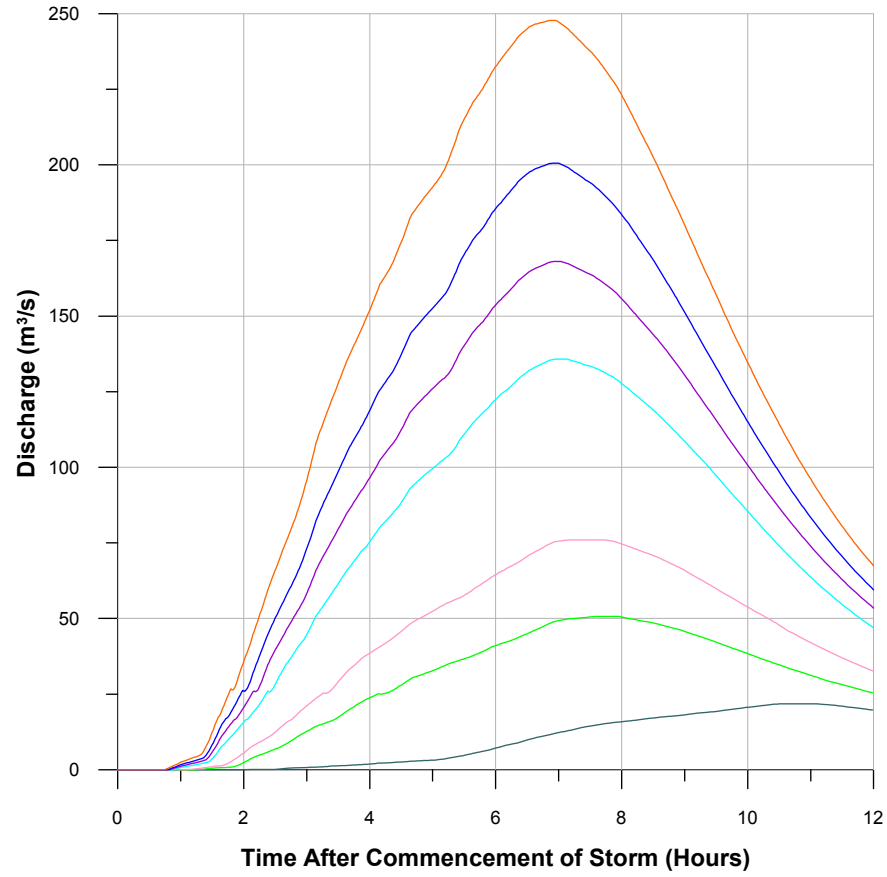


**TARCUTTA, LADYSMITH AND URANQUINTY FLOOD STUDIES
DESIGN FLOOD MODELLING**

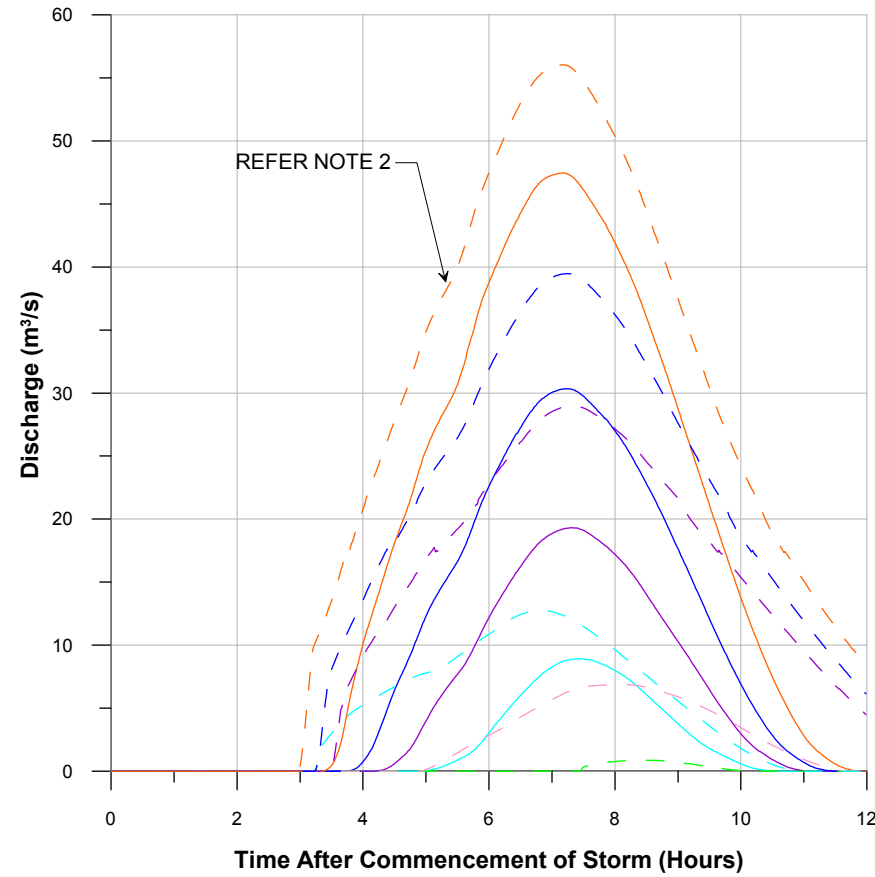
Figure 5.1
DESIGN WATER SURFACE PROFILES
SANDY CREEK



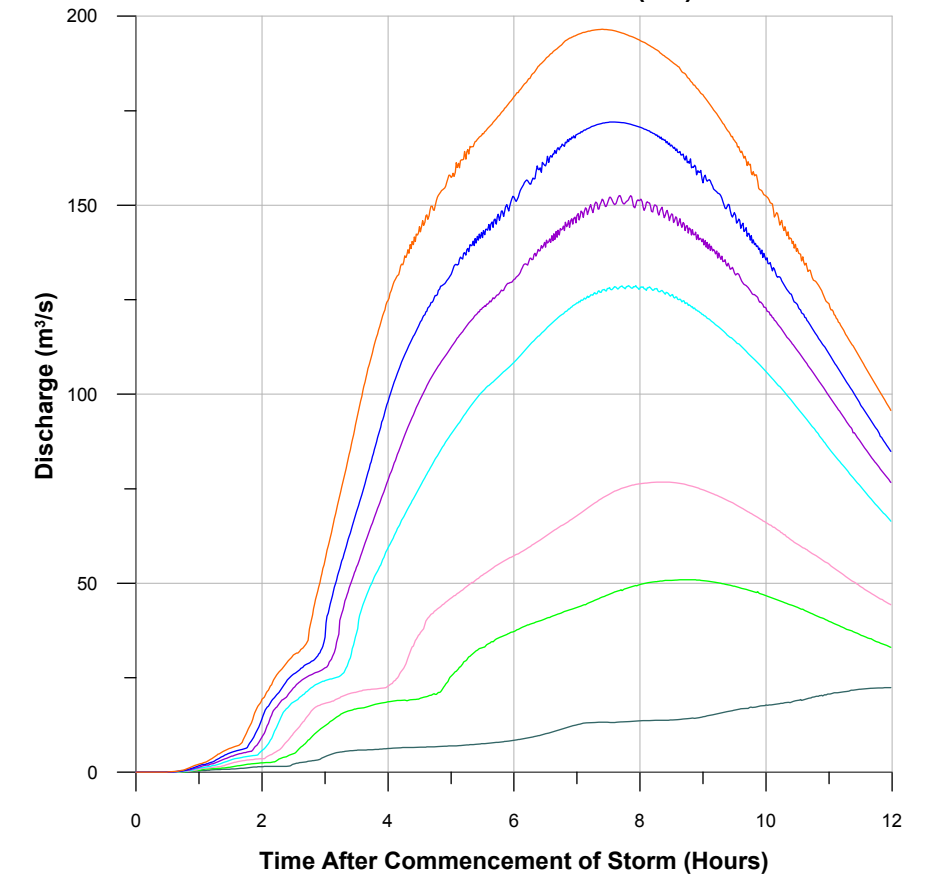
**SANDY CREEK UPSTREAM
EXTENT OF TUFLOW MODEL (Q1)**



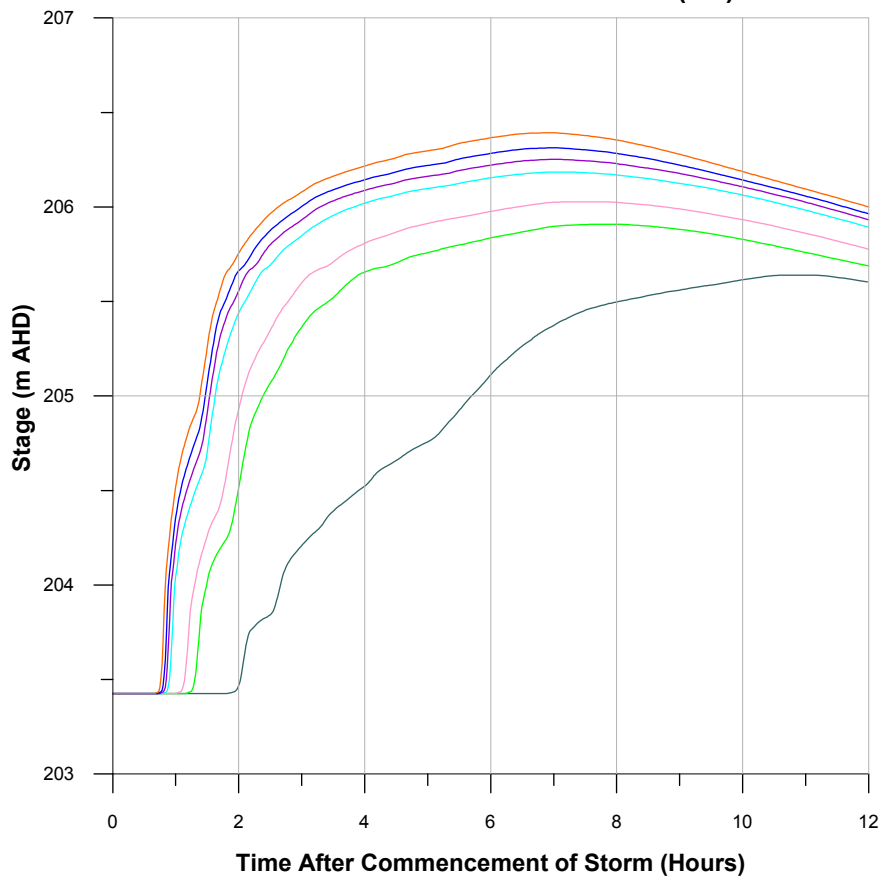
**FLOW ACROSS
DEANE STREET (Q5)**



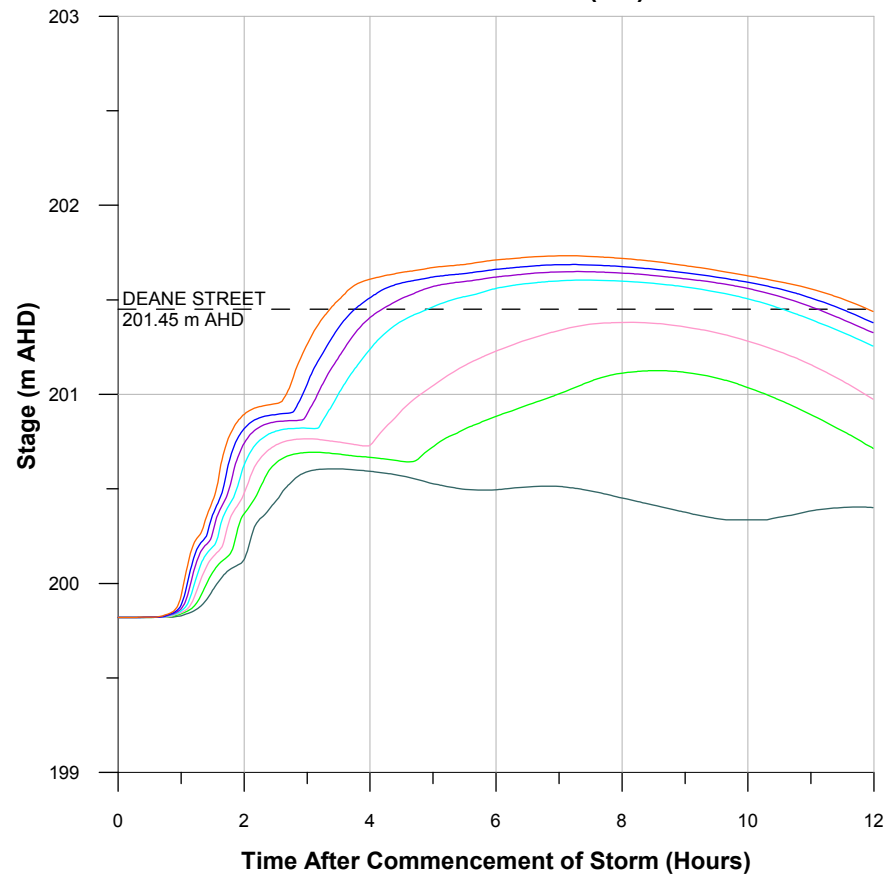
**SANDY CREEK AT
OLYMPIC HIGHWAY (Q2)**



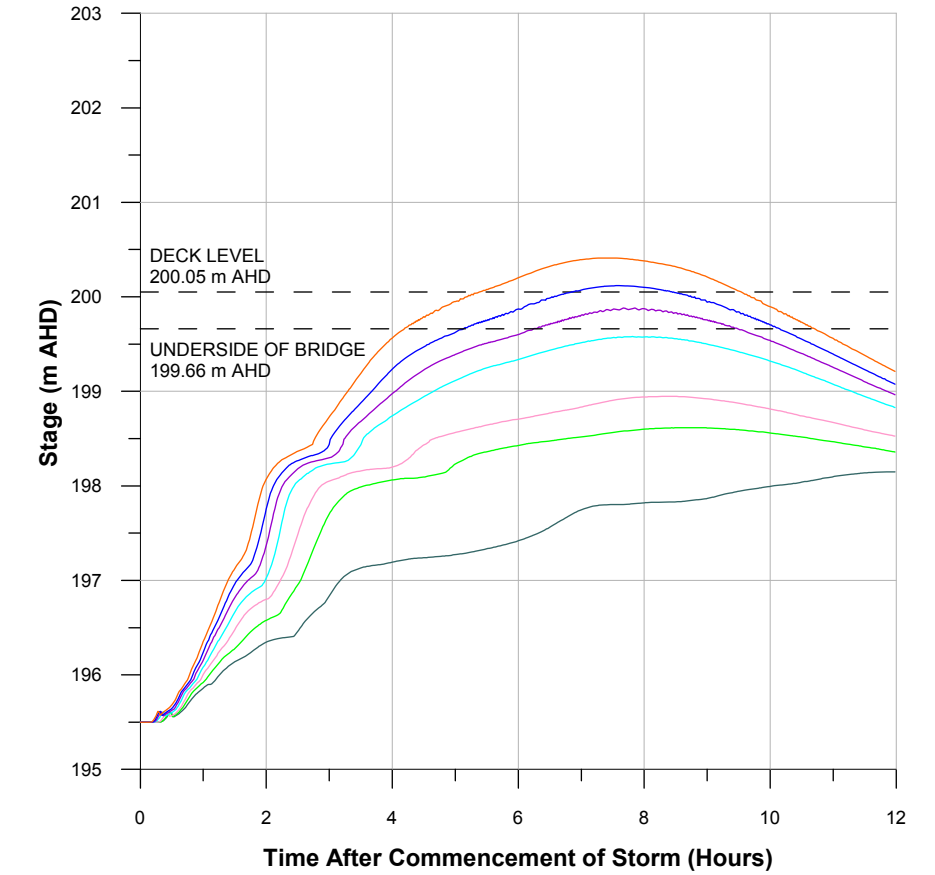
**SANDY CREEK UPSTREAM
EXTENT OF TUFLOW MODEL (Q1)**



