LITHGOW CITY COUNCIL

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

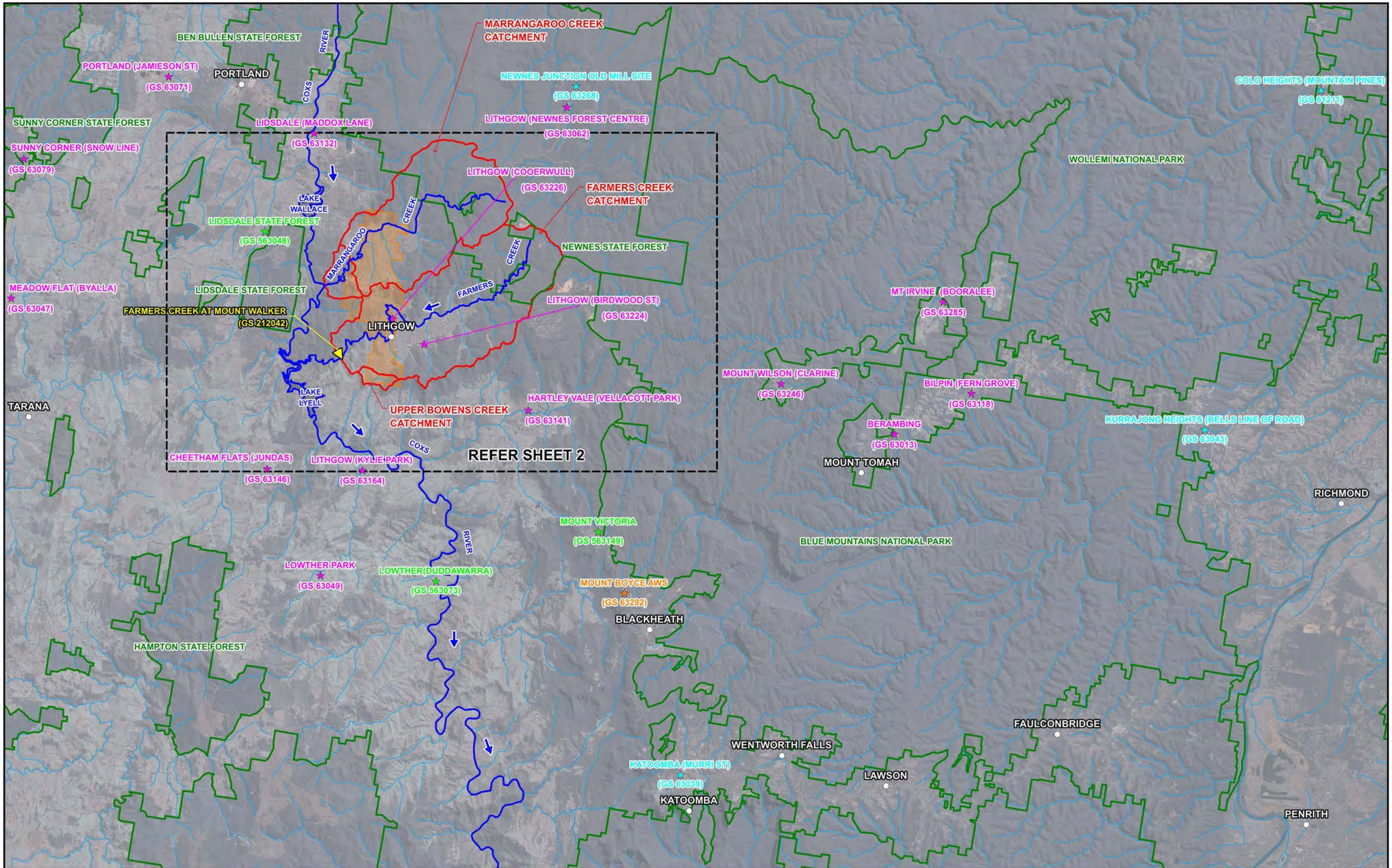
JANUARY 2023

VOLUME 2 – FIGURES AND APPENDICES

DRAFT REPORT FOR PUBLIC EXHIBITION

Job No: DT496 File: LFRMS&P_V2_Figures_[Rev 1.4]	Date: January 2023 Rev No: 1.4	Principal: SAB Author: SAB/TDR

LIST OF FIGURES



N

2 0 2 4 6 km

Scale: 1:200,000

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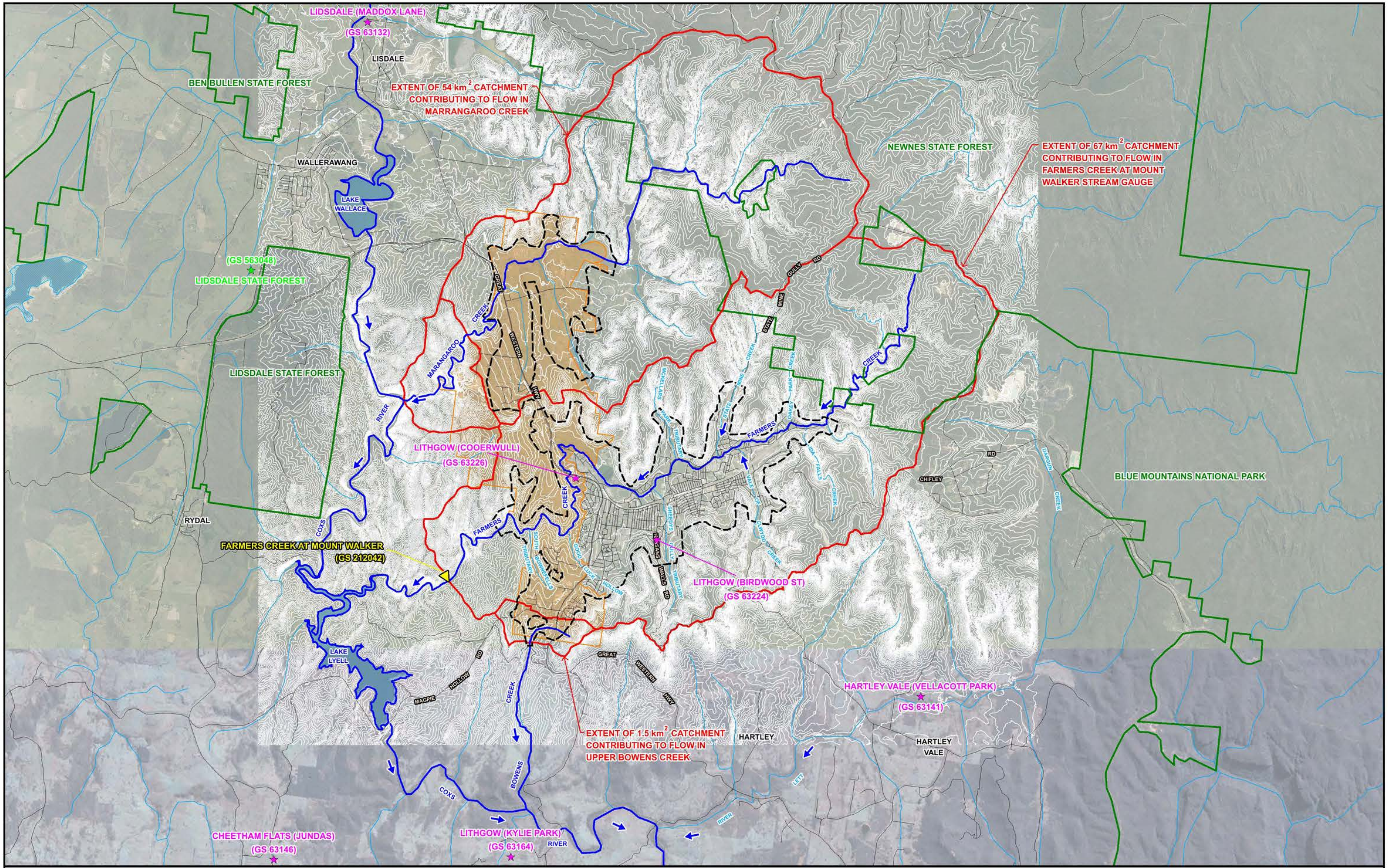
LEGEND

BoM All Weather Station (AWS)	WaterNSW Stream and Pluviographic Rain Gauge
BoM Pluviographic Rainfall Station	Reserve Boundary
SW Pluviographic Rainfall Station	Future Growth Areas
BoM Daily Rainfall Station	

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 1.1
(Sheet 1 of 2)

LOCATION AND CATCHMENT PLAN



N

800 0 800 1600 2400 m

Scale: 1:80,000

LEGEND

- BoM All Weather Station (AWS)
- BoM Pluviographic Rainfall Station
- SW Pluviographic Rainfall Station
- BoM Daily Rainfall Station
- WaterNSW Stream and Pluviographic Rain Gauge
- Reserve Boundary
- Extent of Two-Dimensional Model Domain
- Future Growth Areas

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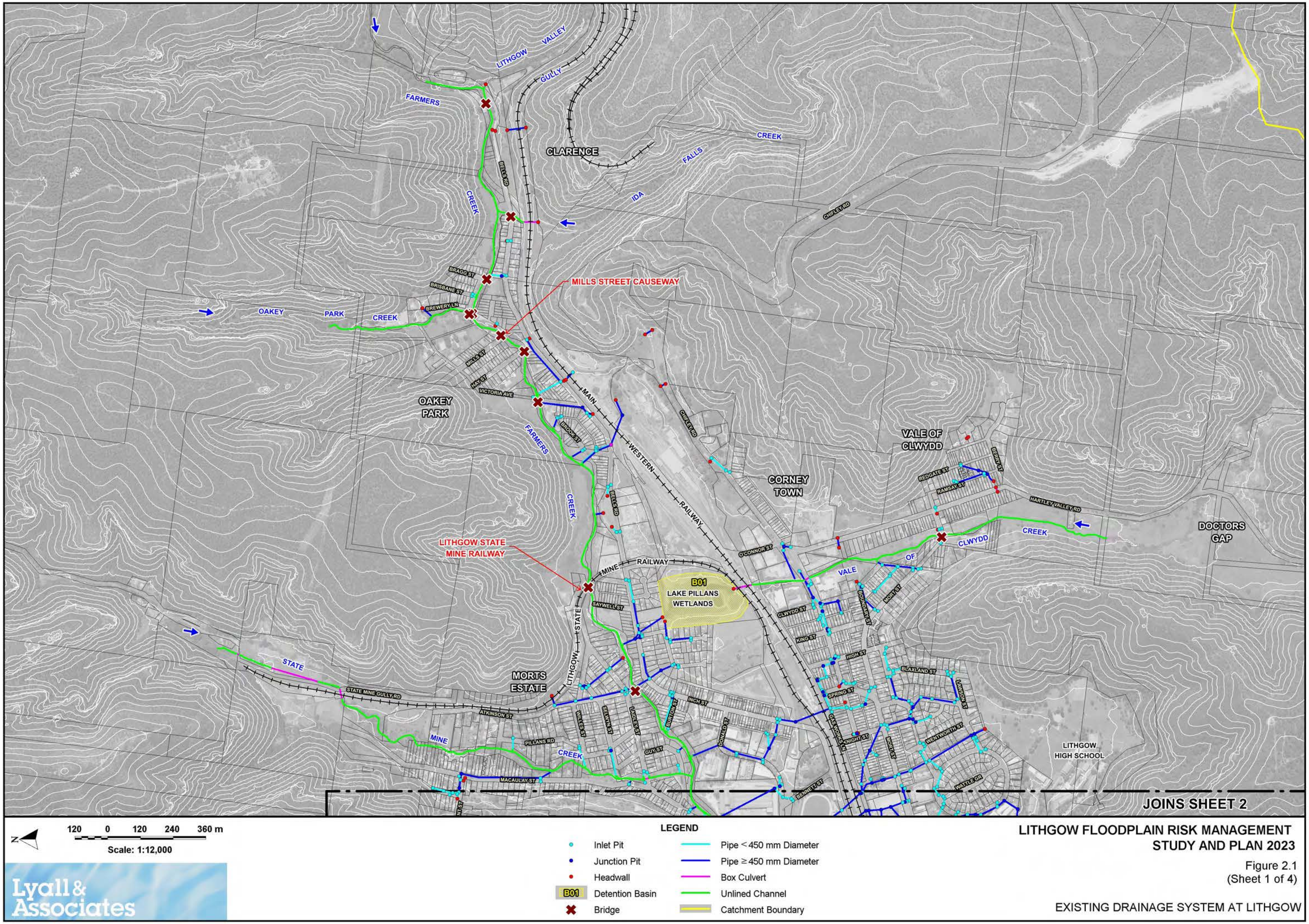
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 1.2
(Sheet 2 of 2)

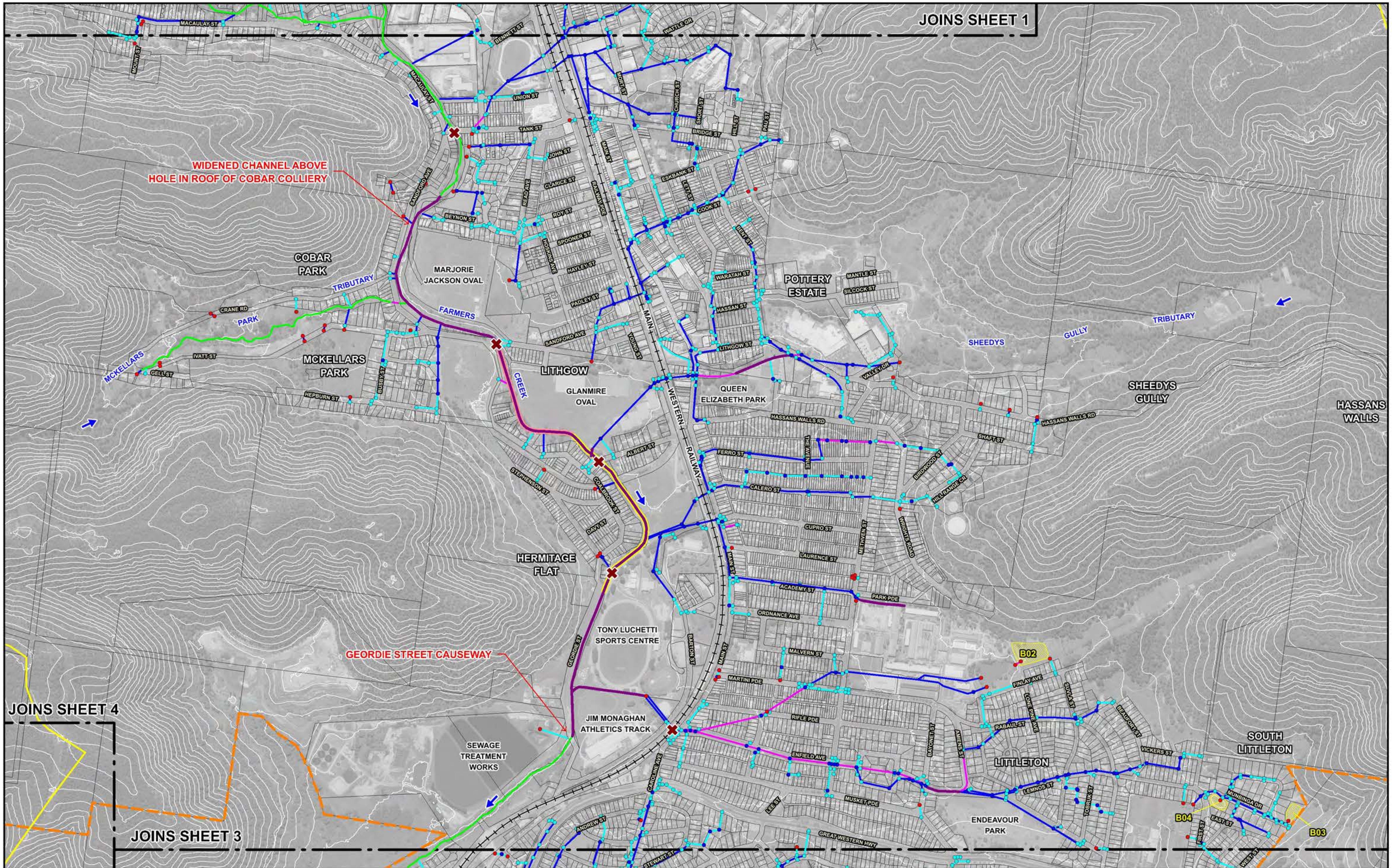
LOCATION AND CATCHMENT PLAN



LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.1
(Sheet 1 of 4)

EXISTING DRAINAGE SYSTEM AT LITHGOW



120 0 120 240 360 m

Scale: 1:12,000

LEGEND

- Inlet Pit
- Junction Pit
- Headwall
- B02 Detention Basin
- Bridge
- Pipe < 450 mm Diameter
- Pipe ≥ 450 mm Diameter
- Box Culvert
- Extent of Future Growth Area
- Catchment Boundary
- Concrete Lined Channel
- Extent of Future Stages 3 and 4 Flood Modification Works
- Extent of Stages 1 and 2 Flood Modification Works
- Unlined Channel

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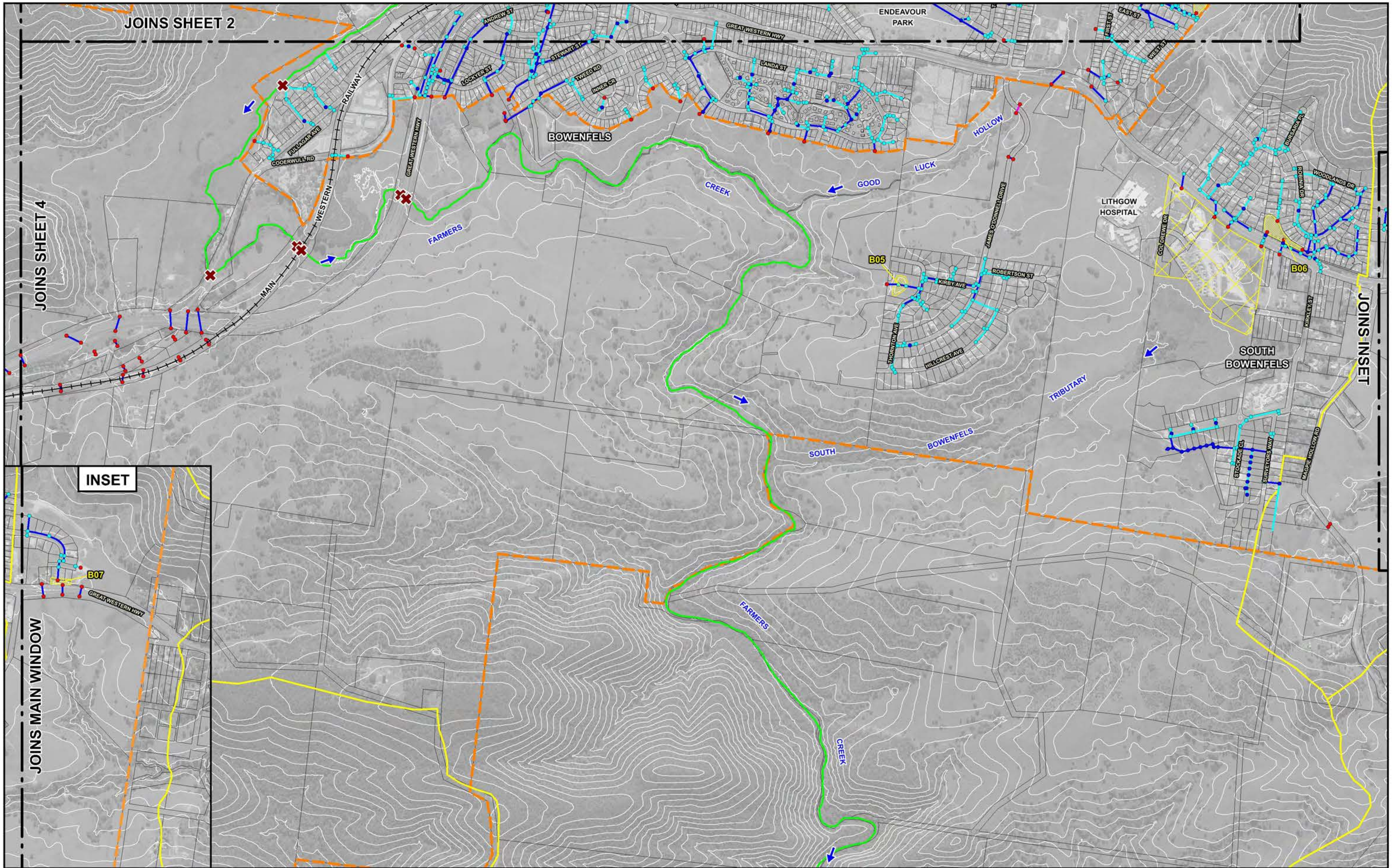
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.1
(Sheet 2 of 4)

EXISTING DRAINAGE SYSTEM AT LITHGOW



120 0 120 240 360 m

Scale: 1:12,000

LEGEND

Inlet Pit	Pipe <450 mm Diameter
Junction Pit	Pipe ≥450 mm Diameter
Headwall	Box Culvert
B05 Detention Basin	Extent of Future Growth Area
Bridge	Unlined Channel

Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model

Catchment Boundary

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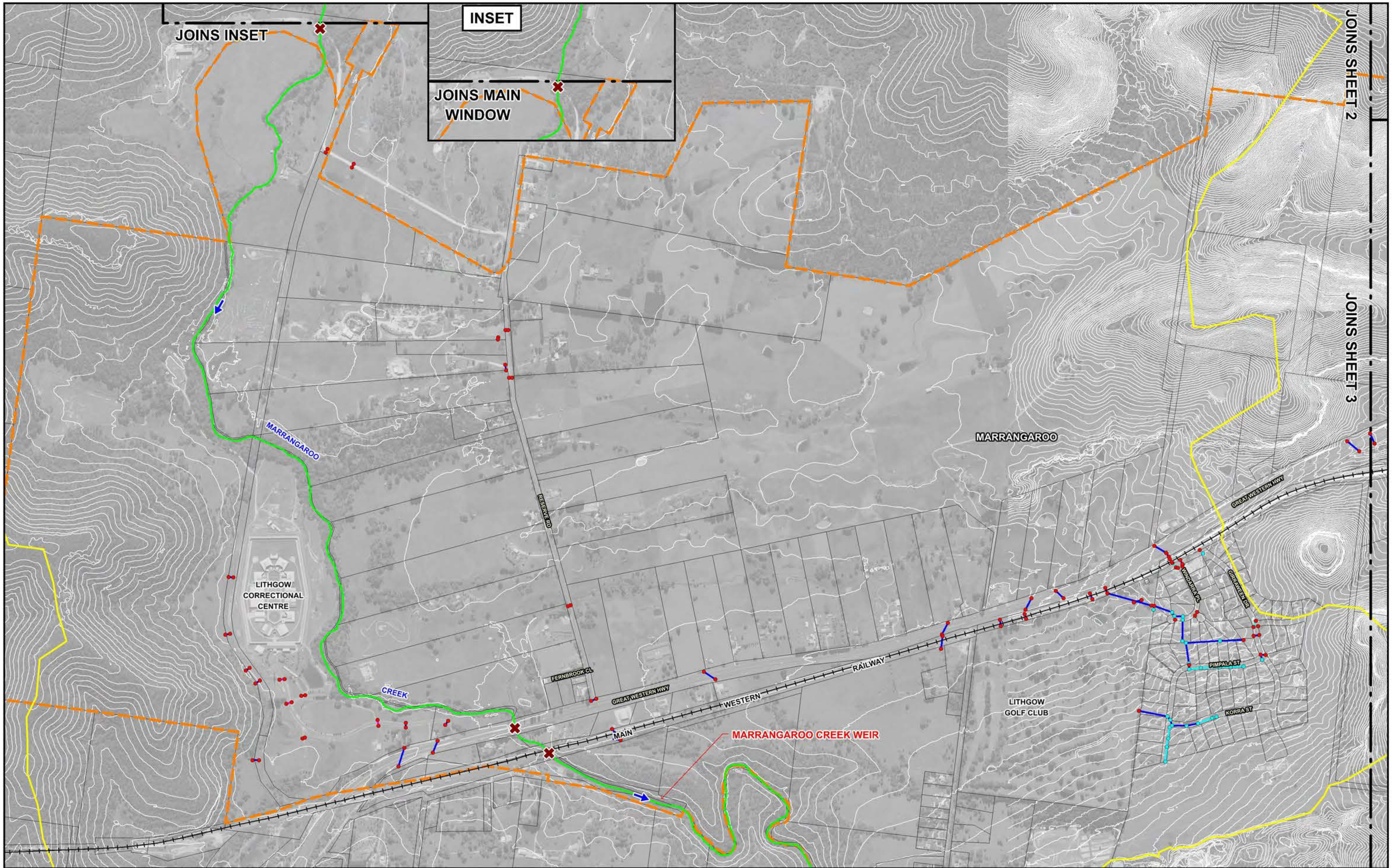
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.1
(Sheet 3 of 4)

EXISTING DRAINAGE SYSTEM AT LITHGOW



N

120 0 120 240 360 m

Scale: 1:12,000

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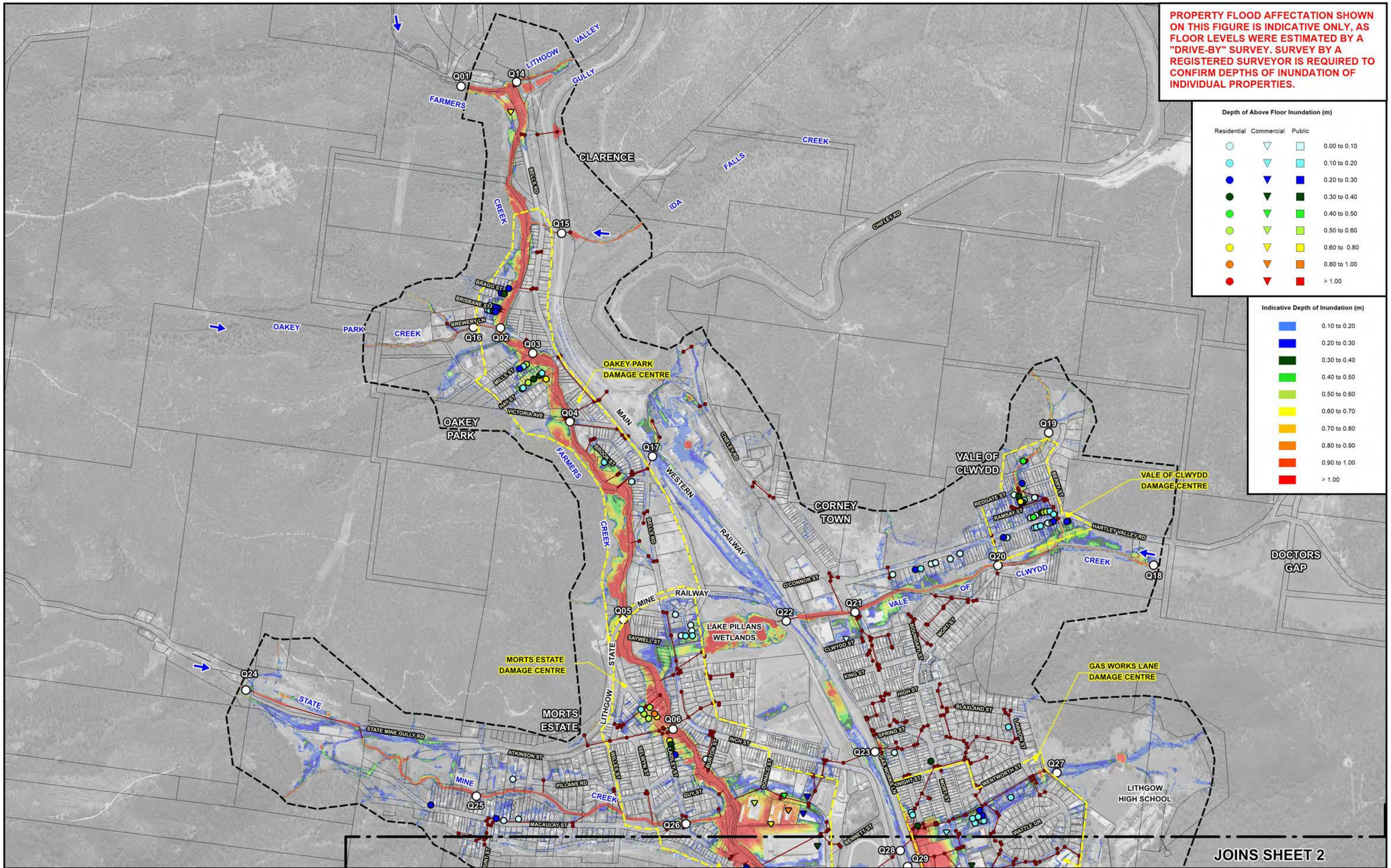
LEGEND

Inlet Pit	Pipe < 450 mm Diameter	Extent of Future Growth Area
Junction Pit	Pipe ≥ 450 mm Diameter	Unlined Channel
Headwall	Box Culvert	Catchment Boundary
Bridge		

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.1
(Sheet 4 of 4)

EXISTING DRAINAGE SYSTEM AT LITHGOW



N

120 0 120 240 360 m

Scale: 1:12,000

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

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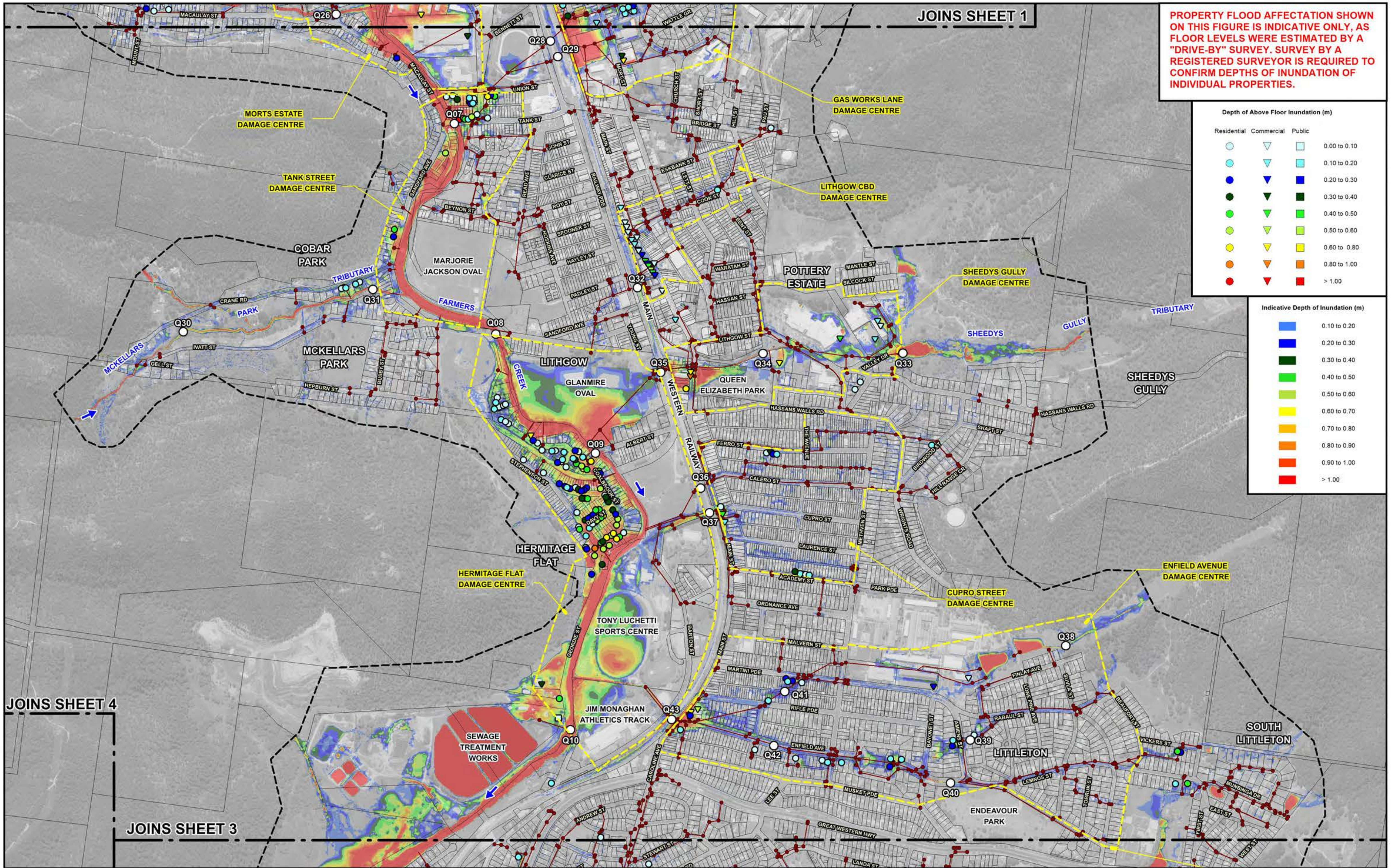
LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Q06 Peak Flow Location and Identifier
- Damage Centre

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.2
(Sheet 1 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
1% AEP



120 0 120 240 360 m

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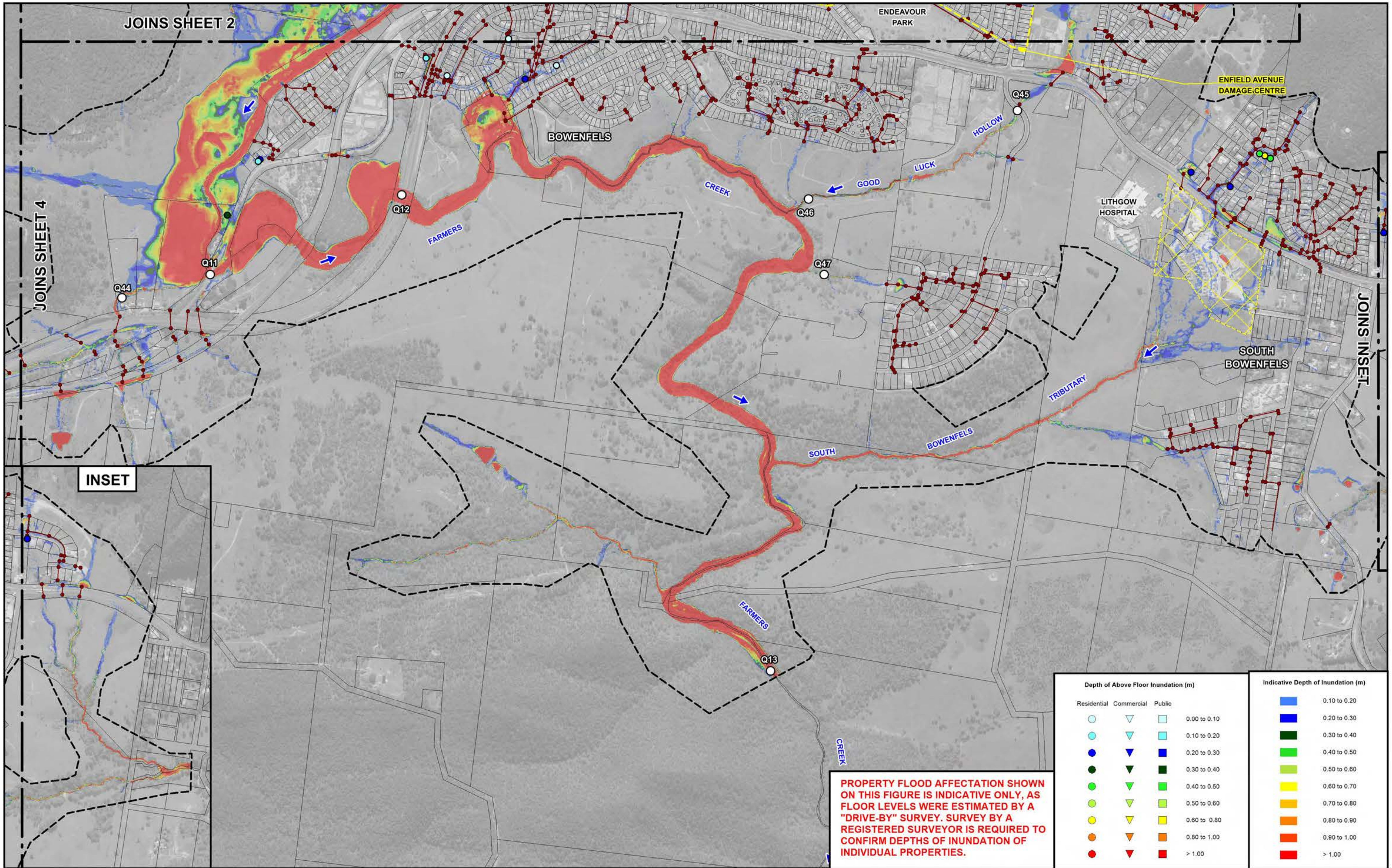
LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Q06 Peak Flow Location and Identifier
- Damage Centre

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.2
(Sheet 2 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
1% AEP



N

120 0 120 240 360 m

Scale: 1:12,000

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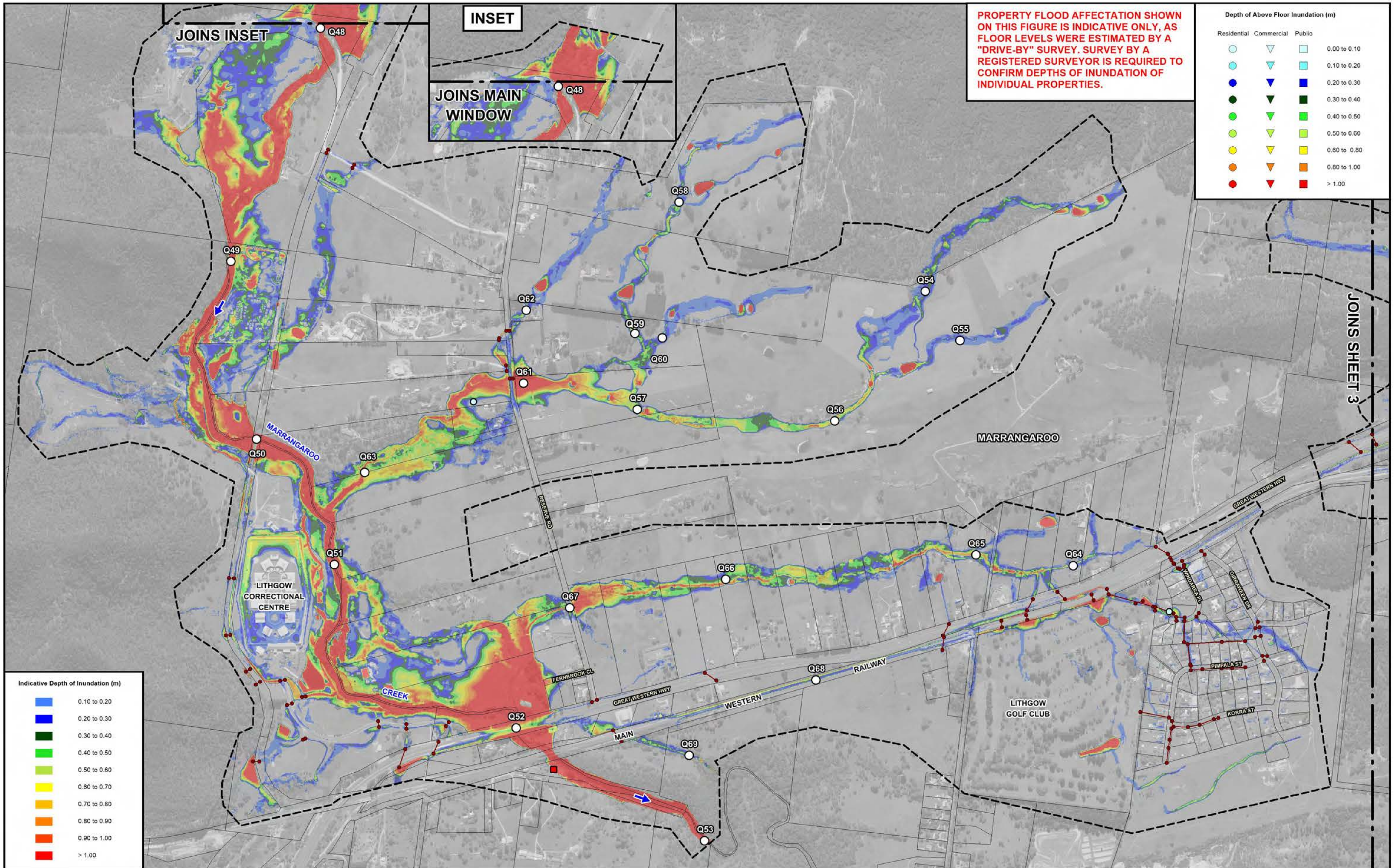
LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Damage Centre
- Q46 Peak Flow Location and Identifier
- Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.2
(Sheet 3 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
1% AEP



120 0 120 240 360 m

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LEGEND

Existing Drainage Network

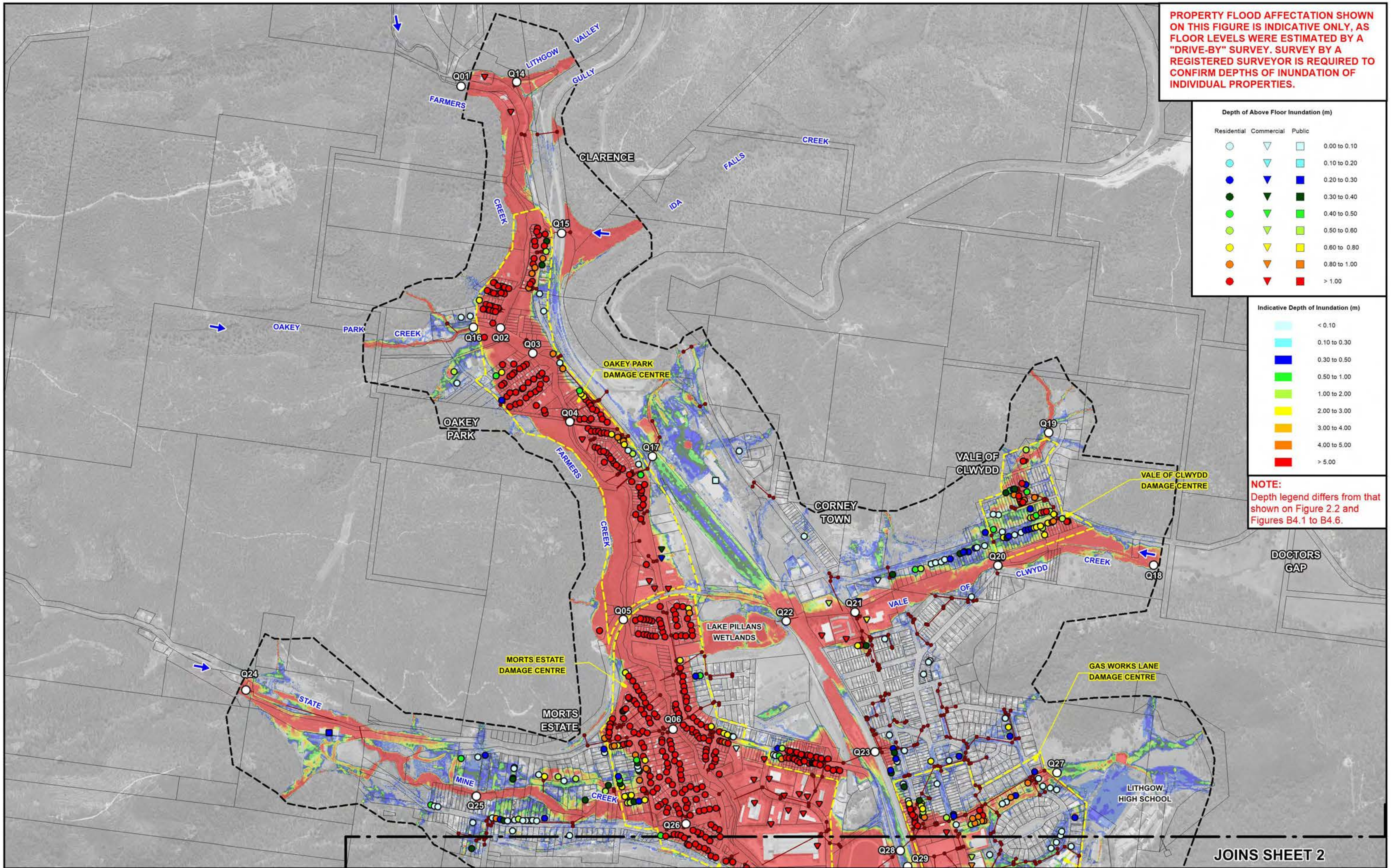
Two-Dimensional Model Boundary

Q64 Peak Flow Location and Identifier

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.2
(Sheet 4 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
1% AEP



120 0 120 240 360 m

Scale: 1:12,000

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LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Q38 Peak Flow Location and Identifier
- Damage Centre

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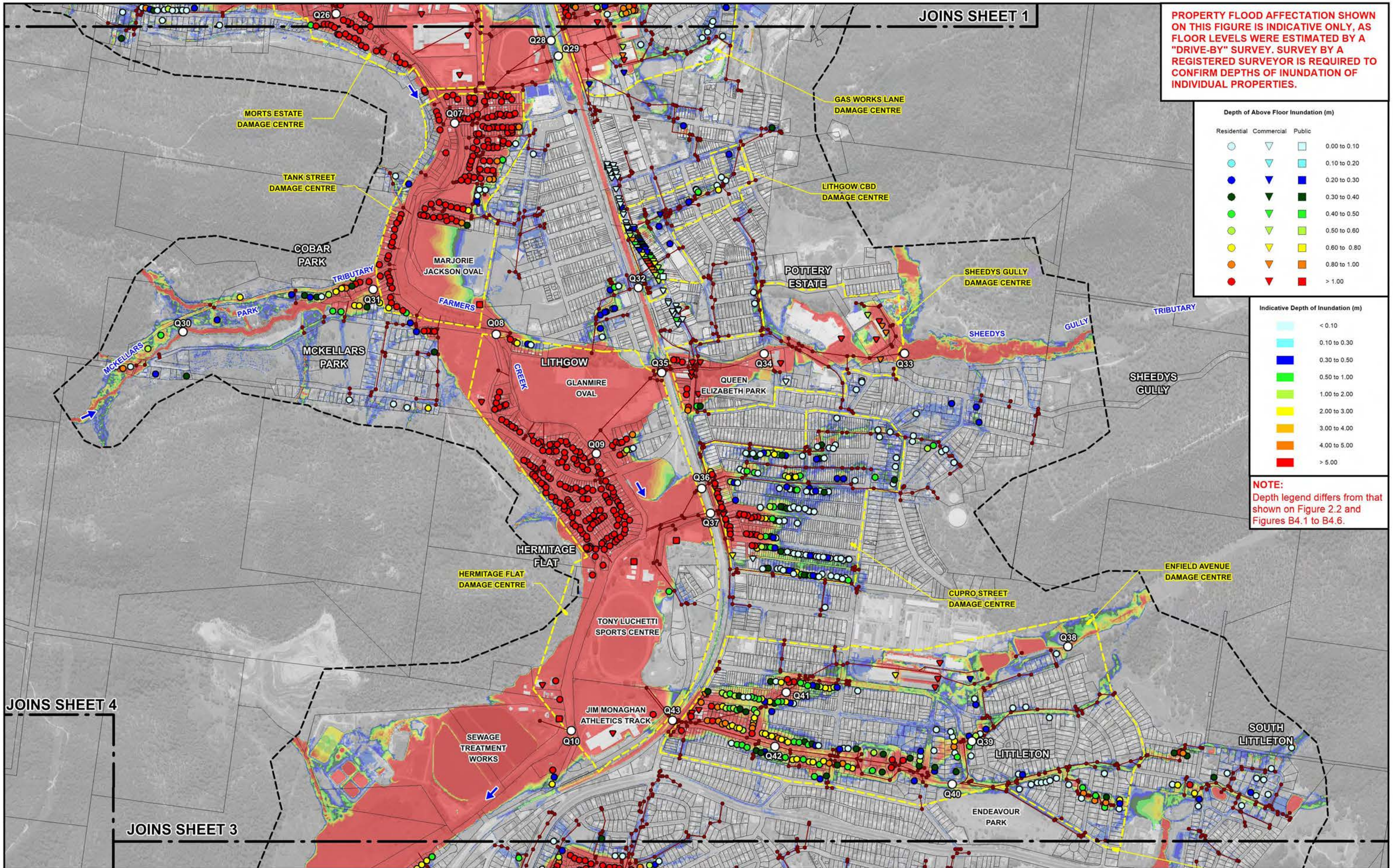
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.3
(Sheet 1 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
PMF



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LEGEND

Existing Drainage Network	Peak Flow Location and Identifier (Q38)
Two-Dimensional Model Boundary	Damage Centre

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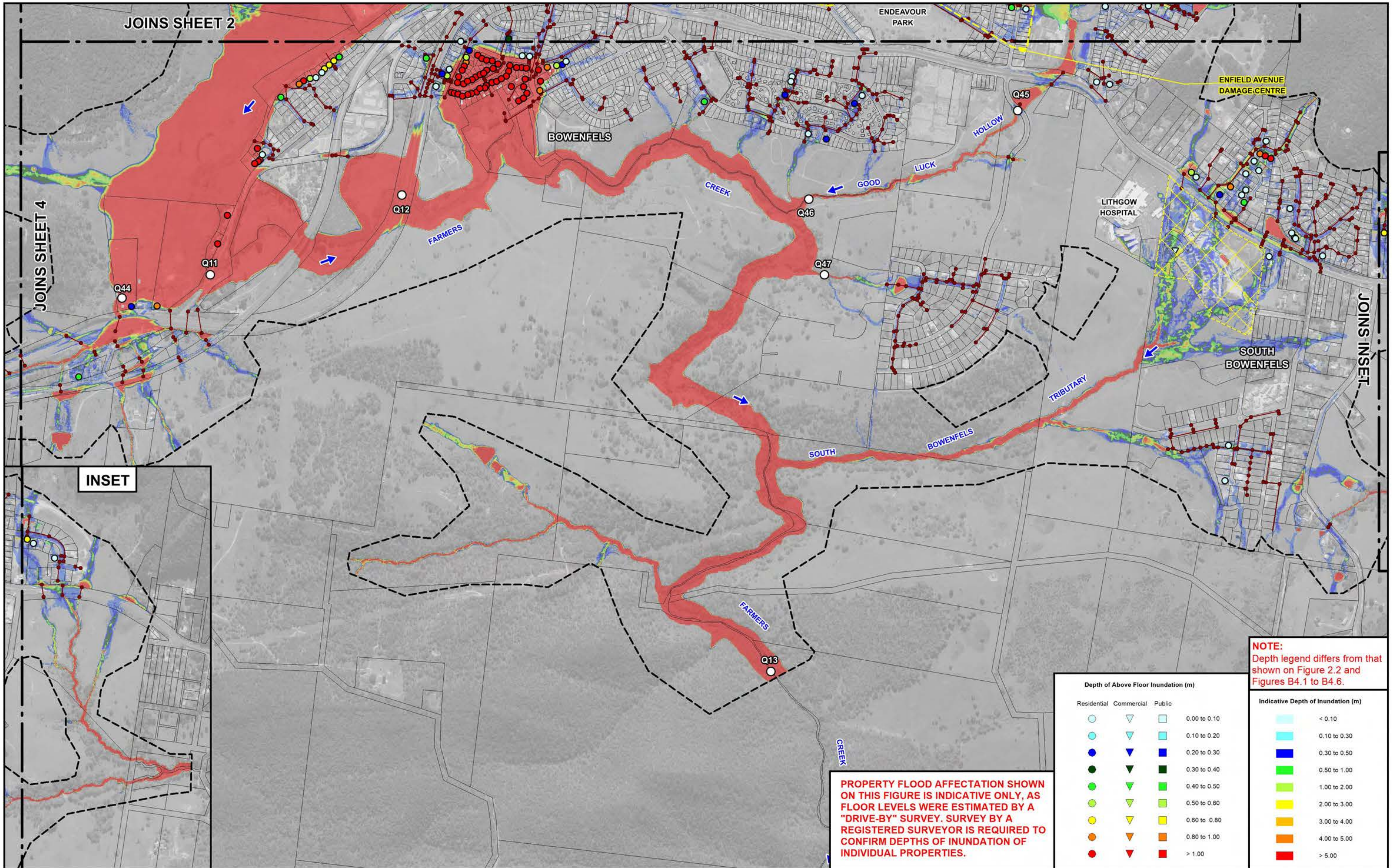
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.3
(Sheet 2 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
PMF



120 0 120 240 360 m

Scale: 1:12,000

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LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Damage Centre
- Q46 Peak Flow Location and Identifier
- Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.

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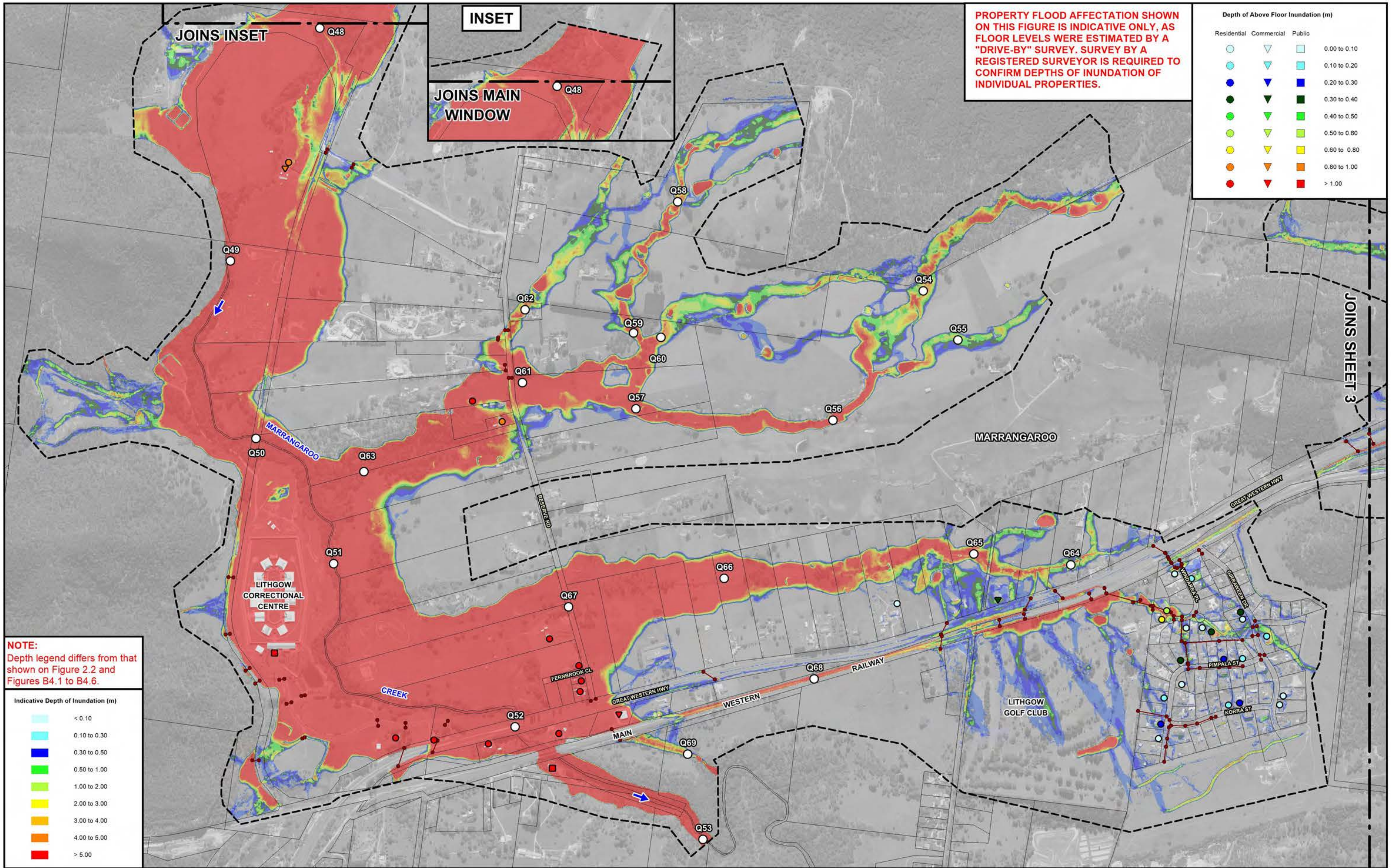
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.3
(Sheet 3 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
PMF



N

120 0 120 240 360 m

Scale: 1:12,000

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LEGEND

Existing Drainage Network

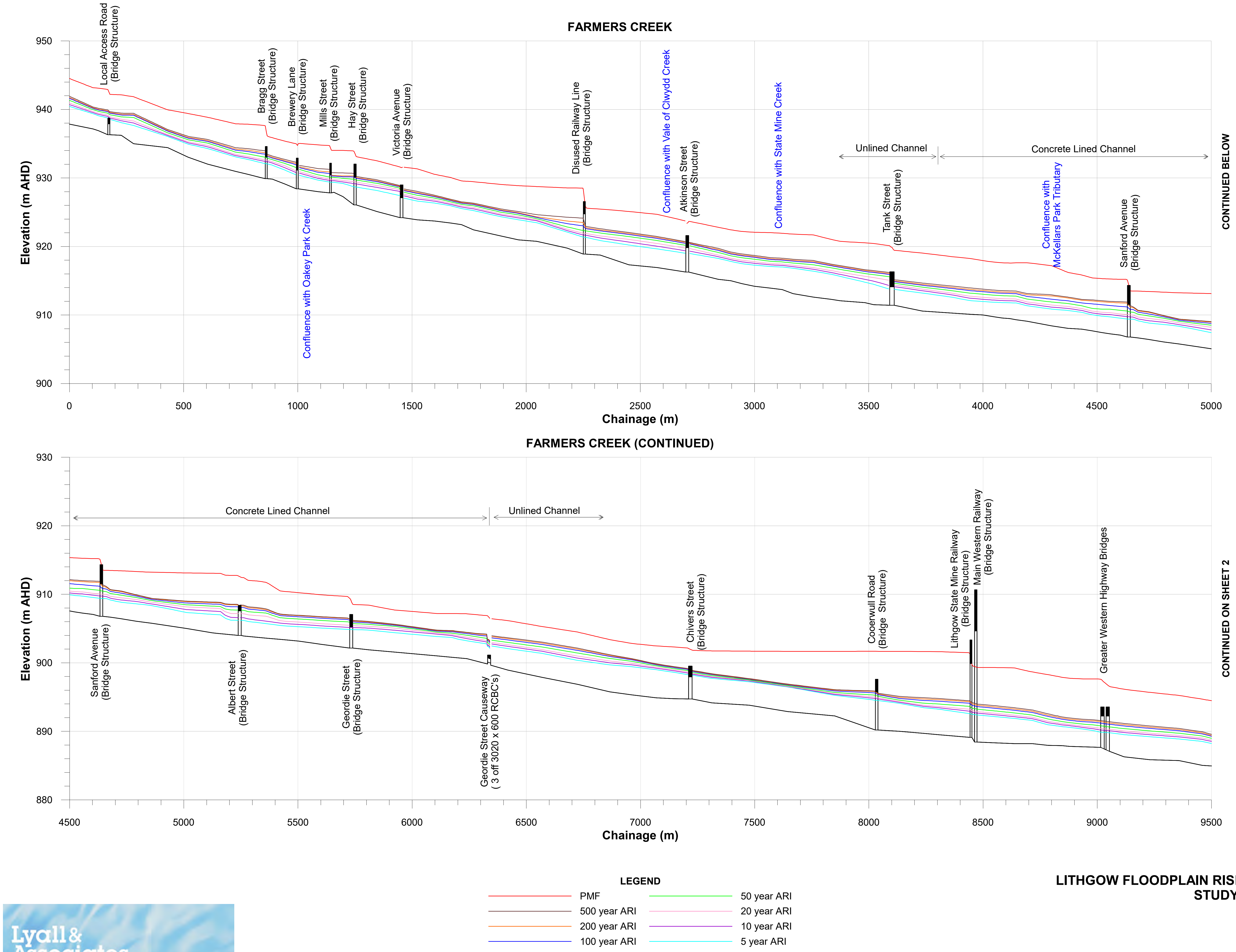
Two-Dimensional Model Boundary

Q64 Peak Flow Location and Identifier

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.3
(Sheet 4 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
PMF

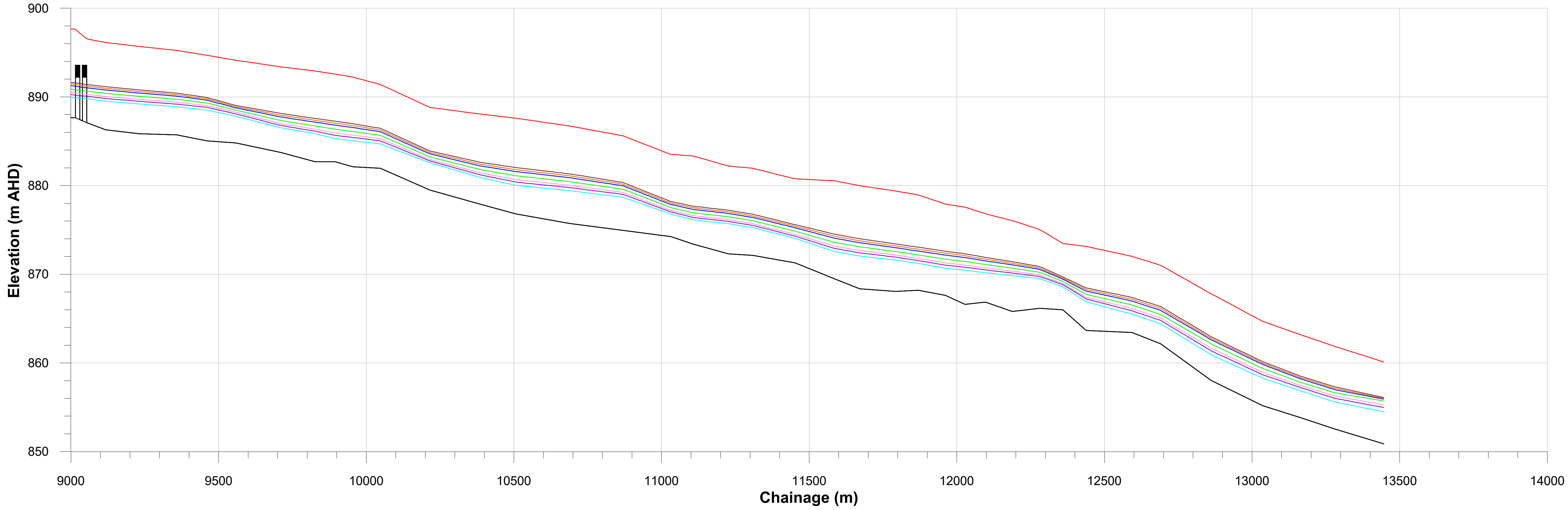


LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

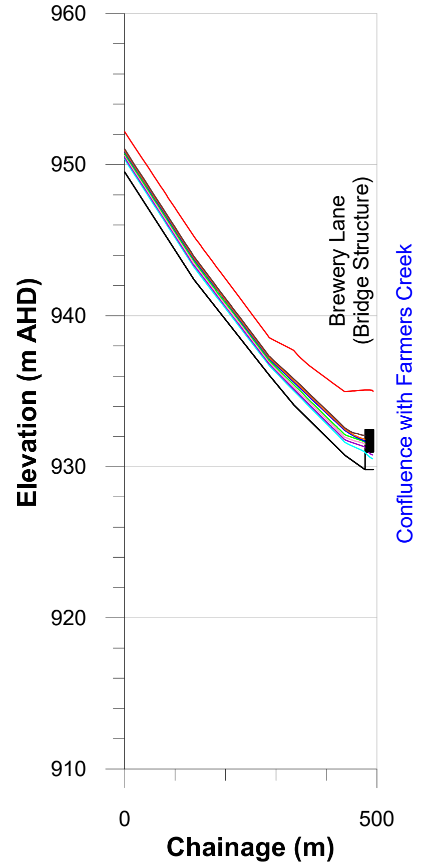
Figure 2.4
(Sheet 1 of 3)

DESIGN WATER SURFACE PROFILES

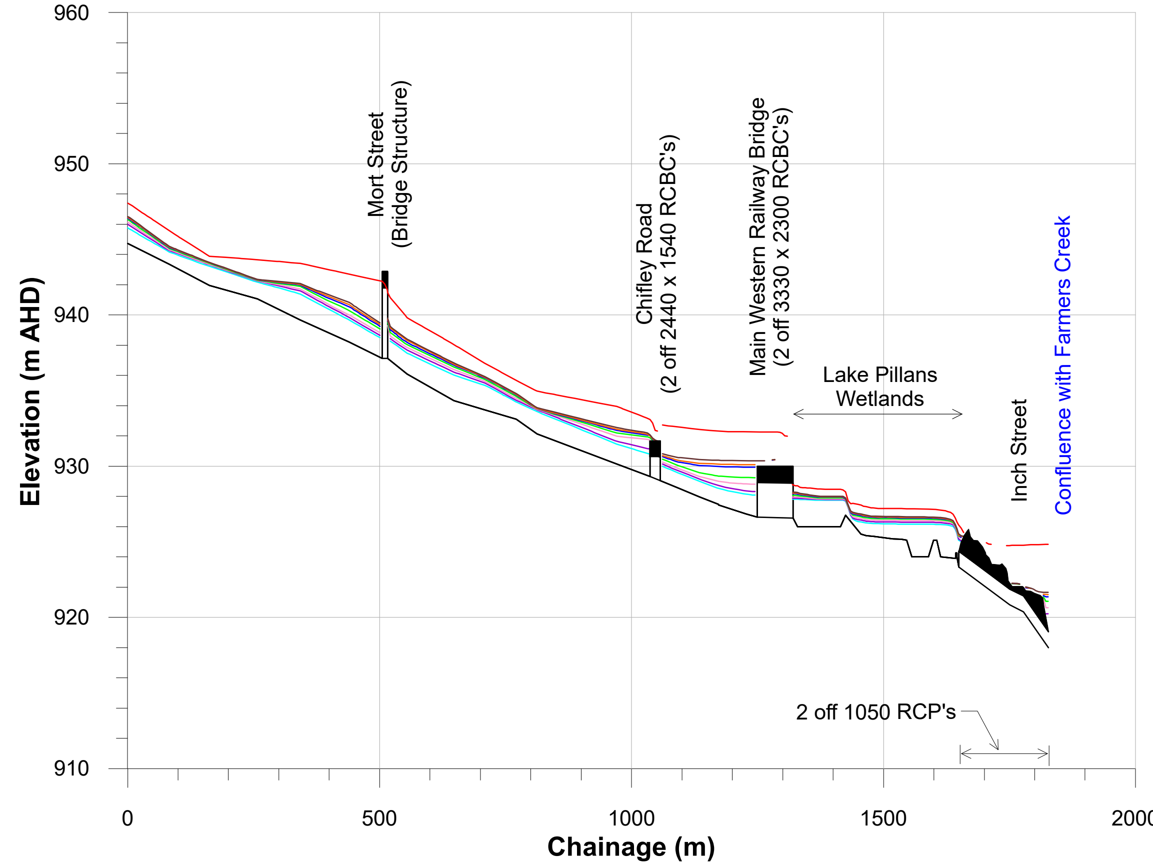
FARMERS CREEK (CONTINUED)



