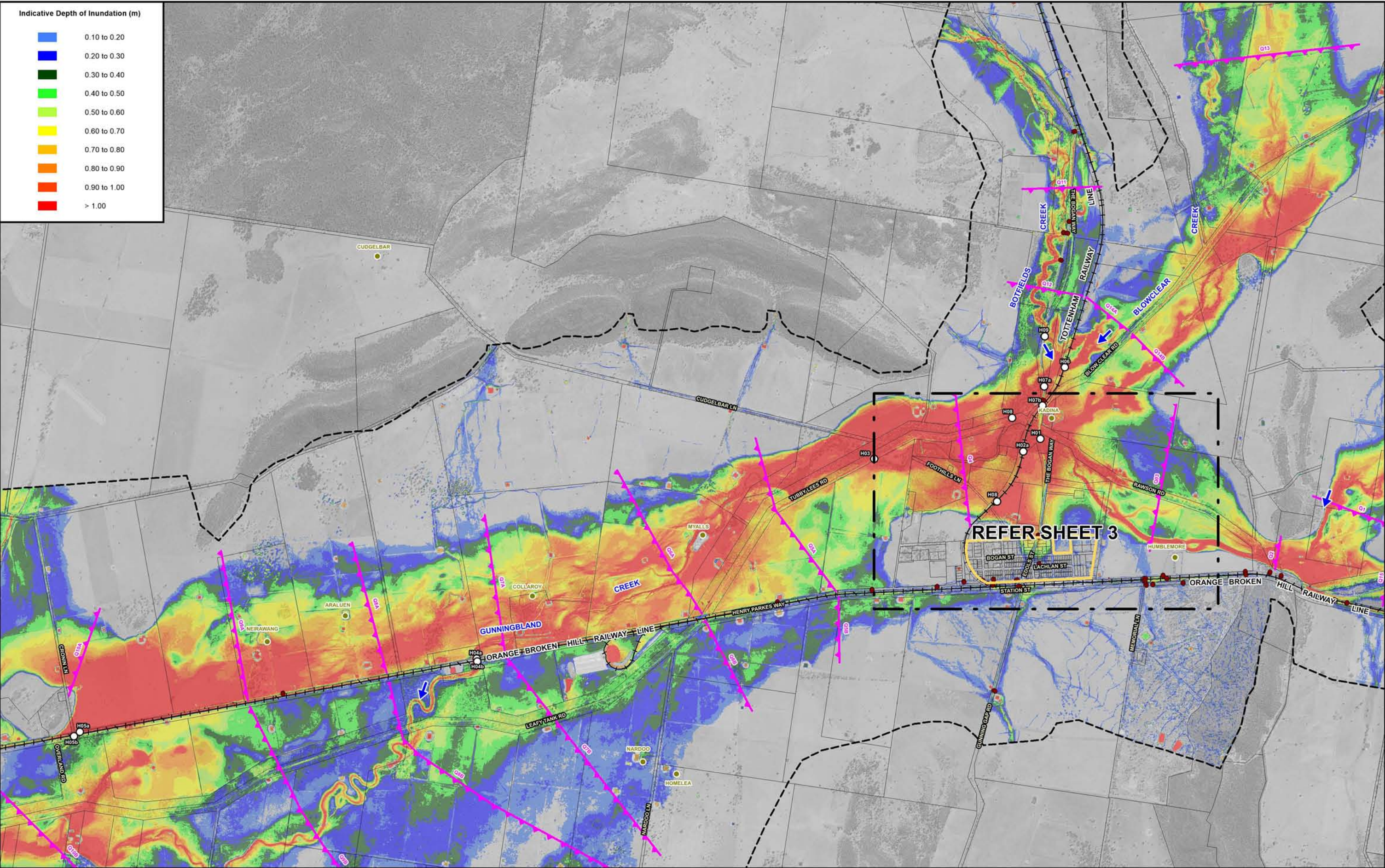
- LGA Boundary
- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

- Q01 Peak Flow Location and Identifier
- H00 Peak Flood Level Location and Identifier

BOGAN GATE FLOOD STUDY

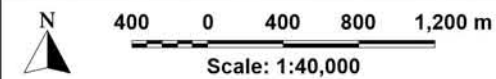
Figure 6.6
(Sheet 3 of 3)
TUFLOW MODEL RESULTS
0.5% AEP





Indicative Depth of Inundation (m)

- 0.10 to 0.20
- 0.20 to 0.30
- 0.30 to 0.40
- 0.40 to 0.50
- 0.50 to 0.60
- 0.60 to 0.70
- 0.70 to 0.80
- 0.80 to 0.90
- 0.90 to 1.00
- > 1.00



Lyall & Associates

NOTE:
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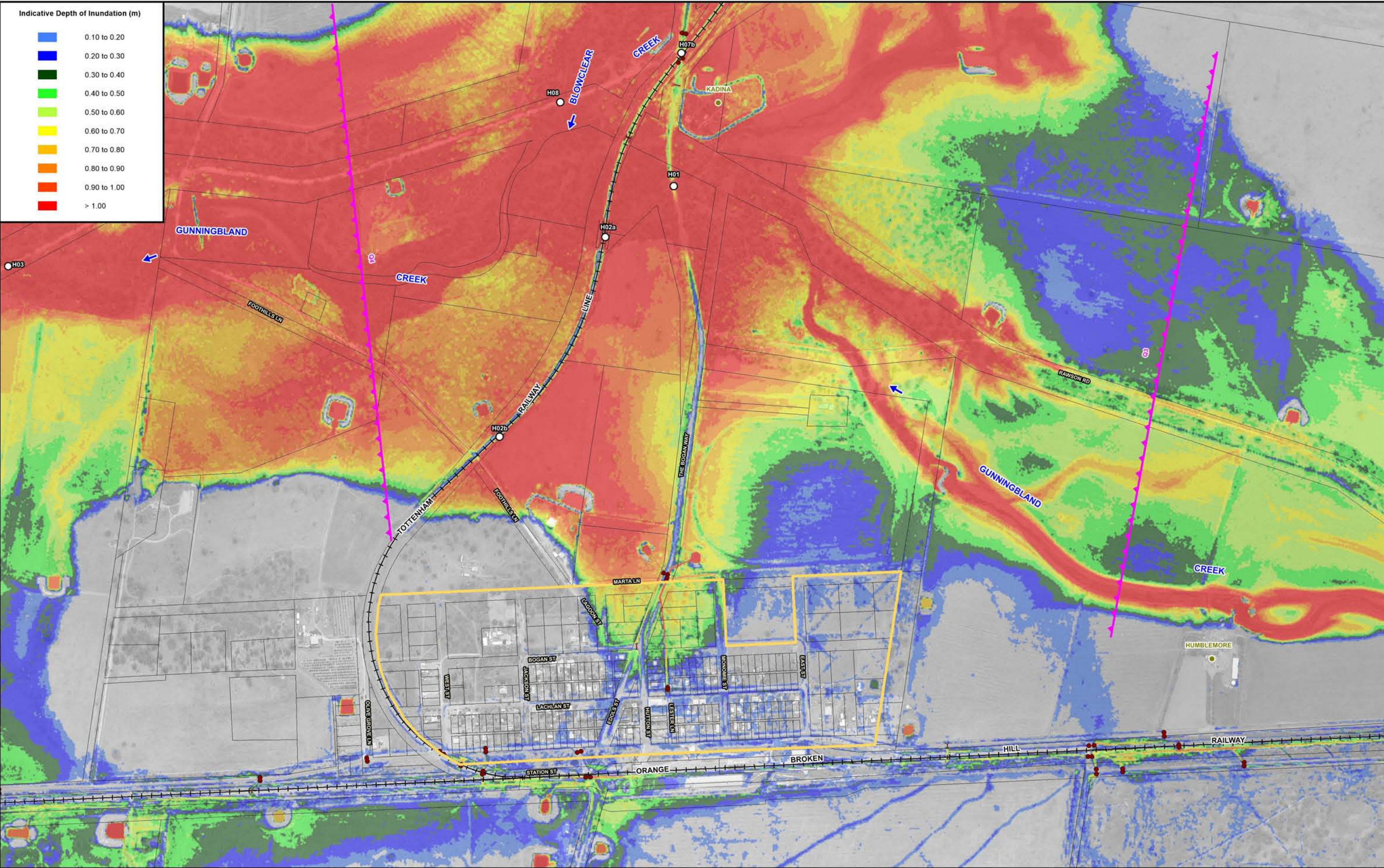
LEGEND

- LGA Boundary
- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

- Q01 Peak Flow Location and Identifier
- H01 Peak Flood Level Location and Identifier

BOGAN GATE FLOOD STUDY

Figure 6.7
(Sheet 2 of 3)
TUFLOW MODEL RESULTS
0.2% AEP



Indicative Depth of Inundation (m)

0.10 to 0.20
0.20 to 0.30
0.30 to 0.40
0.40 to 0.50
0.50 to 0.60
0.60 to 0.70
0.70 to 0.80
0.80 to 0.90
0.90 to 1.00
> 1.00

NOTE:

The ground surface model incorporated in TUFLOW is based on LiDAR survey which has been sampled on a 3 m (min) grid and does not necessarily incorporate localised features which can influence flooding behaviour in individual allotments.

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LEGEND

- LGA Boundary
- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

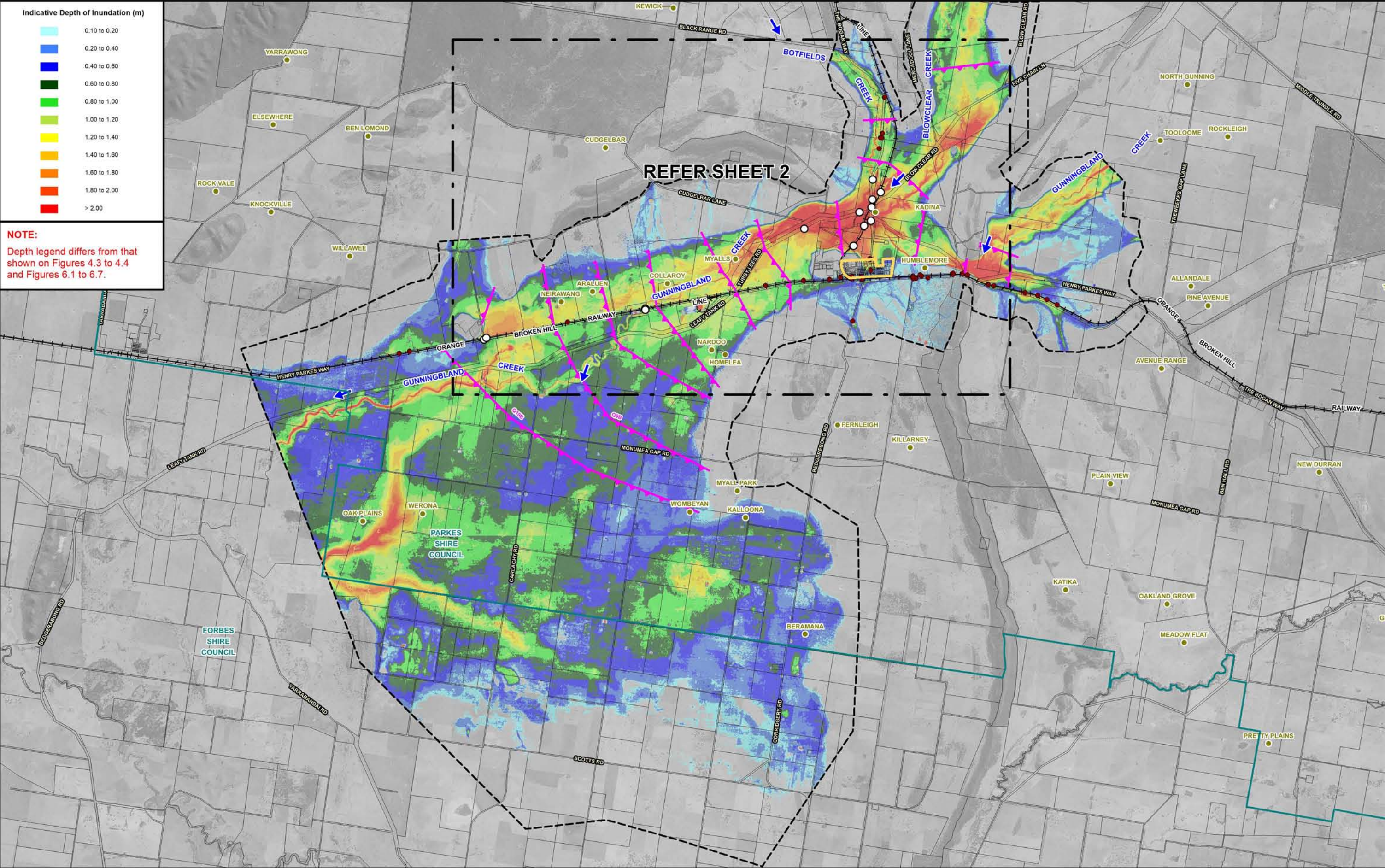
Q01 Peak Flow Location and Identifier

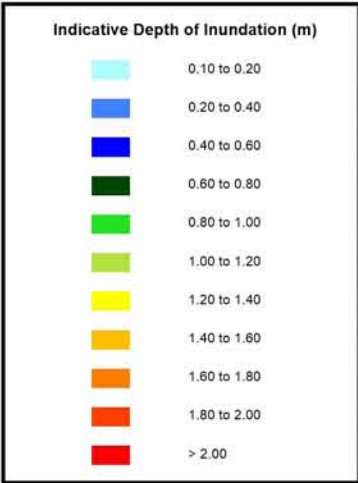
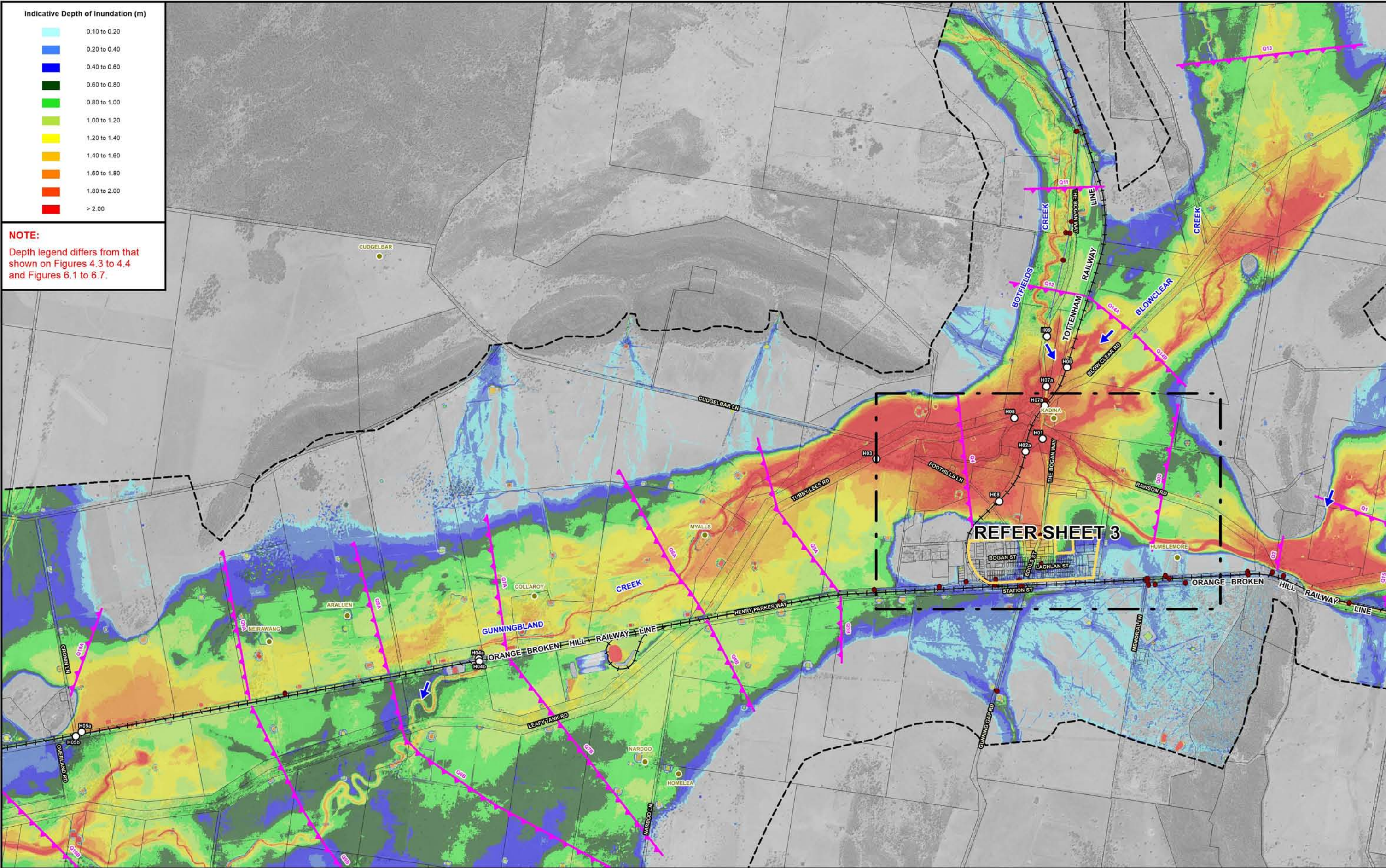
H01 Peak Flood Level Location and Identifier

BOGAN GATE FLOOD STUDY

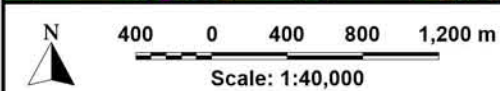
Figure 6.7
(Sheet 3 of 3)

TUFLOW MODEL RESULTS
0.2% AEP





NOTE:
Depth legend differs from that shown on Figures 4.3 to 4.4 and Figures 6.1 to 6.7.



Lyall & Associates

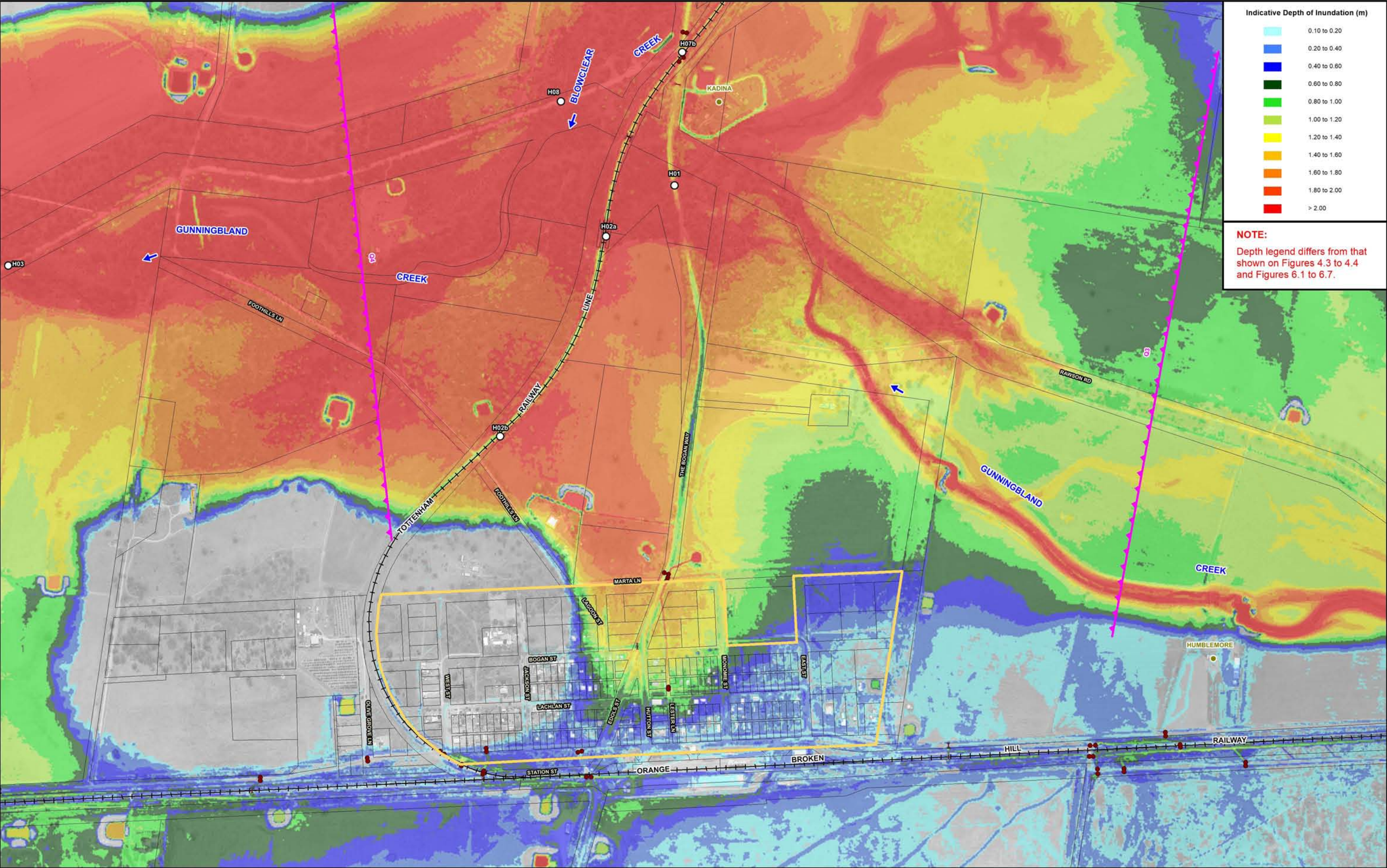
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- LEGEND**
- LGA Boundary
 - - - Two-Dimensional Model Boundary
 - Modelled Stormwater Drainage System
 - Village Centre
 - Homesteads

- Q01 Peak Flow Location and Identifier
- H001 Peak Flood Level Location and Identifier



Indicative Depth of Inundation (m)	
	0.10 to 0.20
	0.20 to 0.40
	0.40 to 0.60
	0.60 to 0.80
	0.80 to 1.00
	1.00 to 1.20
	1.20 to 1.40
	1.40 to 1.60
	1.60 to 1.80
	1.80 to 2.00
	> 2.00

NOTE:
Depth legend differs from that shown on Figures 4.3 to 4.4 and Figures 6.1 to 6.7.

100 0 100 200 300 m
Scale: 1:10,000

NOTE:
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LEGEND

- LGA Boundary
- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

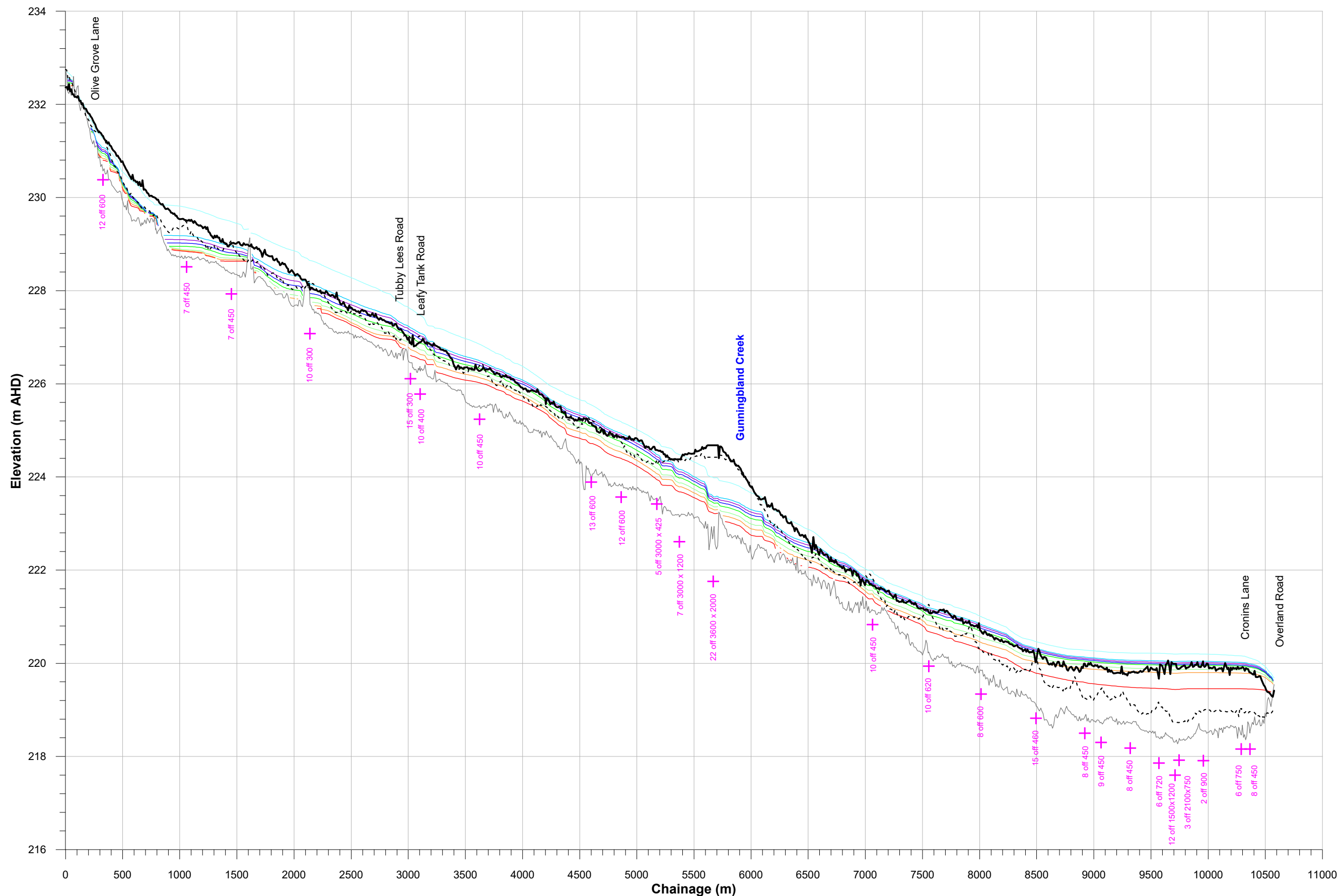
Q01 Peak Flow Location and Identifier

H01 Peak Flood Level Location and Identifier

BOGAN GATE FLOOD STUDY

Figure 6.8
(Sheet 3 of 3)

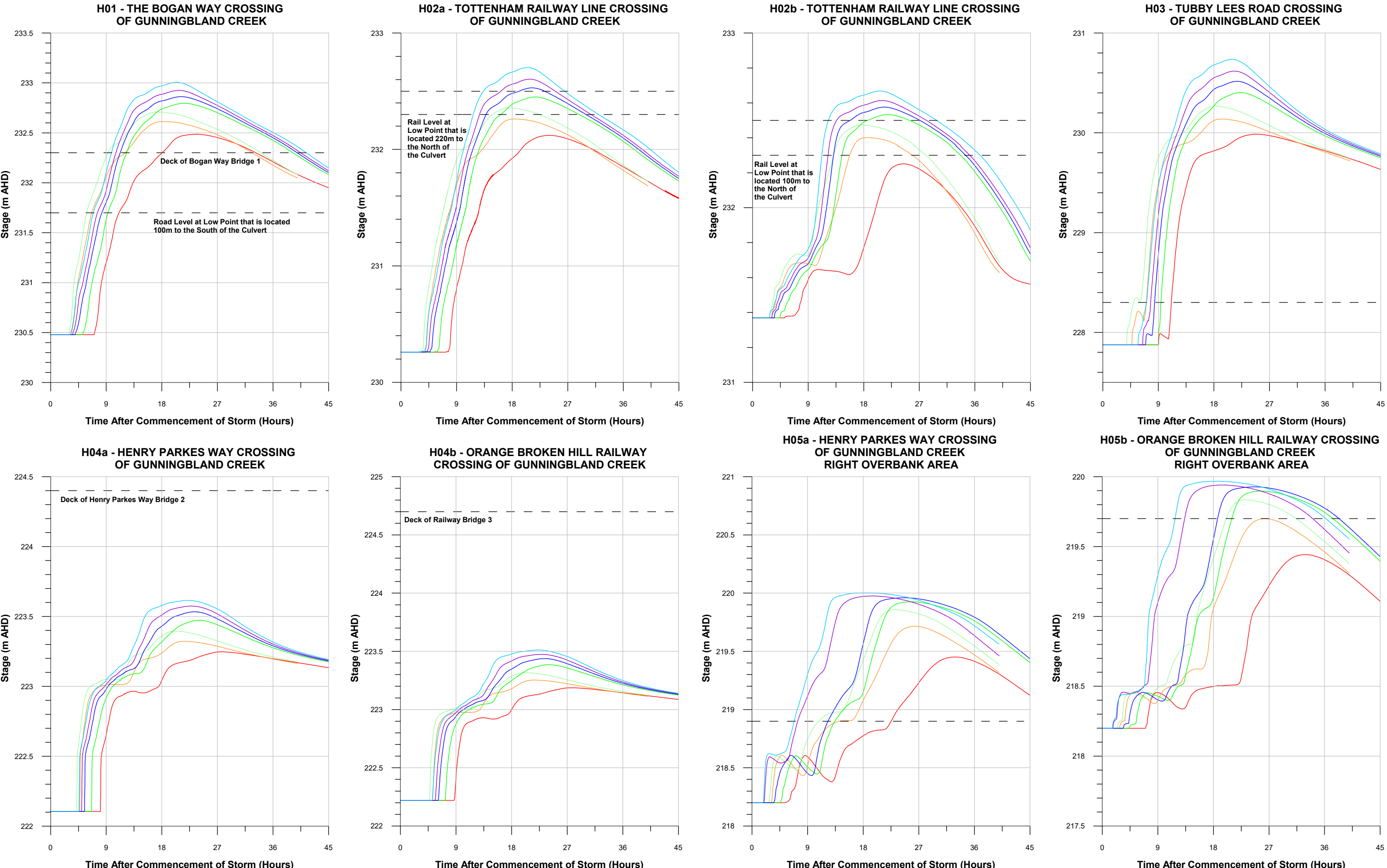
TUFLOW MODEL RESULTS
PMF



BOGAN GATE FLOOD STUDY

Figure 6.9

LONGITUDINAL SECTION ALONG ORANGE - BROKEN HILL RAILWAY LINE
BETWEEN OLIVE GROVE LAND AND OVERLAND ROAD - DESIGN STORM EVENTS