**FLOW ACROSS
DEANE STREET (Q5)**



**SANDY CREEK AT
OLYMPIC HIGHWAY (Q2)**



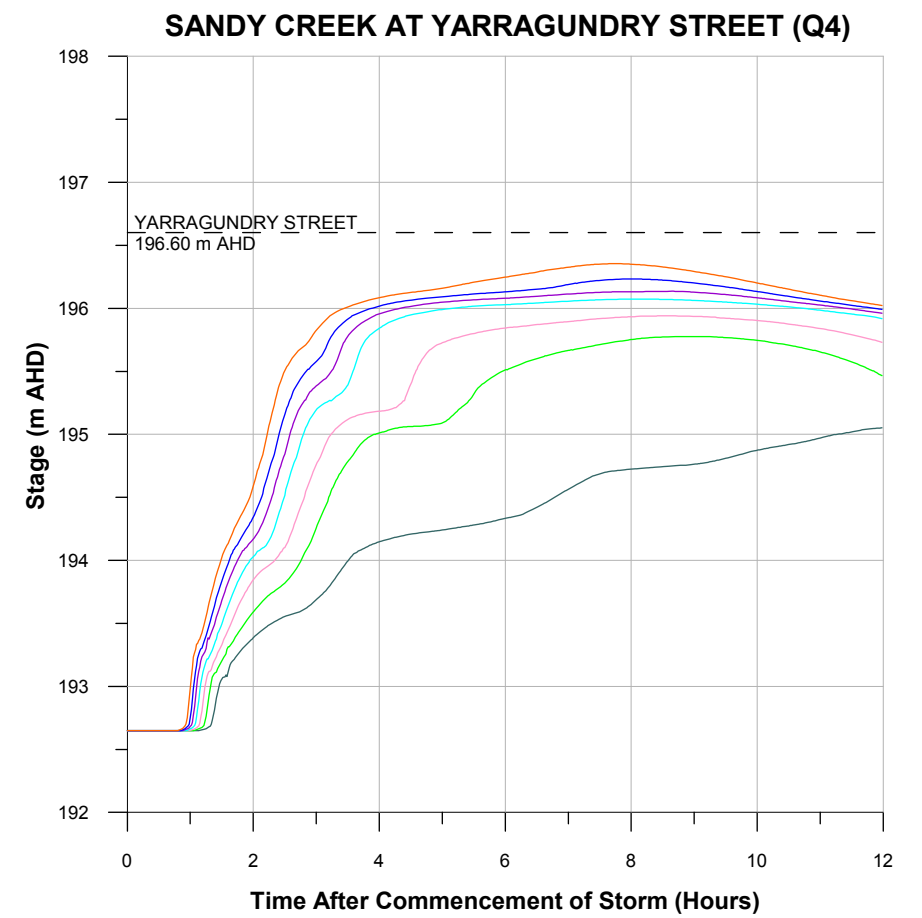
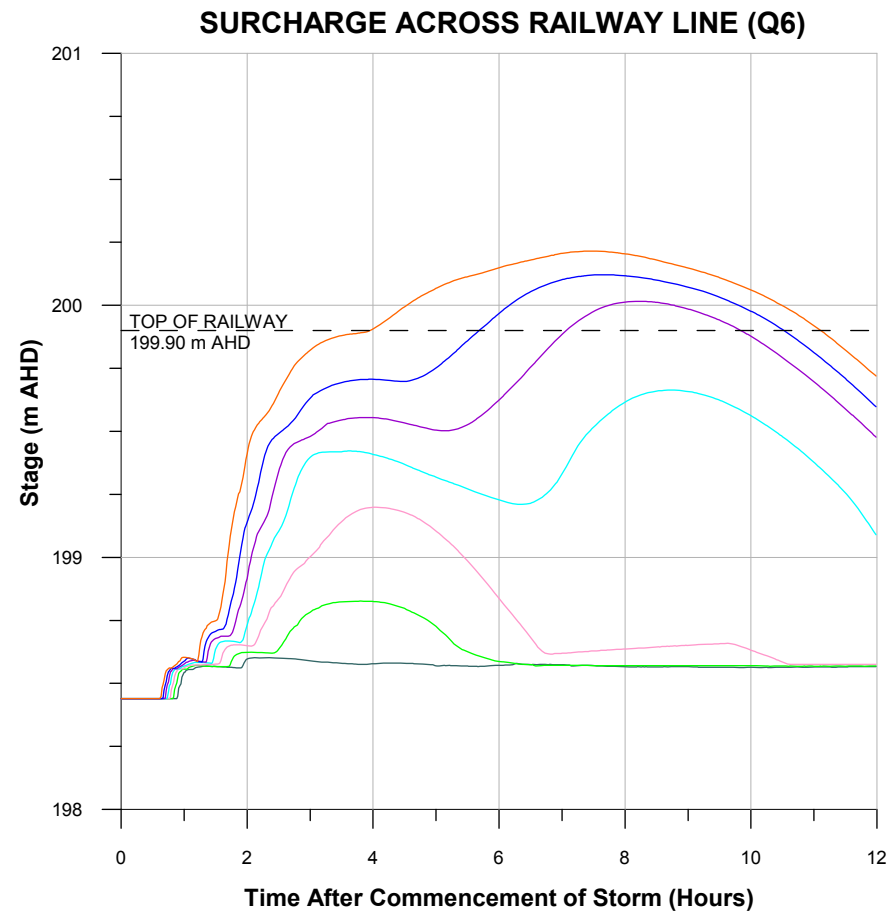
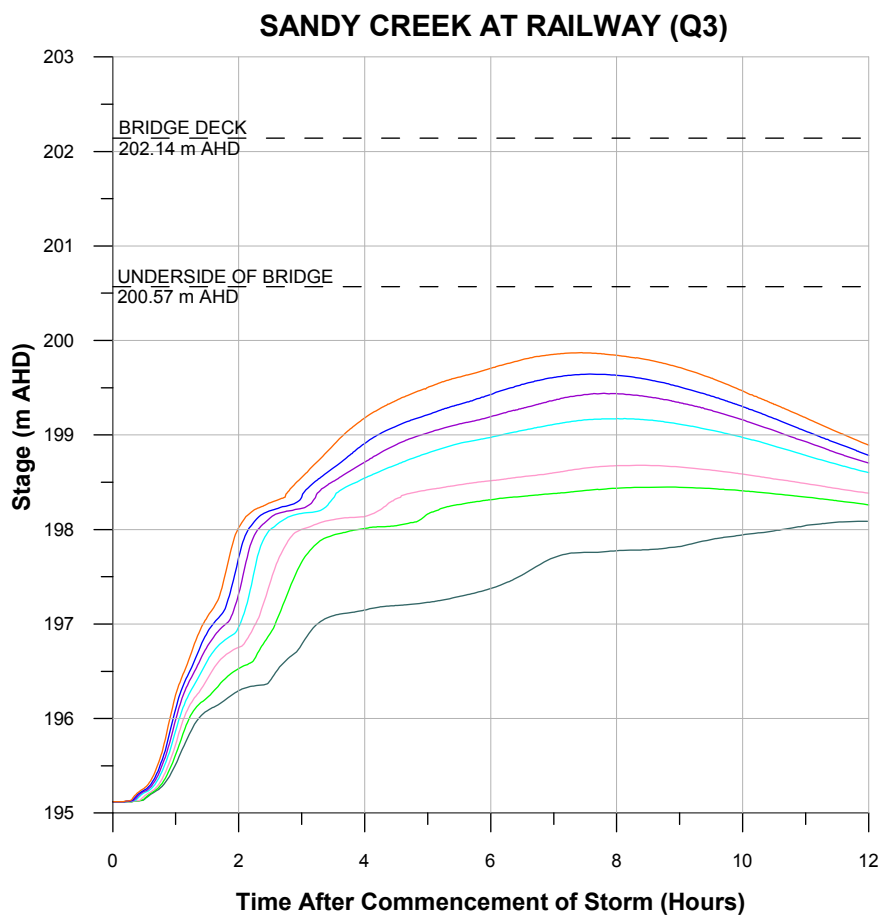
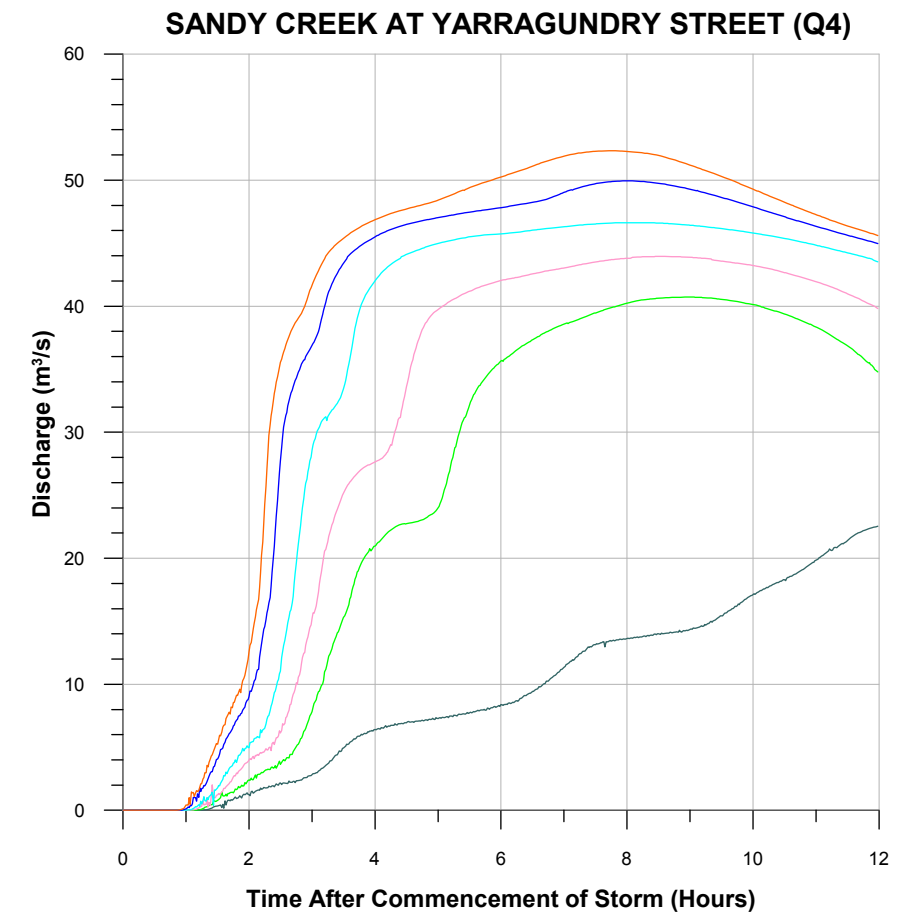
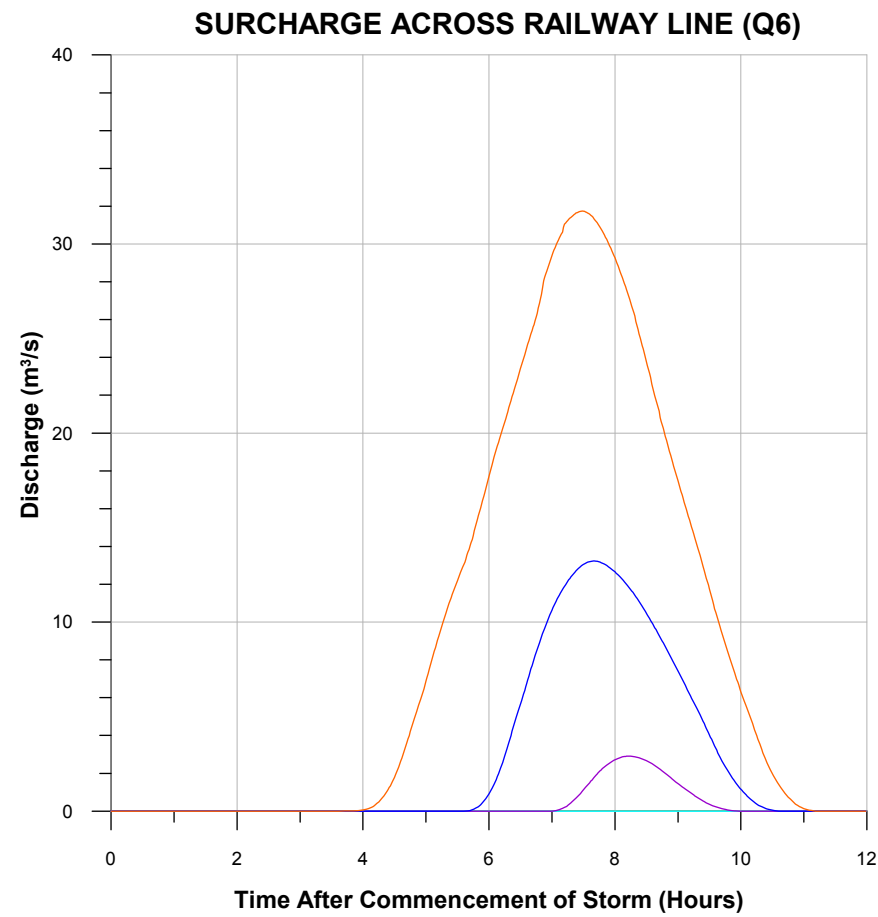
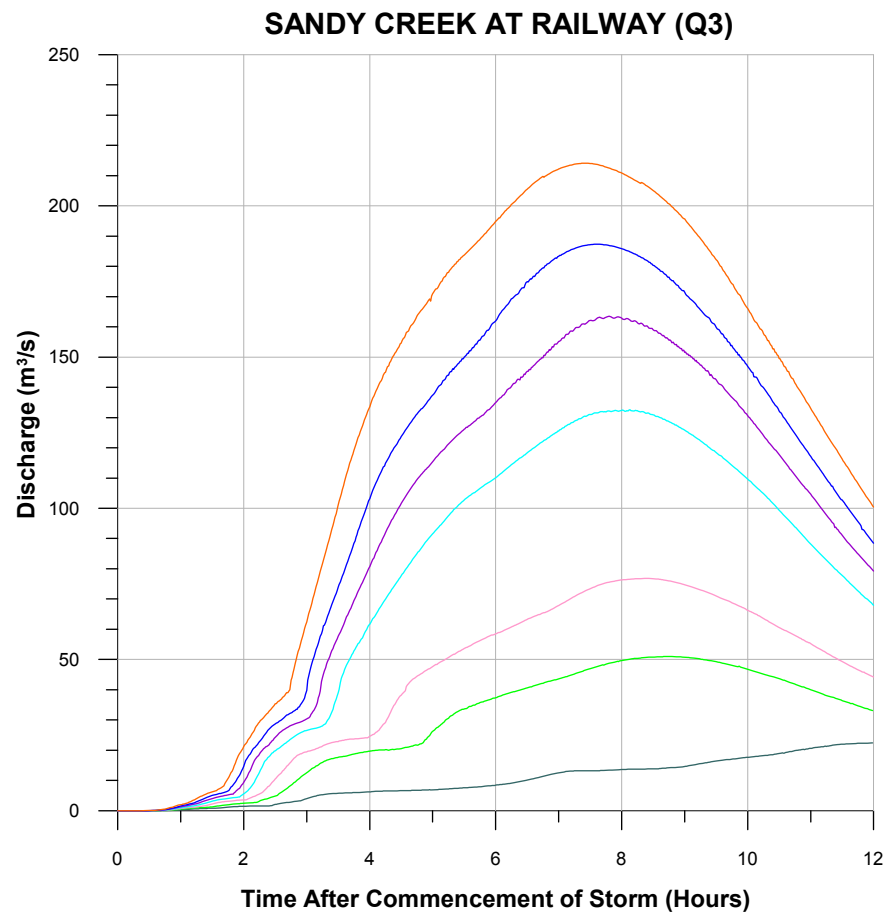
LEGEND