OAKEY PARK CREEK



VALE OF CLWYDD CREEK



LEGEND

PMF	50 year ARI
500 year ARI	20 year ARI
200 year ARI	10 year ARI
100 year ARI	5 year ARI

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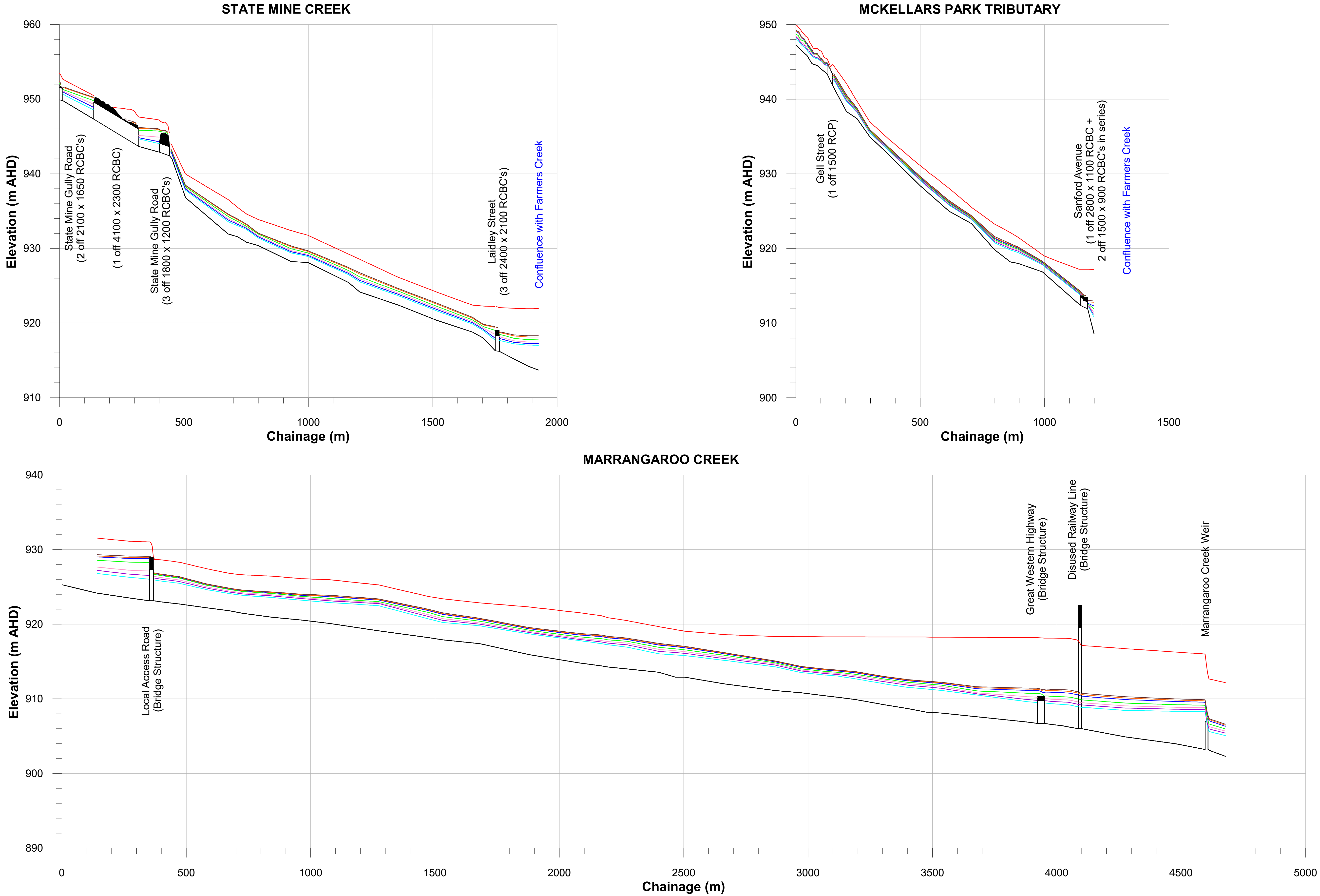
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.4
(Sheet 2 of 3)

DESIGN WATER SURFACE PROFILES



LEGEND

PMF	50 year ARI
500 year ARI	20 year ARI
200 year ARI	10 year ARI
100 year ARI	5 year ARI

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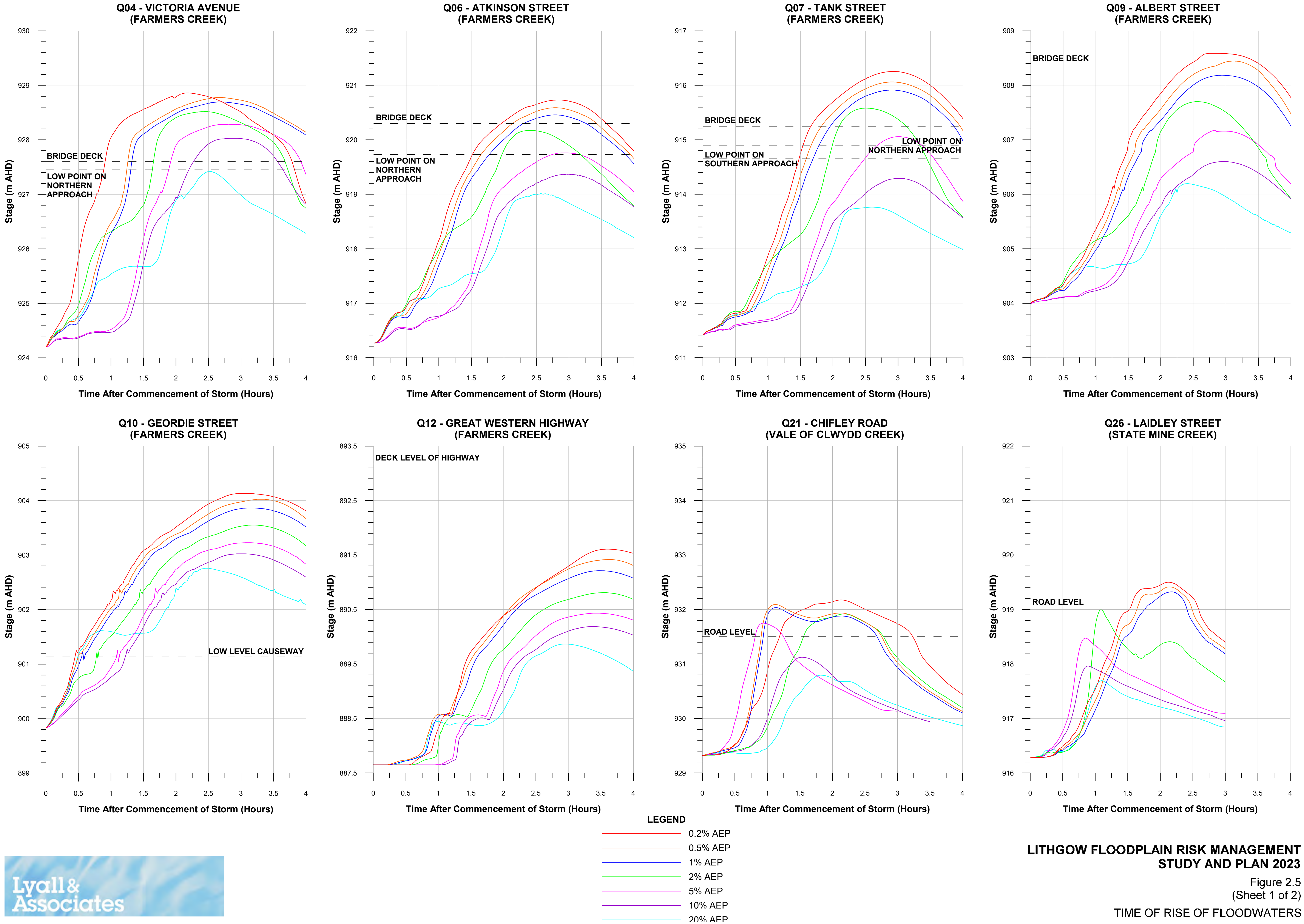
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.4
(Sheet 3 of 3)

DESIGN WATER SURFACE PROFILES



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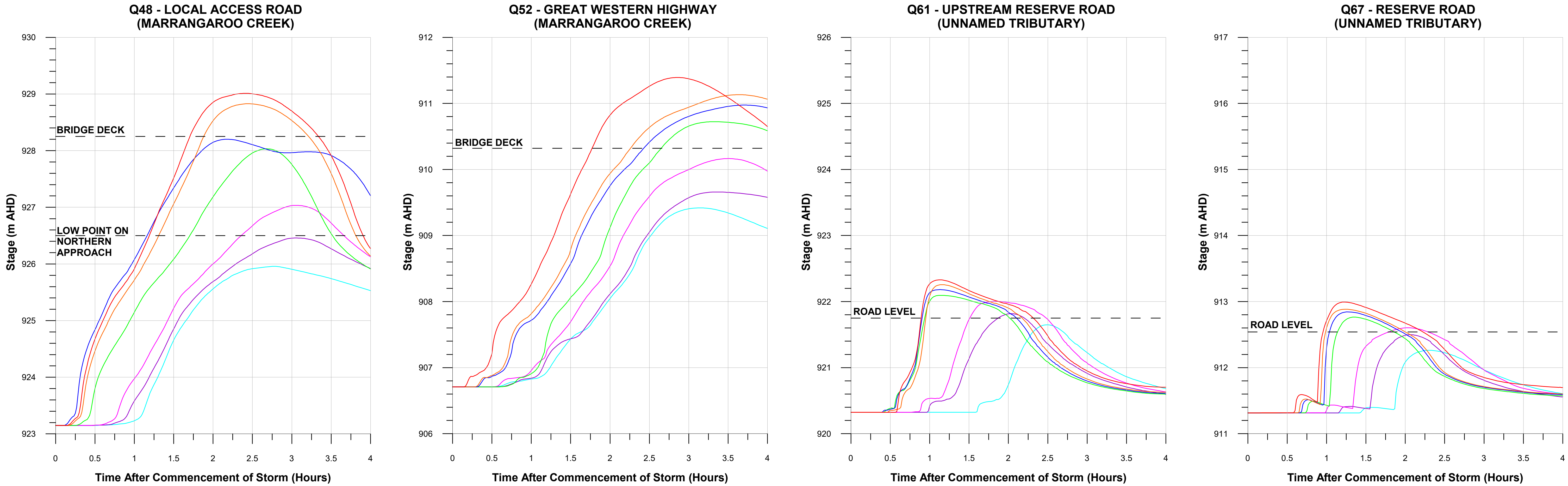
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.5
(Sheet 1 of 2)

TIME OF RISE OF FLOODWATERS



LEGEND

- 0.2% AEP
- 0.5% AEP
- 1% AEP
- 2% AEP
- 5% AEP
- 10% AEP
- 20% AEP

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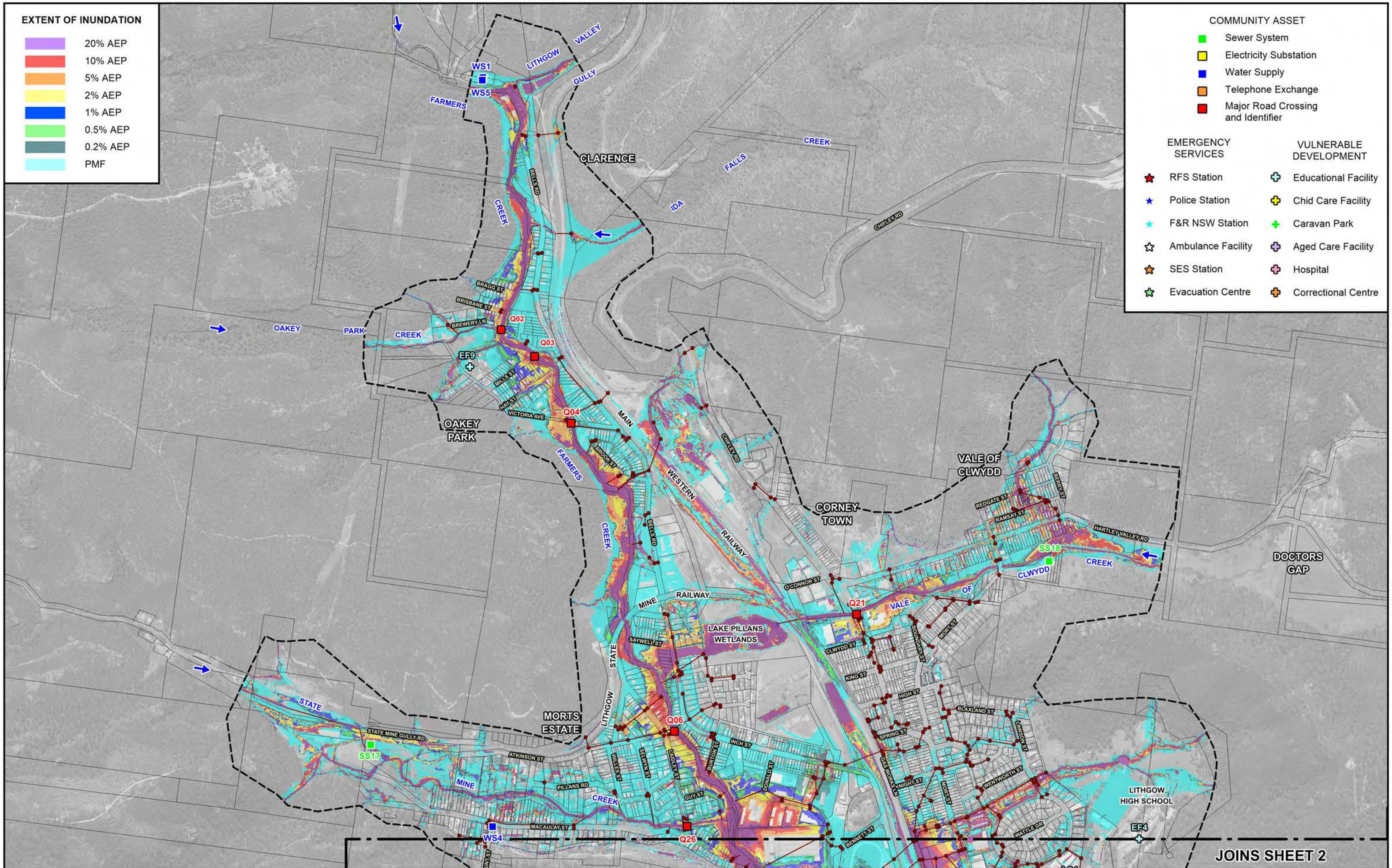
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.5
(Sheet 2 of 2)

TIME OF RISE OF FLOODWATERS



120 0 120 240 360 m

Scale: 1:12,000

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LEGEND
Existing Drainage Network
Two-Dimensional Model Boundary

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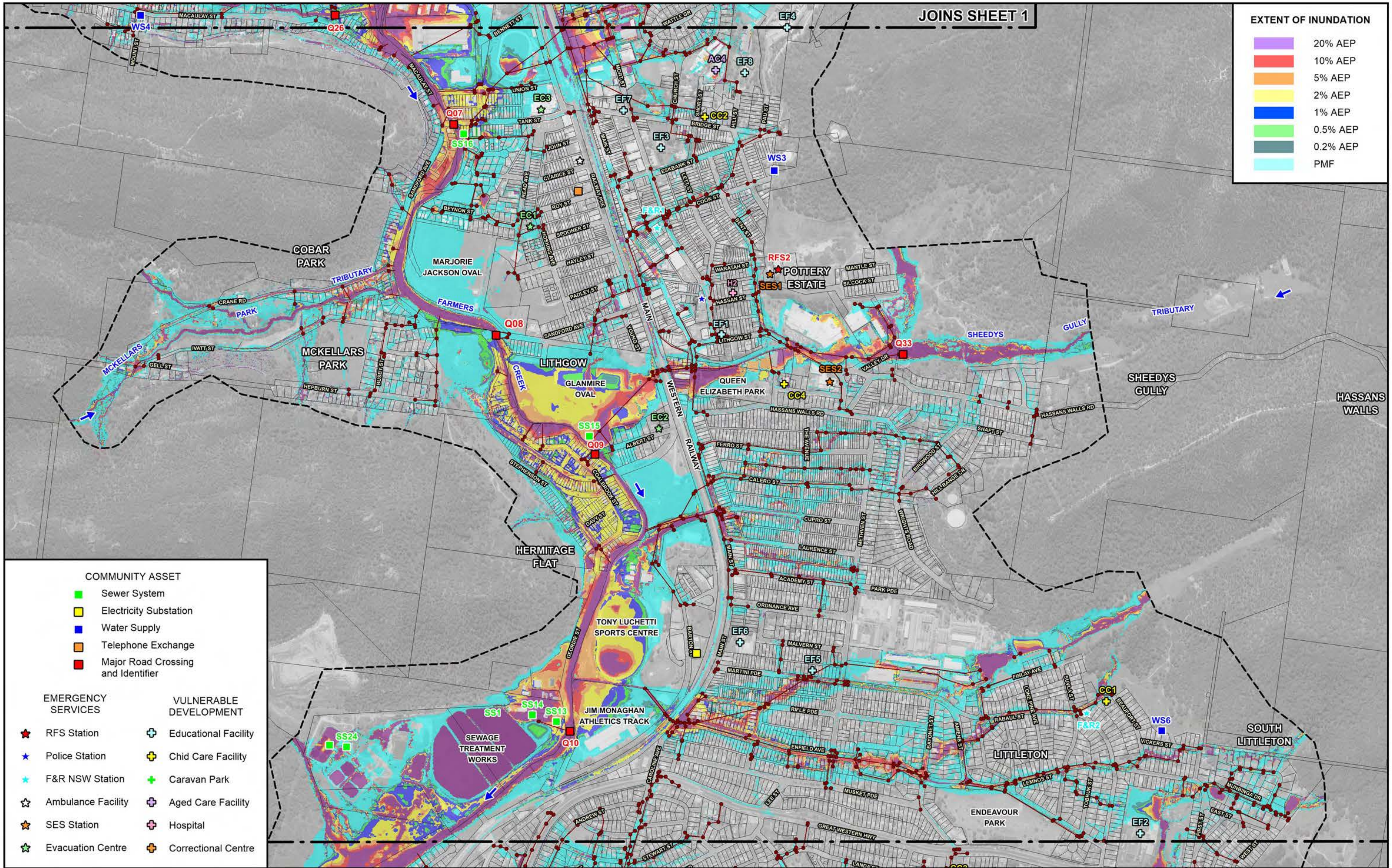
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.6
(Sheet 1 of 4)

INDICATIVE EXTENT OF INUNDATION AND LOCATION OF VULNERABLE DEVELOPMENT AND CRITICAL INFRASTRUCTURE



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LEGEND

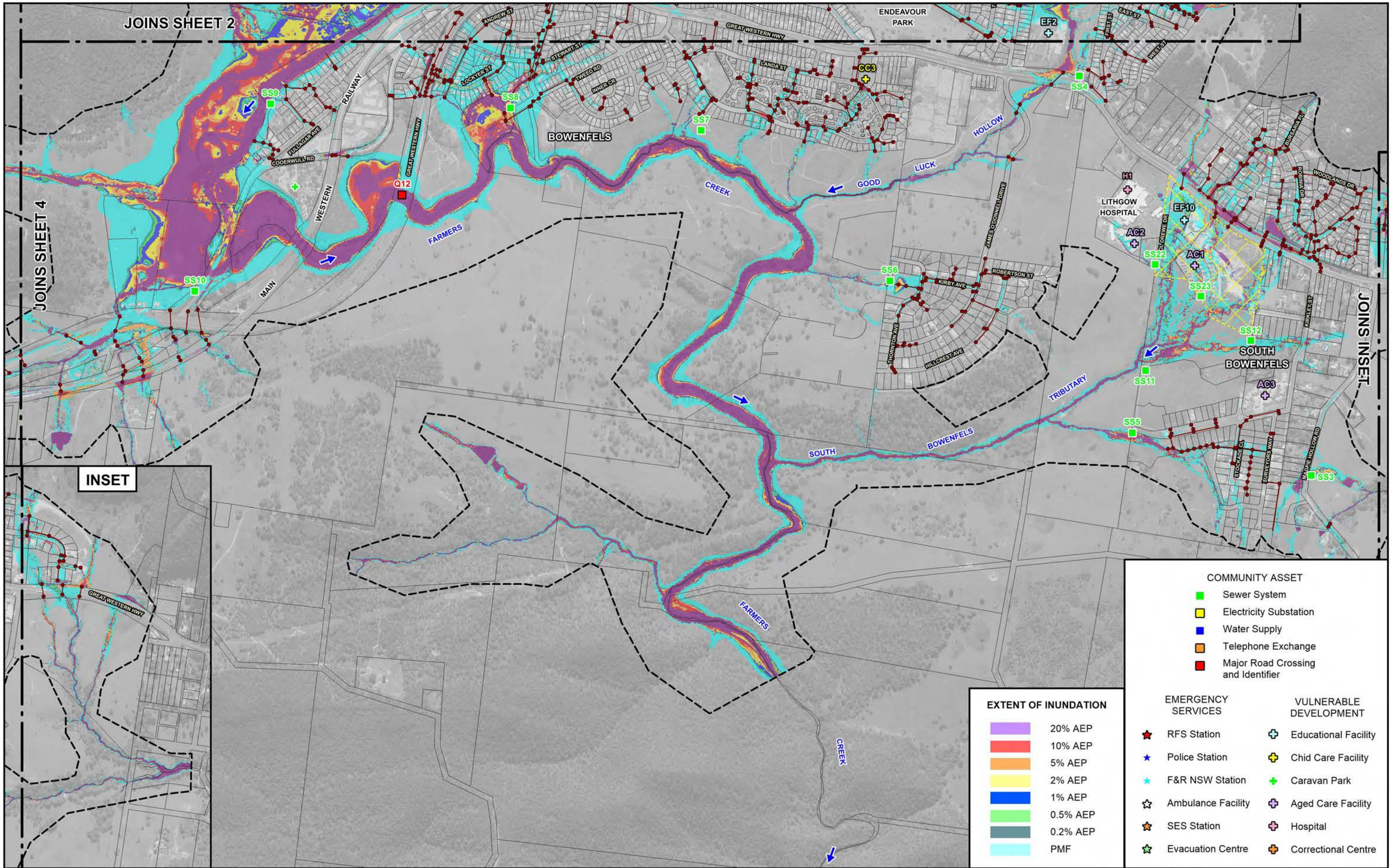
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.6
(Sheet 2 of 4)

INDICATIVE EXTENT OF INUNDATION AND LOCATION OF VULNERABLE DEVELOPMENT AND CRITICAL INFRASTRUCTURE



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LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.

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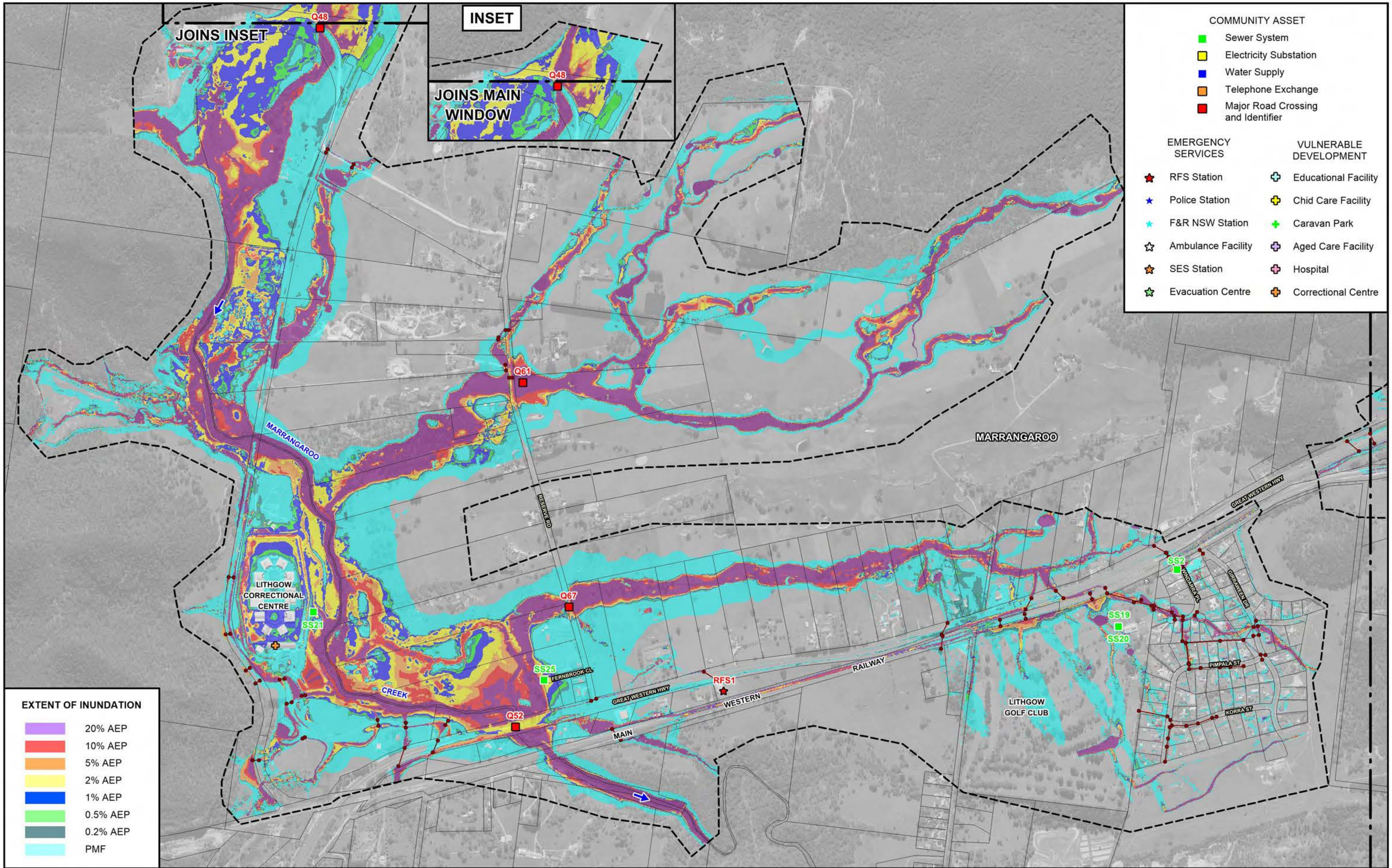
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.6
(Sheet 3 of 4)

INDICATIVE EXTENT OF INUNDATION AND LOCATION OF VULNERABLE DEVELOPMENT AND CRITICAL INFRASTRUCTURE



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LEGEND
Existing Drainage Network
Two-Dimensional Model Boundary

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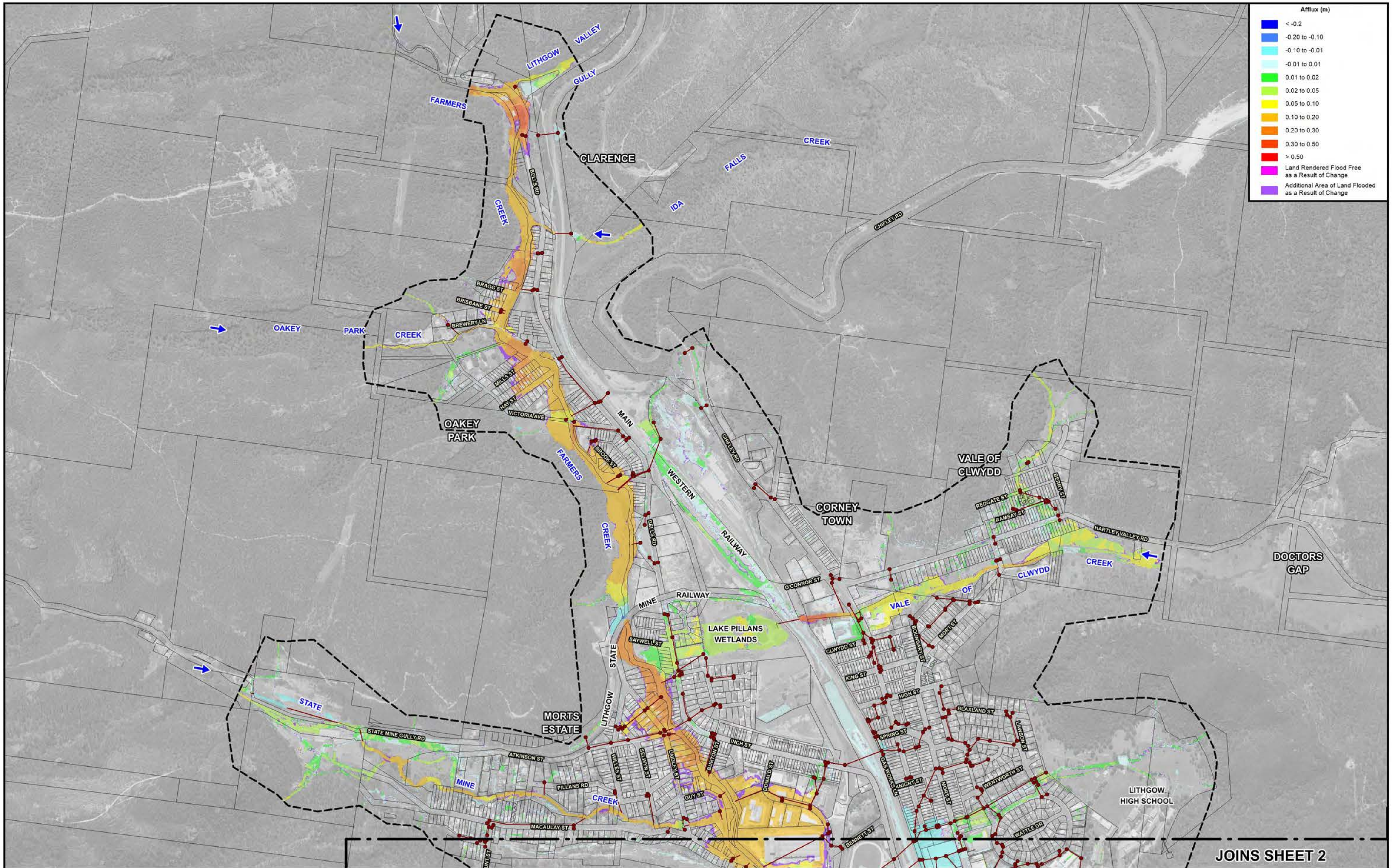
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.6
(Sheet 4 of 4)

INDICATIVE EXTENT OF INUNDATION AND LOCATION OF VULNERABLE DEVELOPMENT AND CRITICAL INFRASTRUCTURE



N

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LEGEND

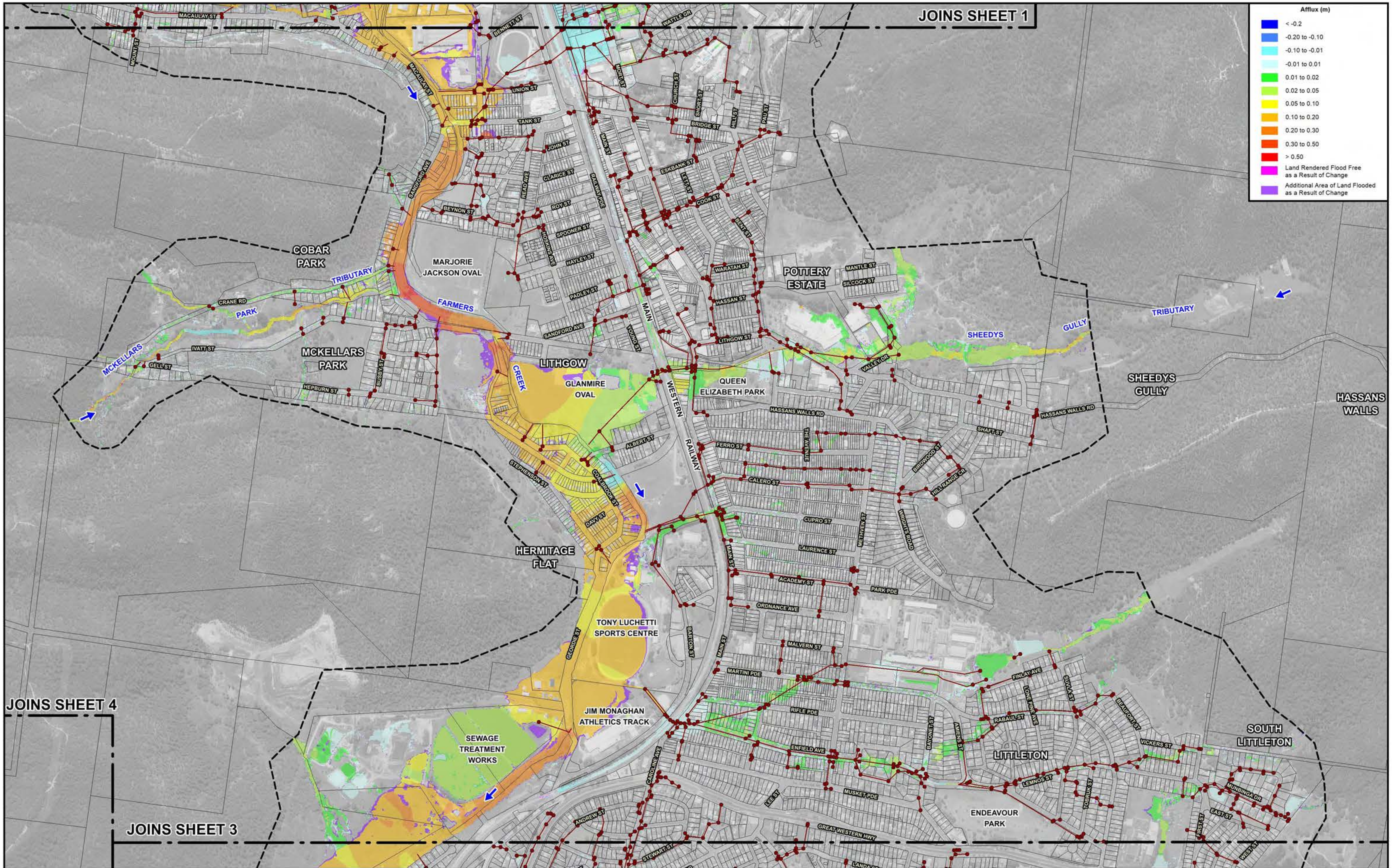
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.7
(Sheet 1 of 4)

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



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LEGEND

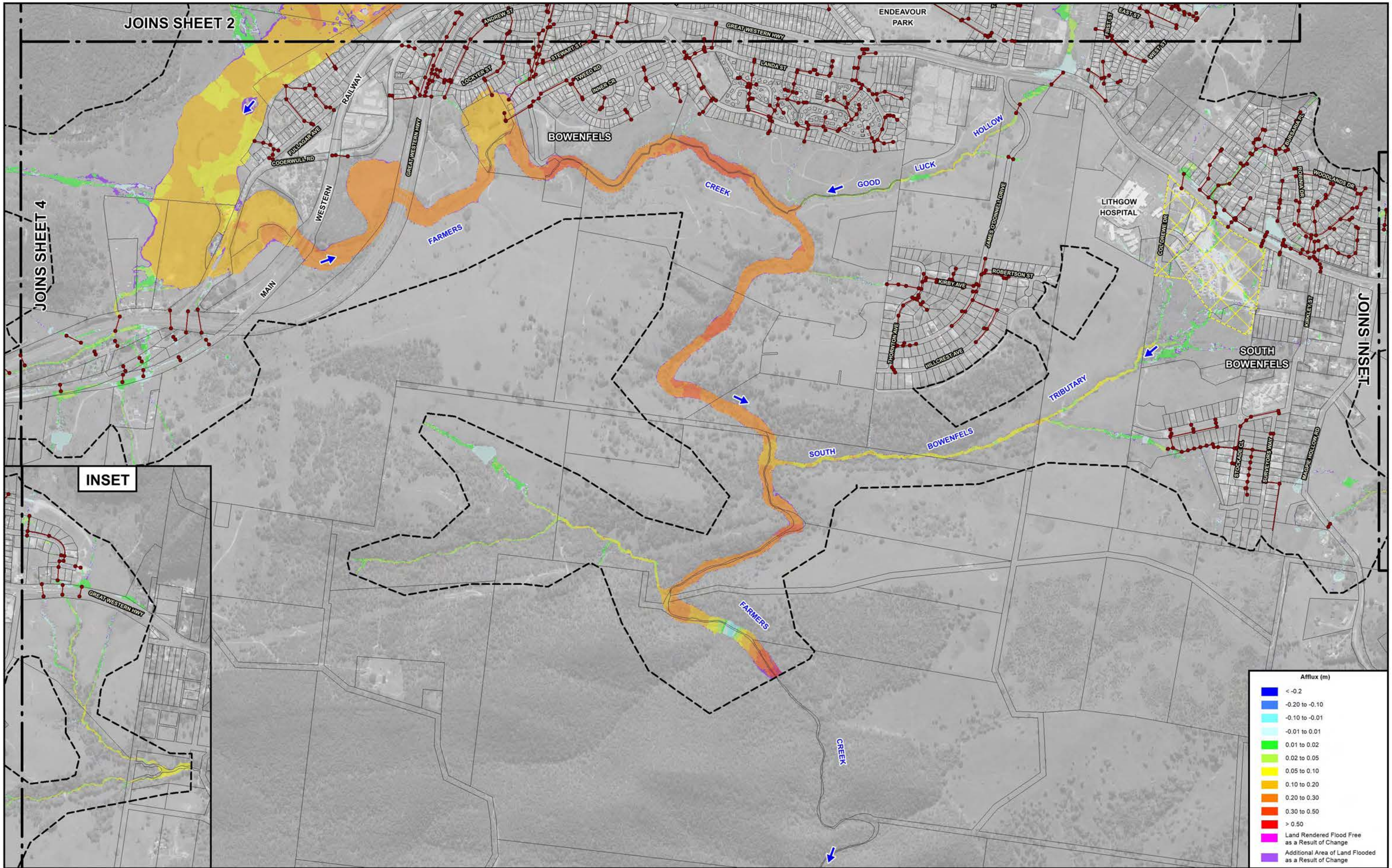
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.7
(Sheet 2 of 4)

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



N

120 0 120 240 360 m

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LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.

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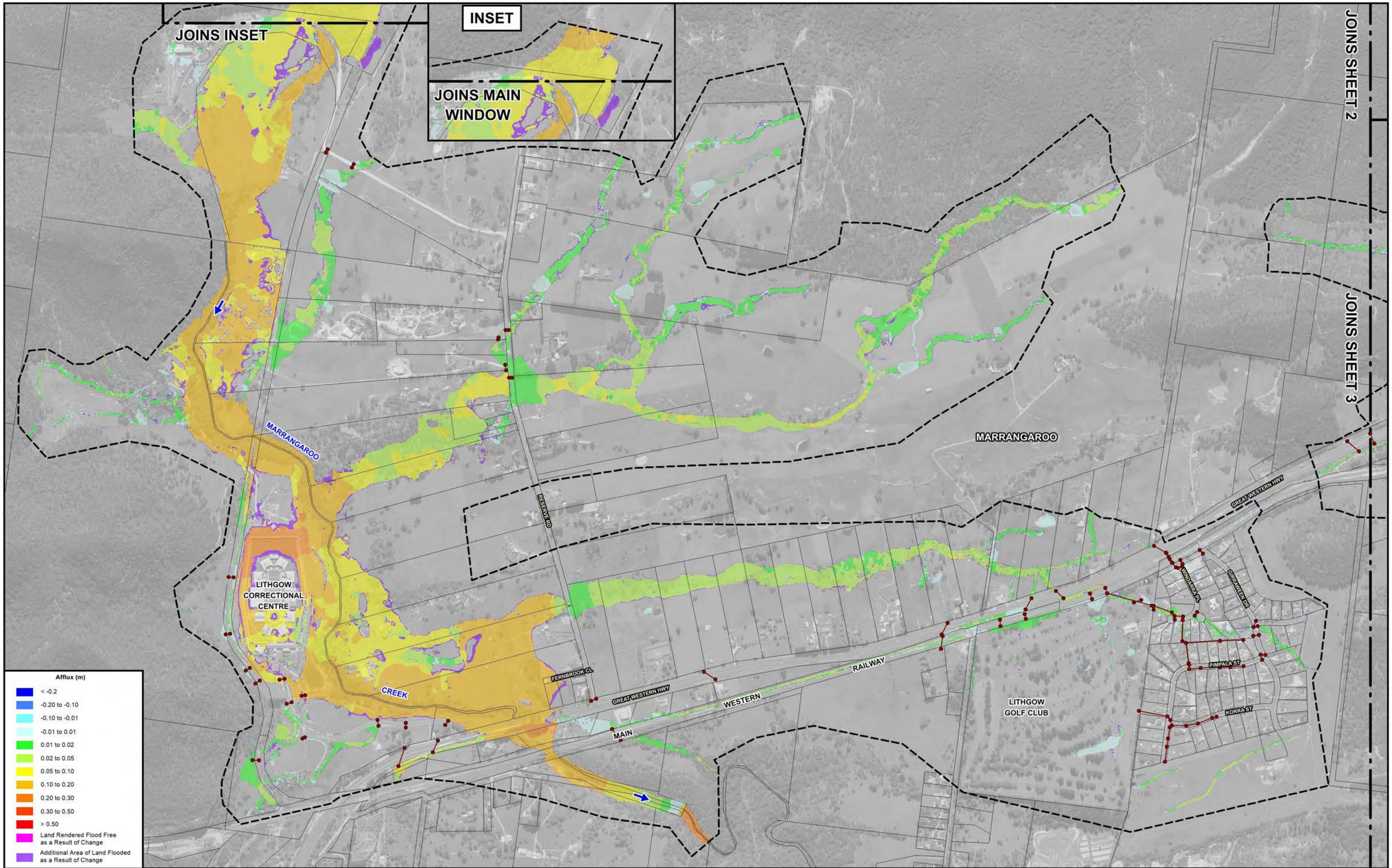
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.7
(Sheet 3 of 4)

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



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LEGEND

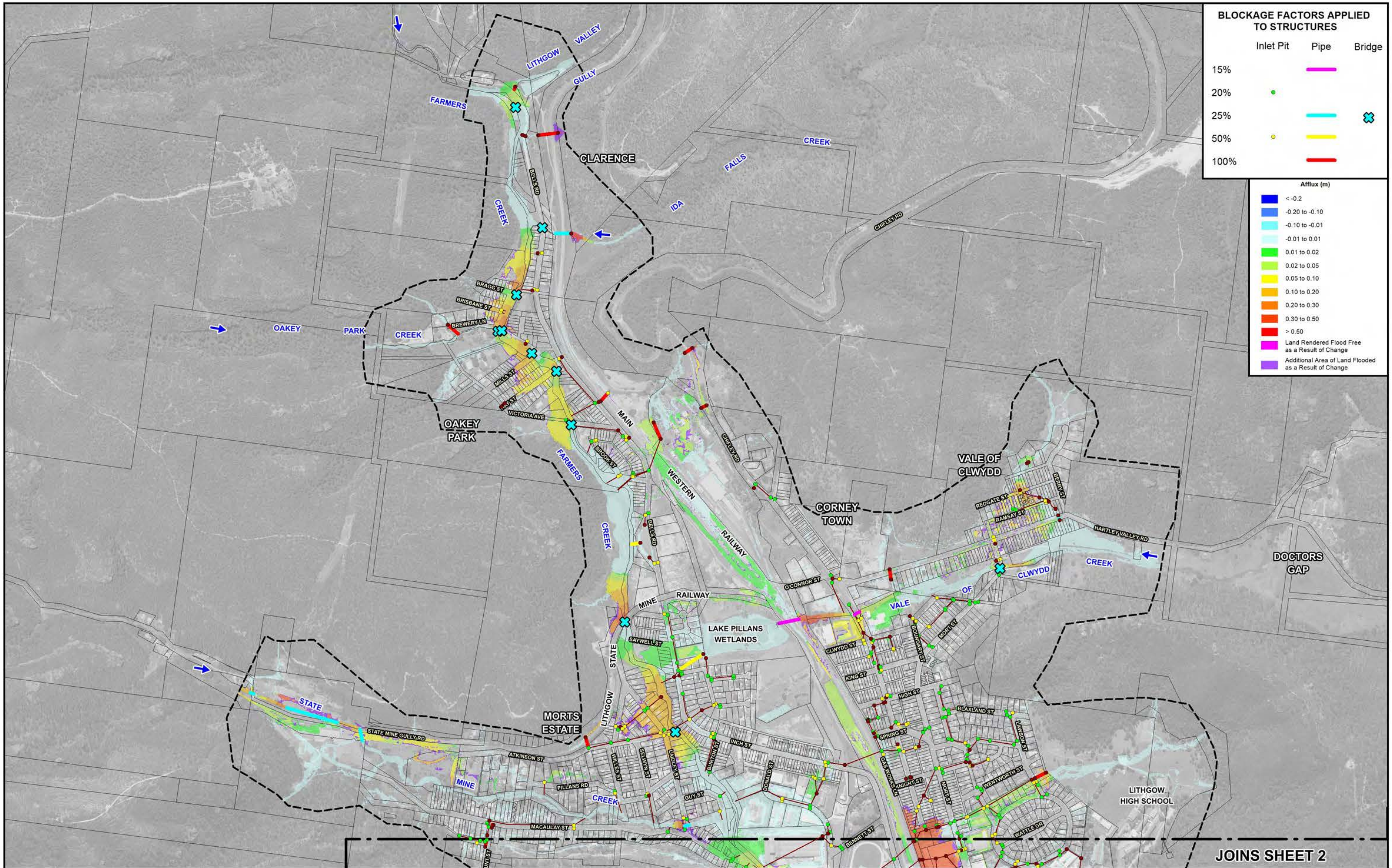
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.7
(Sheet 4 of 4)

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



120 0 120 240 360 m

Scale: 1:12,000

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Lyall & Associates

LEGEND

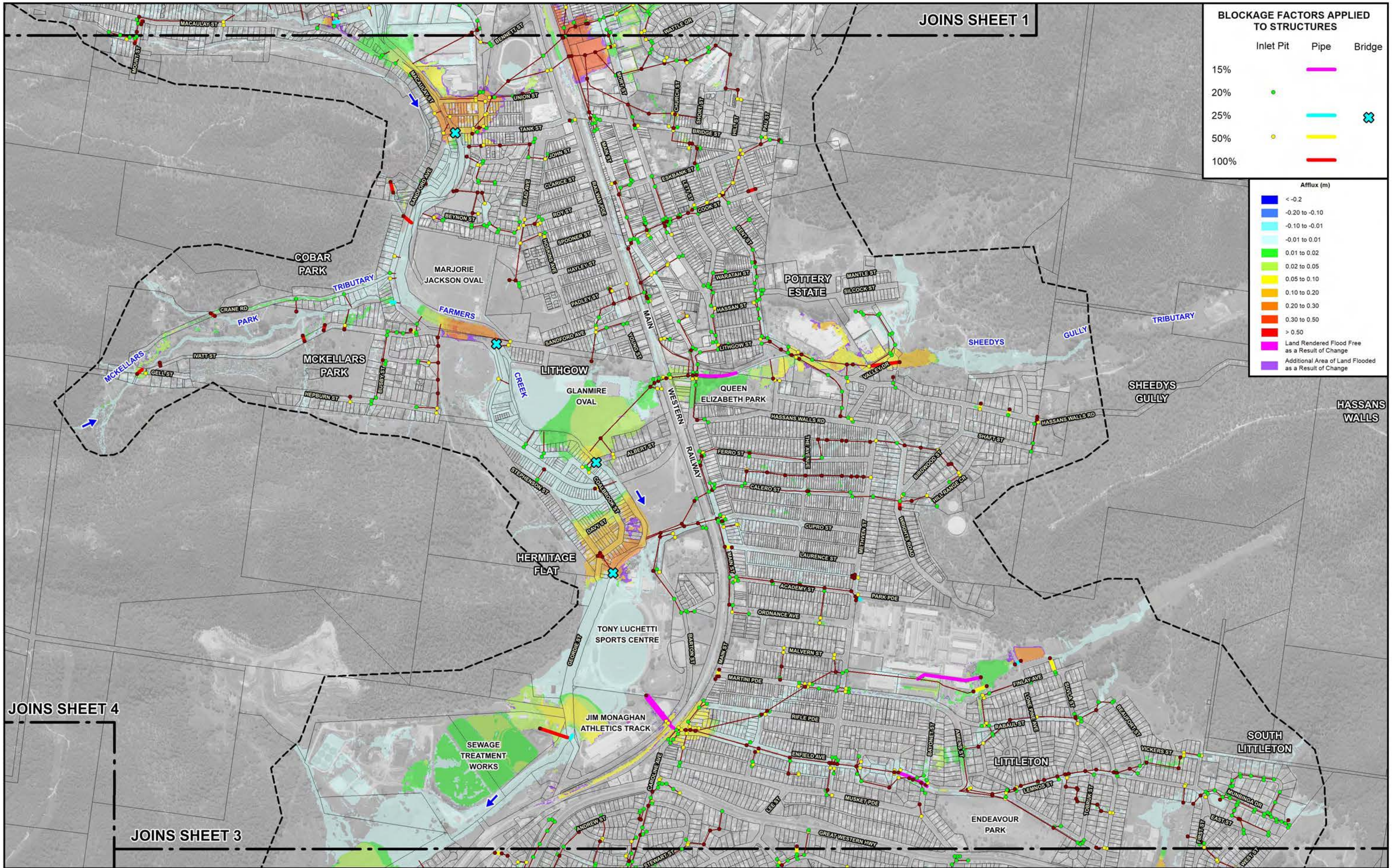
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.8
(Sheet 1 of 4)

IMPACT OF PARTIAL BLOCKAGE OF HYDRAULIC STRUCTURES ON FLOOD BEHAVIOUR
1% AEP



120 0 120 240 360 m

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Lyall & Associates

LEGEND

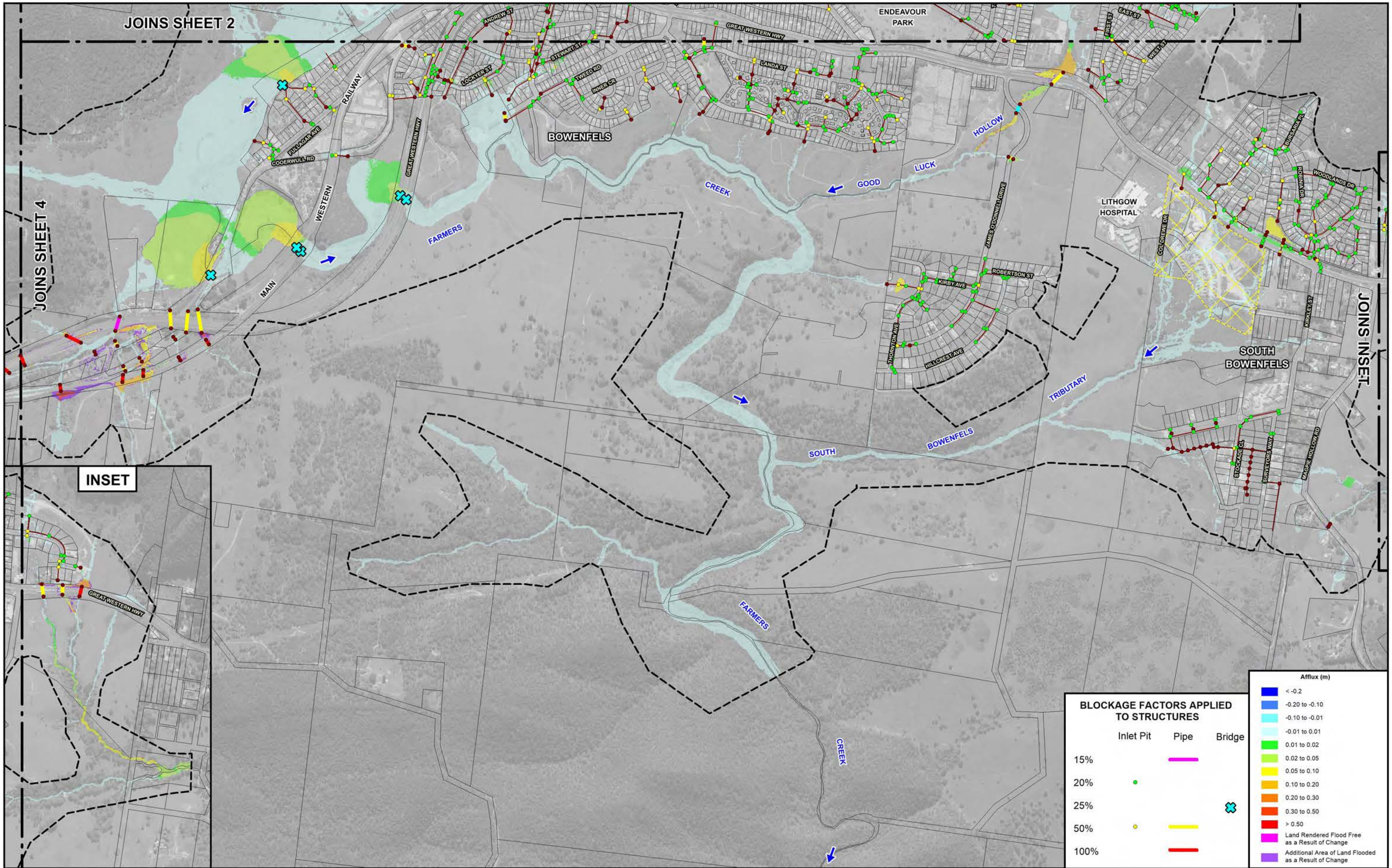
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.8
(Sheet 2 of 4)

IMPACT OF PARTIAL BLOCKAGE OF HYDRAULIC STRUCTURES ON FLOOD BEHAVIOUR
1% AEP



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LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.

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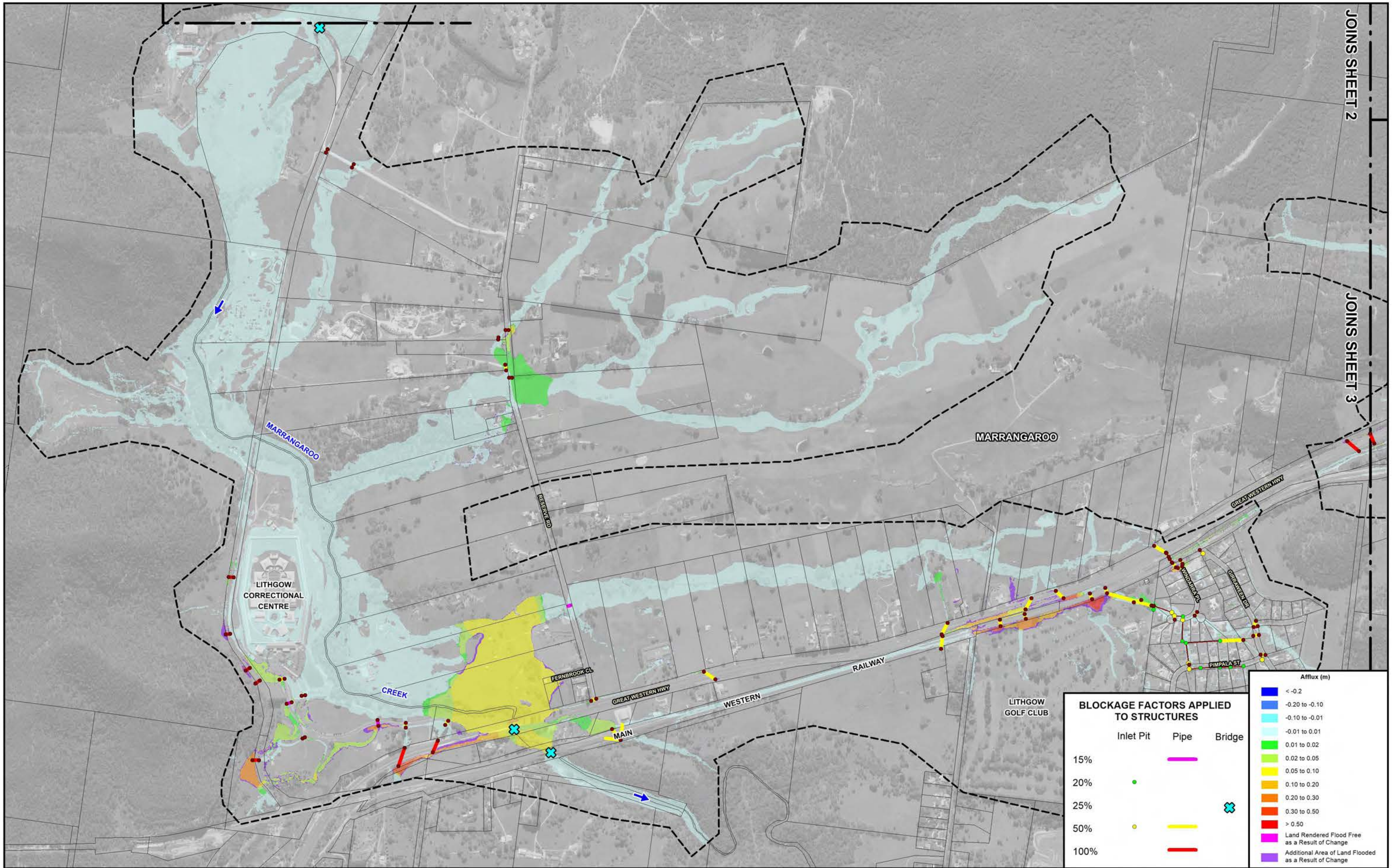
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.8
(Sheet 3 of 4)

IMPACT OF PARTIAL BLOCKAGE OF HYDRAULIC STRUCTURES ON FLOOD BEHAVIOUR
1% AEP



120 0 120 240 360 m

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LEGEND
- Existing Drainage Network
- Two-Dimensional Model Boundary

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LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.8
(Sheet 4 of 4)

IMPACT OF PARTIAL BLOCKAGE OF HYDRAULIC STRUCTURES ON FLOOD BEHAVIOUR
1% AEP

N

120 0 120 240 360 m

Scale: 1:12,000

Lyall & Associates

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LEGEND

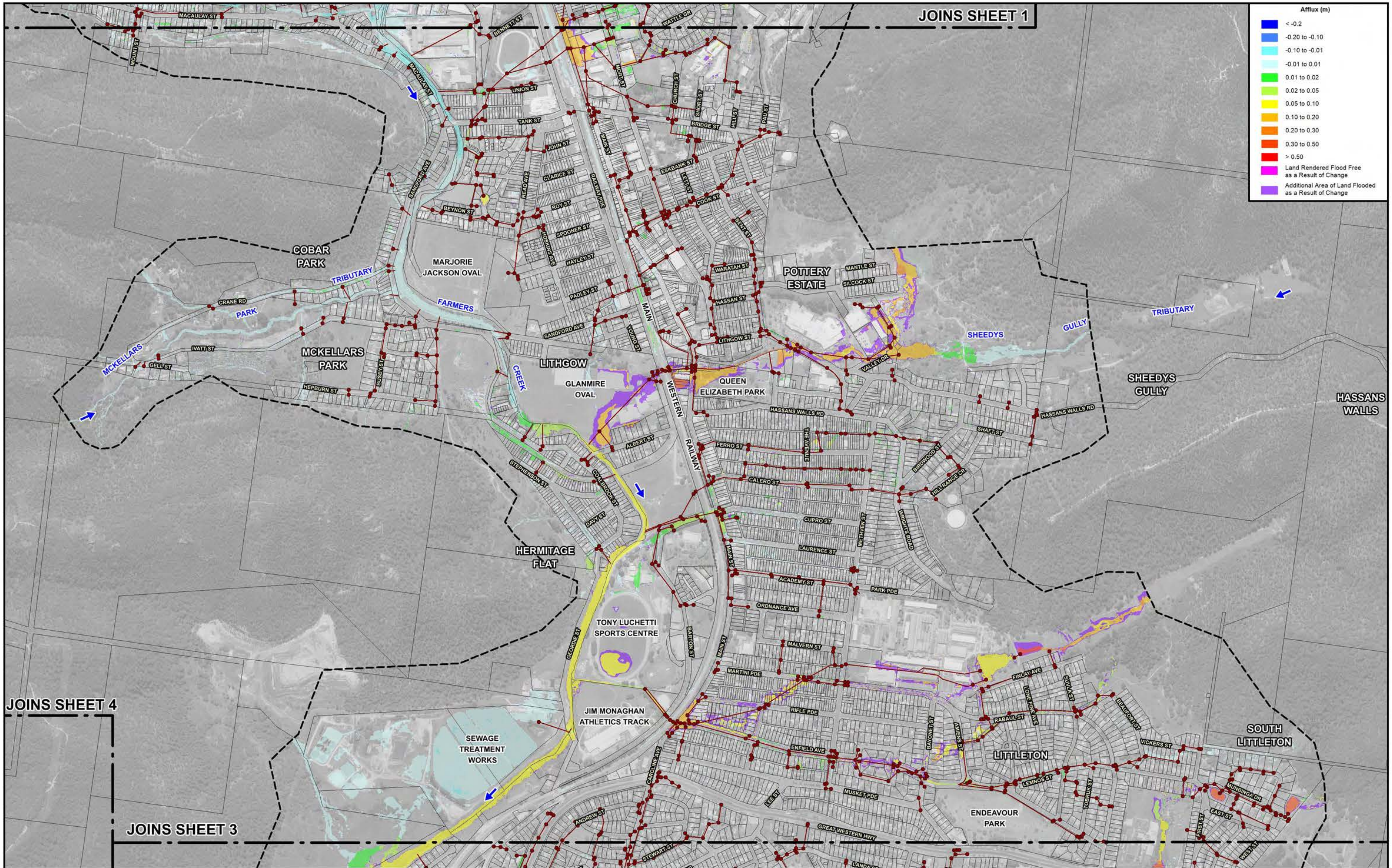
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.9
(Sheet 1 of 4)

POTENTIAL IMPACT OF FUTURE INFILL DEVELOPMENT ON FLOODING AND DRAINAGE PATTERNS - 20% AEP



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LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary

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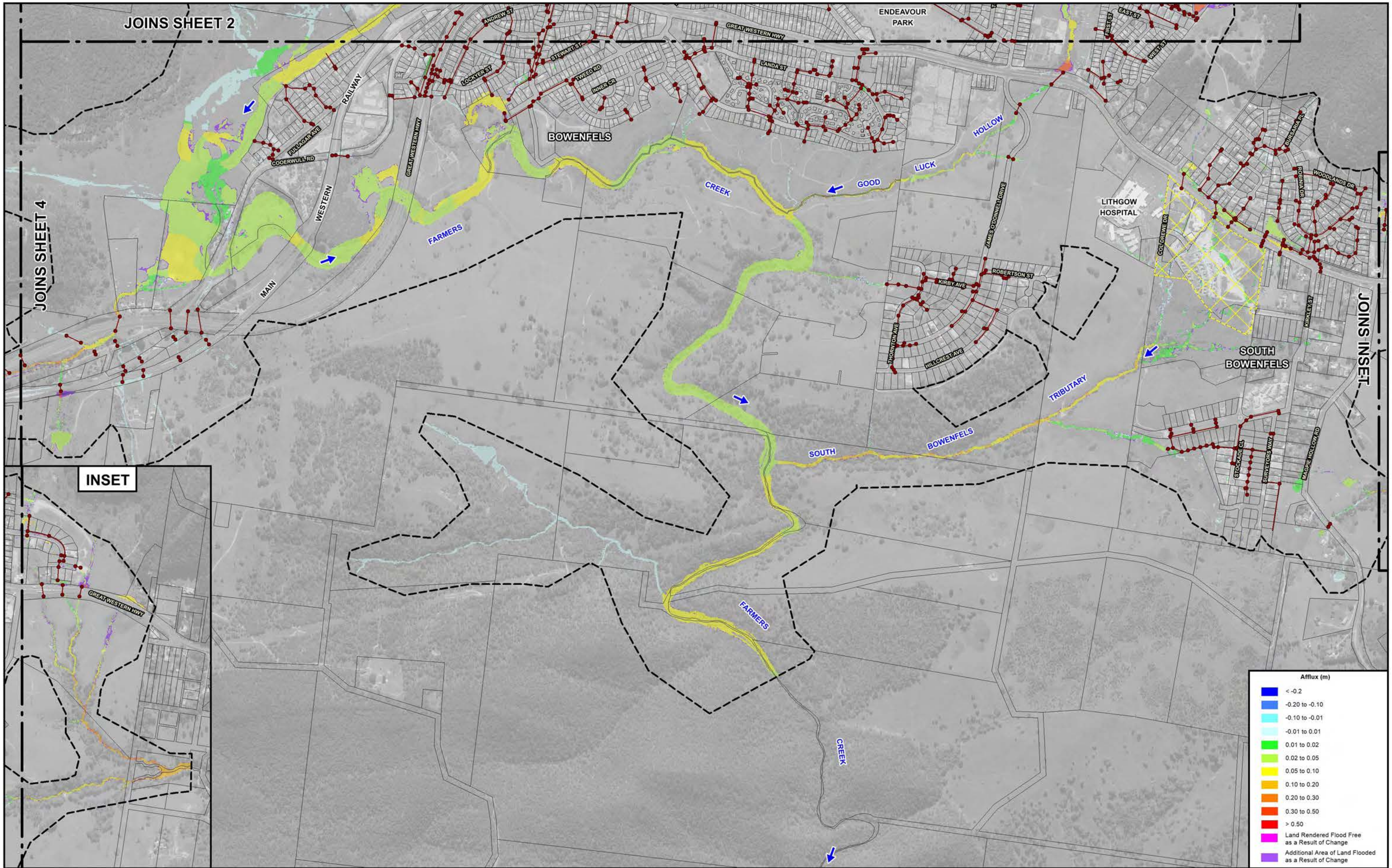
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.9
(Sheet 2 of 4)

POTENTIAL IMPACT OF FUTURE INFILL DEVELOPMENT ON FLOODING AND DRAINAGE PATTERNS - 20% AEP



120 0 120 240 360 m

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LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.