--- Road/Rail Level

— 0.2% AEP

— 0.5% AEP

— 1% AEP

— 2% AEP

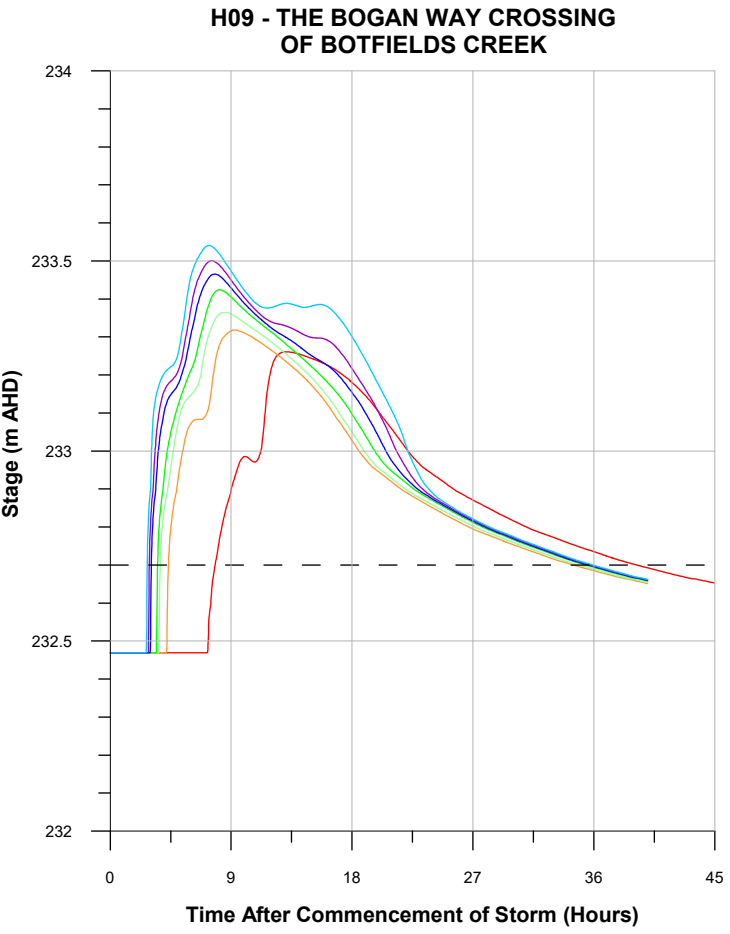
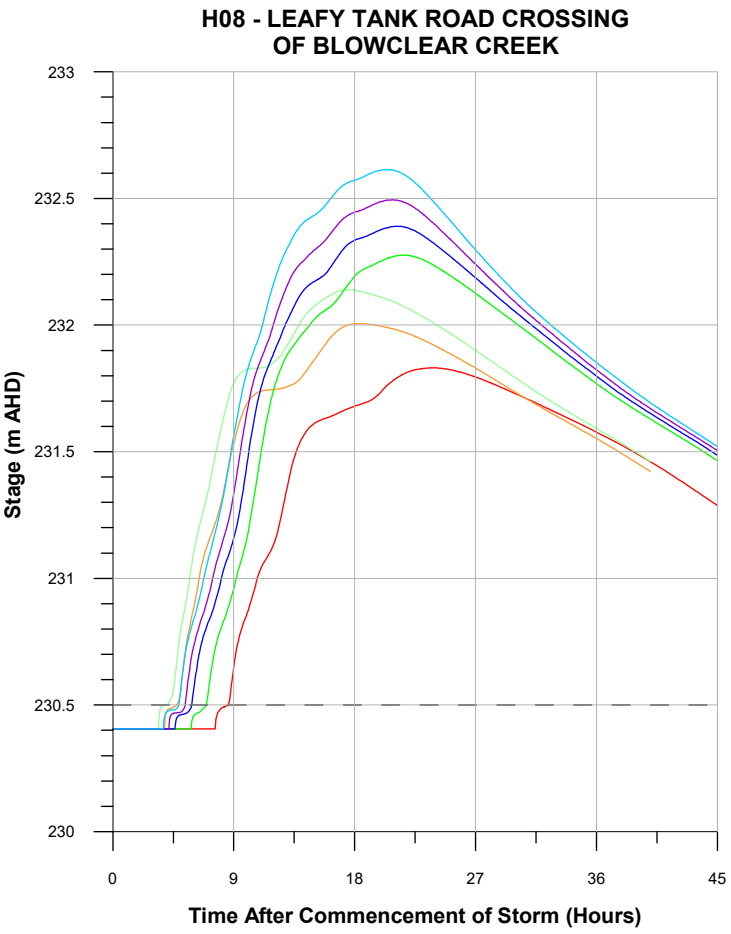
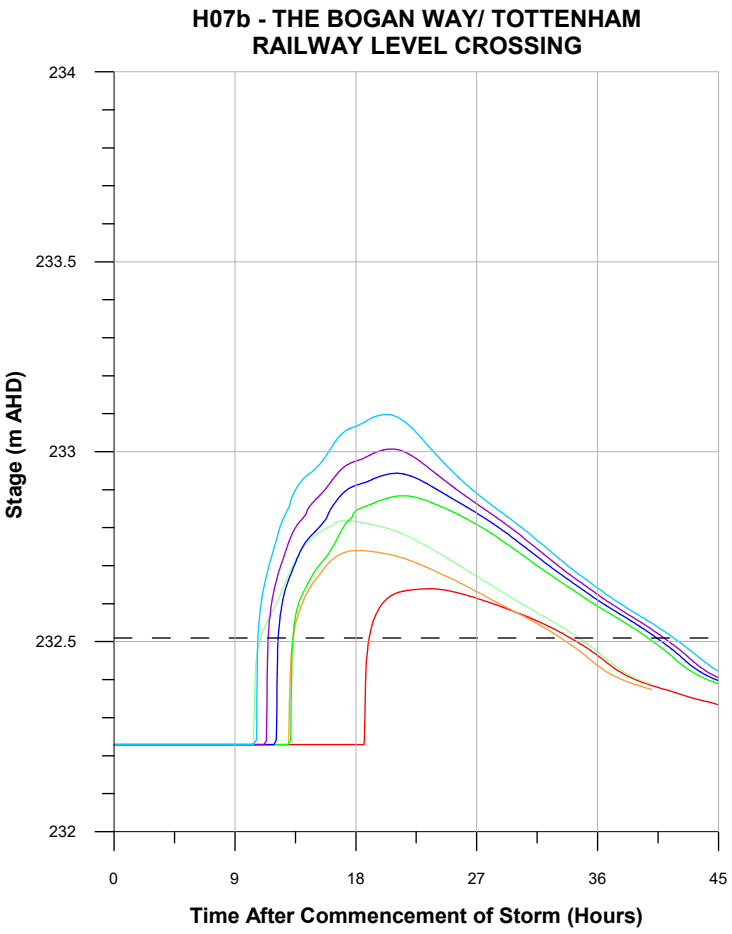
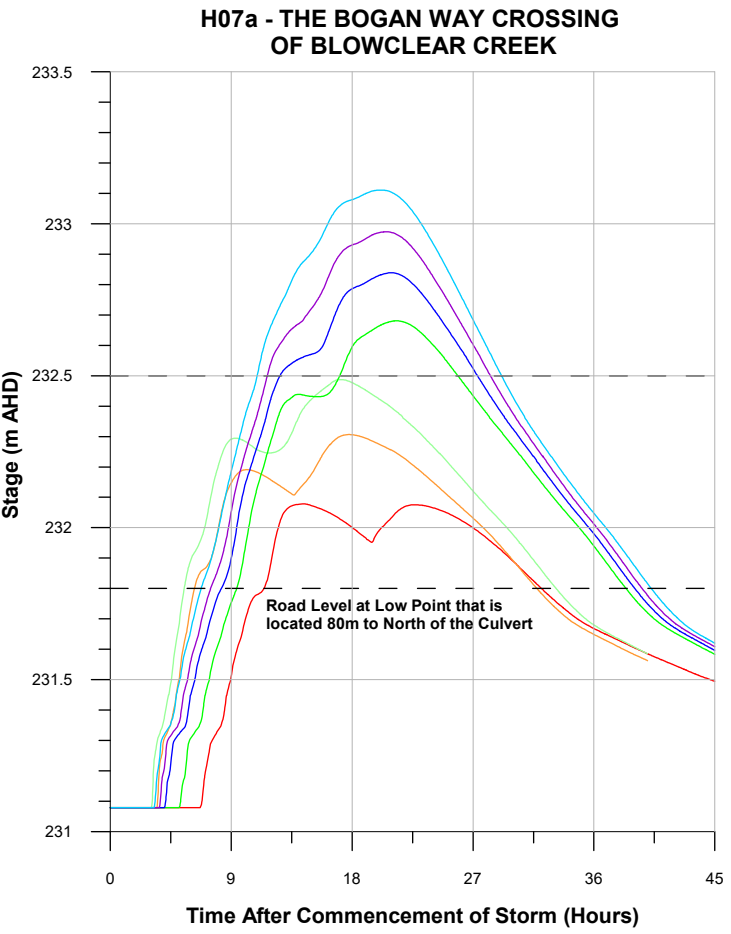
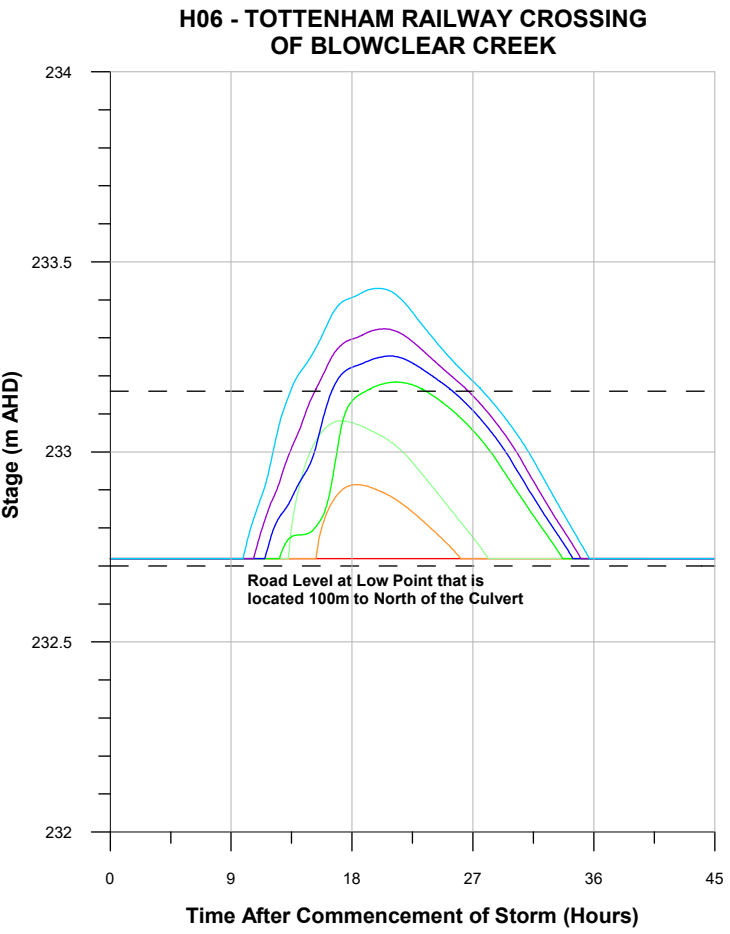
— 5% AEP

— 10% AEP

— 20% AEP

NOTES:
Refer Figures 6.1 to 6.8 for Peak Flood Level Locations.



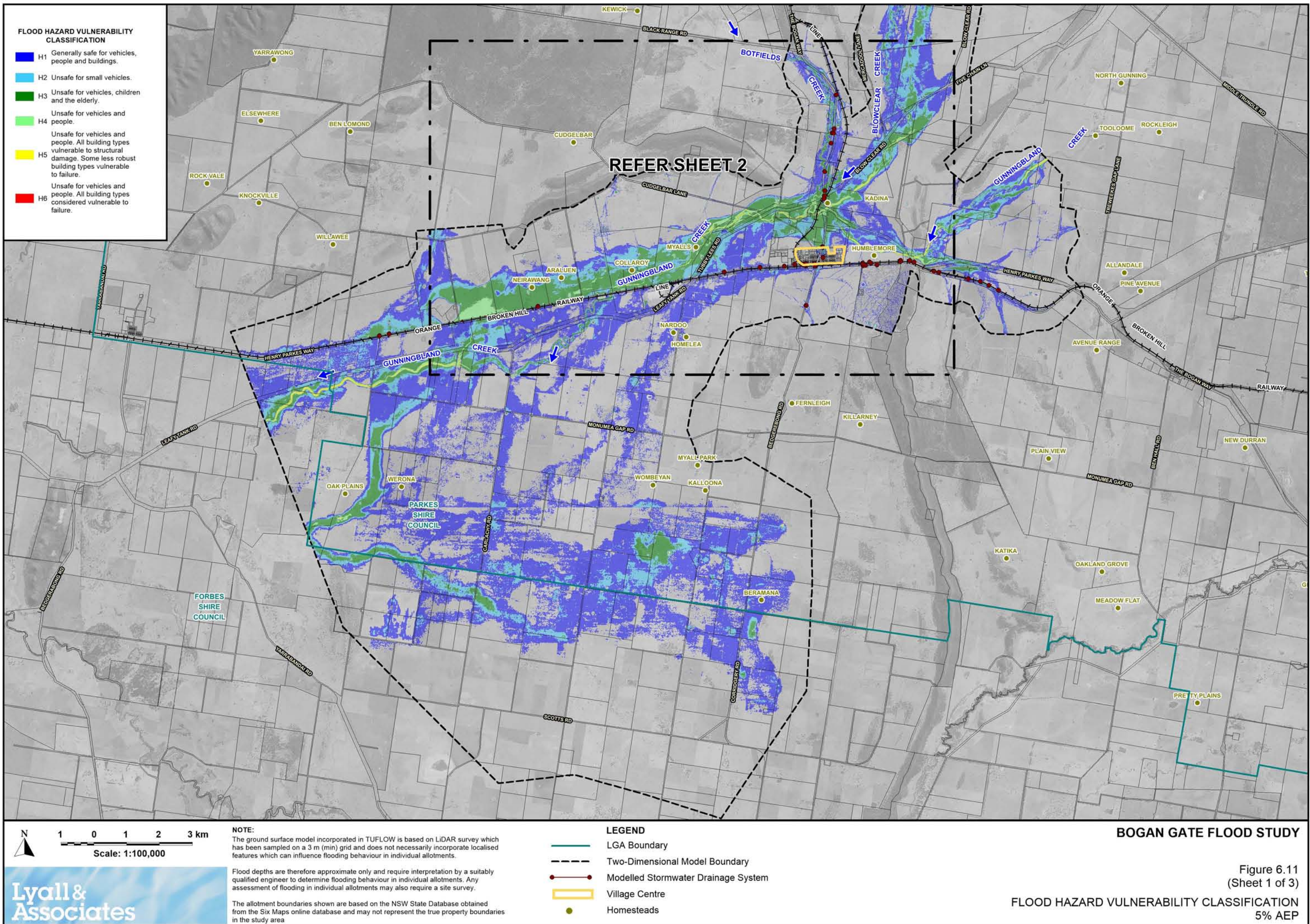


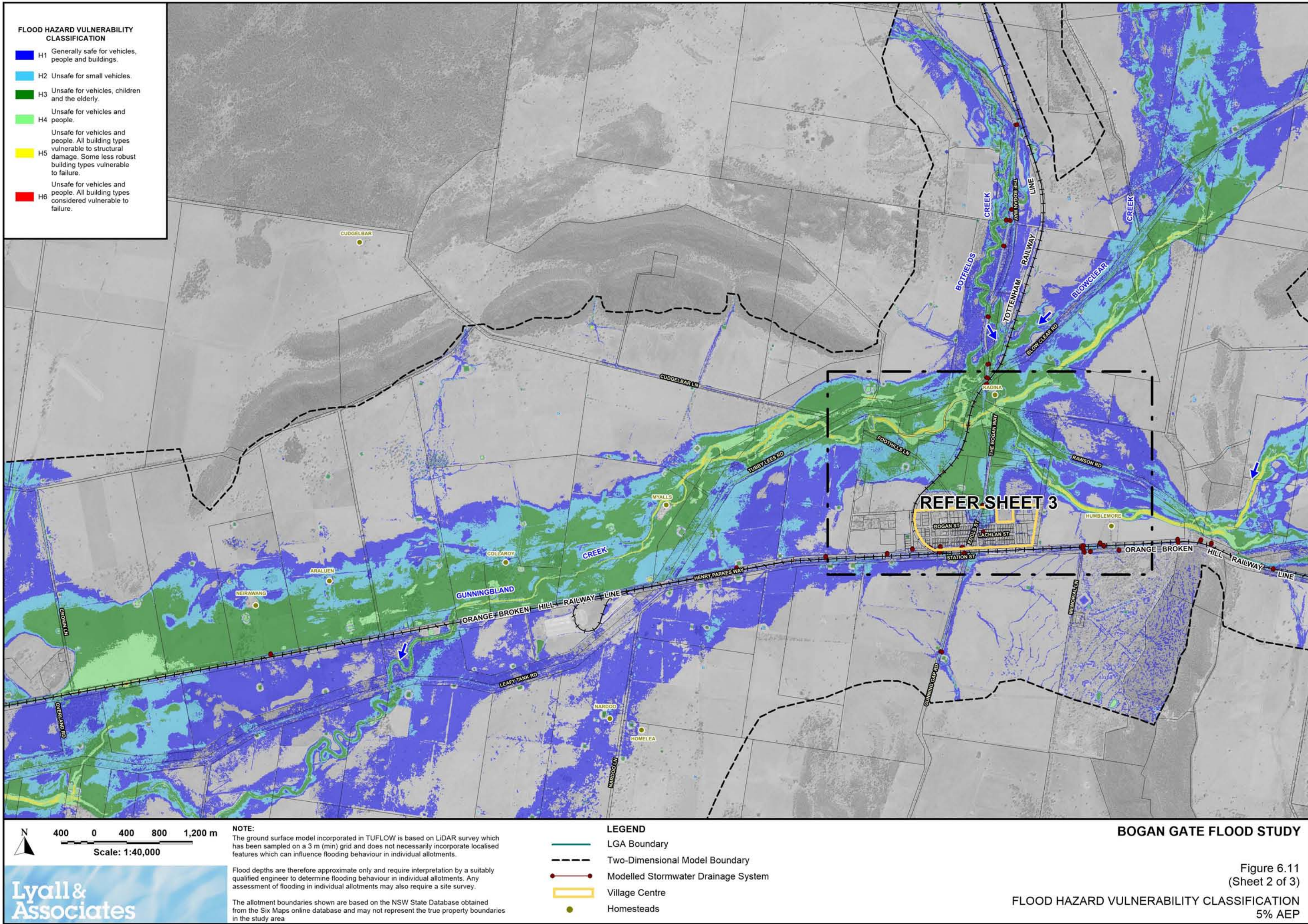
LEGEND

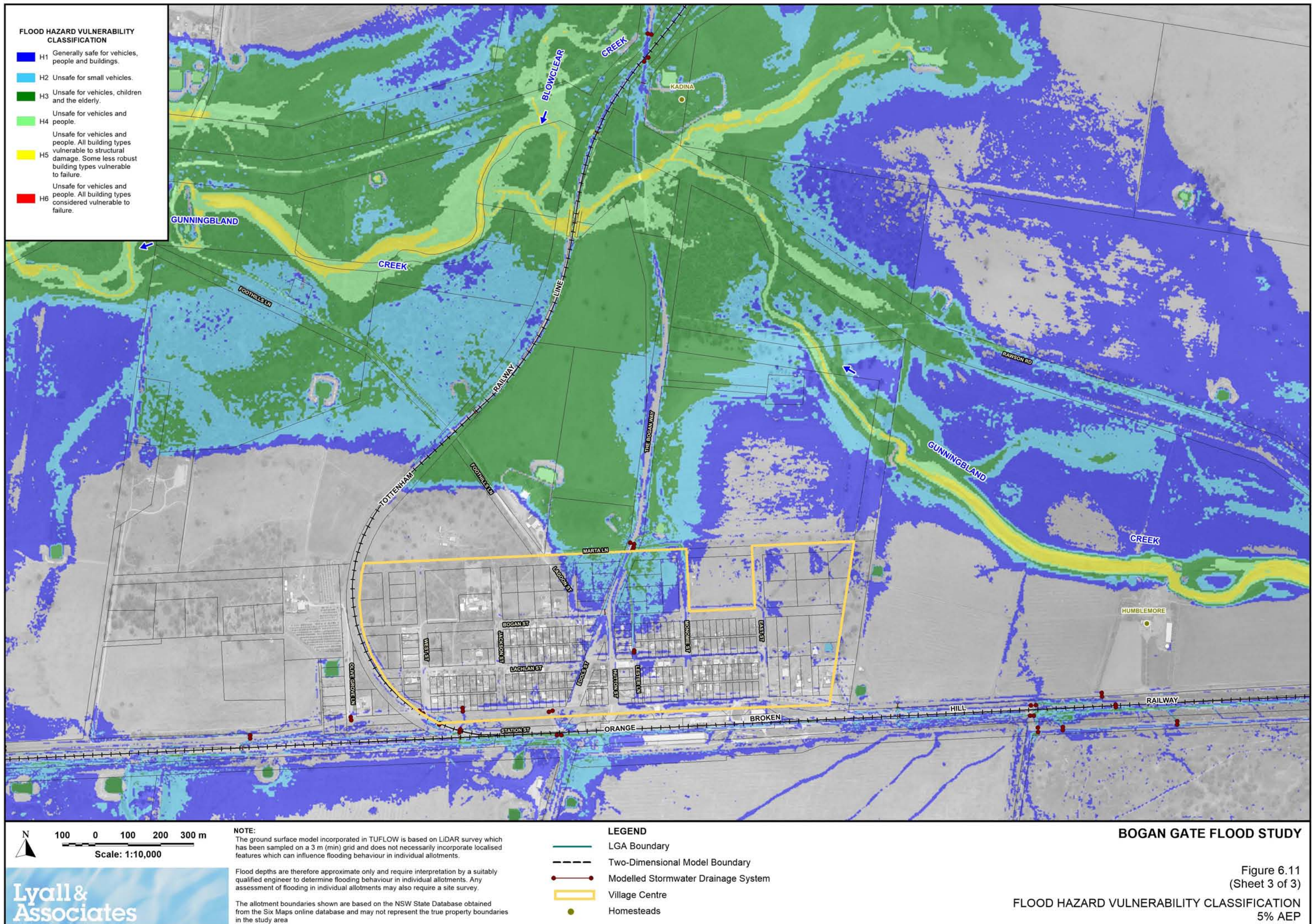
---	Road/Rail Level	—	2% AEP
—	0.2% AEP	—	5% AEP
—	0.5% AEP	—	10% AEP
—	1% AEP	—	20% AEP

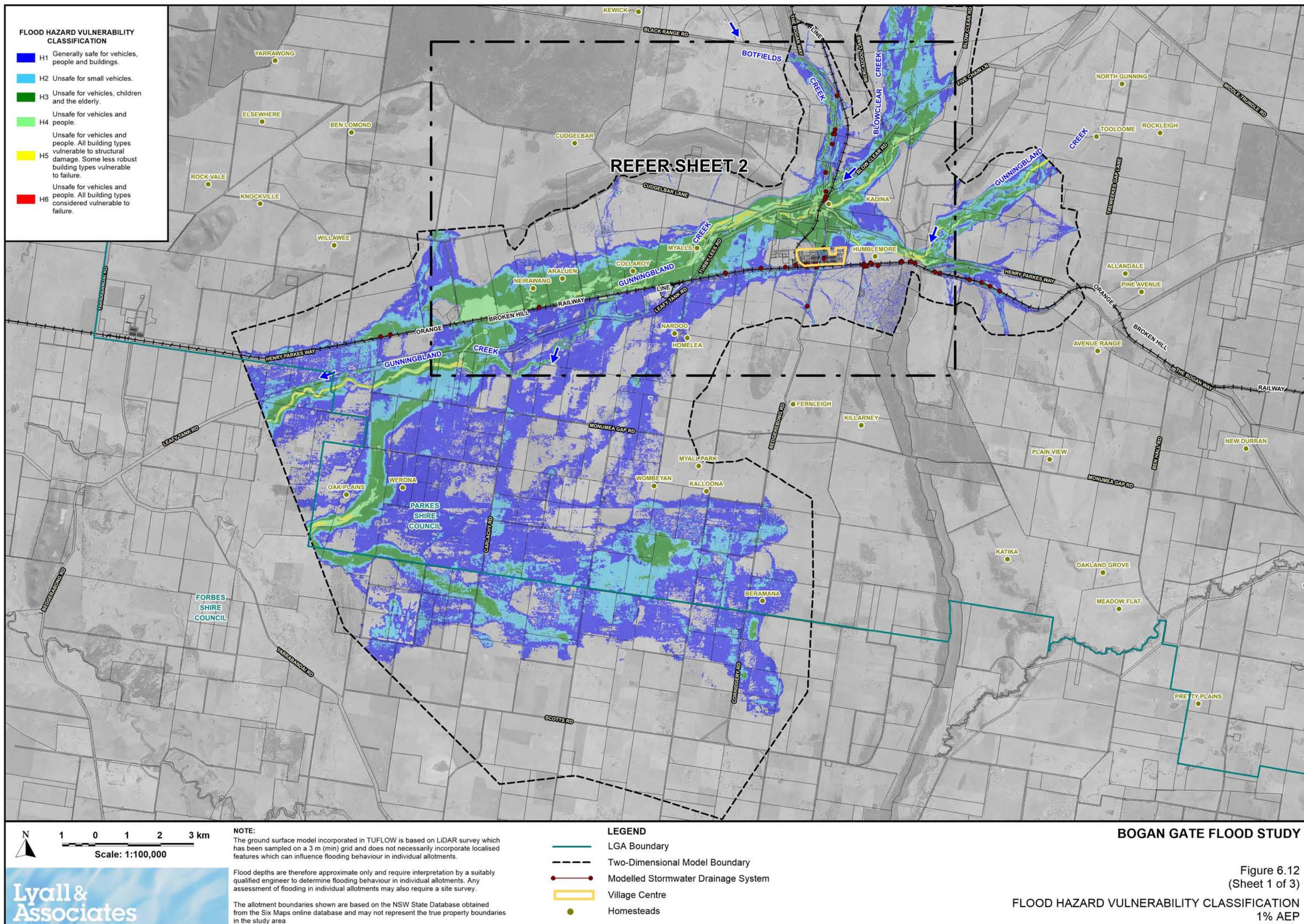


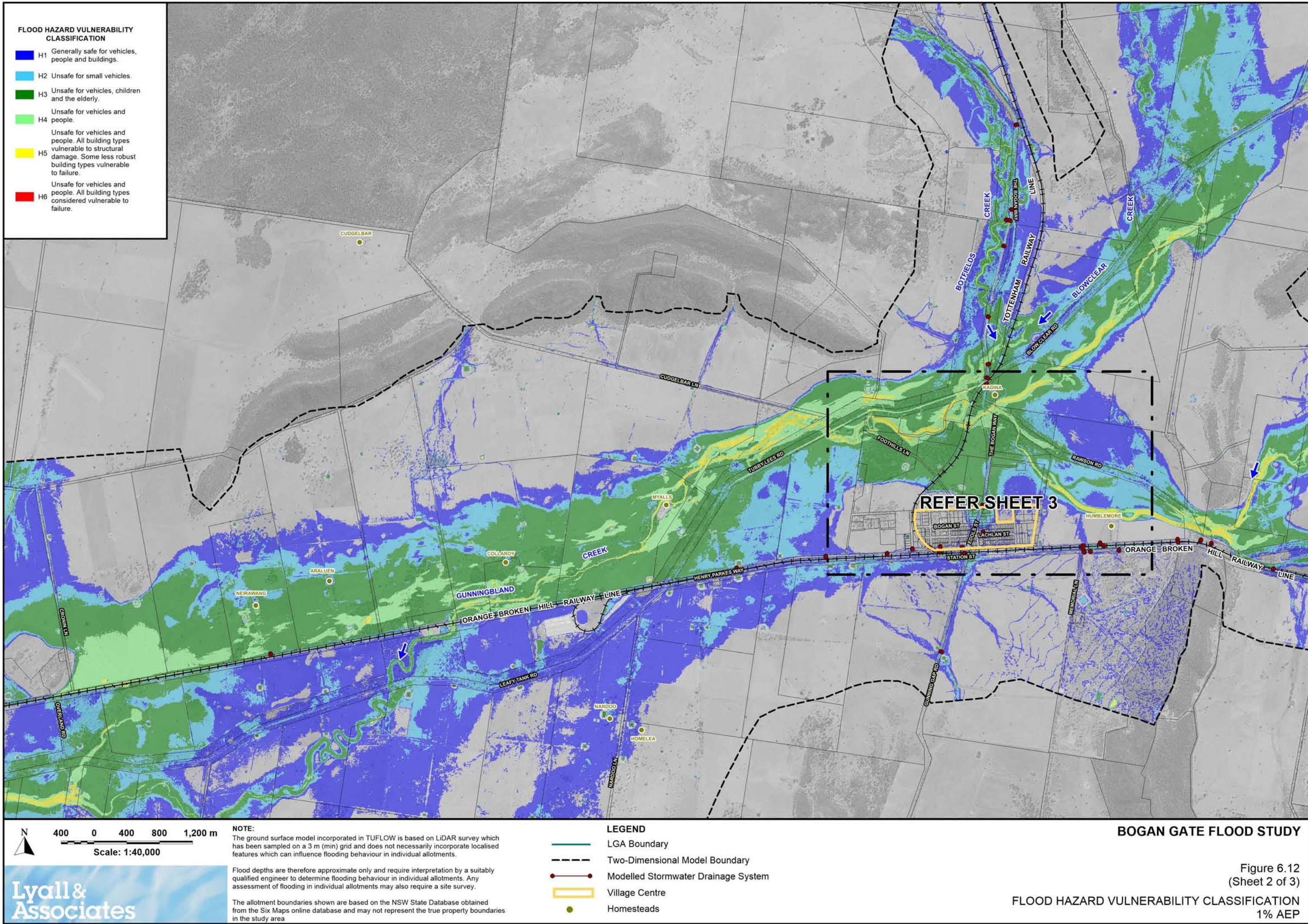
NOTES:
Refer **Figures 6.1 to 6.8** for Peak Flood Level Locations.