- | | | | |
|------------|--------------|-----------|-------------|
| — (Orange) | 500 year ARI | — (Pink) | 20 year ARI |
| — (Blue) | 200 year ARI | — (Green) | 10 year ARI |
| — (Purple) | 100 year ARI | — (Grey) | 5 year ARI |
| — (Cyan) | 50 year ARI | | |

NOTE:

1. Refer Table A2 of Appendix A for storm durations of hydrographs at selected locations.
2. Dashed lines represent flow over levee when failure occurs.





LEGEND

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

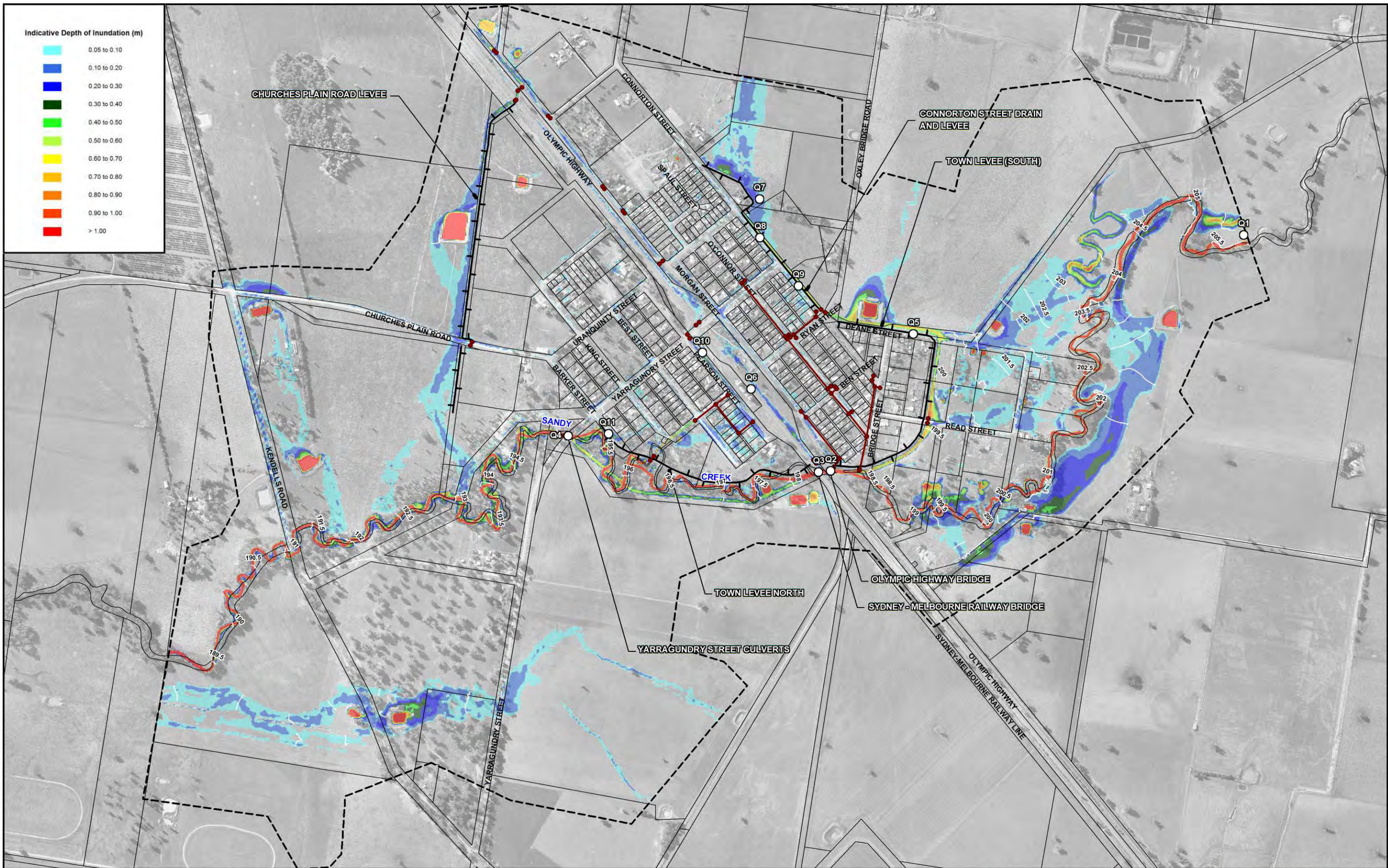


NOTE:
Refer Table A2 of Appendix A for storm durations of hydrographs at selected locations.

**TARCUTTA, LADYSMITH AND URANQUINTY FLOOD STUDIES
DESIGN FLOOD MODELLING**

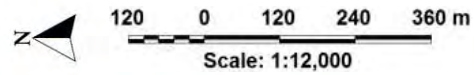
Figure 5.2
Sheet 2 of 2

STAGE AND DISCHARGE HYDROGRAPHS - DESIGN FLOOD EVENTS
SANDY CREEK



Indicative Depth of Inundation (m)

- 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



NOTE:

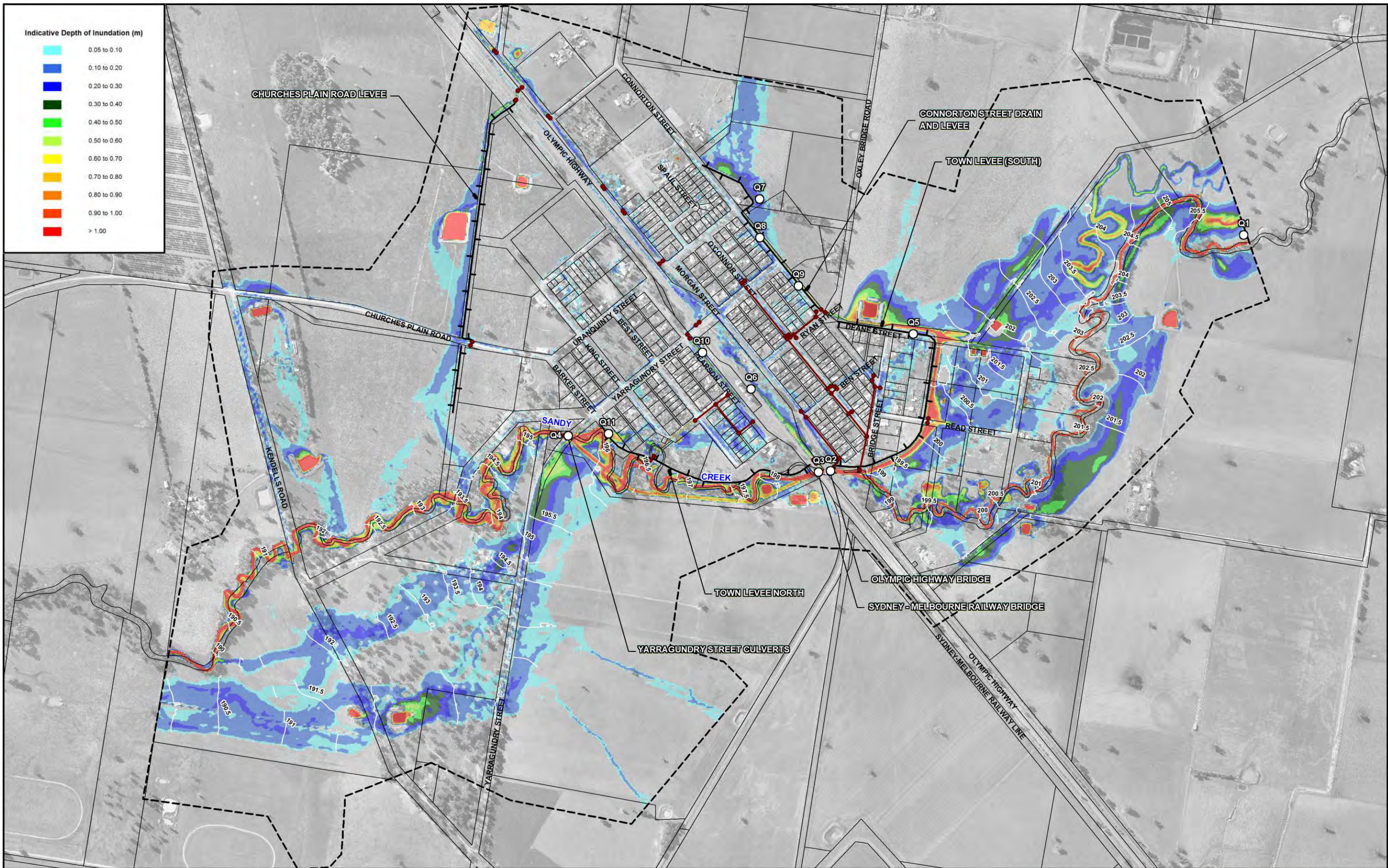
The extent and depths of flooding shown were determined from airborne laser scanning survey and are approximate only. The extent of inundation in individual allotments near the flood fringe should be confirmed by site specific survey.