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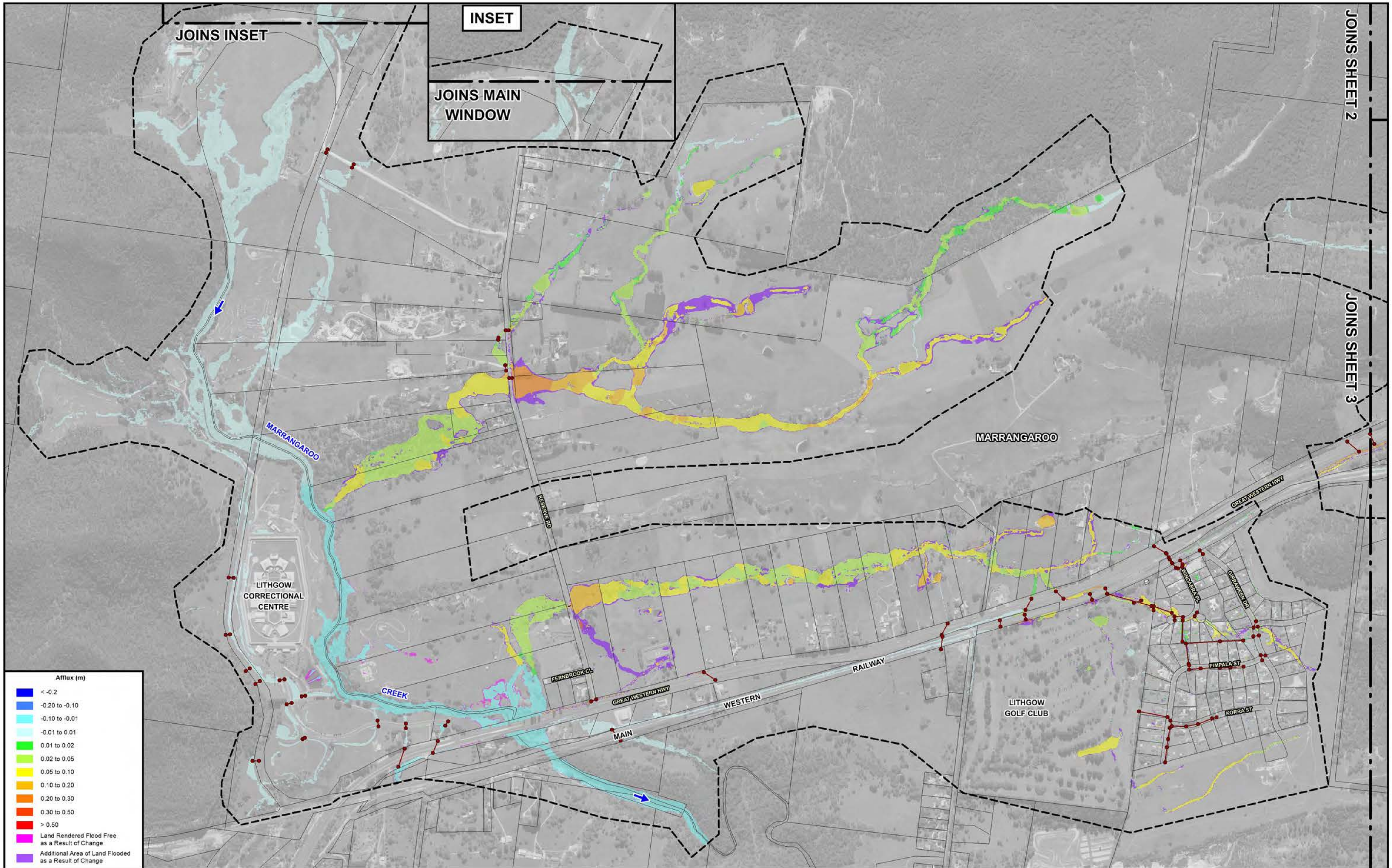
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.9
(Sheet 3 of 4)

POTENTIAL IMPACT OF FUTURE INFILL DEVELOPMENT ON FLOODING AND DRAINAGE PATTERNS - 20% AEP



N

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LEGEND

Existing Drainage Network

Two-Dimensional Model Boundary

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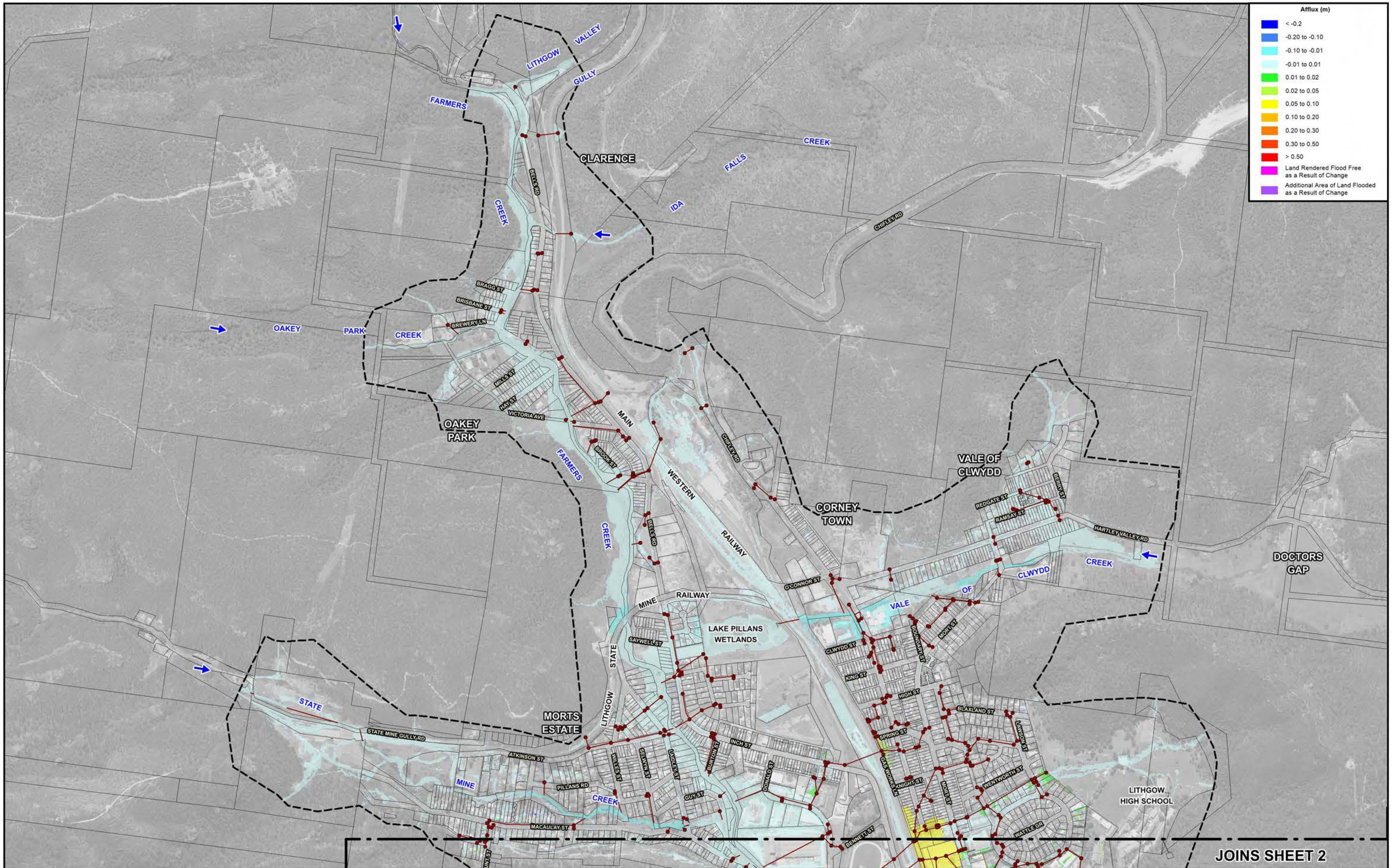
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.9
(Sheet 4 of 4)

POTENTIAL IMPACT OF FUTURE INFILL DEVELOPMENT ON FLOODING AND DRAINAGE PATTERNS - 20% AEP



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LEGEND

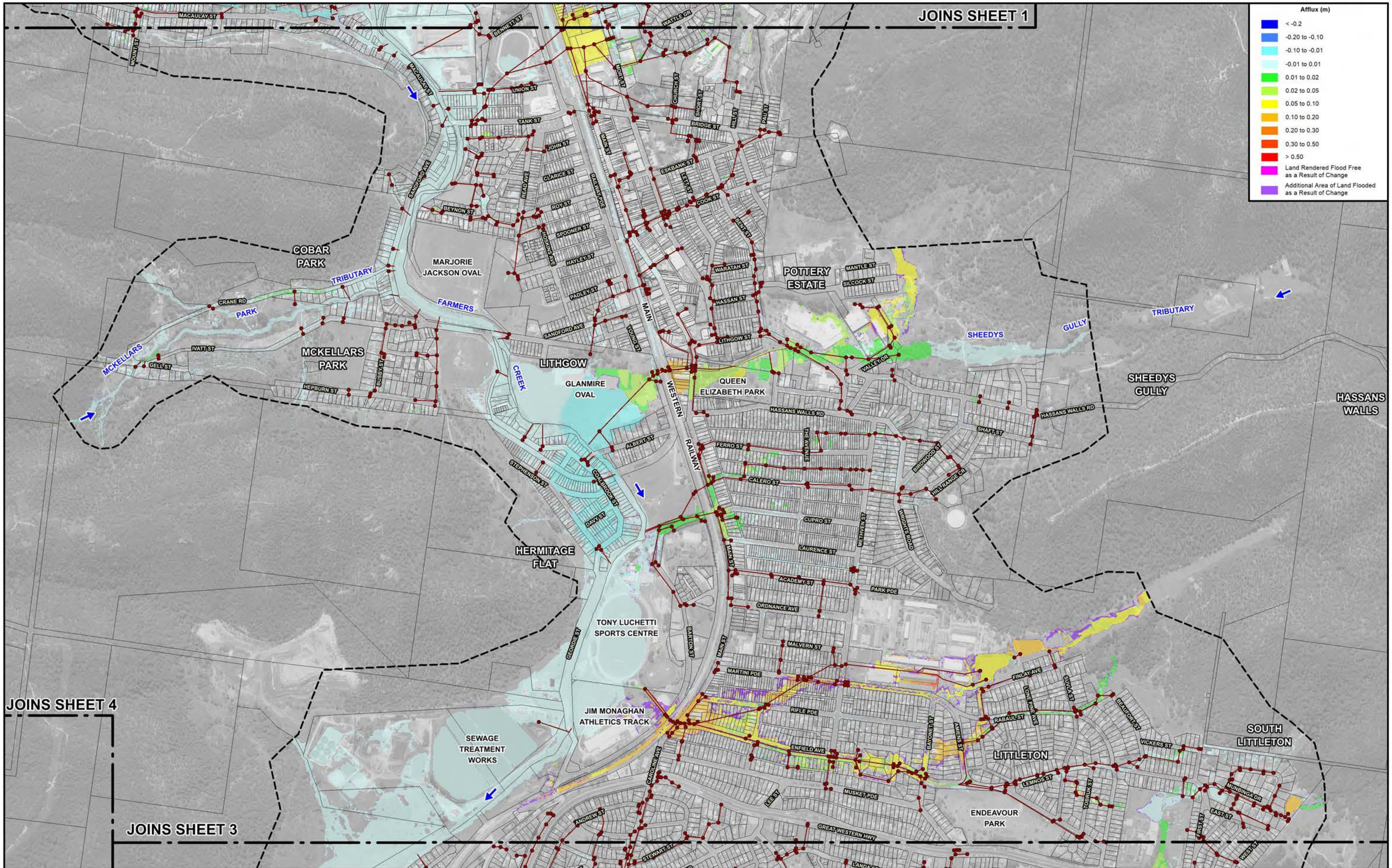
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.10
(Sheet 1 of 4)

POTENTIAL IMPACT OF FUTURE INFILL DEVELOPMENT ON FLOODING AND DRAINAGE PATTERNS - 1% AEP



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LEGEND

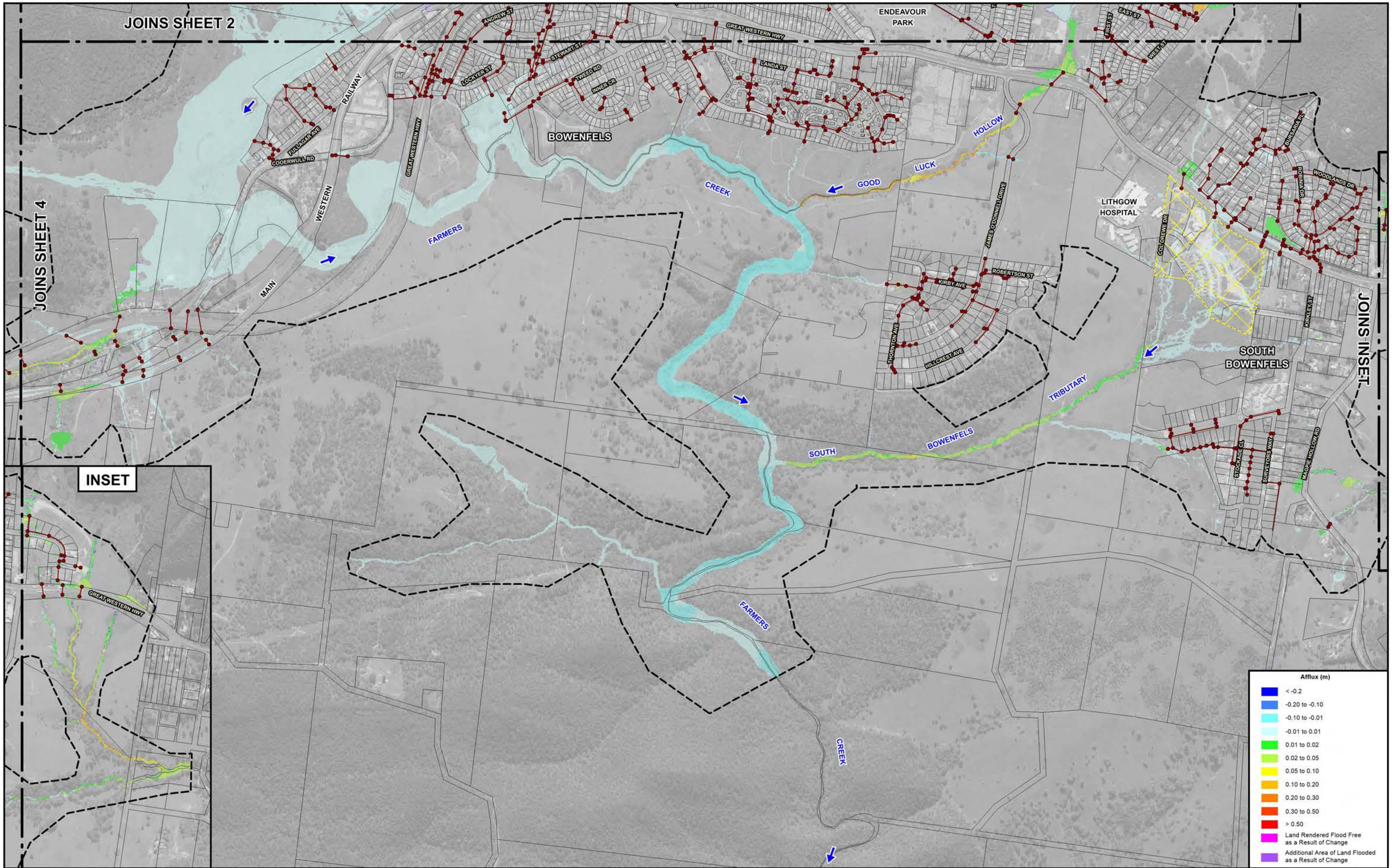
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.10
(Sheet 2 of 4)

POTENTIAL IMPACT OF FUTURE INFILL DEVELOPMENT ON FLOODING AND DRAINAGE PATTERNS - 1% AEP



N

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LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.

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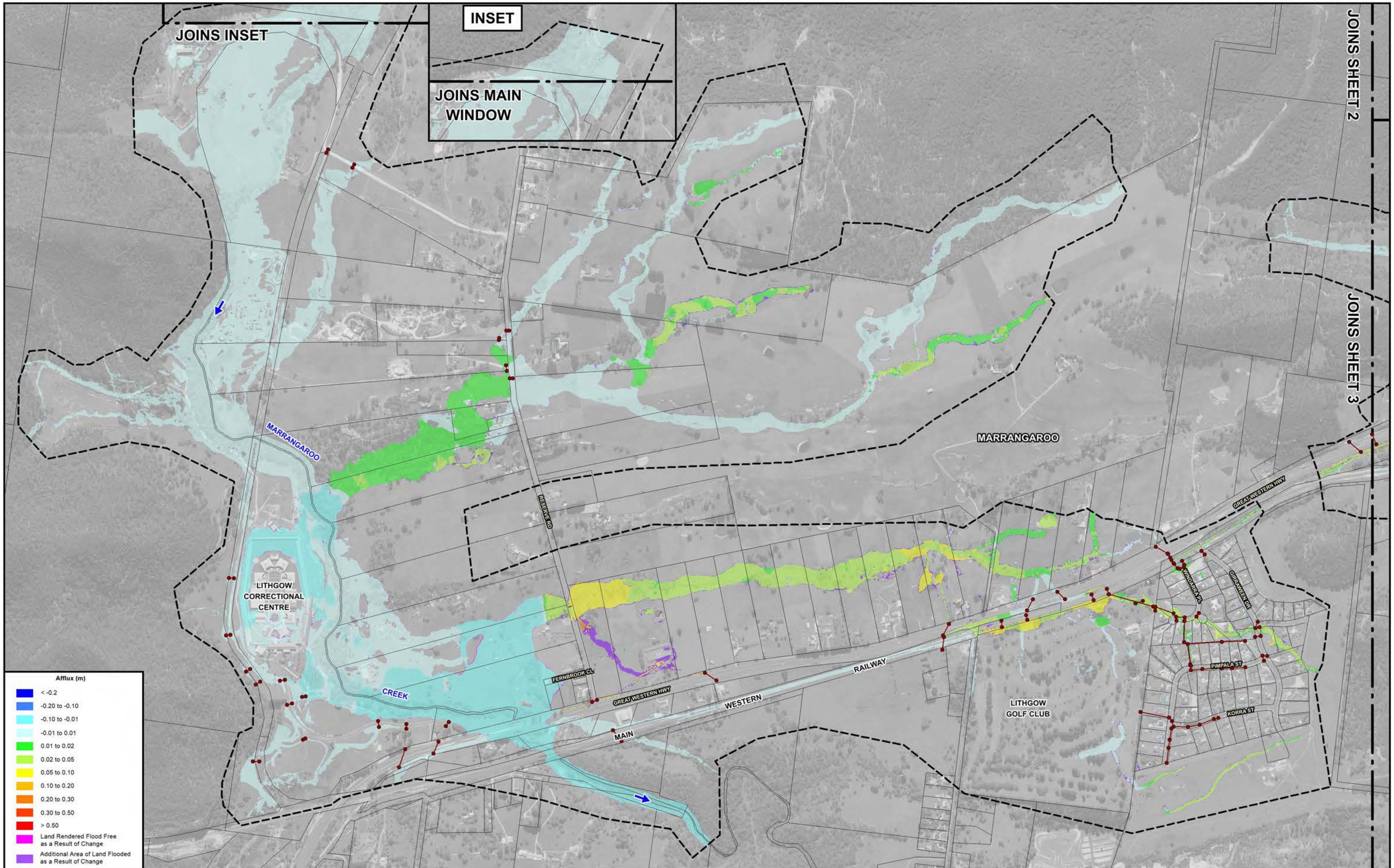
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.10
(Sheet 3 of 4)

POTENTIAL IMPACT OF FUTURE INFILL DEVELOPMENT ON FLOODING AND DRAINAGE PATTERNS - 1% AEP



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LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary

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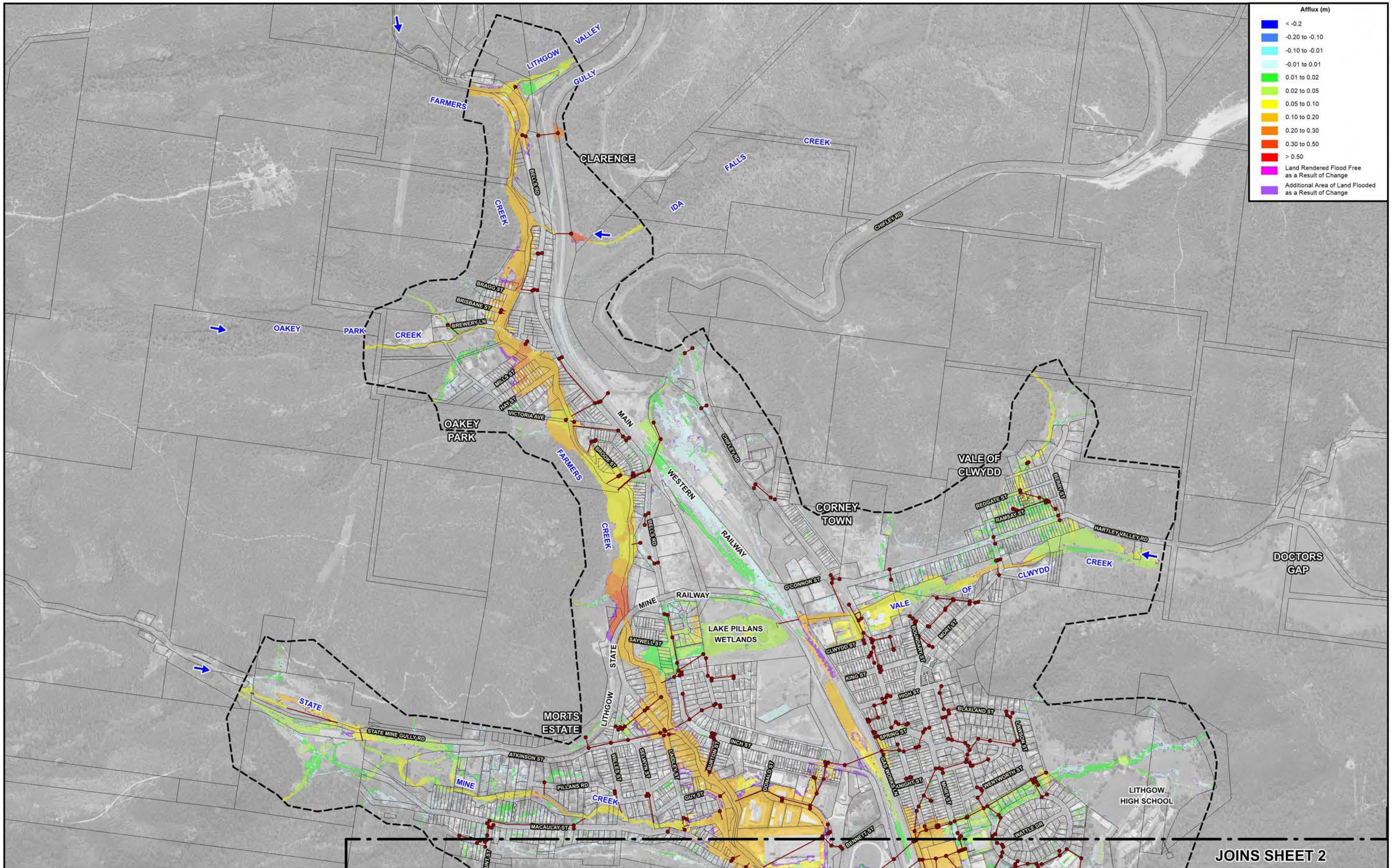
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.10
(Sheet 4 of 4)

POTENTIAL IMPACT OF FUTURE INFILL DEVELOPMENT ON FLOODING AND DRAINAGE PATTERNS - 1% AEP



N

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Lyall & Associates

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LEGEND

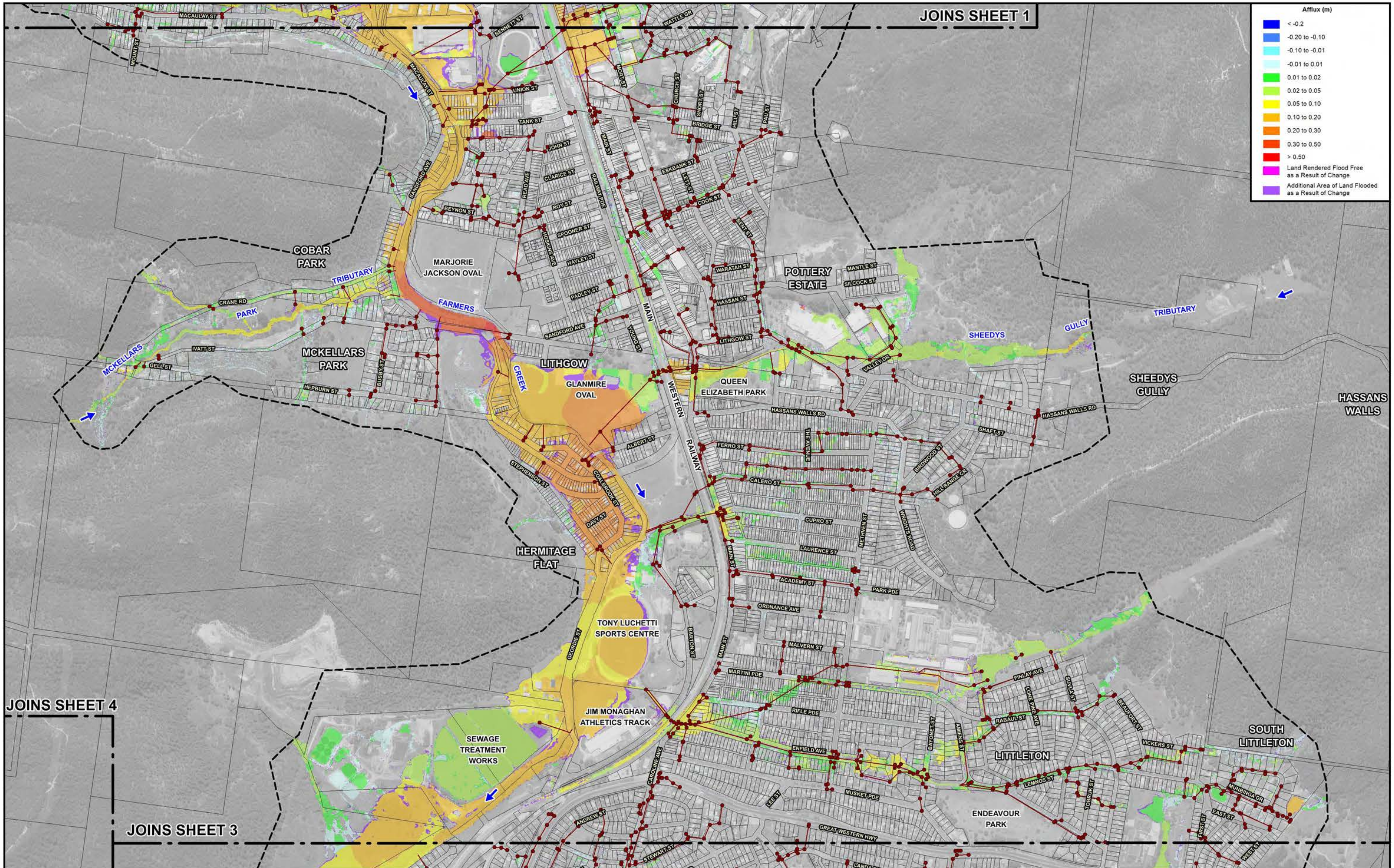
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.11
(Sheet 1 of 4)

IMPACT OF A POTENTIAL 10% INCREASE IN RAINFALL INTENSITIES ON FLOODING AND DRAINAGE PATTERNS - 1% AEP



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LEGEND

Existing Drainage Network
Two-Dimensional Model Boundary

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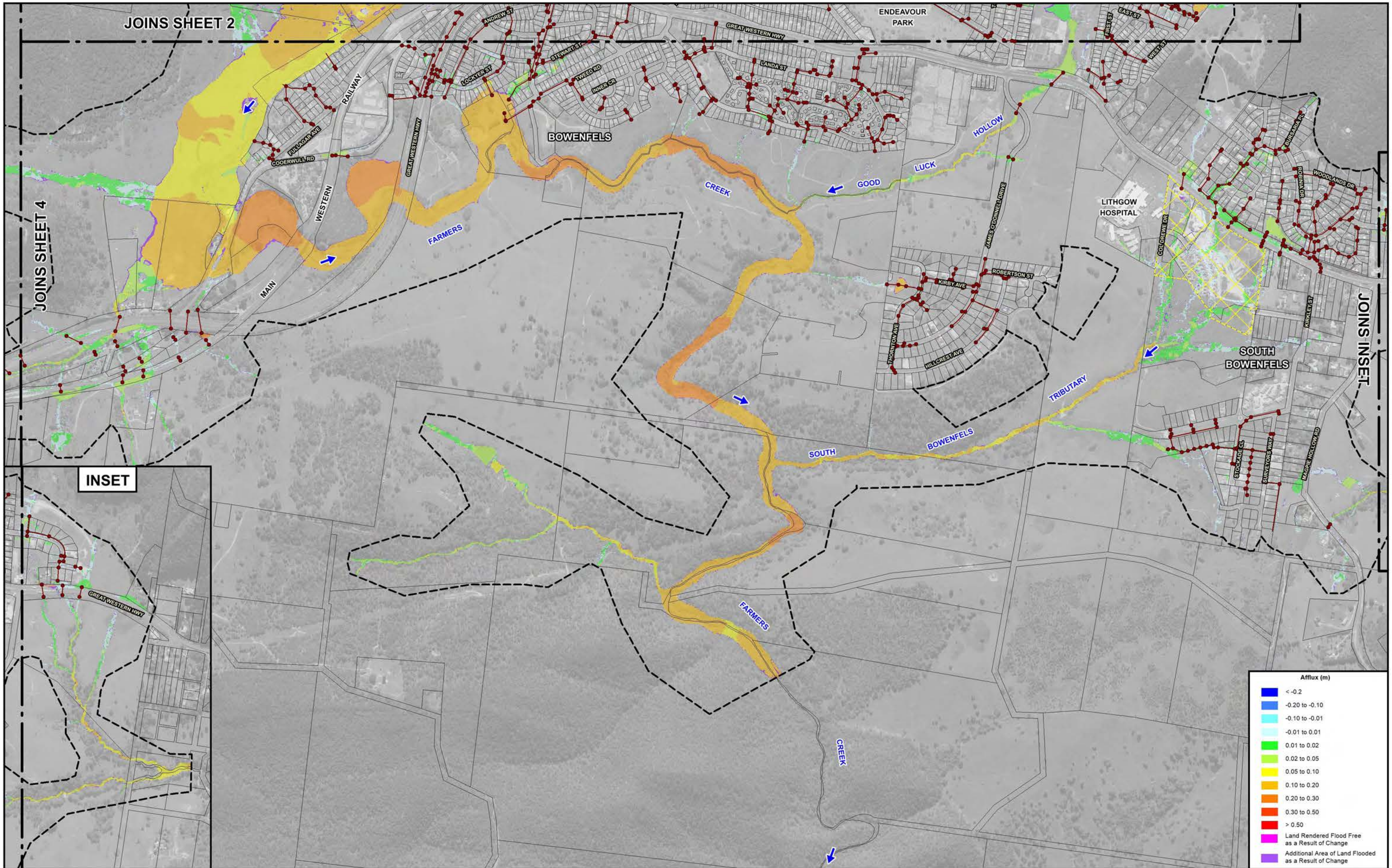
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.11
(Sheet 2 of 4)

IMPACT OF A POTENTIAL 10% INCREASE IN RAINFALL INTENSITIES ON FLOODING AND DRAINAGE PATTERNS - 1% AEP



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LEGEND

Existing Drainage Network

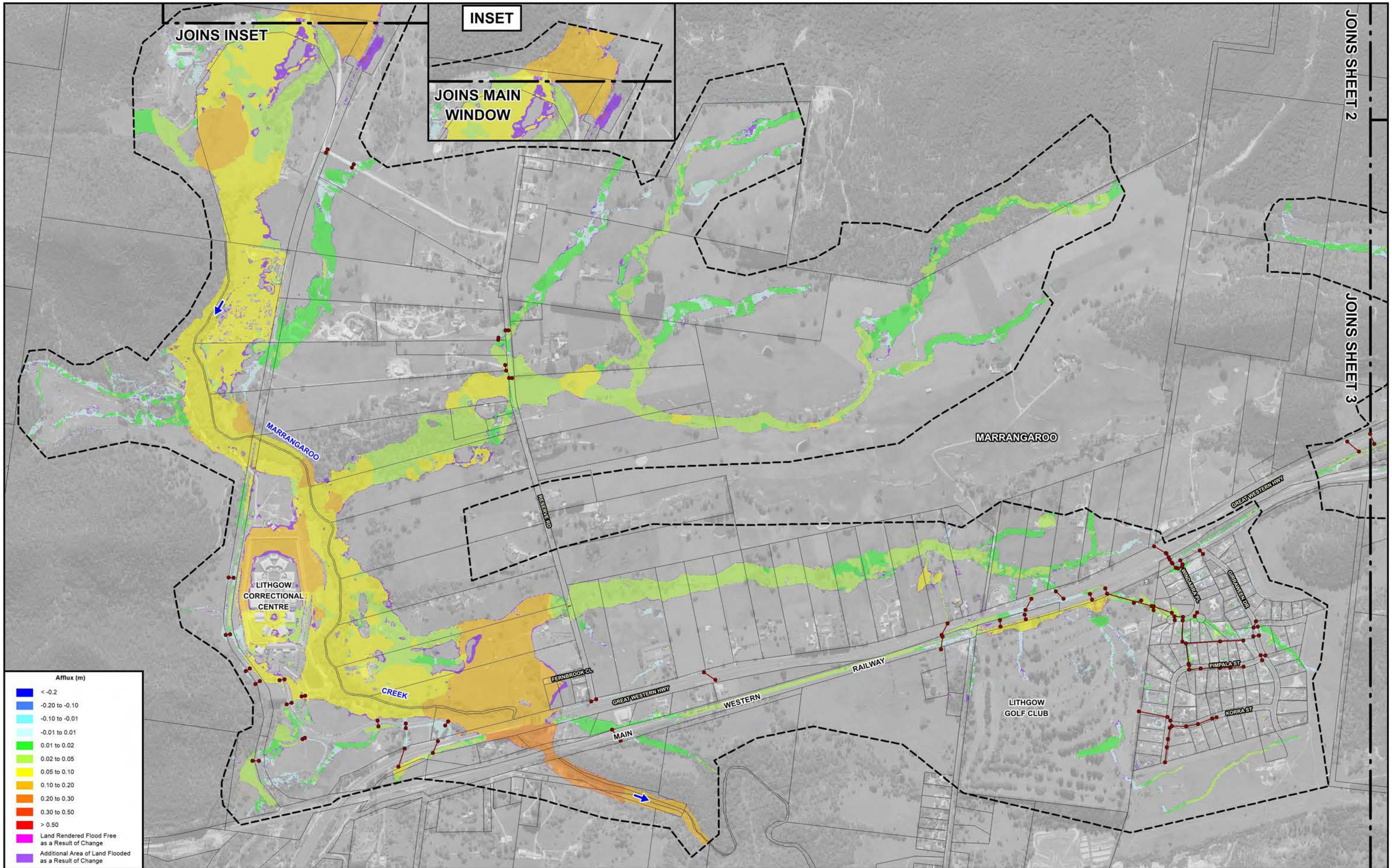
Two-Dimensional Model Boundary

Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.11
(Sheet 3 of 4)

IMPACT OF A POTENTIAL 10% INCREASE IN RAINFALL INTENSITIES ON FLOODING AND DRAINAGE PATTERNS - 1% AEP



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120 0 120 240 360 m

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Lyall & Associates

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LEGEND

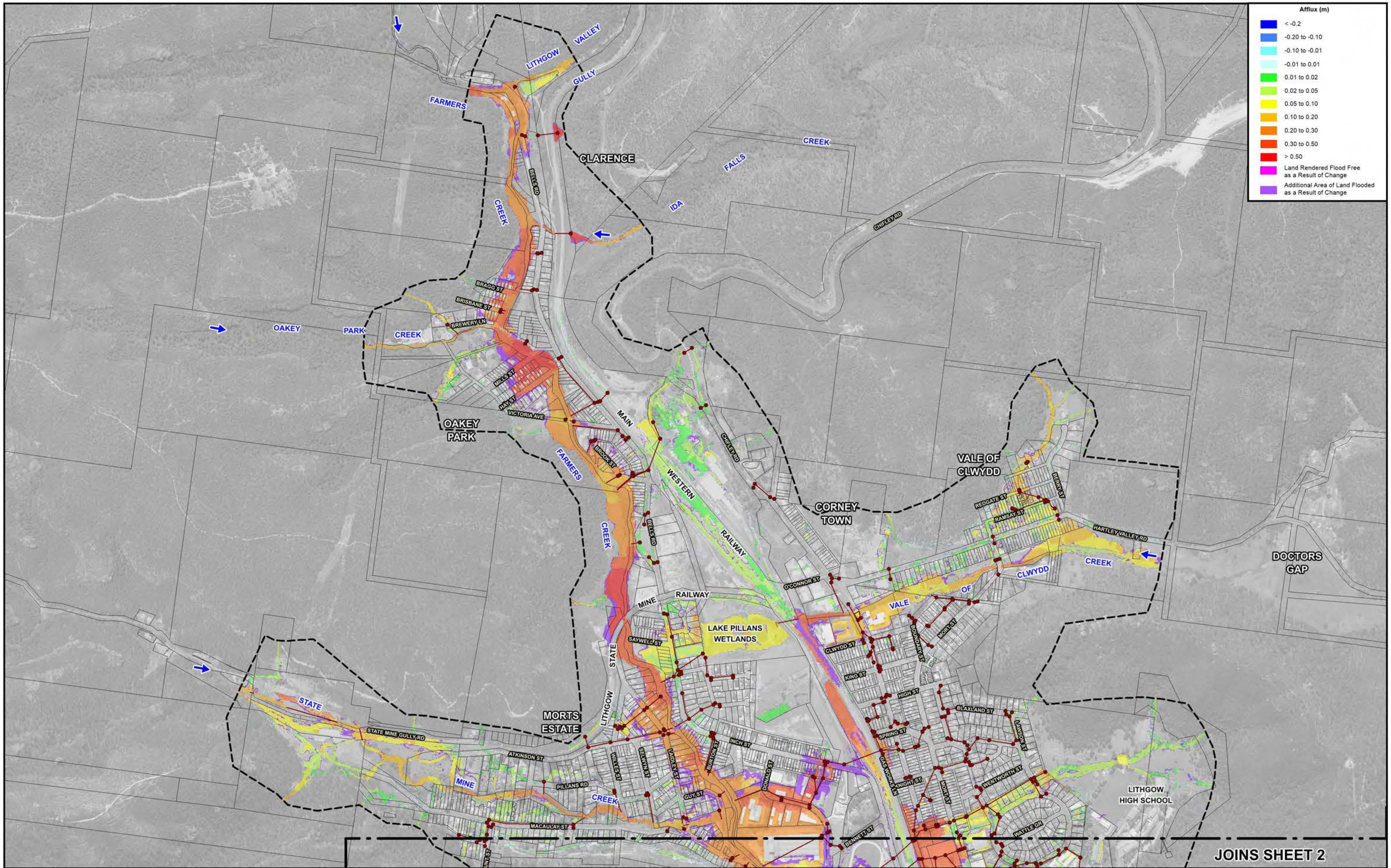
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.11
(Sheet 4 of 4)

IMPACT OF A POTENTIAL 10% INCREASE IN RAINFALL INTENSITIES ON FLOODING AND DRAINAGE PATTERNS - 1% AEP



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LEGEND

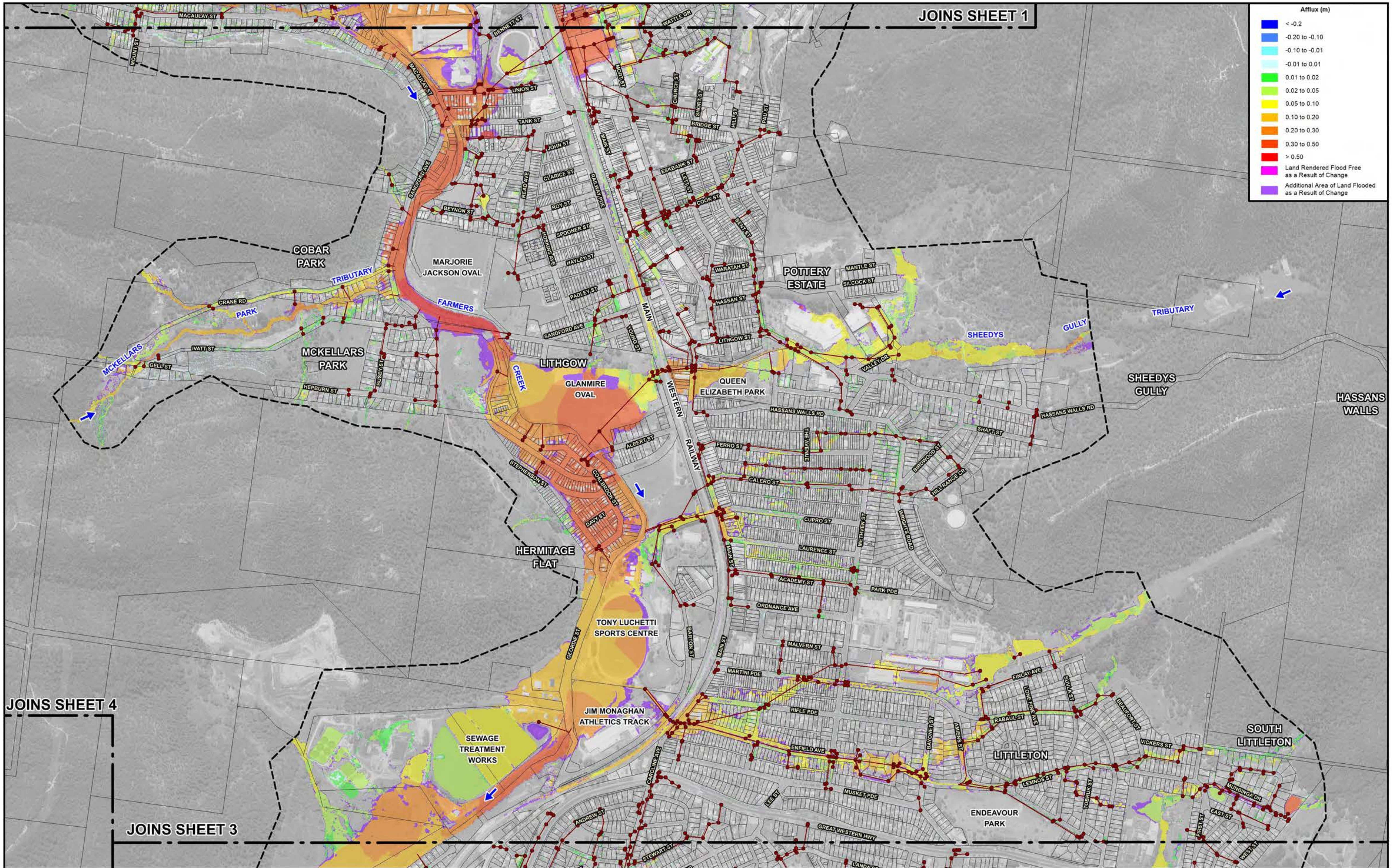
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.12
(Sheet 1 of 4)

IMPACT OF A POTENTIAL 30% INCREASE IN RAINFALL INTENSITIES ON FLOODING AND DRAINAGE PATTERNS - 1% AEP



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LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary

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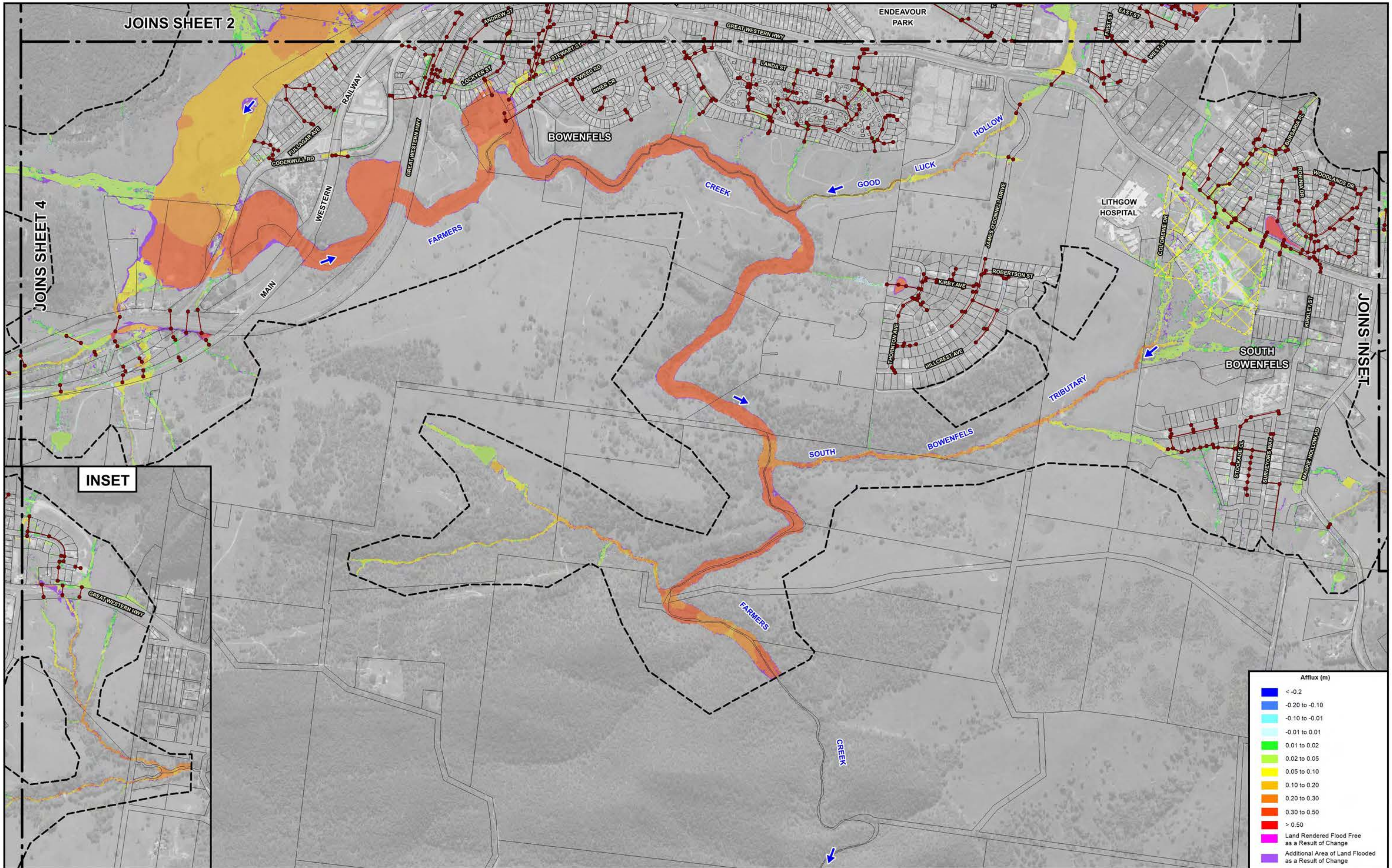
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.12
(Sheet 2 of 4)

IMPACT OF A POTENTIAL 30% INCREASE IN RAINFALL INTENSITIES ON FLOODING AND DRAINAGE PATTERNS - 1% AEP



N

120 0 120 240 360 m

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LEGEND

Existing Drainage Network

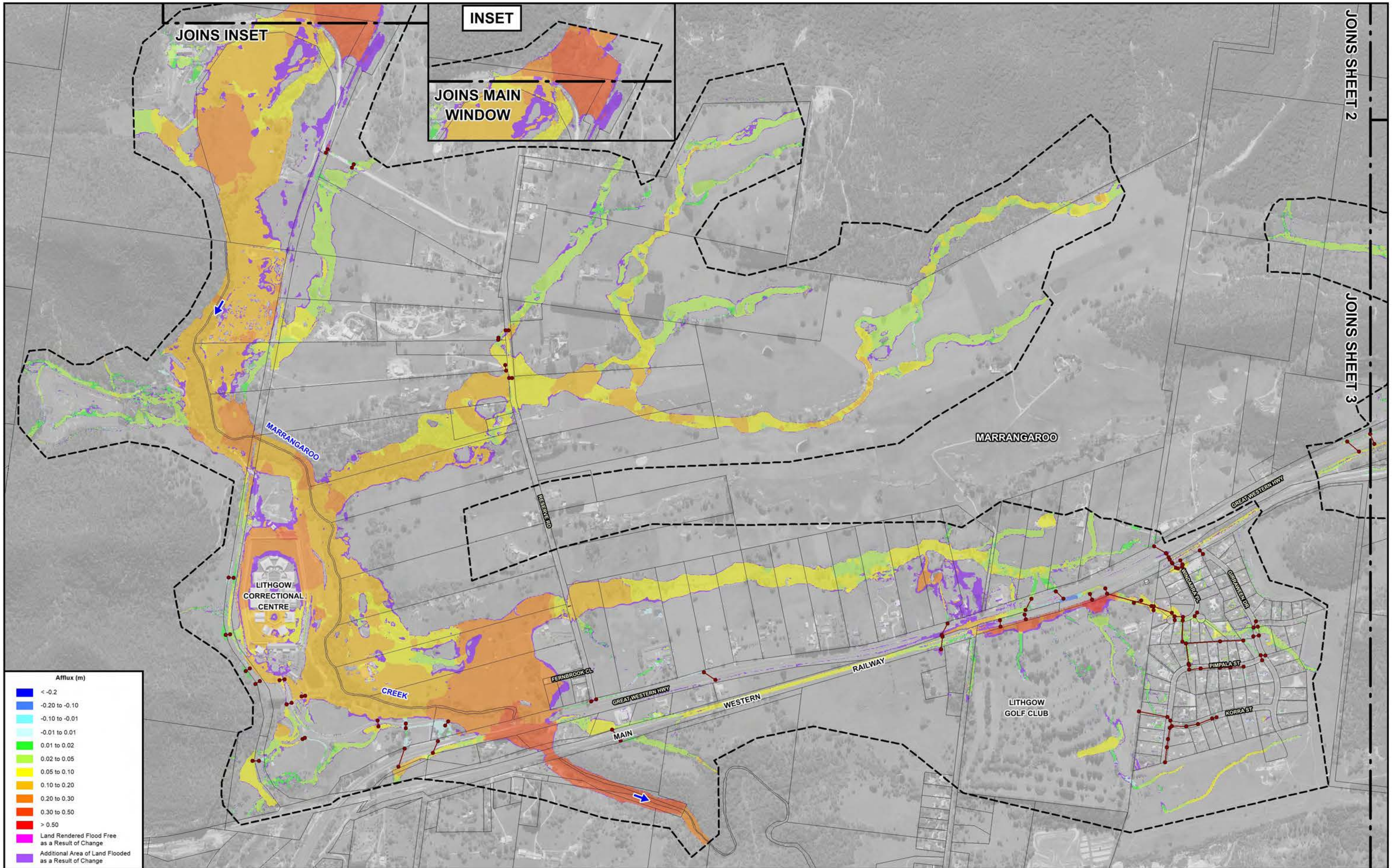
Two-Dimensional Model Boundary

Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.12
(Sheet 3 of 4)

IMPACT OF A POTENTIAL 30% INCREASE IN RAINFALL INTENSITIES ON FLOODING AND DRAINAGE PATTERNS - 1% AEP



N

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LEGEND

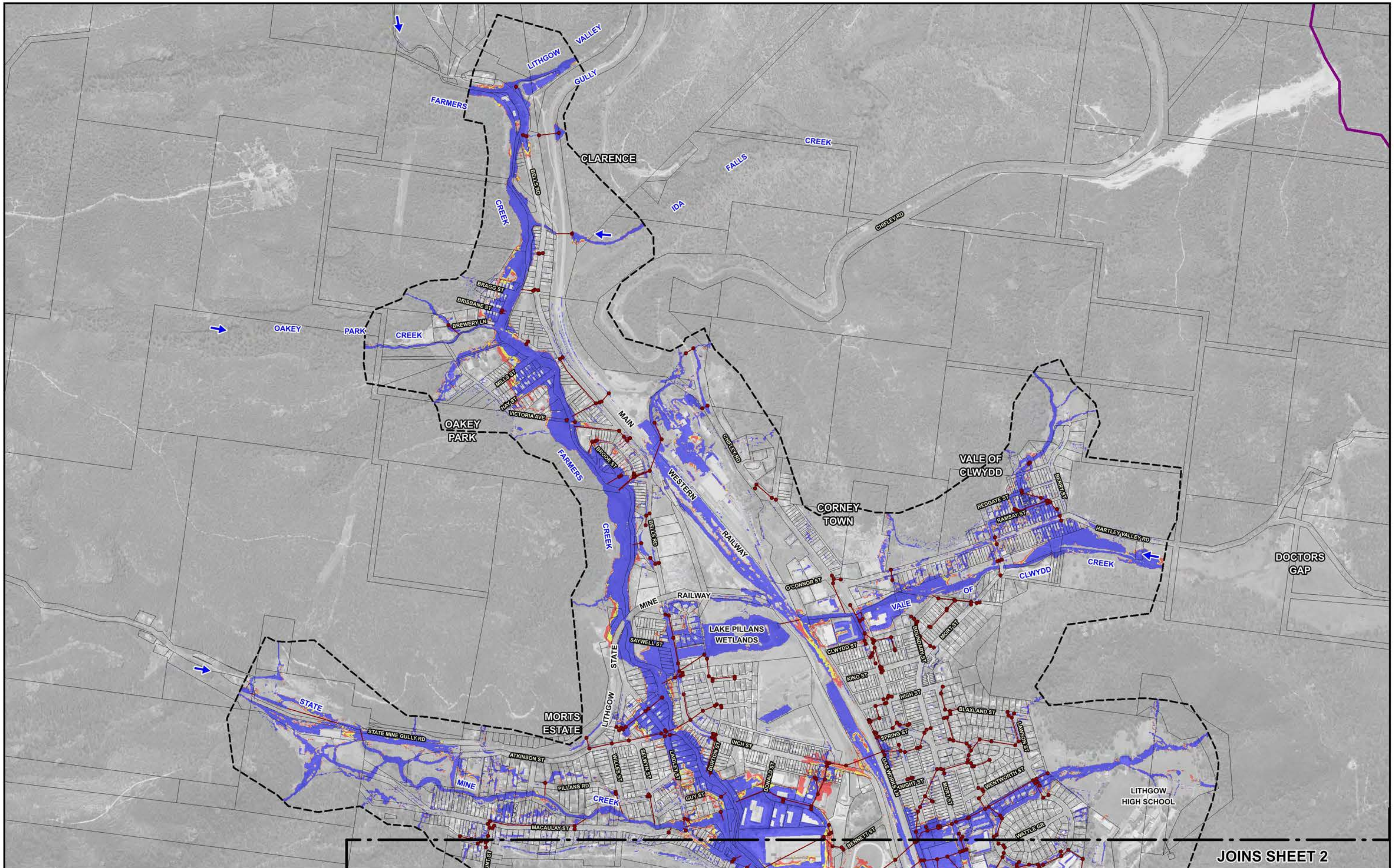
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.12
(Sheet 4 of 4)

IMPACT OF A POTENTIAL 30% INCREASE IN RAINFALL INTENSITIES ON FLOODING AND DRAINAGE PATTERNS - 1% AEP



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Lyall & Associates

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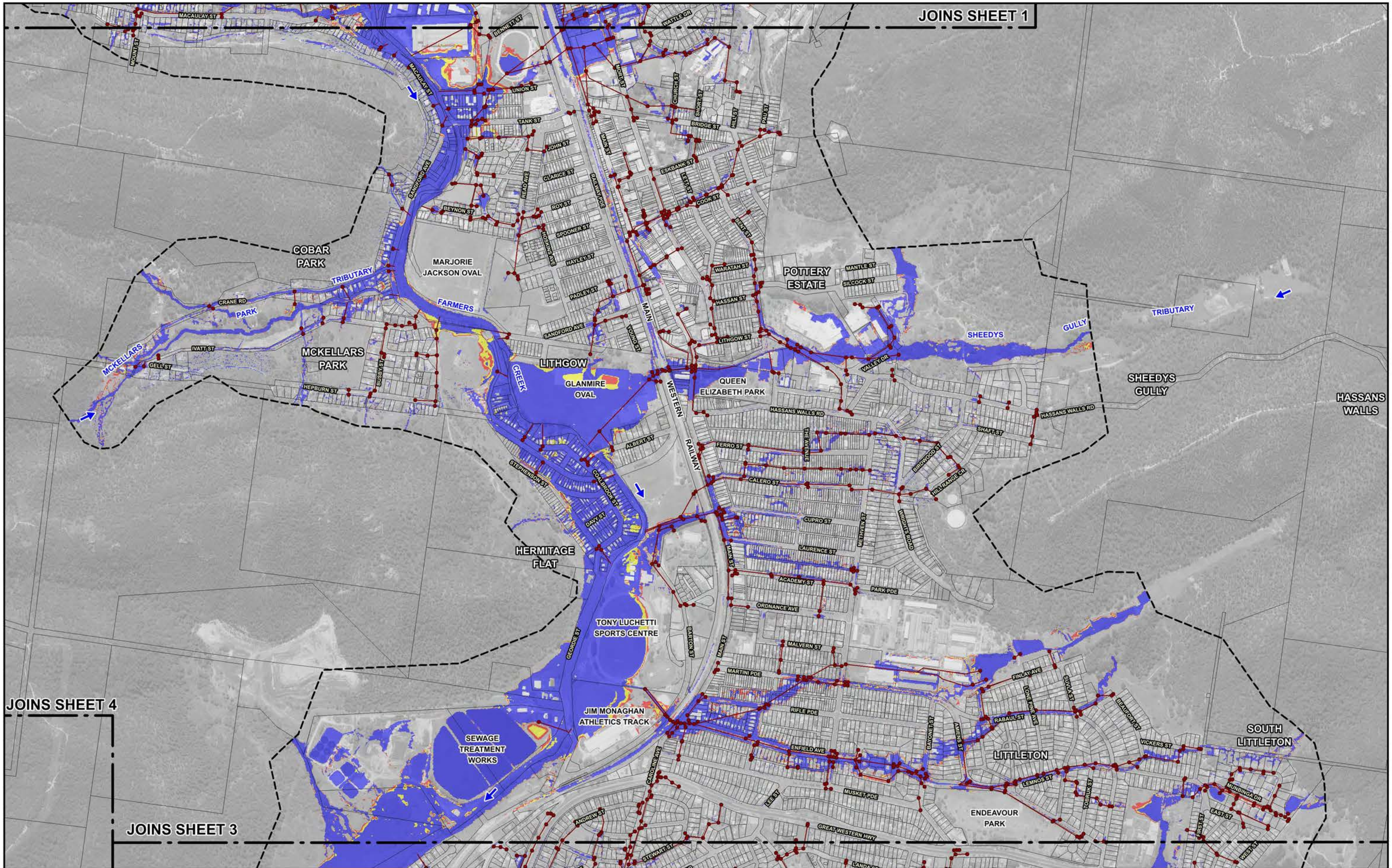
LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- 1% AEP
- 1% AEP Rainfall Increased by 10%
- 1% AEP Rainfall Increased by 30%

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.13
(Sheet 1 of 4)

IMPACT OF INCREASED RAINFALL INTENSITIES ON EXTENT OF FLOODING
1% AEP



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LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- 1% AEP
- 1% AEP Rainfall Increased by 10%
- 1% AEP Rainfall Increased by 30%

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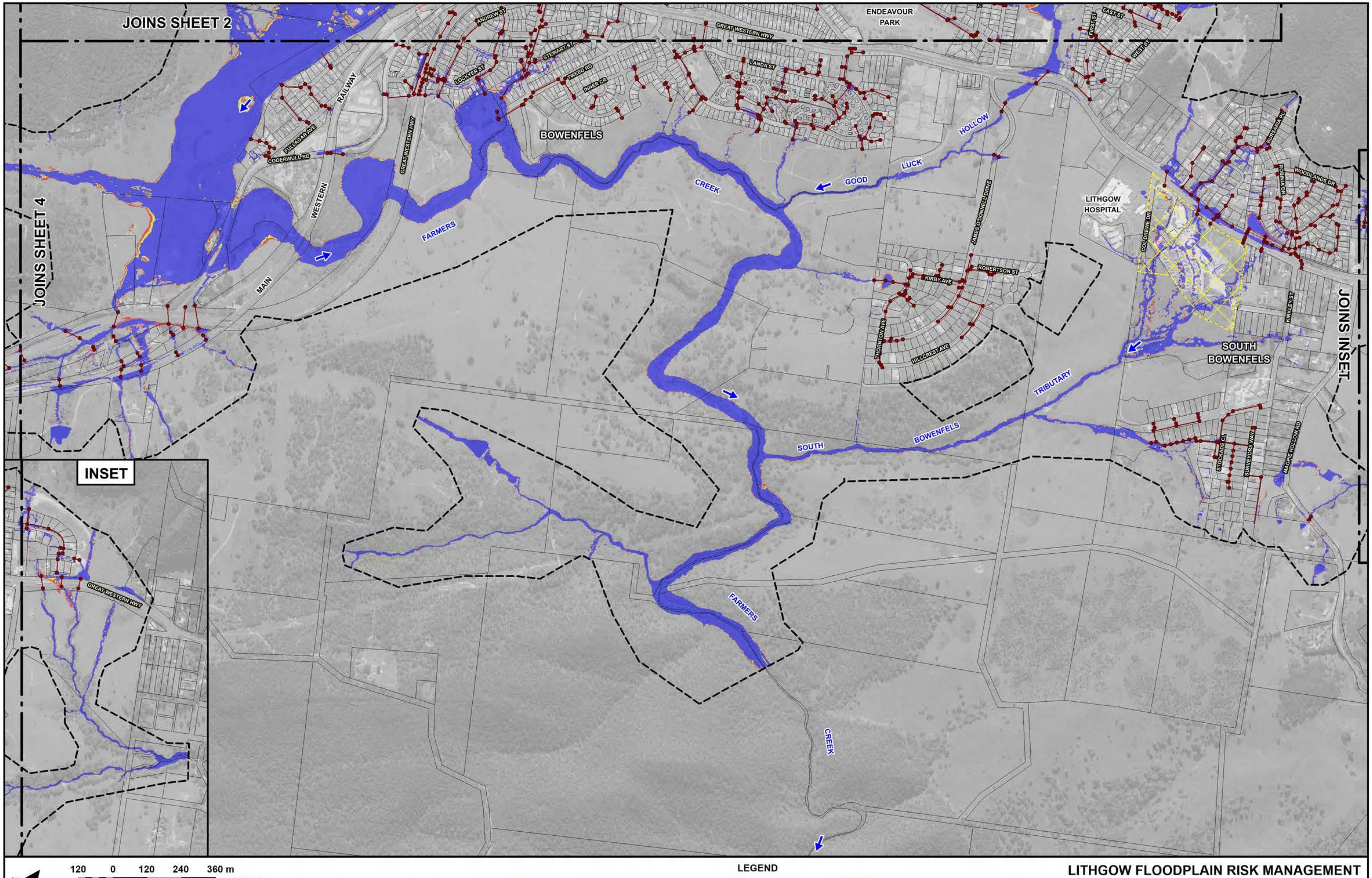
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.13
(Sheet 2 of 4)

IMPACT OF INCREASED RAINFALL INTENSITIES ON EXTENT OF FLOODING
1% AEP



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LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.
- 1% AEP
- 1% AEP Rainfall Increased by 10%
- 1% AEP Rainfall Increased by 30%