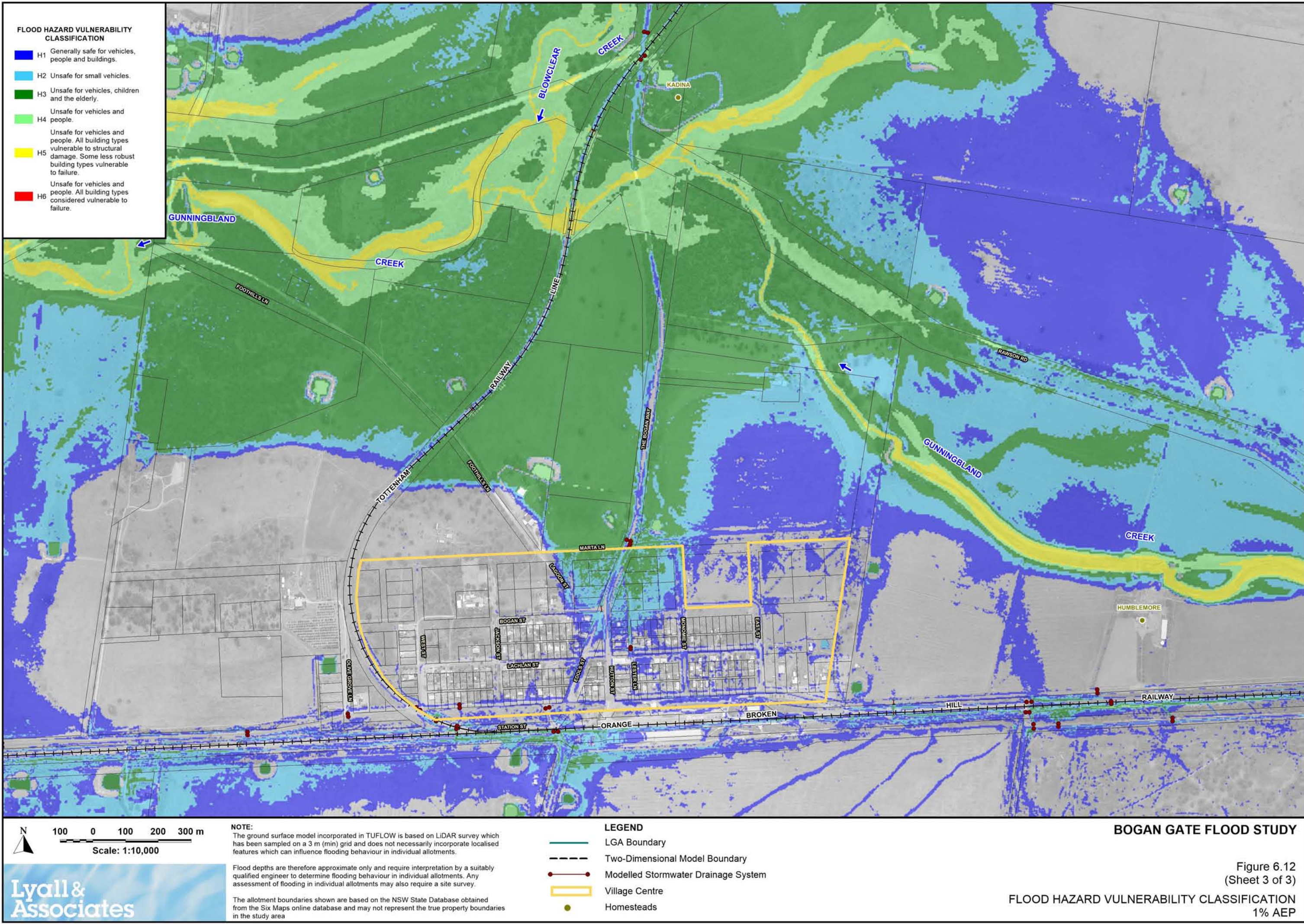


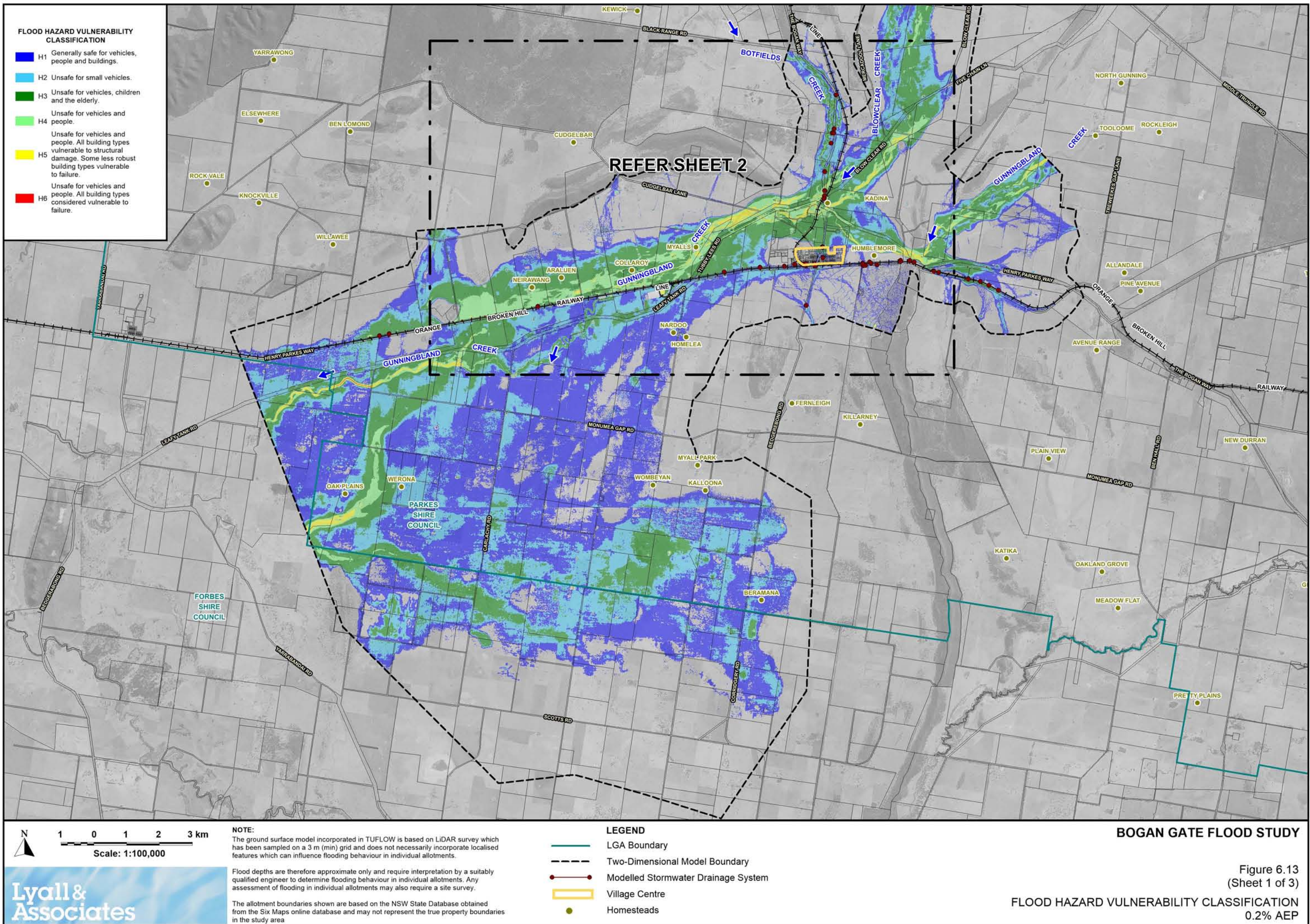


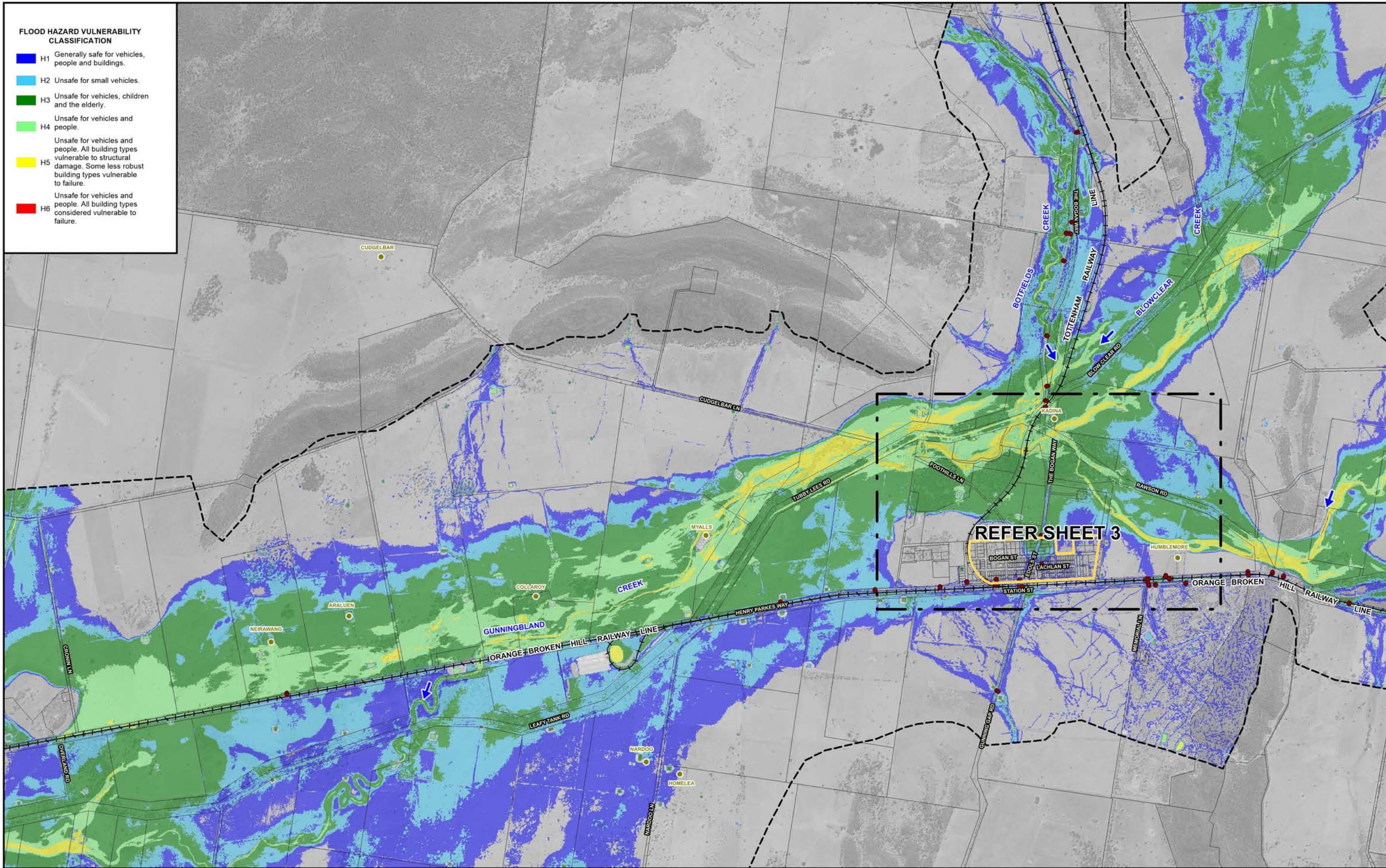












FLOOD HAZARD VULNERABILITY CLASSIFICATION

- 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. Some less robust building types vulnerable to failure.
- H6** Unsafe for vehicles and people. All building types considered vulnerable to failure.

400 0 400 800 1,200 m
Scale: 1:40,000

Lyall & Associates

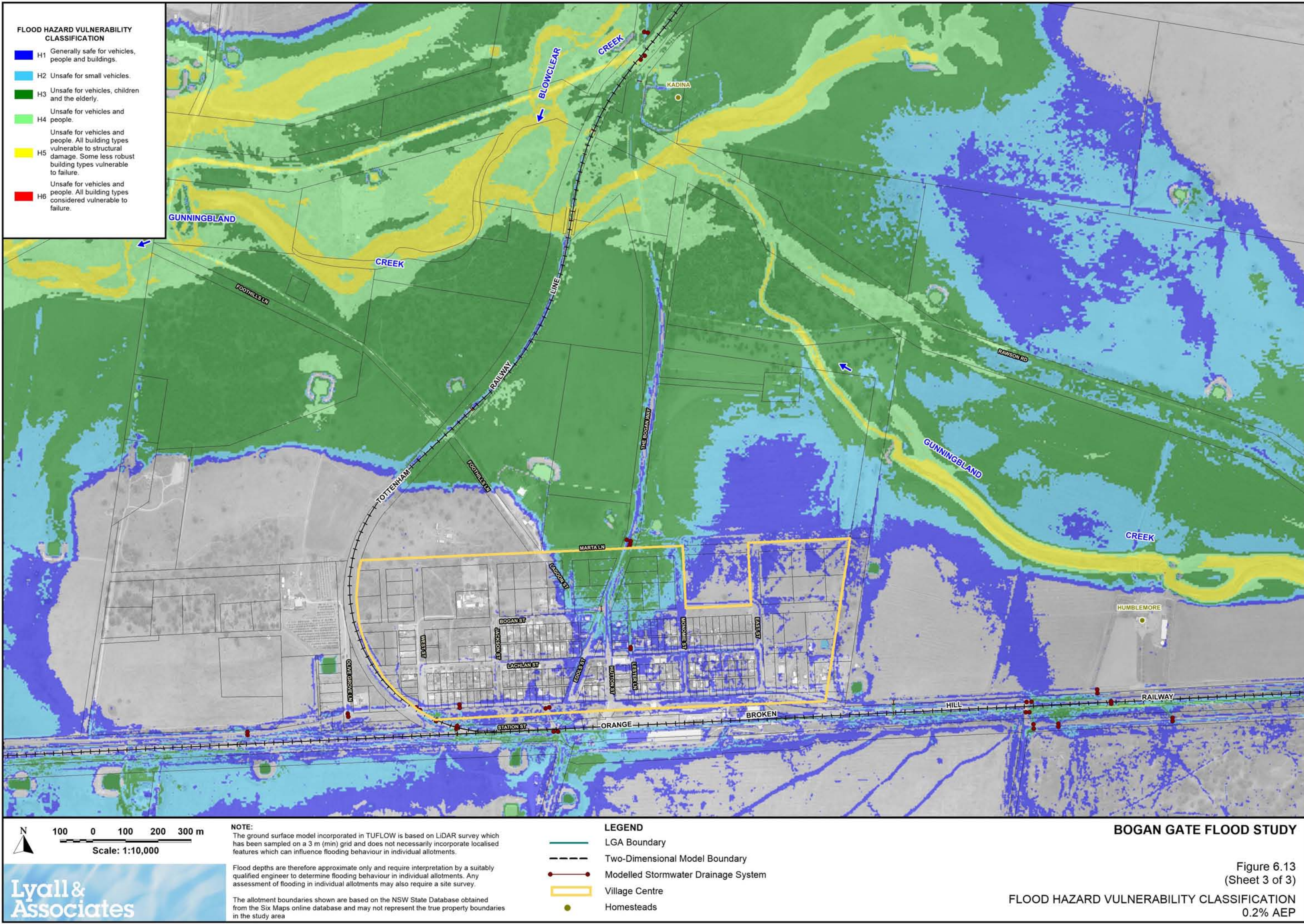
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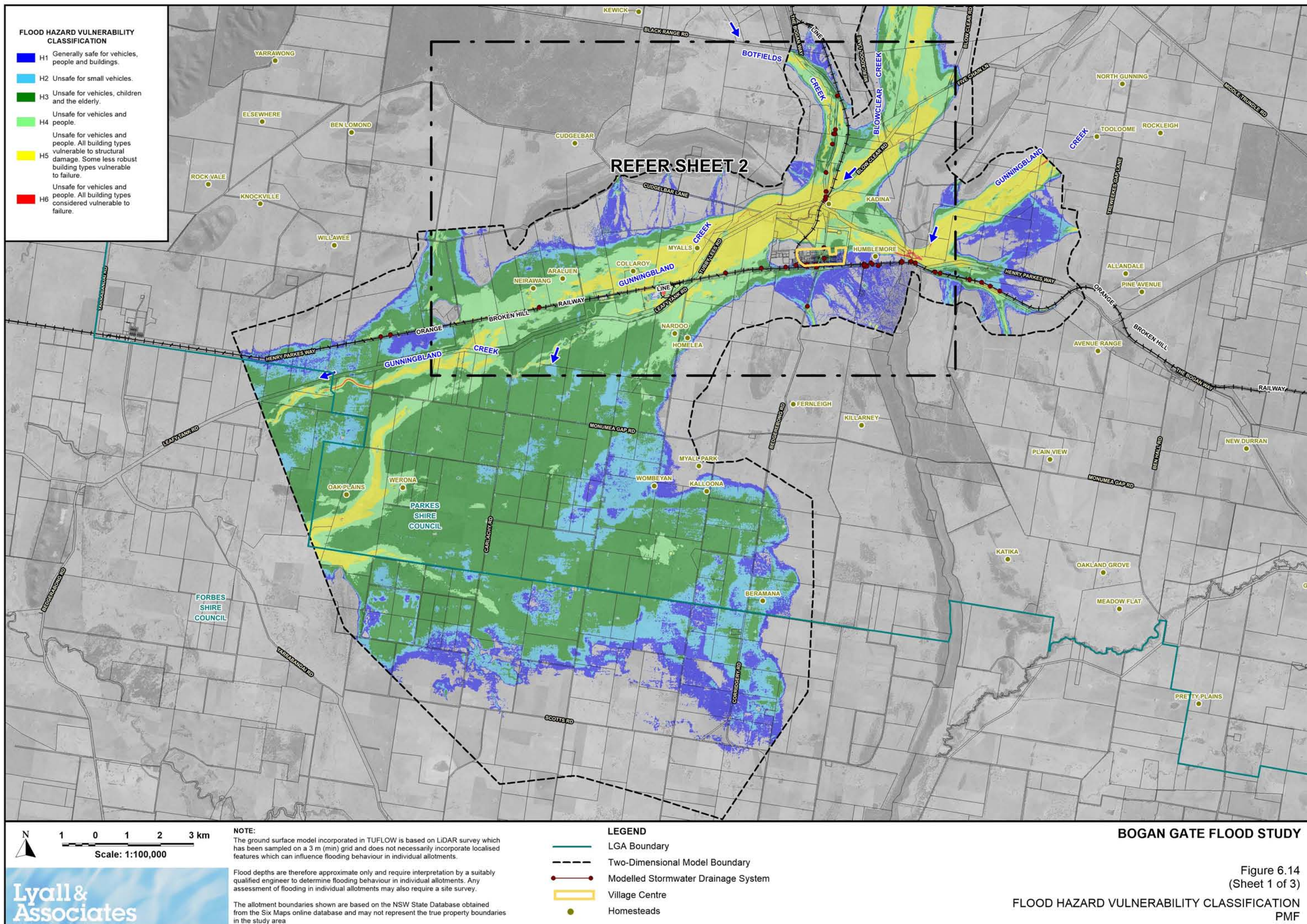
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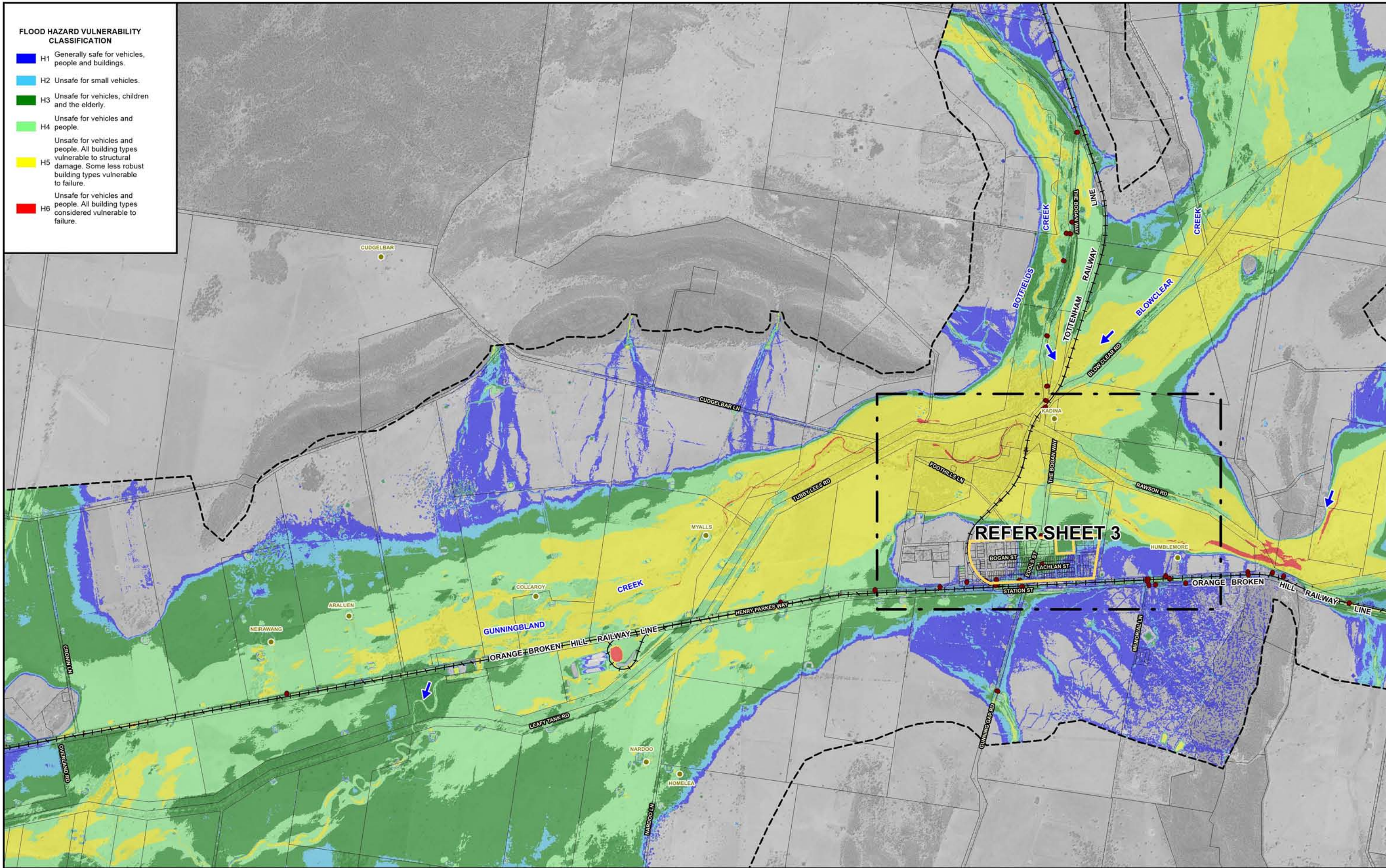
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LEGEND

- LGA Boundary
- - - Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads







FLOOD HAZARD VULNERABILITY CLASSIFICATION

- 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.
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LEGEND

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- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

BOGAN GATE FLOOD STUDY

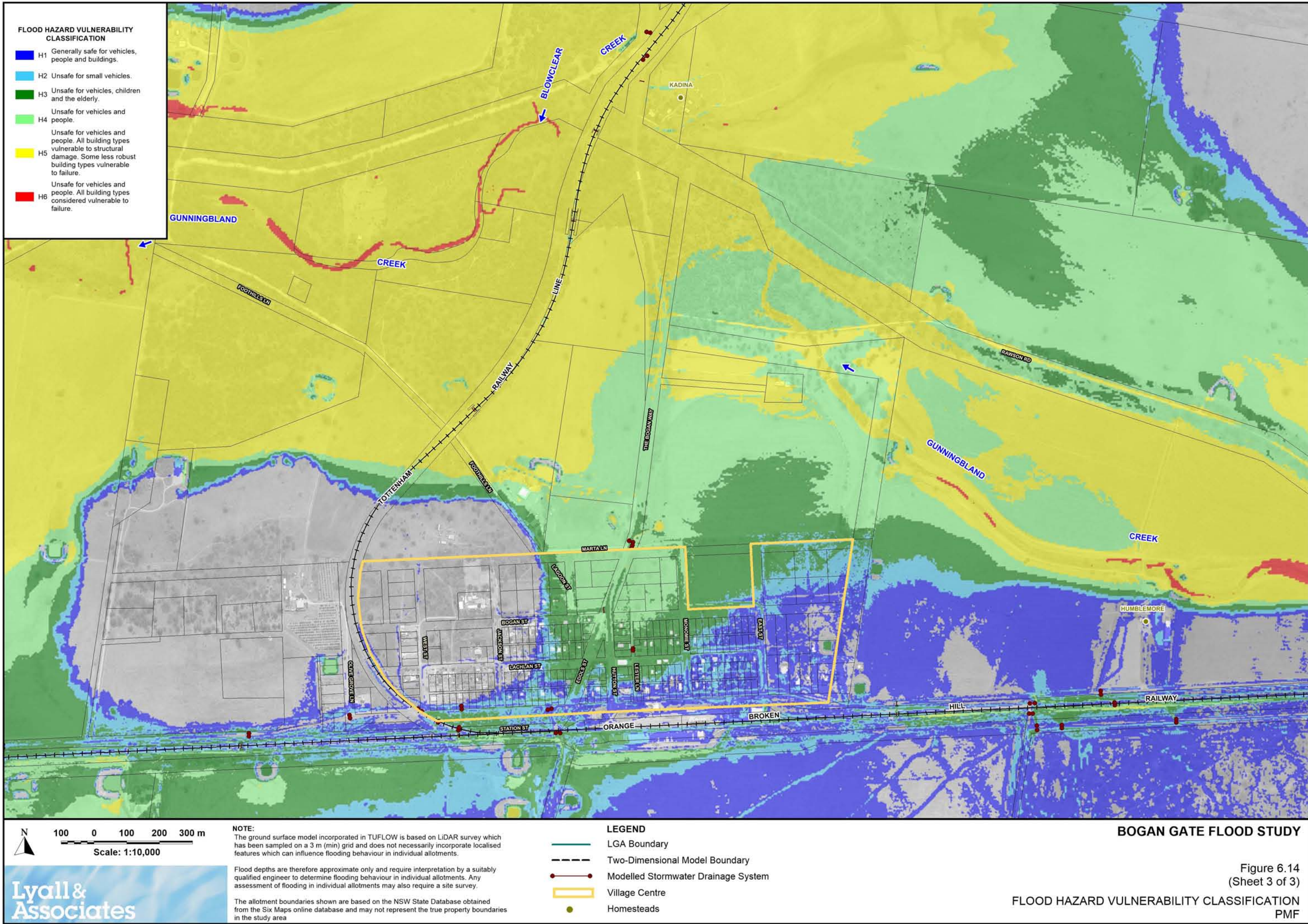
Figure 6.14
(Sheet 2 of 3)

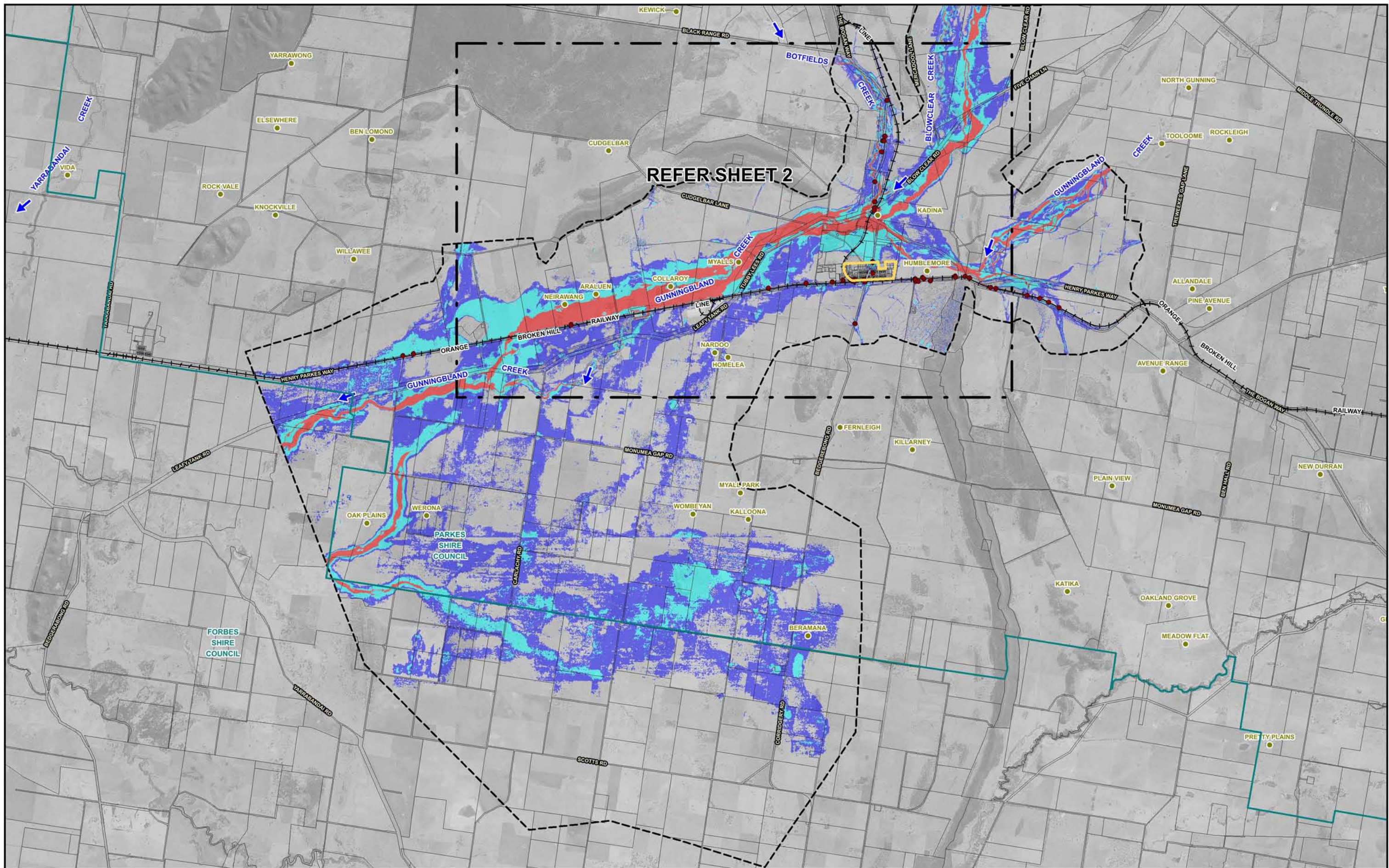
FLOOD HAZARD VULNERABILITY CLASSIFICATION
PMF

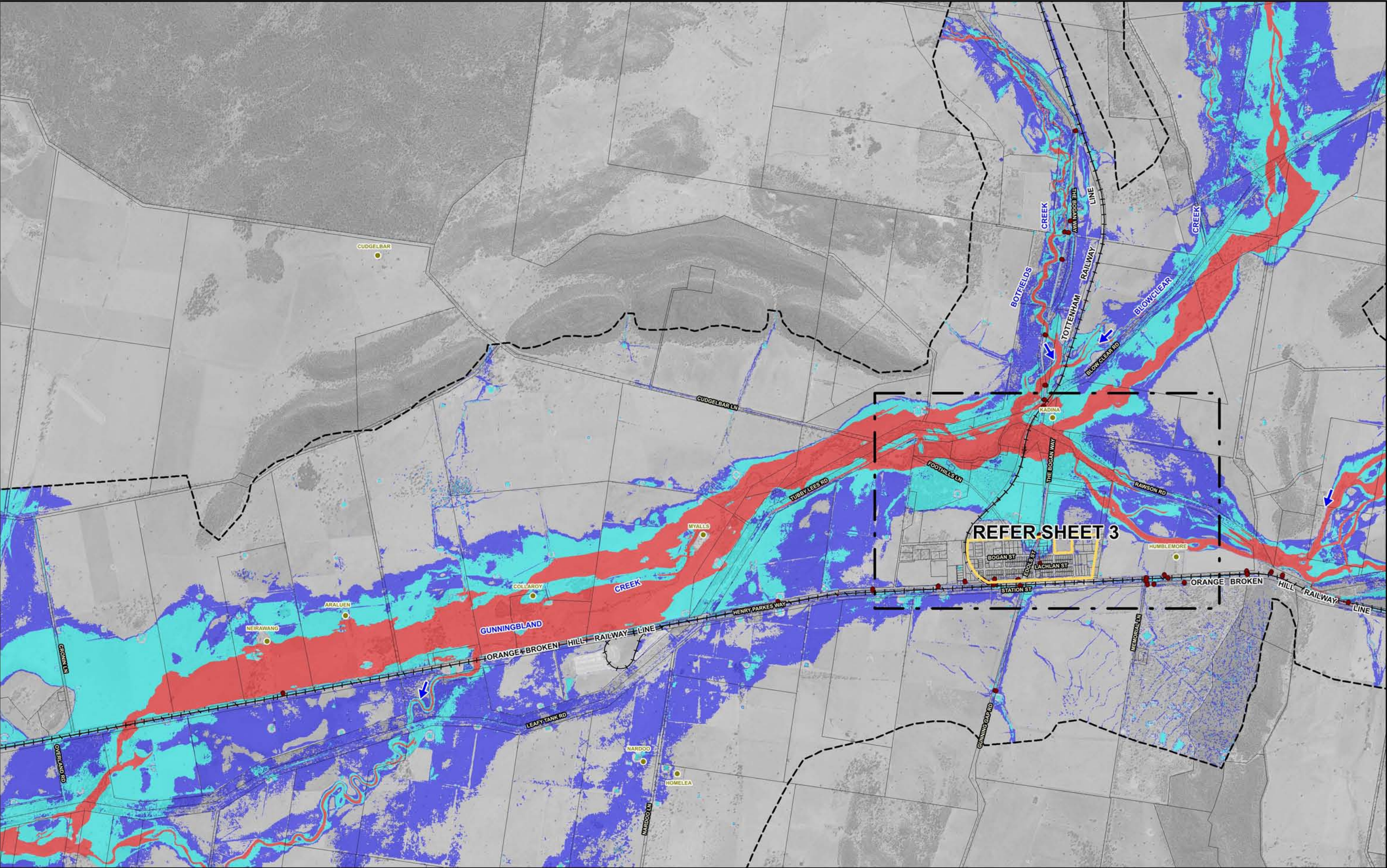
Scale: 1:40,000

0 400 800 1,200 m

Lyall & Associates







Scale: 1:40,000

400 0 400 800 1,200 m

Lyall & Associates

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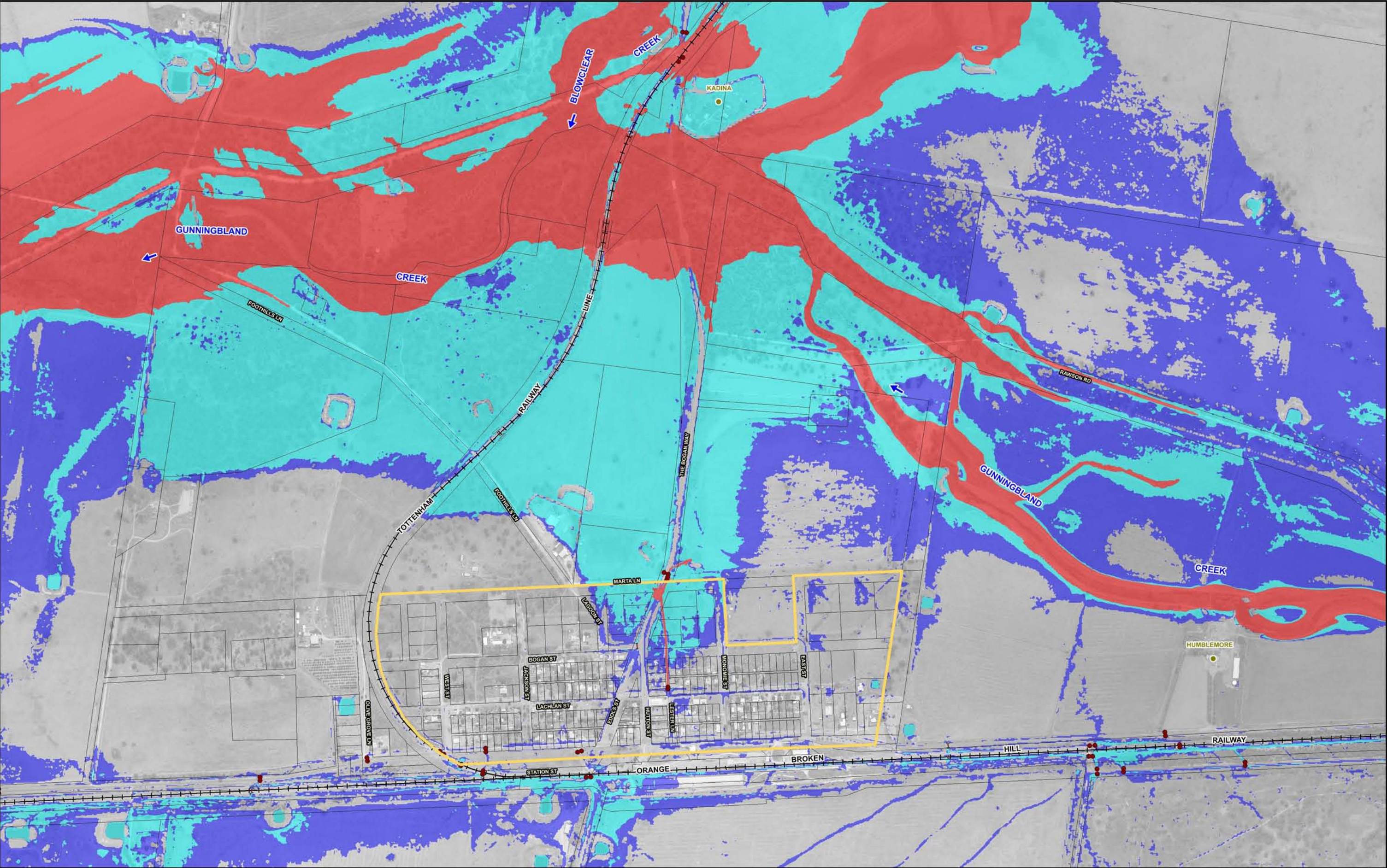
LEGEND