LEGEND

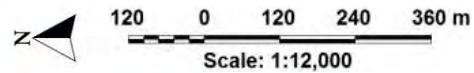
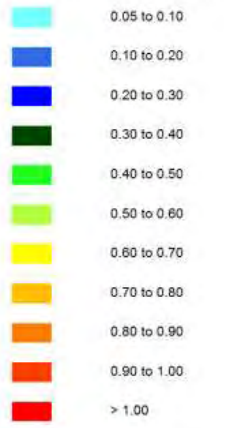
- Modelled Stormwater Network
- Two-Dimensional Model Boundary
- Water Surface Contours (m AHD) (Mainstream Flooding Only)
- Alignment of Existing Levee
- Q1 Peak Flow Locations and Identifier (Refer Table A3 in Appendix A)

TARCUTTA, LADYSMITH AND URANQUINTY FLOOD STUDIES
DESIGN FLOOD MODELLING

Figure 5.3



Indicative Depth of Inundation (m)



NOTE:

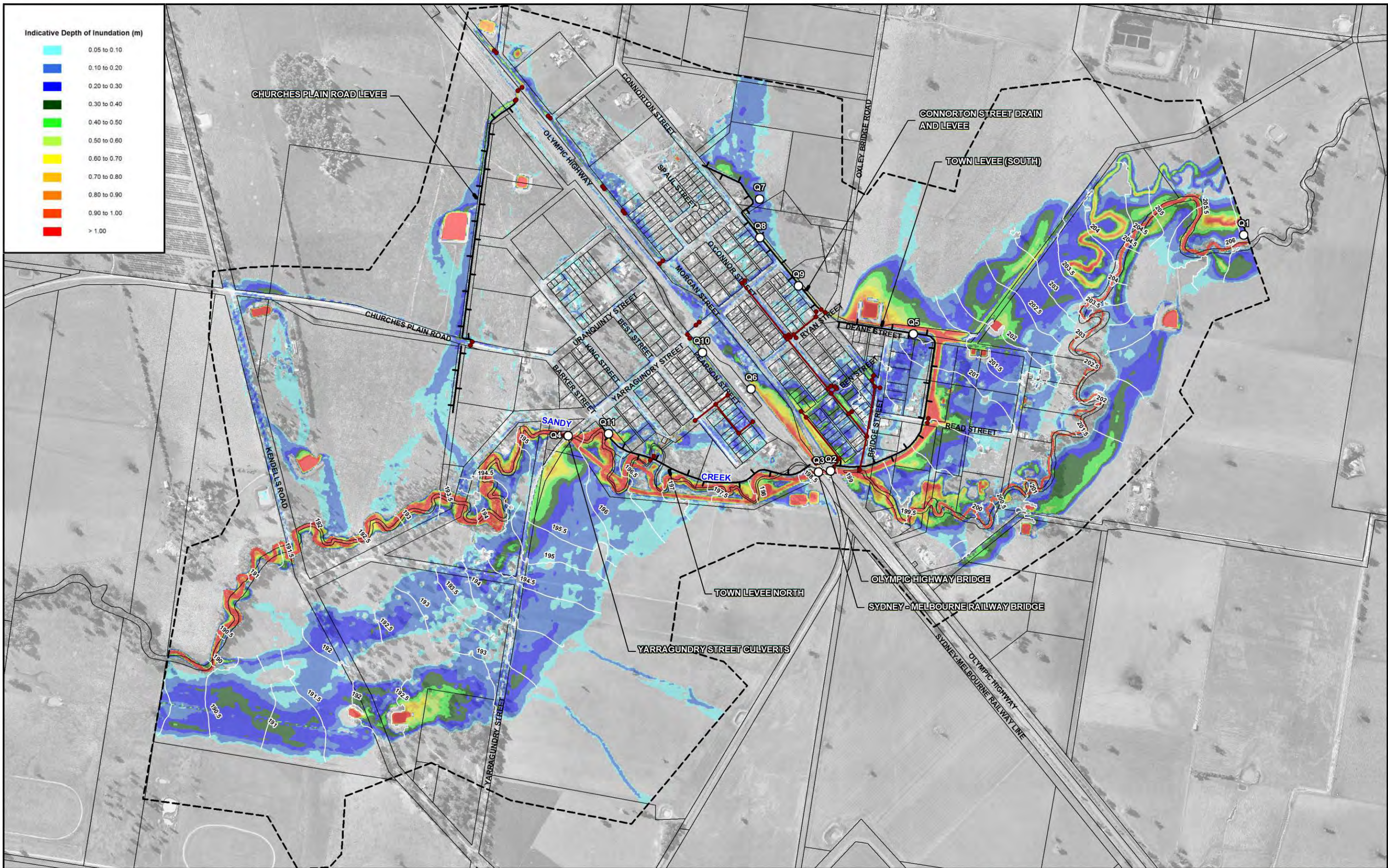
The extent and depths of flooding shown were determined from airborne laser scanning survey and are approximate only. The extent of inundation in individual allotments near the flood fringe should be confirmed by site specific survey.

LEGEND

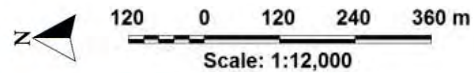
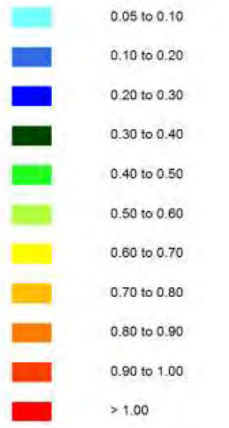
- Modelled Stormwater Network
- Two-Dimensional Model Boundary
- Water Surface Contours (m AHD) (Mainstream Flooding Only)
- Alignment of Existing Levee
- Peak Flow Locations and Identifier (Refer Table A3 in Appendix A)

TARCUTTA, LADYSMITH AND URANQUINTY FLOOD STUDIES
DESIGN FLOOD MODELLING

Figure 5.4



Indicative Depth of Inundation (m)



NOTE:

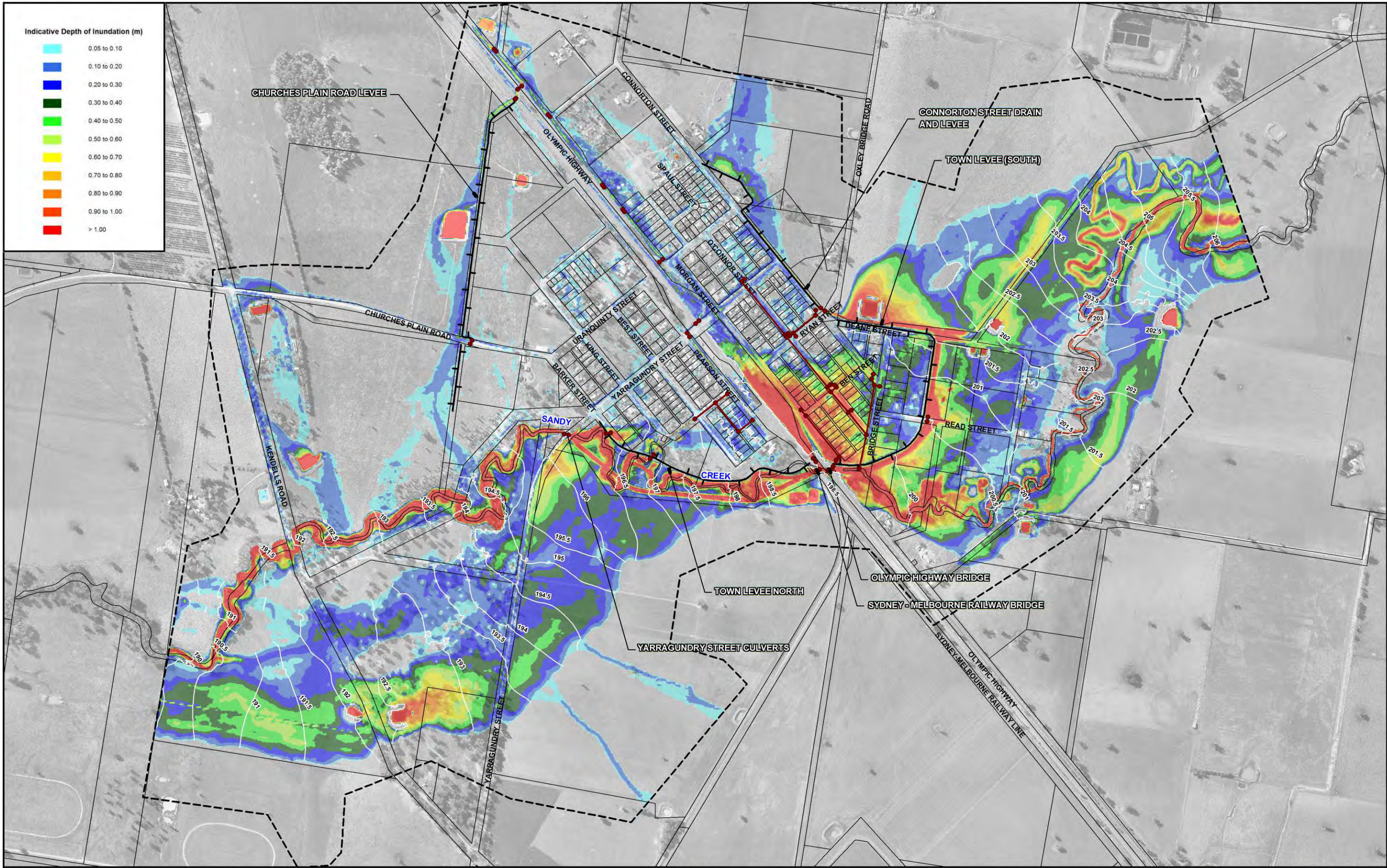
The extent and depths of flooding shown were determined from airborne laser scanning survey and are approximate only. The extent of inundation in individual allotments near the flood fringe should be confirmed by site specific survey.

LEGEND

- Modelled Stormwater Network
- Two-Dimensional Model Boundary
- Water Surface Contours (m AHD) (Mainstream Flooding Only)
- Alignment of Existing Levee
- Peak Flow Locations and Identifier (Refer Table A3 in Appendix A)

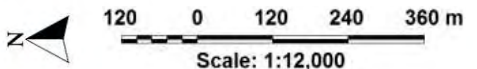
TARCUTTA, LADYSMITH AND URANQUINTY FLOOD STUDIES
DESIGN FLOOD MODELLING

Figure 5.5



Indicative Depth of Inundation (m)

- 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



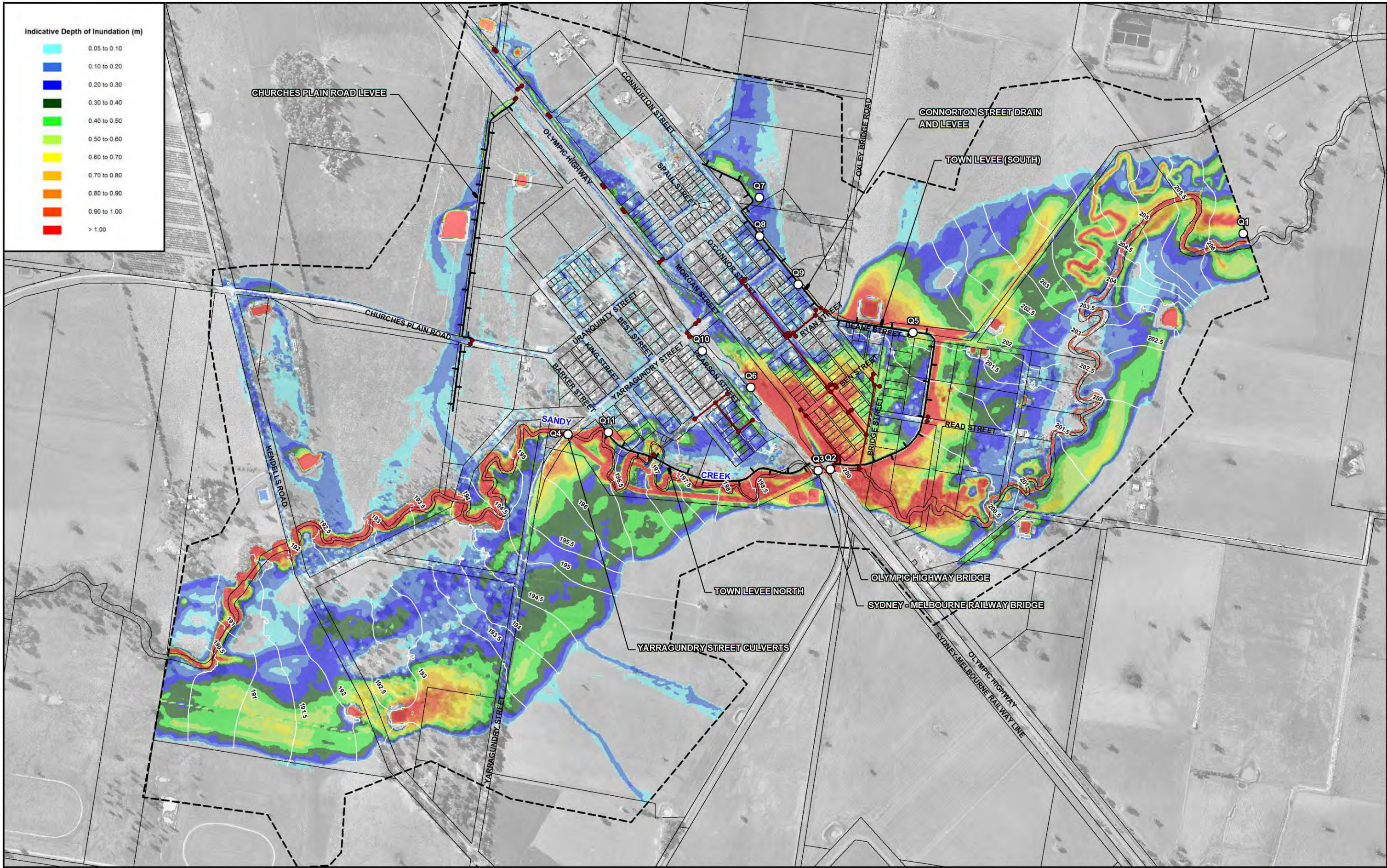
NOTE:
 The extent and depths of flooding shown were determined from airborne laser scanning survey and are approximate only. The extent of inundation in individual allotments near the flood fringe should be confirmed by site specific survey.