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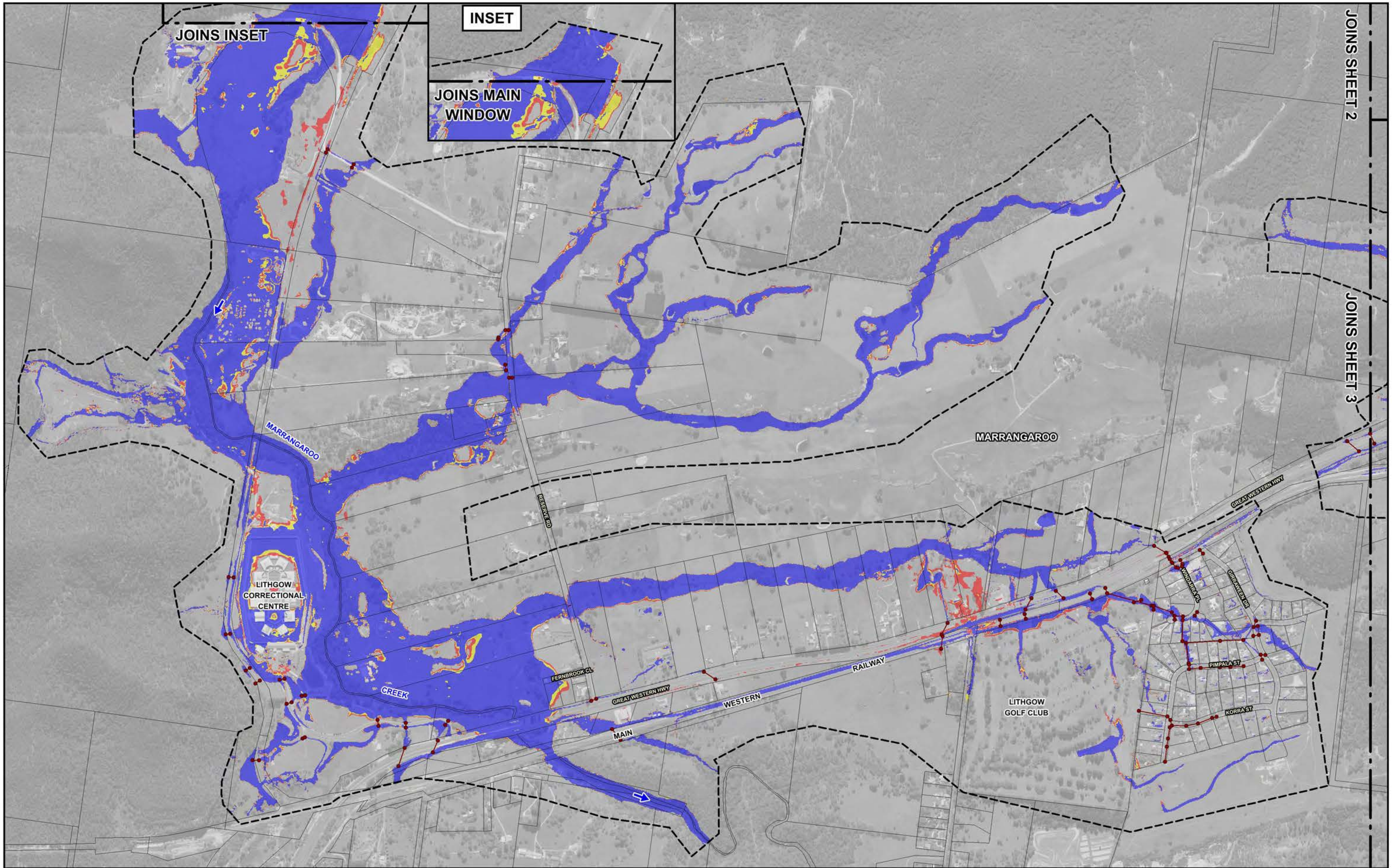
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.13
(Sheet 3 of 4)

IMPACT OF INCREASED RAINFALL INTENSITIES ON EXTENT OF FLOODING
1% AEP



120 0 120 240 360 m

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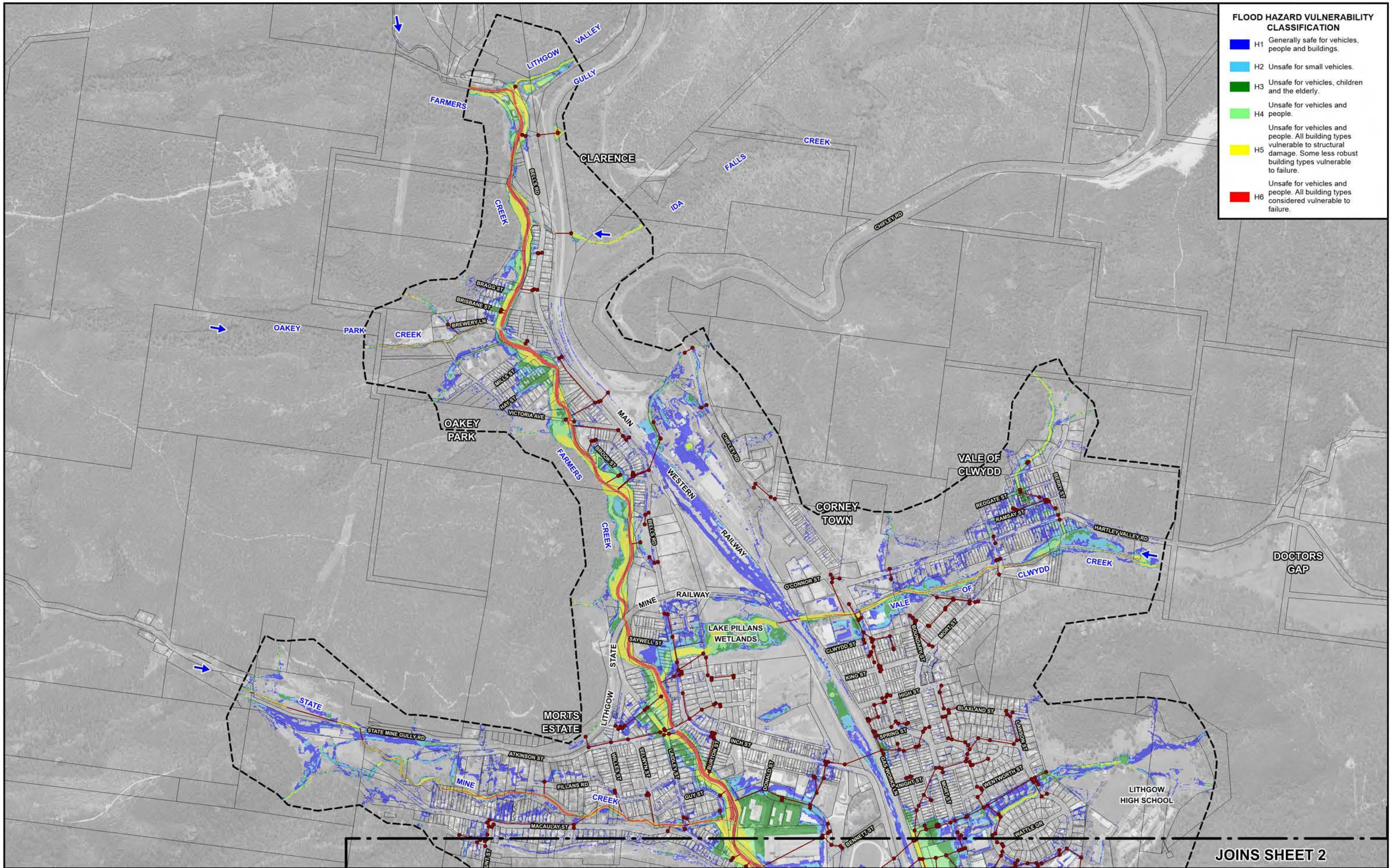
LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- 1% AEP
- 1% AEP Rainfall Increased by 10%
- 1% AEP Rainfall Increased by 30%

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.13
(Sheet 4 of 4)

IMPACT OF INCREASED RAINFALL INTENSITIES ON EXTENT OF FLOODING
1% AEP



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LEGEND

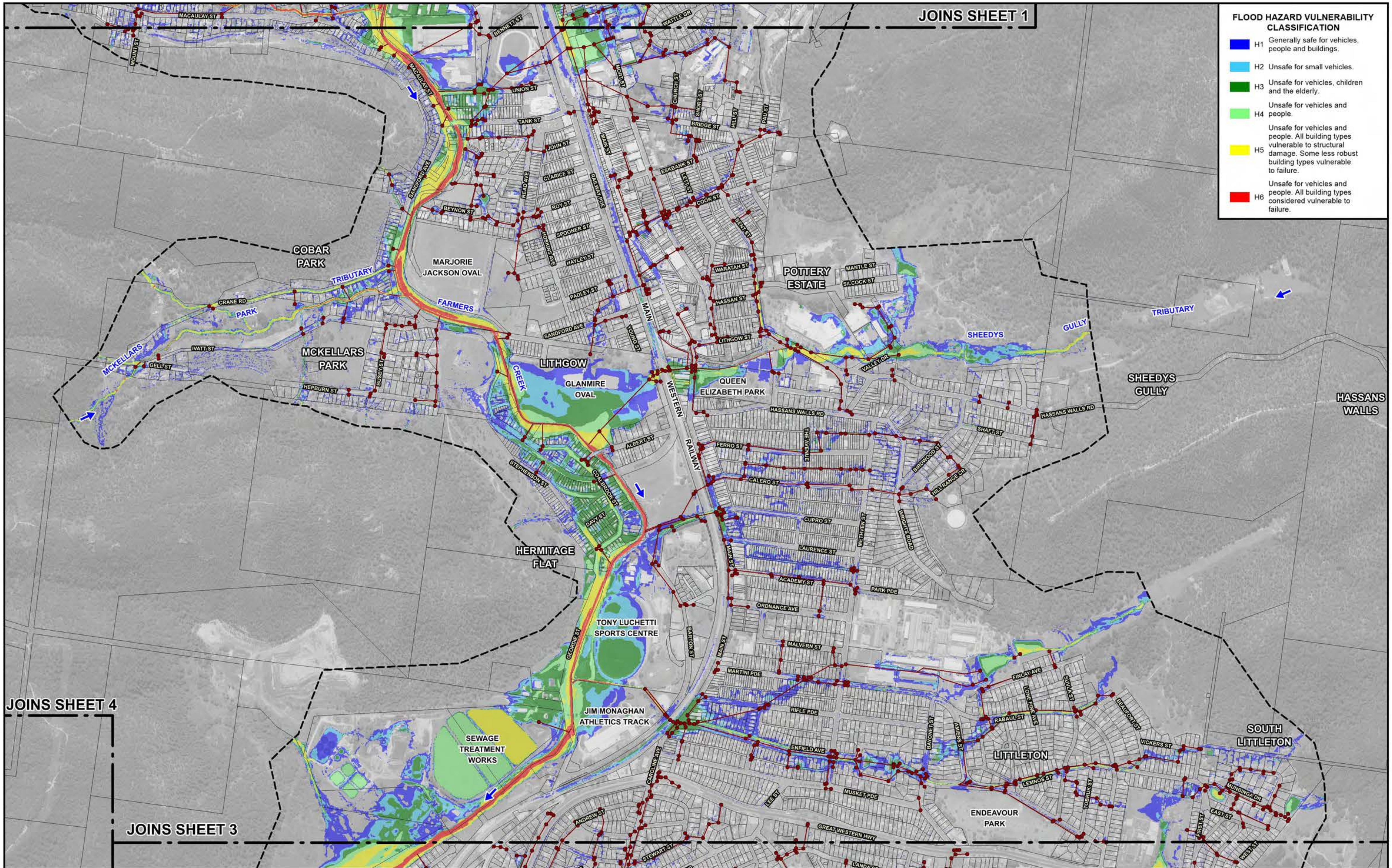
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.14
(Sheet 1 of 4)

FLOOD HAZARD VULNERABILITY CLASSIFICATION
1% AEP



N

120 0 120 240 360 m

Scale: 1:12,000

Lyall & Associates

NOTE:
The ground surface model incorporated in TUFLOW is based on LiDAR survey which has been sampled on a 3 m 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.

LEGEND

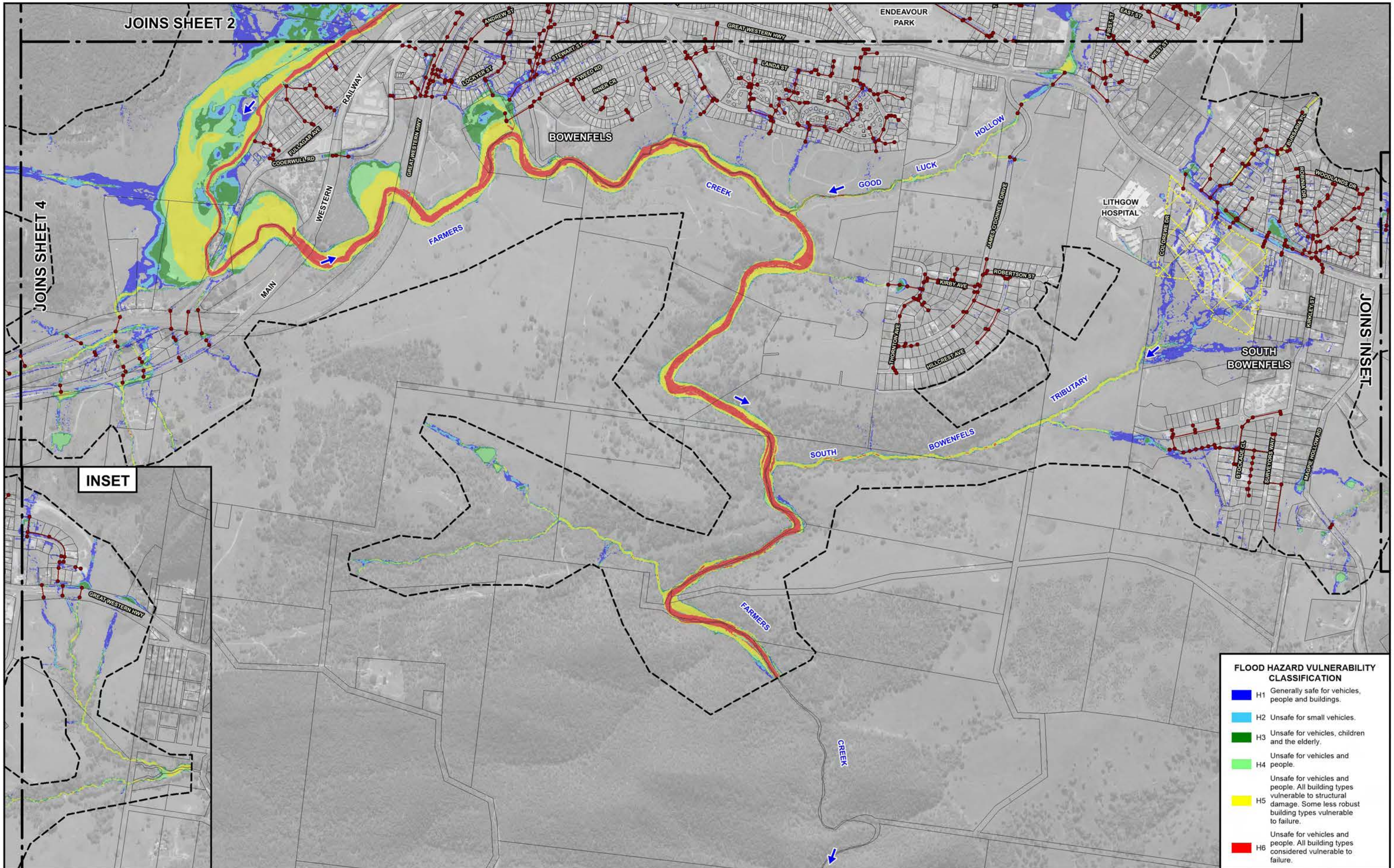
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.14
(Sheet 2 of 4)

FLOOD HAZARD VULNERABILITY CLASSIFICATION
1% AEP



120 0 120 240 360 m

Scale: 1:12,000

NOTE:

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LEGEND

Existing Drainage Network

Two-Dimensional Model Boundary

Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.

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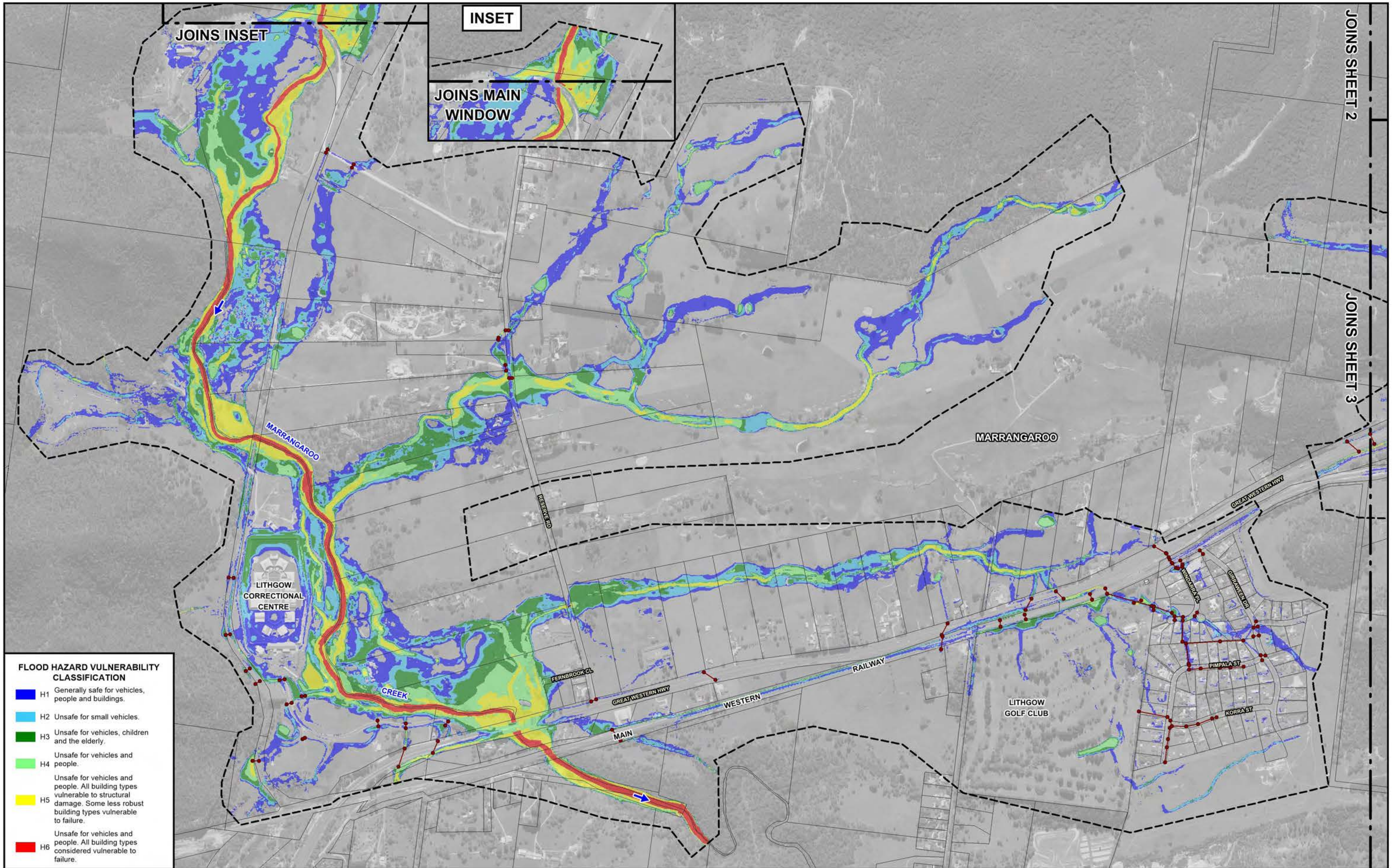
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.14
(Sheet 3 of 4)

FLOOD HAZARD VULNERABILITY CLASSIFICATION
1% AEP



N

120 0 120 240 360 m

Scale: 1:12,000

NOTE:
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LEGEND

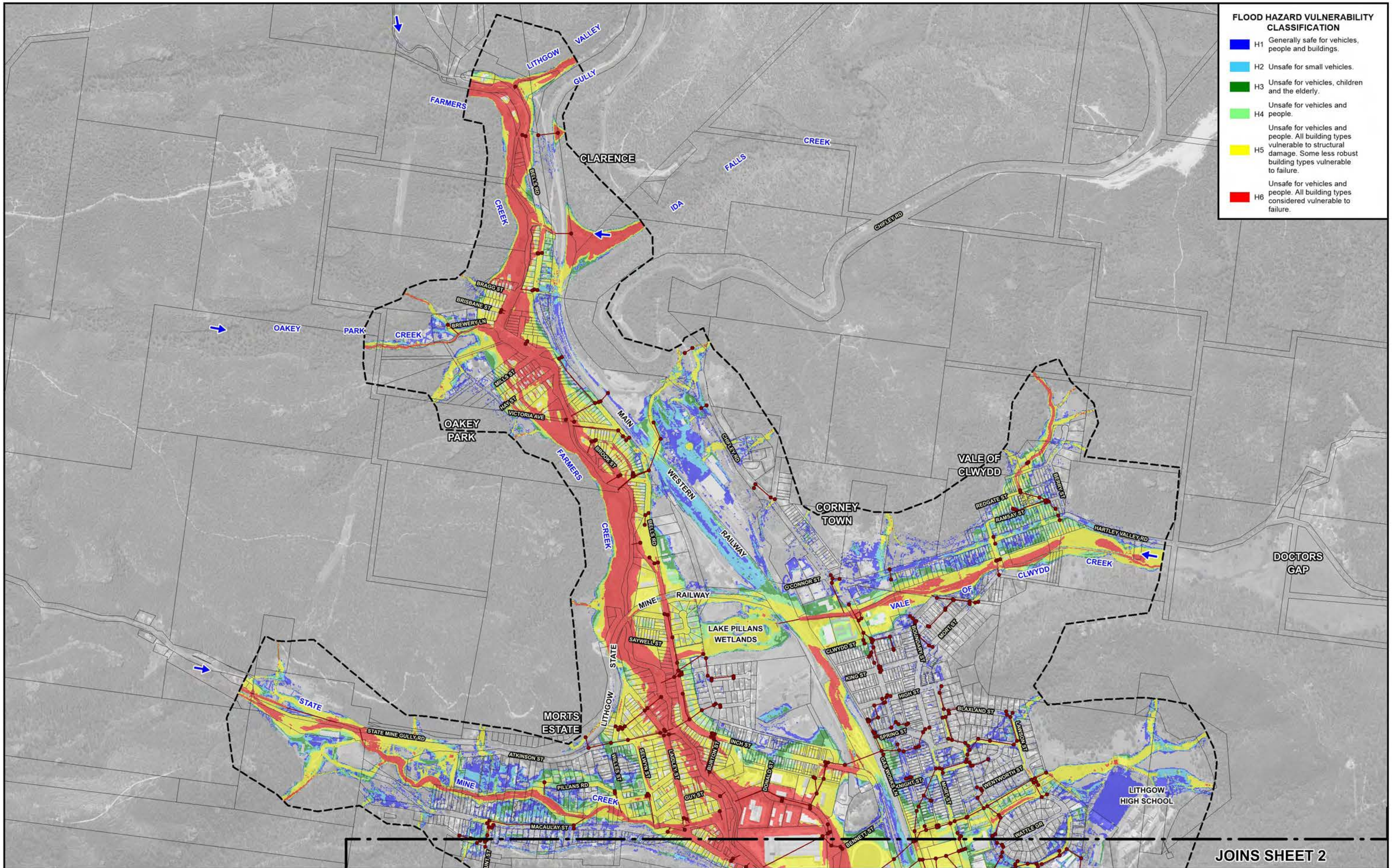
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.14
(Sheet 4 of 4)

FLOOD HAZARD VULNERABILITY CLASSIFICATION
1% AEP



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.

N

120 0 120 240 360 m

Scale: 1:12,000

NOTE:
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LEGEND

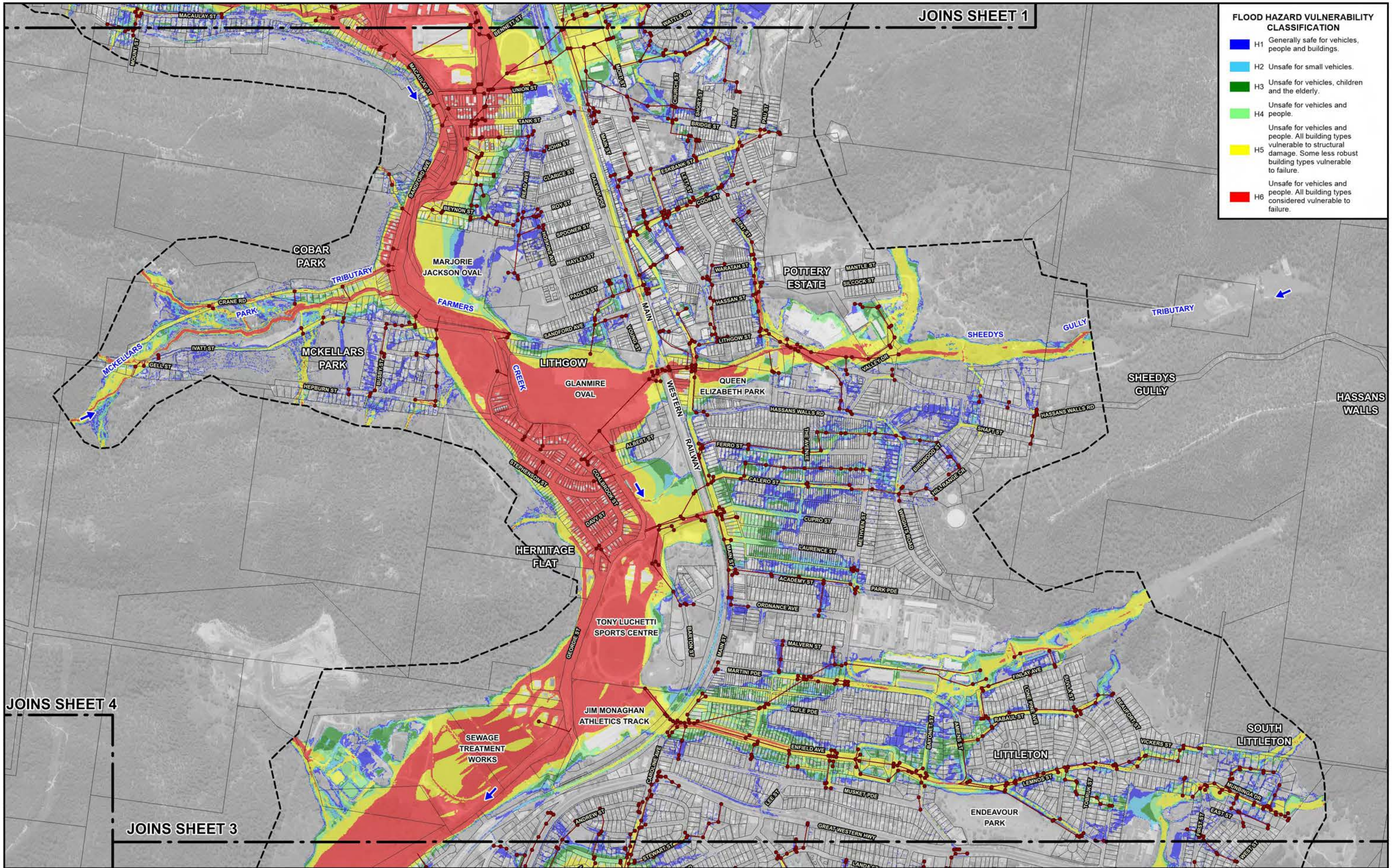
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.15
(Sheet 1 of 4)

FLOOD HAZARD VULNERABILITY CLASSIFICATION
PMF



120 0 120 240 360 m

Scale: 1:12,000

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LEGEND

Existing Drainage Network

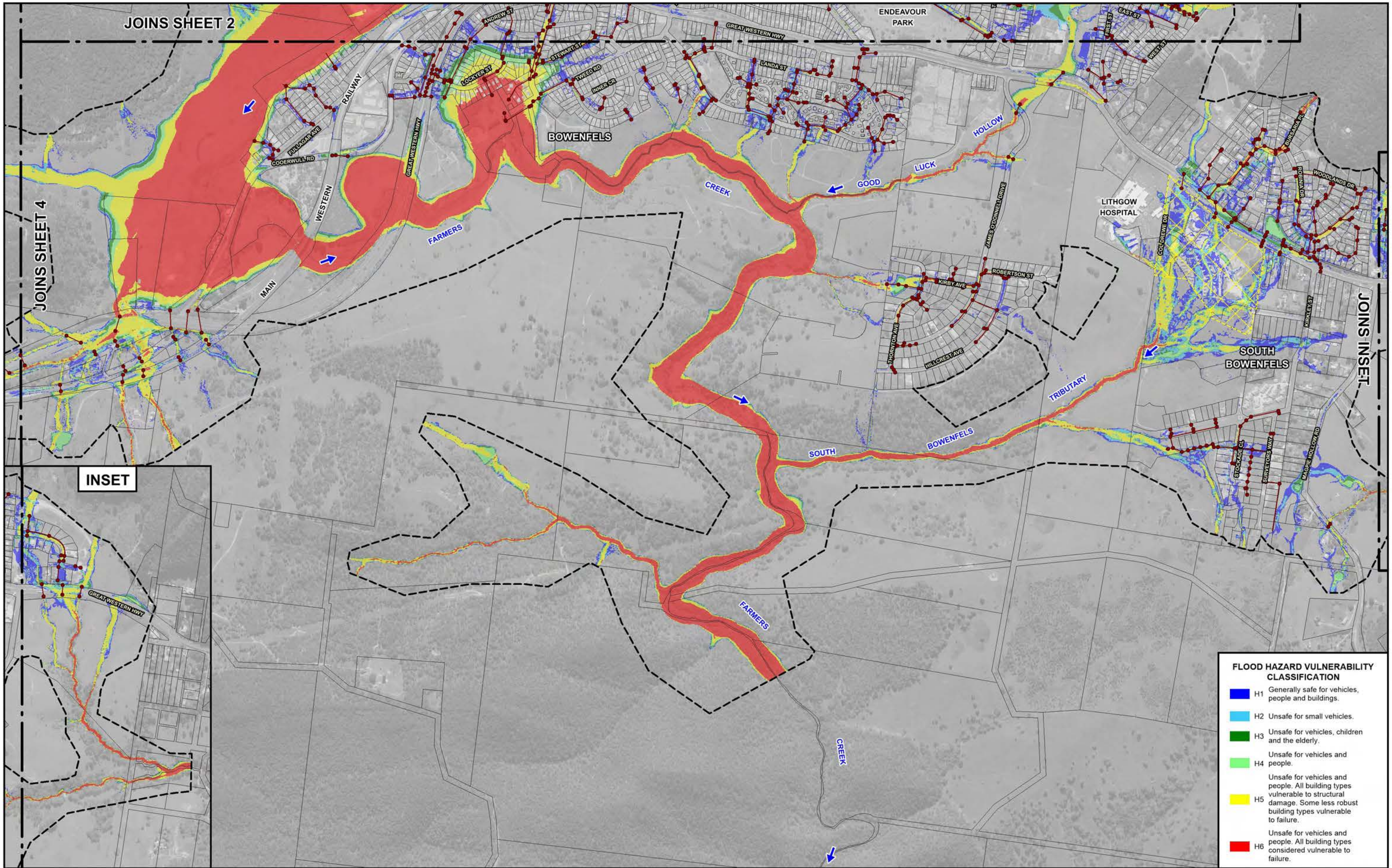
Two-Dimensional Model Boundary

Lyall & Associates

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.15
(Sheet 2 of 4)

FLOOD HAZARD VULNERABILITY CLASSIFICATION
PMF



N

120 0 120 240 360 m

Scale: 1:12,000

Lyall & Associates

NOTE:
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LEGEND

Existing Drainage Network

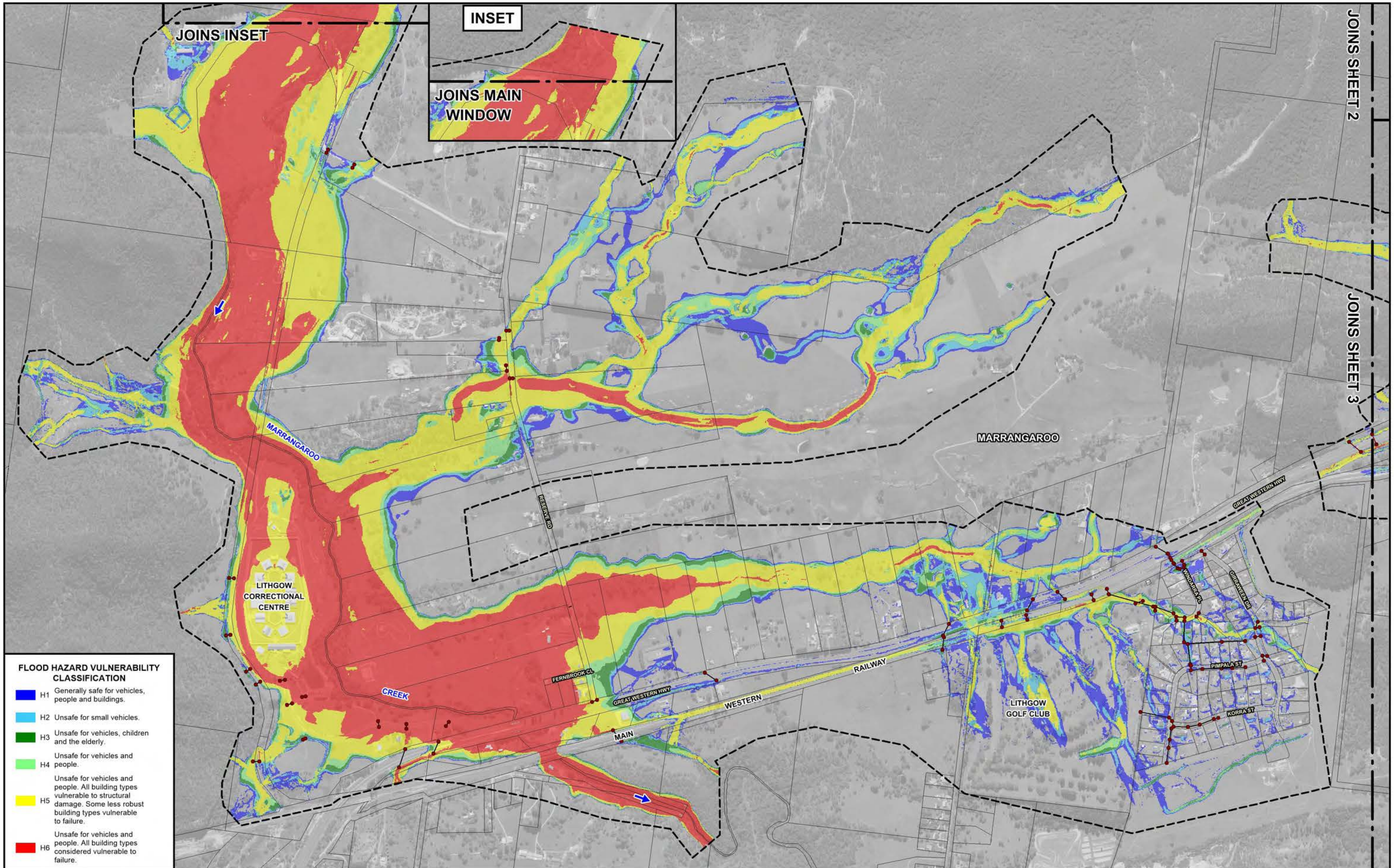
Two-Dimensional Model Boundary

Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.15
(Sheet 3 of 4)

FLOOD HAZARD VULNERABILITY CLASSIFICATION
PMF



N

120 0 120 240 360 m

Scale: 1:12,000

NOTE:
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LEGEND

Existing Drainage Network

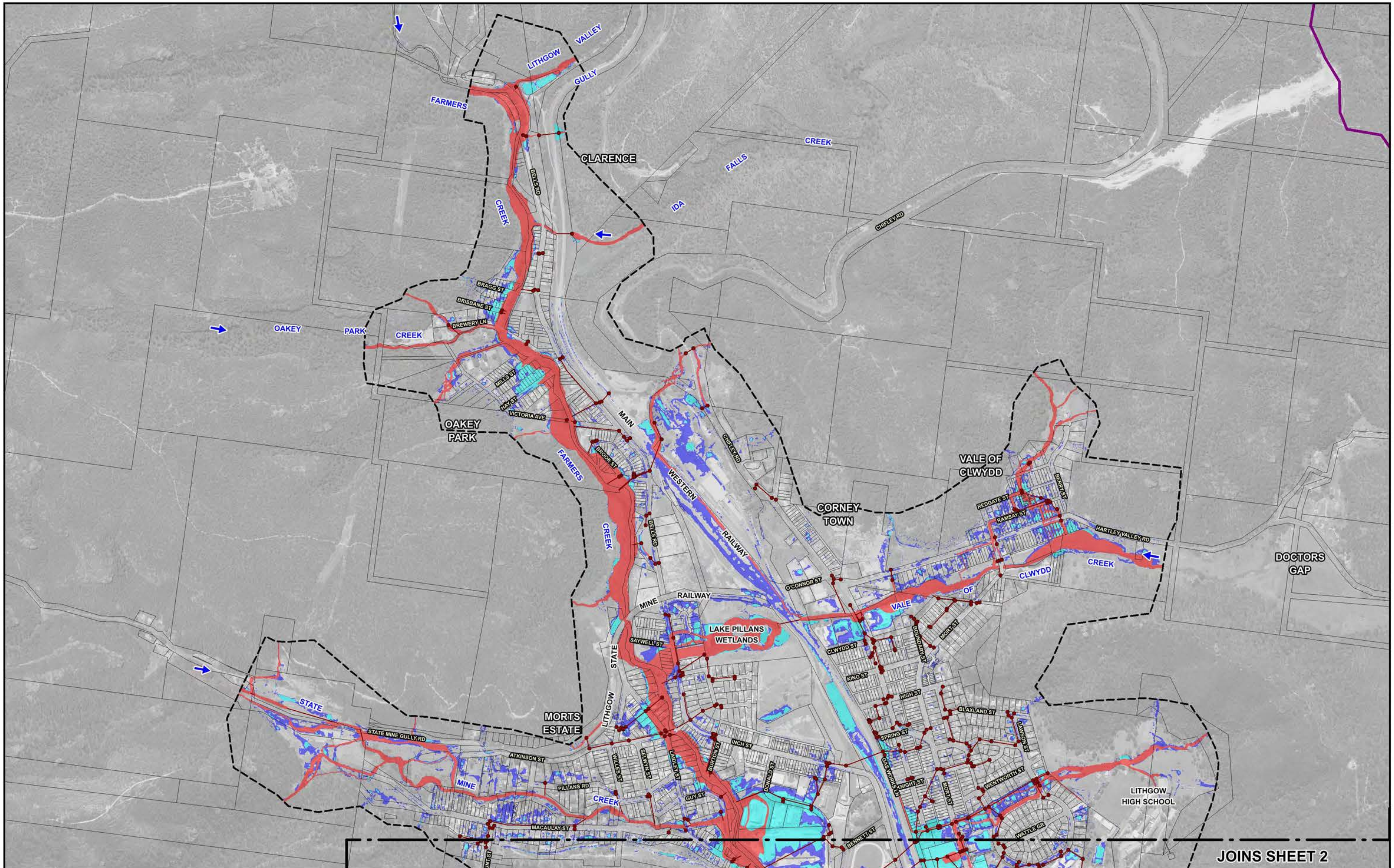
Two-Dimensional Model Boundary

Lyall & Associates

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.15
(Sheet 4 of 4)

FLOOD HAZARD VULNERABILITY CLASSIFICATION
PMF



120 0 120 240 360 m

Scale: 1:12,000

NOTE:

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LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Floodway
- Flood Storage
- Flood Fringe

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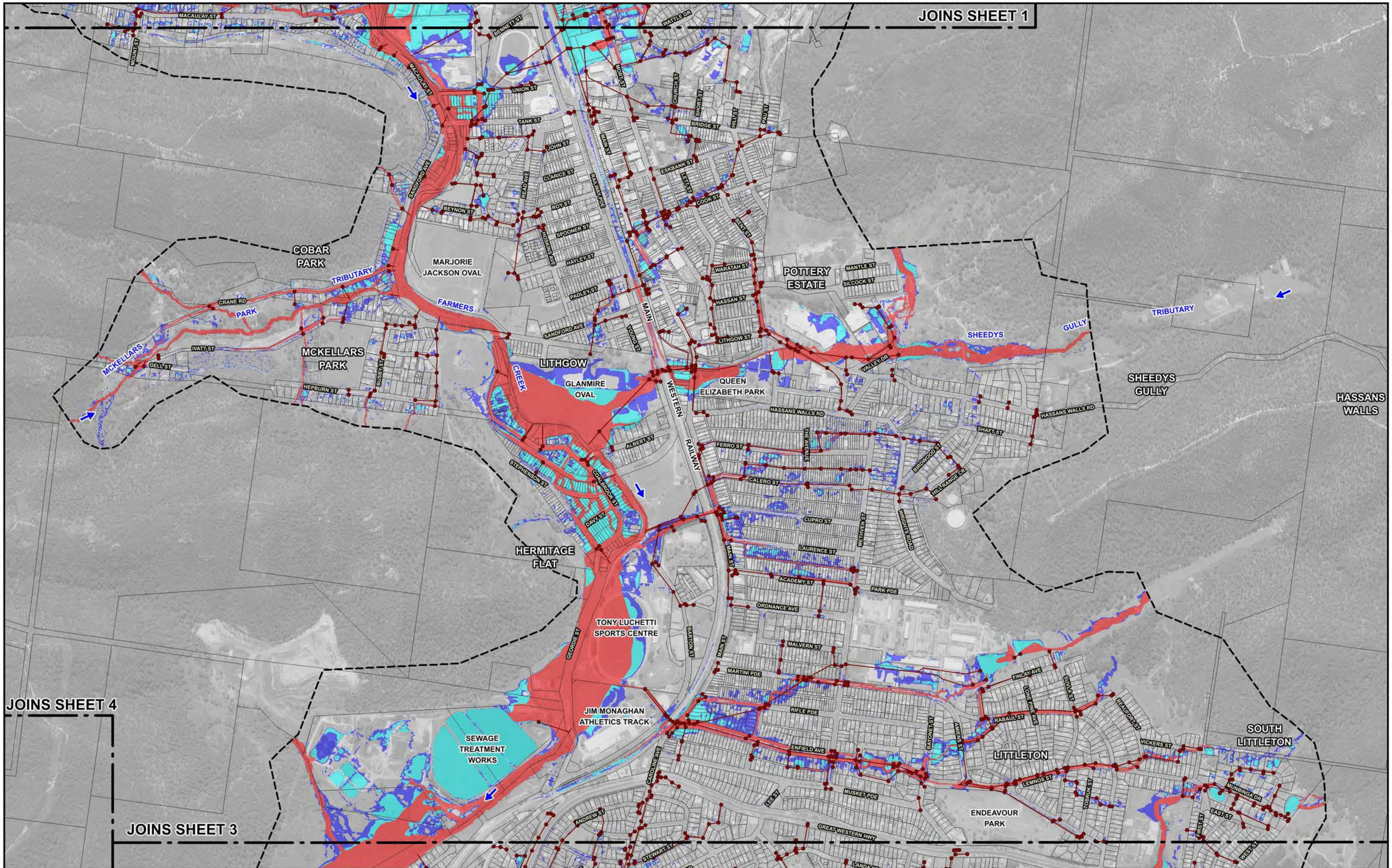
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.16
(Sheet 1 of 4)

HYDRAULIC CATEGORISATION OF FLOODPLAIN
1% AEP



120 0 120 240 360 m

Scale: 1:12,000

NOTE:
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Lyall & Associates

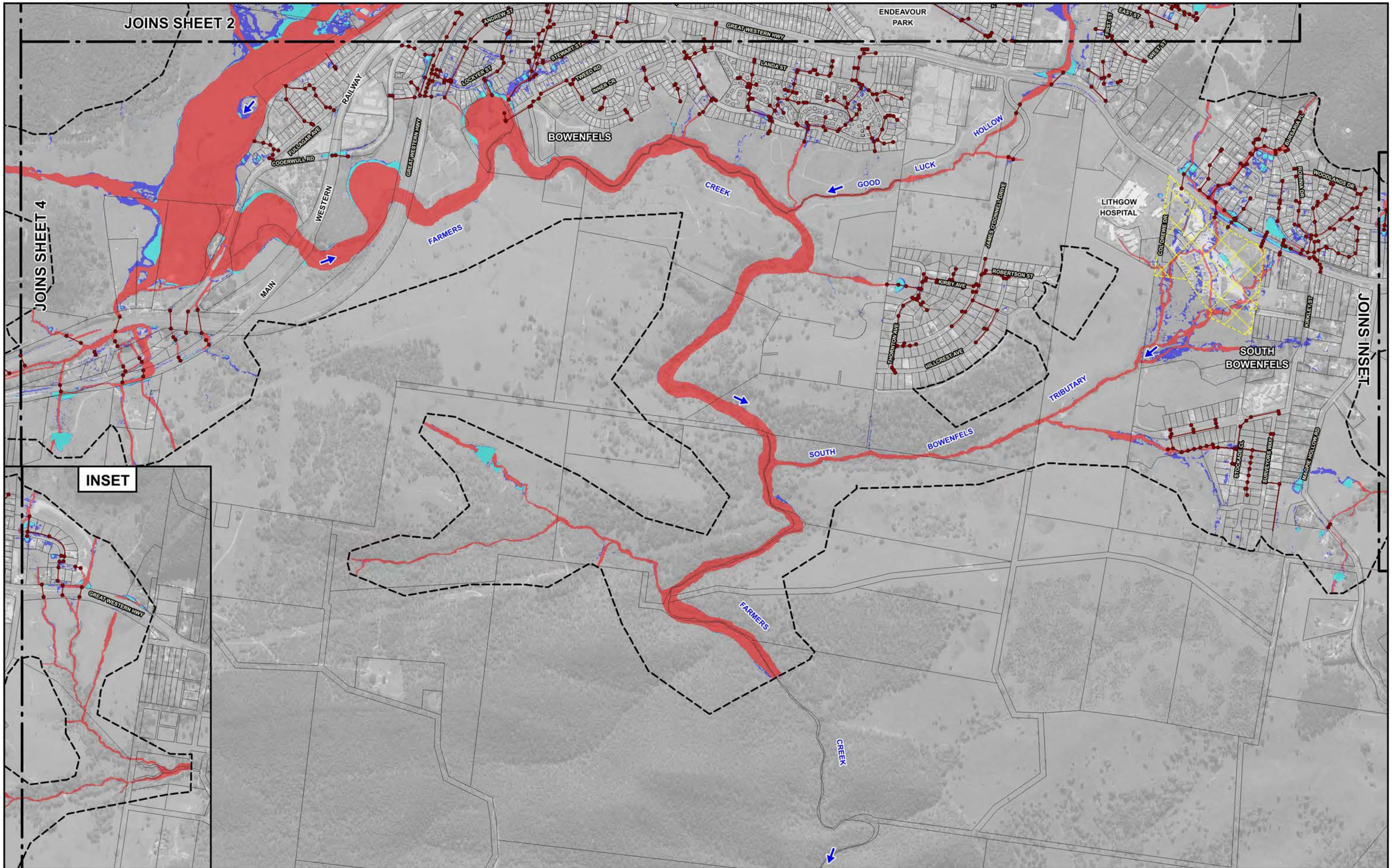
LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Floodway
- Flood Storage
- Flood Fringe

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.16
(Sheet 2 of 4)

HYDRAULIC CATEGORISATION OF FLOODPLAIN
1% AEP



N

120 0 120 240 360 m

Scale: 1:12,000

NOTE:
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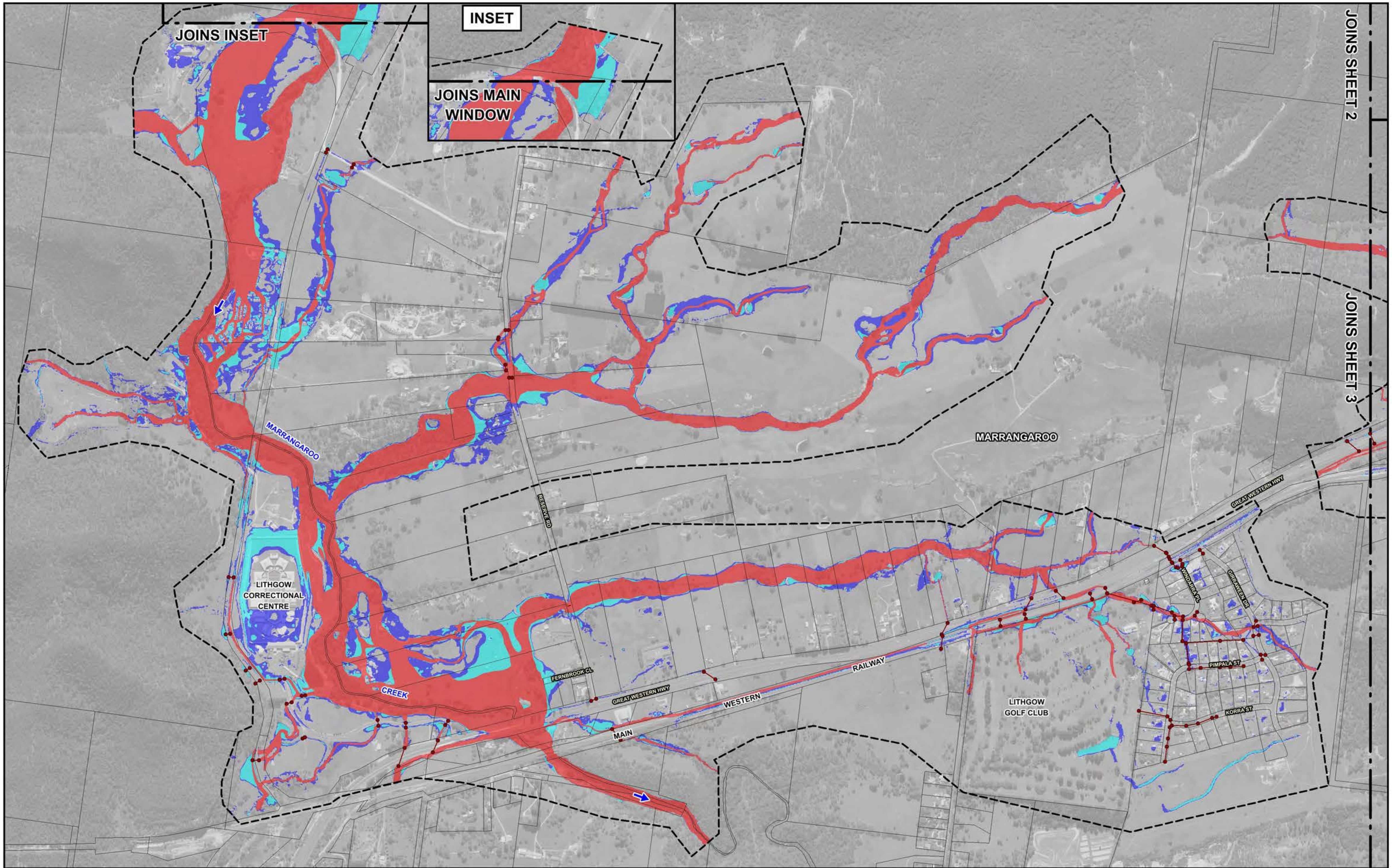
LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.
- Floodway
- Flood Storage
- Flood Fringe

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.16
(Sheet 3 of 4)

HYDRAULIC CATEGORISATION OF FLOODPLAIN
1% AEP



120 0 120 240 360 m

Scale: 1:12,000

NOTE:
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Lyall & Associates

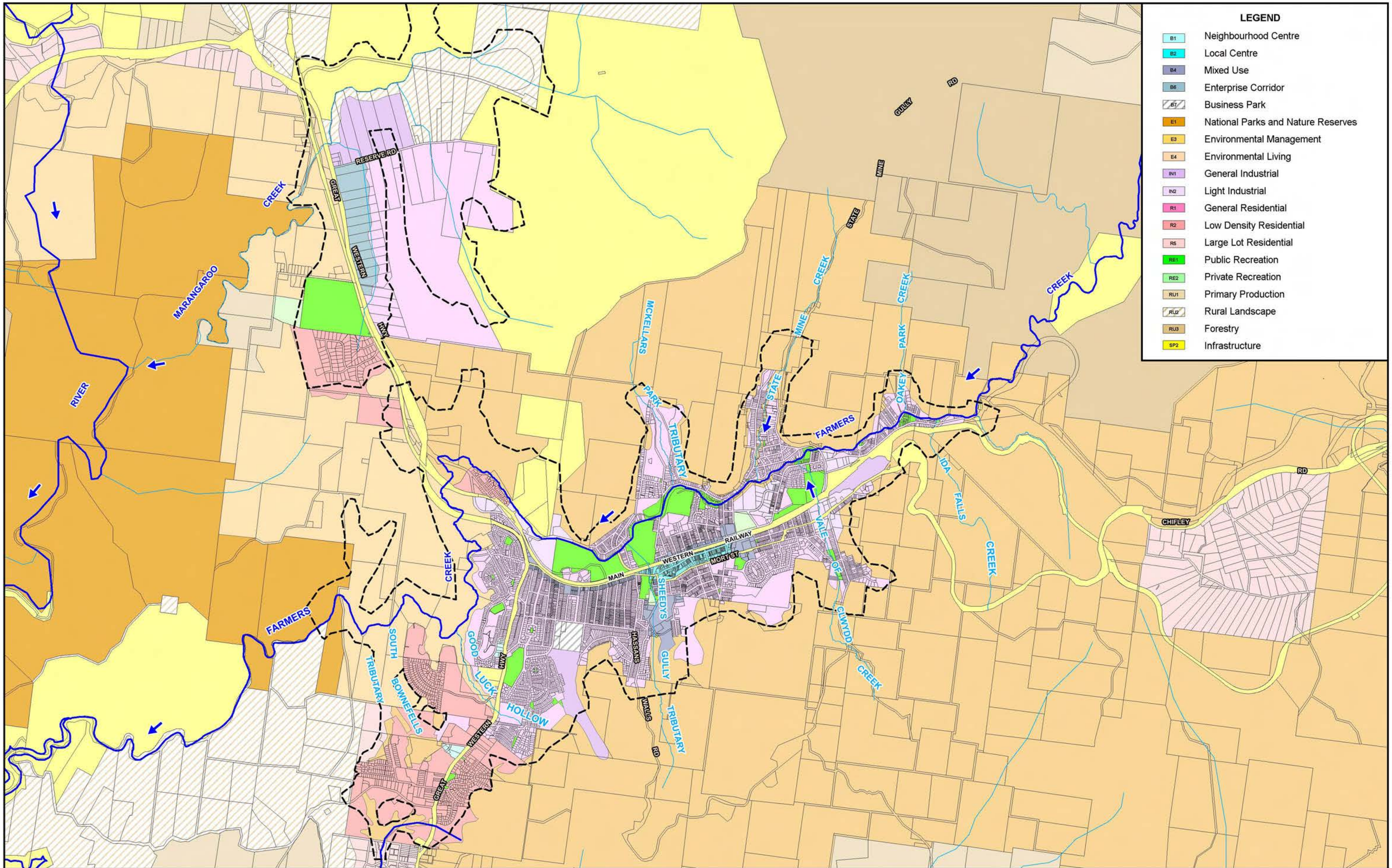
LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Floodway
- Flood Storage
- Flood Fringe

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.16
(Sheet 4 of 4)

HYDRAULIC CATEGORISATION OF FLOODPLAIN
1% AEP



N

400 0 400 800 1200 m

Scale: 1:40,000

LEGEND

Extent of Two-Dimensional Model Domain

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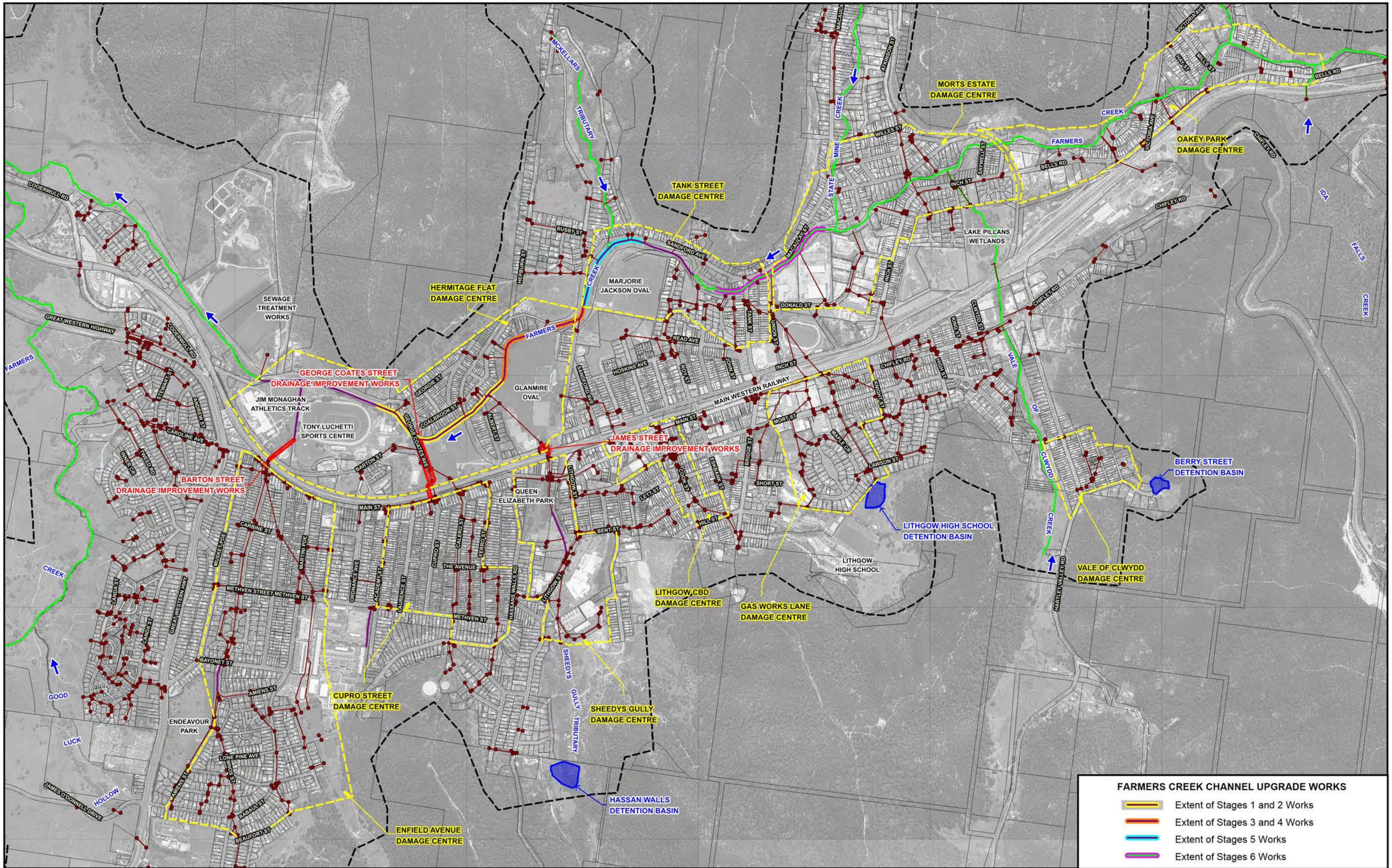
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 2.17

LITHGOW LEP 2014 ZONING



LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Existing Concrete Lined Channel
- Exisiting Unlined Channel
- Damage Centre
- Extent of Assessed Detention Basin
- Extent of Assessed Drainage Improvement Works

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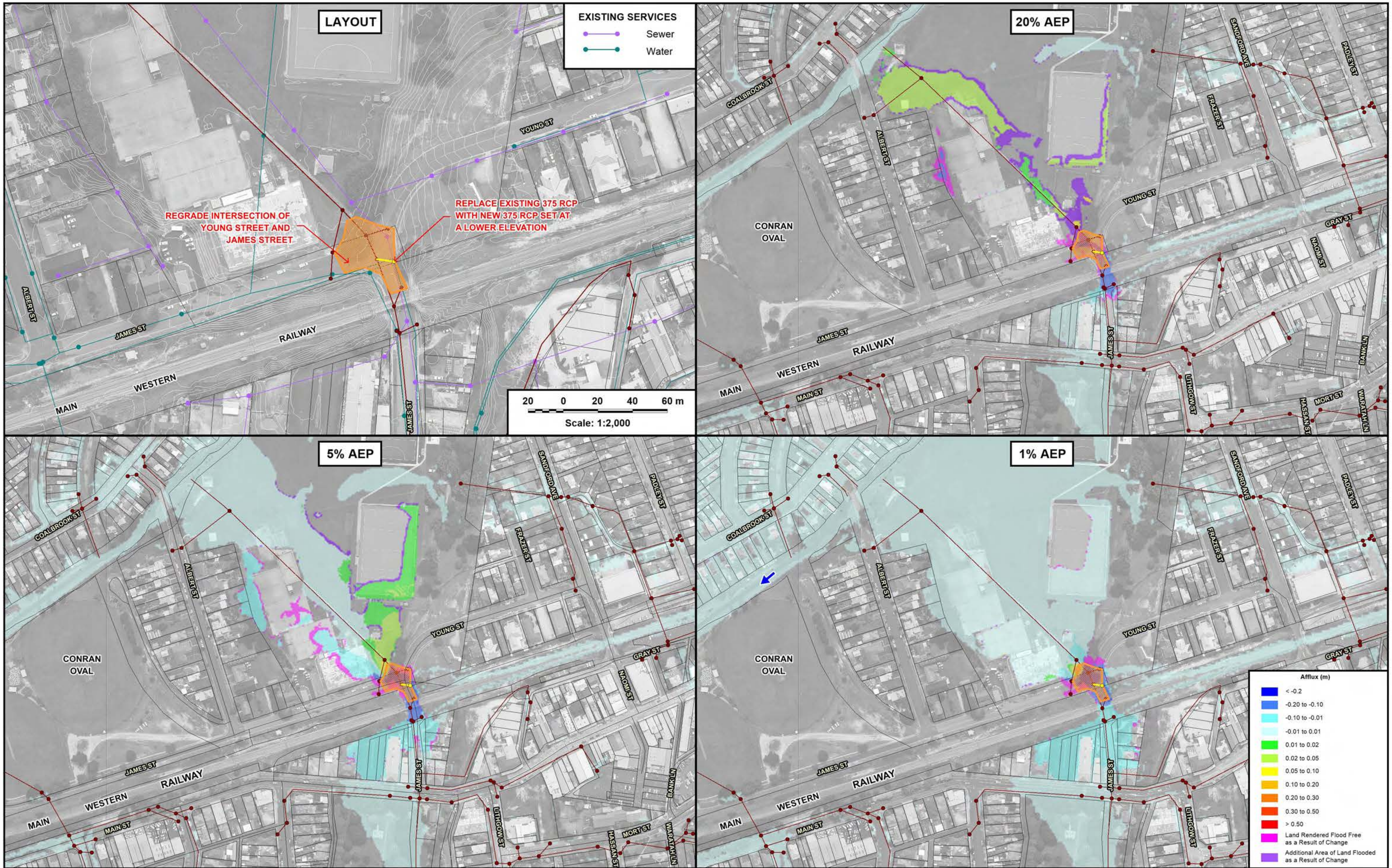
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.1

LOCATION OF ASSESSED FLOOD MODIFICATION MEASURES



N

40 0 40 80 120 m

Scale: 1:4,000

NOTE:
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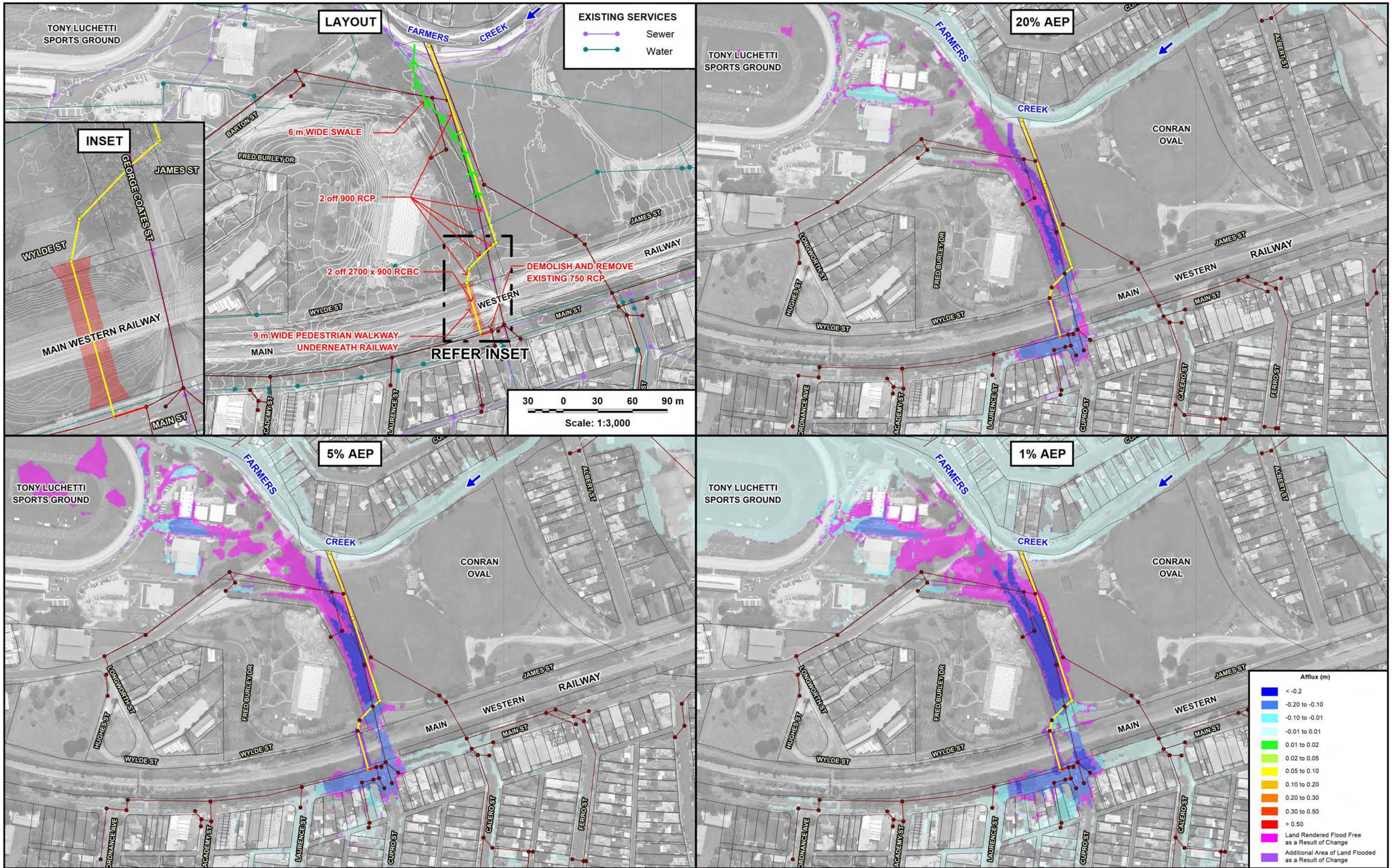
LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Existing Bridge
- Upgraded Stormwater Network Element
- Extent of Regrading Works