- LGA Boundary
- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads
- Floodway
- Flood Storage
- Flood Fringe

BOGAN GATE FLOOD STUDY

Figure 6.15
(Sheet 2 of 3)

HYDRAULIC CATEGORISATION OF FLOODPLAIN
5% AEP



Scale: 1:10,000

100 0 100 200 300 m

Lyall & Associates

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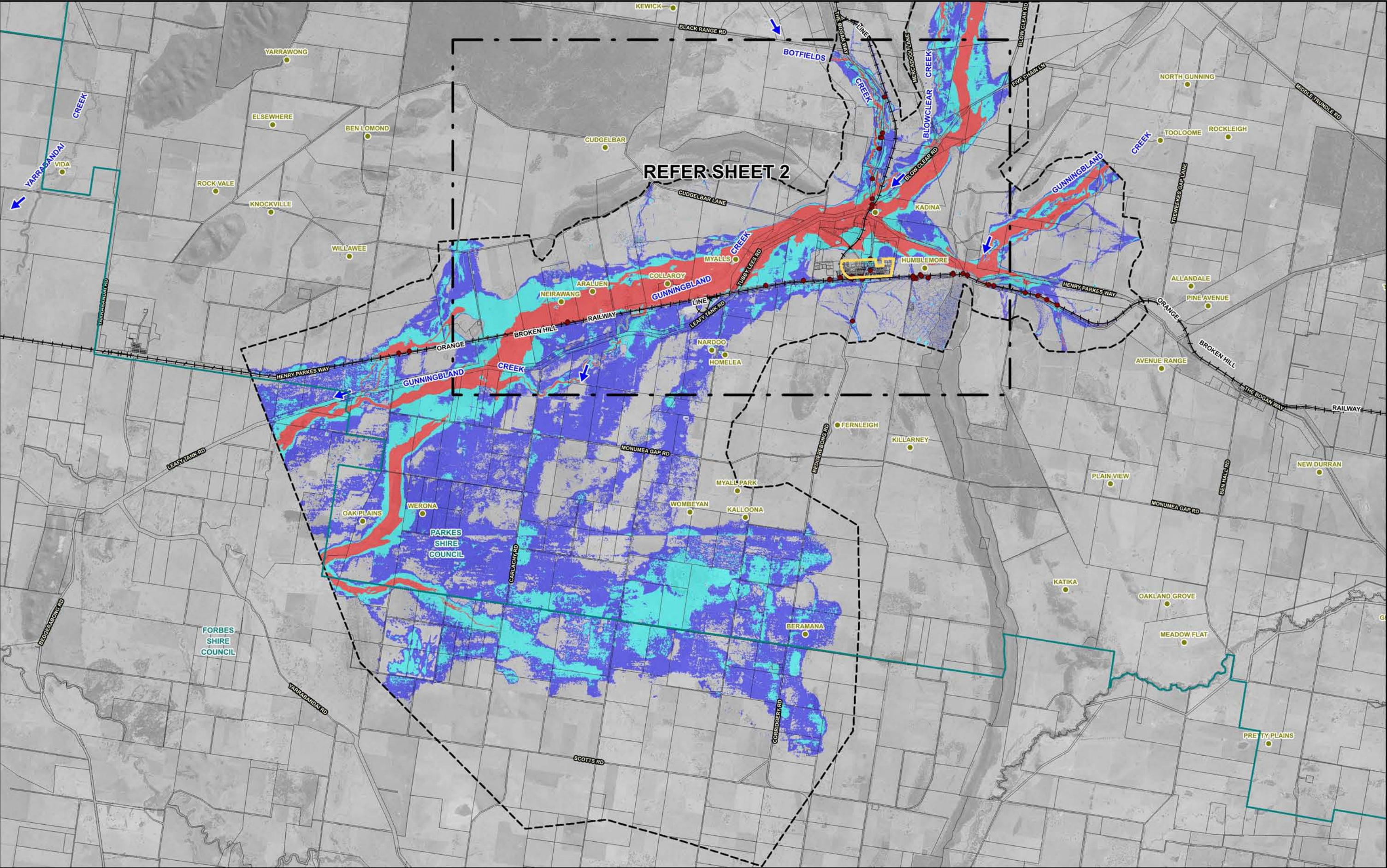
LEGEND

- LGA Boundary
- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads
- Floodway
- Flood Storage
- Flood Fringe

BOGAN GATE FLOOD STUDY

Figure 6.15
(Sheet 3 of 3)

HYDRAULIC CATEGORISATION OF FLOODPLAIN
5% AEP



Lyall & Associates

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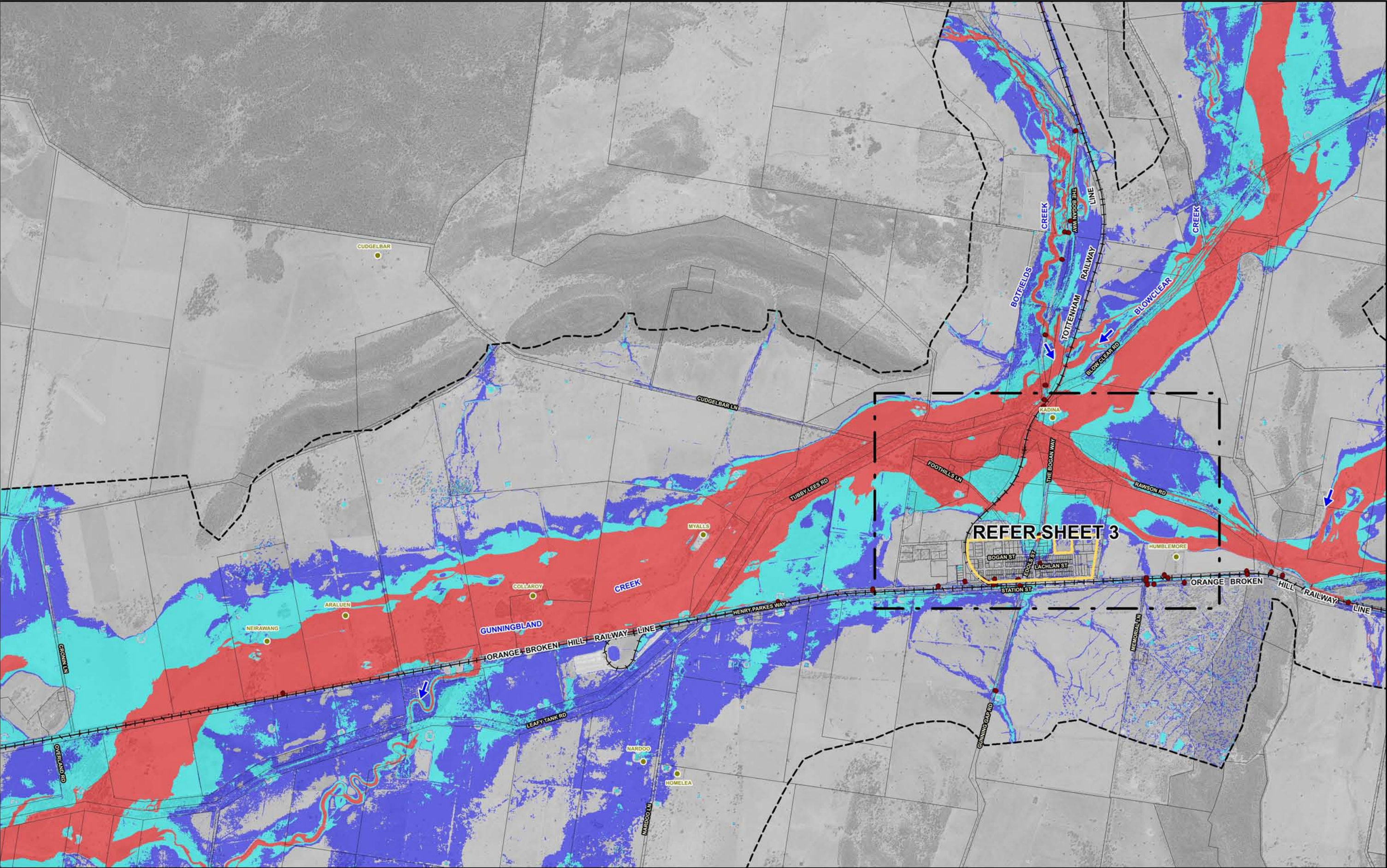
LEGEND

- LGA Boundary
- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads
- Floodway
- Flood Storage
- Flood Fringe

BOGAN GATE FLOOD STUDY

Figure 6.16
(Sheet 1 of 3)

HYDRAULIC CATEGORISATION OF FLOODPLAIN
1% AEP





400 0 400 800 1,200 m

Scale: 1:40,000

Lyall & Associates

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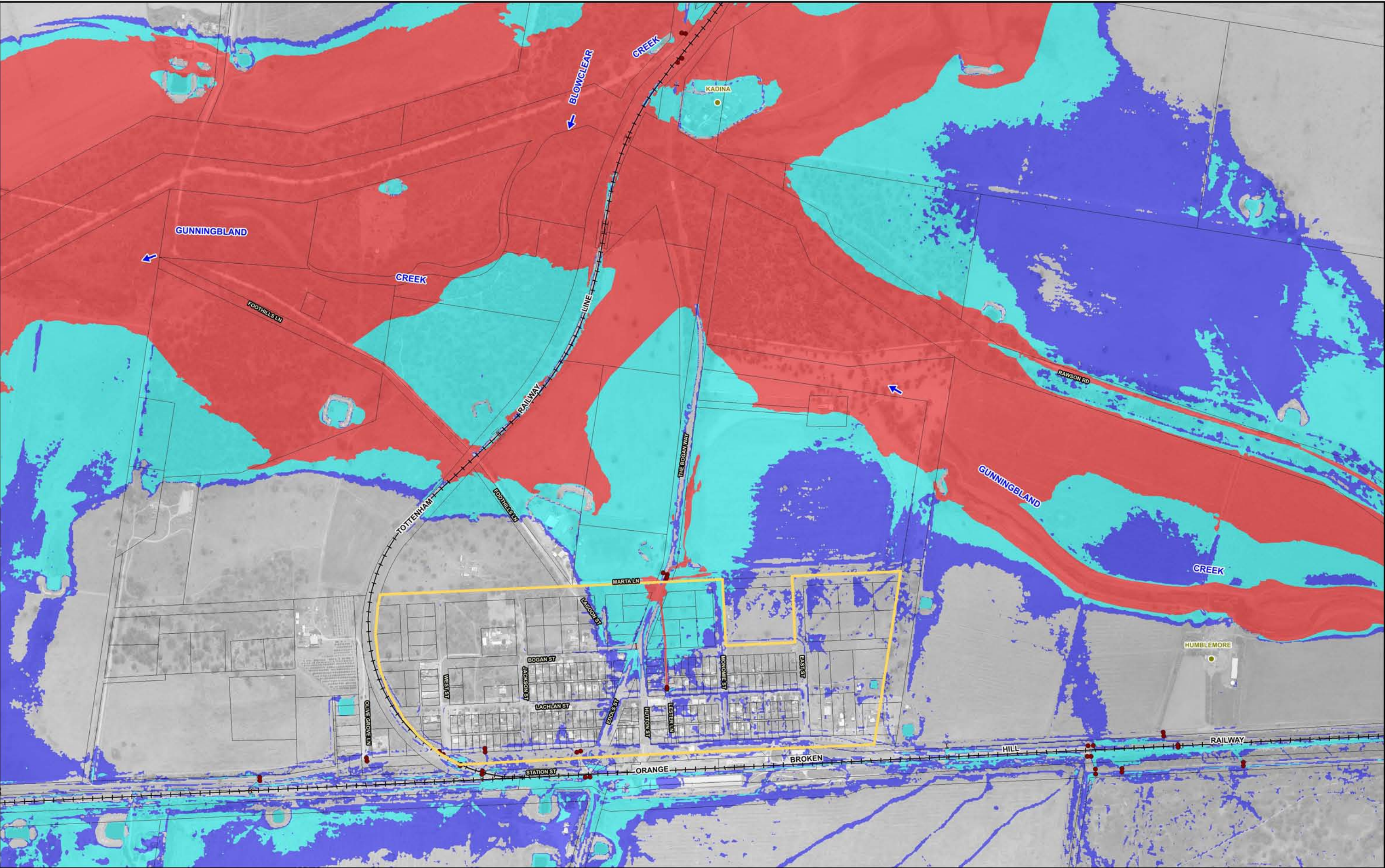
LEGEND

	LGA Boundary		Floodway
	Two-Dimensional Model Boundary		Flood Storage
	Modelled Stormwater Drainage System		Flood Fringe
	Village Centre		
	Homesteads		

BOGAN GATE FLOOD STUDY

Figure 6.16
(Sheet 2 of 3)

HYDRAULIC CATEGORISATION OF FLOODPLAIN
1% AEP



Lyall & Associates

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LEGEND

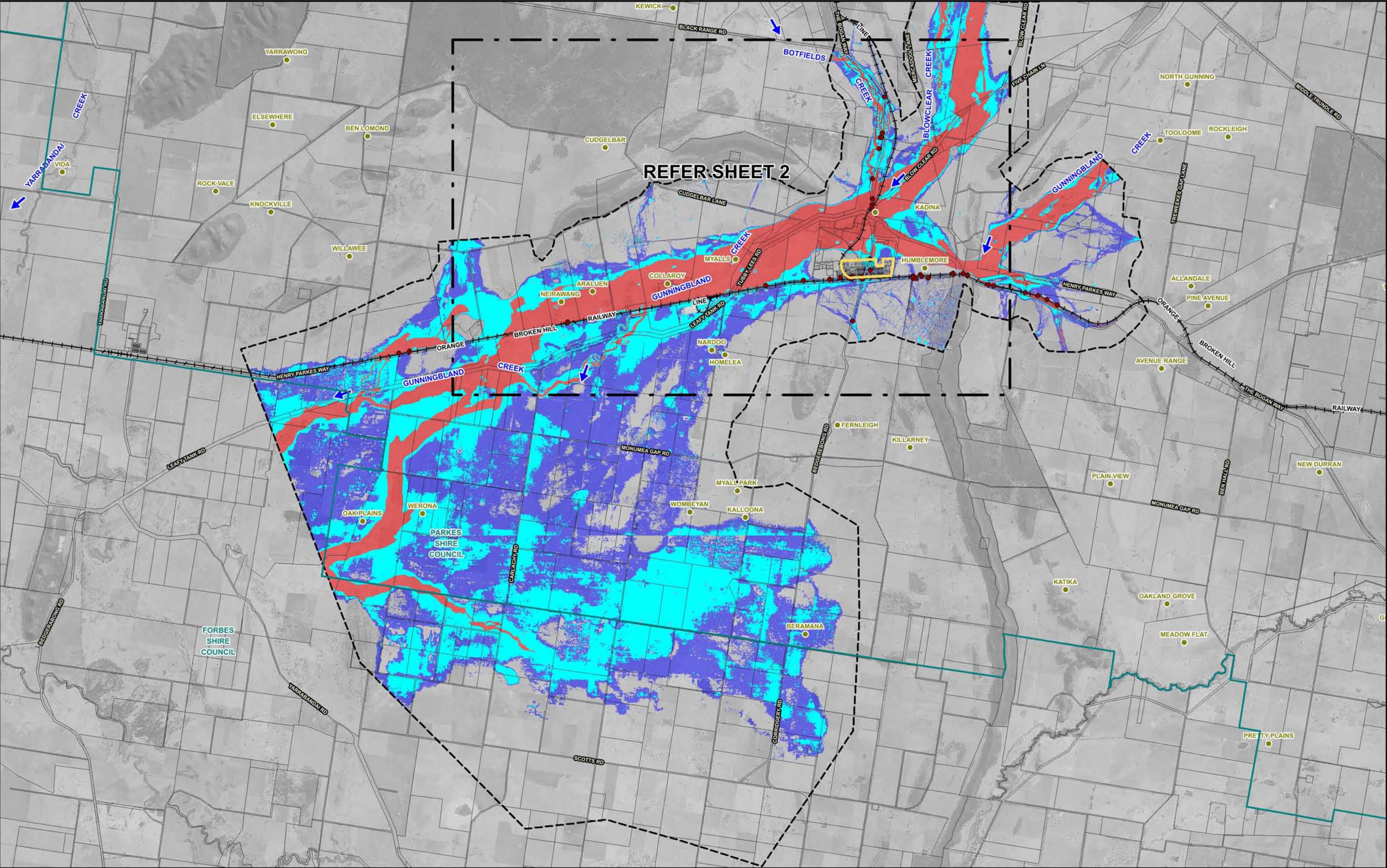
- LGA Boundary
- - - Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- ▭ Village Centre
- Homesteads

- Floodway
- Flood Storage
- Flood Fringe

BOGAN GATE FLOOD STUDY

Figure 6.16
(Sheet 3 of 3)

HYDRAULIC CATEGORISATION OF FLOODPLAIN
1% AEP



Lyall & Associates

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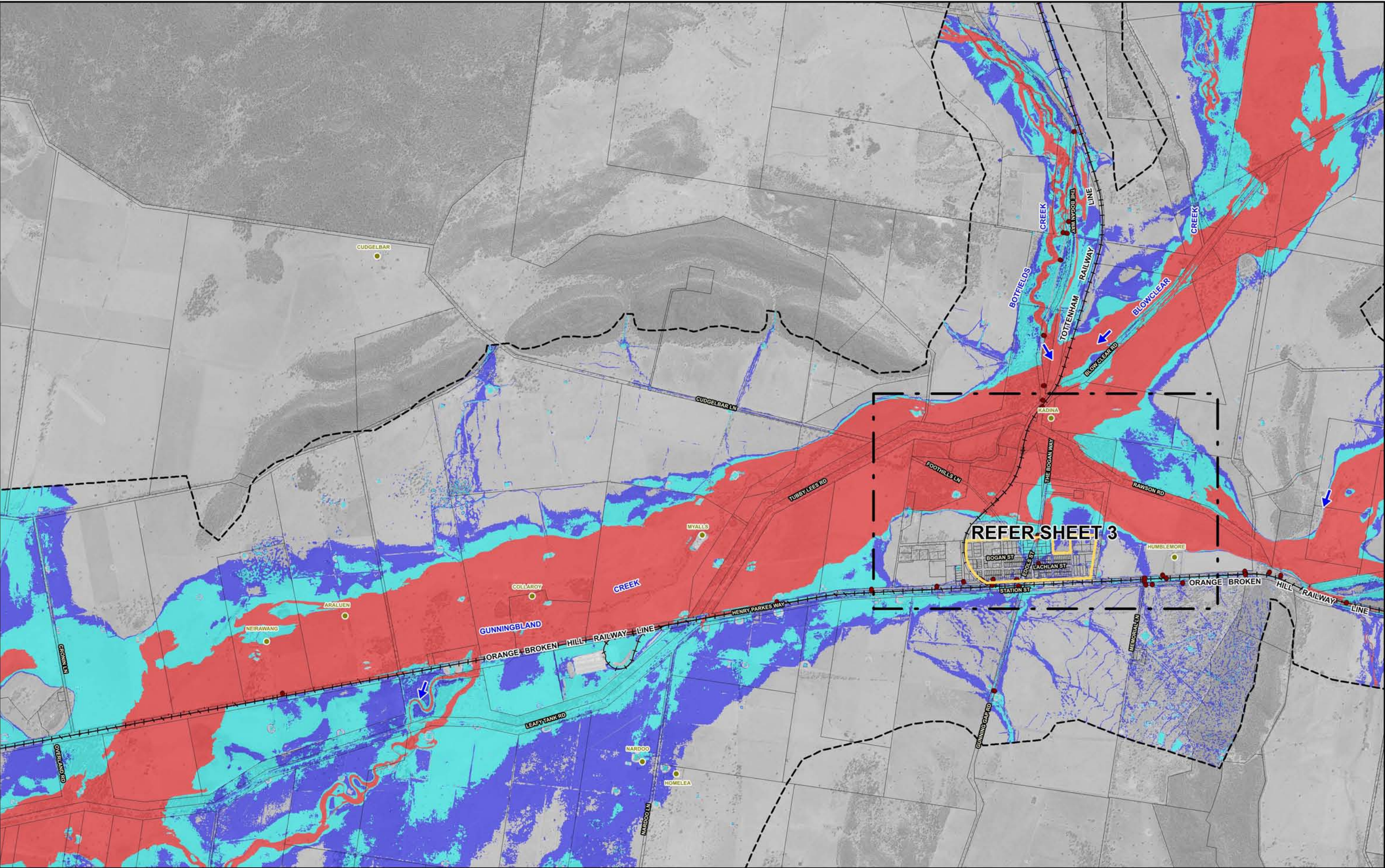
LEGEND

- LGA Boundary
- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads
- Floodway
- Flood Storage
- Flood Fringe

BOGAN GATE FLOOD STUDY

Figure 6.17
(Sheet 1 of 3)

HYDRAULIC CATEGORISATION OF FLOODPLAIN
0.2% AEP



400 0 400 800 1,200 m

Scale: 1:40,000

NOTE:

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LEGEND

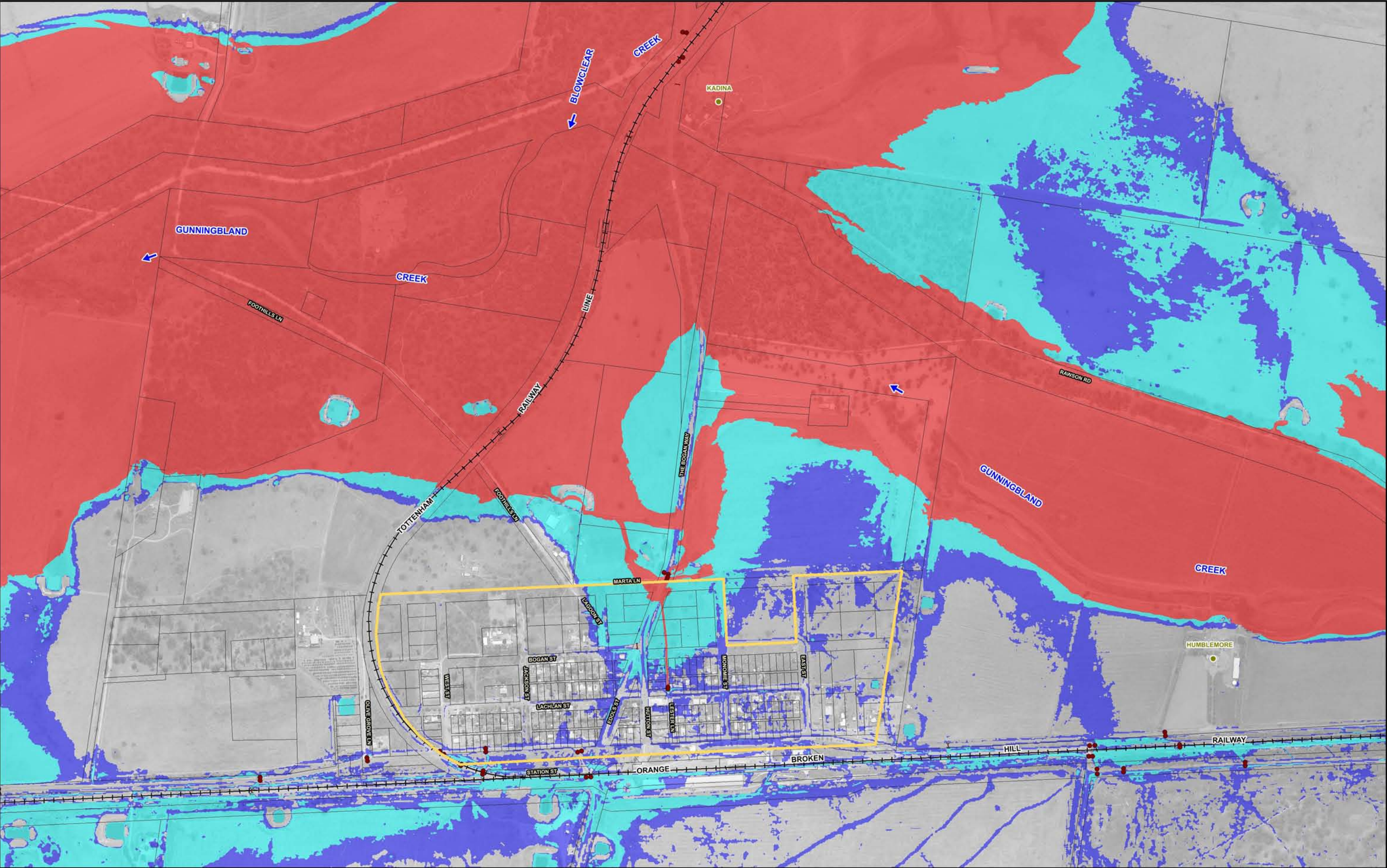
- LGA Boundary
- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

- Floodway
- Flood Storage
- Flood Fringe

BOGAN GATE FLOOD STUDY

Figure 6.17
(Sheet 2 of 3)

HYDRAULIC CATEGORISATION OF FLOODPLAIN
0.2% AEP





100 0 100 200 300 m

Scale: 1:10,000

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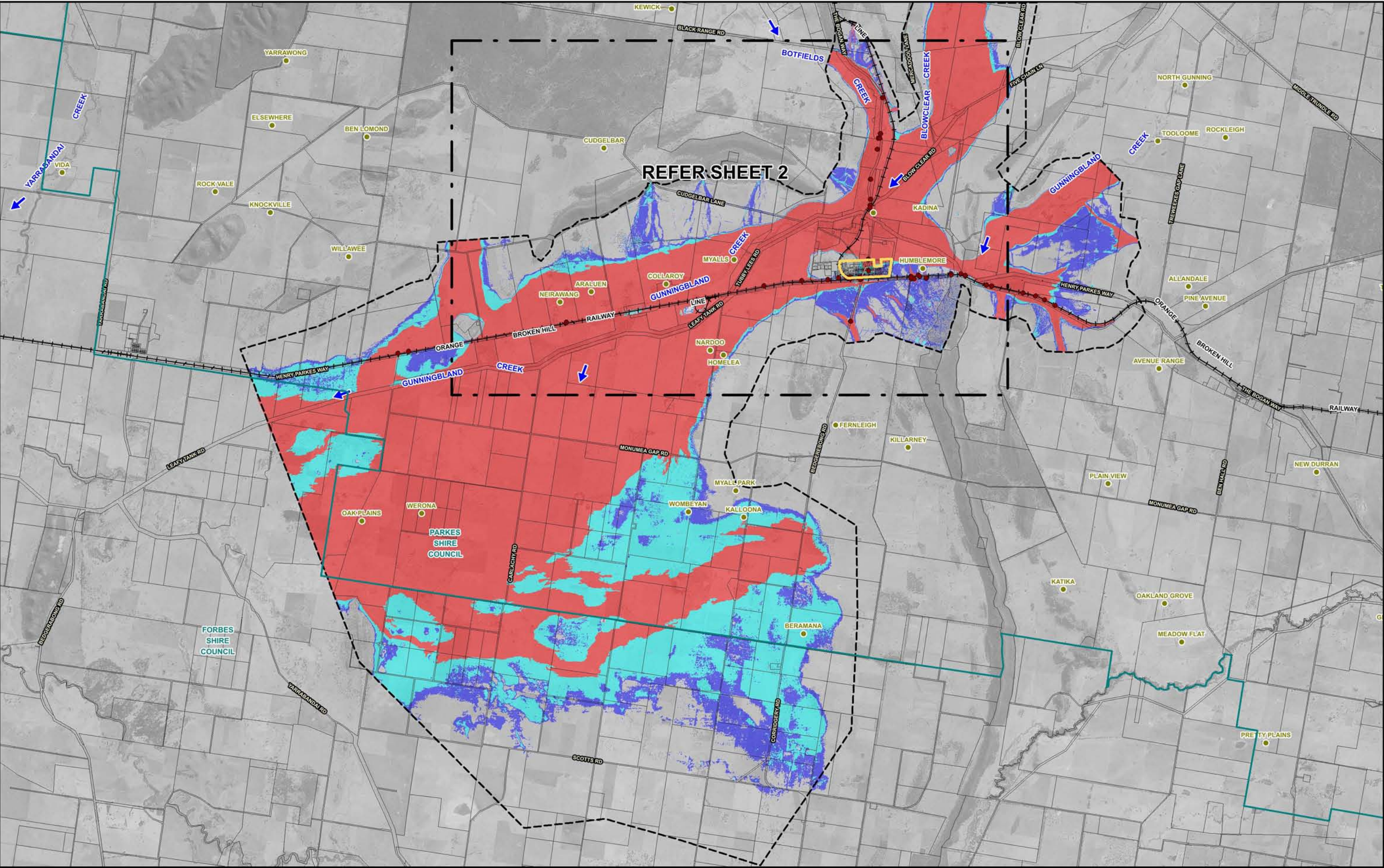
LEGEND