LEGEND

- Modelled Stormwater Network
- Two-Dimensional Model Boundary
- Water Surface Contours (m AHD) (Mainstream Flooding Only)
- Alignment of Existing Levee
- Peak Flow Locations and Identifier (Refer Table A3 in Appendix A)

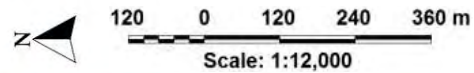
TARCUTTA, LADYSMITH AND URANQUINTY FLOOD STUDIES
 DESIGN FLOOD MODELLING

Figure 5.6



Indicative Depth of Inundation (m)

- 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



NOTE:

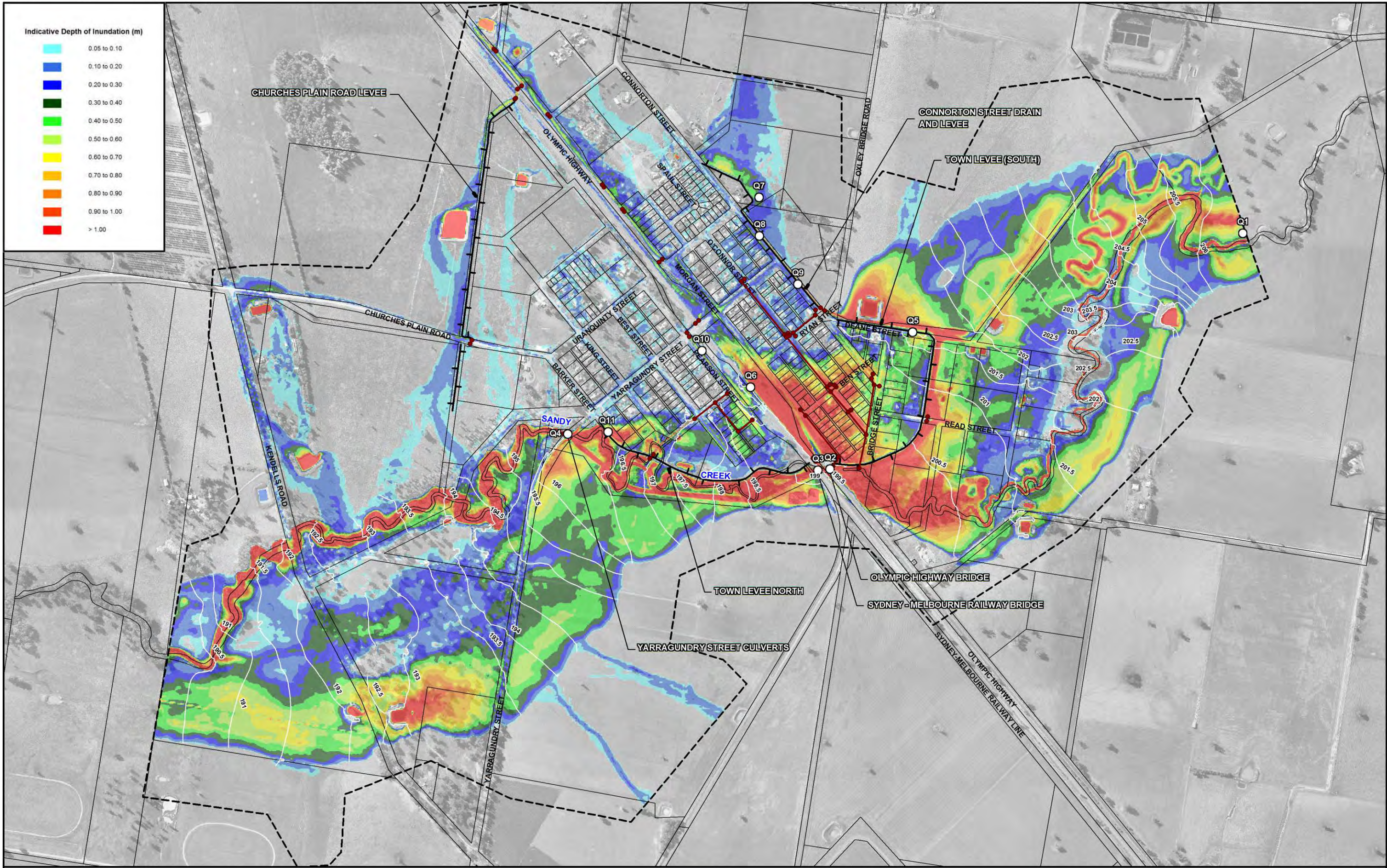
The extent and depths of flooding shown were determined from airborne laser scanning survey and are approximate only. The extent of inundation in individual allotments near the flood fringe should be confirmed by site specific survey.

LEGEND

- Modelled Stormwater Network
- Two-Dimensional Model Boundary
- 201 Water Surface Contours (m AHD) (Mainstream Flooding Only)
- Alignment of Existing Levee
- Q1 Peak Flow Locations and Identifier (Refer Table A3 in Appendix A)

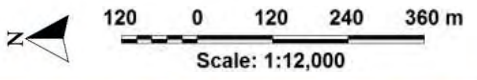
TARCUTTA, LADYSMITH AND URANQUINTY FLOOD STUDIES
DESIGN FLOOD MODELLING

Figure 5.7



Indicative Depth of Inundation (m)

- 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

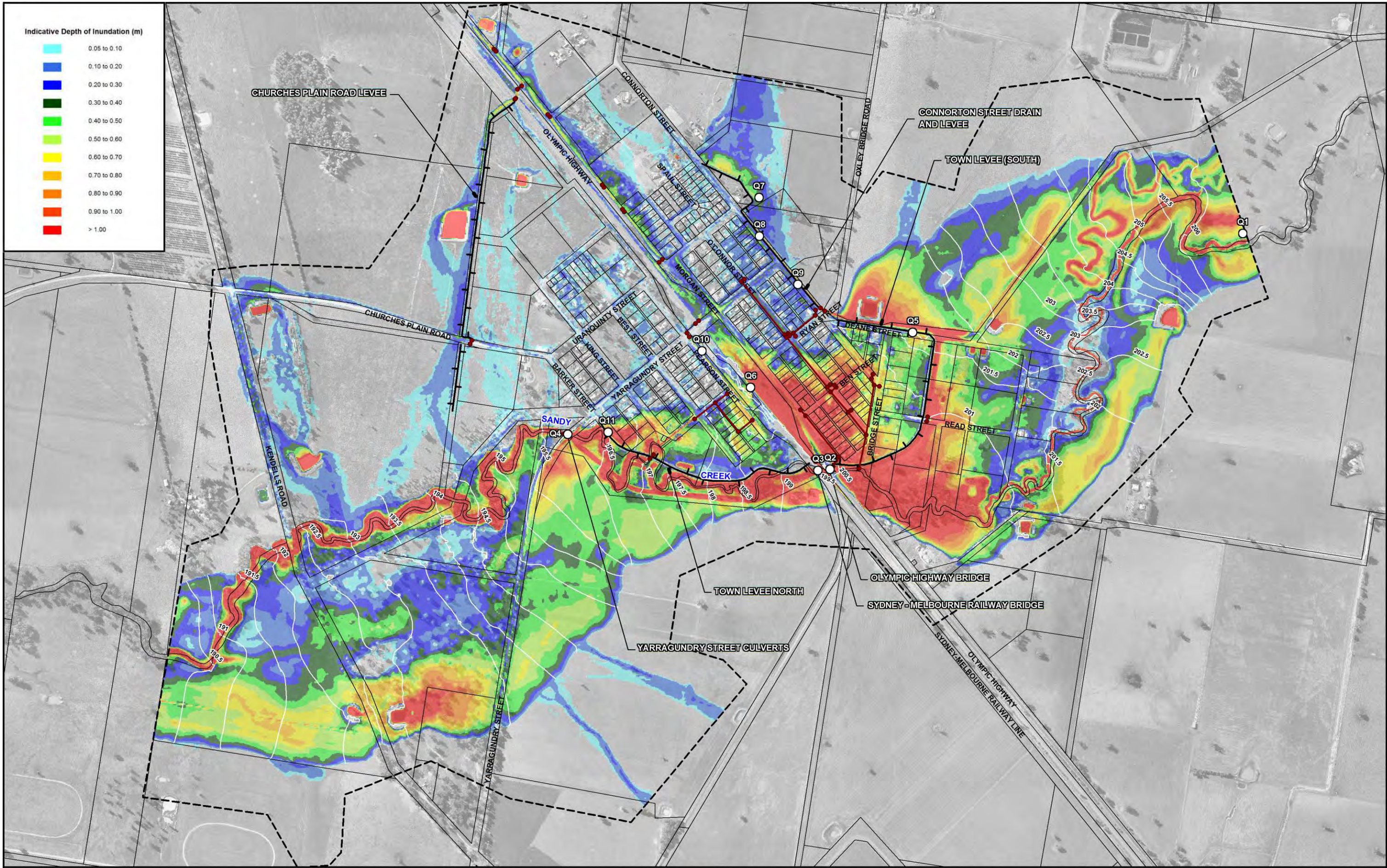


NOTE:
The extent and depths of flooding shown were determined from airborne laser scanning survey and are approximate only. The extent of inundation in individual allotments near the flood fringe should be confirmed by site specific survey.

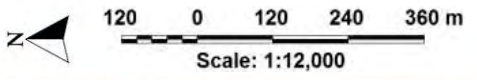
LEGEND

- Modelled Stormwater Network
- Two-Dimensional Model Boundary
- Water Surface Contours (m AHD) (Mainstream Flooding Only)
- Alignment of Existing Levee
- Peak Flow Locations and Identifier (Refer Table A3 in Appendix A)

TARCUTTA, LADYSMITH AND URANQUINTY FLOOD STUDIES
DESIGN FLOOD MODELLING



Indicative Depth of Inundation (m)



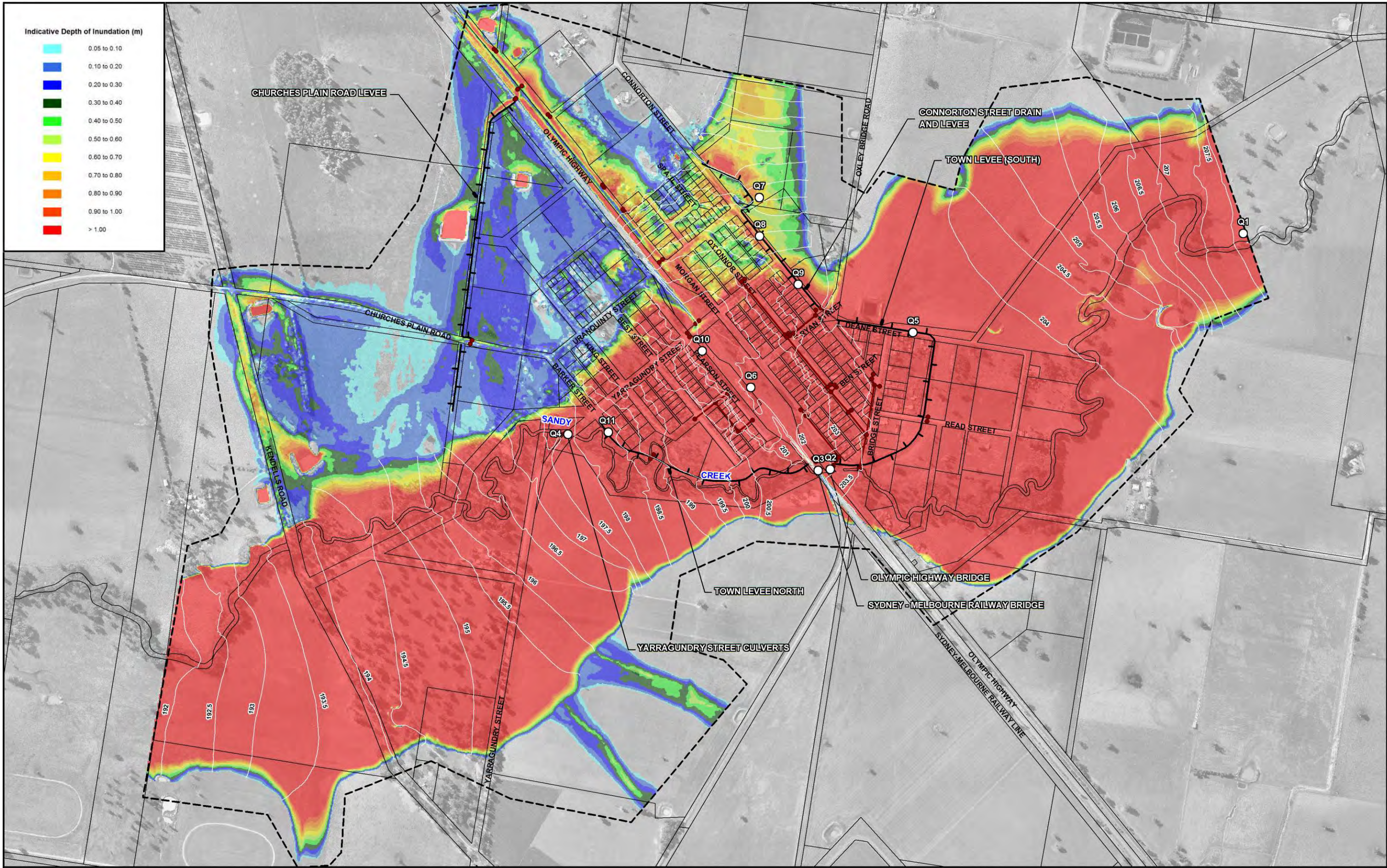
NOTE:
The extent and depths of flooding shown were determined from airborne laser scanning survey and are approximate only. The extent of inundation in individual allotments near the flood fringe should be confirmed by site specific survey.

