



ALLANS CREEK FLOOD STUDY, ALLANS CREEK FLOODPLAIN RISK MANAGEMENT STUDY & ALLANS CREEK FLOODPLAIN RISK MANAGEMENT PLAN ADDENDUM 1

(To be read in conjunction with the *Allans Creek Flood Study, September 2006*,
the *Allans Creek Floodplain Risk Management Study, September 2006*
and the *Allans Creek Floodplain Risk Management Plan, September 2006*)

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EXECUTIVE SUMMARY

A flood study of the Allans Creek catchment was undertaken to define the nature and extent of flooding in the study area for a range of design rainfall events (Cardno Lawson Treloar, 2006a).

As part of the Floodplain Risk Management Process as outlined in the Floodplain Development Manual (NSW Government, 2005) a Floodplain Risk Management Study (Cardno Lawson Treloar, 2006b) was undertaken to assess a range of flood management options for the Allans Creek Floodplain. One of the options assessed and subsequently recommended in the Allans Creek Floodplain Risk Management Plan (Cardno Lawson Treloar, 2006c) involved the removal of the median strip on the Freeway (F6).

After the release of the Draft Plan and prior to the adoption of the Final Plan, the raised and vegetated median strip (also referred to as the Freeway mound in this report) was cleared and lowered to road level in 2005 by the Roads and Traffic Authority allowing for flood flows to pass with less restriction.

The hydraulic model developed as part of the Flood Study (Cardno Lawson Treloar, 2006a) has been updated to assess the flood impact of removing the median strip mound as this now represents the base case for flood planning. This study is therefore an addendum to the Allans Creek Flood Study (Cardno Lawson Treloar, 2006a).

During the period elapsed since the finalisation of the previous studies, Airborne Laser Scanning (ALS) survey has been captured for the Allans Creek Floodplain. This data is more accurate than the 2m contours used in many areas to previously define the flood extents. All flood extents have been updated based on the ALS data. However, it should be noted that only the flood extents have been updated using the ALS data. The hydraulic model was only updated by removing the mound on the median strip, the ALS data was not used to update the hydraulic model.

The flood hazard and flood risk precinct mapping has been reviewed with respect to the updated hydraulic model results and the ALS data. This study is therefore also an addendum to the Allans Creek Floodplain Risk Management Study (Cardno Lawson Treloar, 2006b) and the Allans Creek Floodplain Risk Management Plan (Cardno Lawson Treloar, 2006c).

The results of the Addendum modelling indicate that, in general, the flood behaviour in the catchment is relatively similar to that reported in the Allans Creek Flood Study (Cardno Lawson Treloar, 2006a). However, there are various local changes to the flood behaviour due to the removal of the freeway median strip mound. Findings of the Addendum modelling are provided in the accompanying figures, tables and appendices.

The limits of the updated predicted extents for the 5, 10, 20, 50 and 100 Year ARI and PMF events are provided in plan form. Updated tabulated modelling results are also provided for the cross sections affected by the freeway median strip removal.

The flood risk precincts (including true hazard mapping) have also been updated for the affected portions of the floodplain.

1. INTRODUCTION

The Allans Creek Flood Study, Floodplain Risk Management Study and Floodplain Risk Management Plan were finalised in September 2006 (Cardno Lawson Treloar, 2006a,b,c). This first addendum has been prepared to incorporate the effect of the removal of the mound on the F6 Freeway median strip in accordance with the implementation of Flood Modification Option 59 (described in *Allans Creek Floodplain Risk Management Plan*, Cardno Lawson Treloar, 2006c). The updated flood extents have been based on Airborne Laser Scanning (ALS) Survey Data.

This addendum is to be read in conjunction with the Flood Study, Floodplain Risk Management Study and Floodplain Risk Management Plan noting where results from this addendum supersede the previous results. It should be noted that reference to the previous reports may be required in order to interpret results of this addendum.

The study area, including the extent of the catchment, is shown in **Figure 1.1**. The extent of the area considered for this Addendum is shown in **Figure 3.1**.

2. MODIFICATION OF FREEWAY MOUND

A large vegetated earth mound forms the median strip of the F6 Freeway in the Figtree Area. In 2005 a portion of this mound was removed as part of the early implementation of the Allans Creek Floodplain Risk Management Plan (Cardno Lawson Treloar, 2006c). The recommendation to remove the mound was made to reduce flood risk upstream of the Freeway and is commensurate with other similar actions implemented by the RTA at creek crossings of RTA roads in the Wollongong LGA.

Figure 2.1 shows the extent of the removed earth mound along the median strip (based on advice issued to Wollongong City Council by Cardno Lawson Treloar in 2004) and **Figure 2.2** shows a comparison of the previous mound levels with the road levels, also based on the advice supplied by Cardno Lawson Treloar to Wollongong City Council.