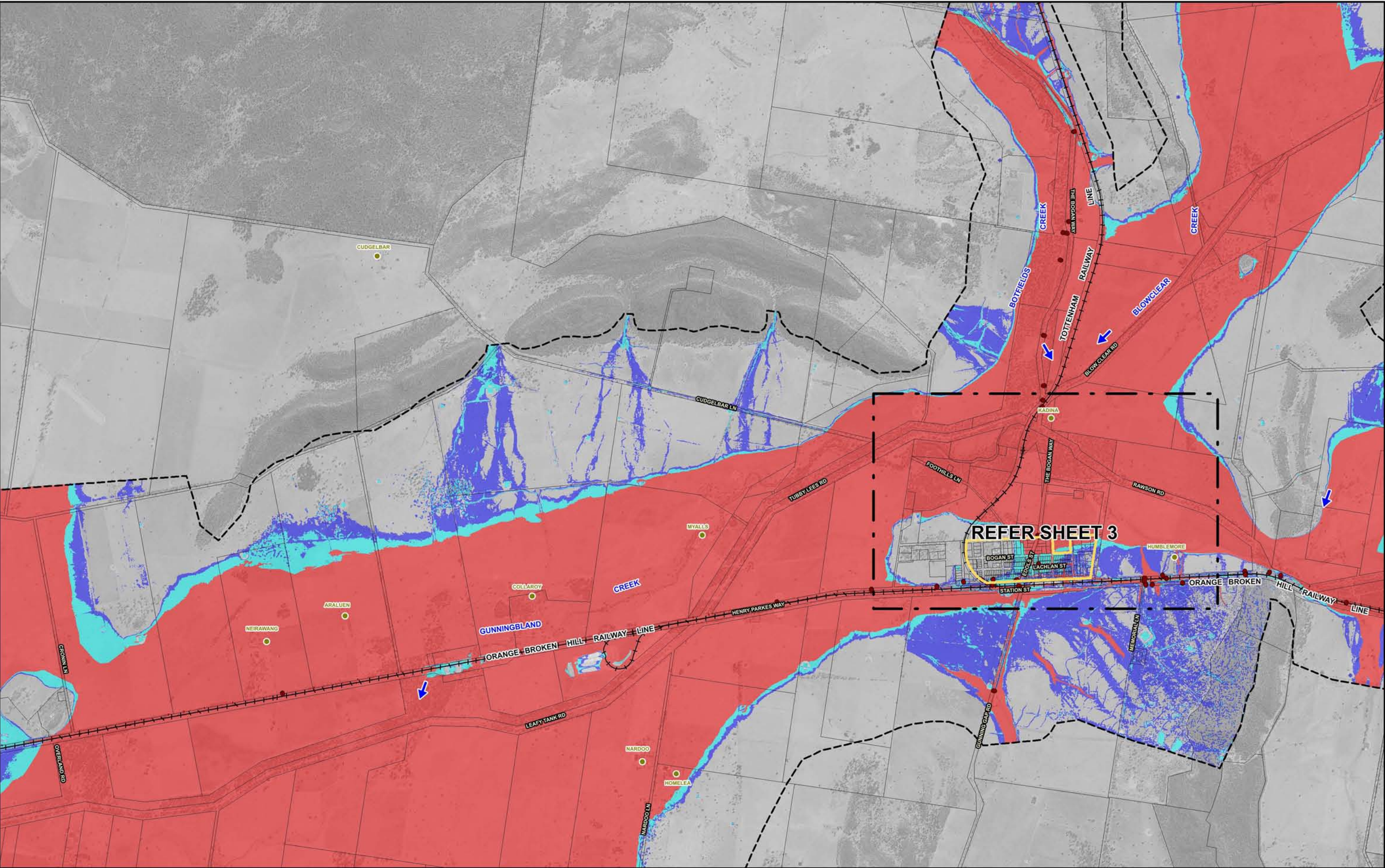
	LGA Boundary		Floodway
	Two-Dimensional Model Boundary		Flood Storage
	Modelled Stormwater Drainage System		Flood Fringe
	Village Centre		
	Homesteads		

BOGAN GATE FLOOD STUDY

Figure 6.17
(Sheet 3 of 3)

HYDRAULIC CATEGORISATION OF FLOODPLAIN
0.2% AEP





Scale: 1:40,000

0 400 800 1,200 m

Lyall & Associates

NOTE:

The ground surface model incorporated in TUFLOW is based on LiDAR survey which has been sampled on a 3 m (min) grid and does not necessarily incorporate localised features which can influence flooding behaviour in individual allotments.

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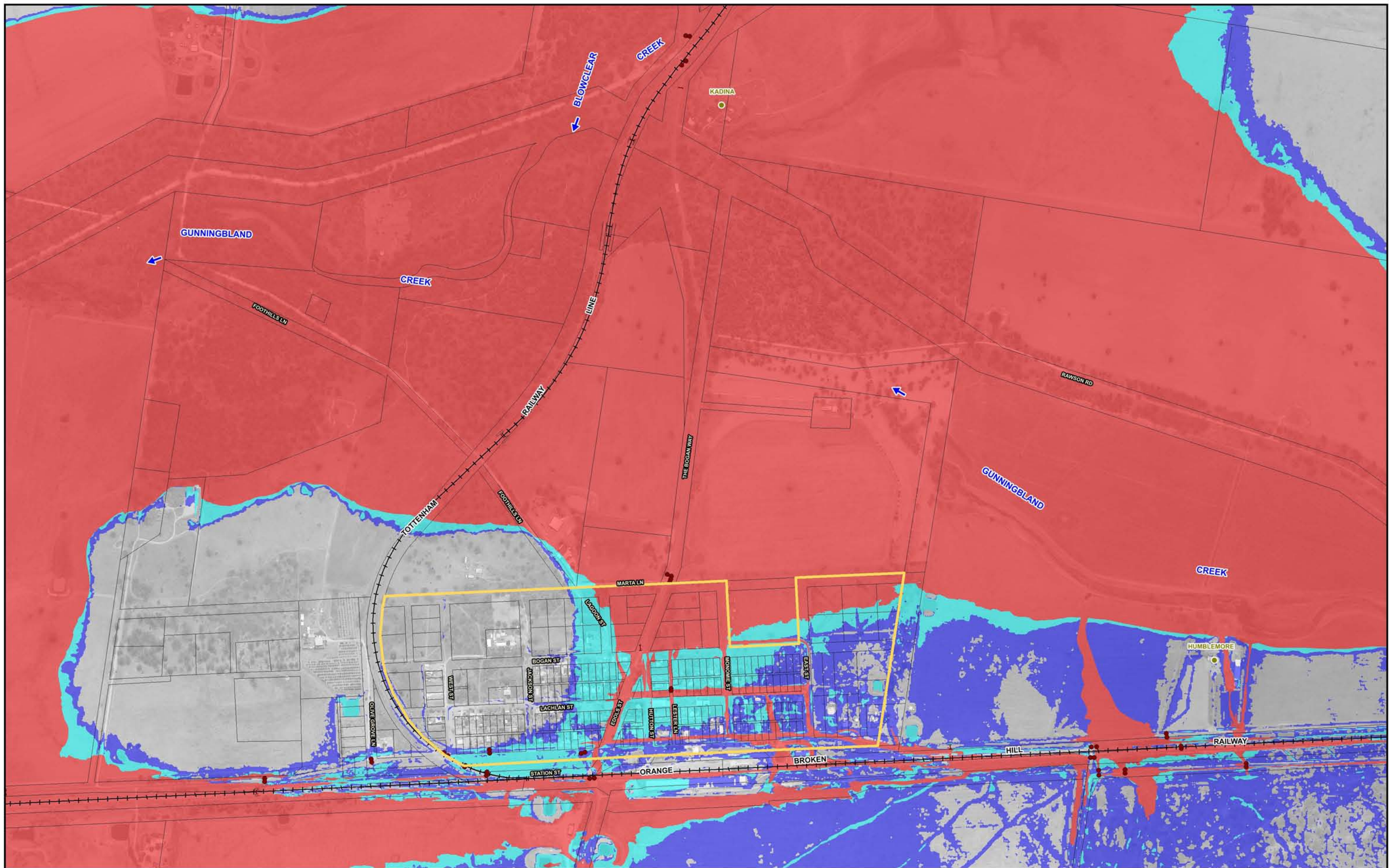
LEGEND

- LGA Boundary
- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads
- Floodway
- Flood Storage
- Flood Fringe

BOGAN GATE FLOOD STUDY

Figure 6.18
(Sheet 2 of 3)

HYDRAULIC CATEGORISATION OF FLOODPLAIN PMF





BOGAN GATE FLOOD STUDY

Figure 6.19

SENSITIVITY OF FLOOD BEHAVIOUR TO 20% INCREASE IN HYDRAULIC ROUGHNESS VALUES
1% AEP

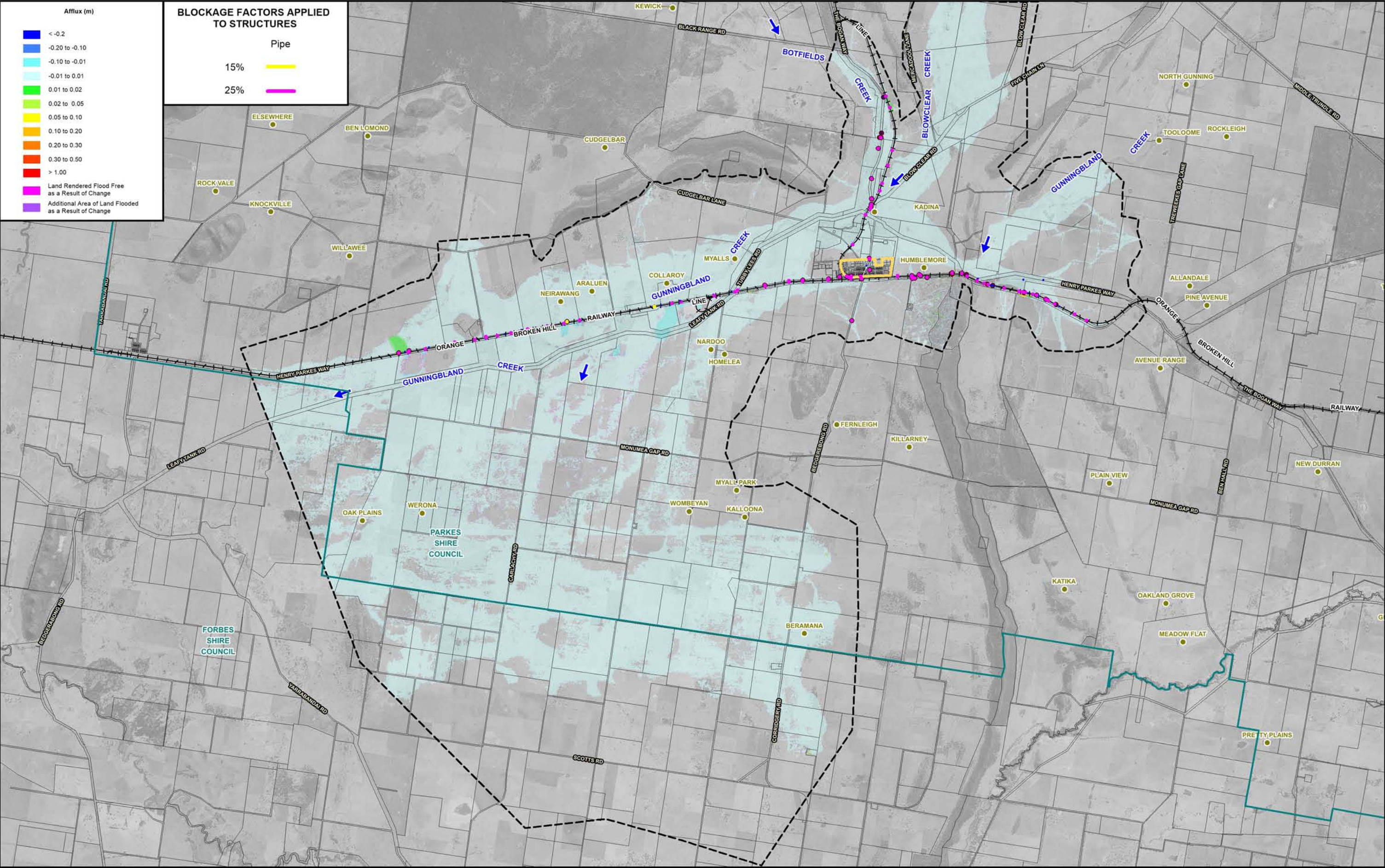
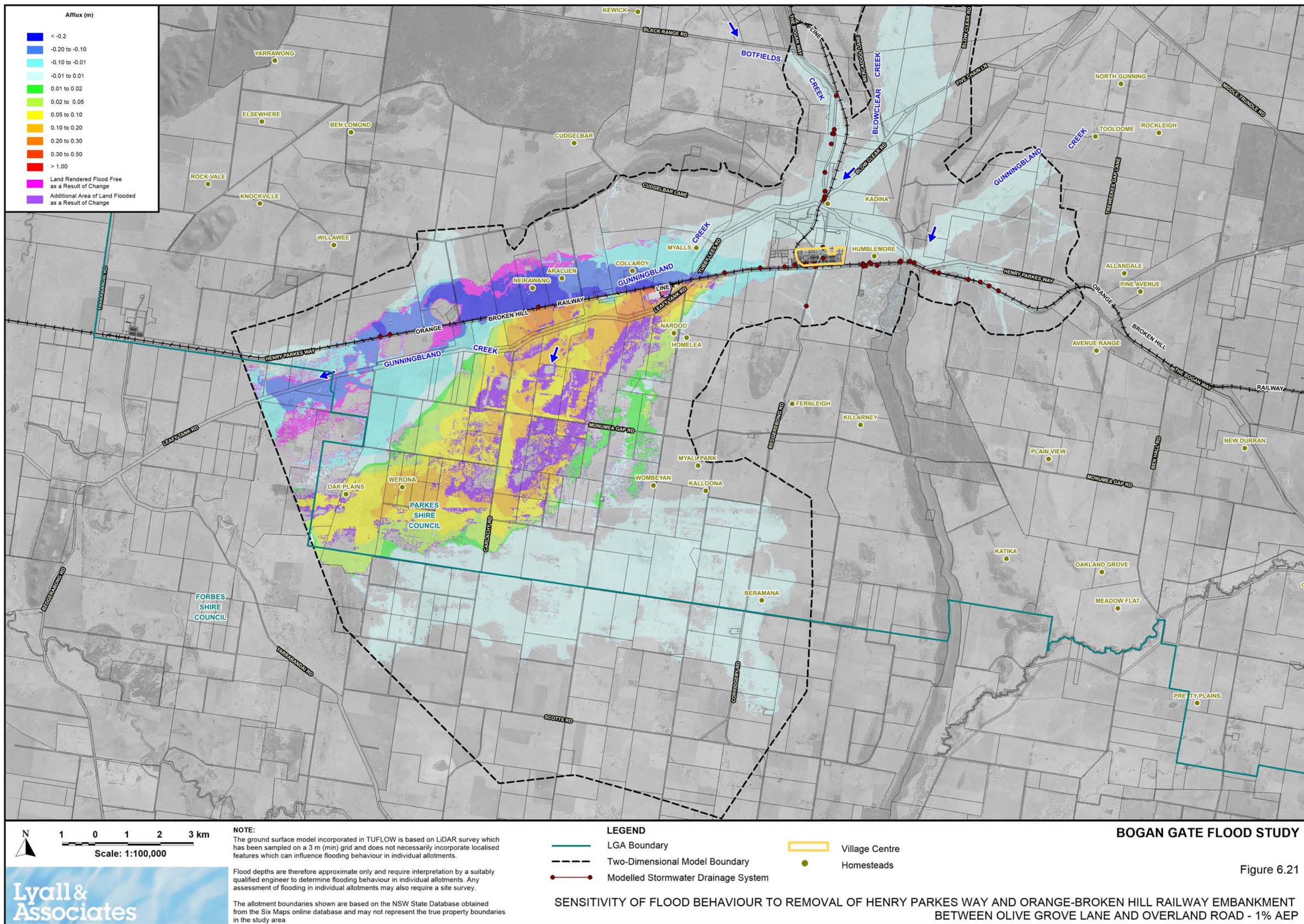
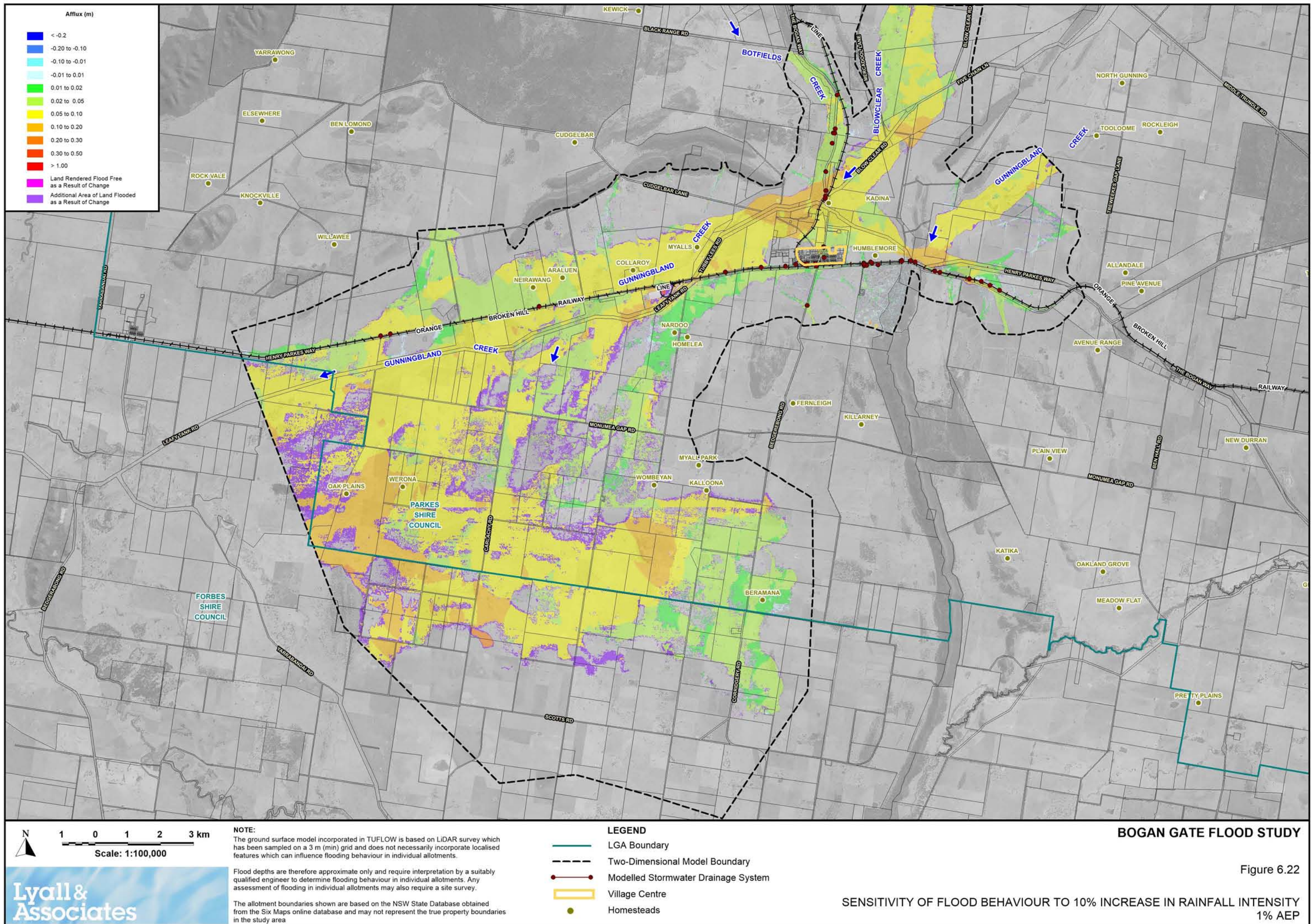
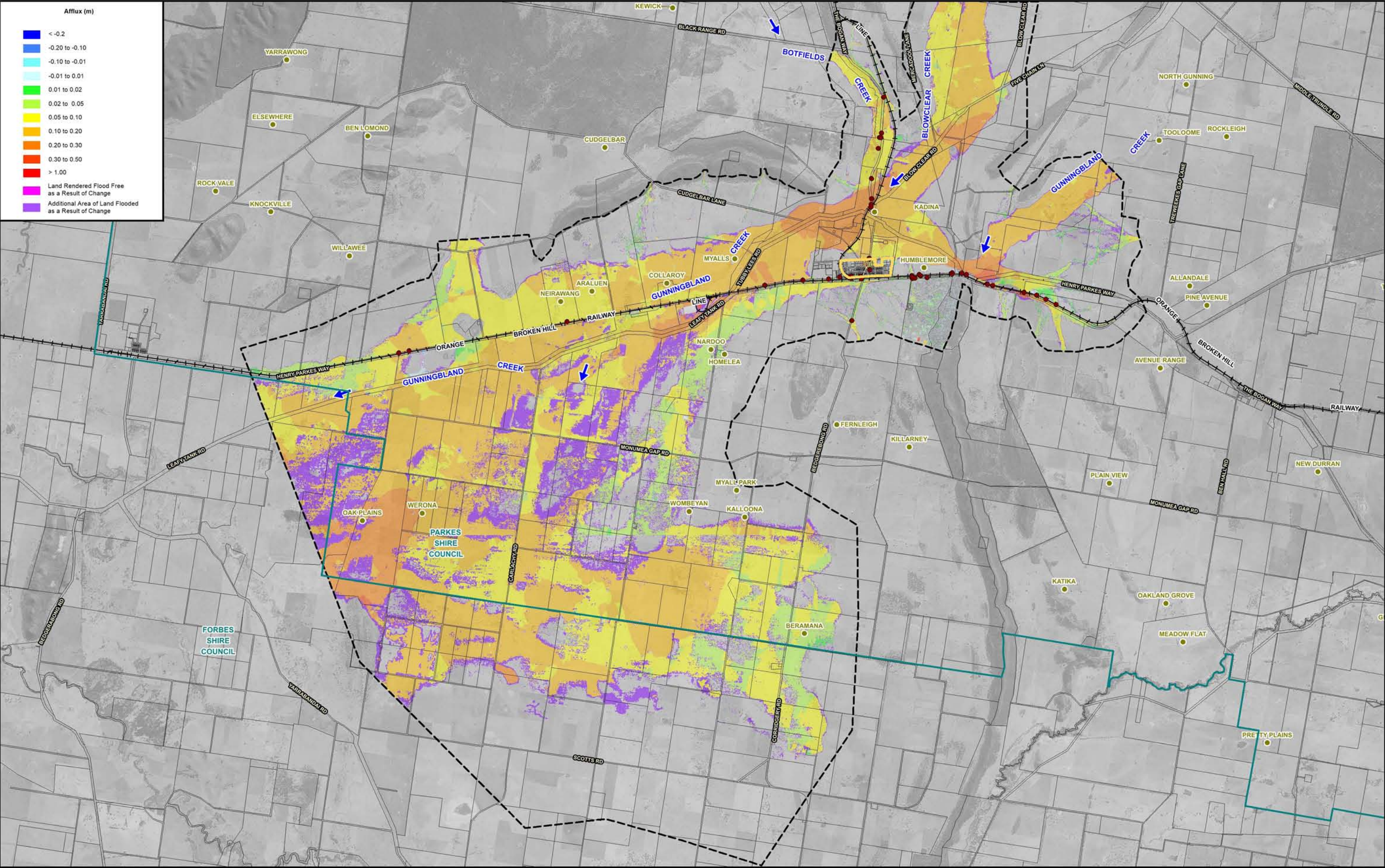


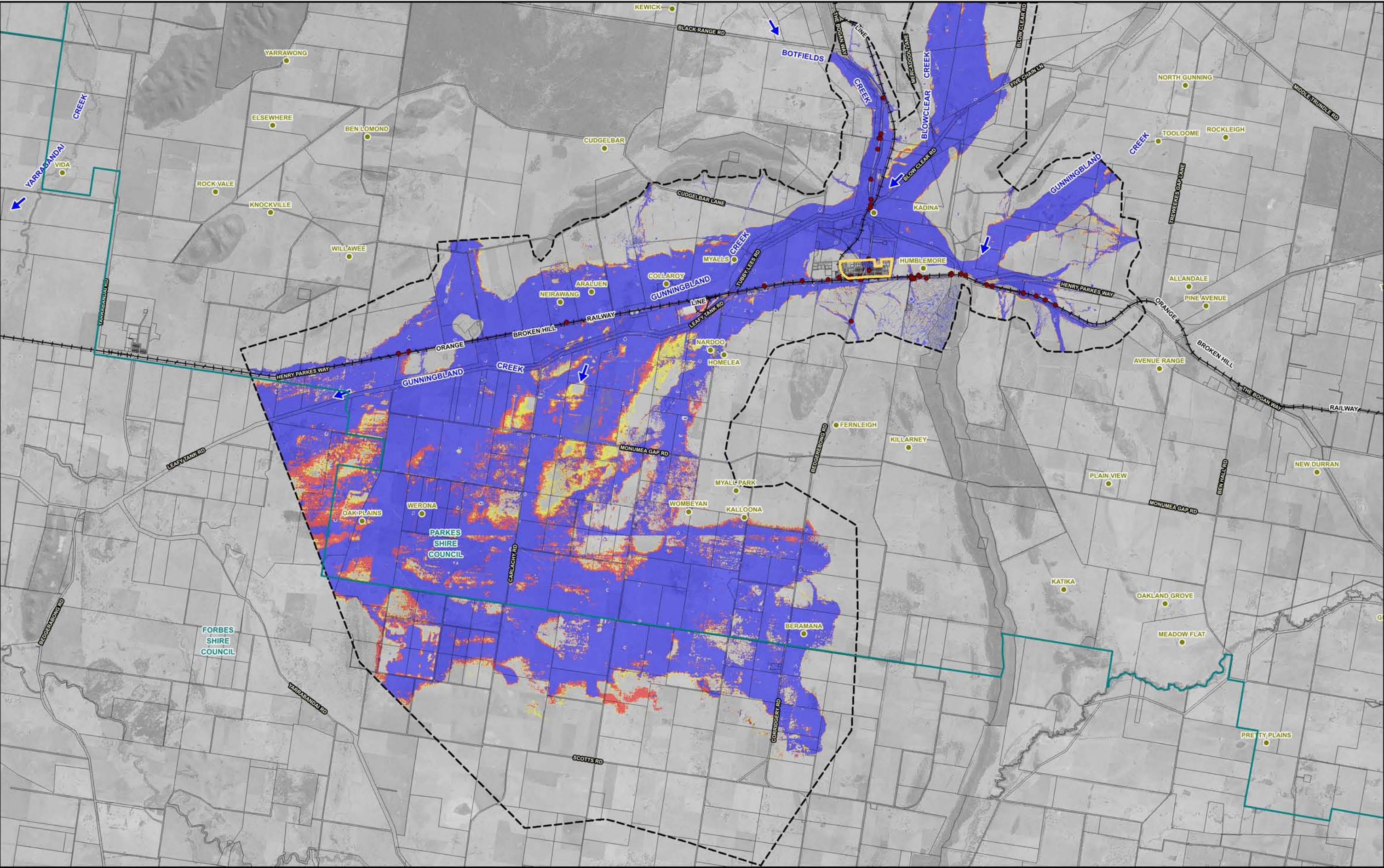
Figure 6.20

SENSITIVITY OF FLOOD BEHAVIOUR TO PARTIAL BLOCKAGE OF HYDRAULIC STRUCTURES
1% AEP









N

1

0

1

2

3

Scale: 1:100,000

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LEGEND

LGA Boundary

Two-Dimensional Model Boundary

Modelled Stormwater Drainage System

Village Centre

Homesteads

1% AEP

1% AEP Rainfall Increased by 10%

1% AEP Rainfall Increased by 30%

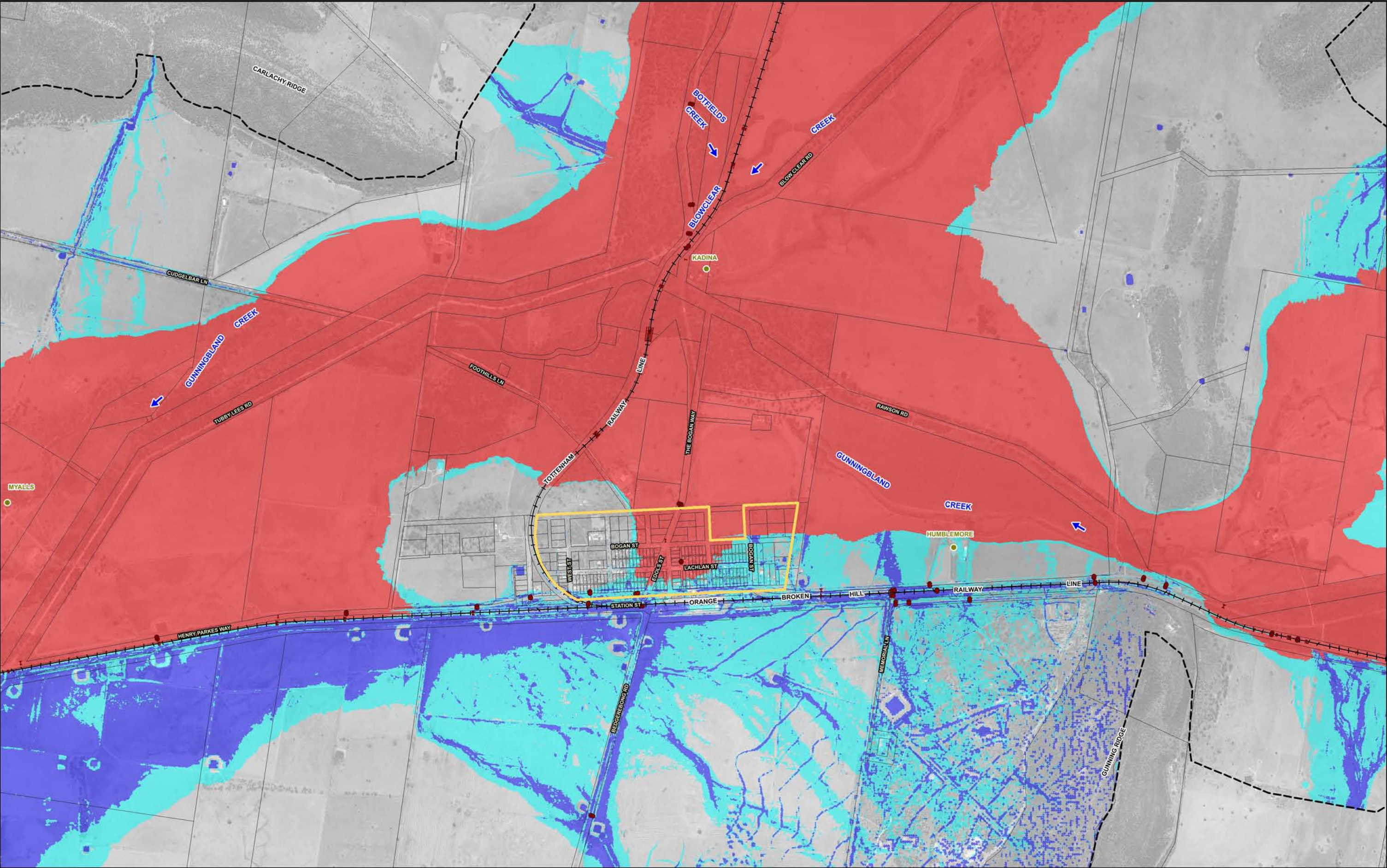
BOGAN GATE FLOOD STUDY

Figure 6.24

IMPACT OF INCREASED RAINFALL INTENSITIES ON EXTENT OF FLOODING

1% AEP

Lyll & Associates



Lyall & Associates

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LEGEND

- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

BOGAN GATE FLOOD STUDY

- Main Stream Flooding Flood Planning Area
- Outer Floodplain
- Major Overland Flow Flood Planning Area