LEGEND

- Modelled Stormwater Network
- Two-Dimensional Model Boundary
- Water Surface Contours (m AHD) (Mainstream Flooding Only)
- Alignment of Existing Levee
- Peak Flow Locations and Identifier (Refer Table A3 in Appendix A)

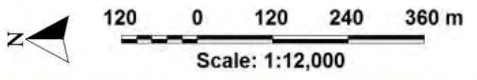
TARCUTTA, LADYSMITH AND URANQUINTY FLOOD STUDIES
DESIGN FLOOD MODELLING

Figure 5.9



Indicative Depth of Inundation (m)

- 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: 1:12,000

NOTE:

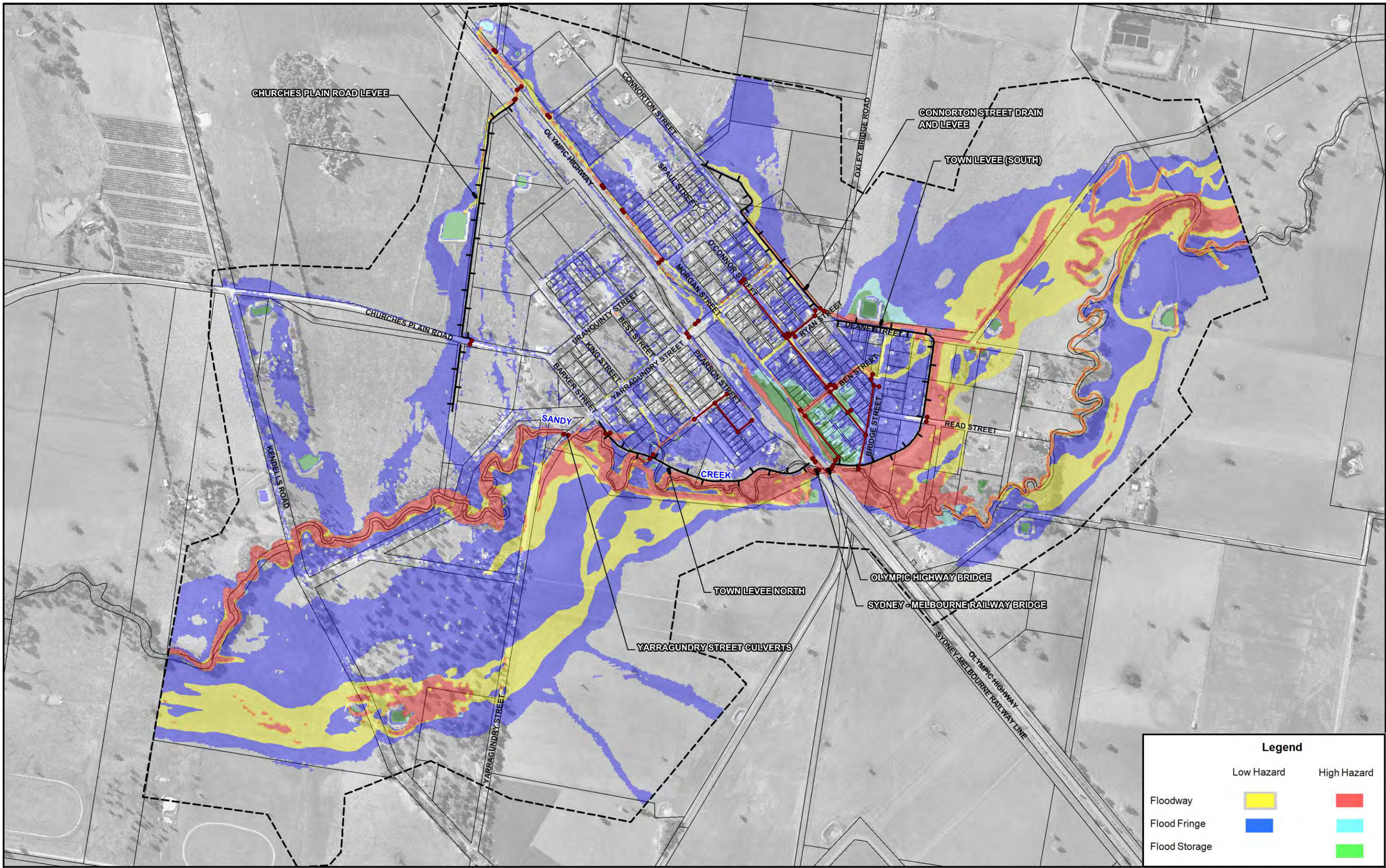
The extent and depths of flooding shown were determined from airborne laser scanning survey and are approximate only. The extent of inundation in individual allotments near the flood fringe should be confirmed by site specific survey.

LEGEND

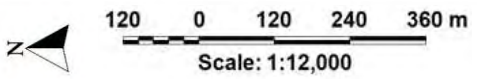
- Modelled Stormwater Network
- Two-Dimensional Model Boundary
- Water Surface Contours (m AHD) (Mainstream Flooding Only)
- Alignment of Existing Levee
- Peak Flow Locations and Identifier (Refer Table A3 in Appendix A)

TARCUTTA, LADYSMITH AND URANQUINTY FLOOD STUDIES
DESIGN FLOOD MODELLING

Figure 5.10



| Legend | | |
|---------------|-------------|-------------|
| Low Hazard | High Hazard | |
| Floodway | Yellow | Red |
| Flood Fringe | Blue | Cyan |
| Flood Storage | Green | Light Green |



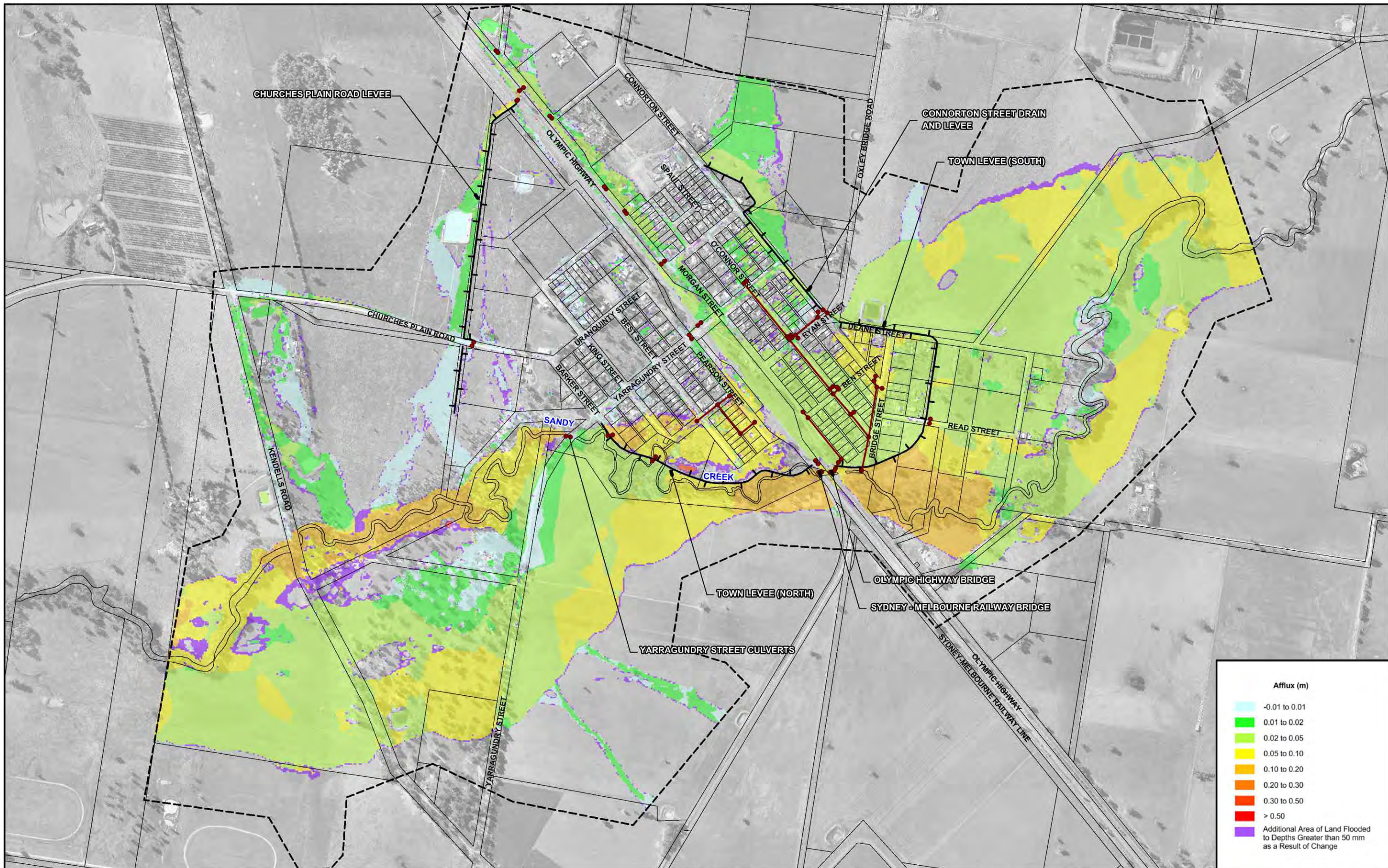
- LEGEND**
- Modelled Stormwater Network
 - Two-Dimensional Model Boundary
 - Alignment of Existing Levee

**TARCUTTA, LADYSMITH AND URANQUINTY FLOOD STUDIES
DESIGN FLOOD MODELLING**

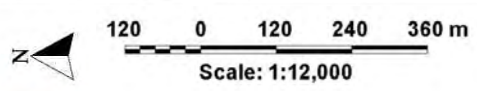


NOTE:
The extent of flooding shown was determined from airborne laser scanning survey and are approximate only. The extent of inundation in individual allotments near the flood fringe should be confirmed by site specific survey.

Figure 5.11



| Afflux (m) | |
|---|--|
| ■ | -0.01 to 0.01 |
| ■ | 0.01 to 0.02 |
| ■ | 0.02 to 0.05 |
| ■ | 0.05 to 0.10 |
| ■ | 0.10 to 0.20 |
| ■ | 0.20 to 0.30 |
| ■ | 0.30 to 0.50 |
| ■ | > 0.50 |
| ■ | Additional Area of Land Flooded to Depths Greater than 50 mm as a Result of Change |



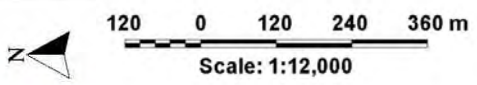
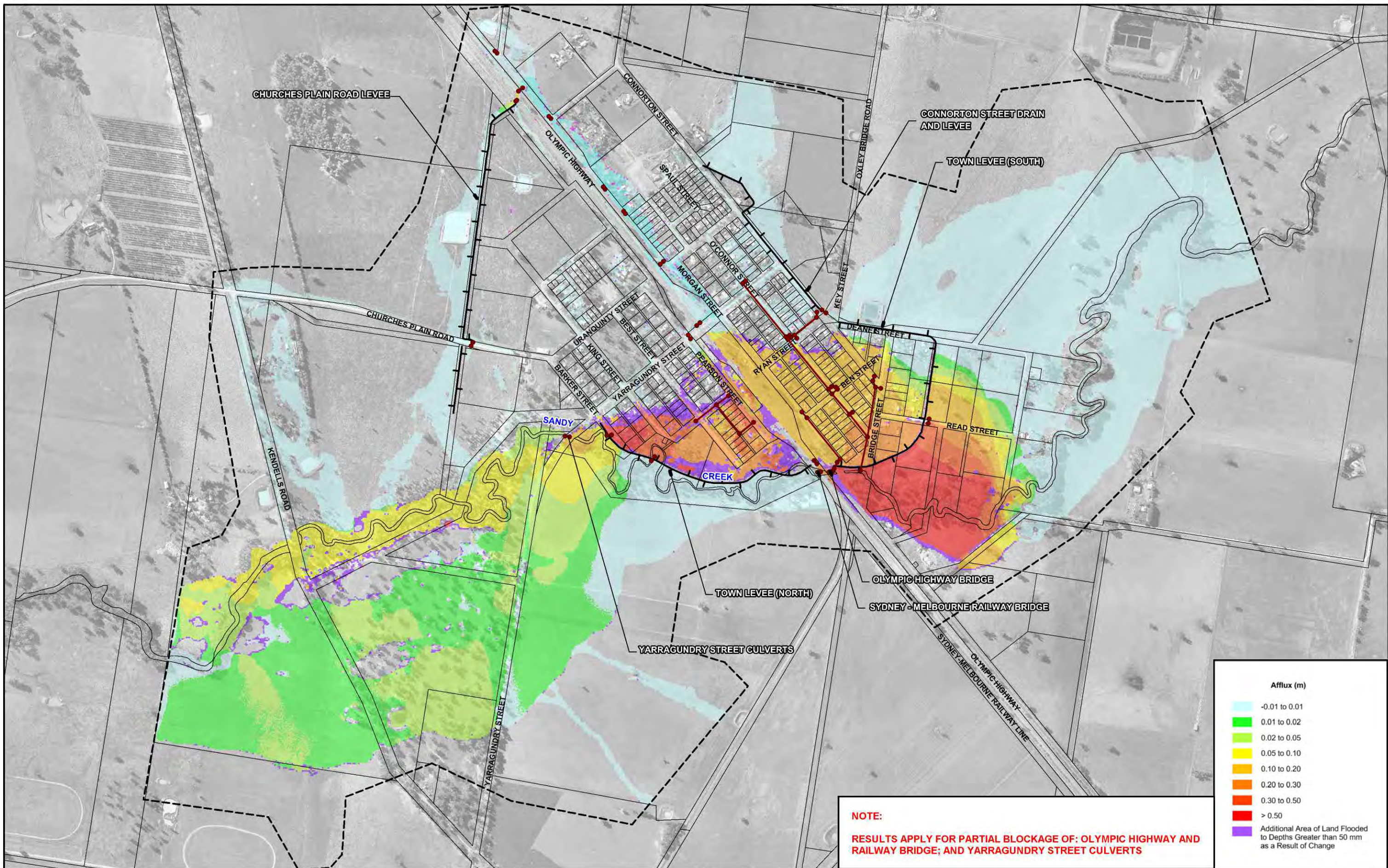
LEGEND

- Modelled Stormwater Network
- |— Alignment of Existing Levee
- - - Two-Dimensional Model Boundary

**TARCUTTA, LADYSMITH AND URANQUINTY FLOOD STUDIES
DESIGN FLOOD MODELLING**

Figure 5.12

NOTE:
The extent of flooding shown was determined from airborne laser scanning survey and are approximate only. The extent of inundation in individual allotments near the flood fringe should be confirmed by site specific survey.