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.2

IMPACT OF JAMES STREET DRAINAGE IMPROVEMENT WORKS ON FLOOD BEHAVIOUR



N

40 0 40 80 120 m

Scale: 1:4,000

NOTE:
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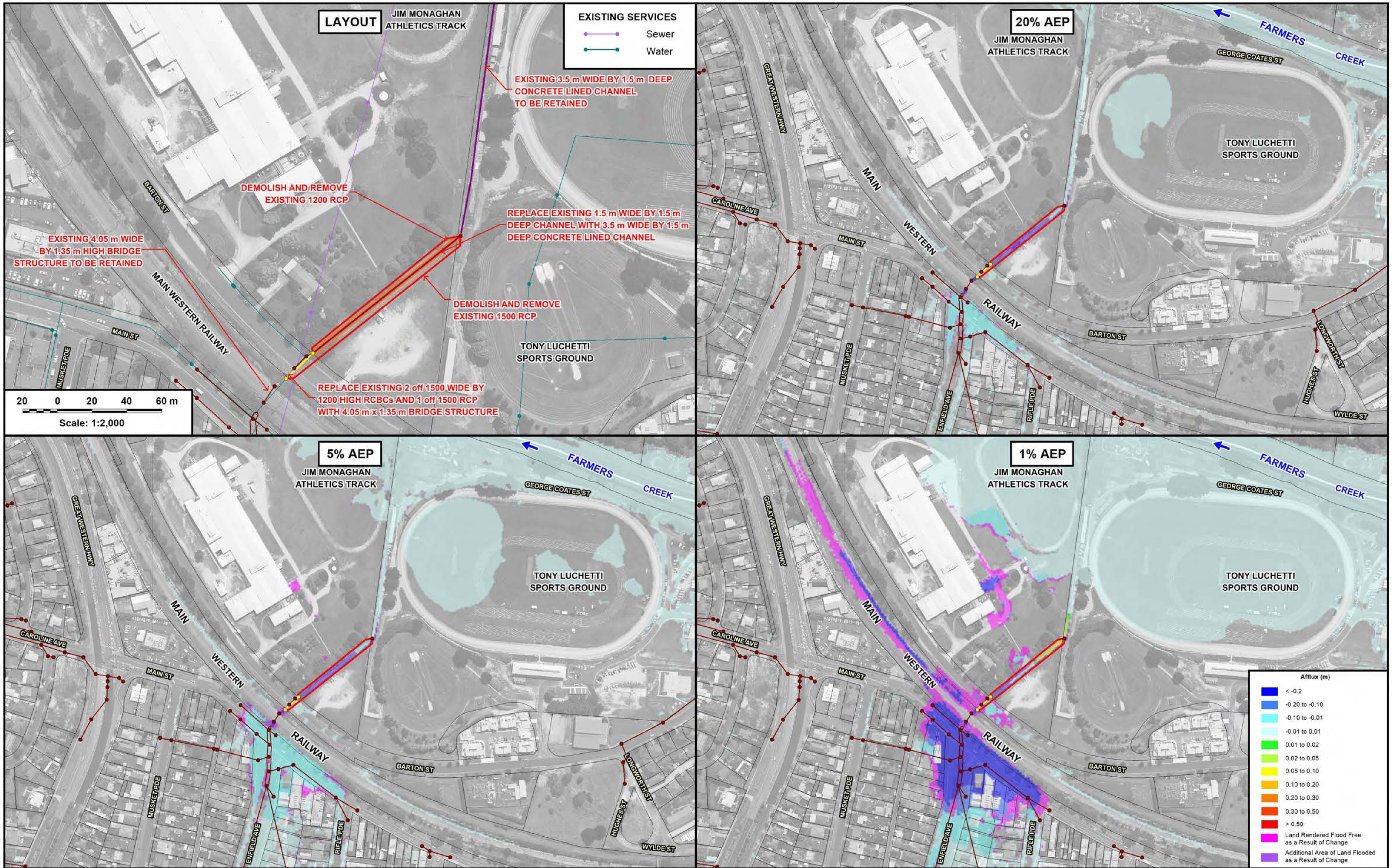
LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Existing Bridge
- New Swale
- New Stormwater Network Element
- Drainage Element Removed
- Extent of New Pedestrian Walkway

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.3

IMPACT OF GEORGE COATES STREET DRAINAGE IMPROVEMENT WORKS ON FLOOD BEHAVIOUR



N

40 0 40 80 120 m
Scale: 1:4,000

NOTE:
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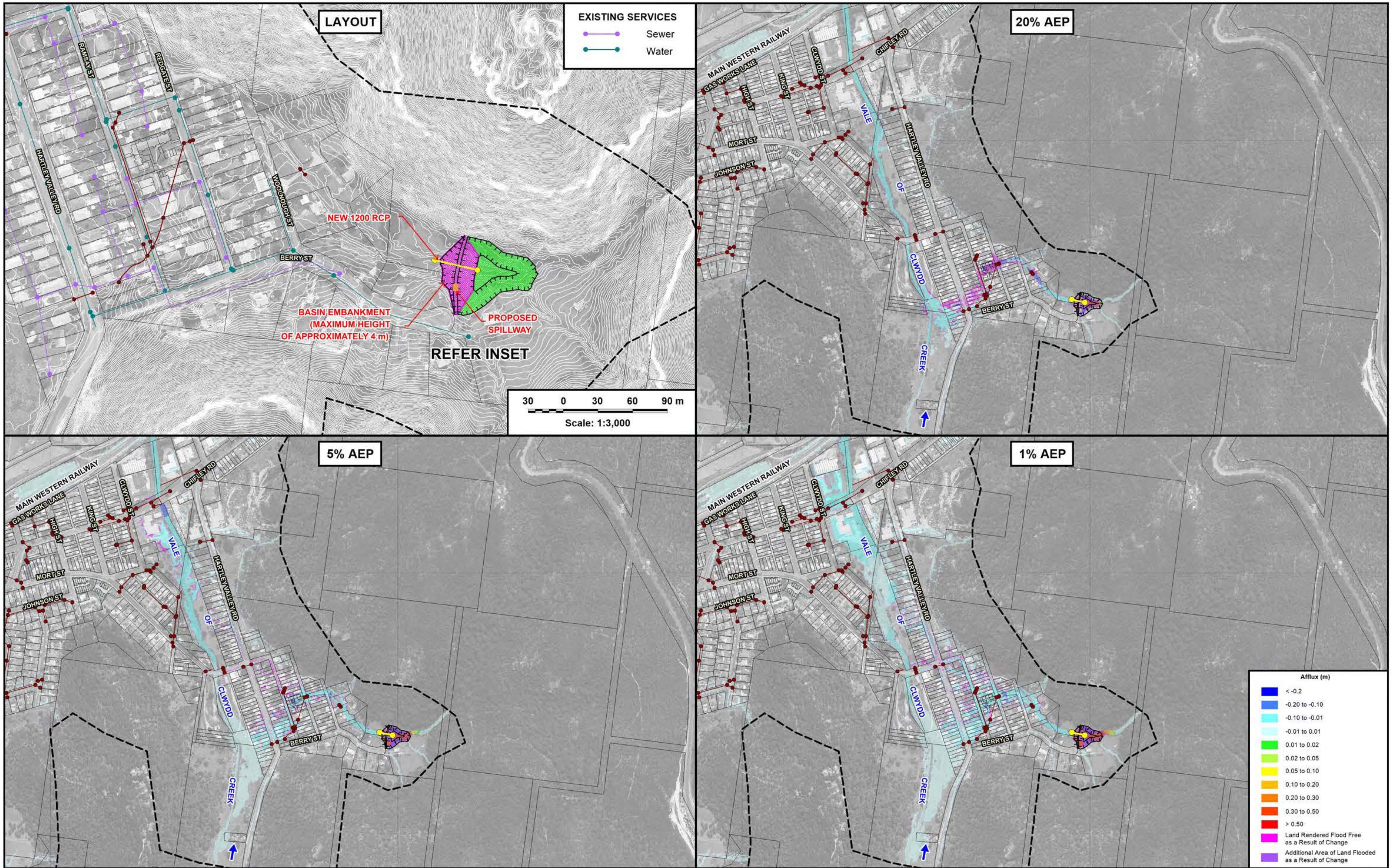
LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Upgraded Concrete Lined Channel
- Existing Concrete Lined Channel
- New Stormwater Network Element
- Drainage Element Removed

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.4

IMPACT OF BARTON STREET DRAINAGE IMRPOVEMENT WORKS ON FLOOD BEHAVIOUR



N

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

NOTE:
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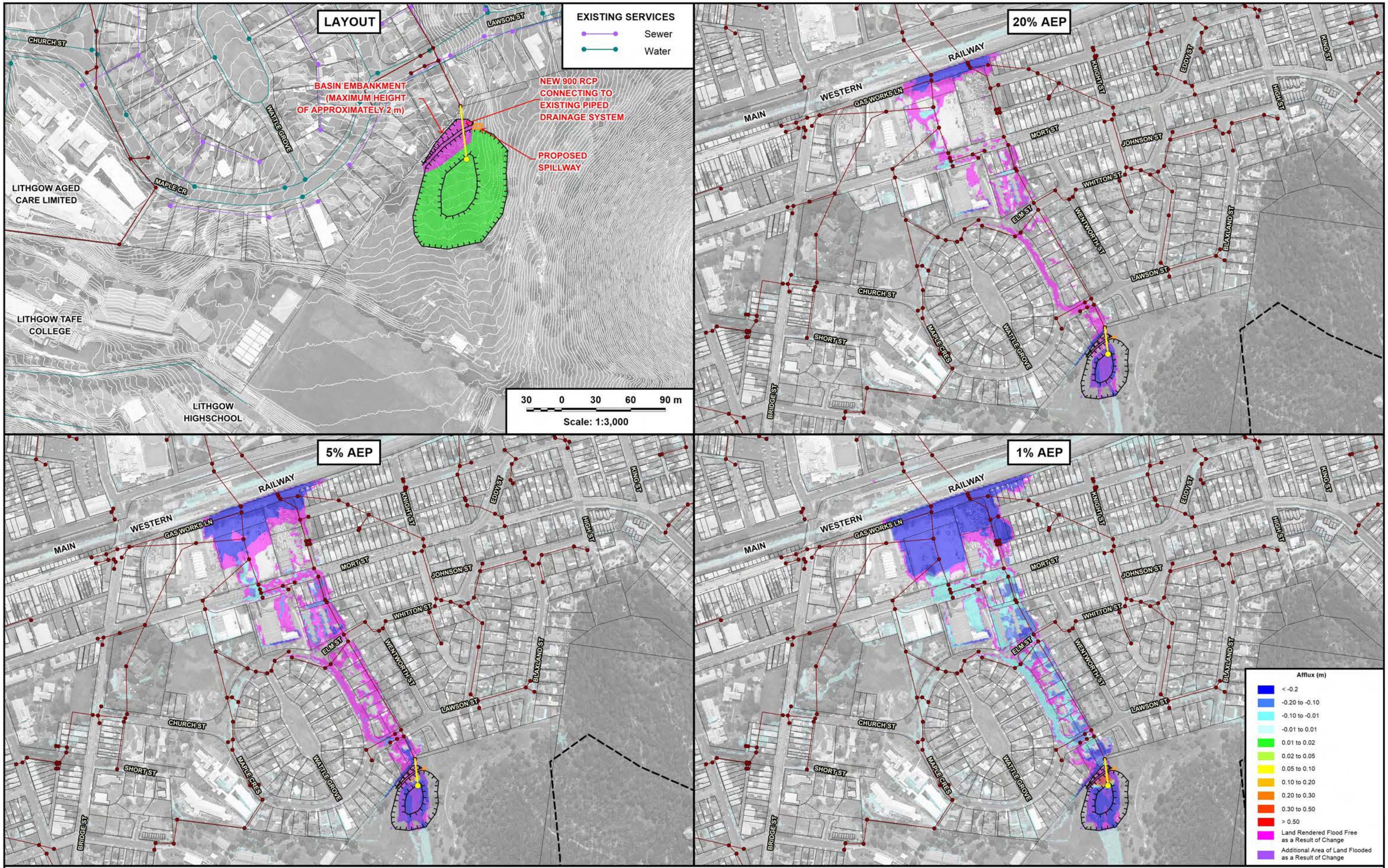
LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Existing Bridge
- Basin Cut/Fill Extents
- New Stormwater Network Element
- Extent of Proposed Spillway
- Approximate Extent of Cut
- Approximate Extent of Fill

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.5

IMPACT OF BERRY STREET DETENTION BASIN ON FLOOD BEHAVIOUR



N

60 0 60 120 180 m

Scale: 1:6,000

NOTE:
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LEGEND

Existing Drainage Network	Basin Cut/Fill Extents
Two-Dimensional Model Boundary	New Stormwater Network Element
Existing Bridge	Extent of Proposed Spillway
Approximate Extent of Fill	Approximate Extent of Cut

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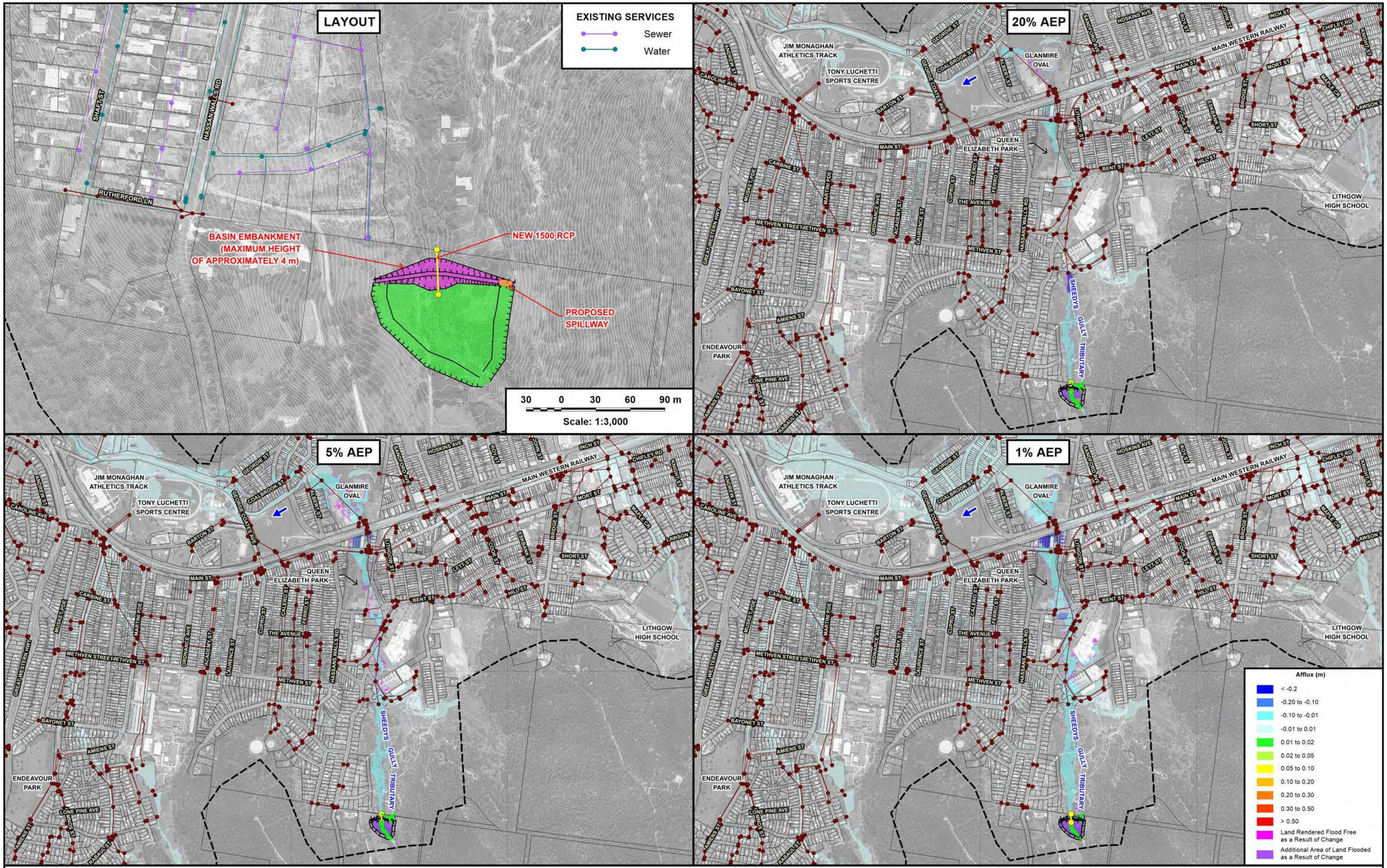
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.6

IMPACT OF LITHGOW HIGH SCHOOL DETENTION BASIN ON FLOOD BEHAVIOUR



N

160 0 160 320 480 m

Scale: 1:16,000

NOTE:
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Lyall & Associates

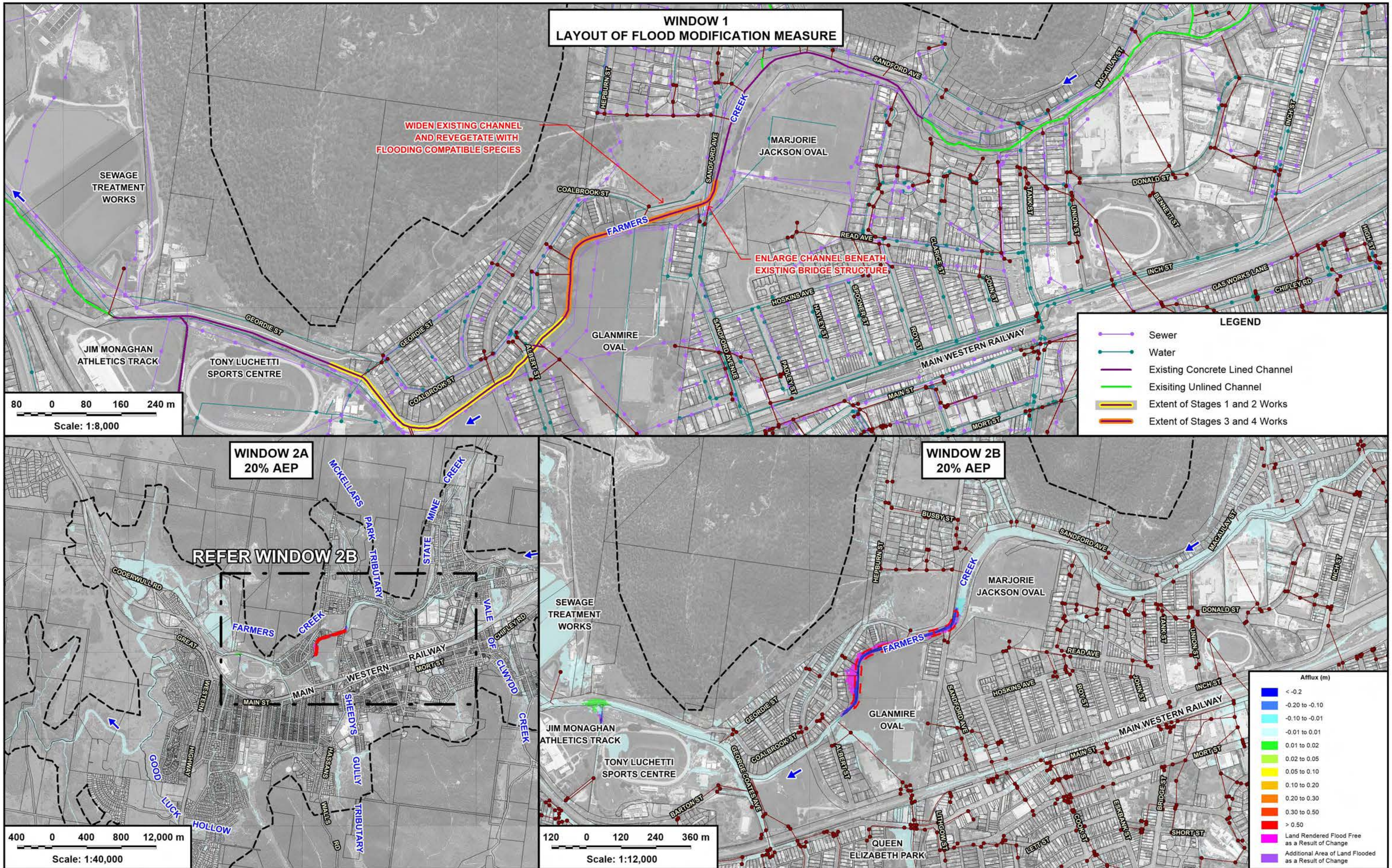
LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Existing Bridge
- Basin Cut/Fill Extents
- New Stormwater Network Element
- Extent of Proposed Spillway
- Approximate Extent of Cut
- Approximate Extent of Fill

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.7

IMPACT OF HASSAN WALLS DETENTION BASIN ON FLOOD BEHAVIOUR



N

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LEGEND
- Existing Drainage Network
- Two-Dimensional Model Boundary
- Extent of Stages 3 and 4 Works

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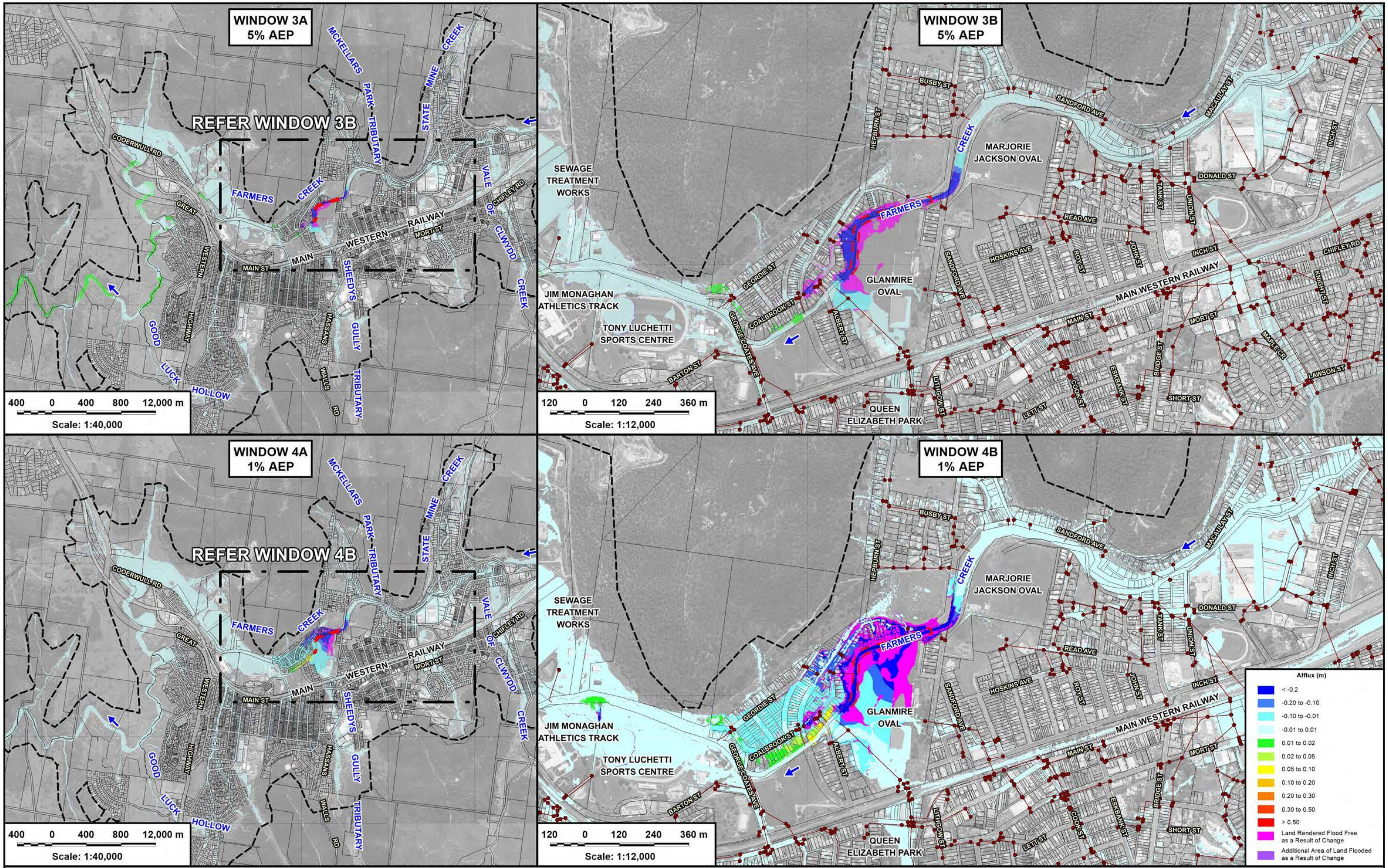
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.8
(Sheet 1 of 2)

IMPACT OF FARMERS CREEK CHANNEL WORKS - STAGES 3 AND 4 ON FLOOD BEHAVIOUR



N

Lyall & Associates

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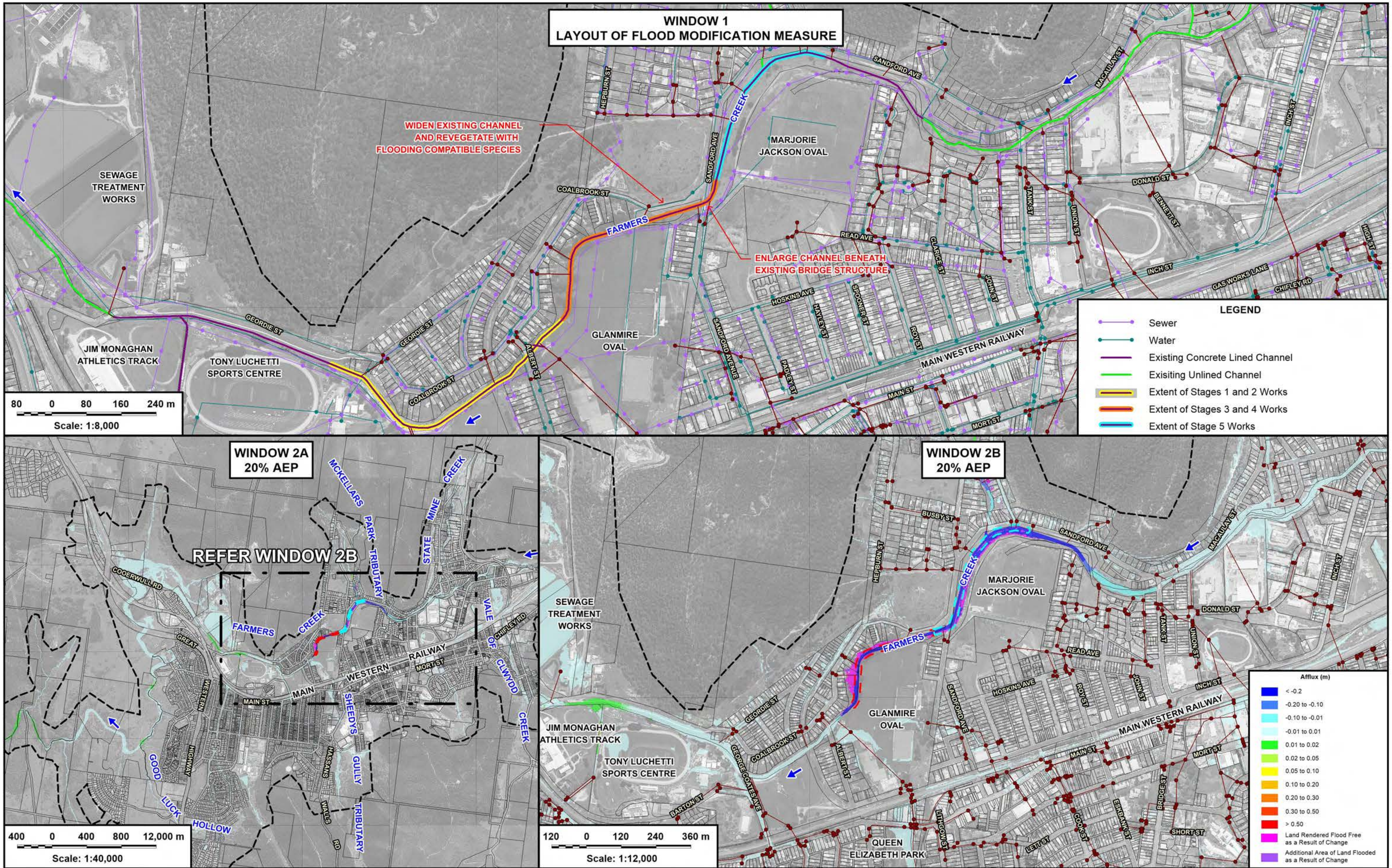
LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Extent of Stages 3 and 4 Works

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.8
(Sheet 2 of 2)

IMPACT OF FARMERS CREEK CHANNEL WORKS - STAGES 3 AND 4 ON FLOOD BEHAVIOUR



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LEGEND
- Existing Drainage Network
- Two-Dimensional Model Boundary
- Extent of Stages 3 and 4 Works
- Extent of Stage 5 Works

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LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.9
(Sheet 1 of 2)

IMPACT OF FARMERS CREEK CHANNEL WORKS - STAGES 3, 4 AND 5 ON FLOOD BEHAVIOUR

N

Lyall & Associates

NOTE:
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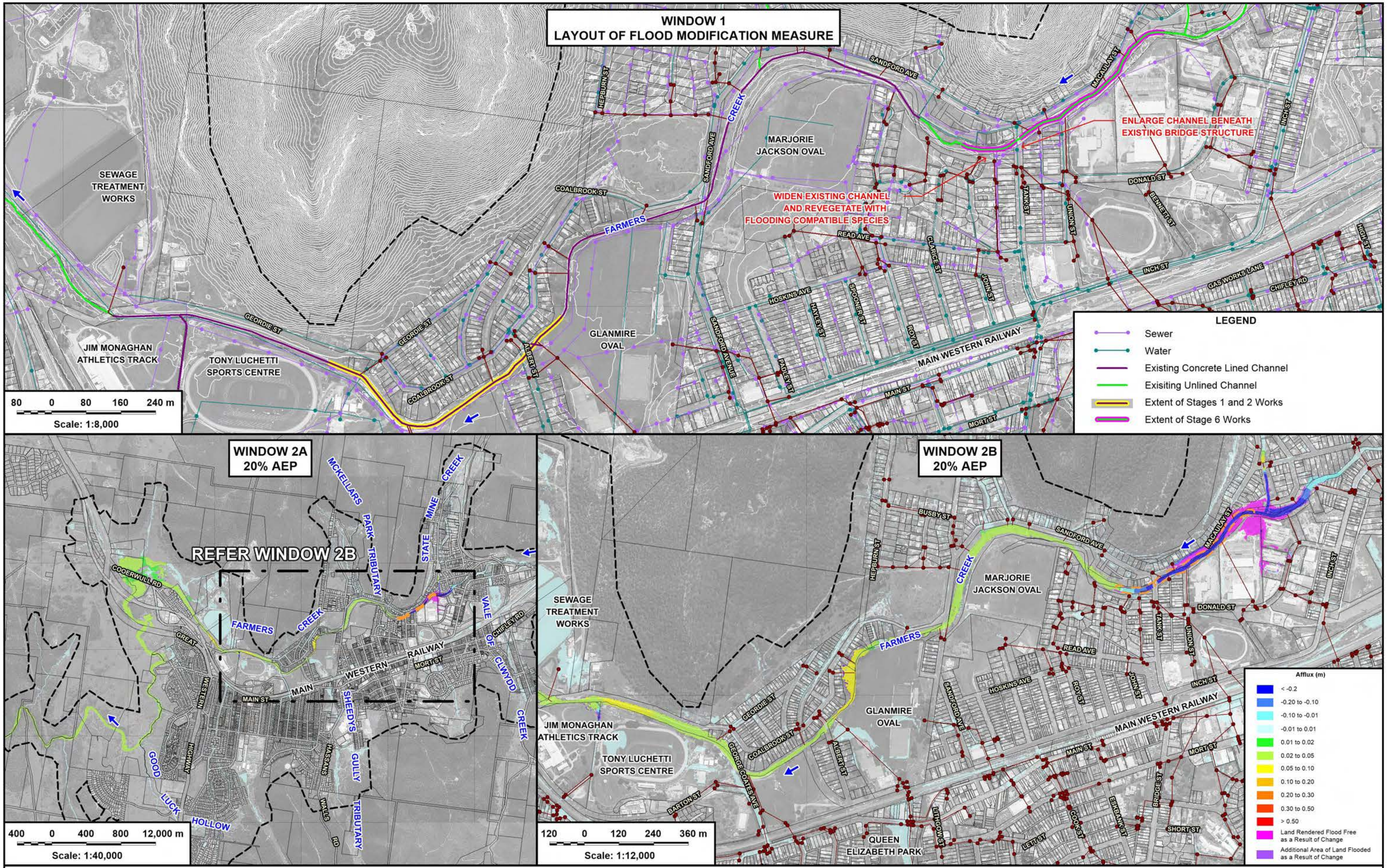
LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Extent of Stages 3 and 4 Works
- Extent of Stage 5 Works

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.9
(Sheet 2 of 2)

IMPACT OF FARMERS CREEK CHANNEL WORKS - STAGES 3, 4 AND 5 ON FLOOD BEHAVIOUR



N

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LEGEND
- Existing Drainage Network
- Two-Dimensional Model Boundary
- Extent of Stage 6 Works

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LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.10
(Sheet 1 of 2)

IMPACT OF FARMERS CREEK CHANNEL WORKS - STAGE 6 ON FLOOD BEHAVIOUR

N

Lyall & Associates

NOTE:
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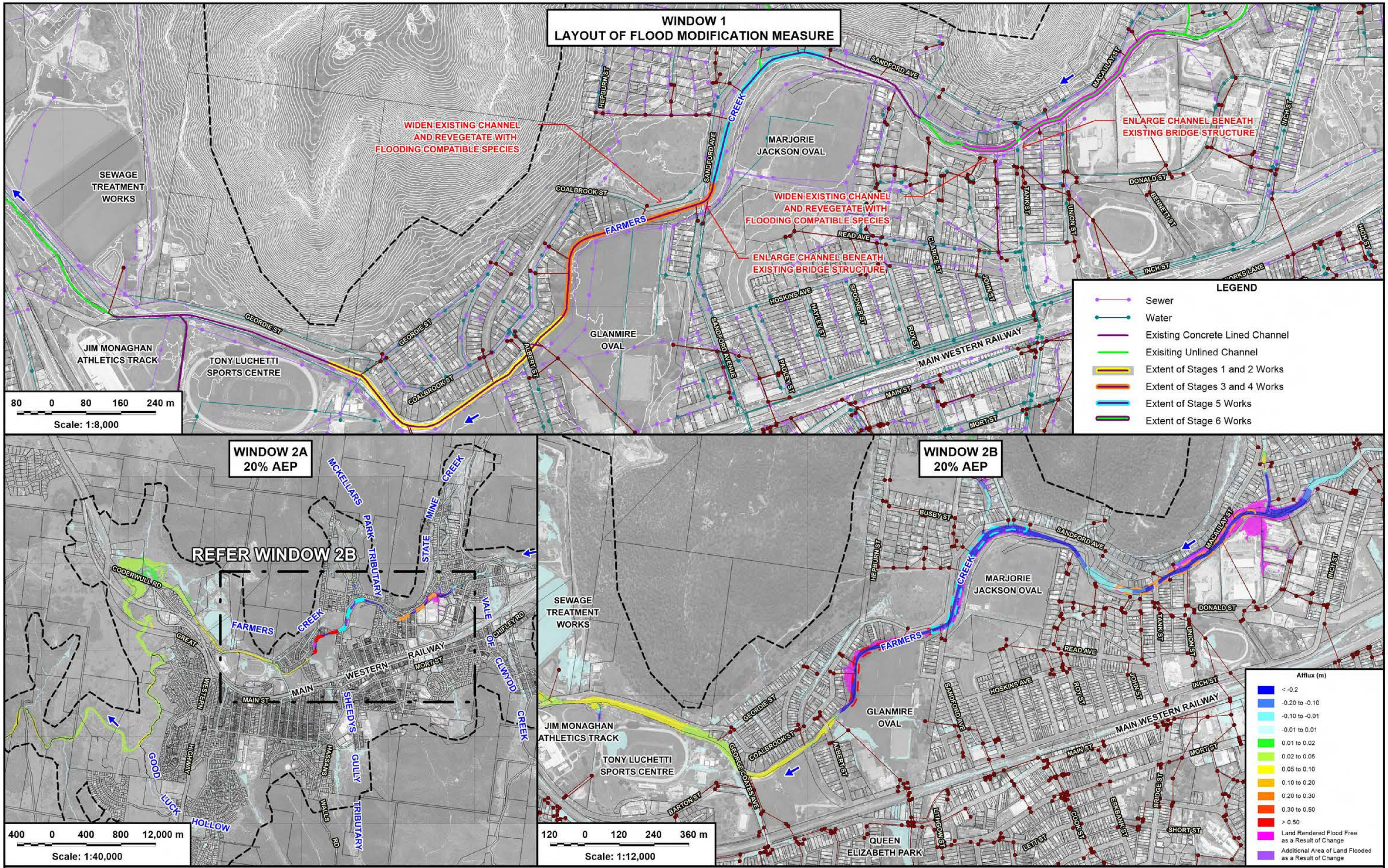
LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Extent of Stage 6 Works

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.10
(Sheet 2 of 2)

IMPACT OF FARMERS CREEK CHANNEL WORKS - STAGE 6 ON FLOOD BEHAVIOUR



LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Extent of Stages 3 and 4 Works
- Extent of Stage 5 Works
- Extent of Stage 6 Works

NOTE:
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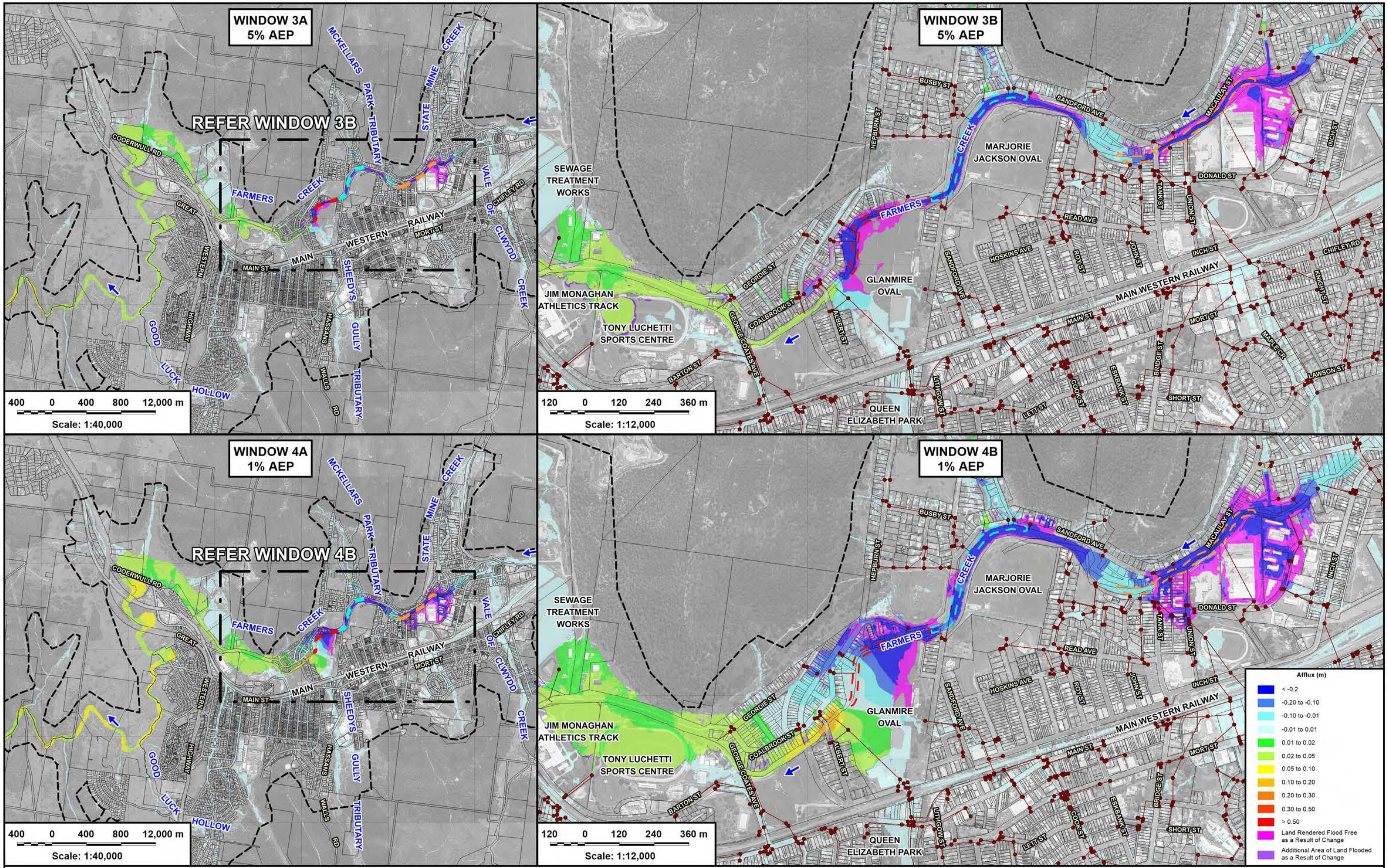
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.11
(Sheet 1 of 2)

IMPACT OF FARMERS CREEK CHANNEL WORKS - STAGES 3, 4, 5 AND 6 ON FLOOD BEHAVIOUR



N

Lyall & Associates

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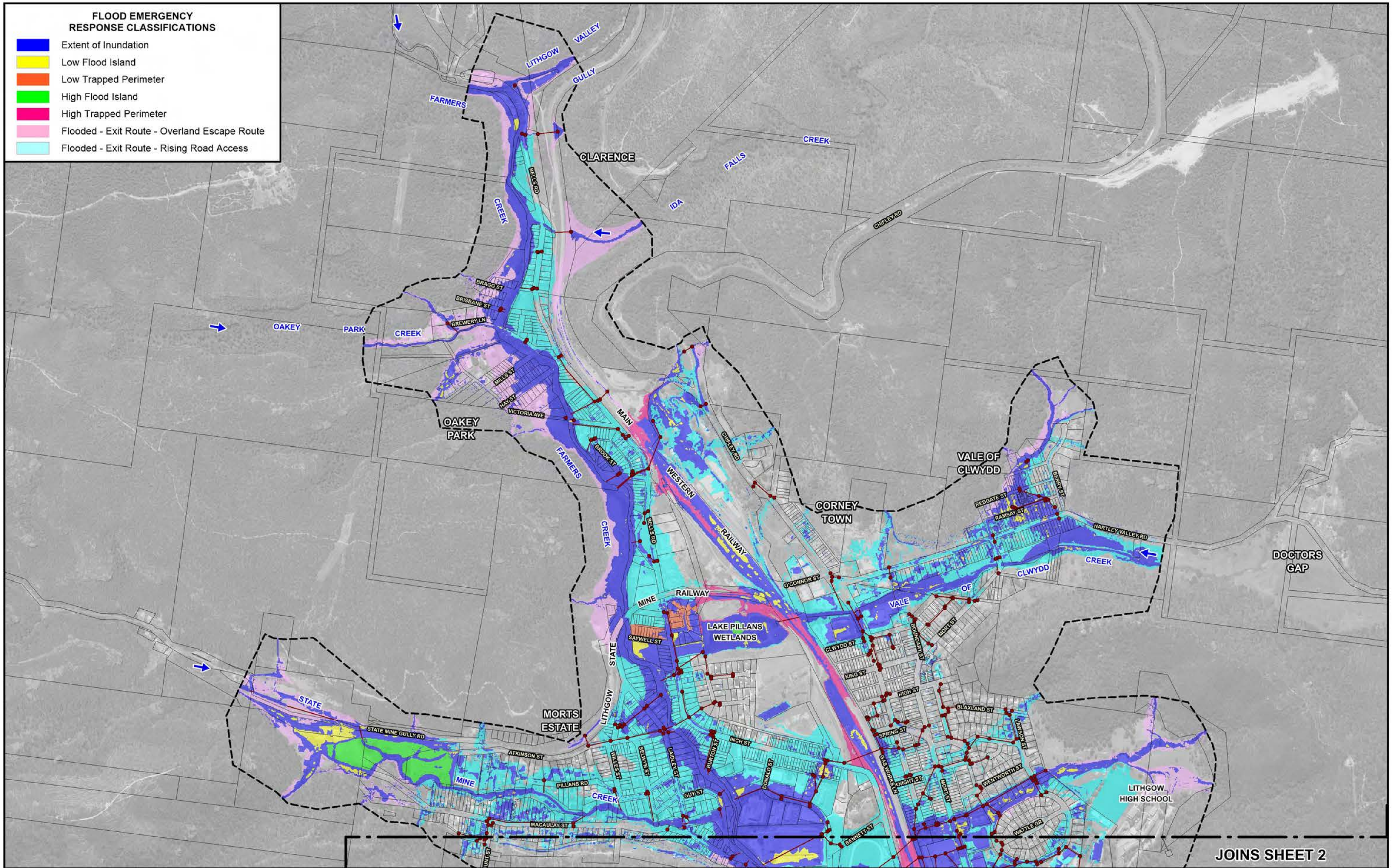
LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Extent of Stages 3 and 4 Works
- Extent of Stage 5 Works
- Extent of Stage 6 Works

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.11
(Sheet 2 of 2)

IMPACT OF FARMERS CREEK CHANNEL WORKS - STAGES 3, 4, 5 AND 6 ON FLOOD BEHAVIOUR



N

120 0 120 240 360 m

Scale: 1:12,000

Lyall & Associates

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LEGEND

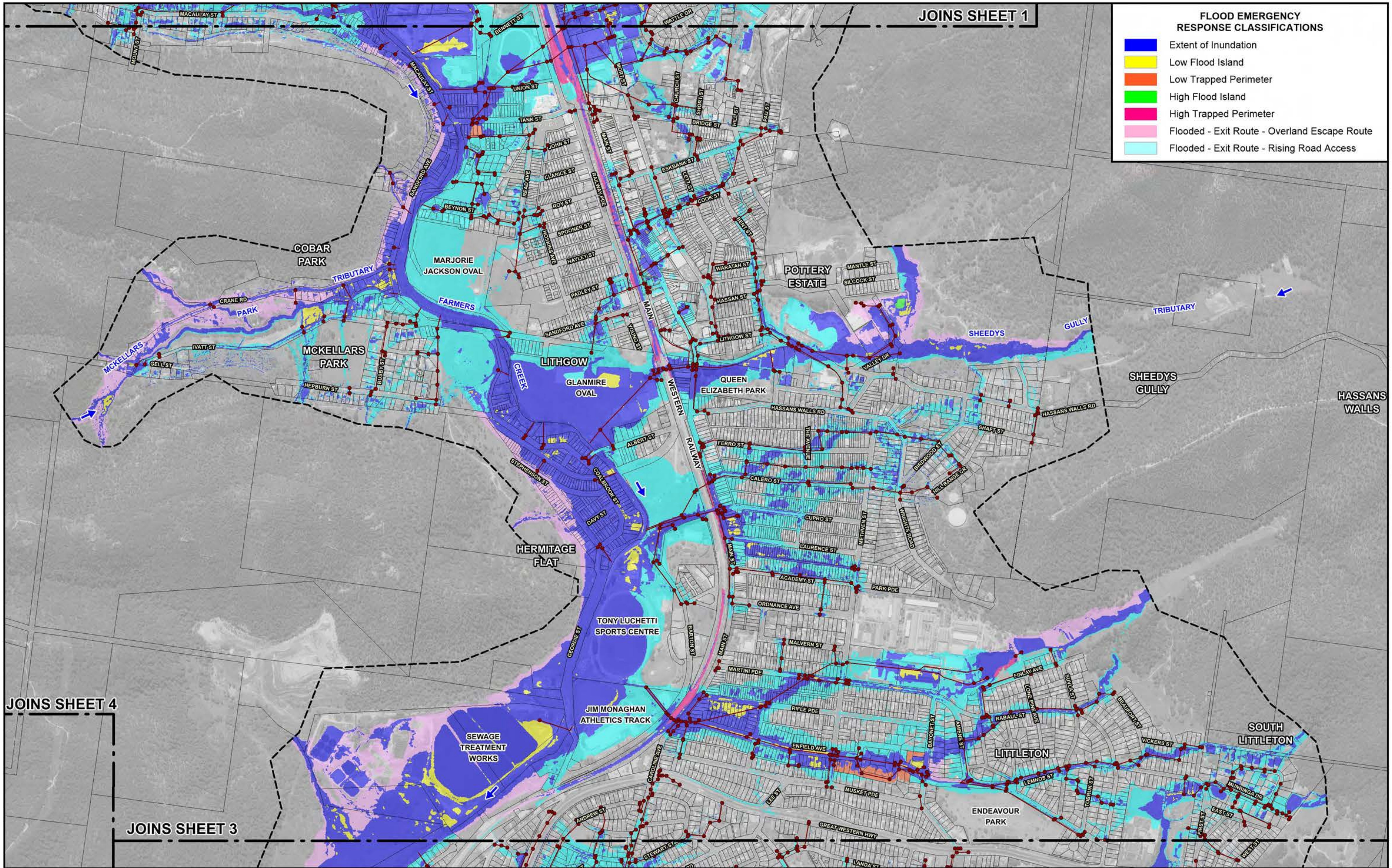
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.12
(Sheet 1 of 4)

FLOOD EMERGENCY RESPONSE PLANNING CLASSIFICATIONS
1% AEP



120 0 120 240 360 m

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LEGEND

Existing Drainage Network

Two-Dimensional Model Boundary

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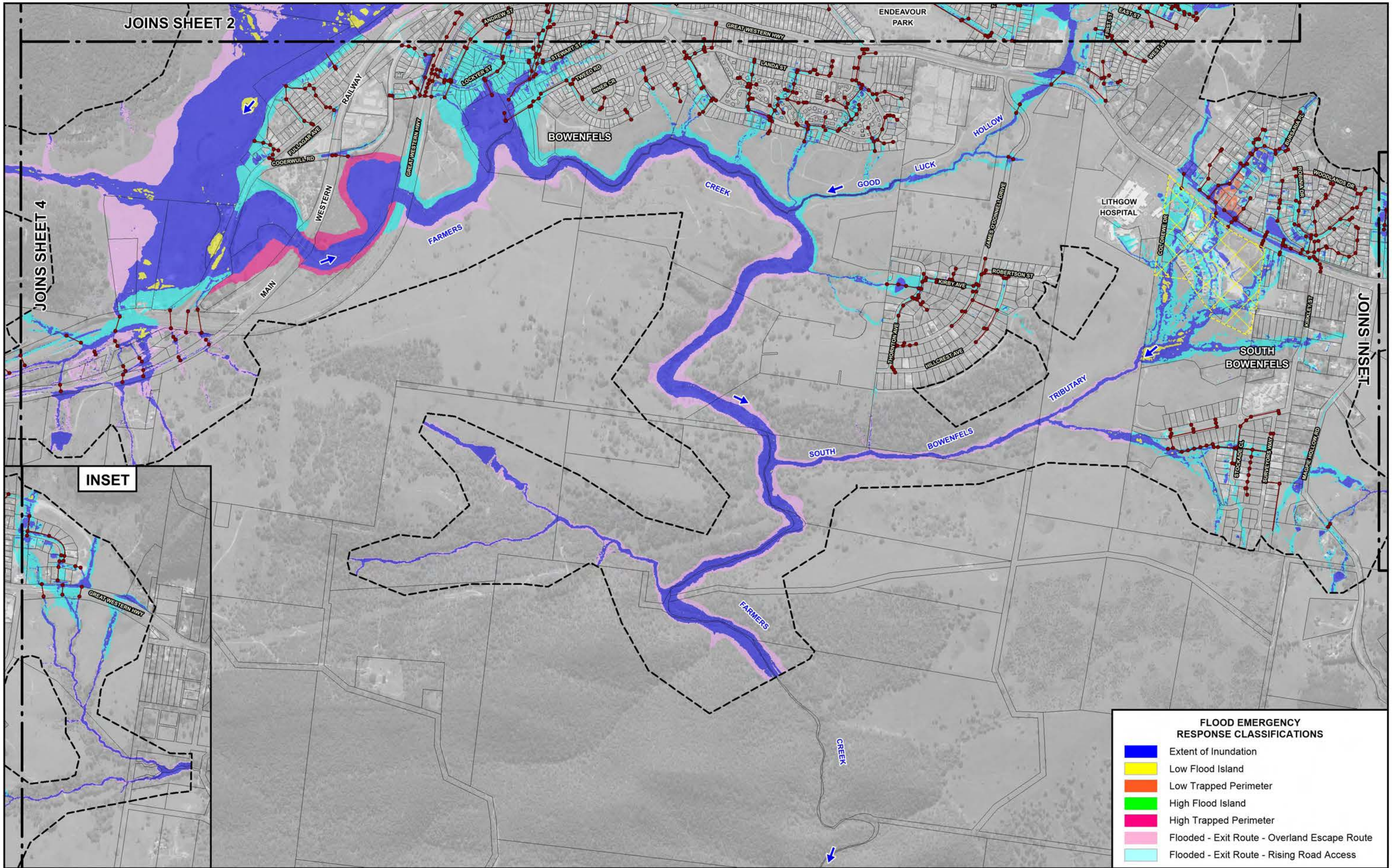
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.12
(Sheet 2 of 4)

FLOOD EMERGENCY RESPONSE PLANNING CLASSIFICATIONS
1% AEP



120 0 120 240 360 m

Scale: 1:12,000

Lyall & Associates

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LEGEND

Existing Drainage Network

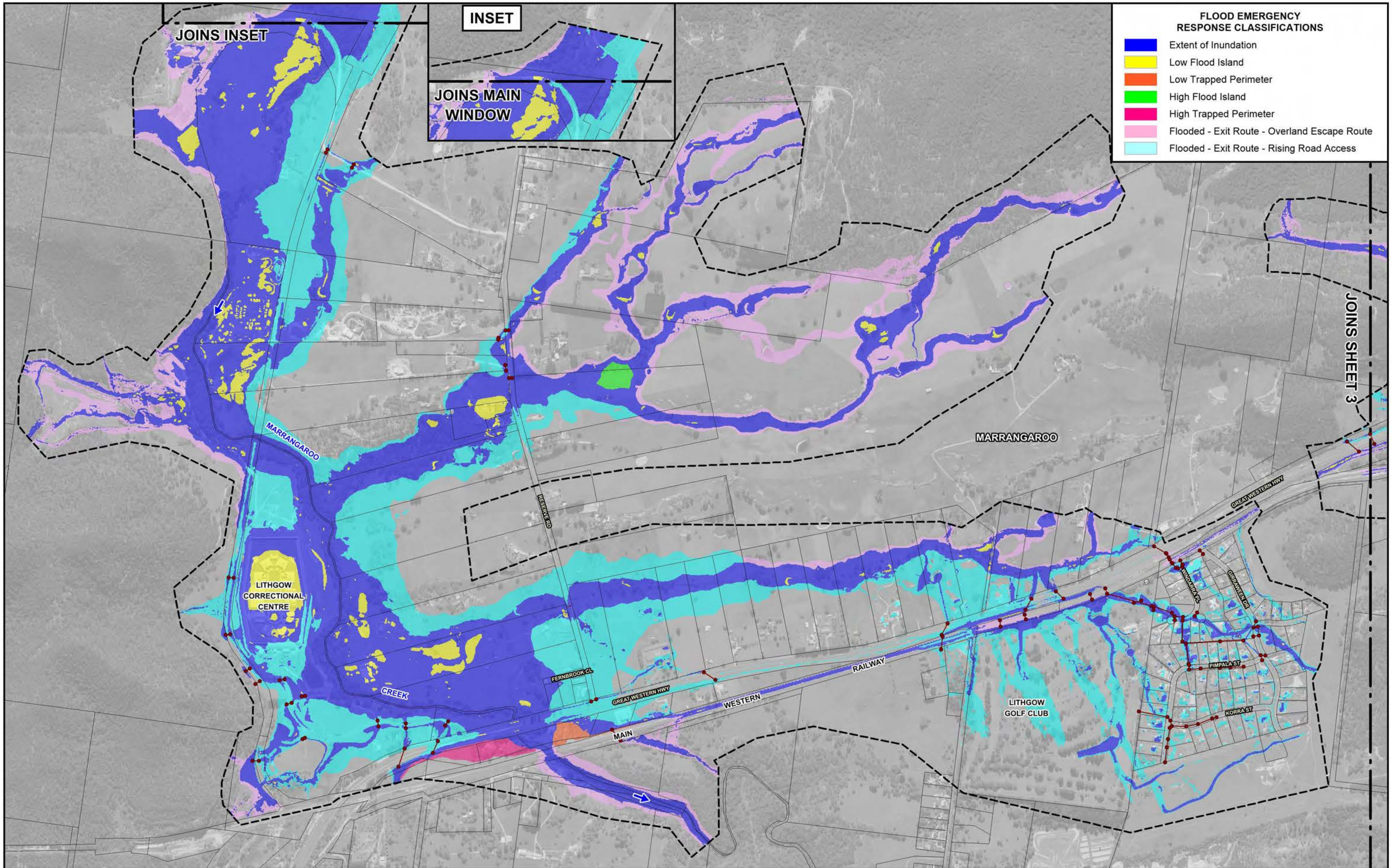
Two-Dimensional Model Boundary

Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.12
(Sheet 3 of 4)

FLOOD EMERGENCY RESPONSE PLANNING CLASSIFICATIONS
1% AEP



120 0 120 240 360 m

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LEGEND

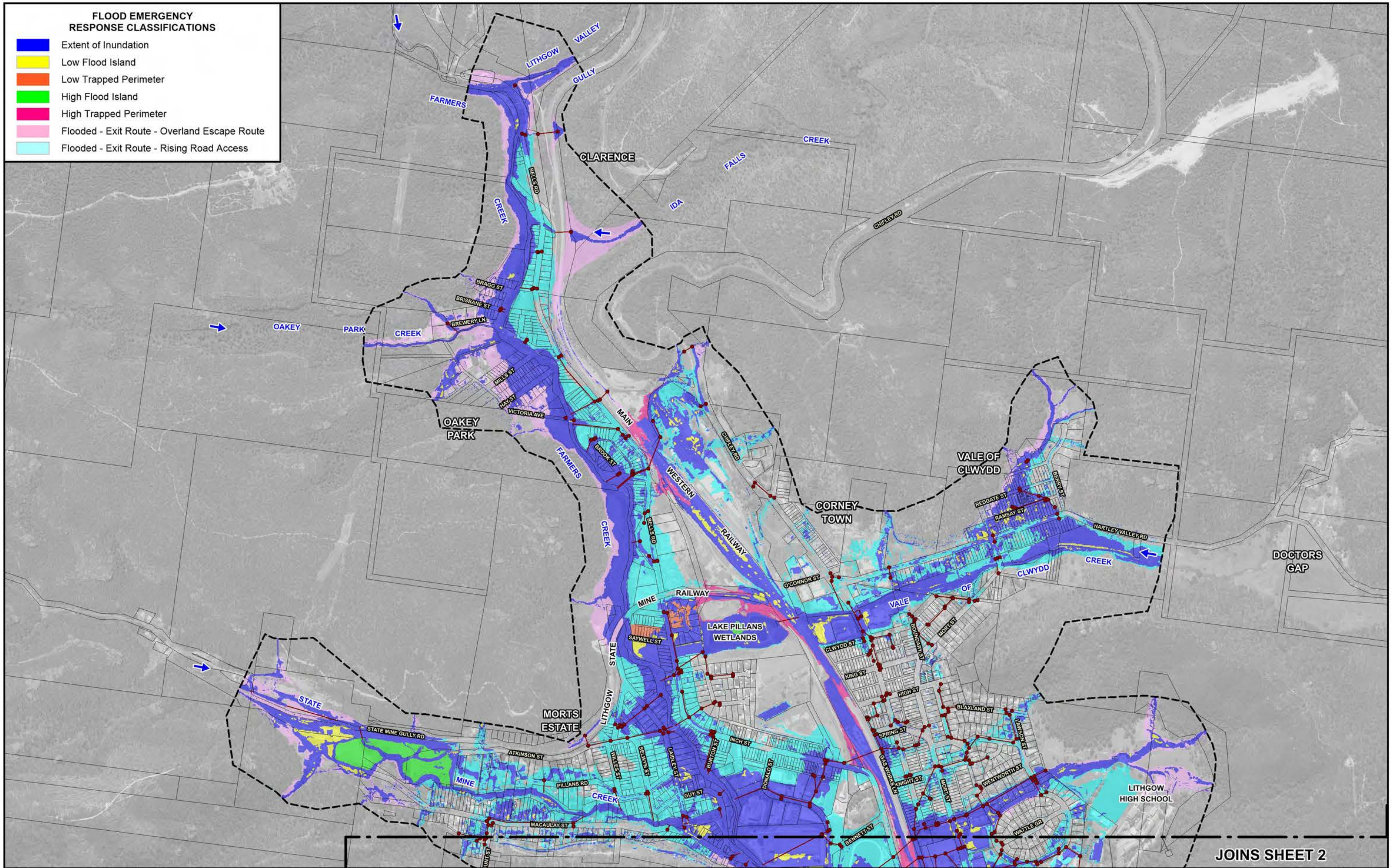
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.12
(Sheet 4 of 4)

FLOOD EMERGENCY RESPONSE PLANNING CLASSIFICATIONS
1% AEP



N

120 0 120 240 360 m

Scale: 1:12,000

Lyall & Associates

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LEGEND

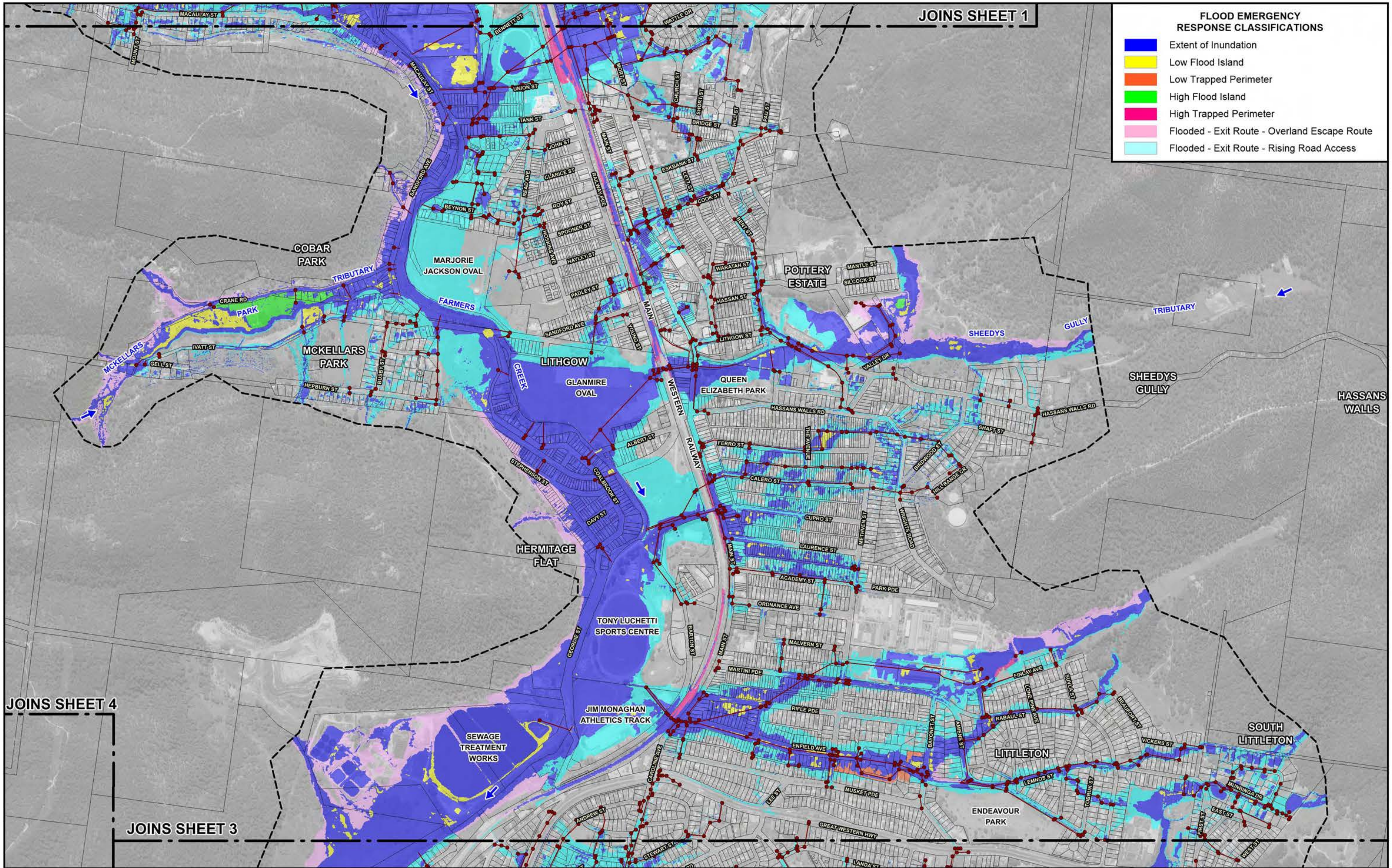
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.13
(Sheet 1 of 4)