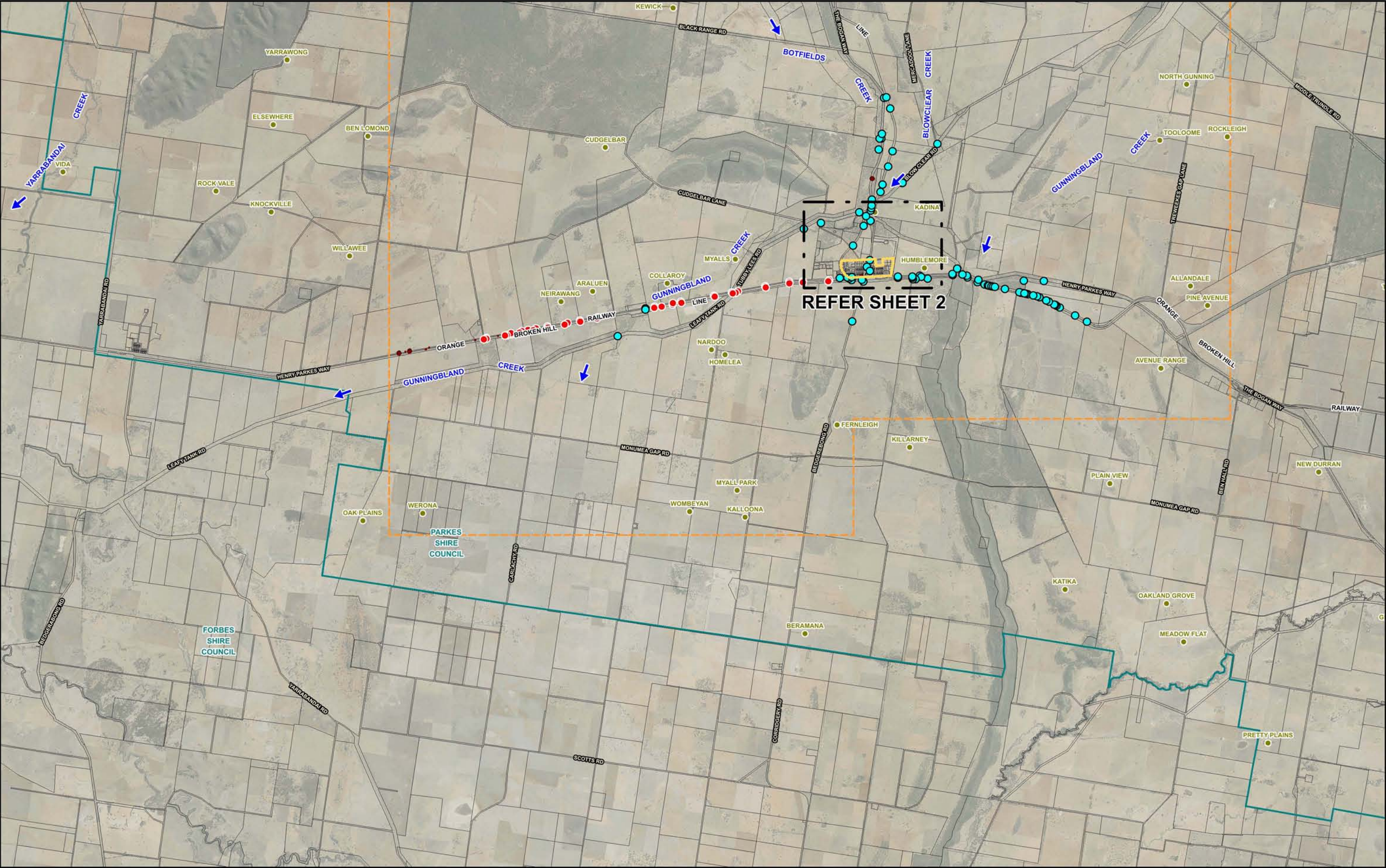
INTERIM FLOOD PLANNING AREA
MAIN STREAM FLOODING AND MAJOR OVERLAND FLOW AFFECTED AREAS

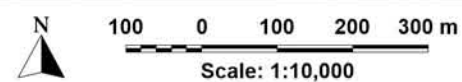
Figure 6.25

APPENDIX B
DETAILS OF AVAILABLE DATA

LIST OF FIGURES (APPENDIX B)

B1.1 Location and Source of Data (2 Sheets)





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LEGEND

- Village Centre
- Surveyed Pipe/Box Culvert (Ardnell Surveying)
- Surveyed Pipe/Box Culvert (KBR, 2017)
- Homestead

BOGAN GATE FLOOD STUDY

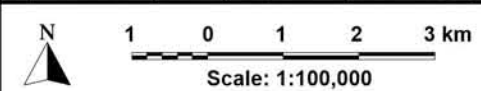
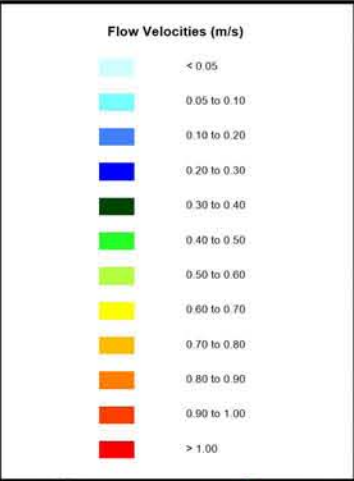
Figure B1.1
(Sheet 2 of 2)

LOCATION AND SOURCE OF DATA

APPENDIX H
DESIGN MAXIMUM FLOW VELOCITY MAPS

LIST OF FIGURES (APPENDIX H)

- H1.1. Maximum Flow Velocities – 20% AEP (3 Sheets)
- H1.2. Maximum Flow Velocities – 10% AEP (3 Sheets)
- H1.3. Maximum Flow Velocities – 5% AEP (3 Sheets)
- H1.4. Maximum Flow Velocities – 2% AEP (3 Sheets)
- H1.5. Maximum Flow Velocities – 1% AEP (3 Sheets)
- H1.6. Maximum Flow Velocities – 0.5% AEP (3 Sheets)
- H1.7. Maximum Flow Velocities – 0.2% AEP (3 Sheets)
- H1.8. Maximum Flow Velocities – PMF (3 Sheets)



NOTE:
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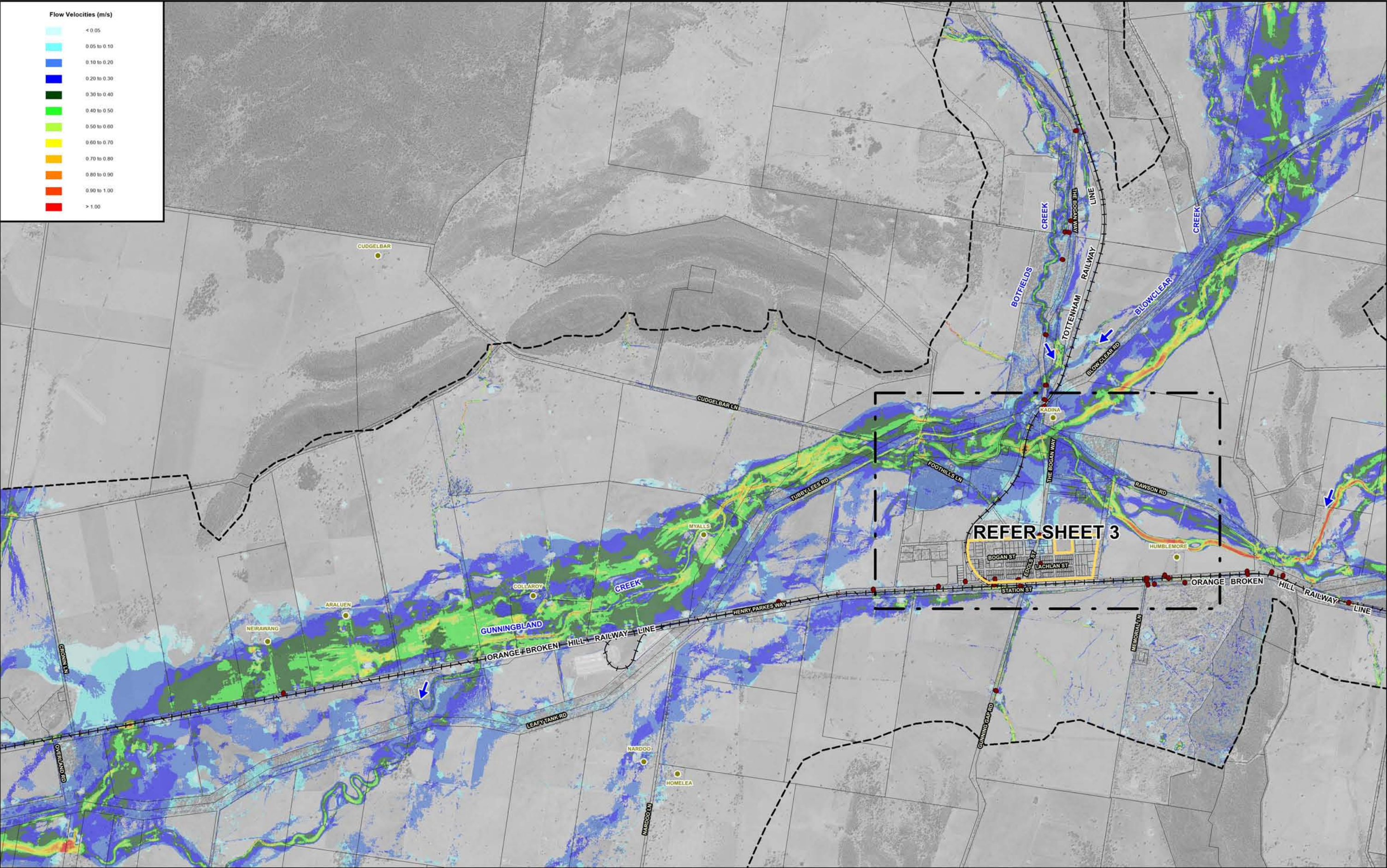
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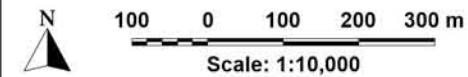
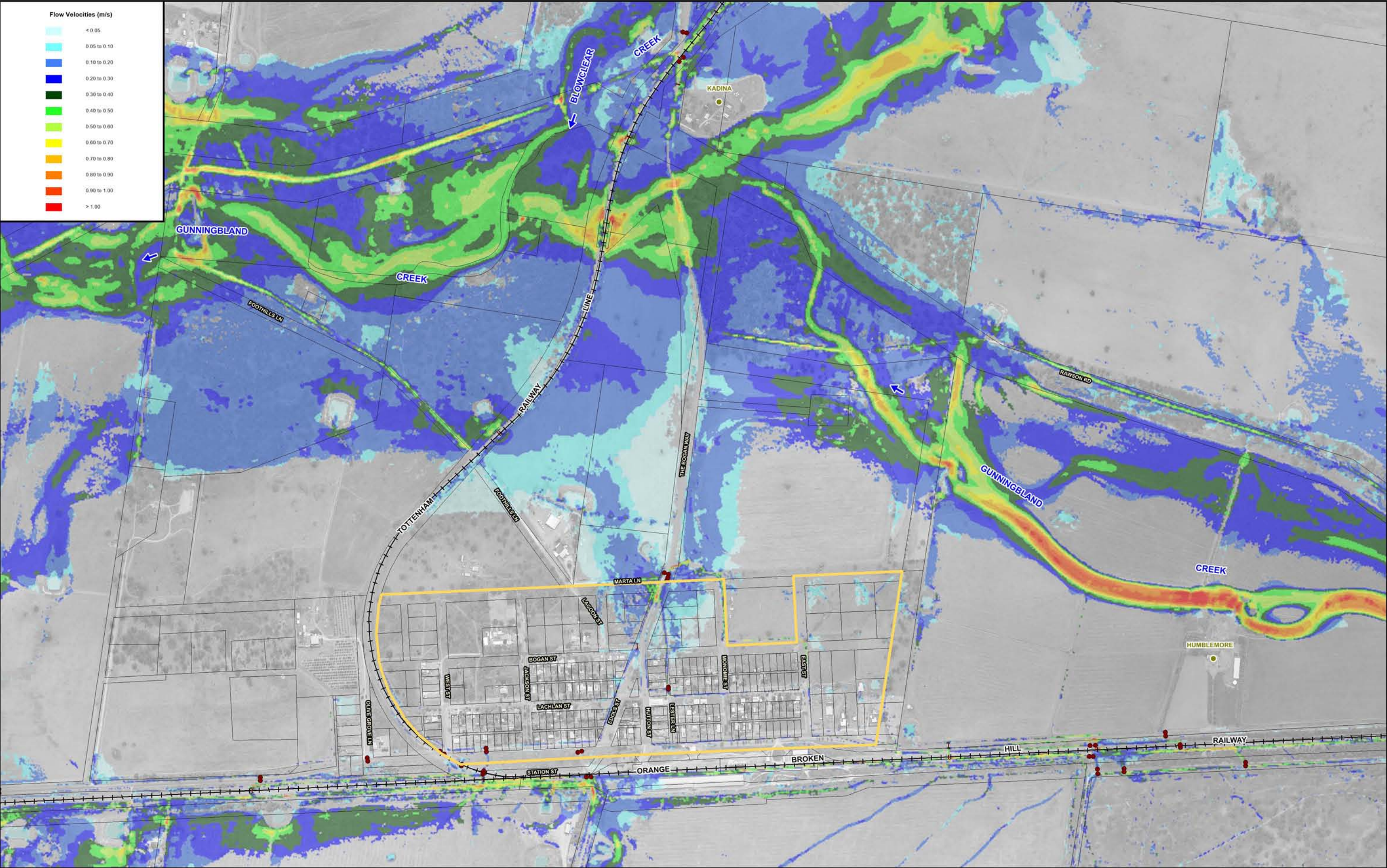
- LEGEND**
- LGA Boundary
 - Two-Dimensional Model Boundary
 - Modelled Stormwater Drainage System
 - Village Centre
 - Homesteads

BOGAN GATE FLOOD STUDY

Figure H1.1
(Sheet 1 of 3)

**MAXIMUM FLOW VELOCITIES
20% AEP**



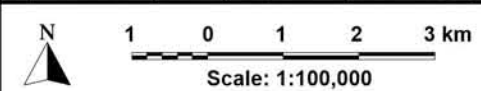
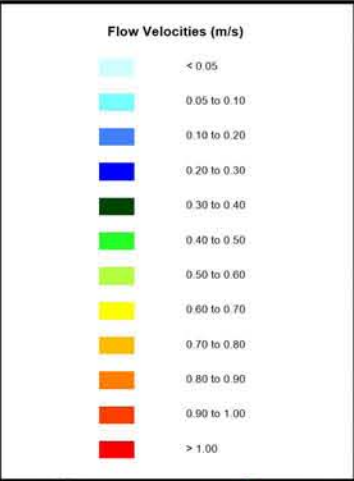


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- LGA Boundary
 - - - Two-Dimensional Model Boundary
 - Modelled Stormwater Drainage System
 - Village Centre
 - Homesteads



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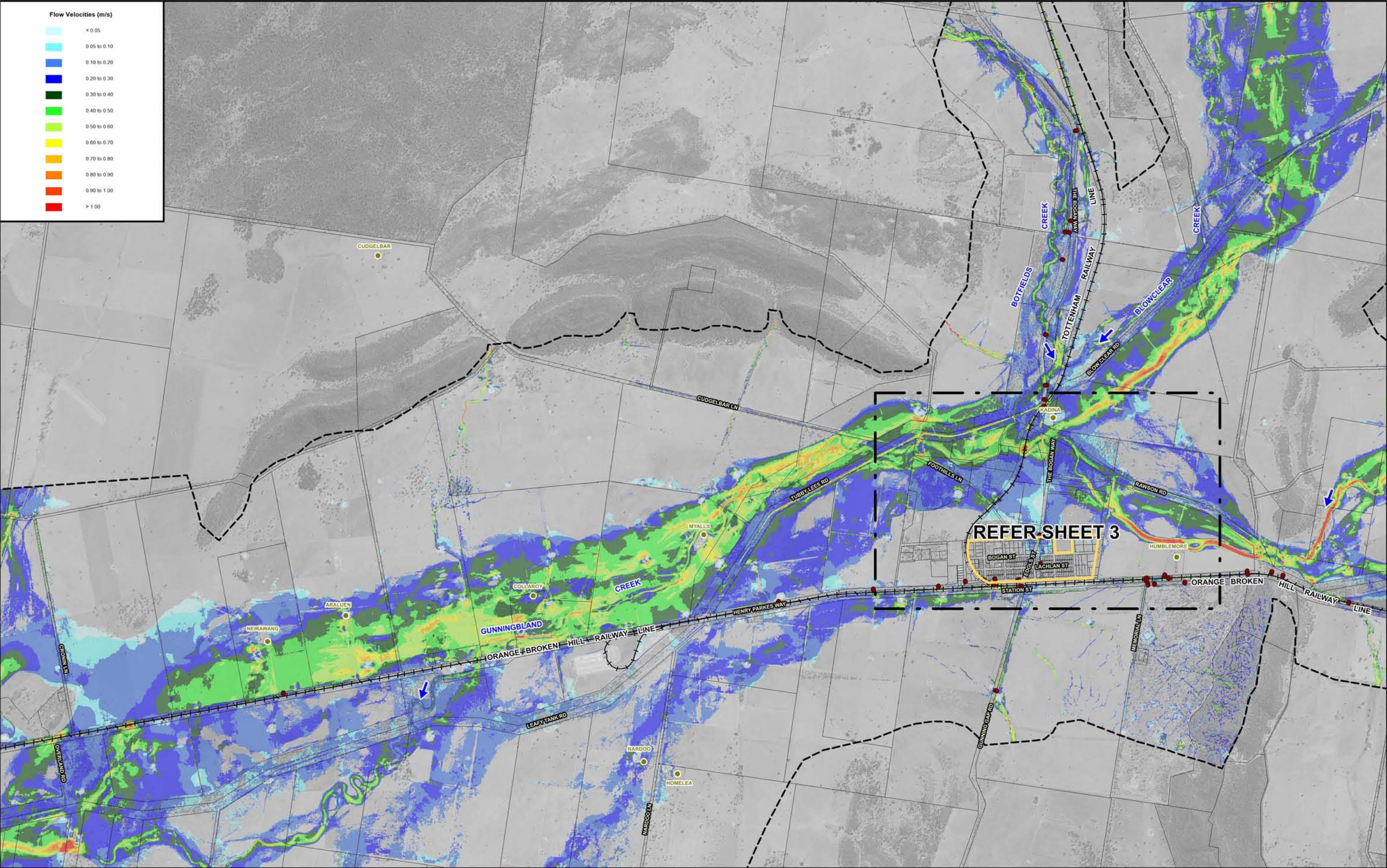
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- LEGEND**
- LGA Boundary
 - - - Two-Dimensional Model Boundary
 - Modelled Stormwater Drainage System
 - Village Centre
 - Homesteads

BOGAN GATE FLOOD STUDY

Figure H1.2
(Sheet 1 of 3)

MAXIMUM FLOW VELOCITIES
10% AEP



Flow Velocities (m/s)

< 0.05
0.05 to 0.10
0.10 to 0.20
0.20 to 0.30
0.30 to 0.40
0.40 to 0.50
0.50 to 0.60
0.60 to 0.70
0.70 to 0.80
0.80 to 0.90
0.90 to 1.00
> 1.00

Scale: 1:40,000

400 0 400 800 1,200 m

NOTE:

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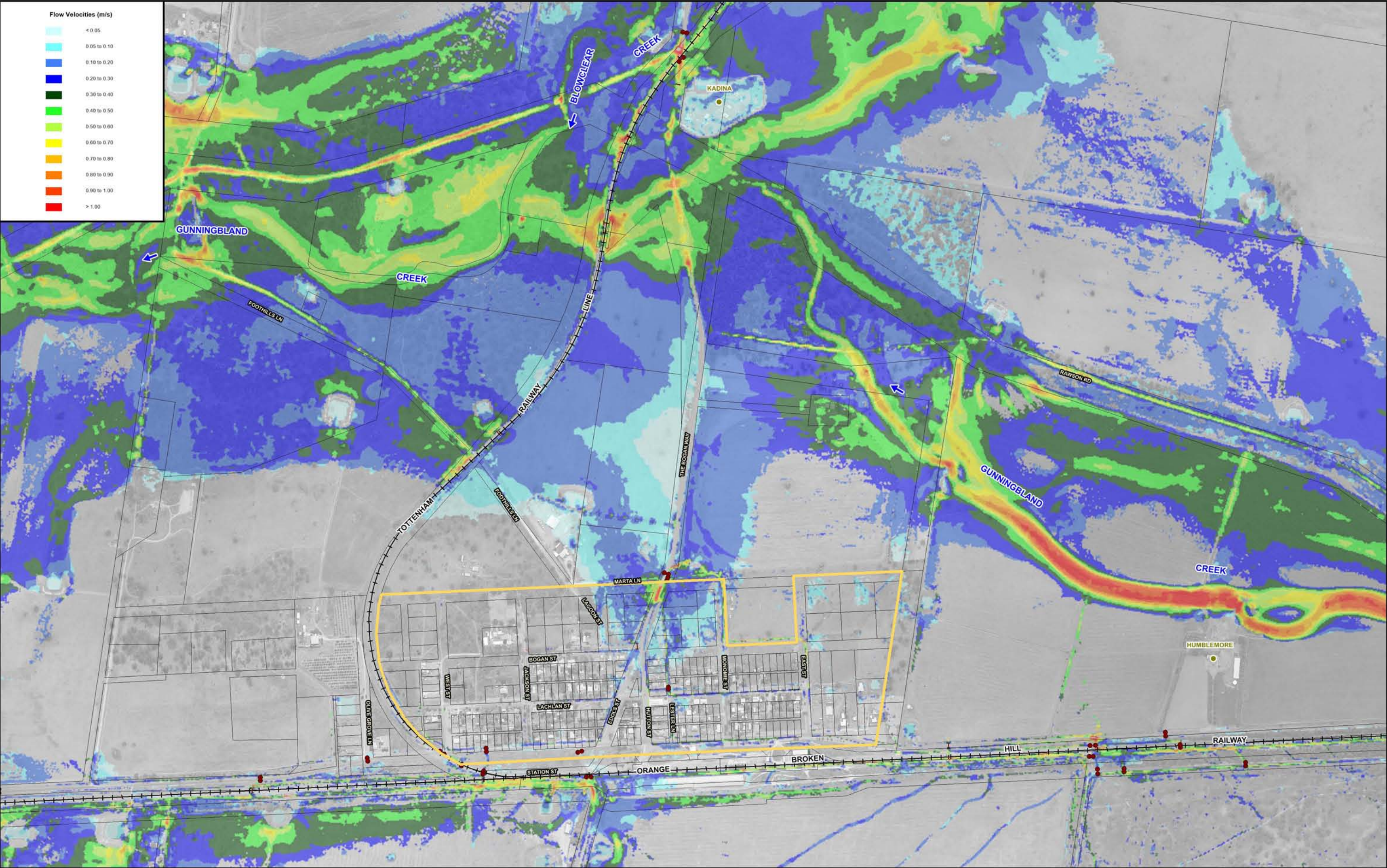
LEGEND

- LGA Boundary
- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

BOGAN GATE FLOOD STUDY

Figure H1.2
(Sheet 2 of 3)

MAXIMUM FLOW VELOCITIES
10% AEP



Flow Velocities (m/s)

< 0.05
0.05 to 0.10
0.10 to 0.20
0.20 to 0.30
0.30 to 0.40
0.40 to 0.50
0.50 to 0.60
0.60 to 0.70
0.70 to 0.80
0.80 to 0.90
0.90 to 1.00
> 1.00

Scale: 1:10,000

100 0 100 200 300 m

Lyall & Associates

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LEGEND

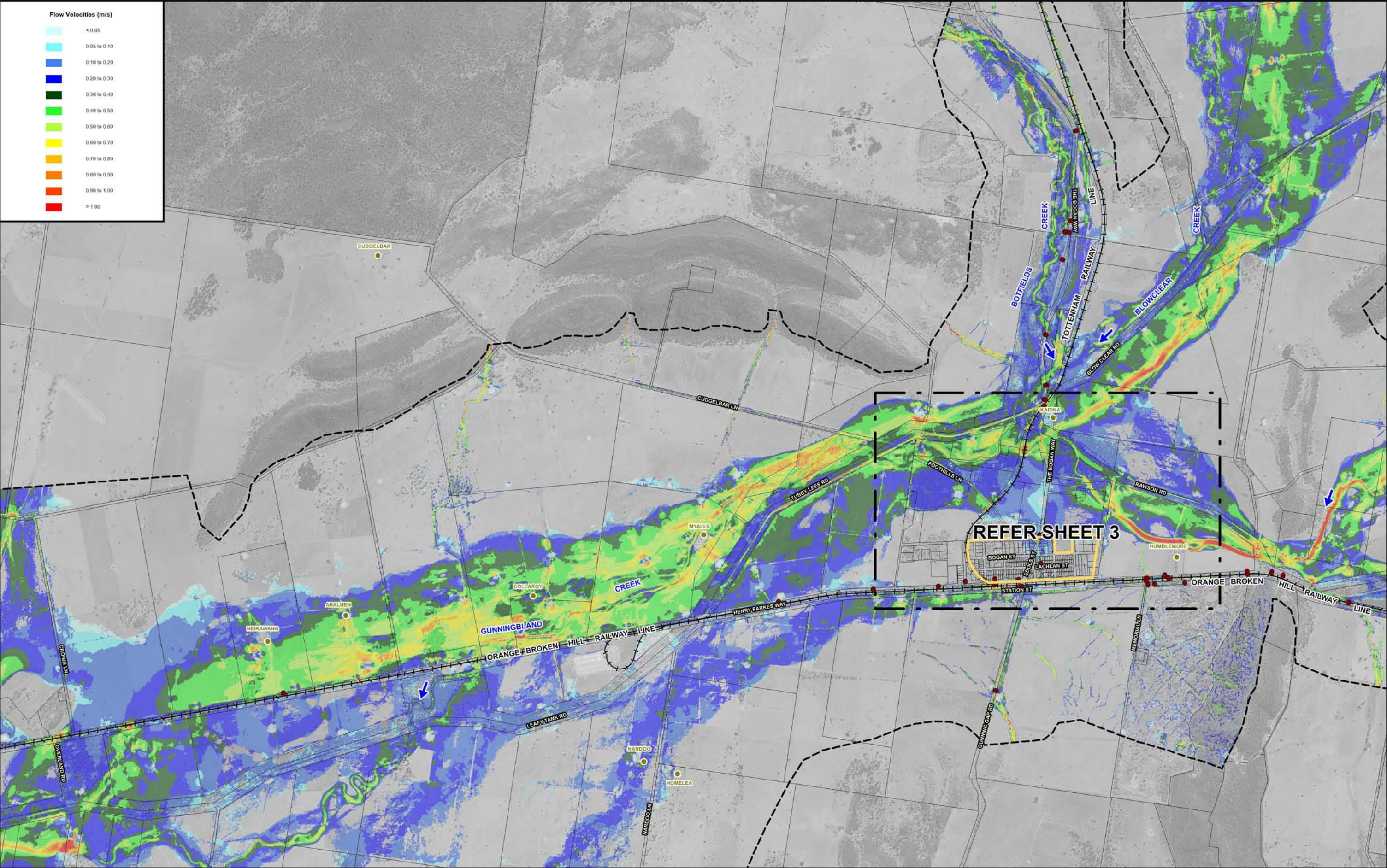
- LGA Boundary
- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

BOGAN GATE FLOOD STUDY

Figure H1.2
(Sheet 3 of 3)

**MAXIMUM FLOW VELOCITIES
10% AEP**





Scale: 1:40,000

Lyall & Associates

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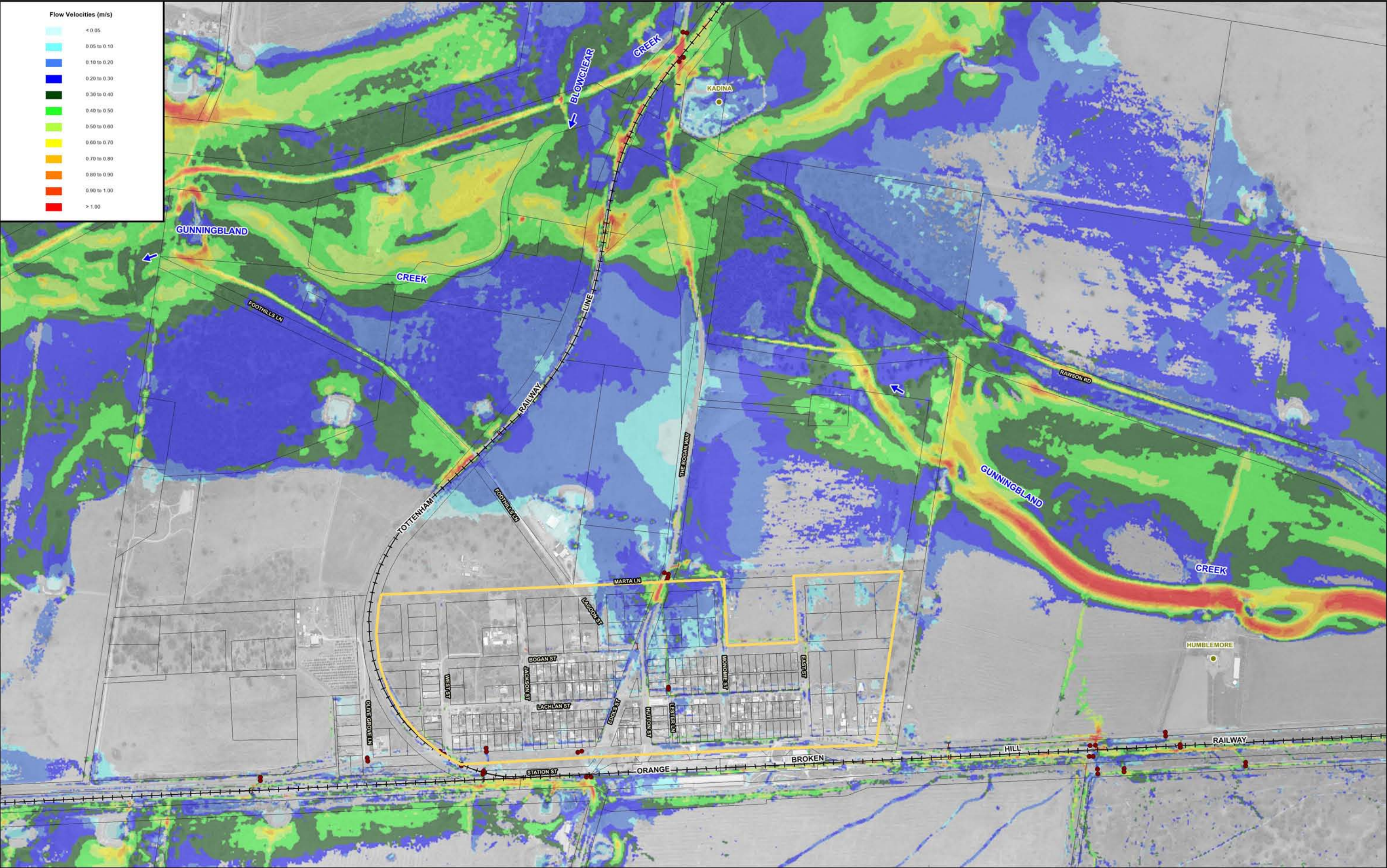
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- LEGEND**
- LGA Boundary
 - - - Two-Dimensional Model Boundary
 - Modelled Stormwater Drainage System
 - Village Centre
 - Homesteads