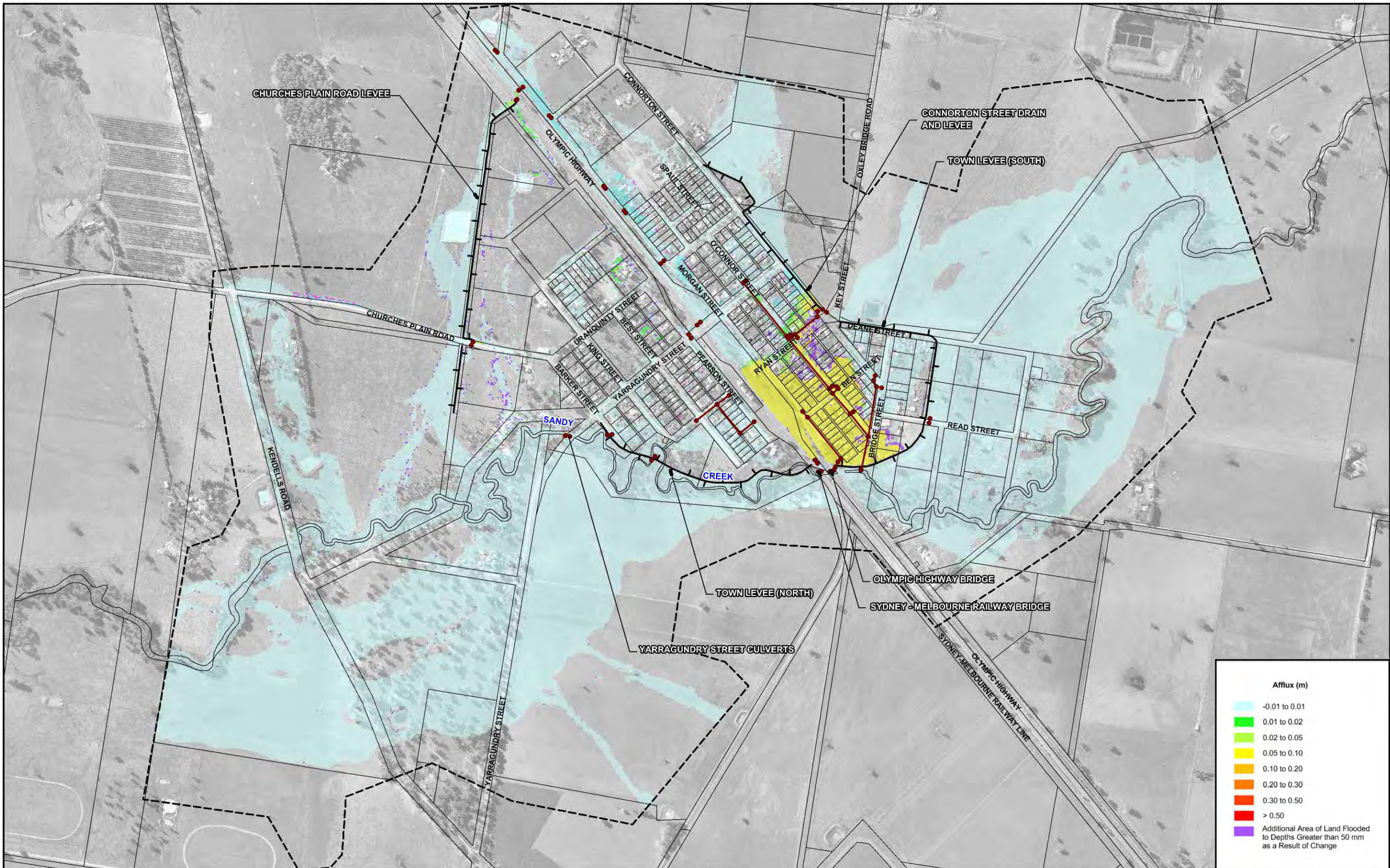
- LEGEND**
- Modelled Stormwater Network
 - Two-Dimensional Model Boundary
 - Alignment of Existing Levee

**TARCUTTA, LADYSMITH AND URANQUINTY FLOOD STUDIES
DESIGN FLOOD MODELLING**



NOTE:
The extent of flooding shown was determined from airborne laser scanning survey and are approximate only. The extent of inundation in individual allotments near the flood fringe should be confirmed by site specific survey.

**Figure 5.13
(Sheet 1 of 2)**
**SENSITIVITY OF FLOOD BEHAVIOUR AT URANQUINTY TO A PARTIAL BLOCKAGE OF MAJOR HYDRAULIC STRUCTURES
MAIN STREAM STRUCTURES ONLY - 100 YEAR ARI 6 HOUR STORM**



120 0 120 240 360 m
Scale: 1:12,000

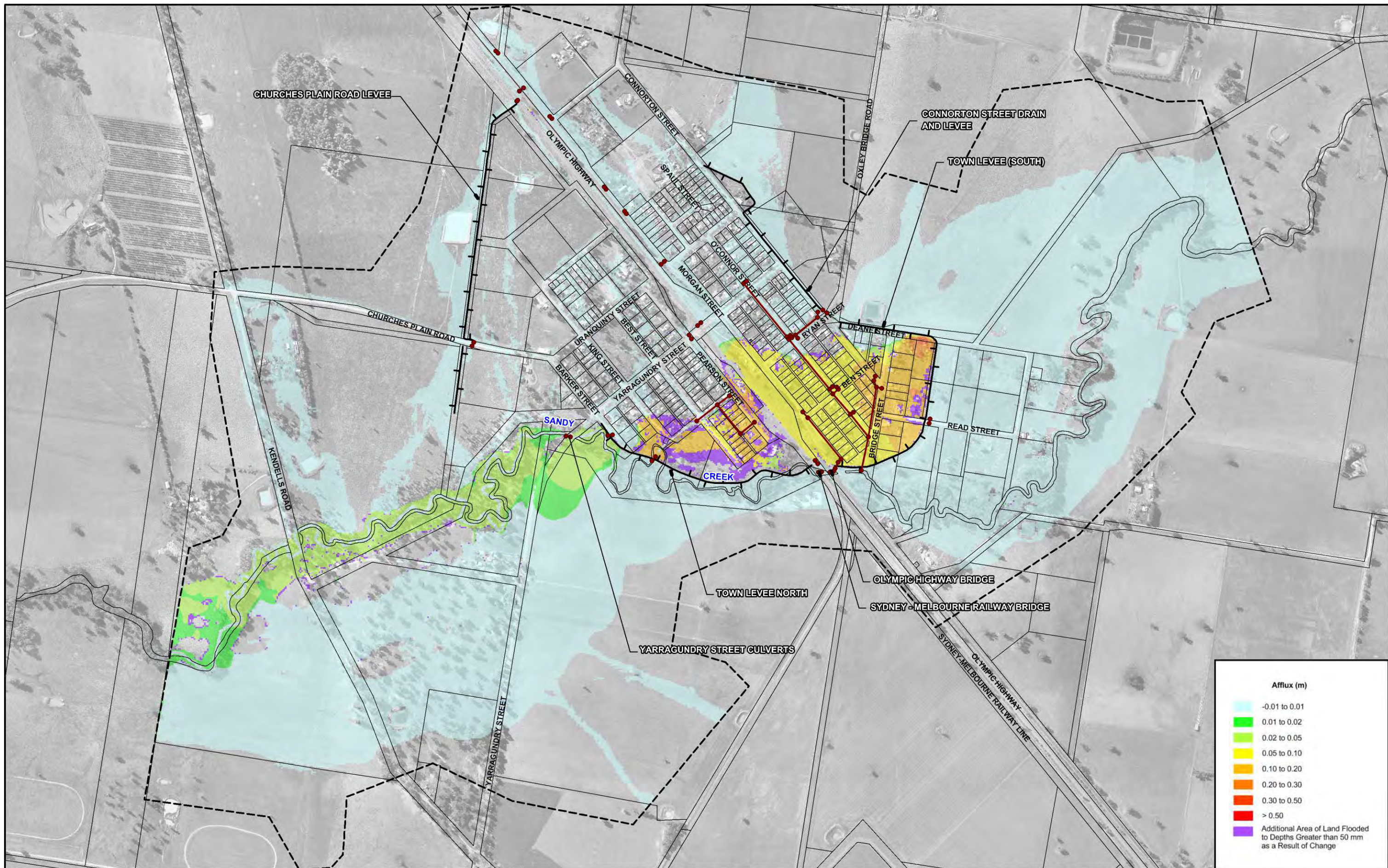
LEGEND

- Modelled Stormwater Network
- Two-Dimensional Model Boundary
- Alignment of Existing Levee

**TARCUTTA, LADYSMITH AND URANQUINTY FLOOD STUDIES
DESIGN FLOOD MODELLING**

Figure 5.13
(Sheet 2 of 2)

NOTE:
The extent of flooding shown was determined from airborne laser scanning survey and are approximate only. The extent of inundation in individual allotments near the flood fringe should be confirmed by site specific survey.



| Afflux (m) | |
|-------------|--|
| Light Blue | -0.01 to 0.01 |
| Green | 0.01 to 0.02 |
| Light Green | 0.02 to 0.05 |
| Yellow | 0.05 to 0.10 |
| Orange | 0.10 to 0.20 |
| Dark Orange | 0.20 to 0.30 |
| Red | 0.30 to 0.50 |
| Dark Red | > 0.50 |
| Purple | Additional Area of Land Flooded to Depths Greater than 50 mm as a Result of Change |

120 0 120 240 360 m
Scale: 1:12,000

NOTE:

1. Refer section x.x of main report for descriptions of levee failure scenarios modelled.
2. The extent of flooding shown was determined from airborne laser scanning survey and are approximate only. The extent of inundation in individual allotments near the flood fringe should be confirmed by site specific survey.

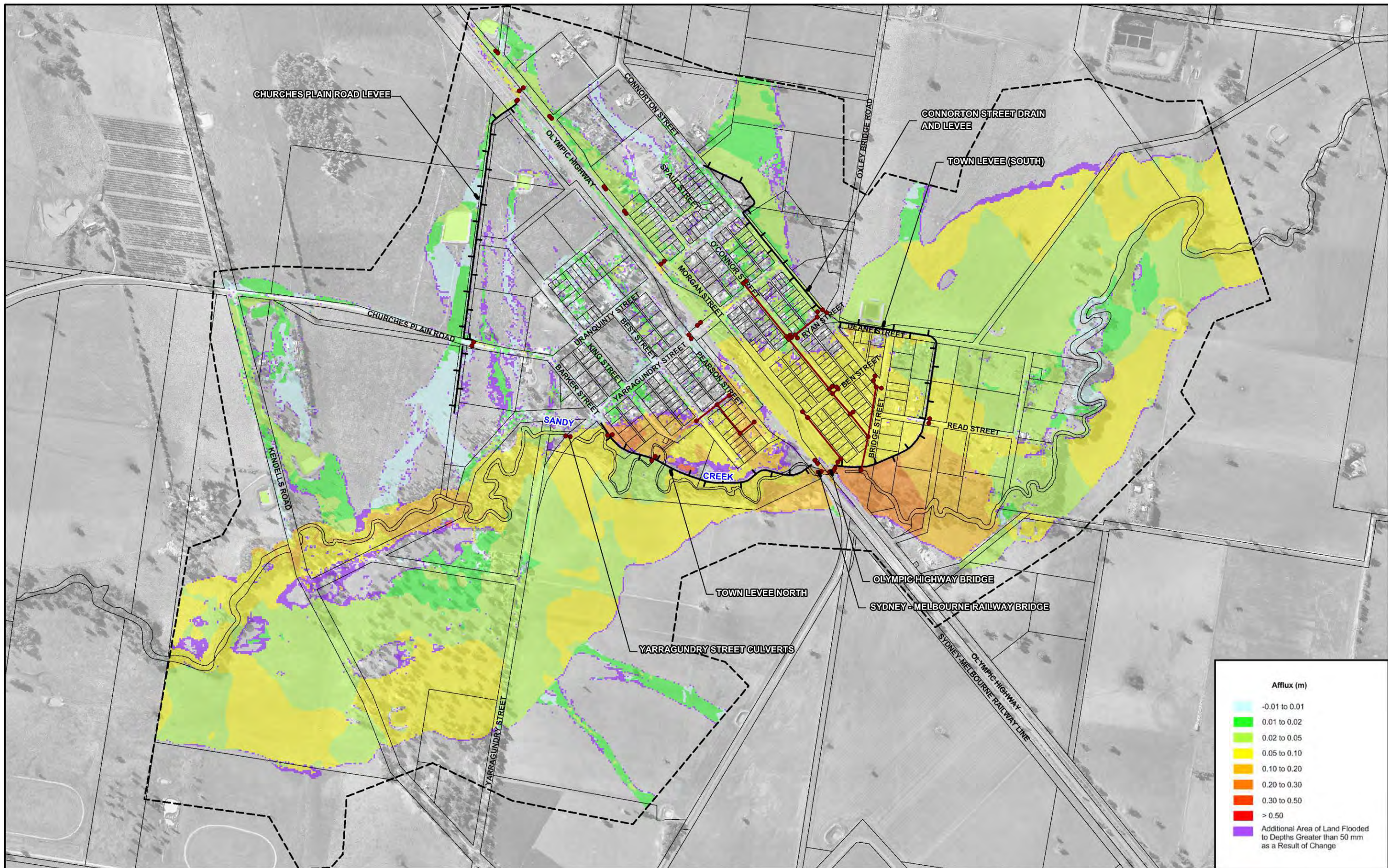
LEGEND

- Modelled Stormwater Network
- Two-Dimensional Model Boundary
- Alignment of Existing Levee