FLOOD EMERGENCY RESPONSE PLANNING CLASSIFICATIONS
0.2% AEP



120 0 120 240 360 m

Scale: 1:12,000

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LEGEND

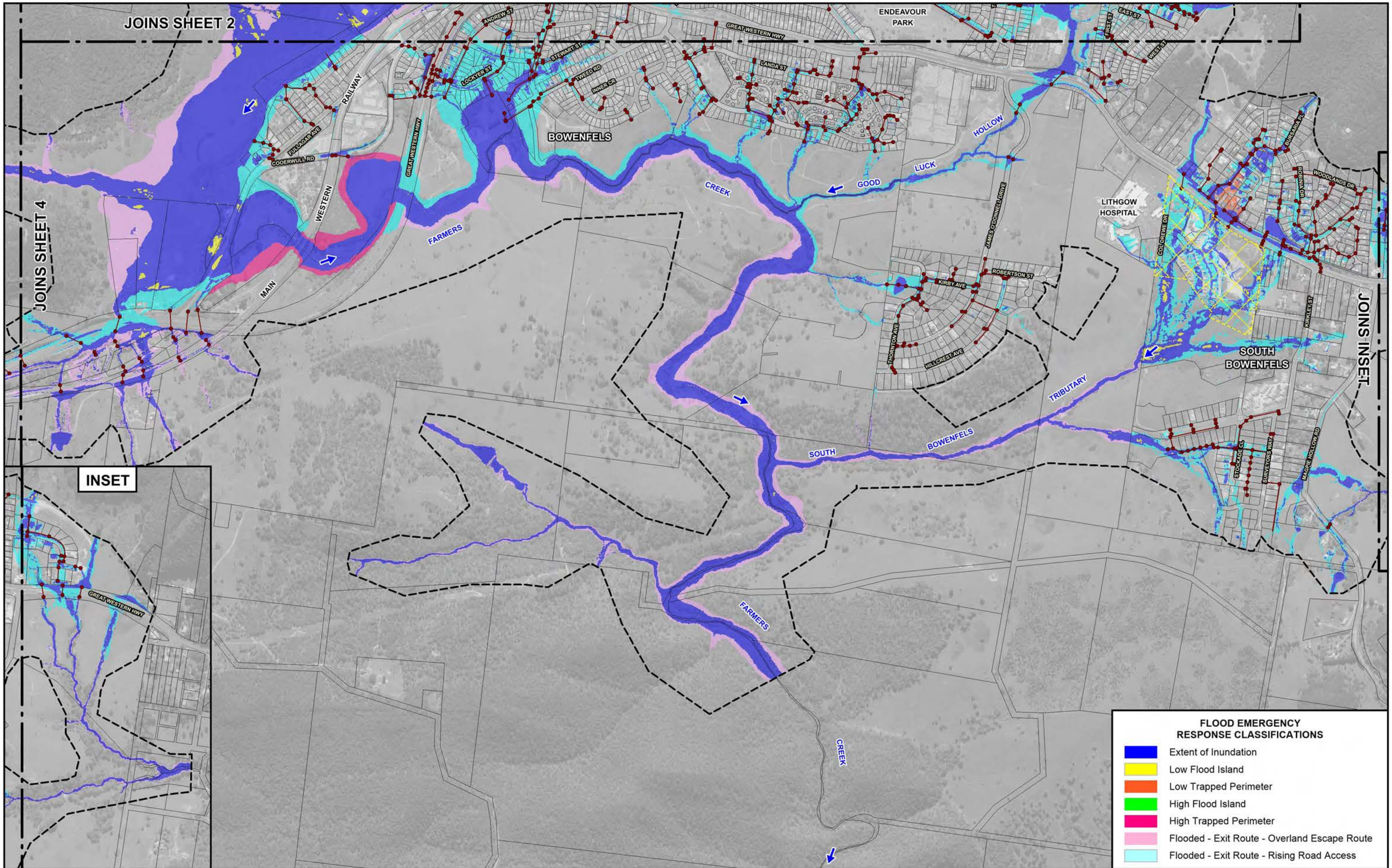
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.13
(Sheet 2 of 4)

FLOOD EMERGENCY RESPONSE PLANNING CLASSIFICATIONS
0.2% AEP



N

120 0 120 240 360 m

Scale: 1:12,000

Lyall & Associates

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LEGEND

Existing Drainage Network

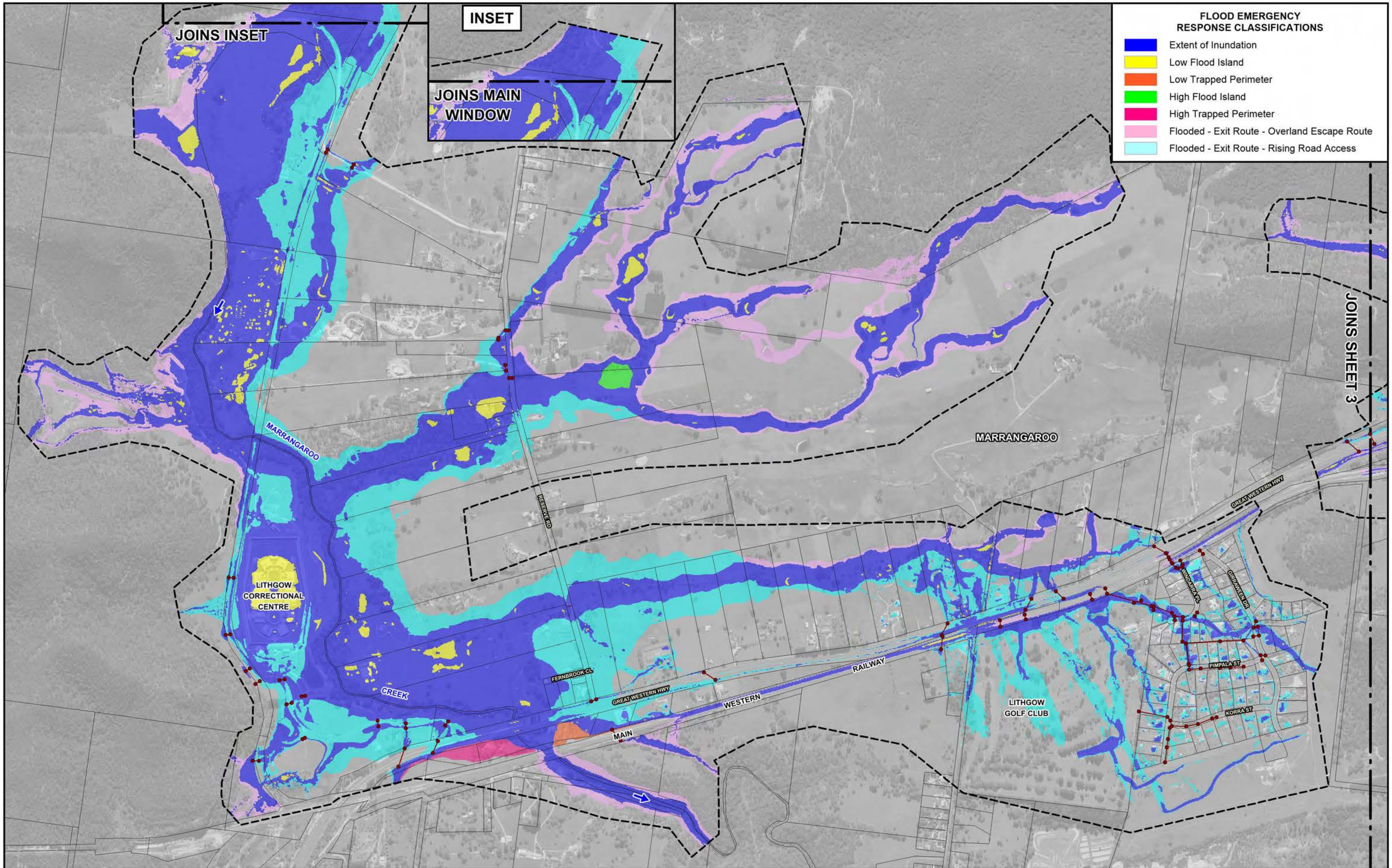
Two-Dimensional Model Boundary

Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.13
(Sheet 3 of 4)

FLOOD EMERGENCY RESPONSE PLANNING CLASSIFICATIONS
0.2% AEP



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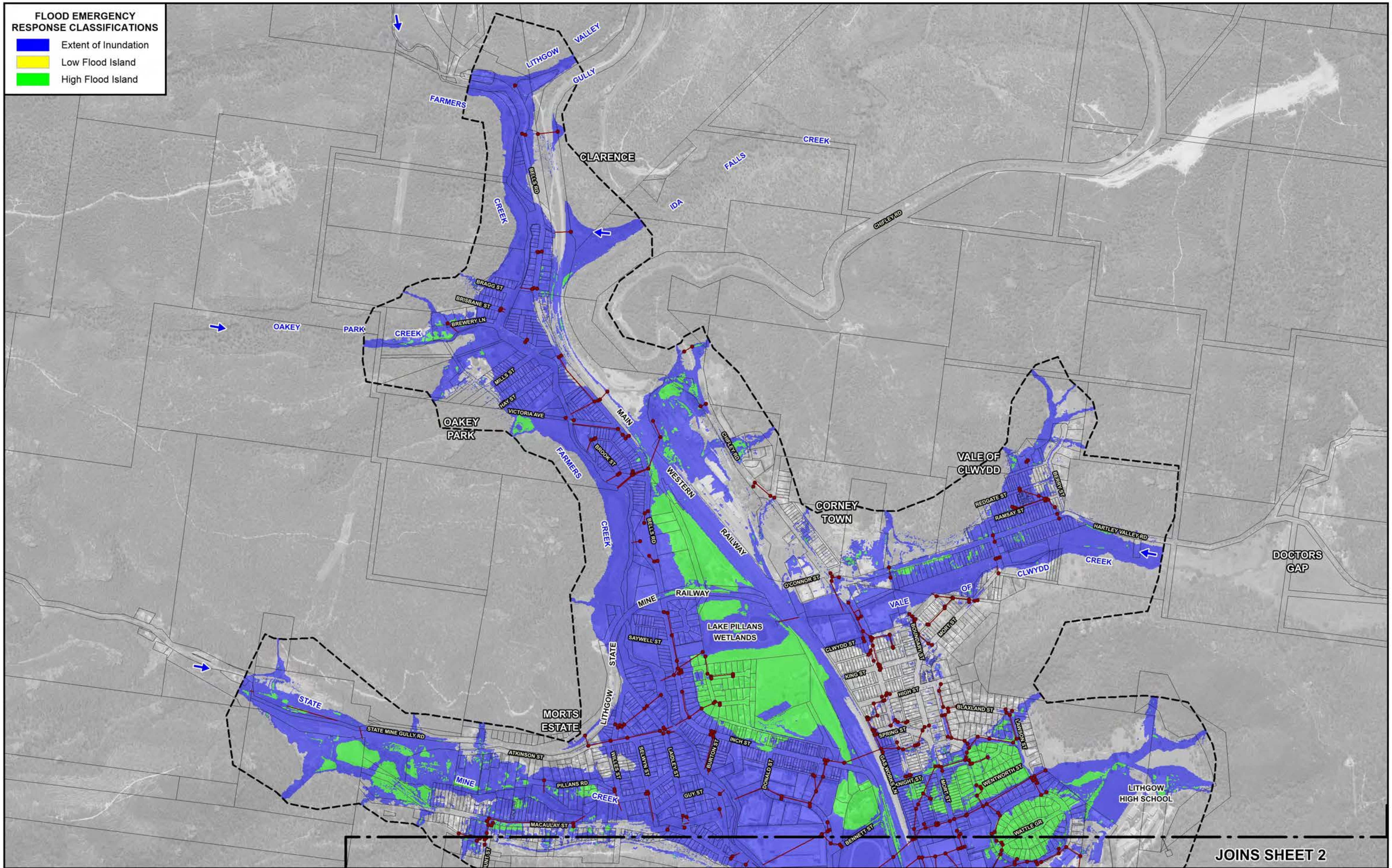
LEGEND
Existing Drainage Network
Two-Dimensional Model Boundary

Lyall & Associates

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.13
(Sheet 4 of 4)

FLOOD EMERGENCY RESPONSE PLANNING CLASSIFICATIONS
0.2% AEP



N

120 0 120 240 360 m

Scale: 1:12,000

Lyall & Associates

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LEGEND

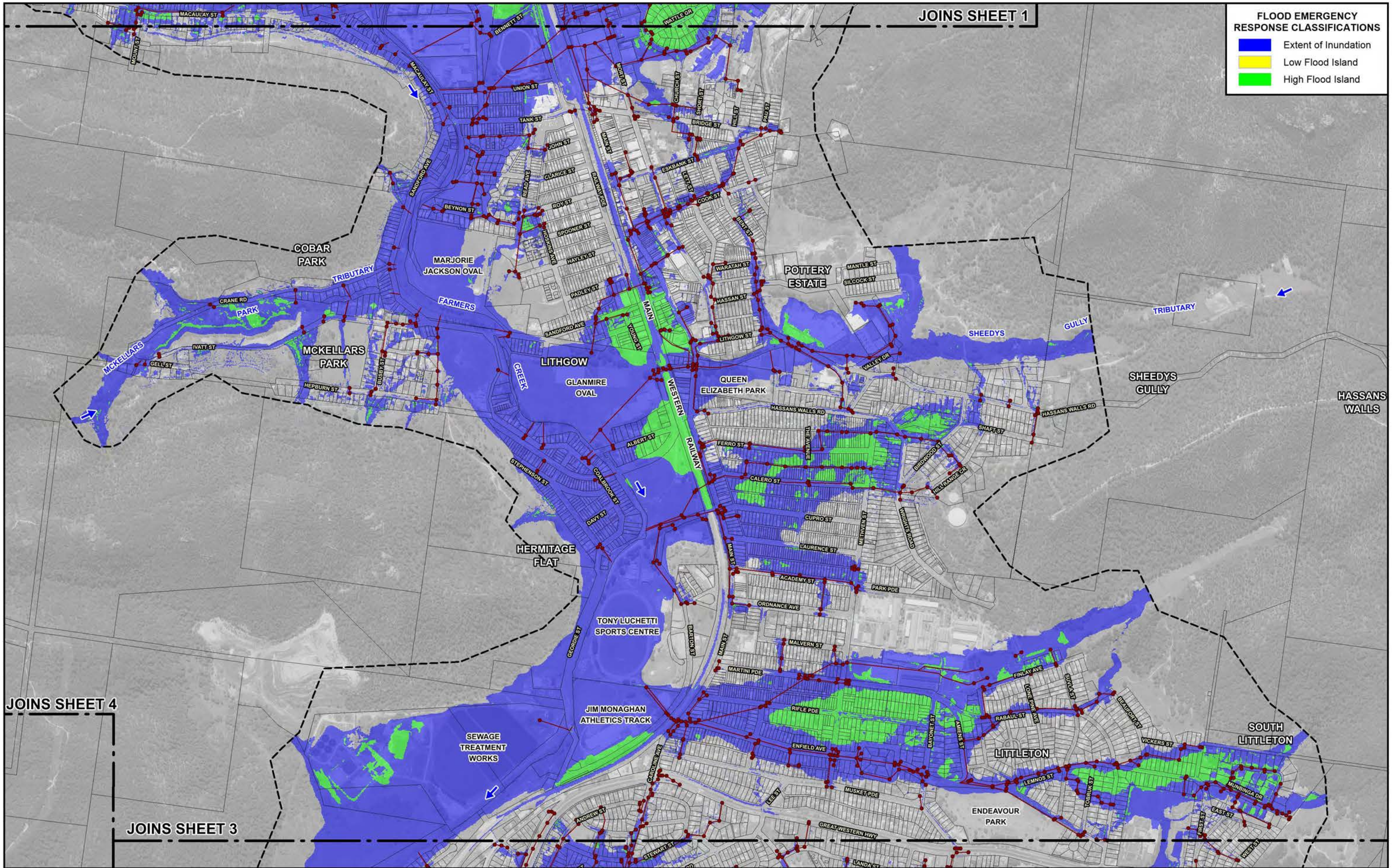
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.14
(Sheet 1 of 4)

FLOOD EMERGENCY RESPONSE PLANNING CLASSIFICATIONS
PMF



120 0 120 240 360 m

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LEGEND

Existing Drainage Network

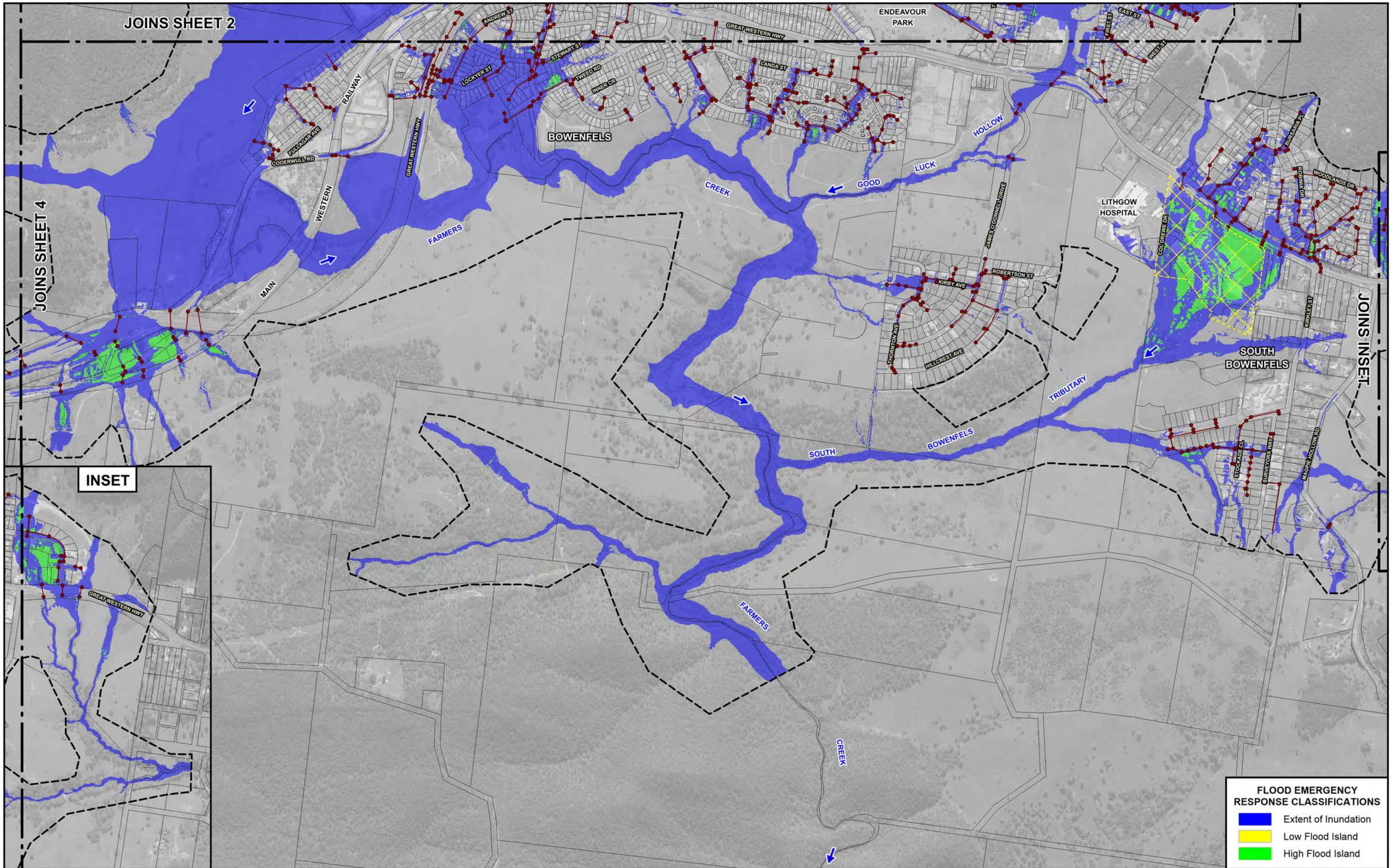
Two-Dimensional Model Boundary

Lyall & Associates

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.14
(Sheet 2 of 4)

FLOOD EMERGENCY RESPONSE PLANNING CLASSIFICATIONS
PMF



N

120 0 120 240 360 m

Scale: 1:12,000

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LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.

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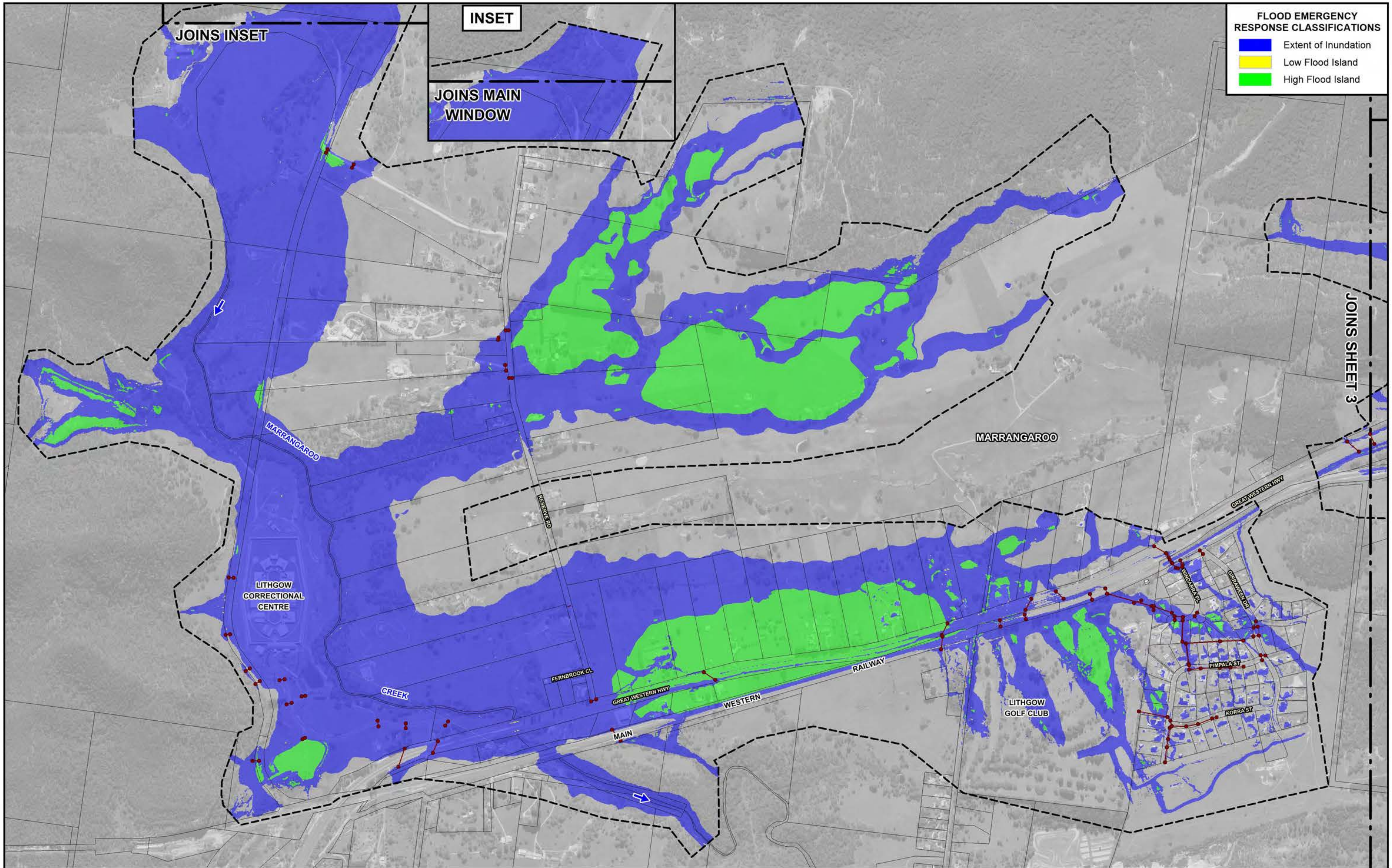
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure 3.14
(Sheet 3 of 4)

FLOOD EMERGENCY RESPONSE PLANNING CLASSIFICATIONS
PMF



120 0 120 240 360 m

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LEGEND

Existing Drainage Network

Two-Dimensional Model Boundary

Lyall & Associates

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

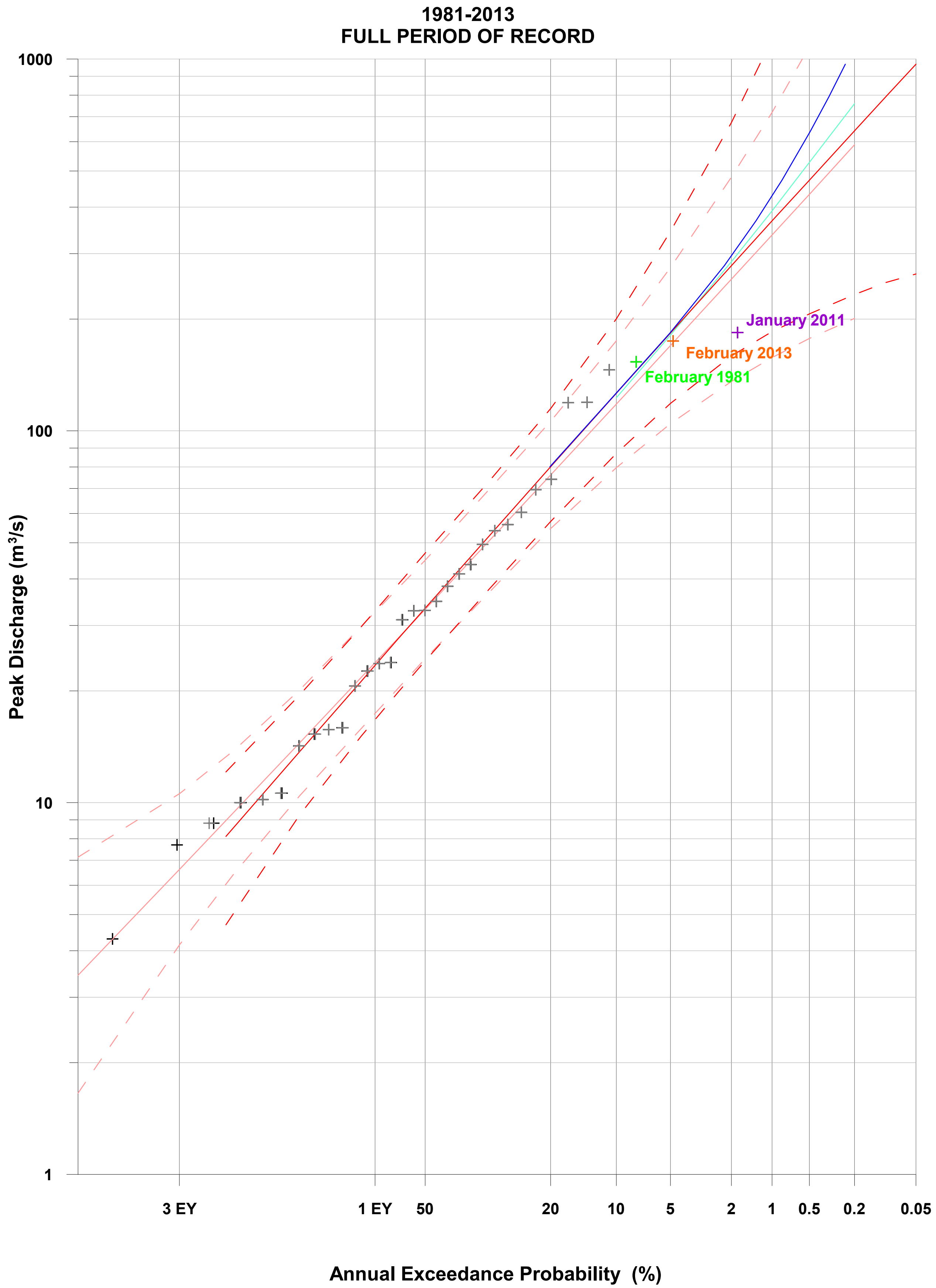
Figure 3.14
(Sheet 4 of 4)

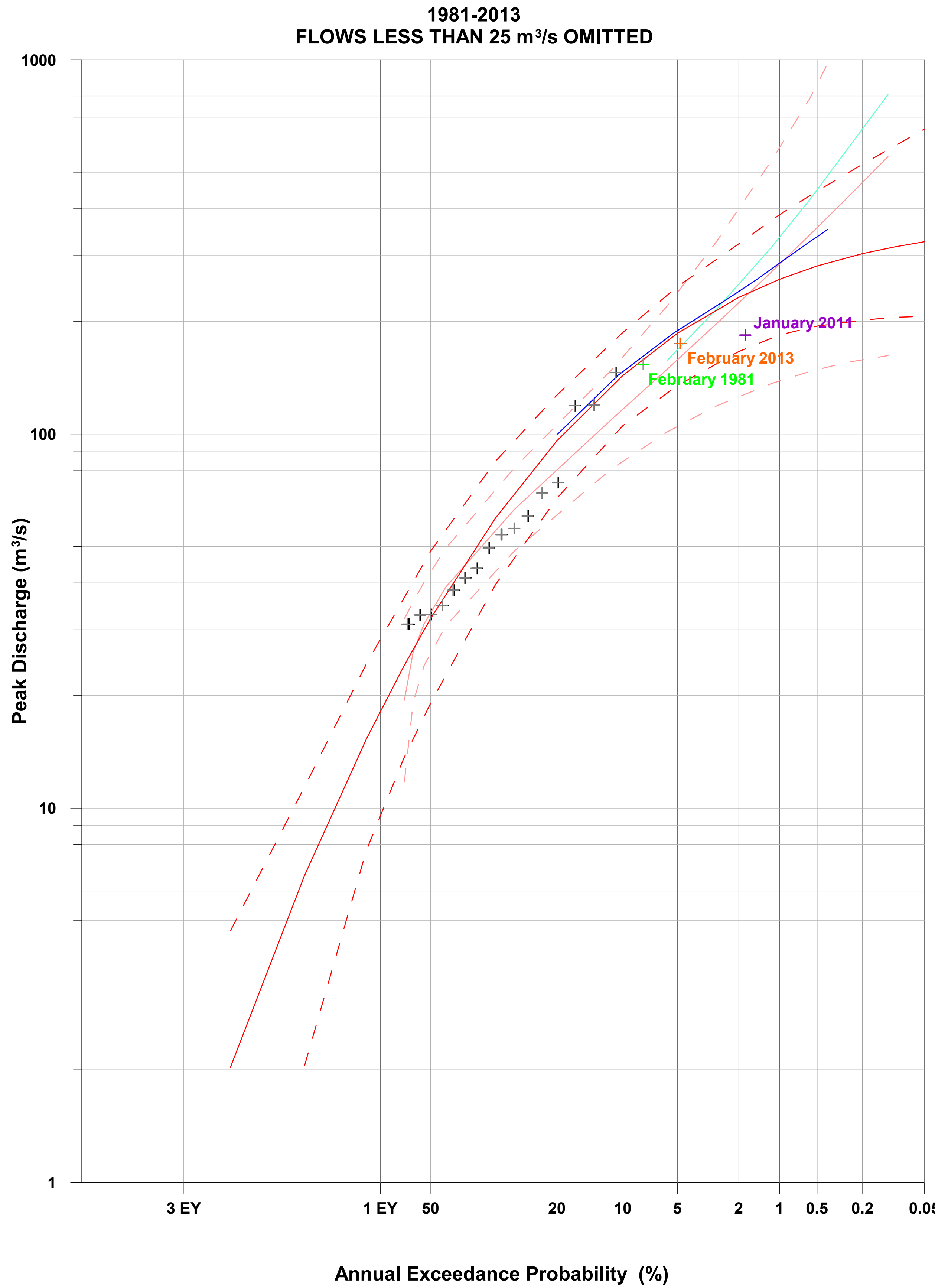
FLOOD EMERGENCY RESPONSE PLANNING CLASSIFICATIONS
PMF

APPENDIX B

HYDROLOGIC AND HYDRAULIC MODELLING UPDATE

LIST OF FIGURES (APPENDIX B)





LEGEND

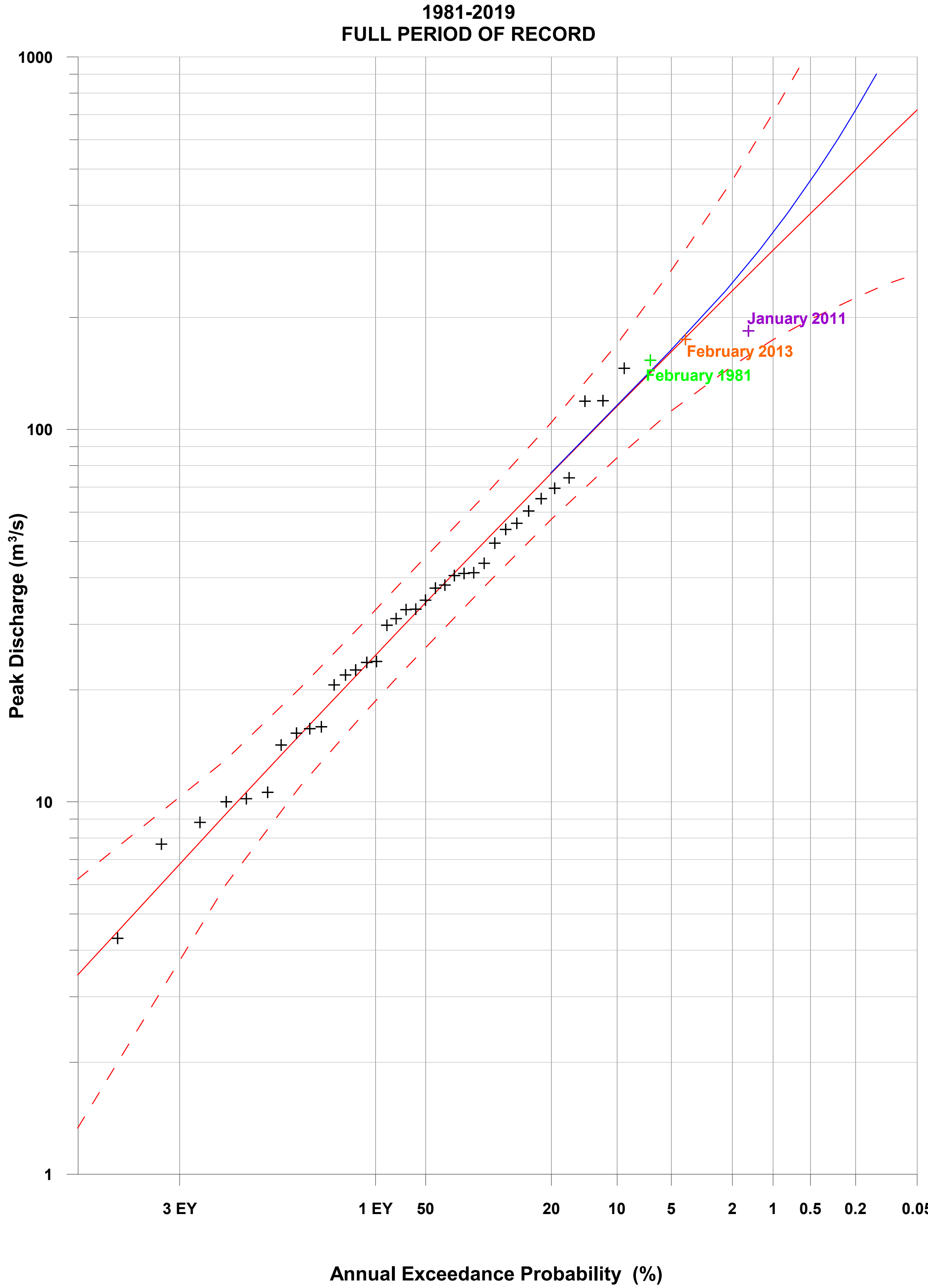
	Present Study	Lithgow Flood Study Review (Lyall & Associates, 2017)
Expected Probability Adjustment		
Log-Pearson III 5% Confidence Limits		
Log-Pearson III 95% Confidence Limits		
Log-Pearson III Fit		
Recorded Annual Maximum Discharge	+	+

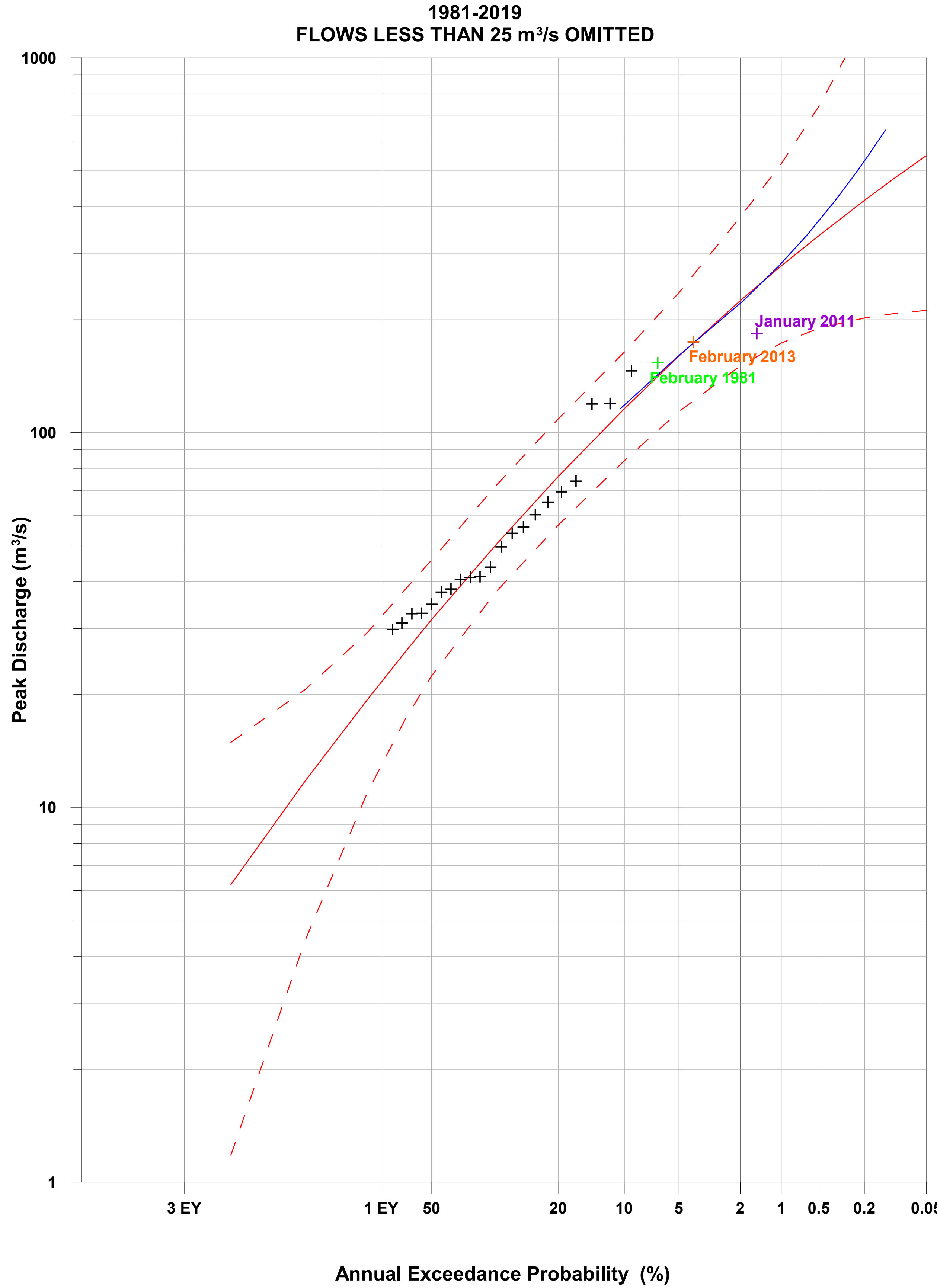
Lyall & Associates

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B1.1

FLOOD FREQUENCY RELATIONSHIP
LOG-PEARSON 3 ANNUAL SERIES 1981-2013
FARMERS CREEK AT MOUNT WALKER STREAM GAUGE (GS 212042)





LEGEND

- Expected Probability Adjustment
- Log-Pearson III 5% Confidence Limits
- Log-Pearson III 95% Confidence Limits
- Log-Pearson III Fit
- Recorded Annual Maximum Discharge

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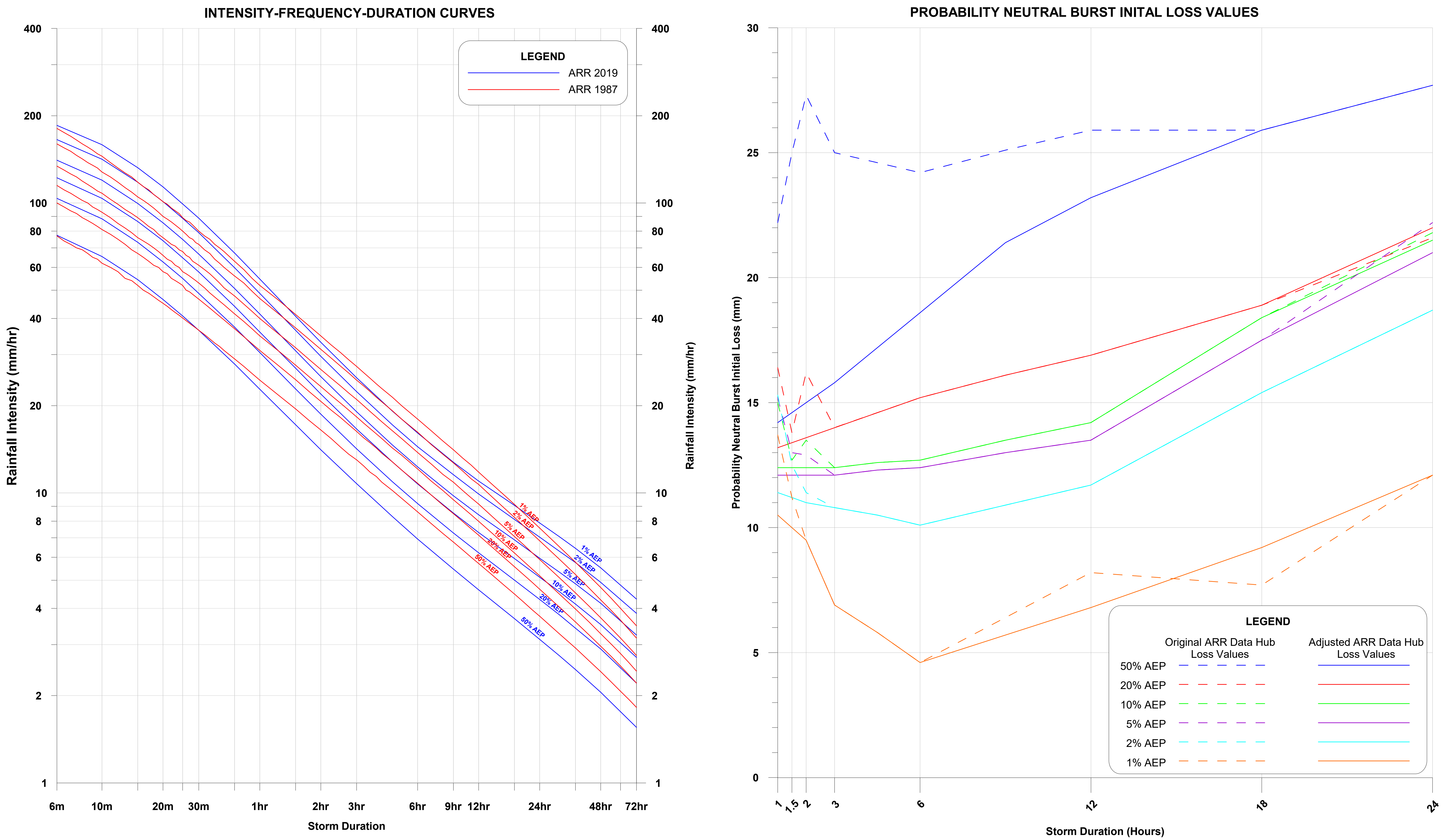
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B1.2

FLOOD FREQUENCY RELATIONSHIP
LOG-PEARSON 3 ANNUAL SERIES 1981-2019
FARMERS CREEK AT MOUNT WALKER STREAM GAUGE (GS 212042)



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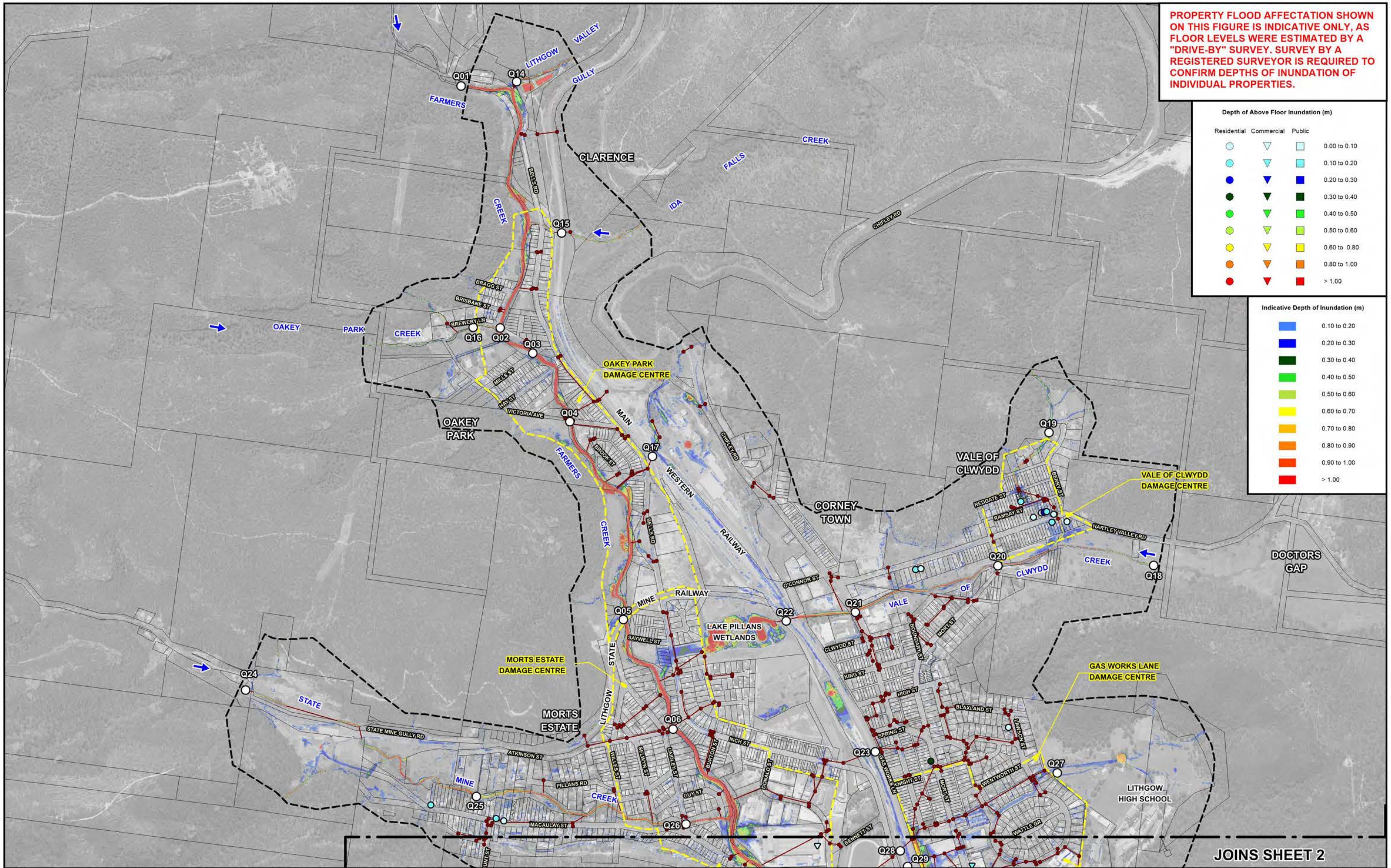
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B2.1

INTENSITY-FREQUENCY-DURATION CURVES (ARR 1987 VERSUS ARR 2019) AND ADJUSTED PROBABILITY NEUTRAL BURST INITIAL LOSS VALUES



PROPERTY FLOOD AFFECTATION SHOWN ON THIS FIGURE IS INDICATIVE ONLY, AS FLOOR LEVELS WERE ESTIMATED BY A "DRIVE-BY" SURVEY. SURVEY BY A REGISTERED SURVEYOR IS REQUIRED TO CONFIRM DEPTHS OF INUNDATION OF INDIVIDUAL PROPERTIES.

Depth of Above Floor Inundation (m)

Residential	Commercial	Public	
○	▽	□	0.00 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 0.80
●	▼	■	0.80 to 1.00
●	▼	■	> 1.00

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

N

120 0 120 240 360 m

Scale: 1:12,000

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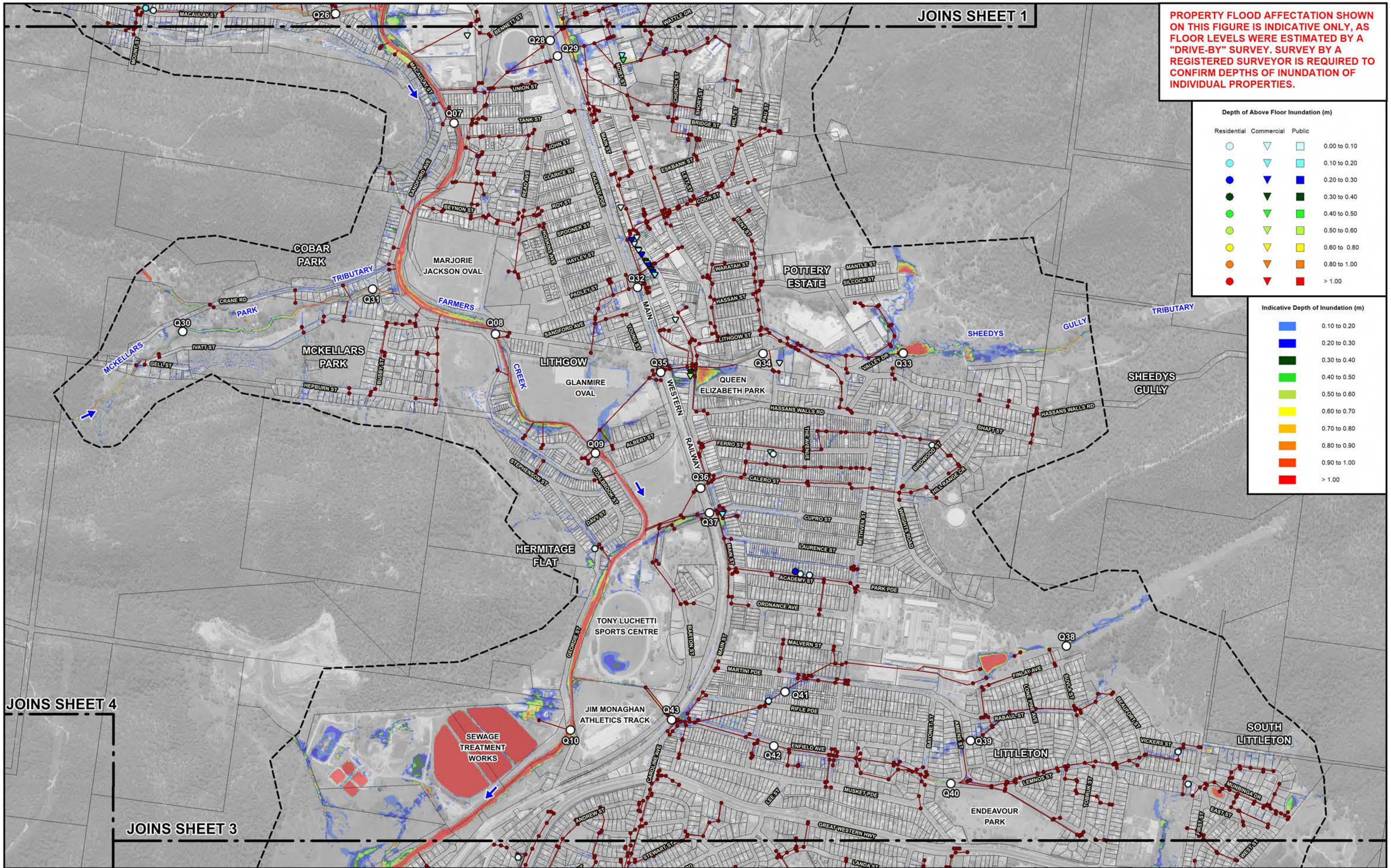
LEGEND

Existing Drainage Network		Q06	Peak Flow Location and Identifier
Two-Dimensional Model Boundary			Damage Centre

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.1
(Sheet 1 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
20% AEP



120 0 120 240 360 m

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LEGEND

Existing Drainage Network

Two-Dimensional Model Boundary

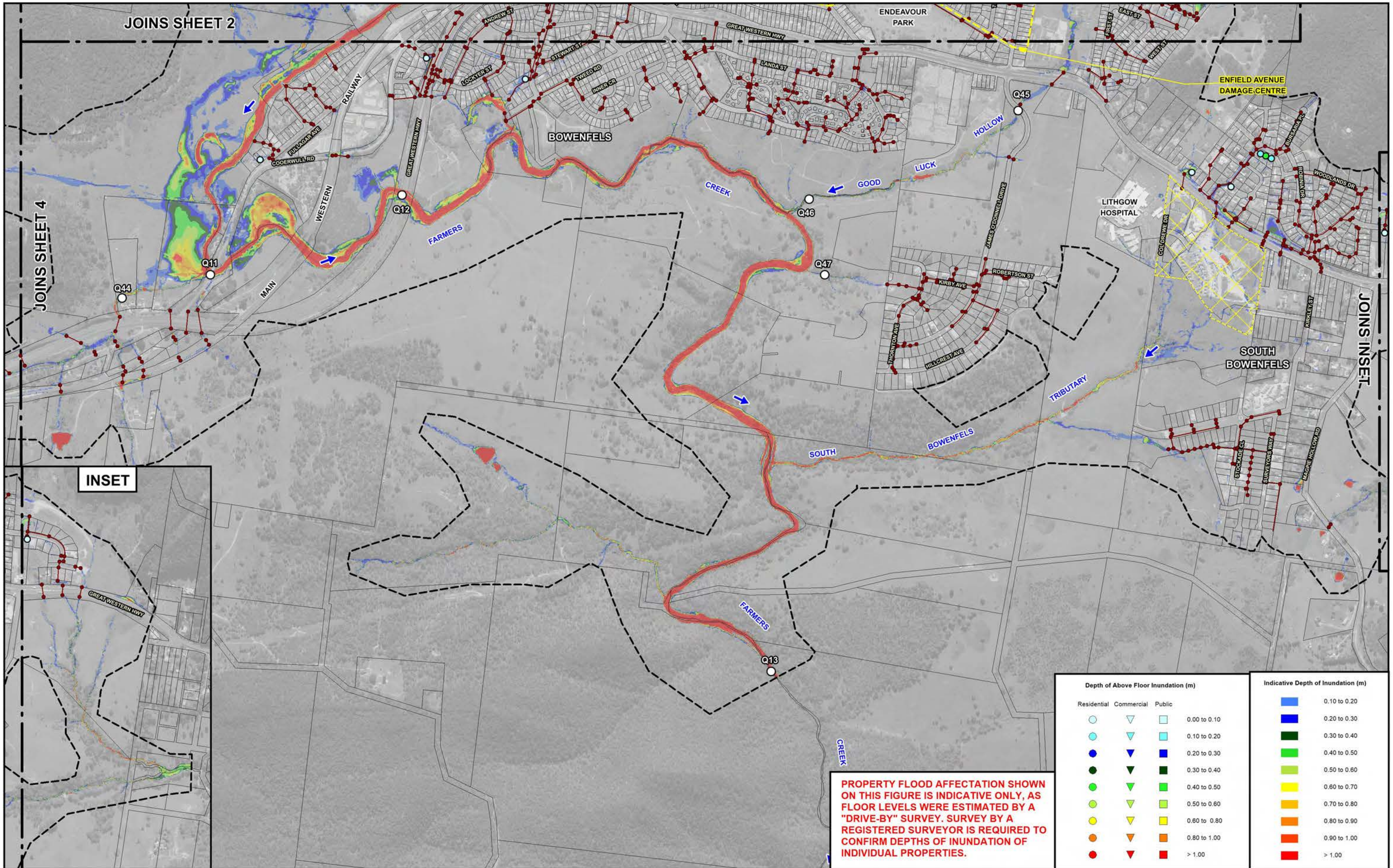
Q38 Peak Flow Location and Identifier

Damage Centre

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.1
(Sheet 2 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
20% AEP



120 0 120 240 360 m

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LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Damage Centre
- Q46 Peak Flow Location and Identifier
- Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.