BOGAN GATE FLOOD STUDY

Figure H1.3
(Sheet 2 of 3)
MAXIMUM FLOW VELOCITIES
5% AEP



Scale: 1:10,000

100 0 100 200 300 m

Lyall & Associates

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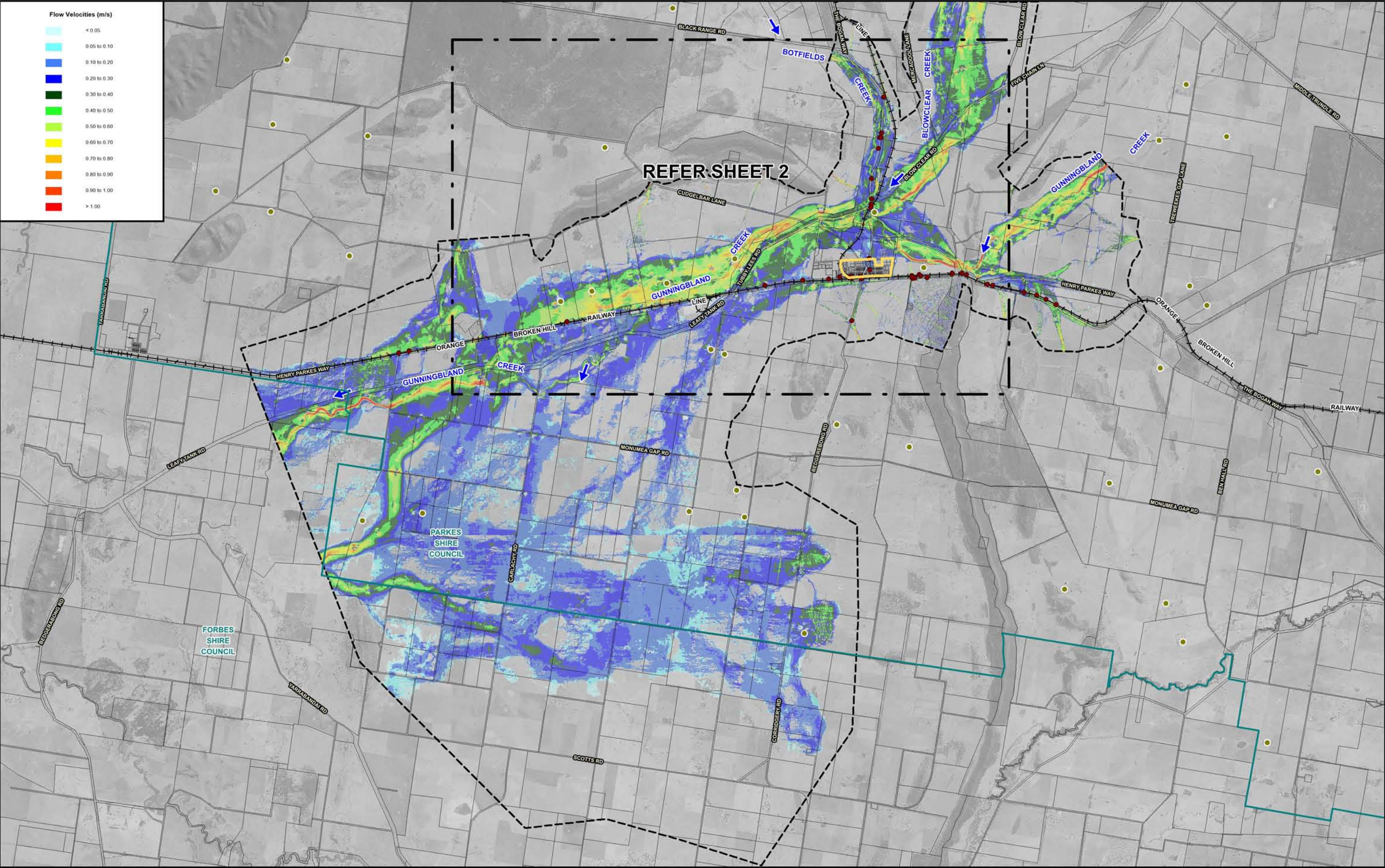
LEGEND

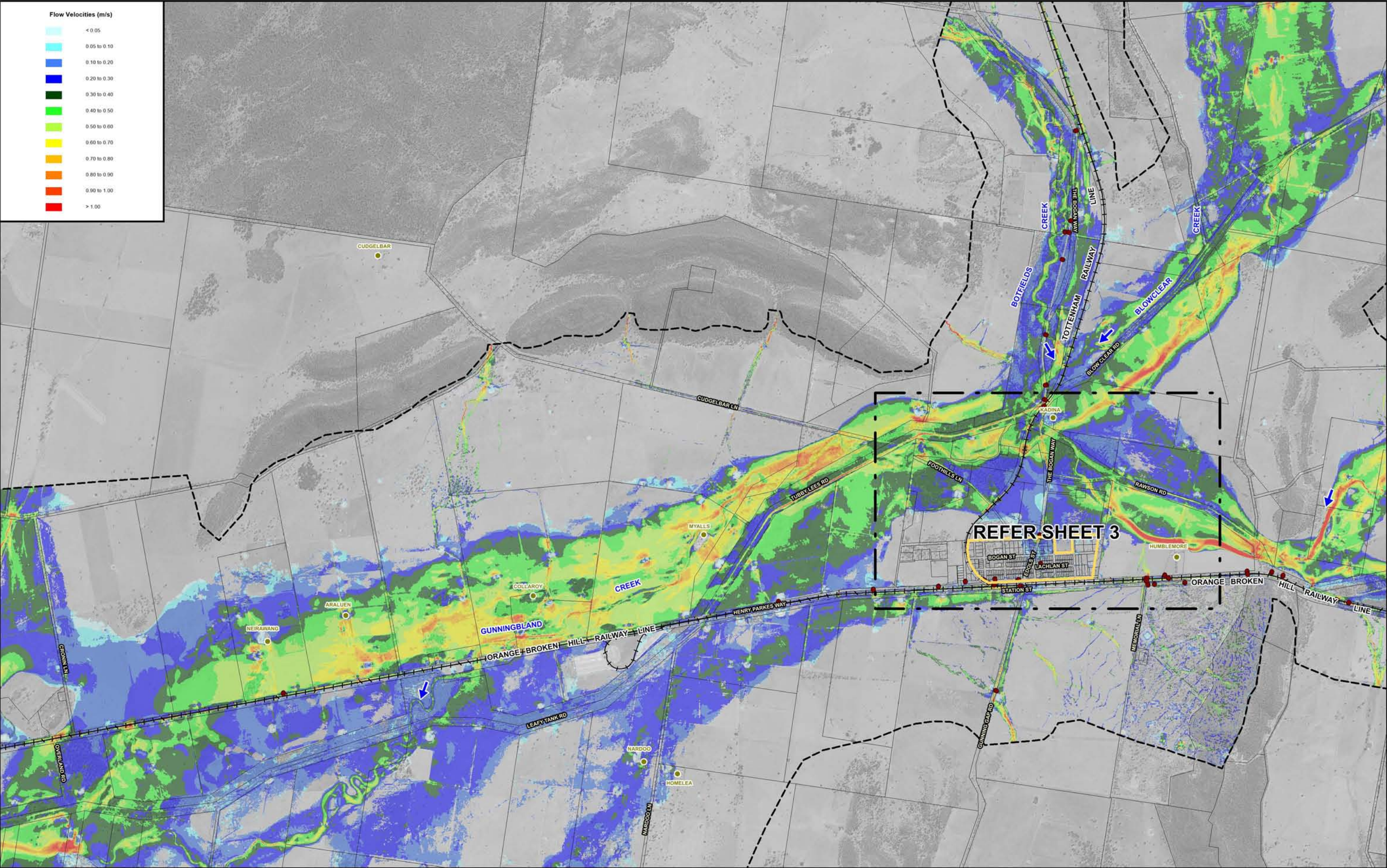
- LGA Boundary
- - - Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

BOGAN GATE FLOOD STUDY

Figure H1.3
(Sheet 3 of 3)

MAXIMUM FLOW VELOCITIES
5% AEP





Scale: 1:40,000

Lyall & Associates

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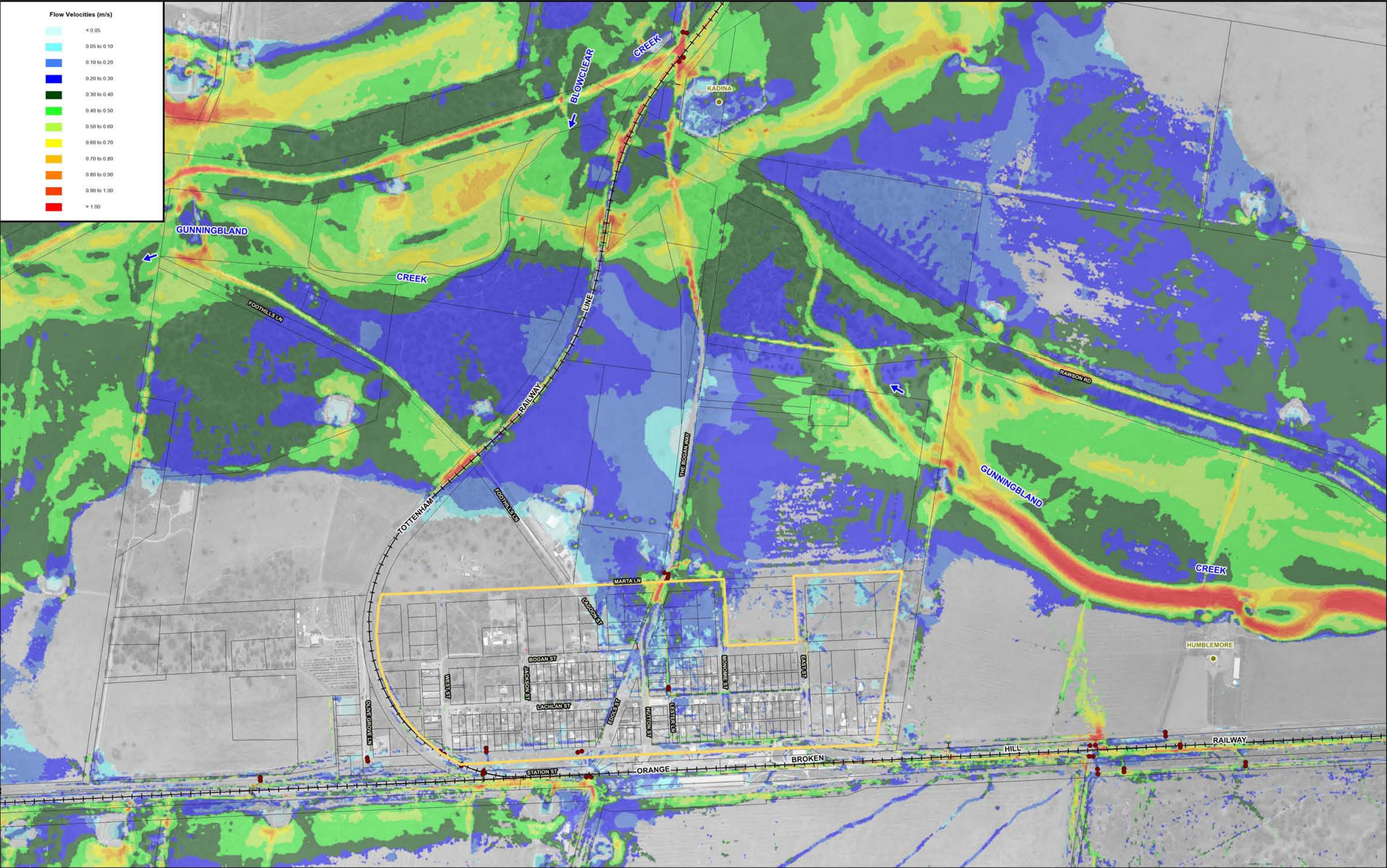
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- LEGEND**
- LGA Boundary
 - - - Two-Dimensional Model Boundary
 - Modelled Stormwater Drainage System
 - Village Centre
 - Homesteads

BOGAN GATE FLOOD STUDY

Figure H1.4
(Sheet 2 of 3)
MAXIMUM FLOW VELOCITIES
2% AEP





100 0 100 200 300 m

Scale: 1:10,000

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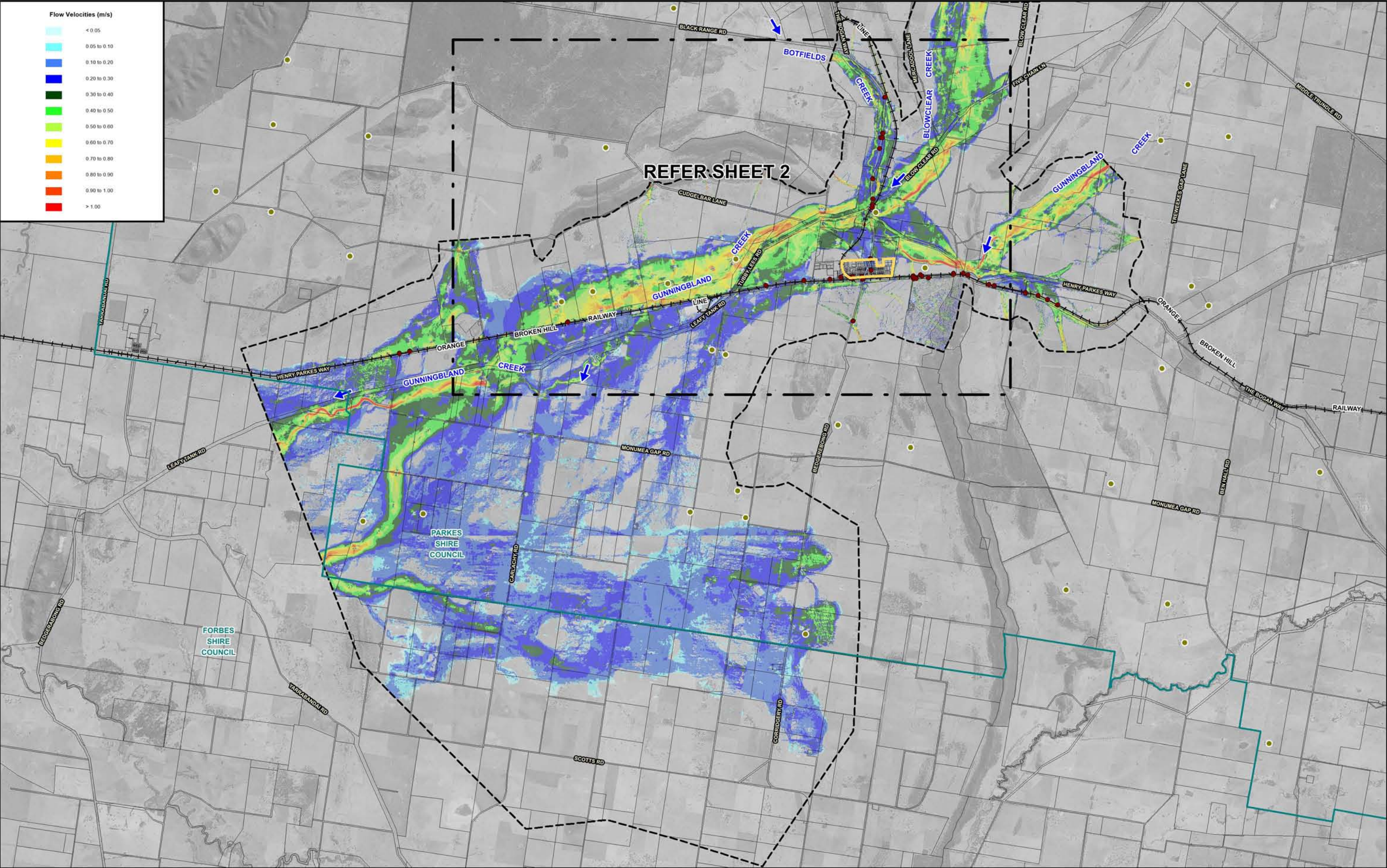
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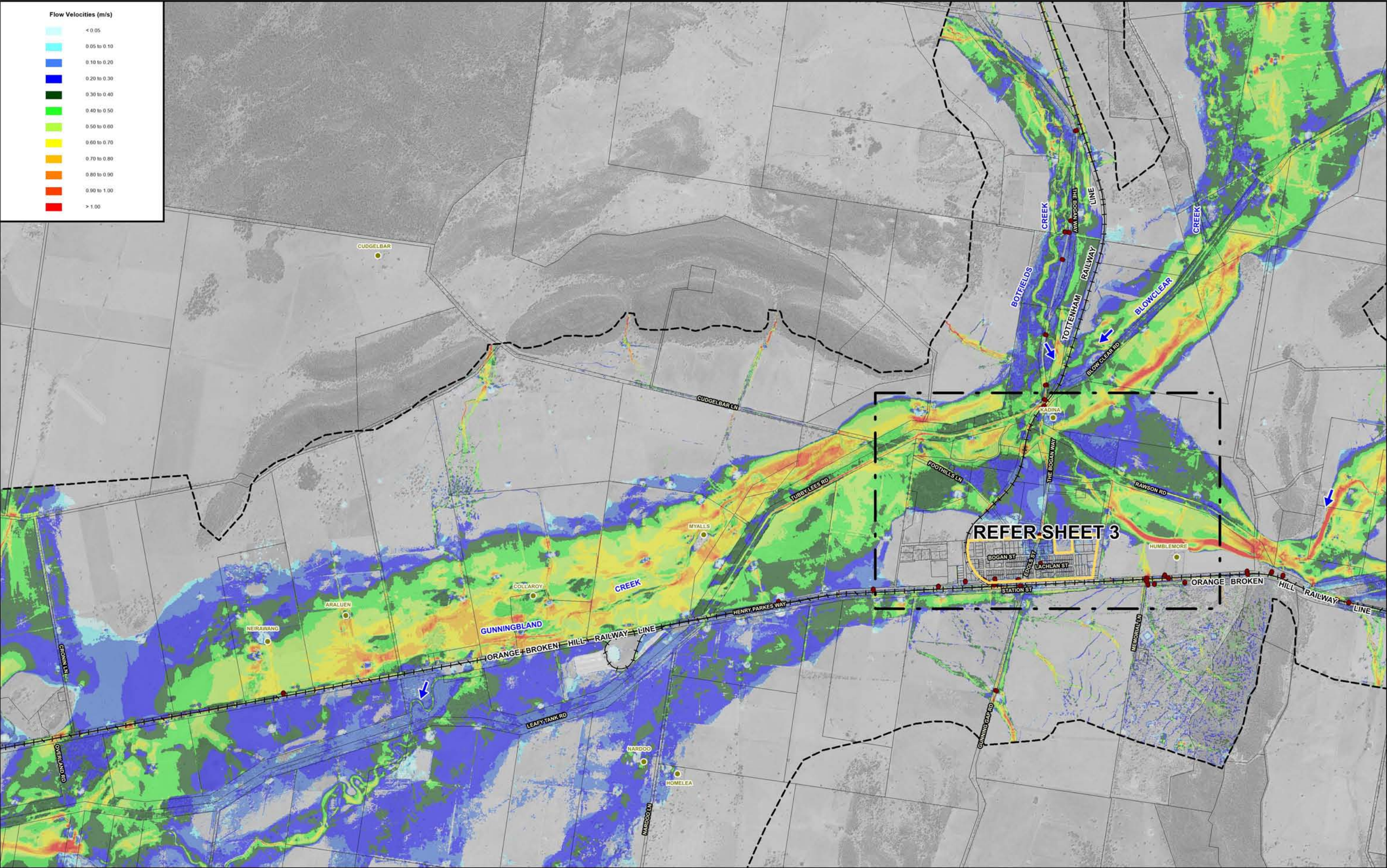
-  LGA Boundary
-  Two-Dimensional Model Boundary
-  Modelled Stormwater Drainage System
-  Village Centre
-  Homesteads

BOGAN GATE FLOOD STUDY

Figure H1.4
(Sheet 3 of 3)

MAXIMUM FLOW VELOCITIES
2% AEP





Flow Velocities (m/s)

< 0.05
0.05 to 0.10
0.10 to 0.20
0.20 to 0.30
0.30 to 0.40
0.40 to 0.50
0.50 to 0.60
0.60 to 0.70
0.70 to 0.80
0.80 to 0.90
0.90 to 1.00
> 1.00

Scale: 1:40,000

400 0 400 800 1,200 m

Lyall & Associates

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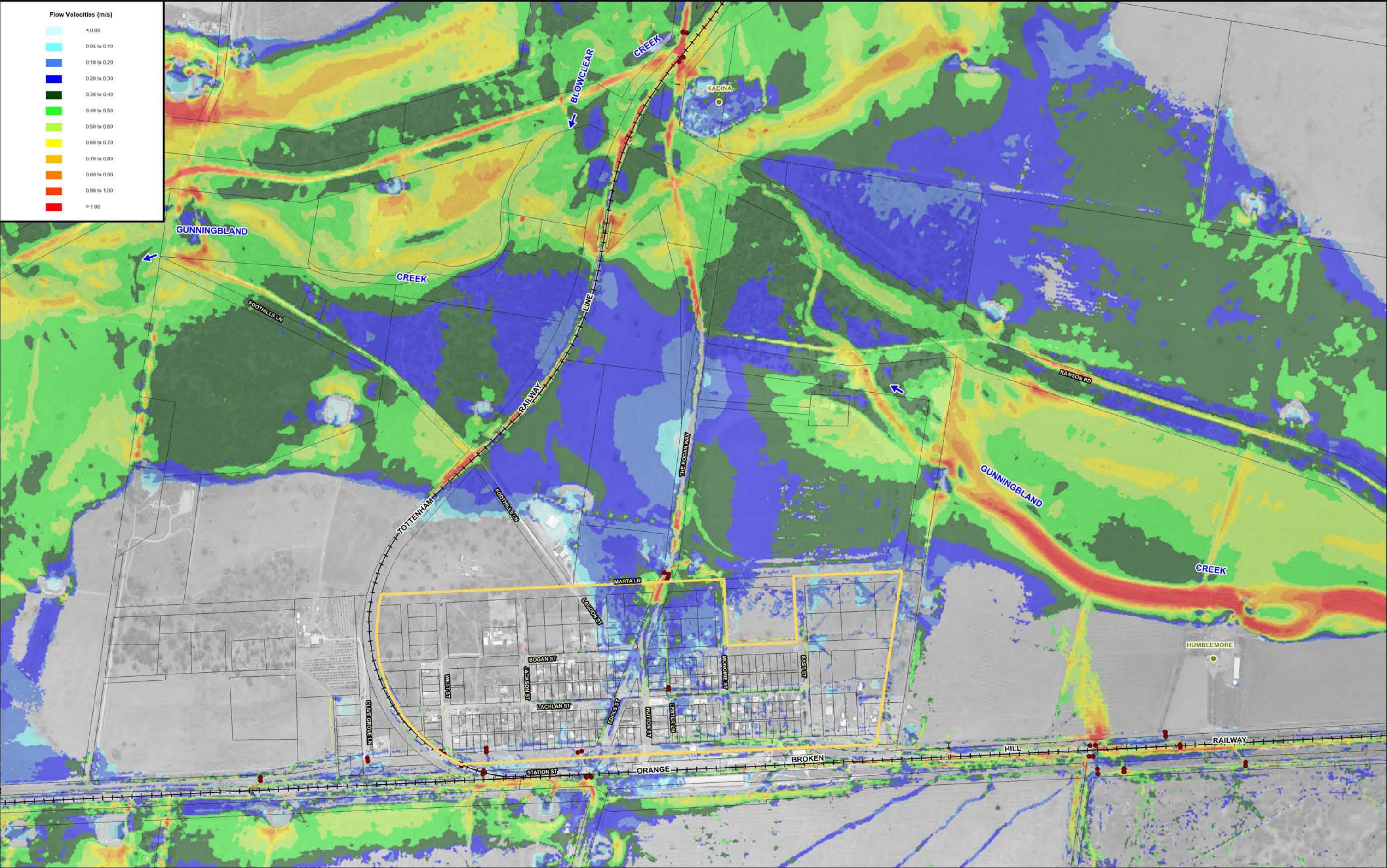
LEGEND

- LGA Boundary
- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

BOGAN GATE FLOOD STUDY

Figure H1.5
(Sheet 2 of 3)

MAXIMUM FLOW VELOCITIES
1% AEP



100 0 100 200 300 m

Scale: 1:10,000

Lyall & Associates

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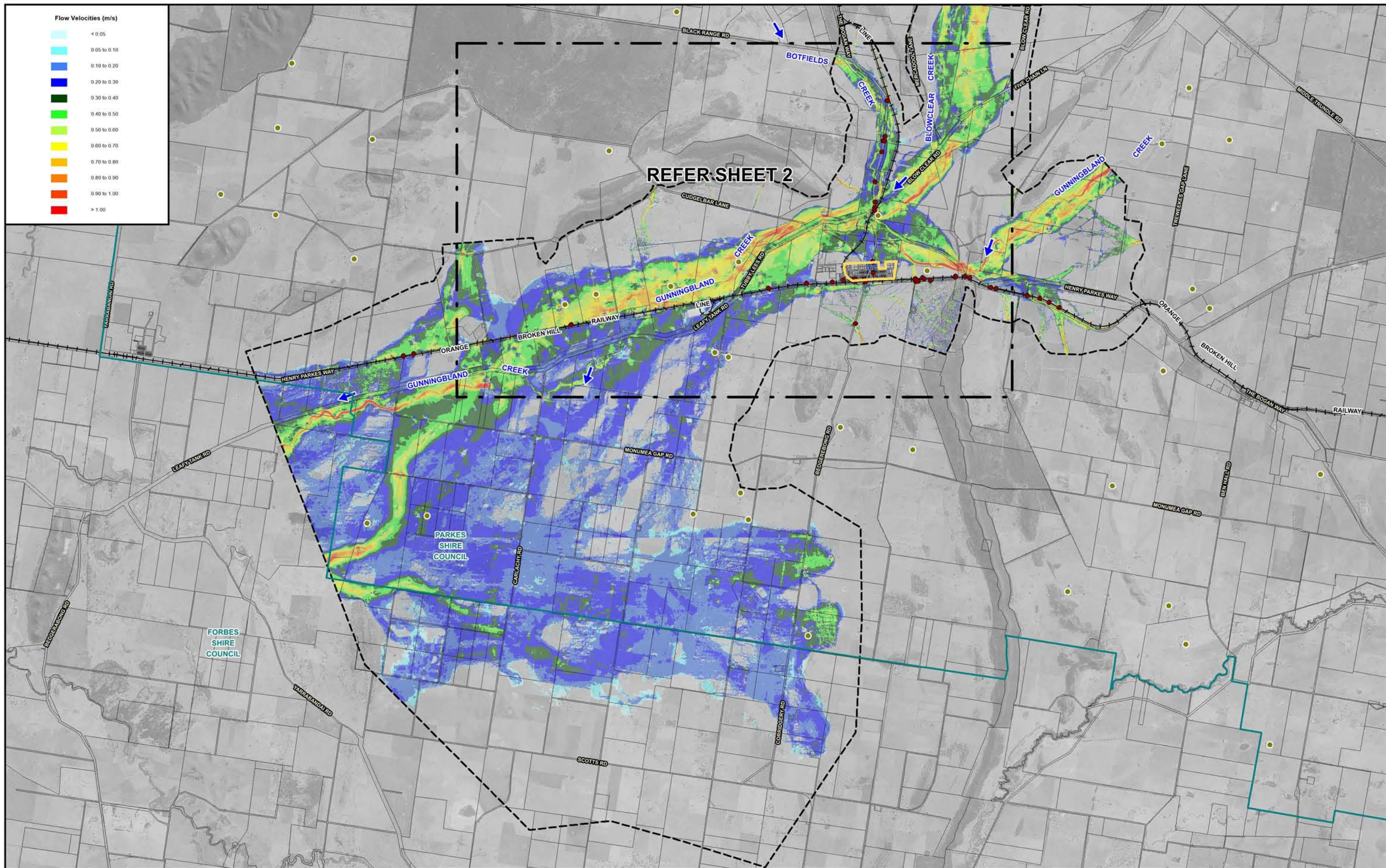
LEGEND

- LGA Boundary
- - - Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

BOGAN GATE FLOOD STUDY

Figure H1.5
(Sheet 3 of 3)

MAXIMUM FLOW VELOCITIES
1% AEP



Flow Velocities (m/s)



REFER SHEET 2

GUNNINGBLAND CREEK

GUNNINGBLAND CREEK

GUNNINGBLAND CREEK

GUNNINGBLAND CREEK

GUNNINGBLAND CREEK

GUNNINGBLAND CREEK

GUNNINGBLAND CREEK

GUNNINGBLAND CREEK

GUNNINGBLAND CREEK

GUNNINGBLAND CREEK

LEGEND

- LGA Boundary
- - - Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

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BOGAN GATE FLOOD STUDY

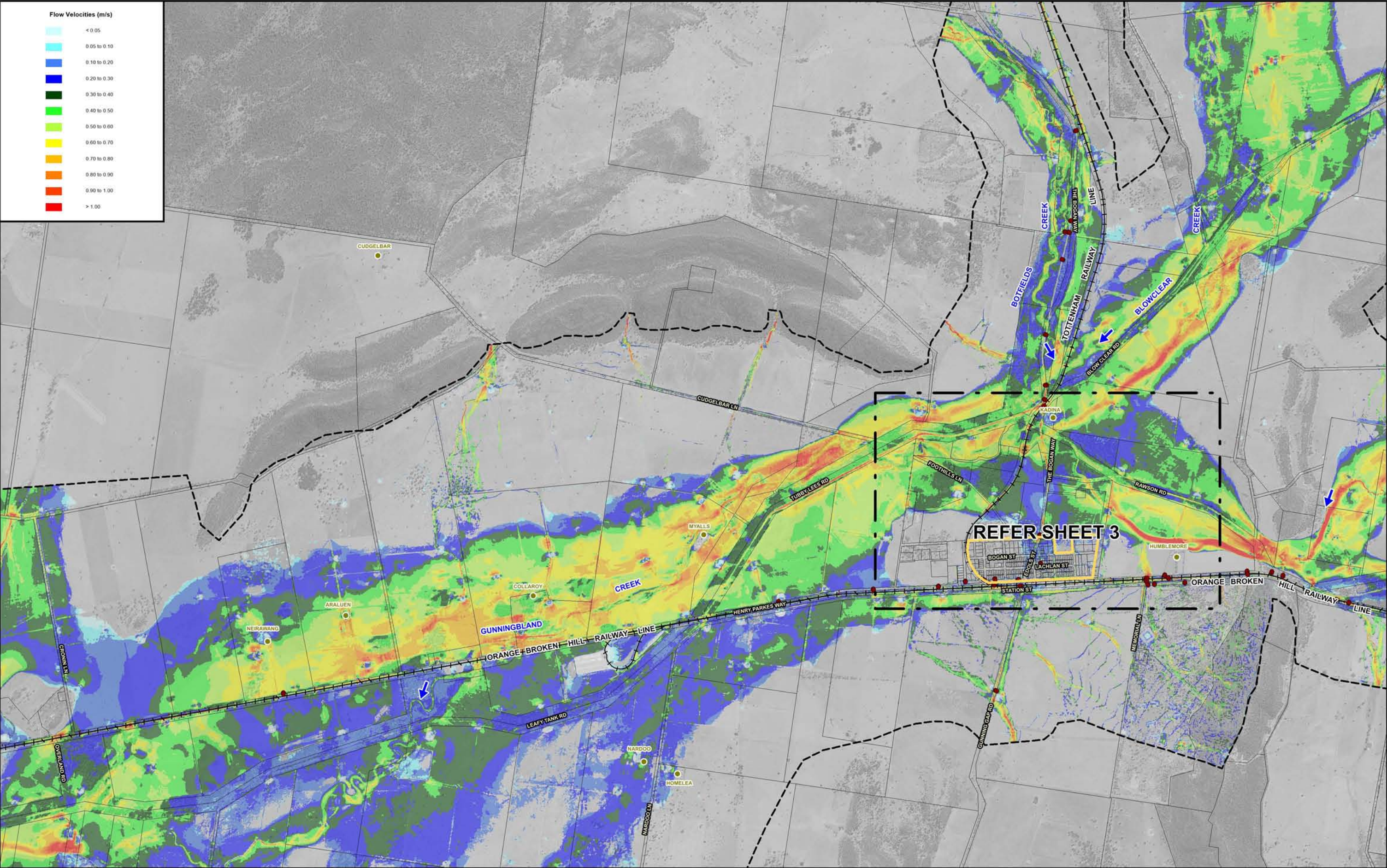
Figure H1.6
(Sheet 1 of 3)