**TARCUTTA, LADYSMITH AND URANQUINTY FLOOD STUDIES
DESIGN FLOOD MODELLING**

Figure 5.14

**SENSITIVITY OF FLOOD BEHAVIOUR AT URANQUINTY TO LEVEE FAILURE
100 YEAR ARI**



**TARCUTTA, LADYSMITH AND URANQUINTY FLOOD STUDIES
DESIGN FLOOD MODELLING**

Figure 5.15

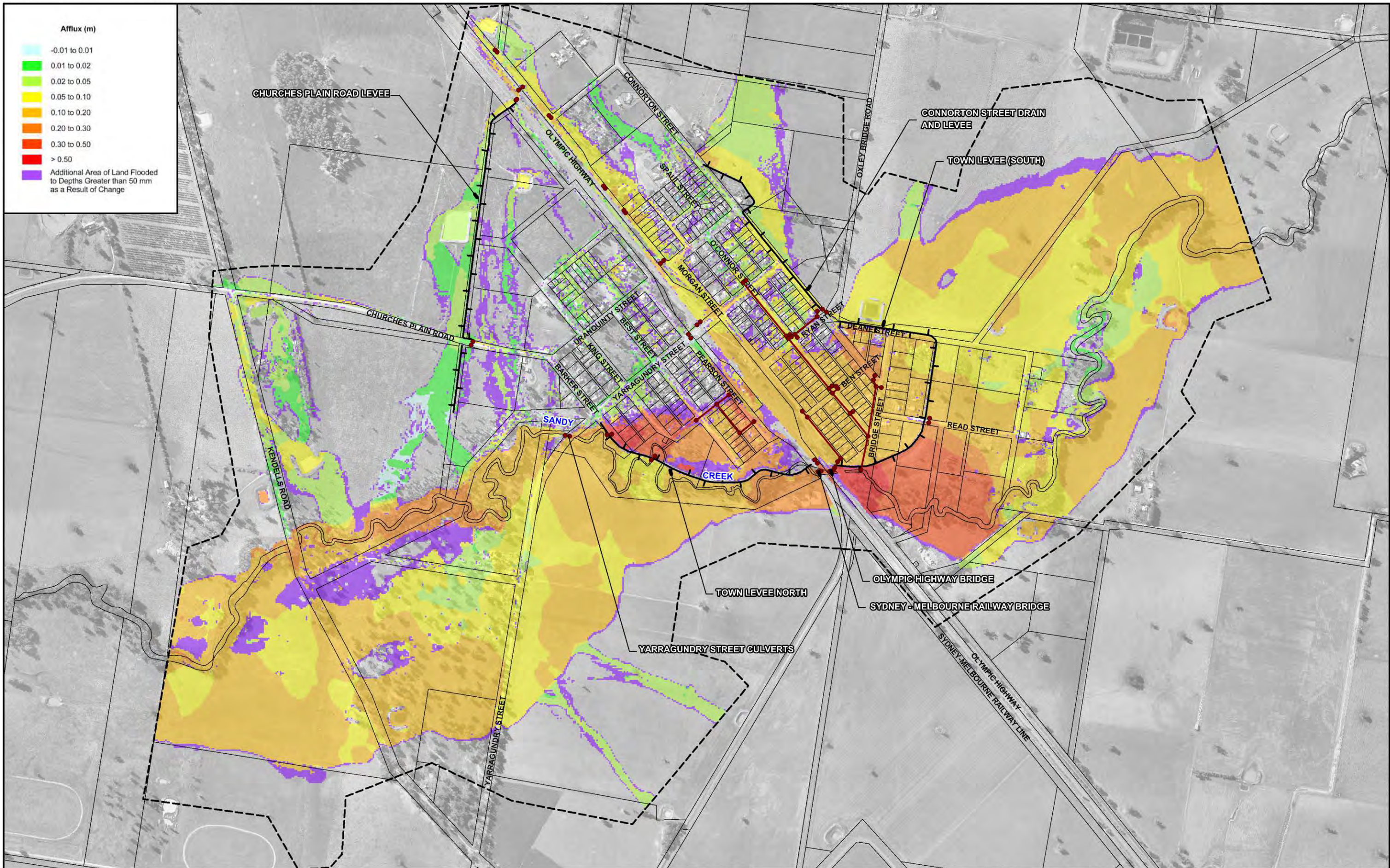
SENSITIVITY OF FLOOD BEHAVIOUR AT URANQUINTY TO 10% INCREASE IN RAINFALL INTENSITY
100 YEAR ARI

120 0 120 240 360 m
Scale: 1:12,000



NOTE:
The extent of flooding shown was determined from airborne laser scanning survey and are approximate only. The extent of inundation in individual allotments near the flood fringe should be confirmed by site specific survey.

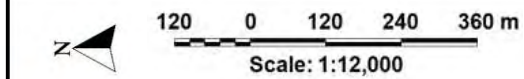
- LEGEND**
- Modelled Stormwater Network
 - Two-Dimensional Model Boundary
 - Alignment of Existing Levee



**TARCUTTA, LADYSMITH AND URANQUINTY FLOOD STUDIES
DESIGN FLOOD MODELLING**

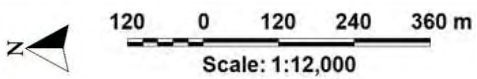
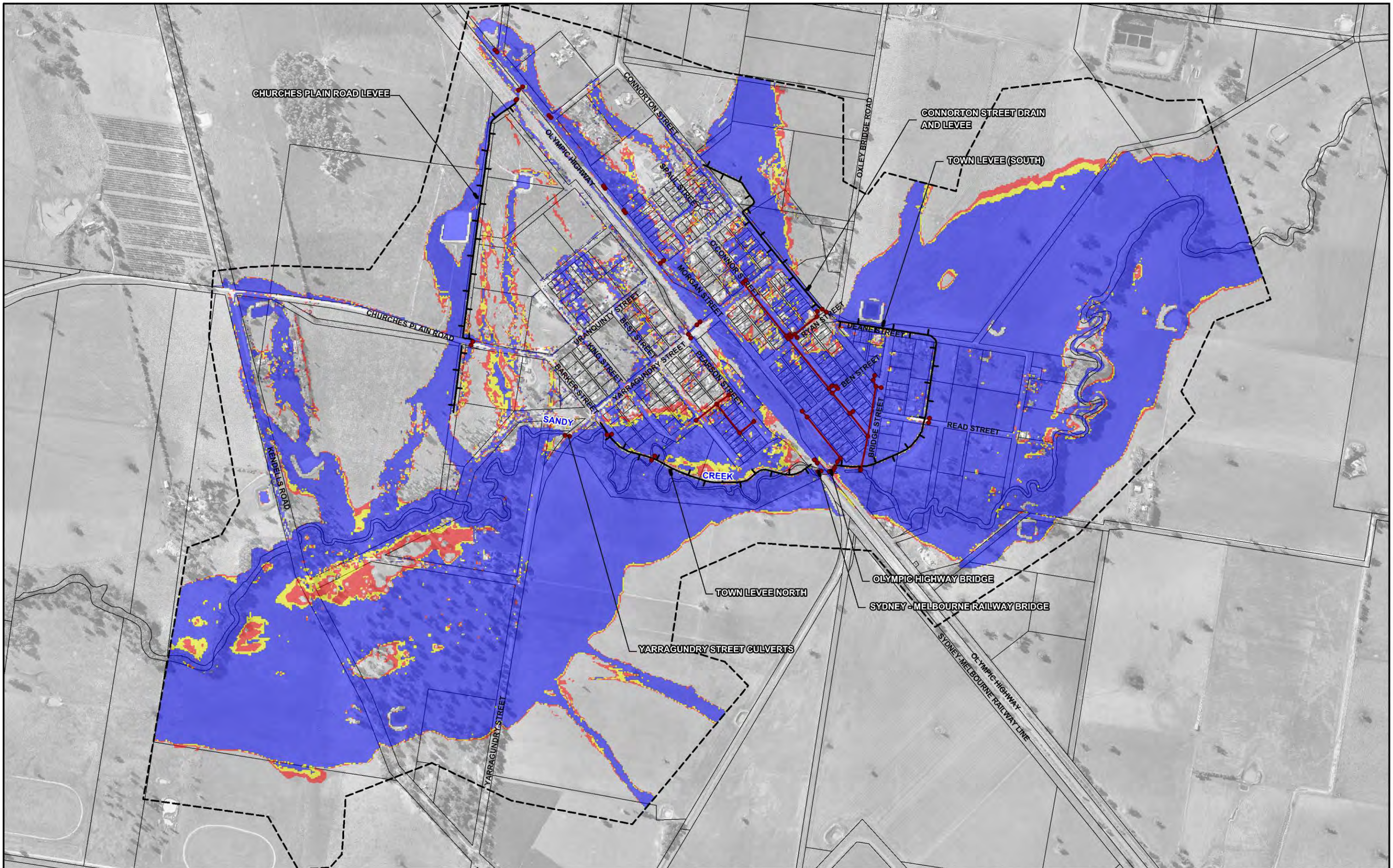
Figure 5.16

SENSITIVITY OF FLOOD BEHAVIOUR AT URANQUINTY TO 30% INCREASE IN RAINFALL INTENSITY
100 YEAR ARI



NOTE:
The extent of flooding shown was determined from airborne laser scanning survey and are approximate only. The extent of inundation in individual allotments near the flood fringe should be confirmed by site specific survey.

- LEGEND**
- Modelled Stormwater Network
 - Two-Dimensional Model Boundary
 - Alignment of Existing Levee

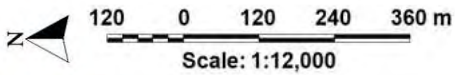
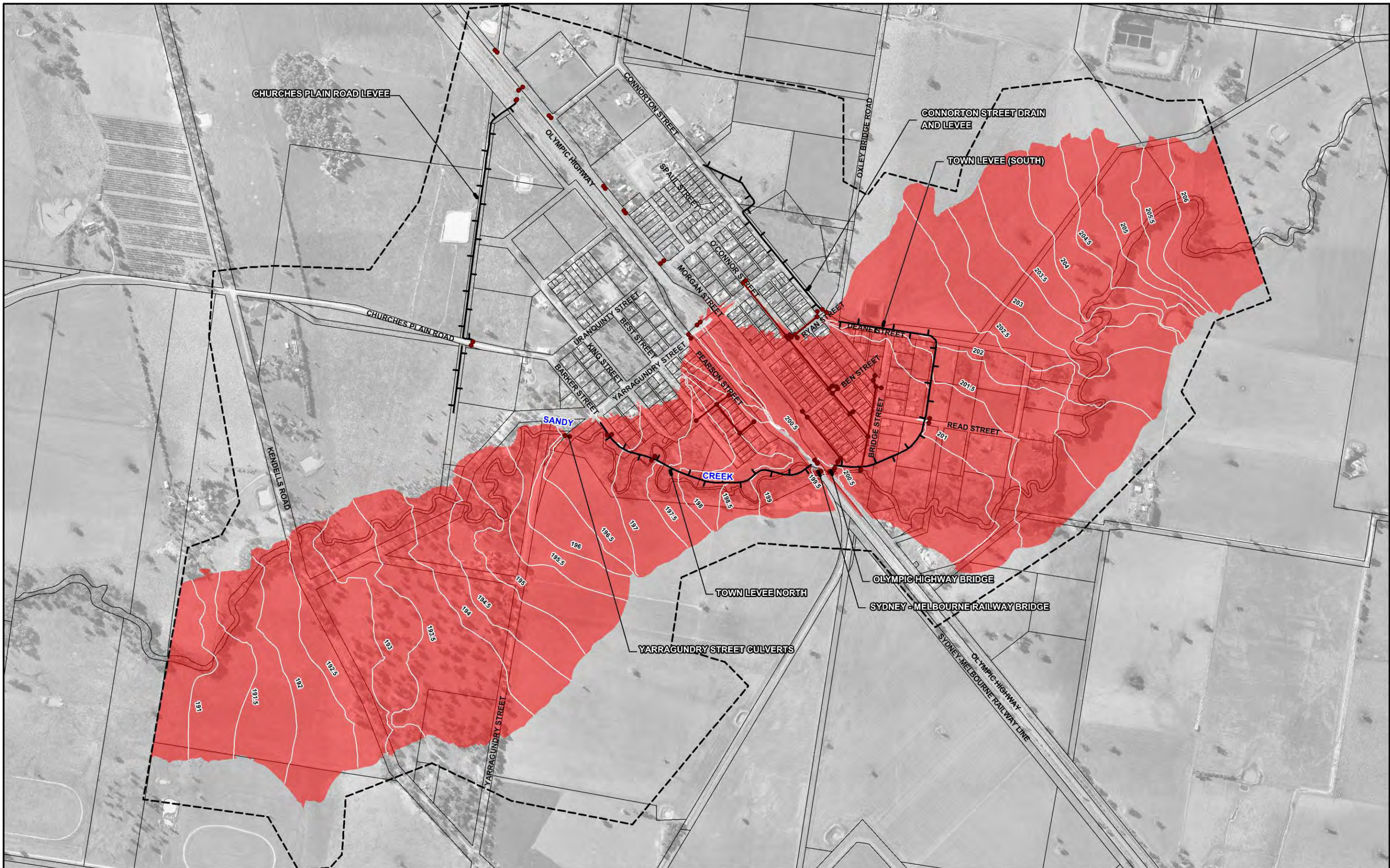


NOTE:
 The extent of flooding shown was determined from airborne laser scanning survey and are approximate only. The extent of inundation in individual allotments near the flood fringe should be confirmed by site specific survey.





- LEGEND**
- Modelled Stormwater Network
 - Two-Dimensional Model Boundary
 - Alignment of Existing Levee
 - 100 Year ARI
 - 100 Year ARI Rainfall Increased by 10%
 - 100 Year ARI Rainfall Increased by 30%

**TARCUTTA, LADYSMITH AND URANQUINTY FLOOD STUDIES
 DESIGN FLOOD MODELLING**

**IMPACT OF INCREASED RAINFALL INTENSITIES ON EXTENT OF FLOODING AT URANQUINTY
 100 YEAR ARI**



NOTE:
 The extent of flooding shown was determined from airborne laser scanning survey and are approximate only. The extent of inundation in individual allotments near the flood fringe should be confirmed by site specific survey.

- LEGEND**
-  Modelled Stormwater Network
 -  Two-Dimensional Model Boundary
 -  Alignment of Existing Levee
 -  Interim Flood Planning Area (FPA) and resulting Flood Planning Level (FPL) (m AHD)

**TARCUTTA, LADYSMITH AND URANQUINTY FLOOD STUDIES
 DESIGN FLOOD MODELLING**

Figure 5.18

**INTERIM FLOOD PLANNING AREA AT URANQUINTY
 MAIN STREAM FLOODING ONLY**

APPENDIX A
PEAK HISTORIC AND DESIGN FLOOD FLOWS