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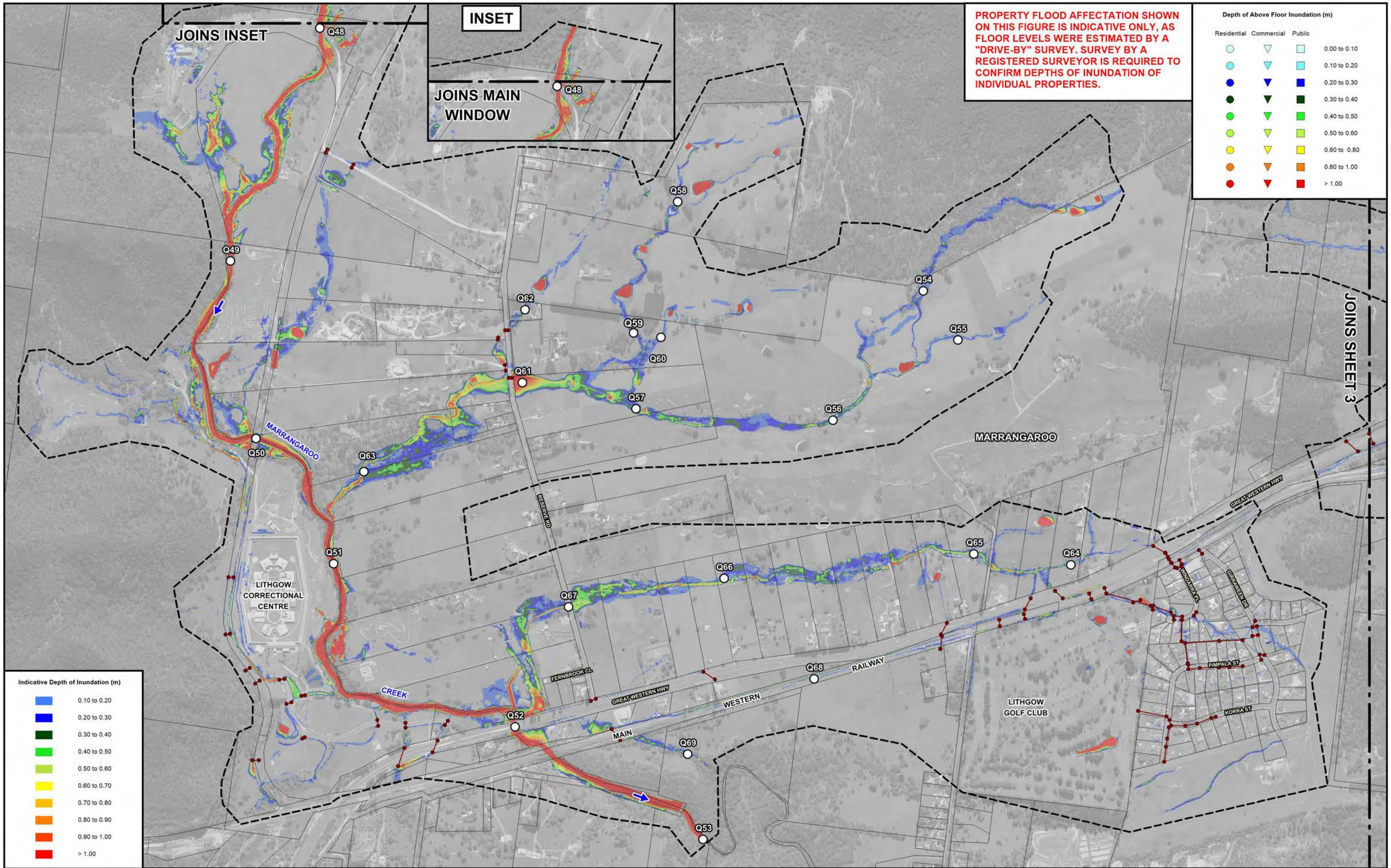
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.1
(Sheet 3 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
20% AEP



N

120 0 120 240 360 m

Scale: 1:12,000

Lyall & Associates

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LEGEND

Existing Drainage Network

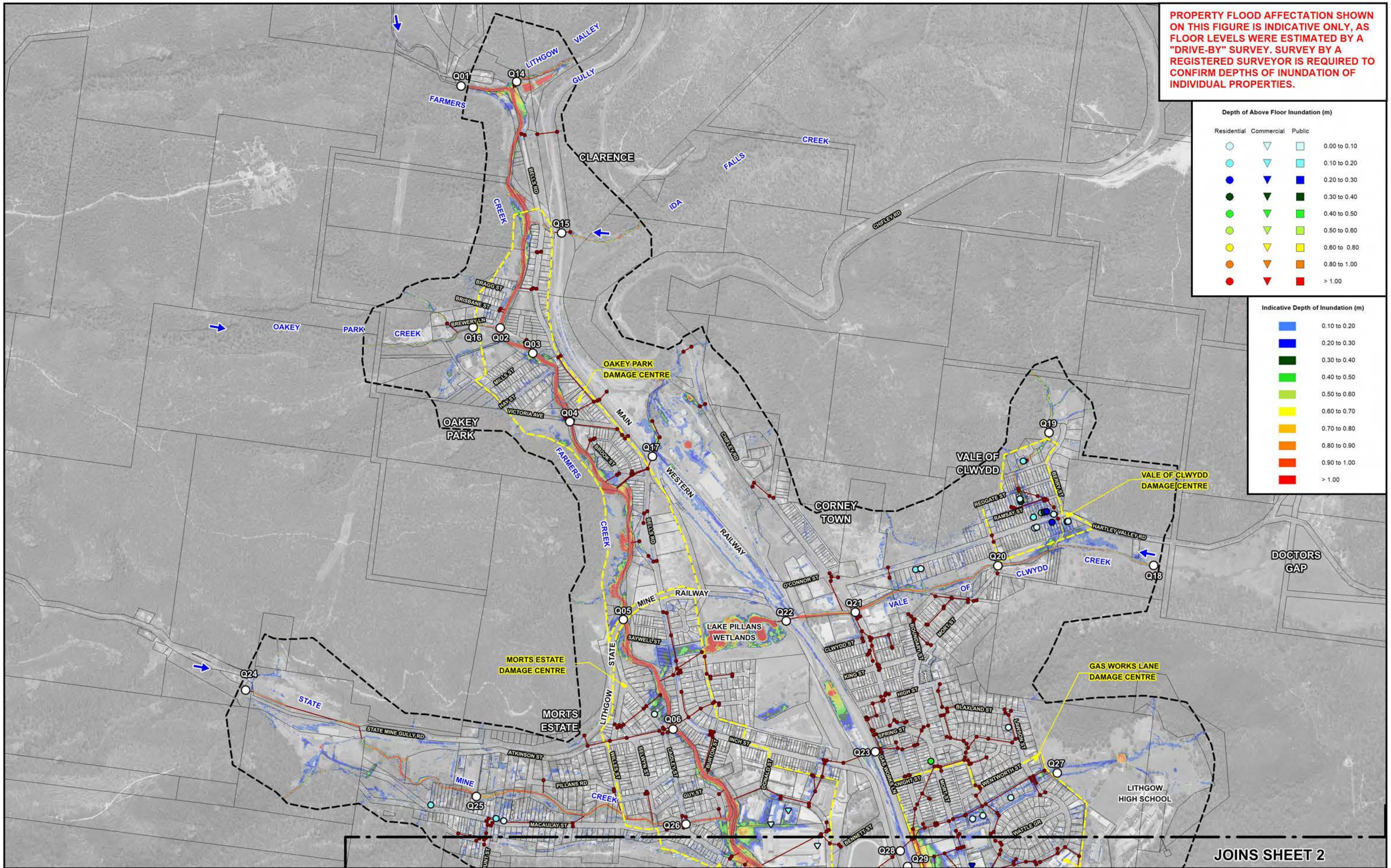
Two-Dimensional Model Boundary

Q64 Peak Flow Location and Identifier

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.1
(Sheet 4 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
20% AEP



120 0 120 240 360 m

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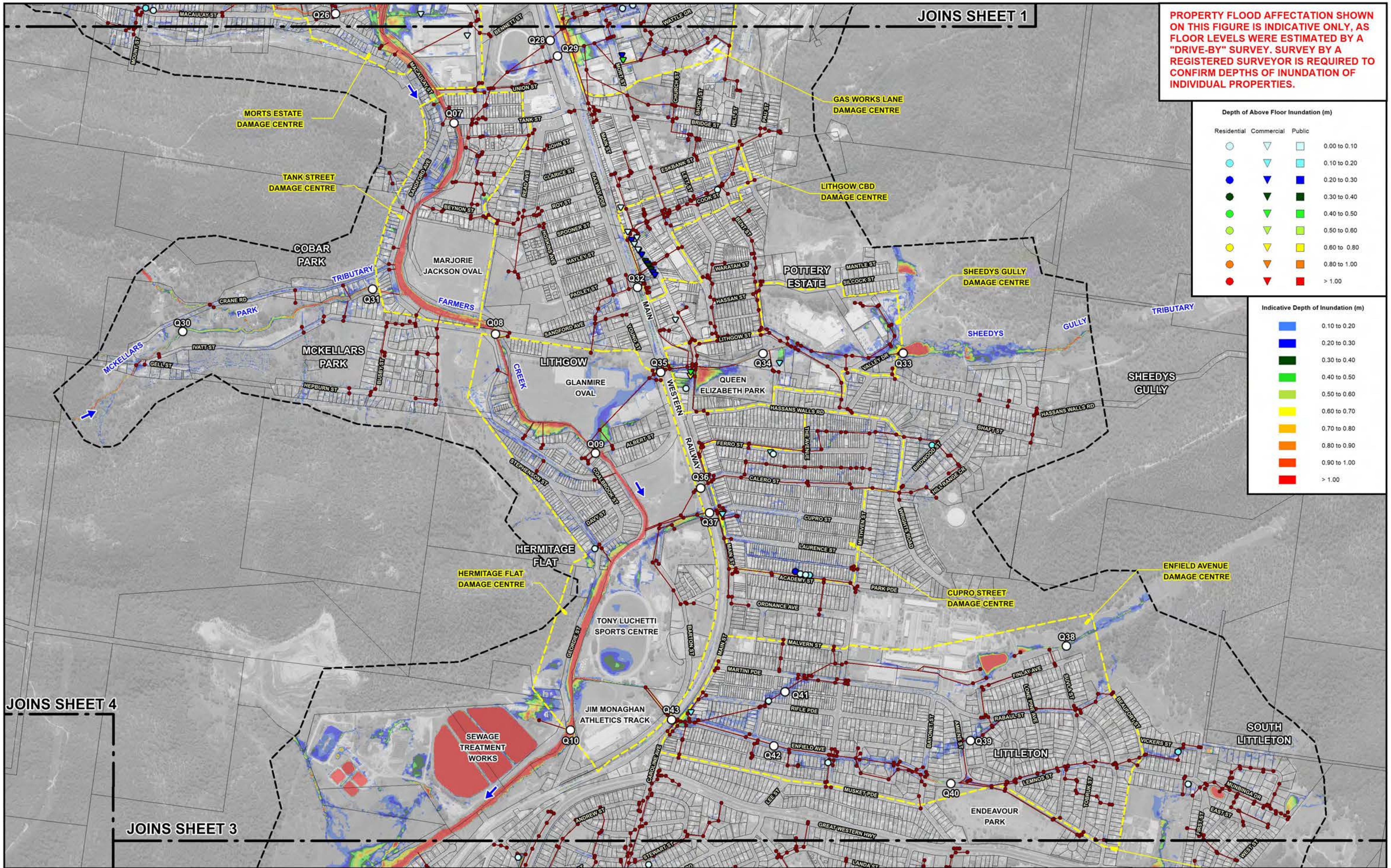
LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Q06 Peak Flow Location and Identifier
- Damage Centre

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.2
(Sheet 1 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
10% AEP



120 0 120 240 360 m

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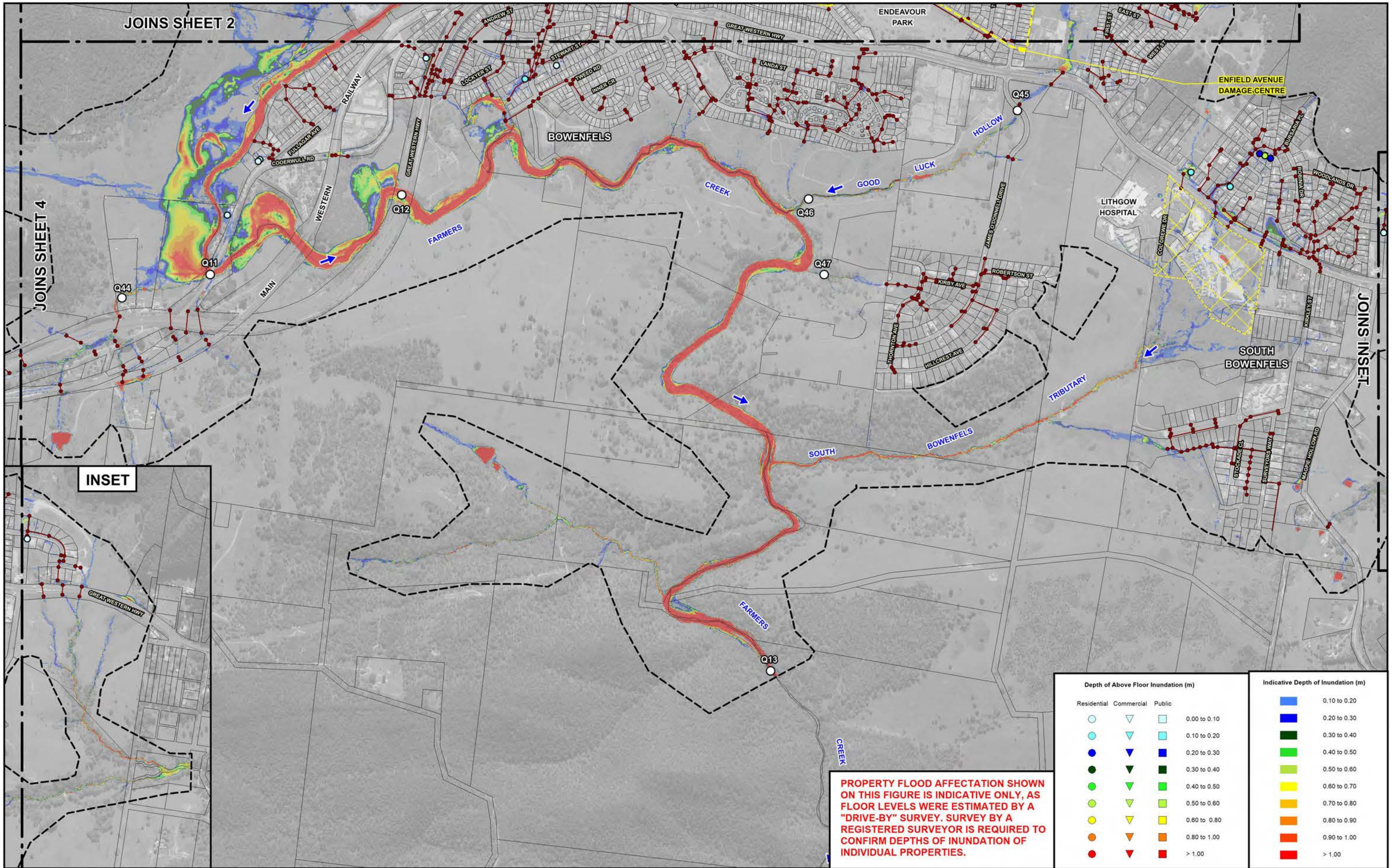
LEGEND

Existing Drainage Network
Two-Dimensional Model Boundary
Q38 Peak Flow Location and Identifier
Damage Centre

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.2
(Sheet 2 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
10% AEP



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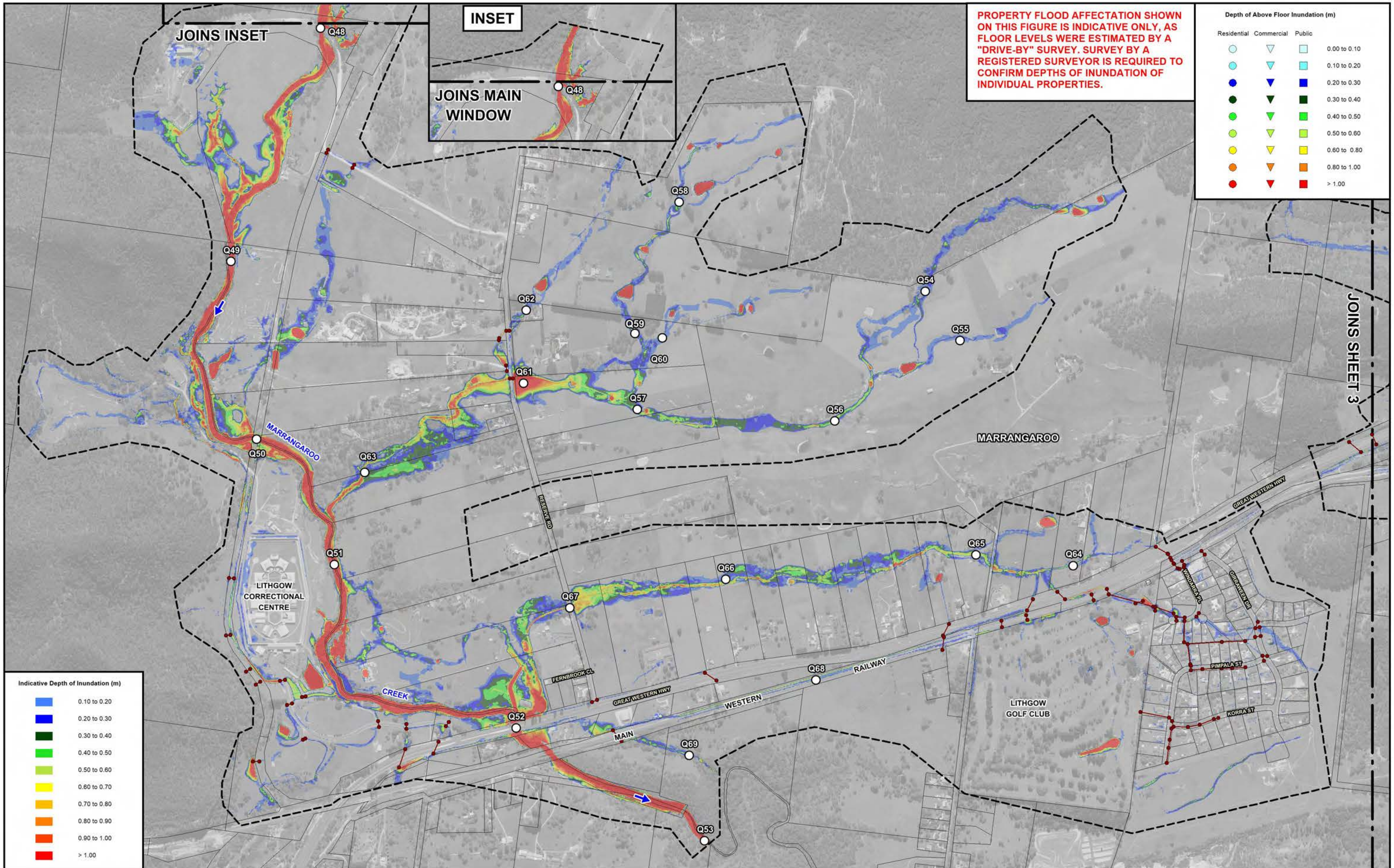
LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Damage Centre
- Q46 Peak Flow Location and Identifier
- Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.2
(Sheet 3 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
10% AEP



N

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LEGEND

Existing Drainage Network

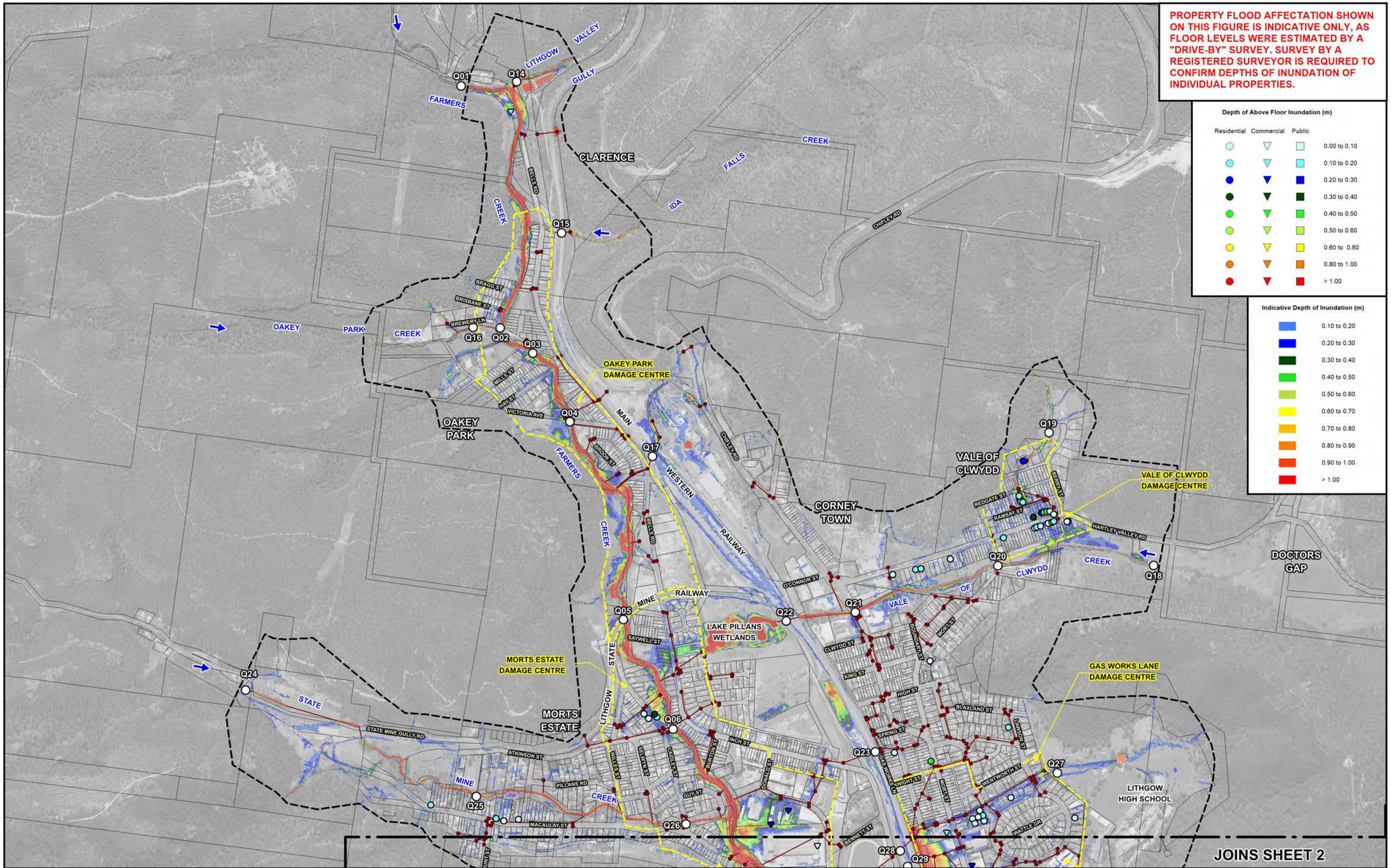
Two-Dimensional Model Boundary

Q64 Peak Flow Location and Identifier

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.2
(Sheet 4 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
10% AEP



120 0 120 240 360 m

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LEGEND

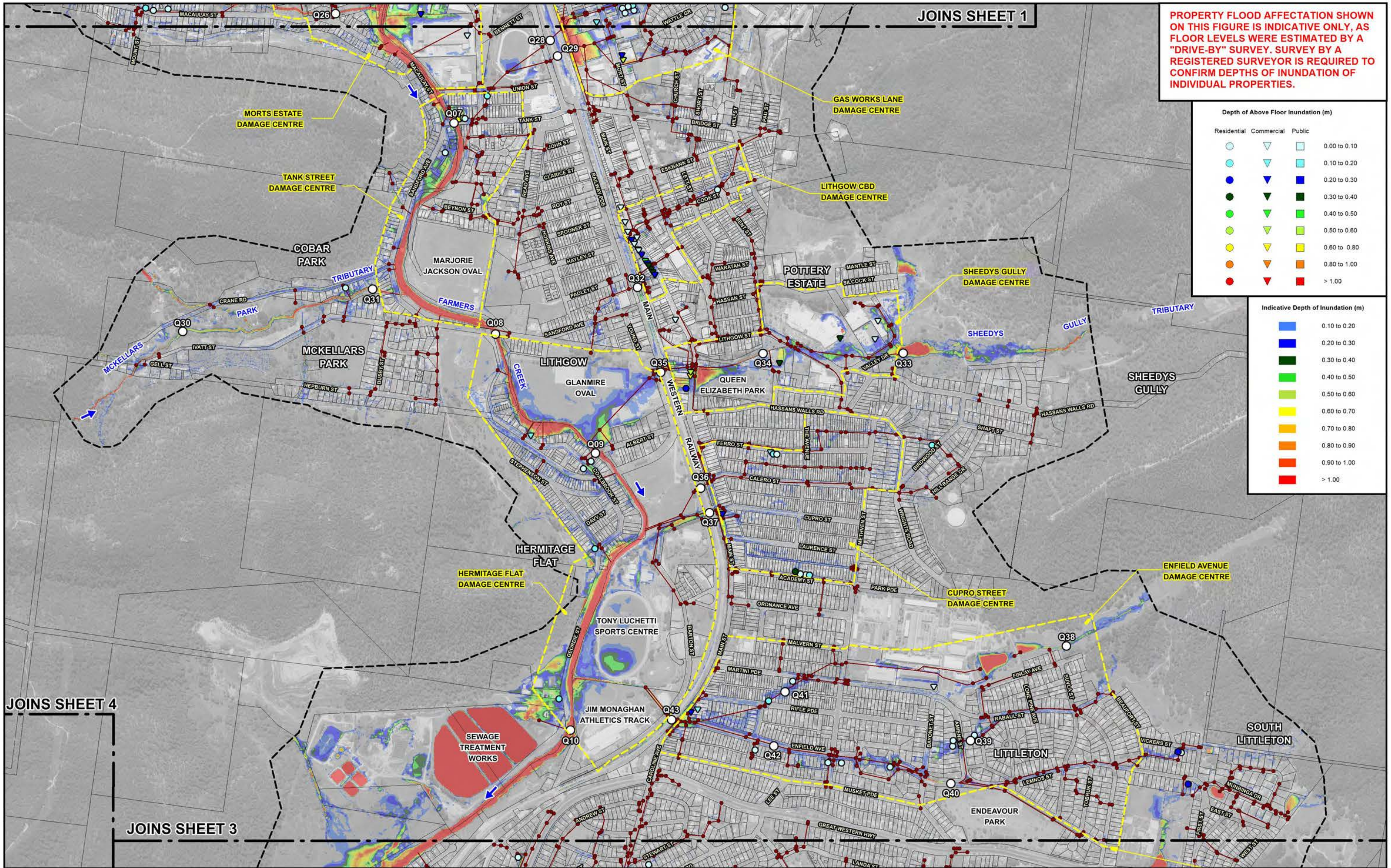
Existing Drainage Network	Peak Flow Location and Identifier (Q06)
Two-Dimensional Model Boundary	Damage Centre

Lyall & Associates

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.3
(Sheet 1 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
5% AEP



120 0 120 240 360 m

Scale: 1:12,000

NOTE:

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LEGEND

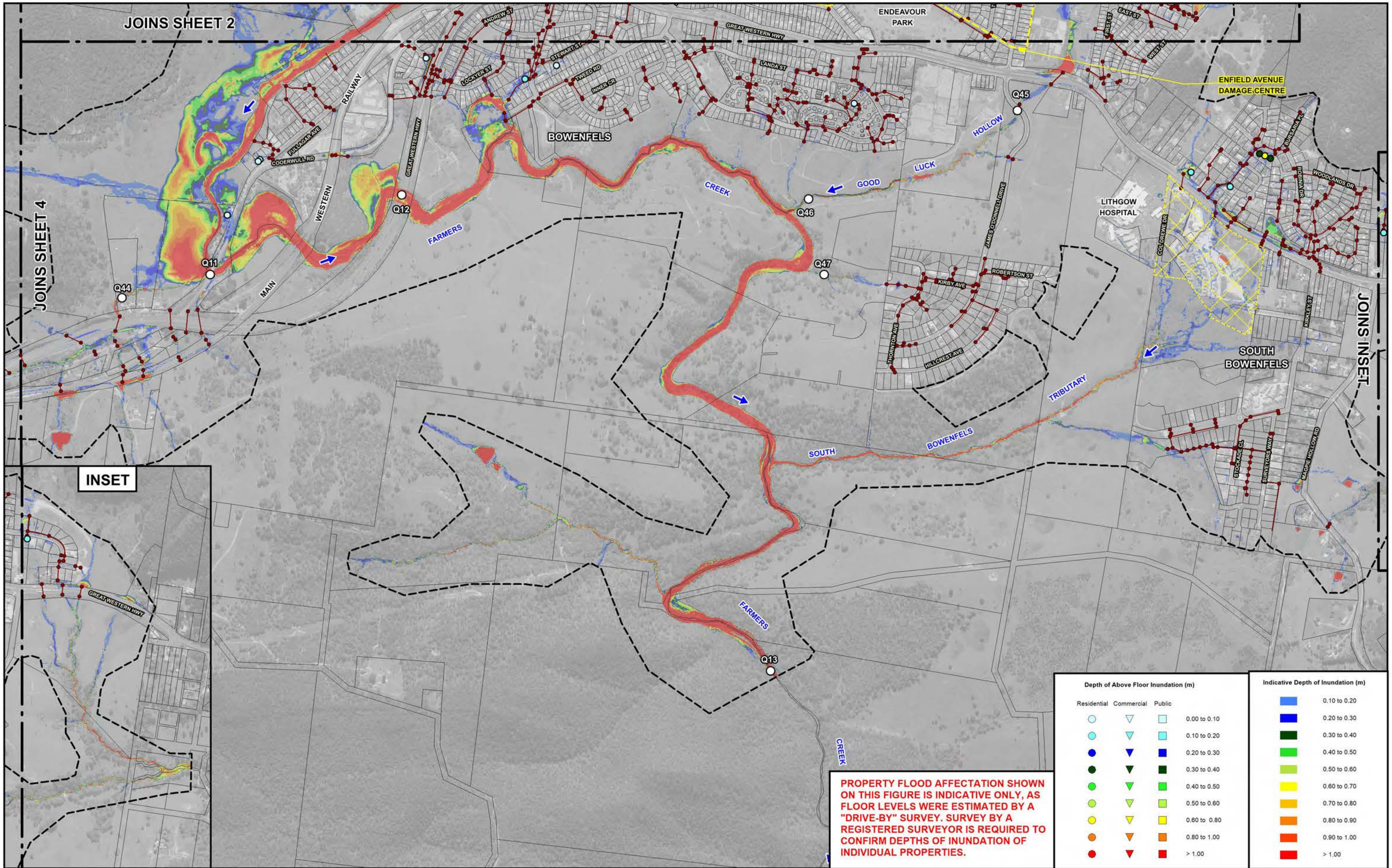
	Existing Drainage Network	Q38	Peak Flow Location and Identifier
	Two-Dimensional Model Boundary		Damage Centre

Lyall & Associates

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.3
(Sheet 2 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
5% AEP



120 0 120 240 360 m

Scale: 1:12,000

Lyall & Associates

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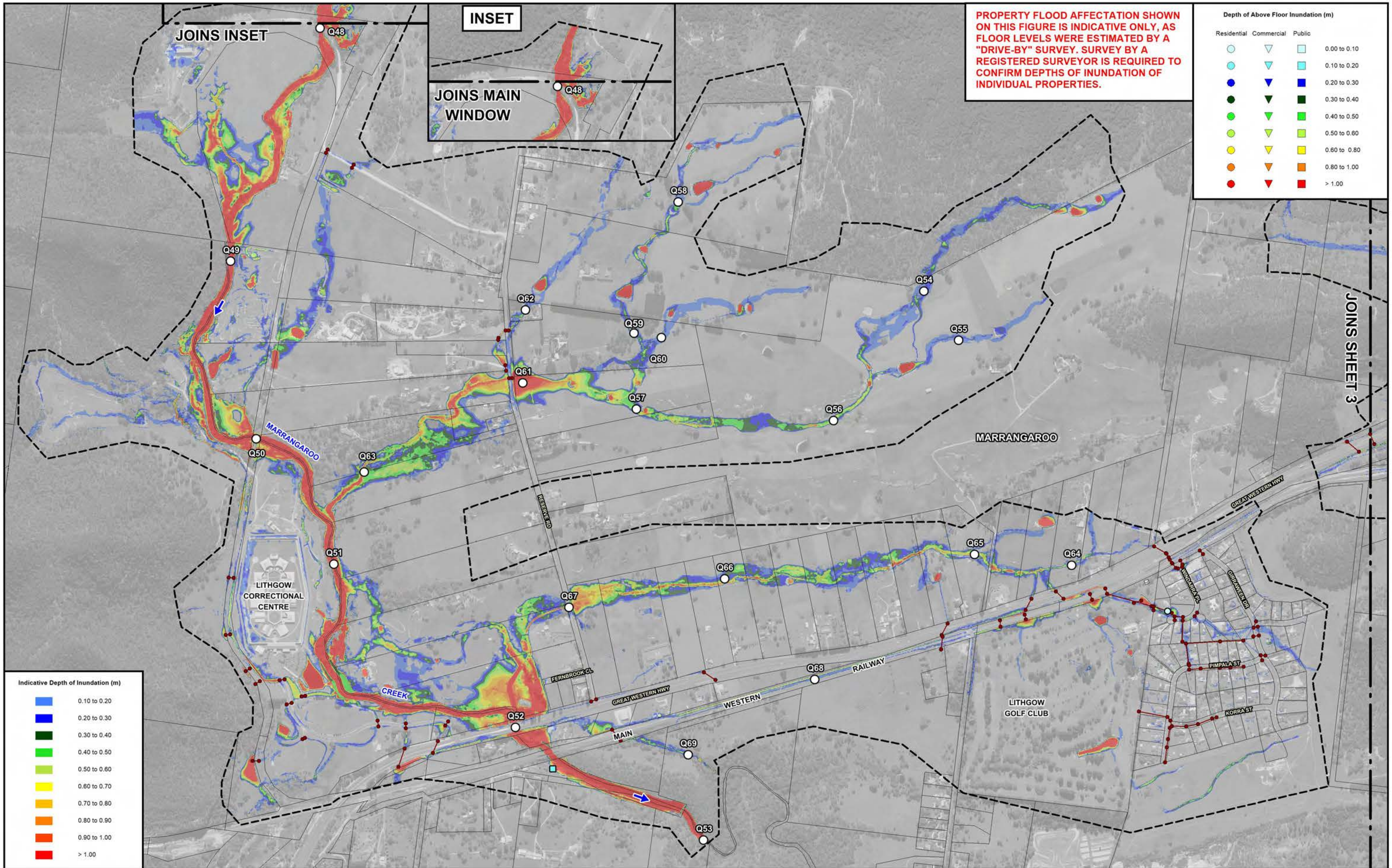
LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Damage Centre
- Q46 Peak Flow Location and Identifier
- Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.3
(Sheet 3 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
5% AEP



N

120 0 120 240 360 m

Scale: 1:12,000

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Lyall & Associates

LEGEND

Existing Drainage Network

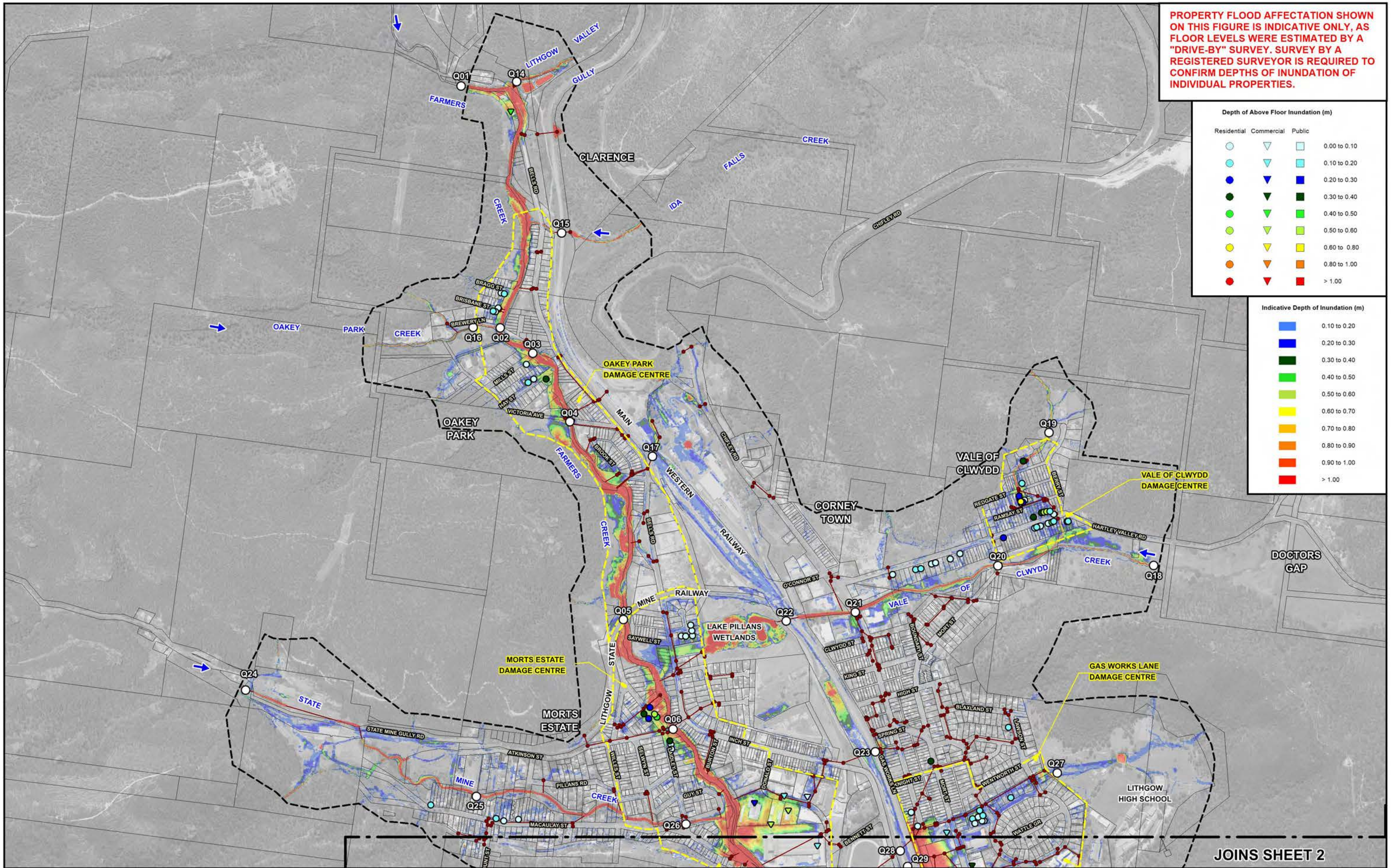
Two-Dimensional Model Boundary

Q64 Peak Flow Location and Identifier

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.3
(Sheet 4 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
5% AEP



120 0 120 240 360 m

Scale: 1:12,000

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LEGEND

Existing Drainage Network

Two-Dimensional Model Boundary

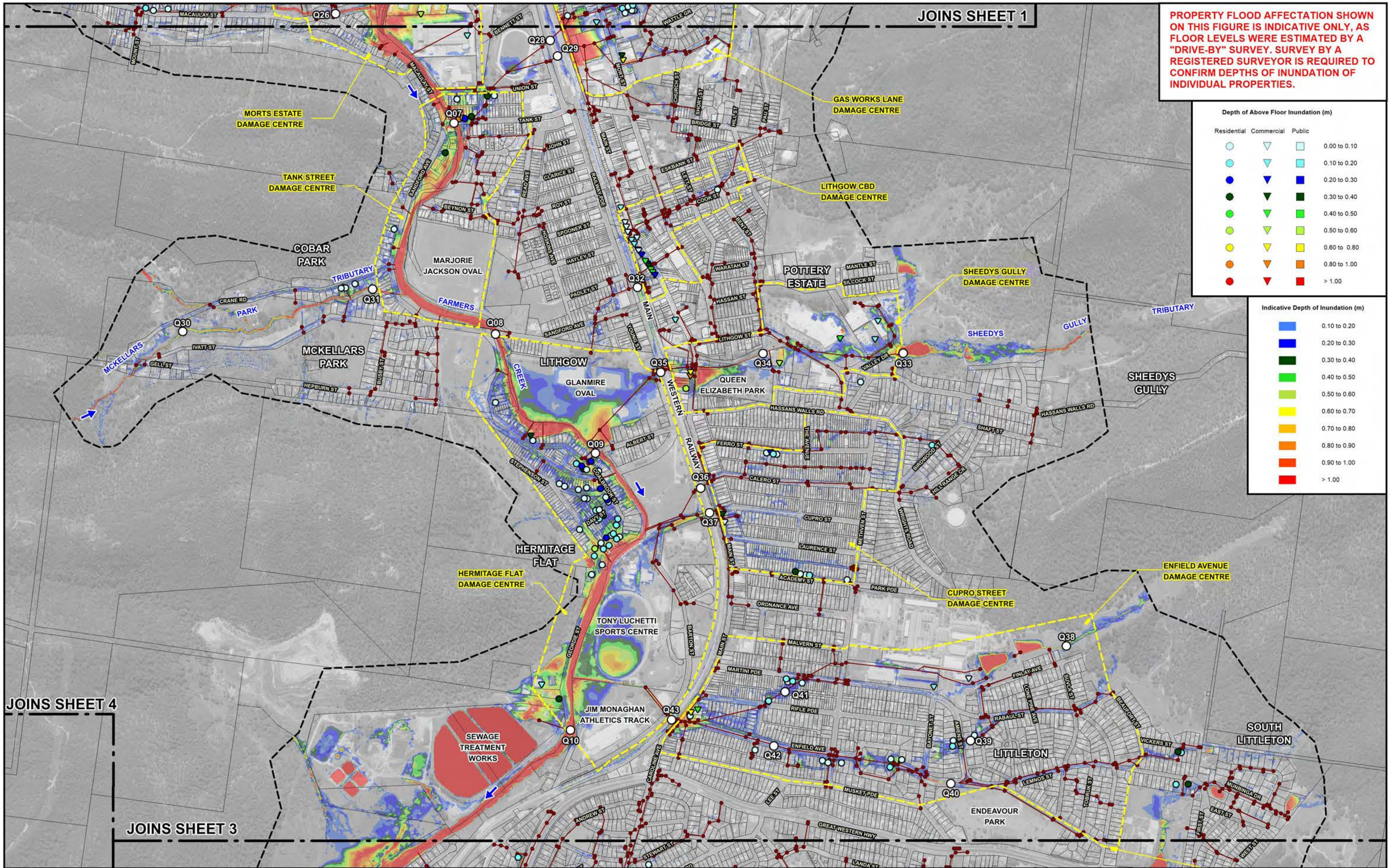
Q06 Peak Flow Location and Identifier

Damage Centre

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.4
(Sheet 1 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
2% AEP



120 0 120 240 360 m

Scale: 1:12,000

NOTE:

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LEGEND

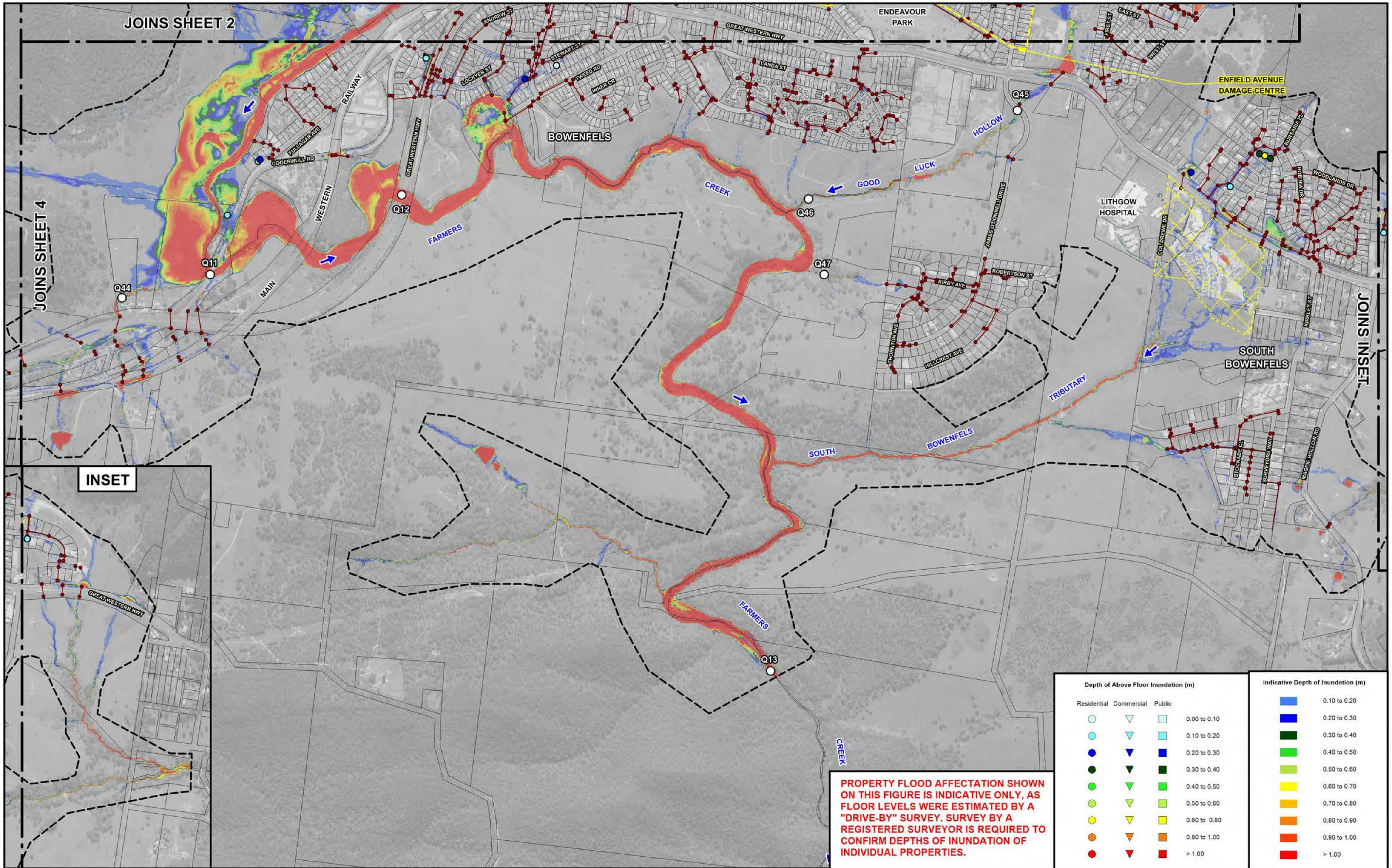
- Existing Drainage Network
- Two-Dimensional Model Boundary
- Q38 Peak Flow Location and Identifier
- Damage Centre

Lyall & Associates

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.4
(Sheet 2 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
2% AEP



N

120 0 120 240 360 m

Scale: 1:12,000

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LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Damage Centre
- Q46 Peak Flow Location and Identifier
- Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.

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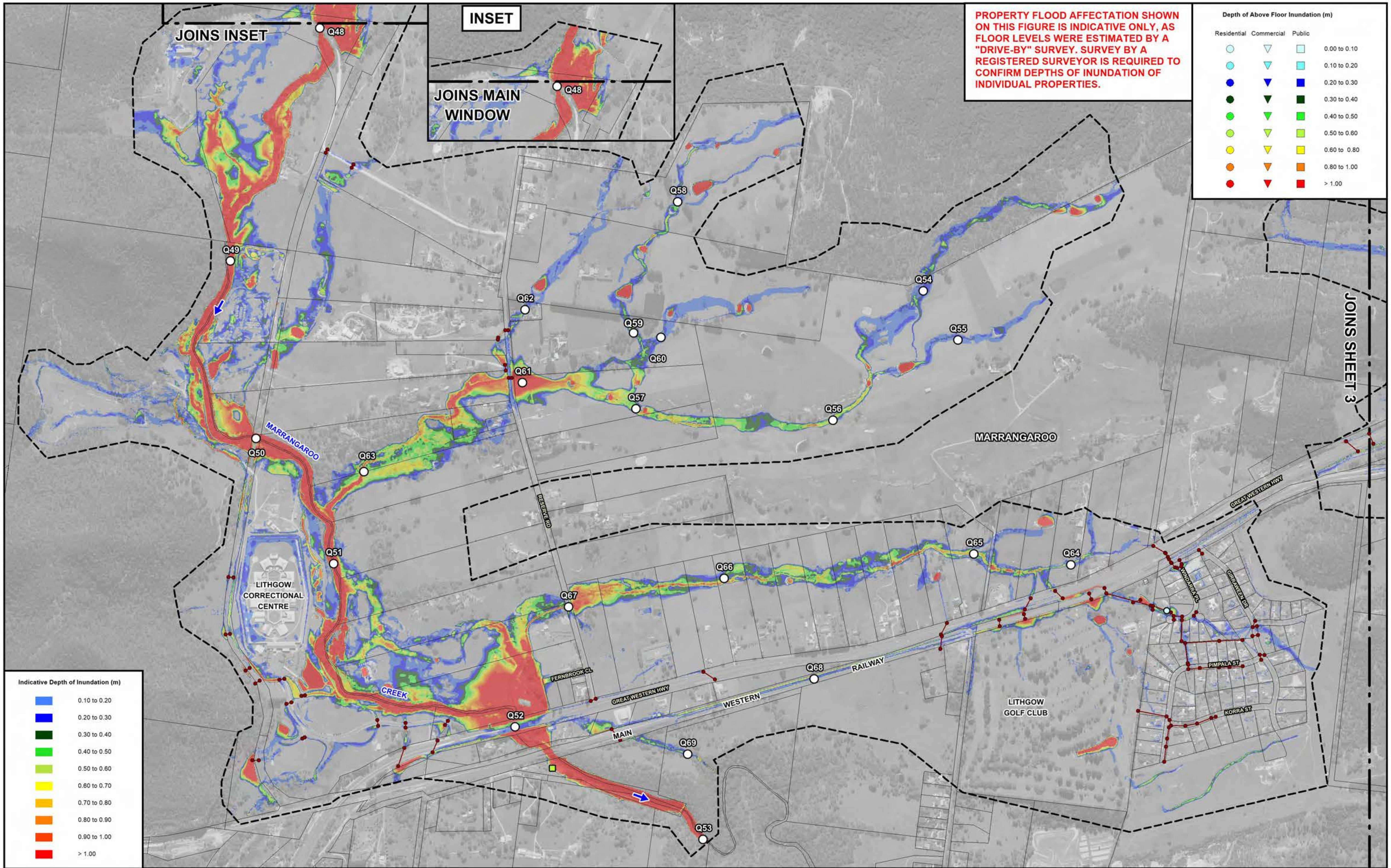
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.4
(Sheet 3 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
2% AEP



N

120 0 120 240 360 m

Scale: 1:12,000

Lyall & Associates

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LEGEND

Existing Drainage Network

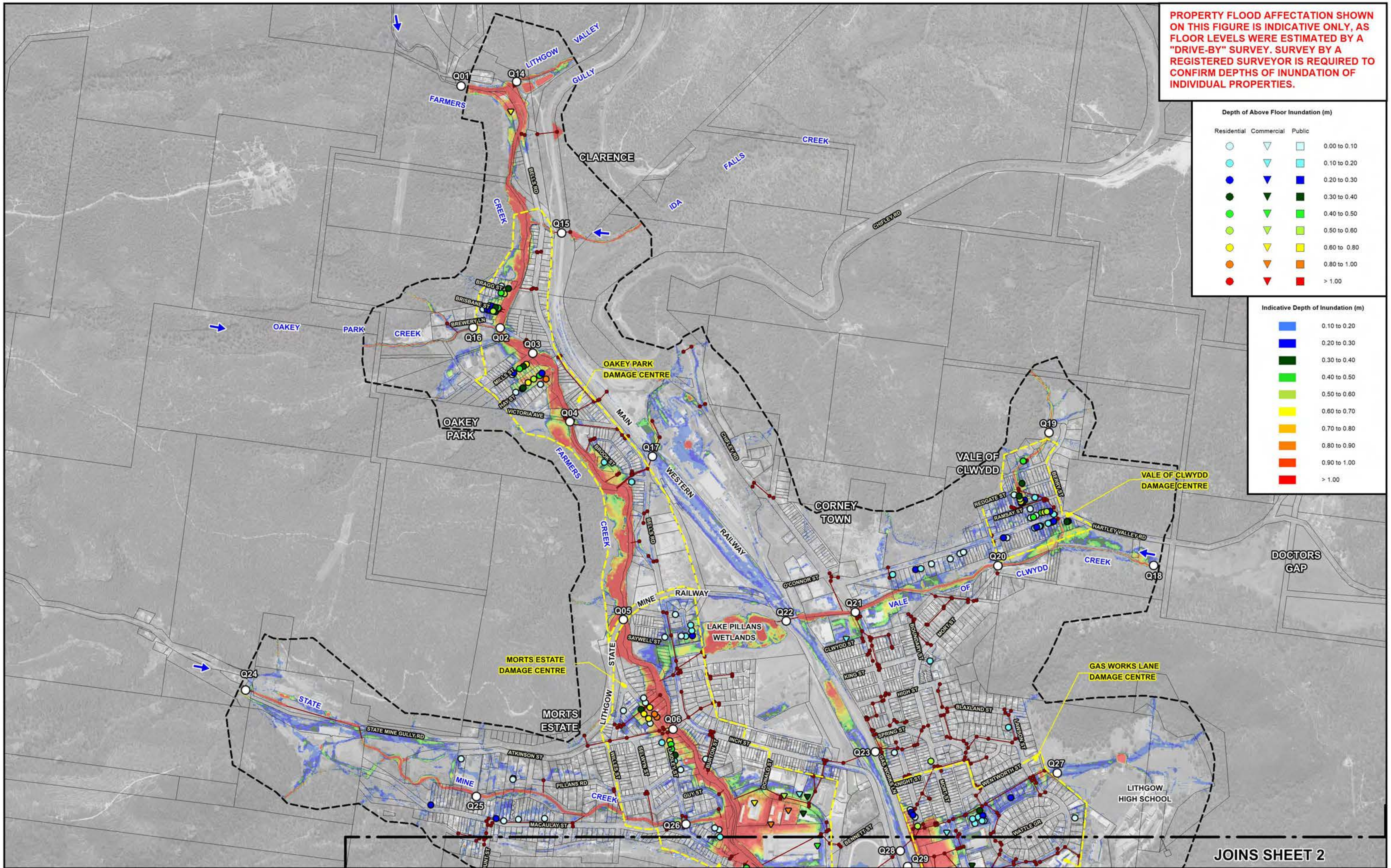
Two-Dimensional Model Boundary

Q64 Peak Flow Location and Identifier

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.4
(Sheet 4 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
2% AEP



120 0 120 240 360 m

Scale: 1:12,000

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Lyall & Associates

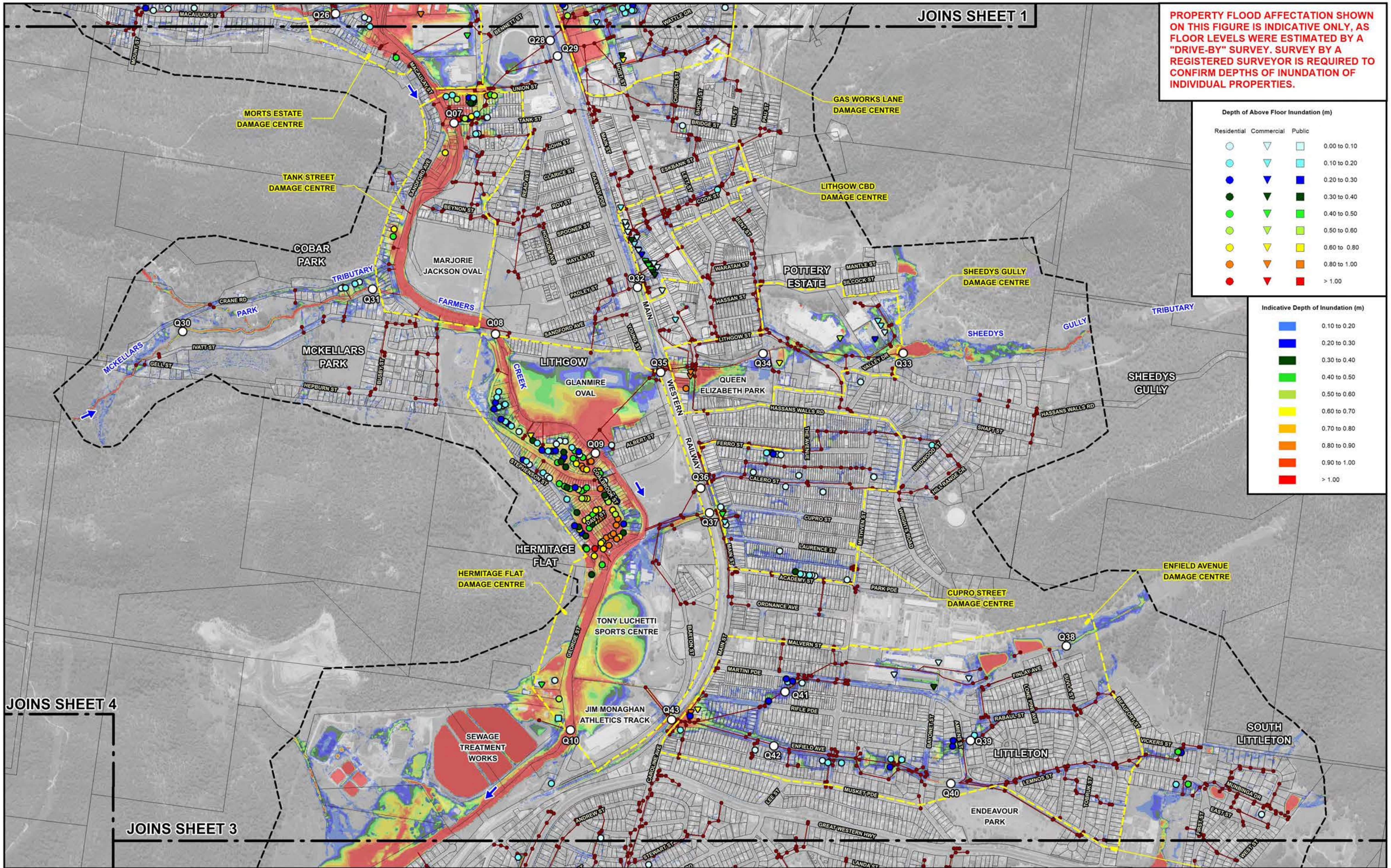
LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Q06 Peak Flow Location and Identifier
- Damage Centre

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.5
(Sheet 1 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
0.5% AEP



120 0 120 240 360 m

Scale: 1:12,000

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LEGEND

Existing Drainage Network

Two-Dimensional Model Boundary

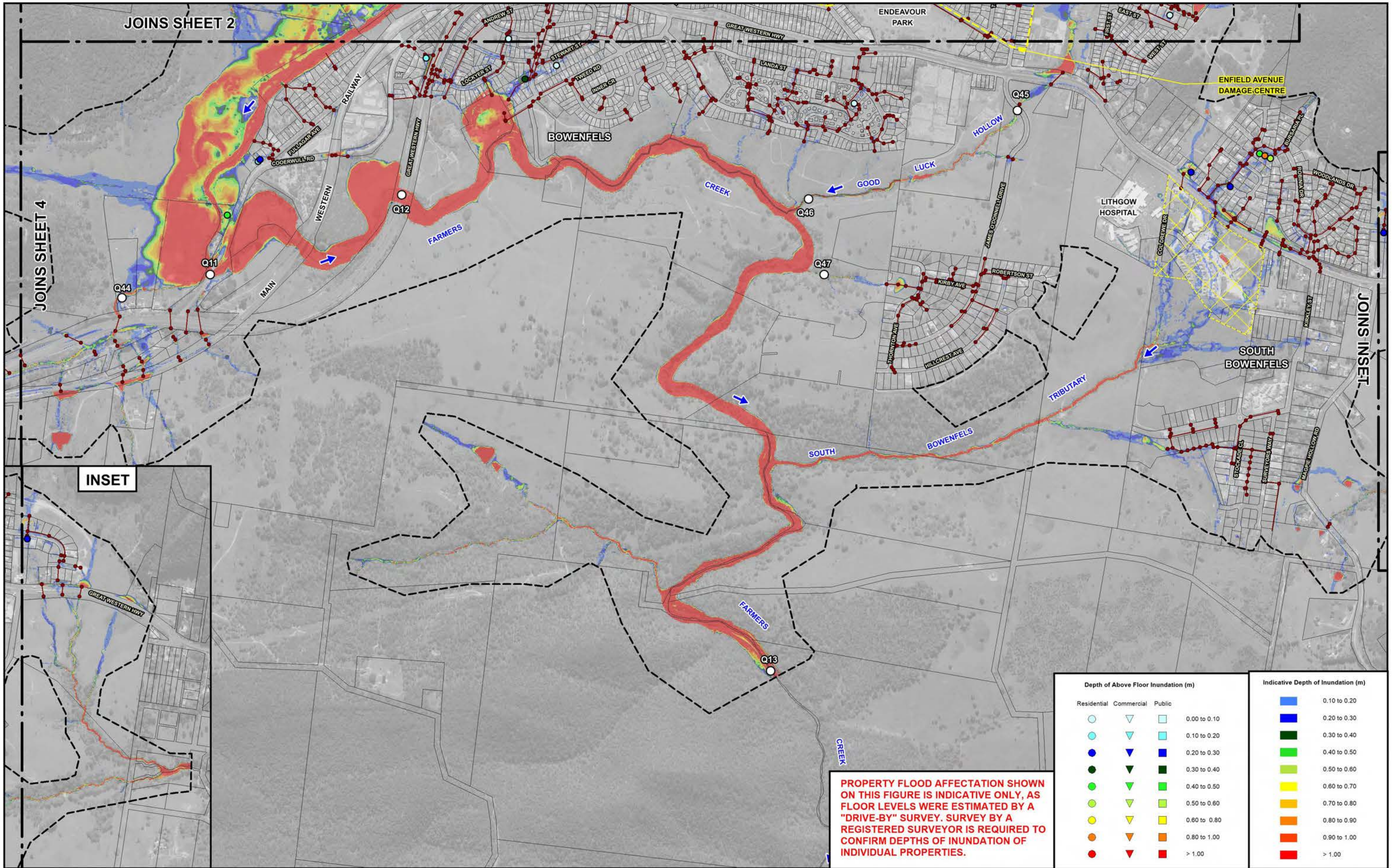
Q38 Peak Flow Location and Identifier

Damage Centre

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.5
(Sheet 2 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
0.5% AEP



N

120 0 120 240 360 m

Scale: 1:12,000

Lyall & Associates

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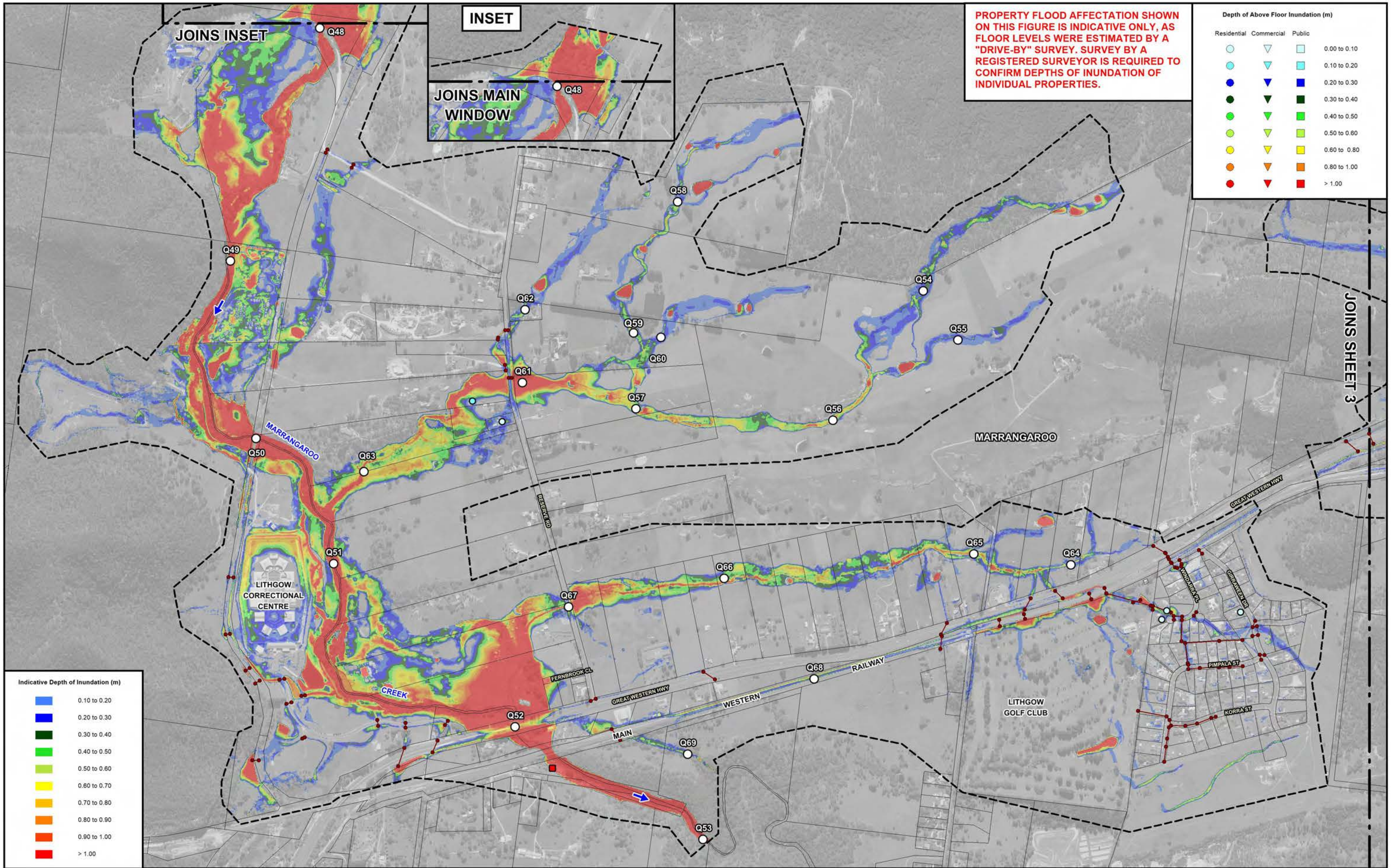
LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Damage Centre
- Q46 Peak Flow Location and Identifier
- Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.5
(Sheet 3 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
0.5% AEP



N

120 0 120 240 360 m

Scale: 1:12,000

Lyall & Associates

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LEGEND

Existing Drainage Network

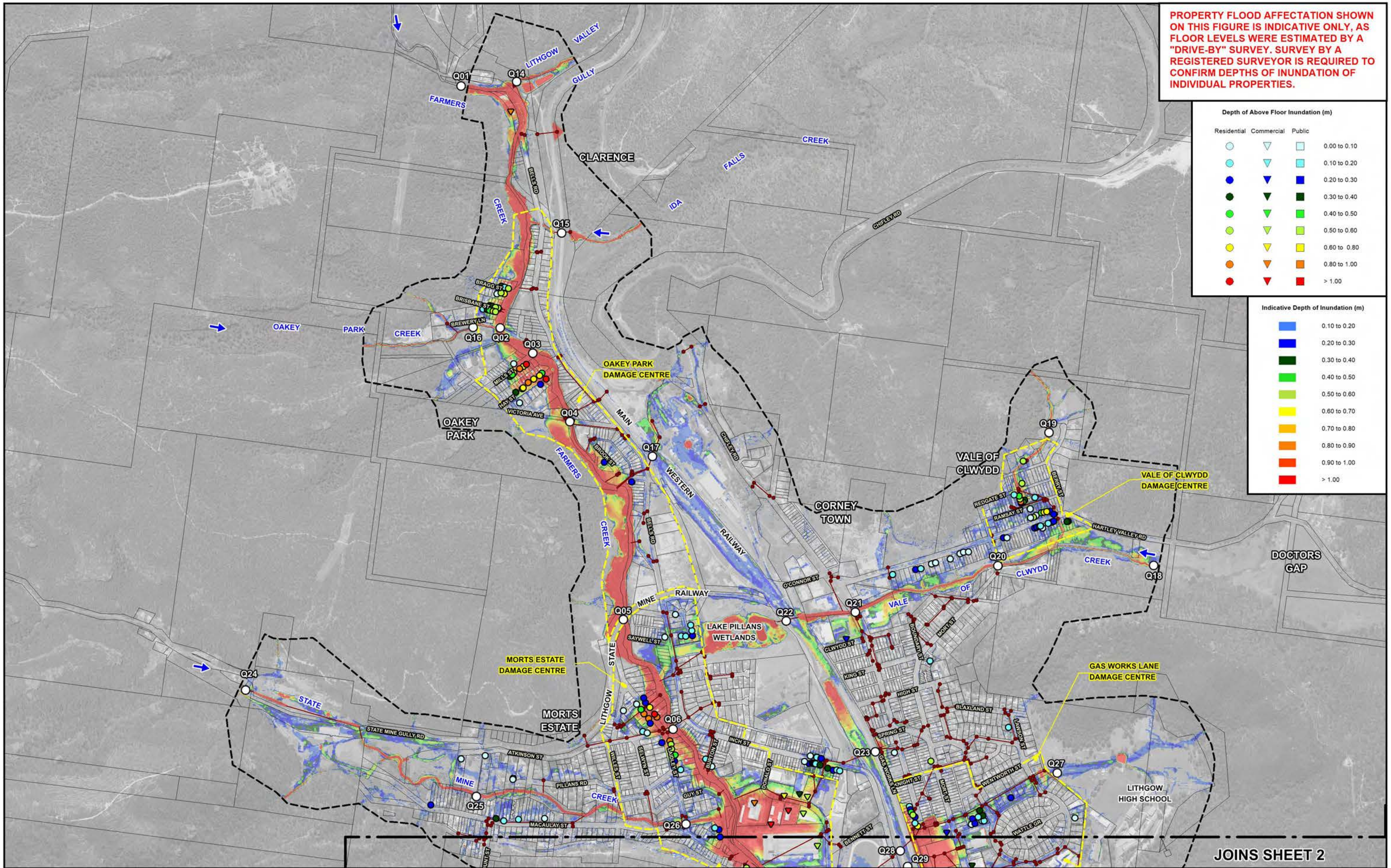
Two-Dimensional Model Boundary

Q64 Peak Flow Location and Identifier

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.5
(Sheet 4 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
0.5% AEP



120 0 120 240 360 m

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Lyall & Associates

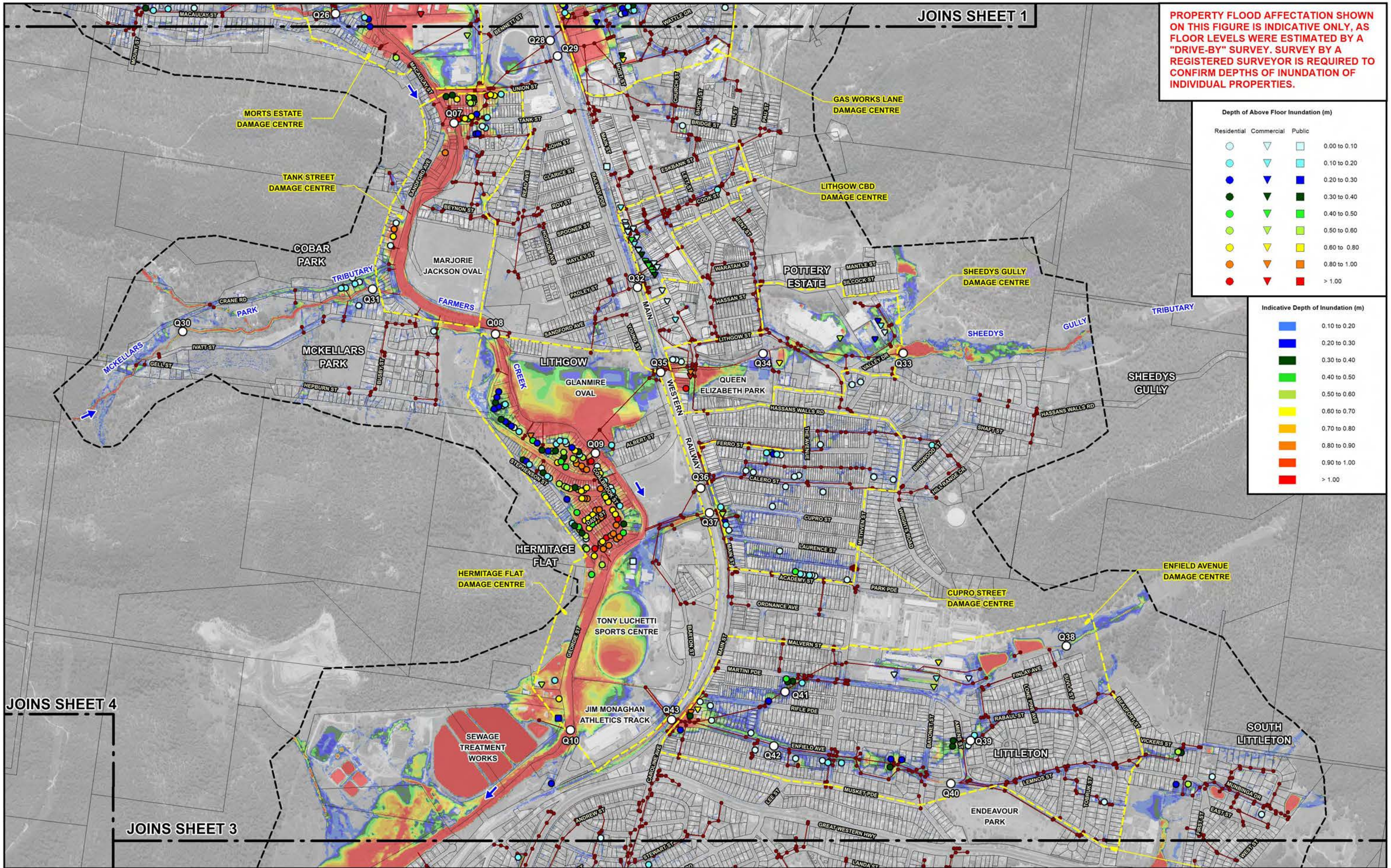
LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Q06 Peak Flow Location and Identifier
- Damage Centre