MAXIMUM FLOW VELOCITIES
0.5% AEP



1 0 1 2 3 km
Scale: 1:100,000

Lyall & Associates



Flow Velocities (m/s)

< 0.05
0.05 to 0.10
0.10 to 0.20
0.20 to 0.30
0.30 to 0.40
0.40 to 0.50
0.50 to 0.60
0.60 to 0.70
0.70 to 0.80
0.80 to 0.90
0.90 to 1.00
> 1.00

Scale: 1:40,000

400 0 400 800 1,200 m

Lyall & Associates

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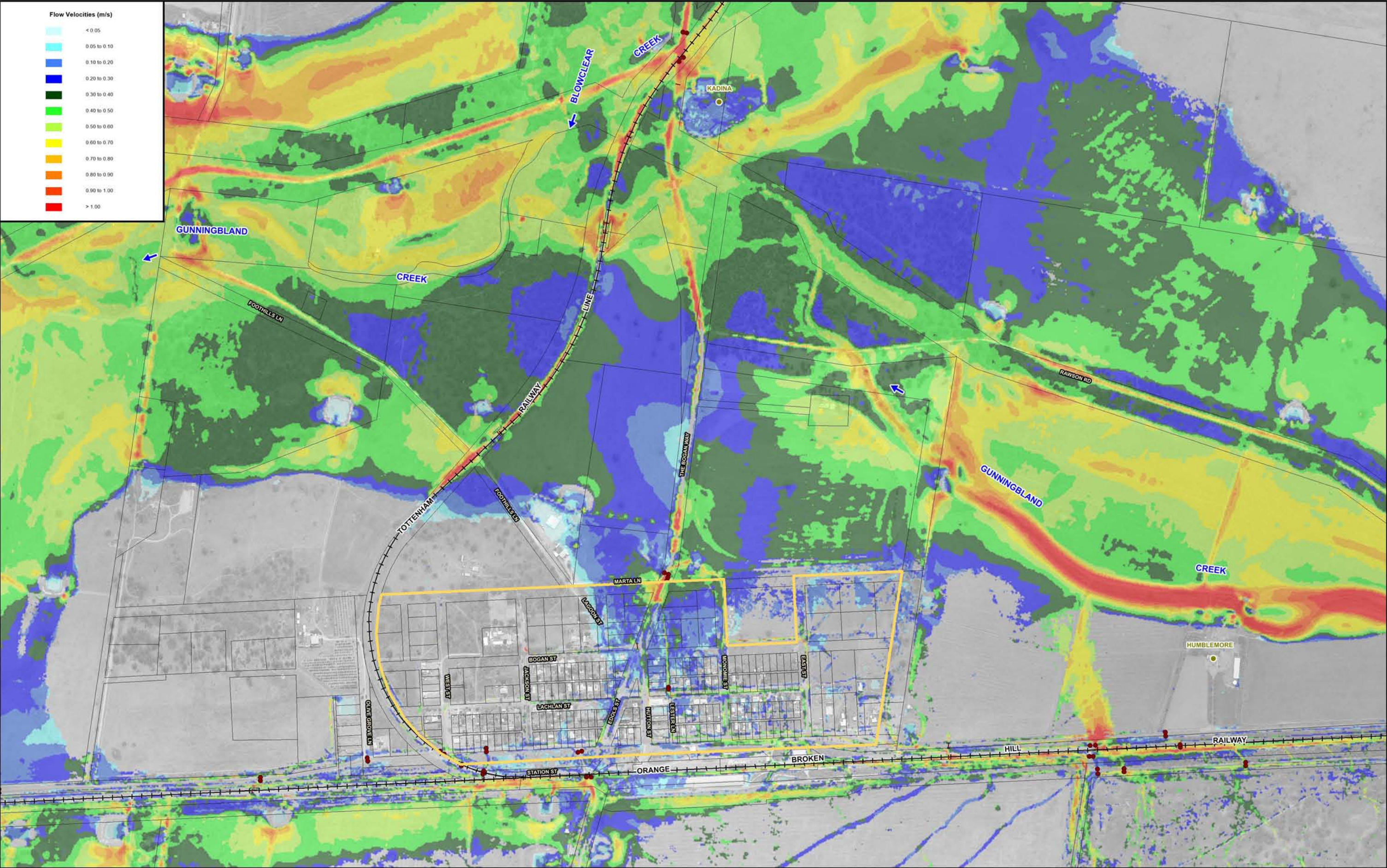
LEGEND

- LGA Boundary
- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

BOGAN GATE FLOOD STUDY

Figure H1.6
(Sheet 2 of 3)

MAXIMUM FLOW VELOCITIES
0.5% AEP



Scale: 1:10,000

Lyll & Associates

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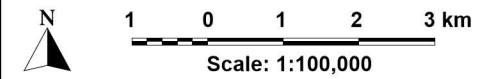
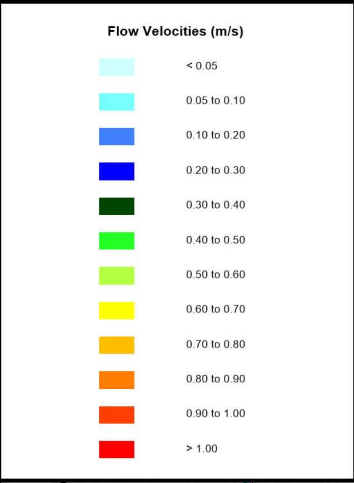
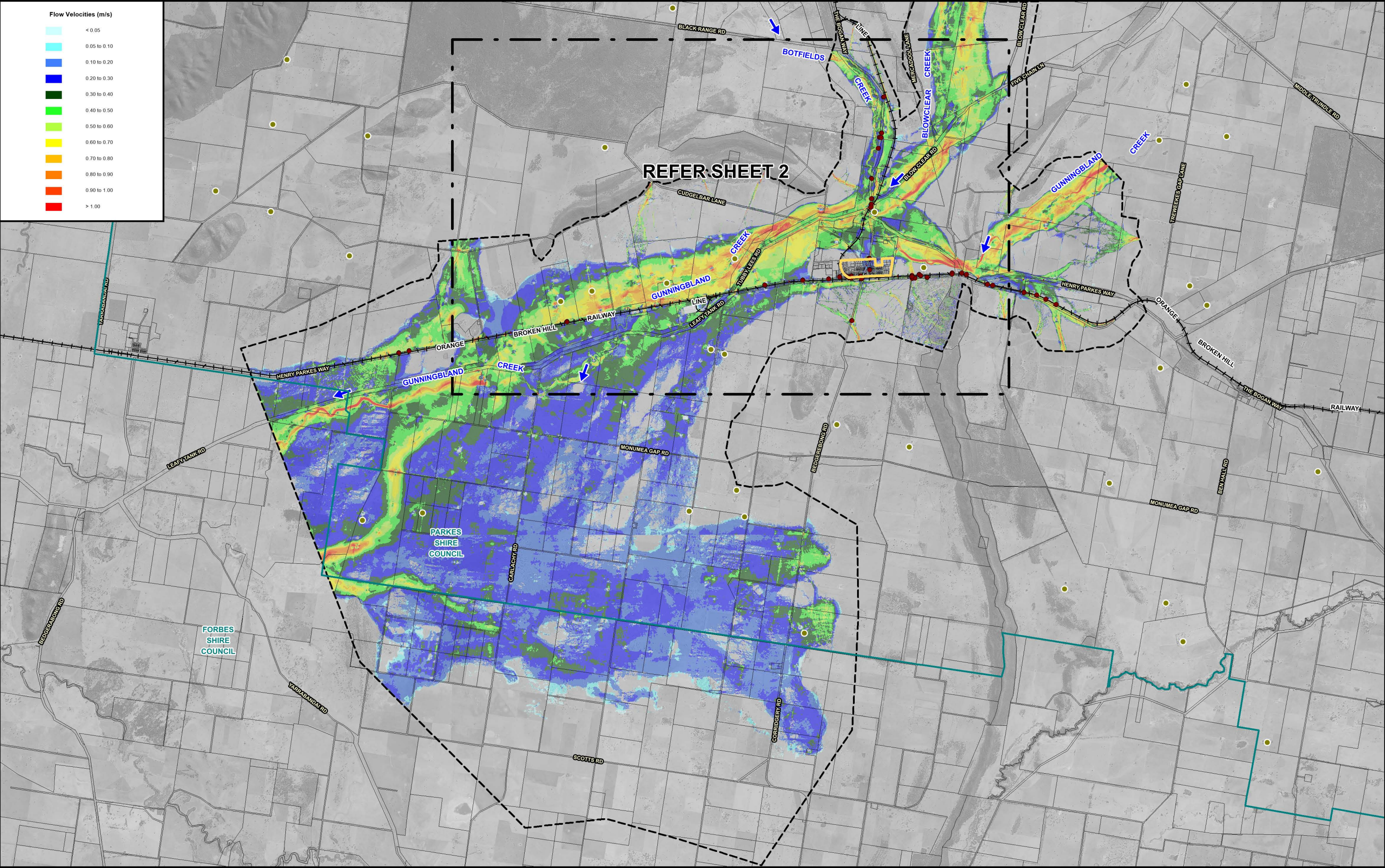
The allotment boundaries shown are based on the NSW State Database obtained from the Six Maps online database and may not represent the true property boundaries in the study area

- LEGEND**
- LGA Boundary
 - - - Two-Dimensional Model Boundary
 - Modelled Stormwater Drainage System
 - Village Centre
 - Homesteads

BOGAN GATE FLOOD STUDY

Figure H1.6
(Sheet 3 of 3)

MAXIMUM FLOW VELOCITIES
0.5% AEP



Lyall & Associates

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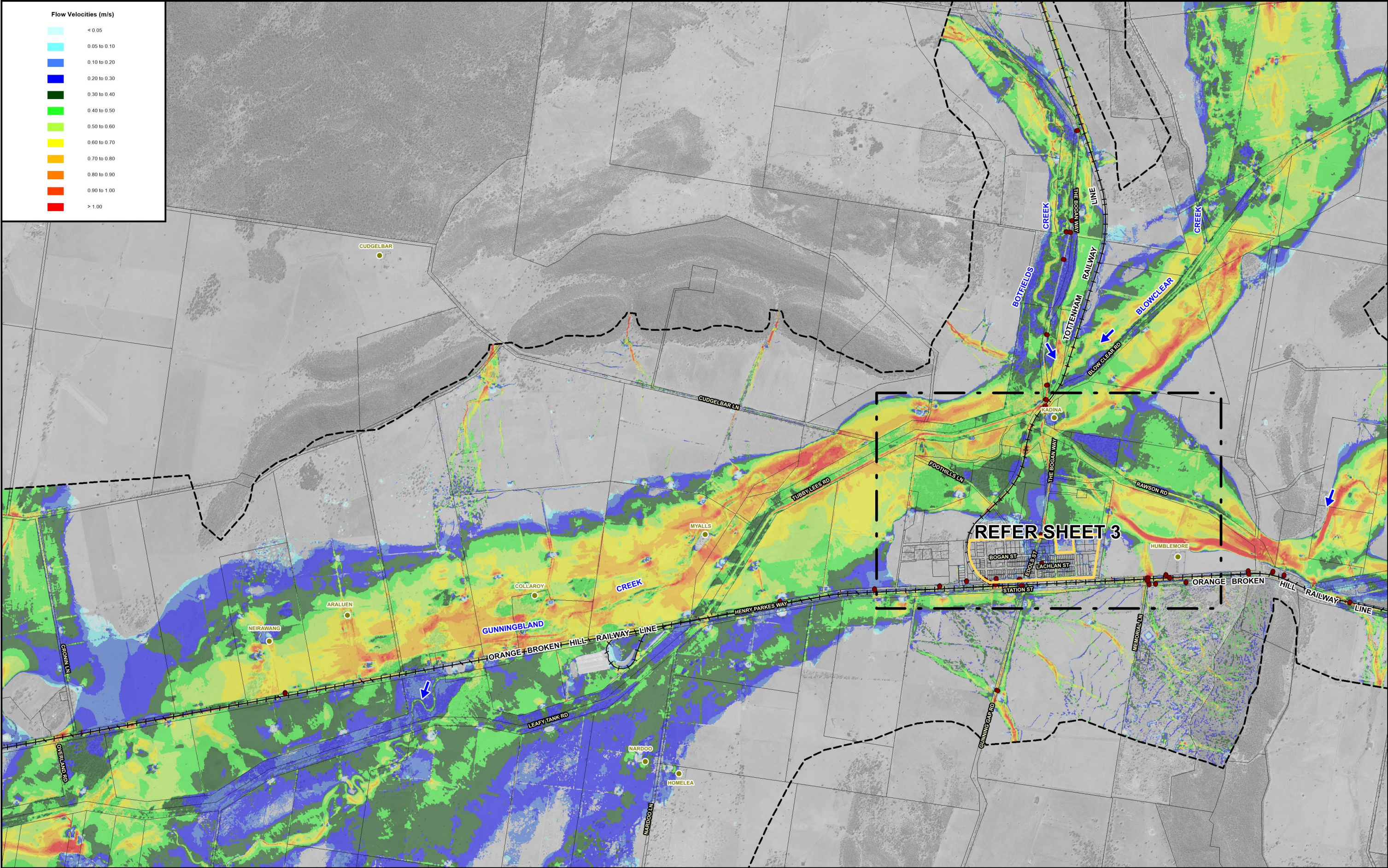
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- LEGEND**
- LGA Boundary
 - Two-Dimensional Model Boundary
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 - Village Centre
 - Homesteads

BOGAN GATE FLOOD STUDY

Figure H1.7
(Sheet 1 of 3)

MAXIMUM FLOW VELOCITIES
0.2% AEP



Flow Velocities (m/s)

< 0.05
0.05 to 0.10
0.10 to 0.20
0.20 to 0.30
0.30 to 0.40
0.40 to 0.50
0.50 to 0.60
0.60 to 0.70
0.70 to 0.80
0.80 to 0.90
0.90 to 1.00
> 1.00

Scale: 1:40,000

400 0 400 800 1,200 m

Lyall & Associates

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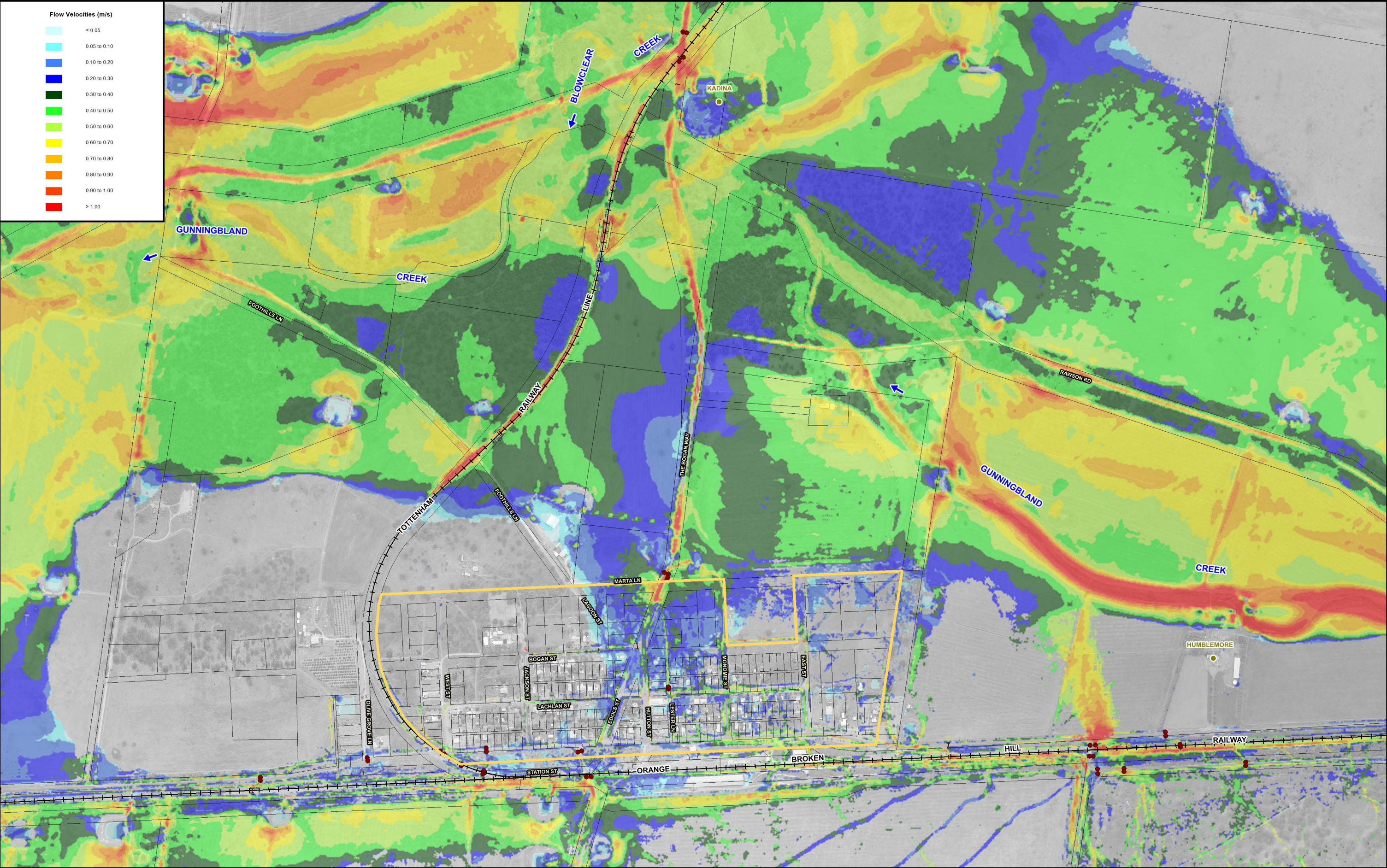
LEGEND

- LGA Boundary
- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

BOGAN GATE FLOOD STUDY

Figure H1.7
(Sheet 2 of 3)

MAXIMUM FLOW VELOCITIES
0.2% AEP



N

100 0 100 200 300 m

Scale: 1:10,000

Lyall & Associates

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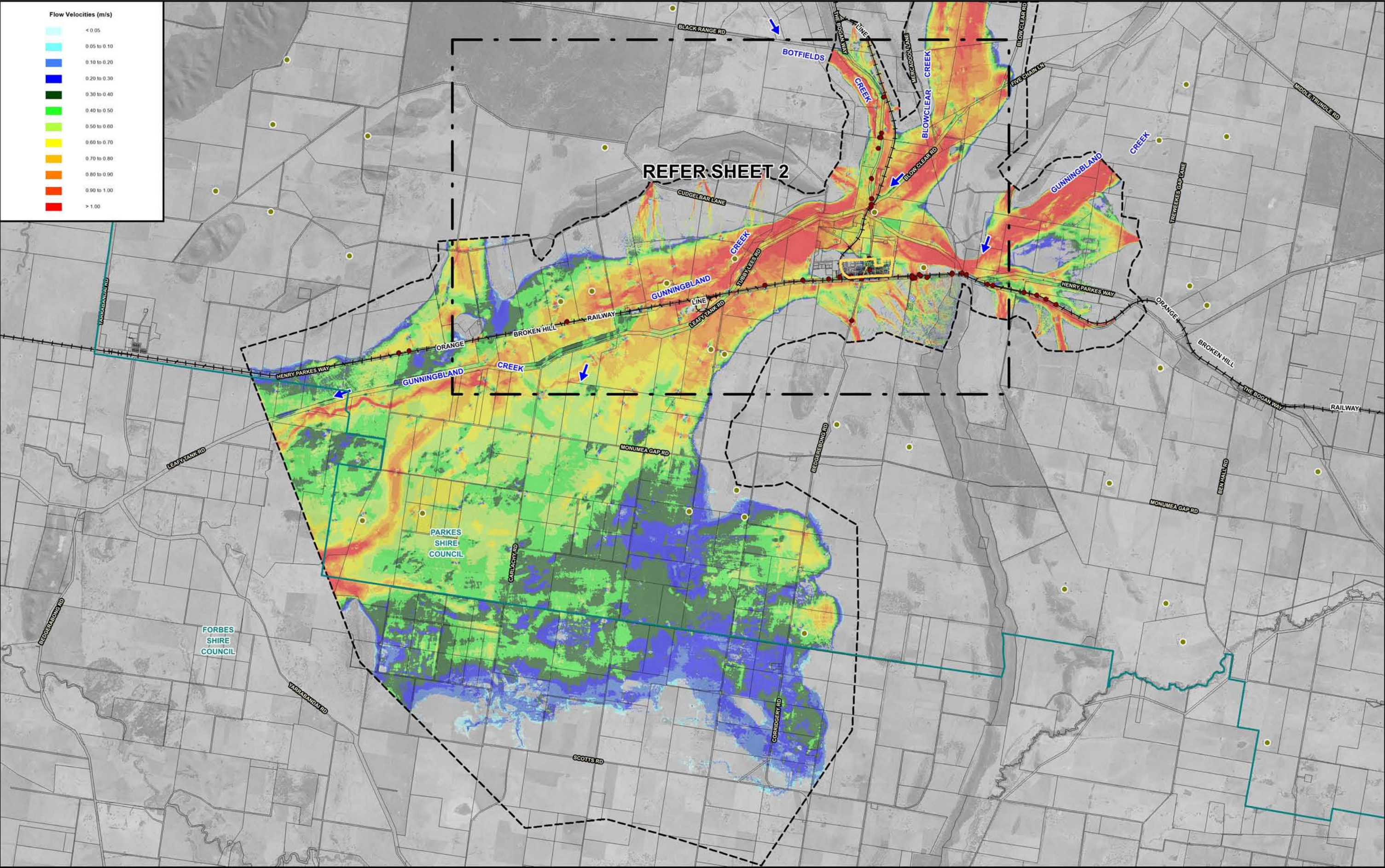
LEGEND

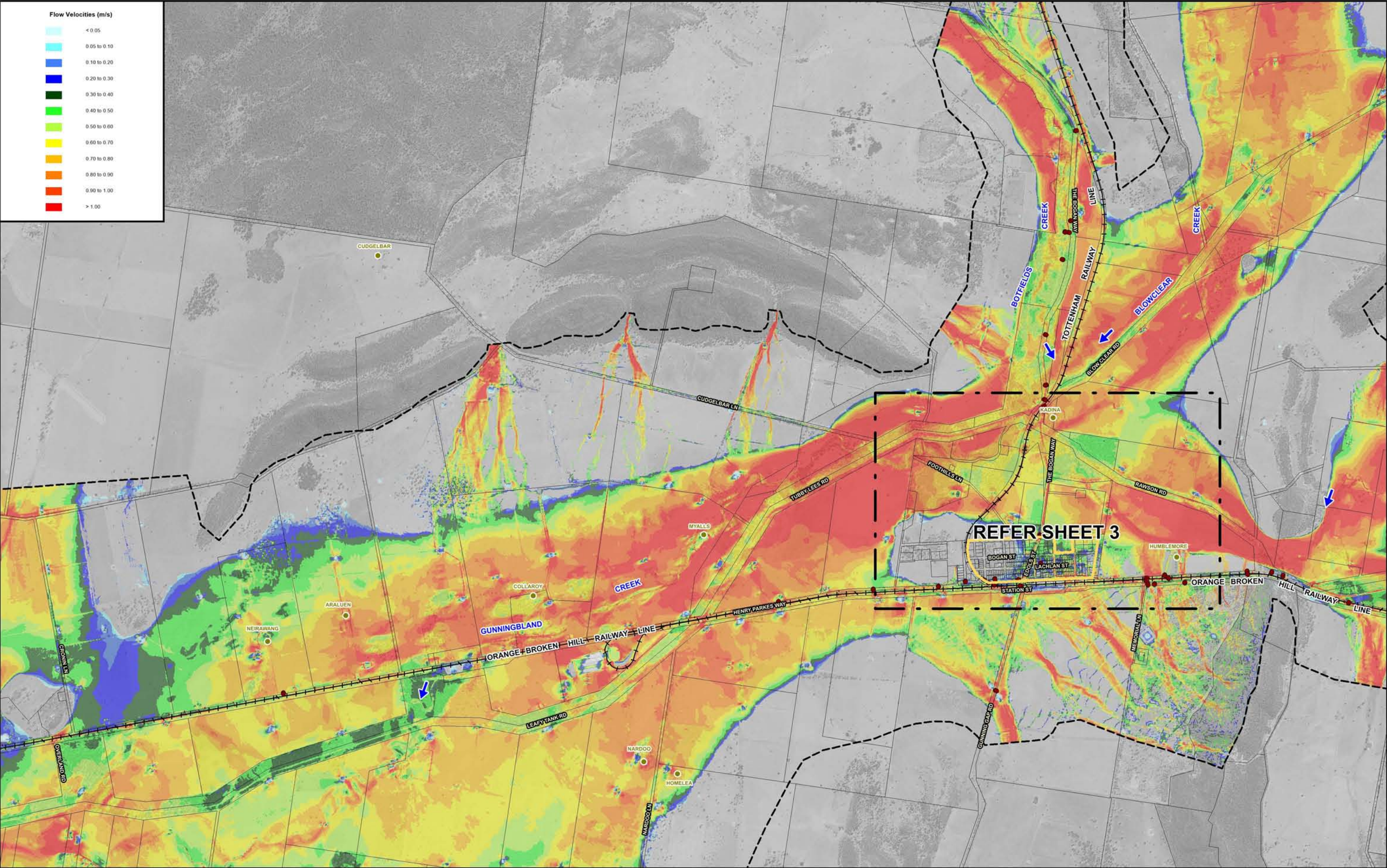
- LGA Boundary
- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

BOGAN GATE FLOOD STUDY

Figure H1.7
(Sheet 3 of 3)

MAXIMUM FLOW VELOCITIES
0.2% AEP





N

400 0 400 800 1,200 m

Scale: 1:40,000

Lyall & Associates

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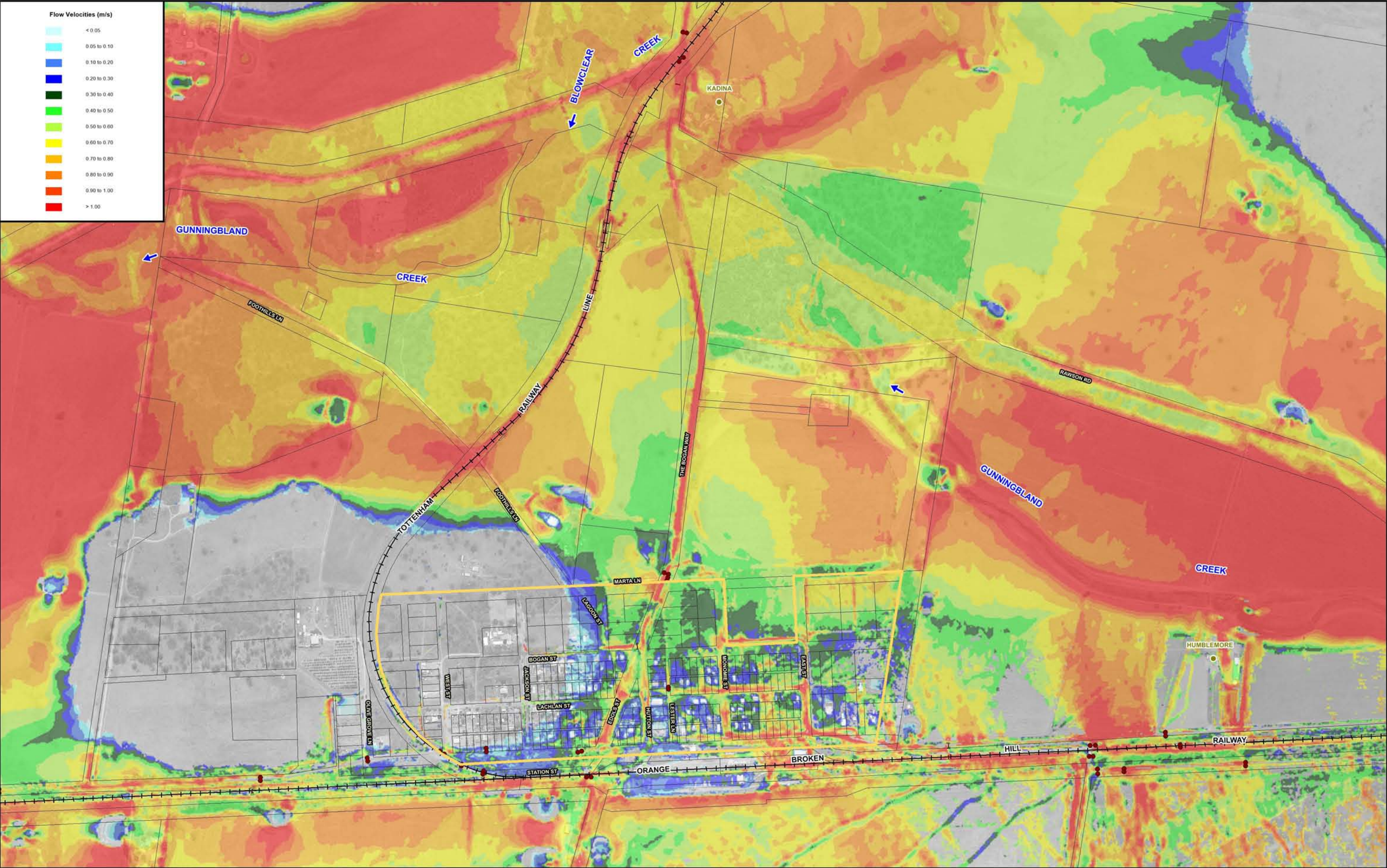
LEGEND

- LGA Boundary
- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

BOGAN GATE FLOOD STUDY

Figure H1.8
(Sheet 2 of 3)

**MAXIMUM FLOW VELOCITIES
PMF**



Flow Velocities (m/s)

< 0.05
0.05 to 0.10
0.10 to 0.20
0.20 to 0.30
0.30 to 0.40
0.40 to 0.50
0.50 to 0.60
0.60 to 0.70
0.70 to 0.80
0.80 to 0.90
0.90 to 1.00
> 1.00

Scale: 1:10,000

100 0 100 200 300 m

Lyall & Associates

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LEGEND

- LGA Boundary
- Two-Dimensional Model Boundary
- Modelled Stormwater Drainage System
- Village Centre
- Homesteads

BOGAN GATE FLOOD STUDY

Figure H1.8
(Sheet 3 of 3)

**MAXIMUM FLOW VELOCITIES
PMF**