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.6
(Sheet 1 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
0.2% AEP



120 0 120 240 360 m

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Lyall & Associates

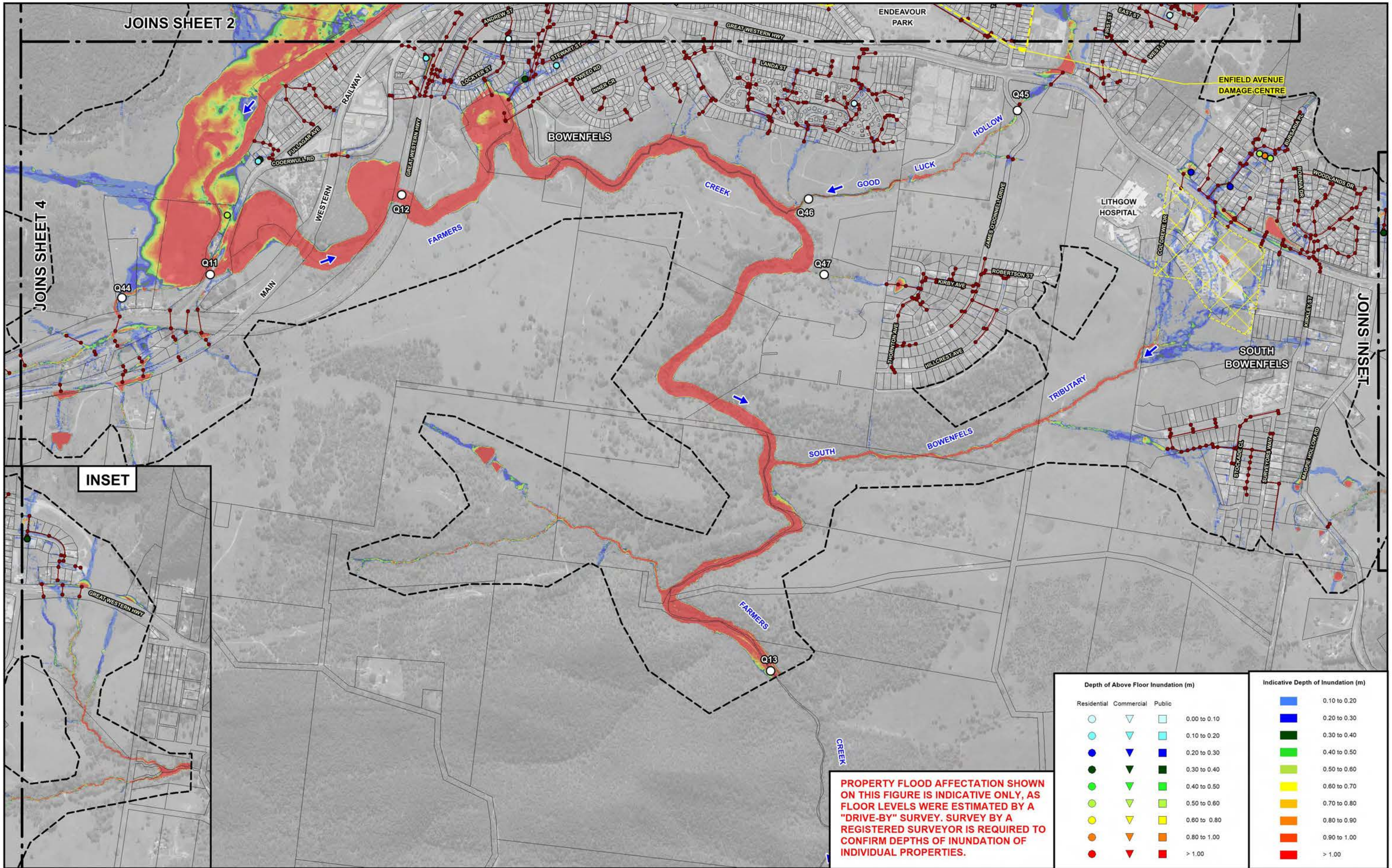
LEGEND

Existing Drainage Network	Peak Flow Location and Identifier (Q38)
Two-Dimensional Model Boundary	Damage Centre

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.6
(Sheet 2 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
0.2% AEP



N

120 0 120 240 360 m

Scale: 1:12,000

Lyall & Associates

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LEGEND

Existing Drainage Network

Two-Dimensional Model Boundary

Damage Centre

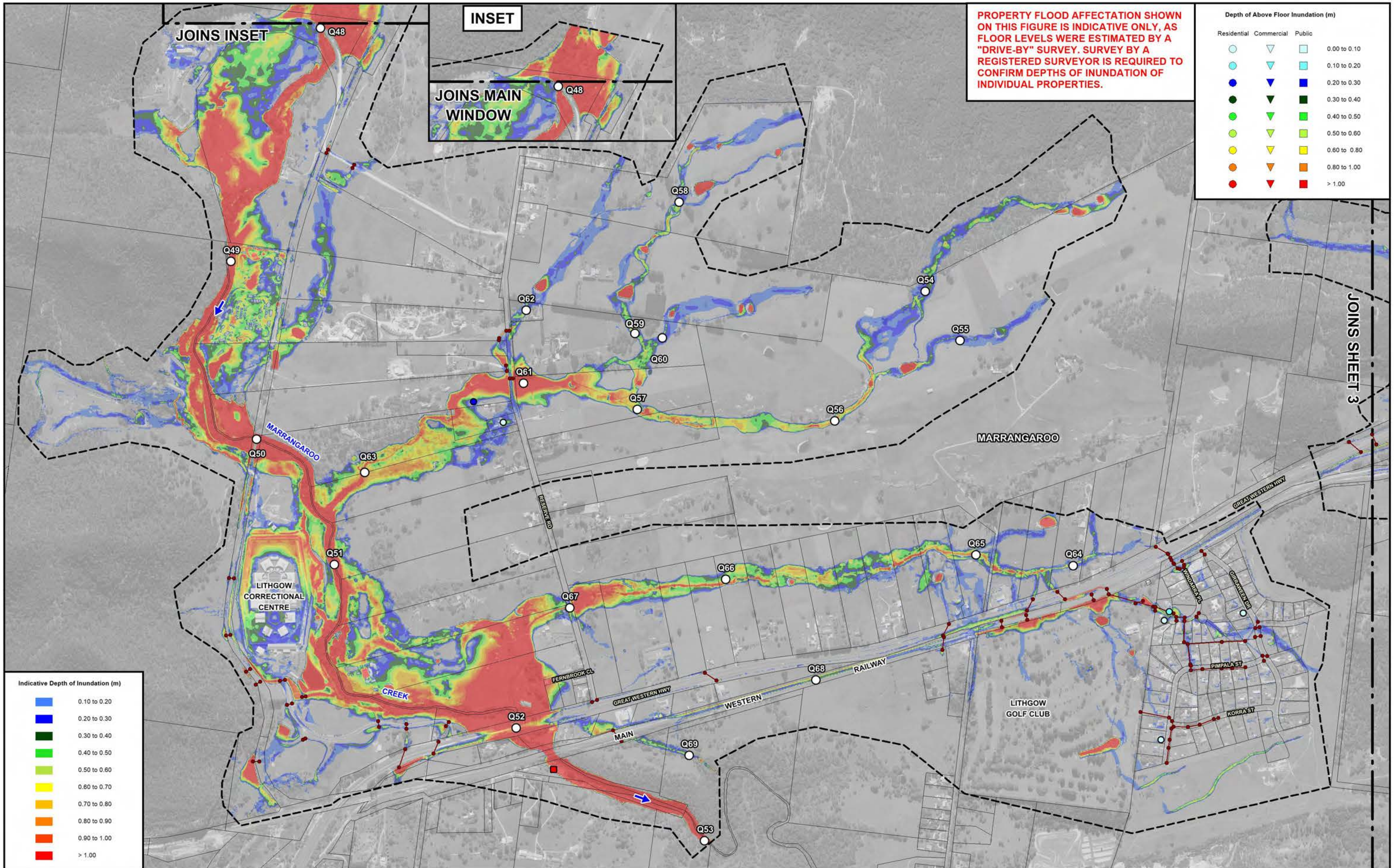
Q46 Peak Flow Location and Identifier

Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.6
(Sheet 3 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
0.2% AEP



N

120 0 120 240 360 m

Scale: 1:12,000

Lyall & Associates

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LEGEND

Existing Drainage Network

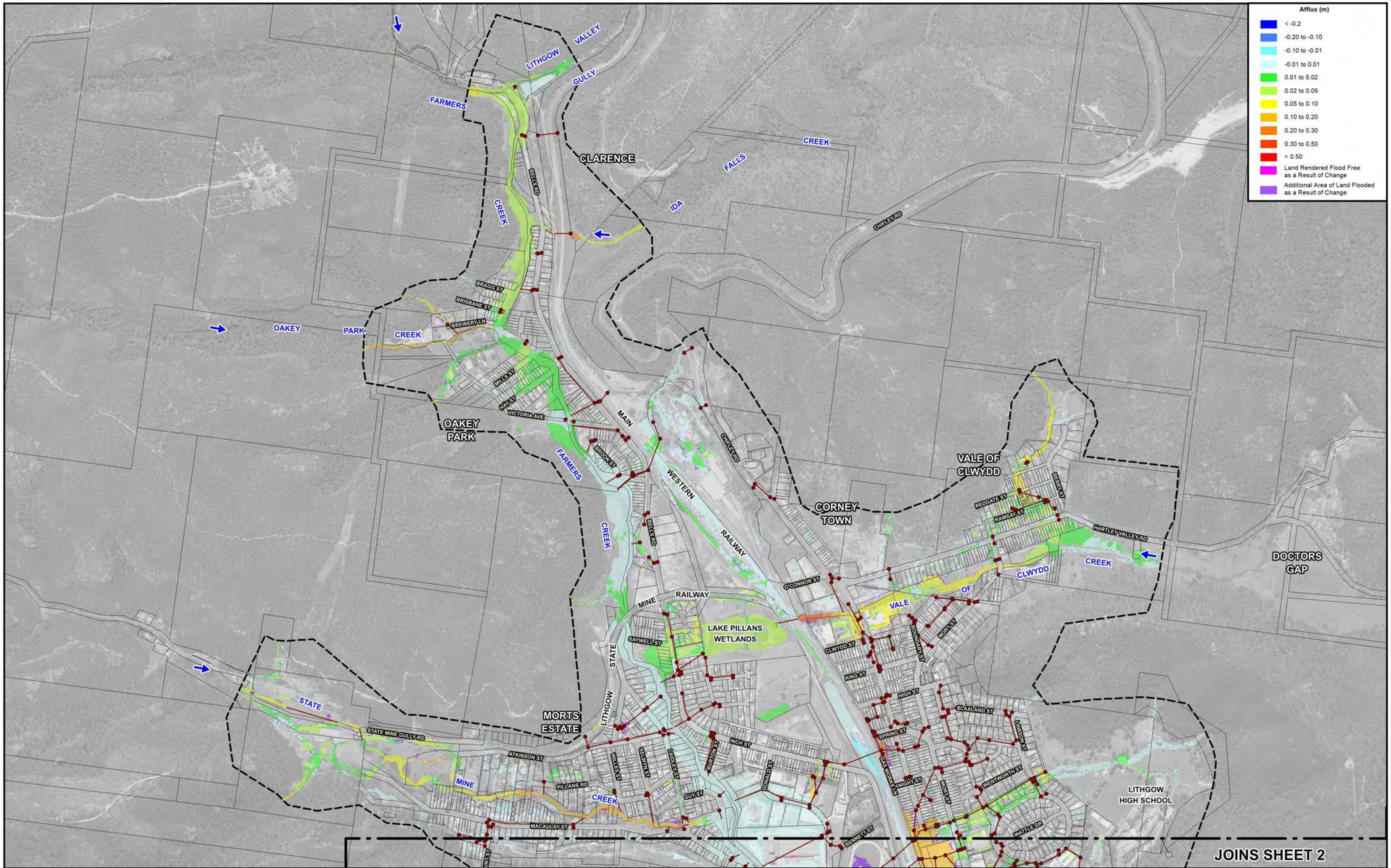
Two-Dimensional Model Boundary

Q64 Peak Flow Location and Identifier

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.6
(Sheet 4 of 4)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
0.2% AEP



N

120 0 120 240 360 m

Scale: 1:12,000

Lyall & Associates

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LEGEND

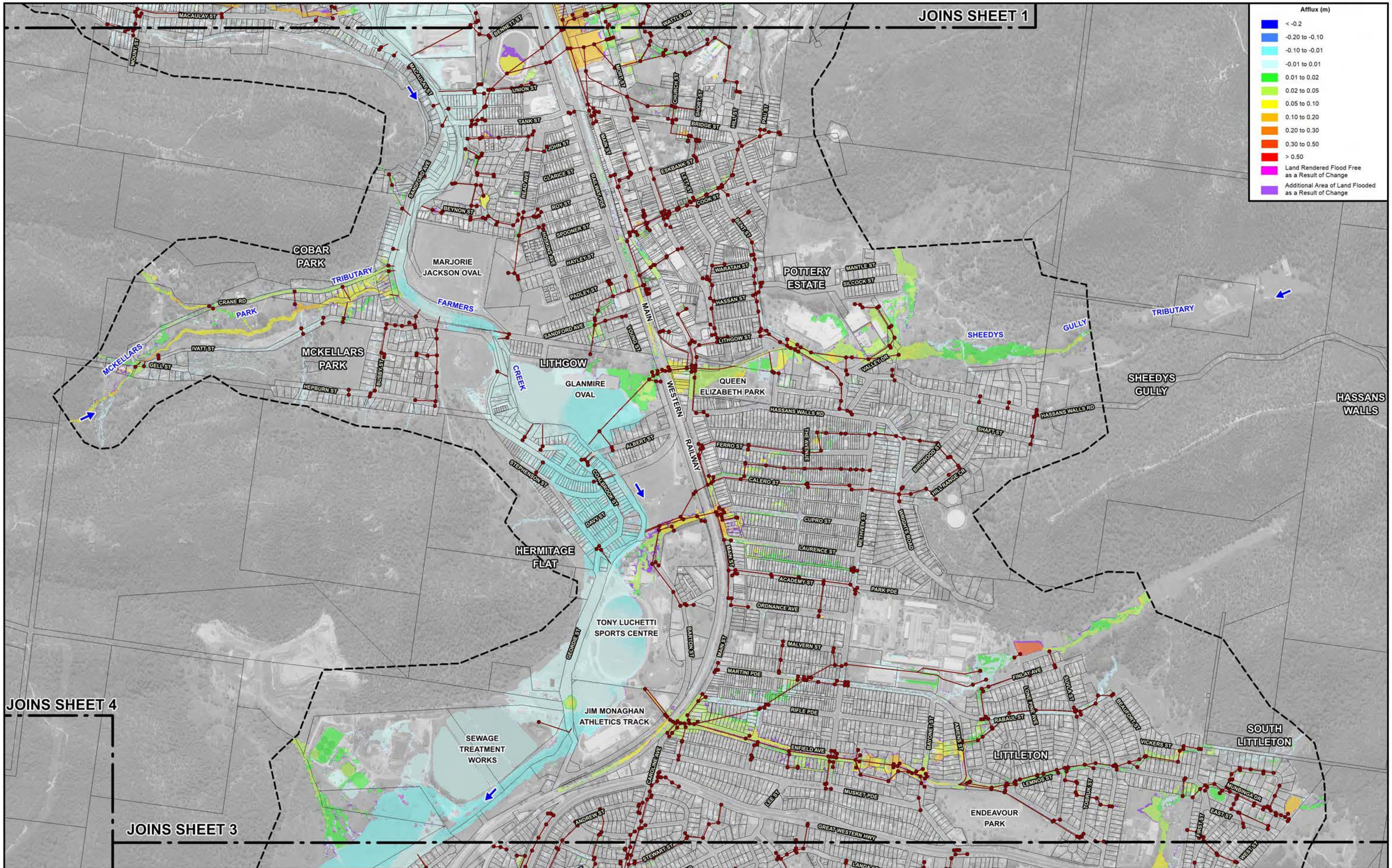
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.7
(Sheet 1 of 4)

DIFFERENCE IN PEAK FLOOD LEVELS DERIVED USING PROCEDURES SET OUT IN ARR 1987 AND ARR 2019
1% AEP



120 0 120 240 360 m

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LEGEND

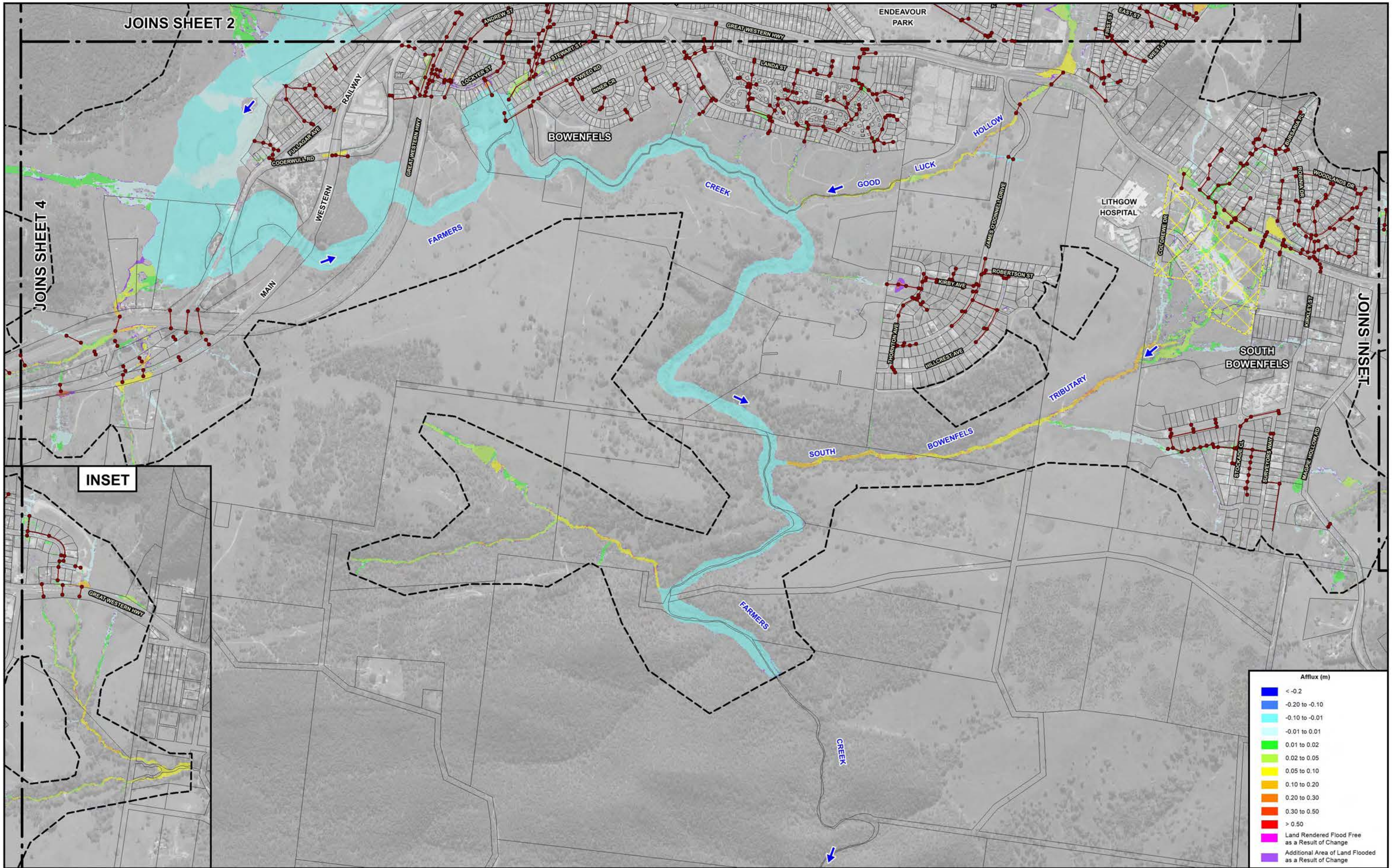
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.7
(Sheet 2 of 4)

DIFFERENCE IN PEAK FLOOD LEVELS DERIVED USING PROCEDURES SET OUT IN ARR 1987 AND ARR 2019
1% AEP



N

120 0 120 240 360 m

Scale: 1:12,000

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Lyall & Associates

LEGEND

Existing Drainage Network

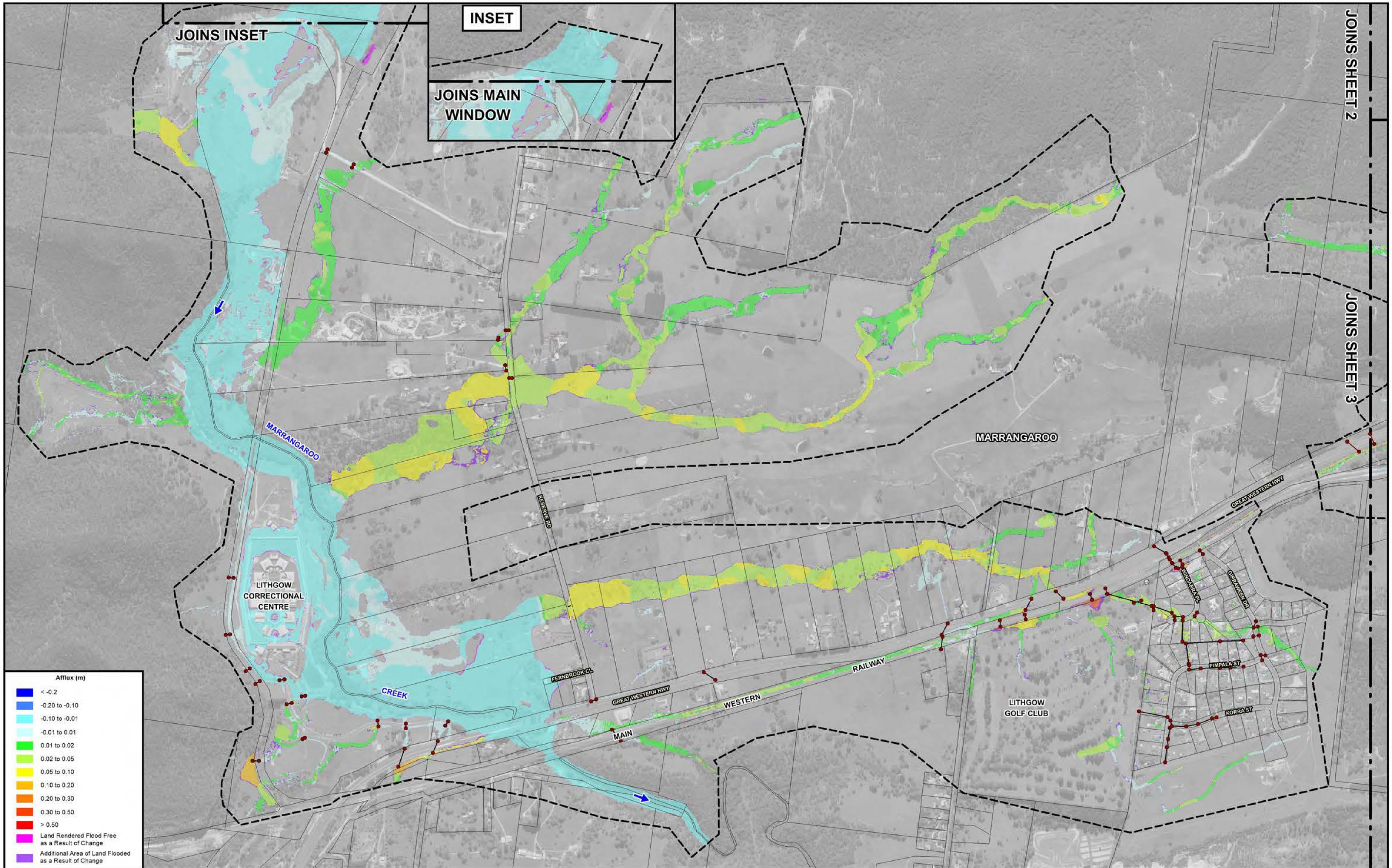
Two-Dimensional Model Boundary

Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure B4.7
(Sheet 3 of 4)

DIFFERENCE IN PEAK FLOOD LEVELS DERIVED USING PROCEDURES SET OUT IN ARR 1987 AND ARR 2019
1% AEP



N

120 0 120 240 360 m

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LEGEND

Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

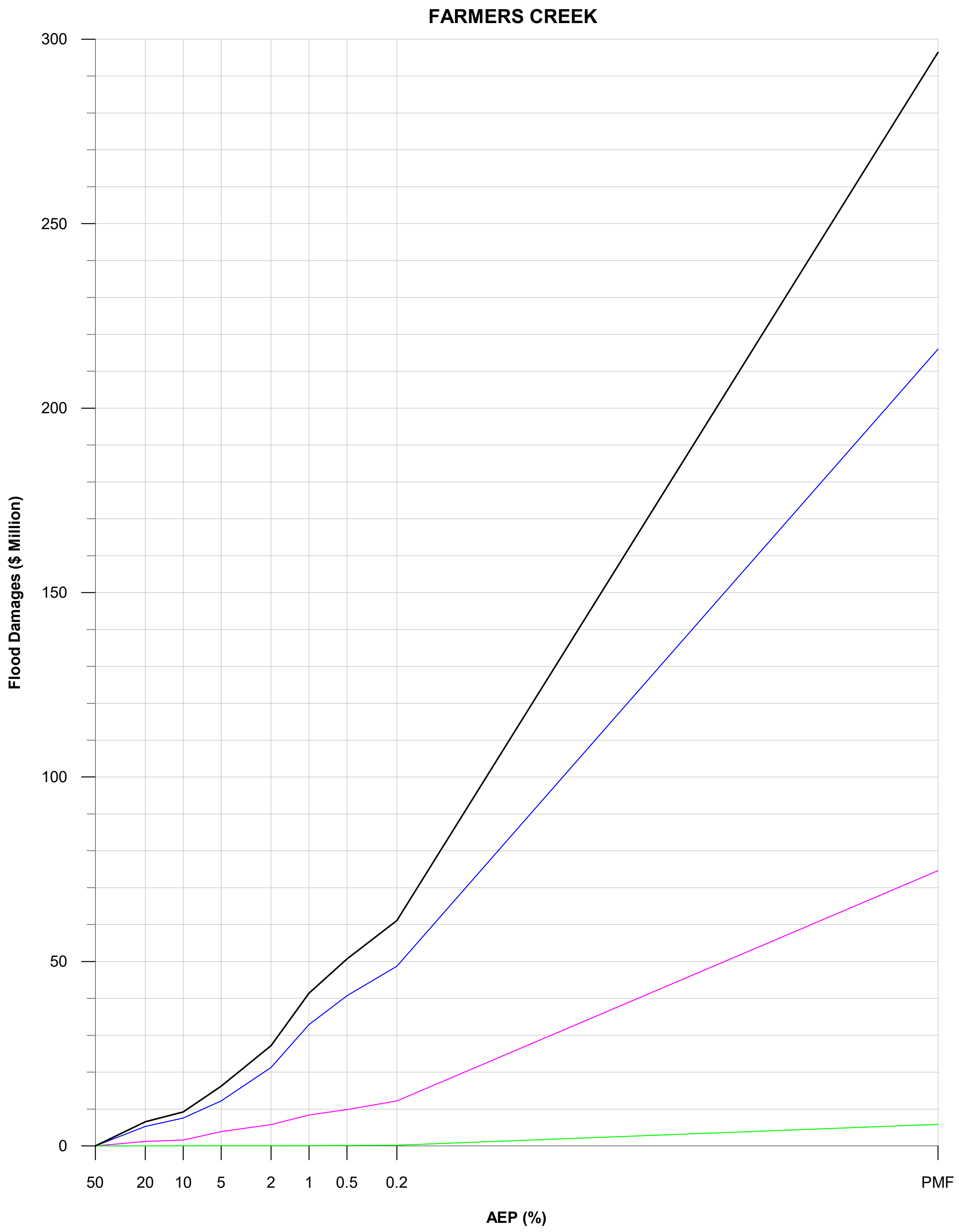
Figure B4.7
(Sheet 4 of 4)

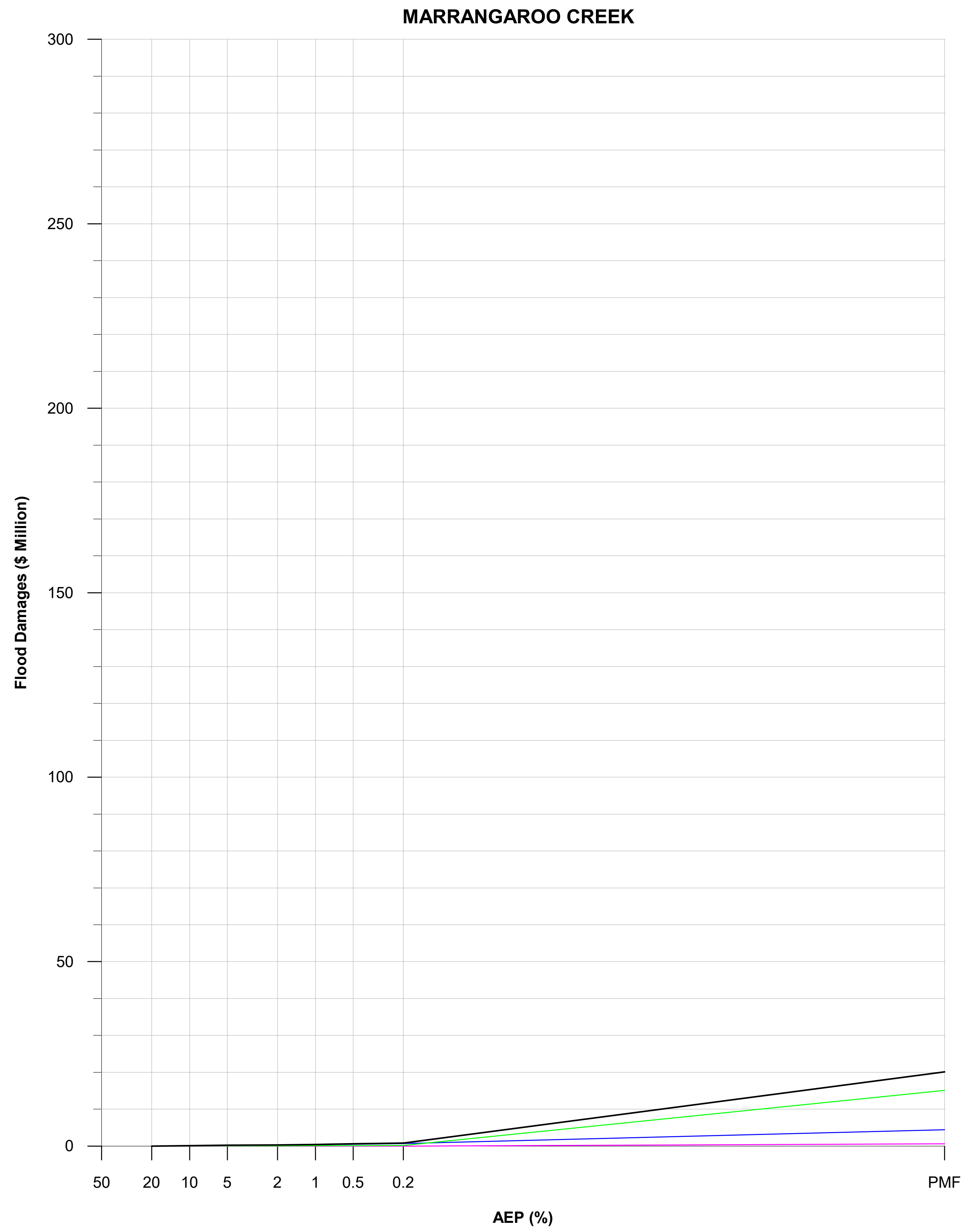
DIFFERENCE IN PEAK FLOOD LEVELS DERIVED USING PROCEDURES SET OUT IN ARR 1987 AND ARR 2019
1% AEP

APPENDIX C

FLOOD DAMAGES

LIST OF FIGURES (APPENDIX C)





LEGEND
- Total
- Residential
- Commercial
- Public

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LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

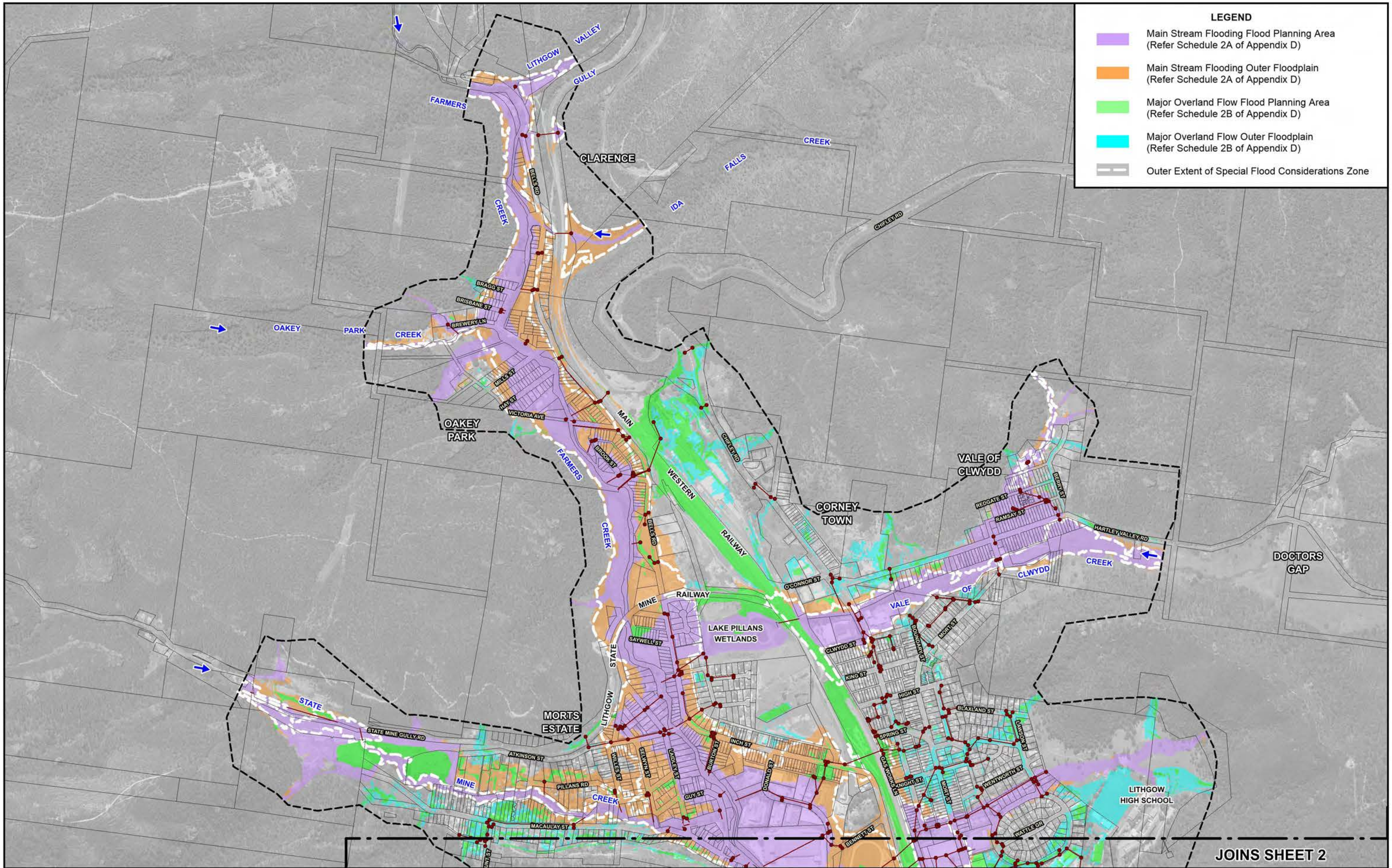
Figure C8.1

DAMAGE - FREQUENCY CURVES
AT FARMERS CREEK AND MARRANGAROO CREEK

APPENDIX D

SUGGESTED WORDING FOR INCLUSION IN LITHGOW CITY DEVELOPMENT CONTROL PLAN

LIST OF FIGURES (APPENDIX D)



120 0 120 240 360 m

Scale: 1:12,000

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LEGEND

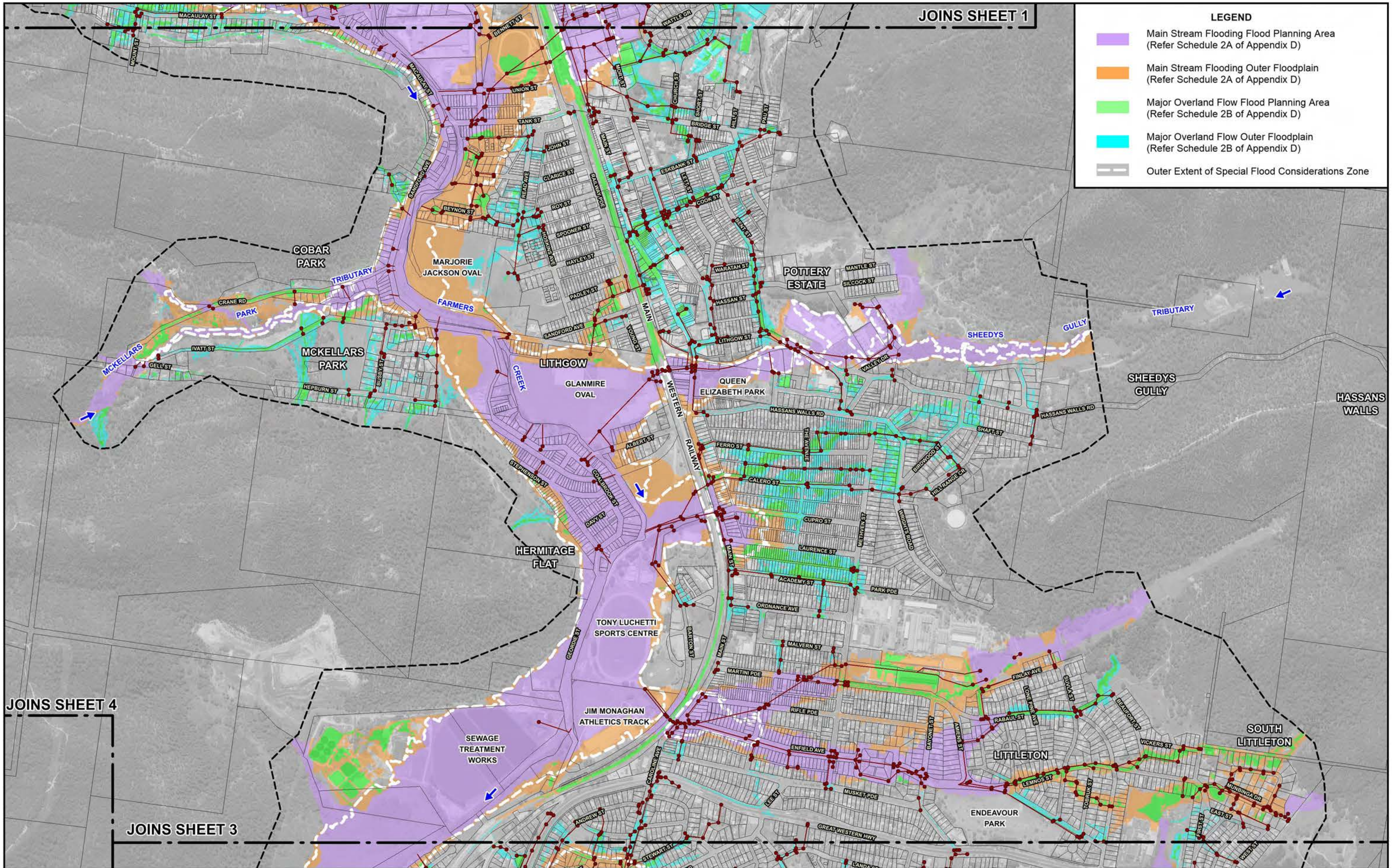
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure D1.1
(Sheet 1 of 4)

EXTRACT OF LITHGOW CITY FLOOD PLANNING MAP AT LITHGOW



N

120 0 120 240 360 m

Scale: 1:12,000

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Lyall & Associates

LEGEND

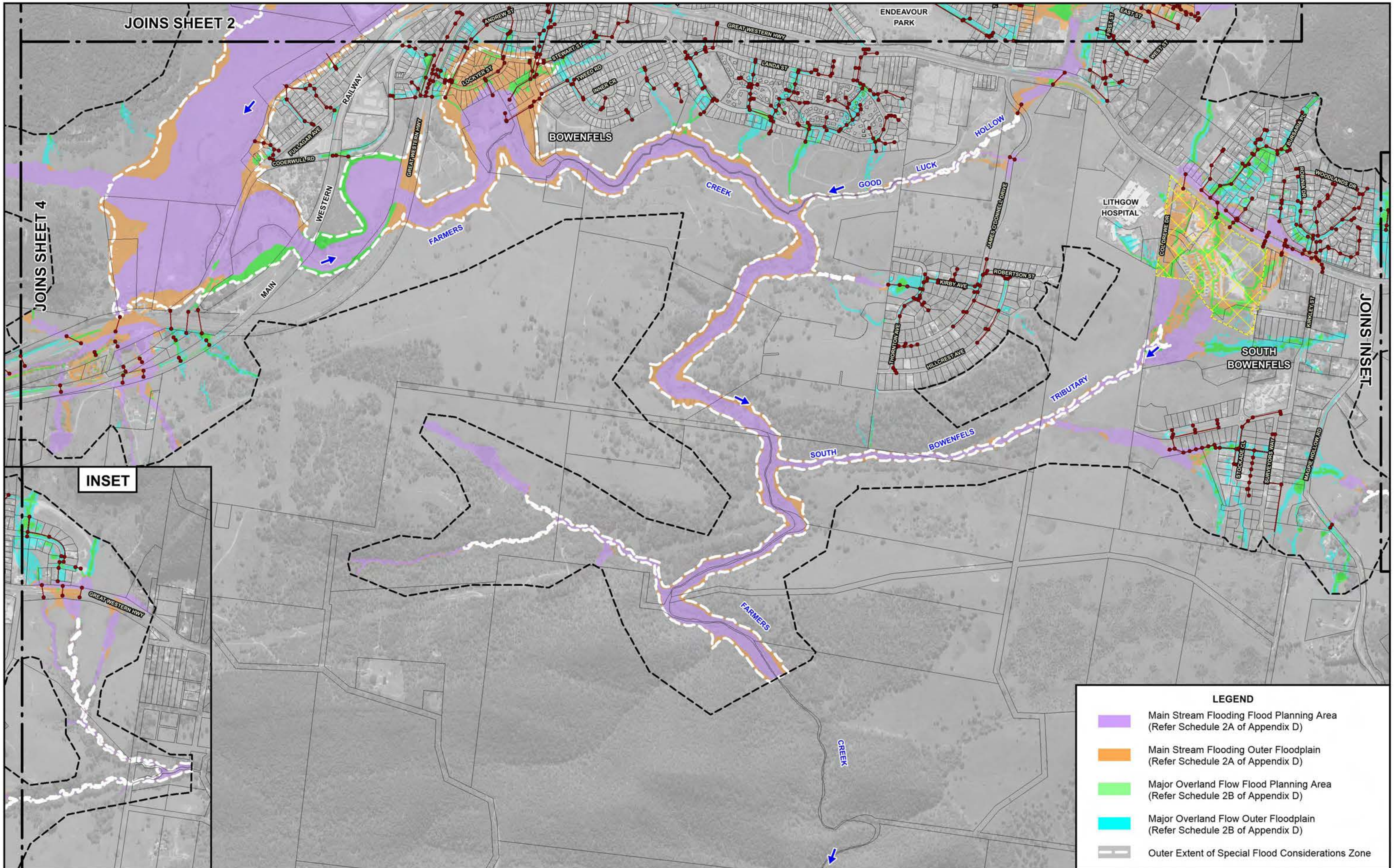
Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure D1.1
(Sheet 2 of 4)

EXTRACT OF LITHGOW CITY FLOOD PLANNING MAP AT LITHGOW



N

120 0 120 240 360 m

Scale: 1:12,000

Lyall & Associates

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LEGEND

Existing Drainage Network

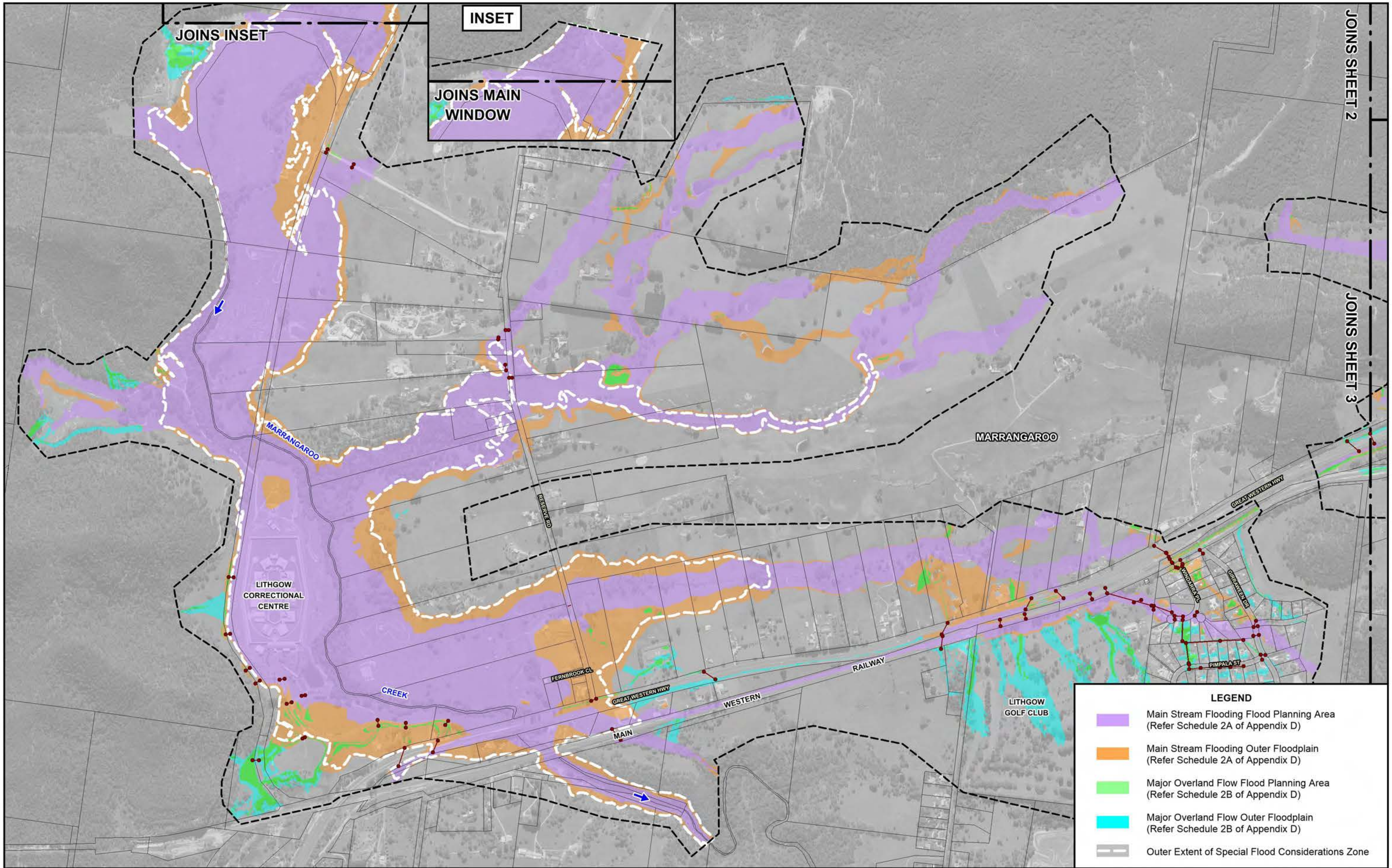
Two-Dimensional Model Boundary

Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure D1.1
(Sheet 3 of 4)

EXTRACT OF LITHGOW CITY FLOOD PLANNING MAP AT LITHGOW



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LEGEND
- Existing Drainage Network
- Two-Dimensional Model Boundary

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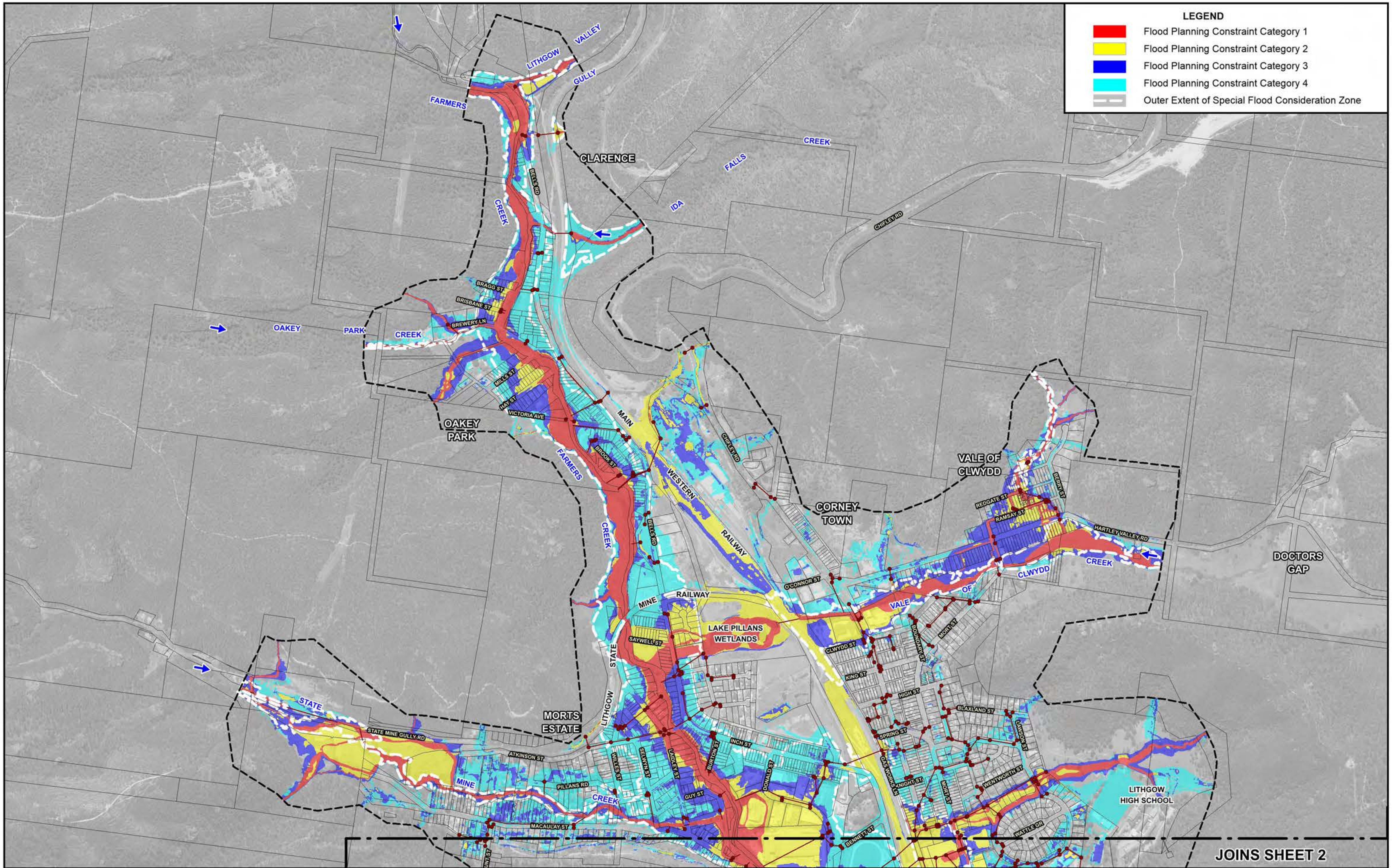
LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure D1.1
(Sheet 4 of 4)

EXTRACT OF LITHGOW CITY FLOOD PLANNING MAP AT LITHGOW



120 0 120 240 360 m

Scale: 1:12,000

NOTE:
The ground surface model incorporated in TUFLOW is based on LiDAR survey which has been sampled on a 3 m 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.

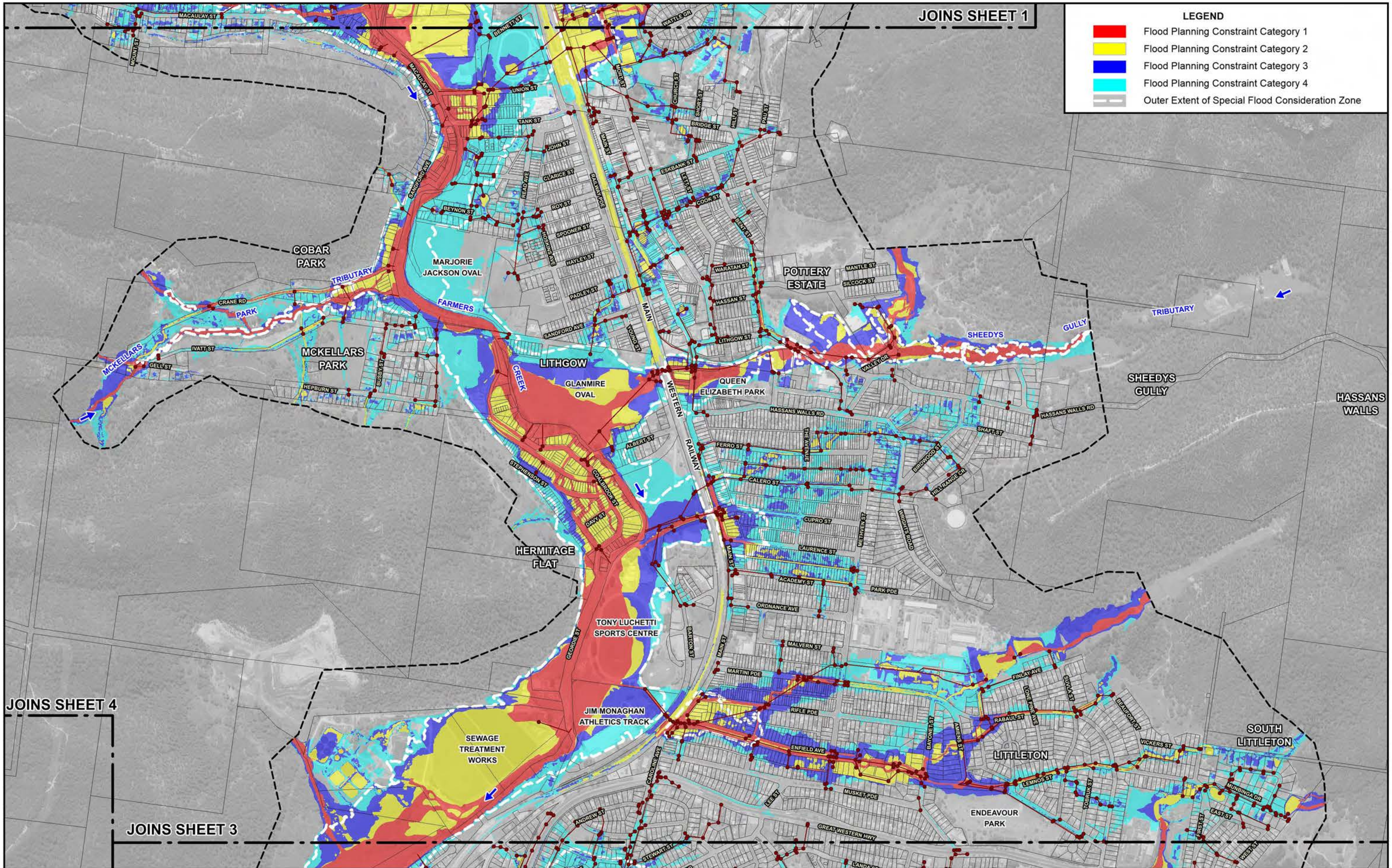
Lyall & Associates

LEGEND
- Existing Drainage Network
- Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure D1.2
(Sheet 1 of 4)

EXTRACT OF LITHGOW CITY FLOOD PLANNING CONSTRAINT CATEGORY MAP AT LITHGOW



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LEGEND

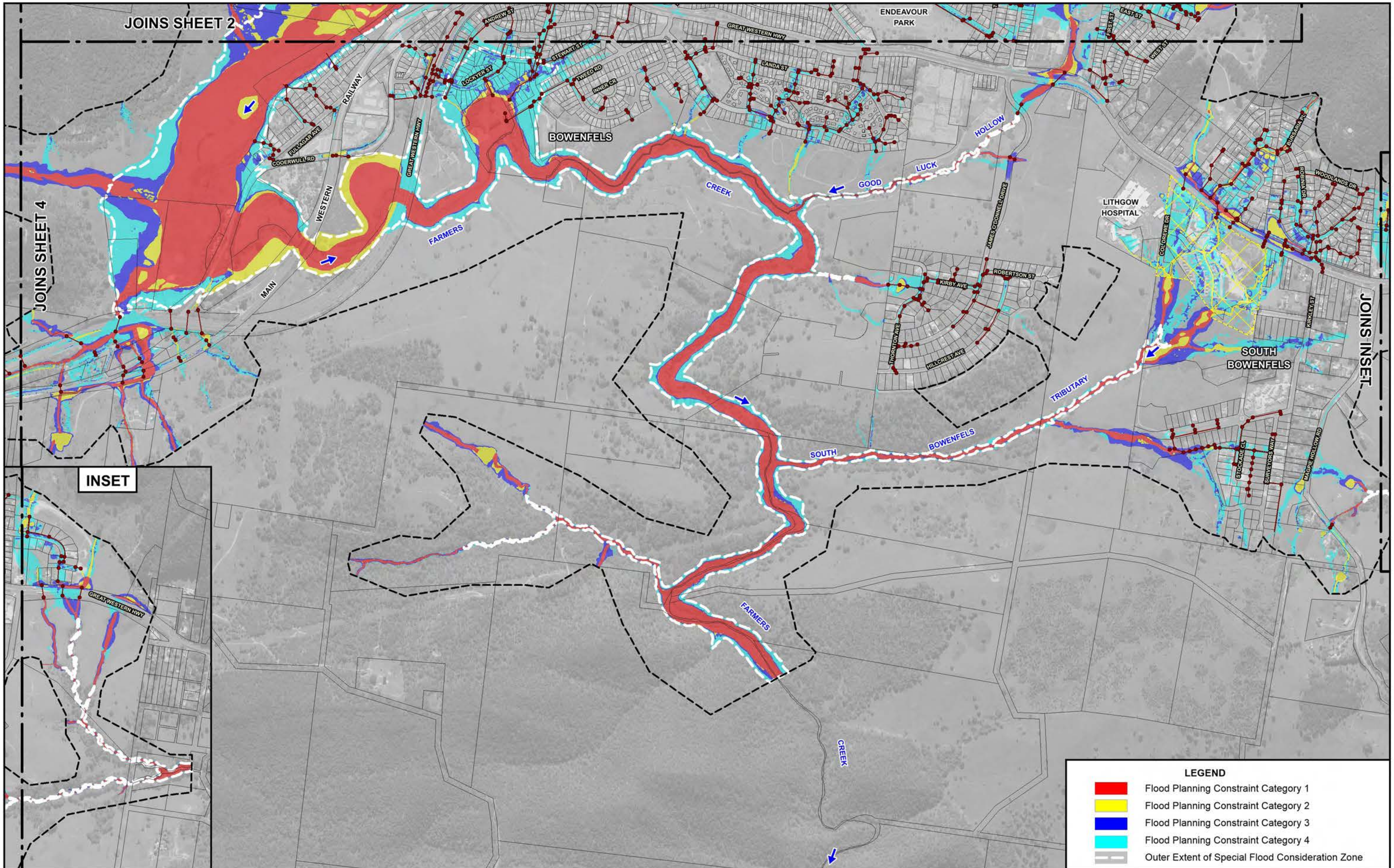
- Existing Drainage Network
- Two-Dimensional Model Boundary

Lyall & Associates

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure D1.2
(Sheet 2 of 4)

EXTRACT OF LITHGOW CITY FLOOD PLANNING CONSTRAINT CATEGORY MAP AT LITHGOW



120 0 120 240 360 m

Scale: 1:12,000

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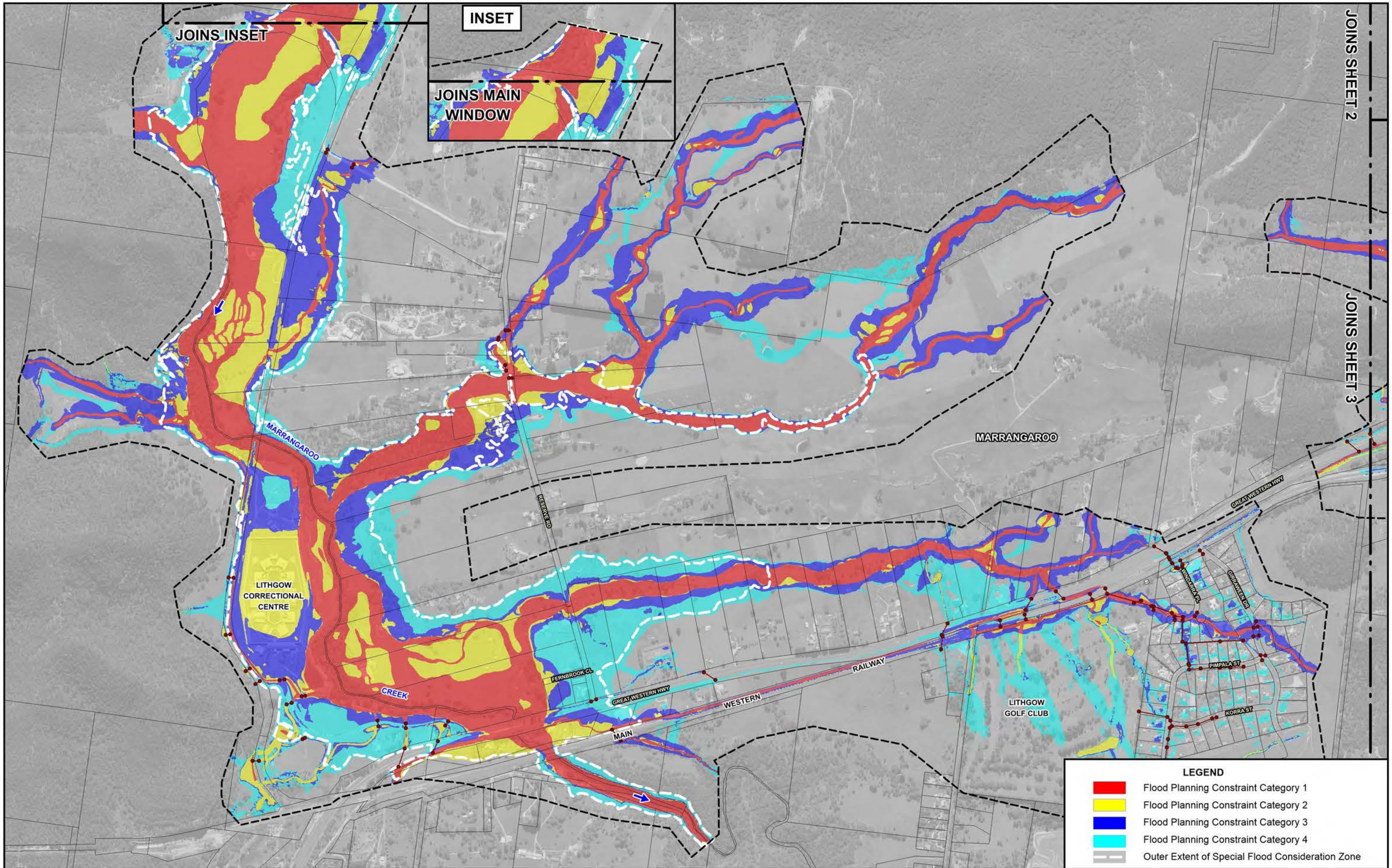
LEGEND

- Existing Drainage Network
- Two-Dimensional Model Boundary
- Extent of Recent Subdivision Development. Details of New Stormwater Drainage System have not been Incorporated in Farmers Creek TUFLOW Model.

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure D1.2
(Sheet 3 of 4)

EXTRACT OF LITHGOW CITY FLOOD PLANNING CONSTRAINT CATEGORY MAP AT LITHGOW



N

120 0 120 240 360 m

Scale: 1:12,000

Lyall & Associates

NOTE:

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LEGEND

Existing Drainage Network

Two-Dimensional Model Boundary

LITHGOW FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN 2023

Figure D1.2
(Sheet 4 of 4)

EXTRACT OF LITHGOW CITY FLOOD PLANNING CONSTRAINT CATEGORY MAP AT LITHGOW