3. HYDRAULIC MODELLING

A one-dimensional MIKE11 hydraulic model developed for the Allans Creek Flood Study (Cardno Lawson Treloar, 2006a) was used for the Addendum 1 modelling.

The model was updated to represent the removed freeway mound. The mound has been removed to below the crest level of the north and south bound carriage ways (**Figure 2.2**). In the absence of Work as Executed survey, the final levels of the removed mound have been assumed and modelled as a composite weir using ground survey of the north and south bound carriageways collected as part of the Allans Creek Flood Study (Cardno Lawson Treloar, 2006a).

The critical model runs for the area of predicted impact were extracted from the information within the Allans Creek Flood Study (Cardno Lawson Treloar, 2006a). The area of predicted impact was determined using a single run of the Probable Maximum Flood (PMF) with the updated weir details. The area of predicted impact from this run is shown in **Figure 3.1** and the critical runs are shown below in **Table 3.1**. It should be noted that the area of predicted impact was verified once the hydraulic modelling for a range of design flood events was completed.

Table 3.1 Critical Flood Model Runs

| 5 Year ARI | 10 Year ARI | 20 Year ARI | 50 Year ARI | 100 Year ARI | PMF |
|-------------------------|-------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| DESIGN BLOCKAGE1-6hr | DESIGN BLOCKAGE 1-6hr | DESIGN BLOCKAGE 1-2hr | DESIGN BLOCKAGE 1-2hr | DESIGN BLOCKAGE 1-2hr | DESIGN BLOCKAGE 1-1hr |
| DESIGN BLOCKAGE 1-2hr | DESIGN BLOCKAGE 1-2hr | DESIGN BLOCKAGE 2-2hr | DESIGN BLOCKAGE 2-2hr | DESIGN BLOCKAGE 2-2hr | DESIGN BLOCKAGE 1-2hr |
| DESIGN BLOCKAGE 1-3hr | DESIGN BLOCKAGE 1-3hr | DESIGN BLOCKAGE 2-6hr | DESIGN BLOCKAGE 2-3hr | DESIGN BLOCKAGE 2-6hr | DESIGN BLOCKAGE 2-1hr |
| DESIGN BLOCKAGE 1-0.5hr | DESIGN BLOCKAGE 1-0.5hr | DESIGN BLOCKAGE 3-2hr | DESIGN BLOCKAGE 2-6hr | DESIGN BLOCKAGE 3-2hr | DESIGN BLOCKAGE 2-2hr |
| DESIGN BLOCKAGE 1-1hr | | DESIGN BLOCKAGE 3-6hr | DESIGN BLOCKAGE 3-2hr | DESIGN BLOCKAGE 3-3hr | DESIGN BLOCKAGE 2-3hr |
| | | DESIGN BLOCKAGE 4-2hr | DESIGN BLOCKAGE 3-6hr | DESIGN BLOCKAGE 3-6hr | DESIGN BLOCKAGE 3-1hr |
| | | DESIGN BLOCKAGE 4-3hr | DESIGN BLOCKAGE 4-2hr | DESIGN BLOCKAGE 4-2hr | DESIGN BLOCKAGE 4-2hr |
| | | DESIGN BLOCKAGE 8-2hr | DESIGN BLOCKAGE 4-3hr | DESIGN BLOCKAGE 4-3hr | DESIGN BLOCKAGE 5-3hr |
| | | DESIGN BLOCKAGE 8-3hr | DESIGN BLOCKAGE 8-2hr | DESIGN BLOCKAGE 1-6hr | DESIGN BLOCKAGE 8-3hr |
| | | DESIGN BLOCKAGE 8-6hr | DESIGN BLOCKAGE 8-6hr | DESIGN BLOCKAGE 2-6hr | DESIGN BLOCKAGE 2-3hr |

| 5 Year ARI | 10 Year ARI | 20 Year ARI | 50 Year ARI | 100 Year ARI | PMF |
|------------|-------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | | DESIGN BLOCKAGE 1-6hr | DESIGN BLOCKAGE 1-6hr | DESIGN BLOCKAGE 6-6hr | DESIGN BLOCKAGE 2-6hr |
| | | DESIGN BLOCKAGE 2-6hr | DESIGN BLOCKAGE 2-6hr | | |
| | | DESIGN BLOCKAGE 3-6hr | DESIGN BLOCKAGE 3-6hr | | |
| | | DESIGN BLOCKAGE 5-6hr | DESIGN BLOCKAGE 6-6hr | | |
| | | DESIGN BLOCKAGE 6-6hr | | | |

Model runs for this Addendum 1 assessment were carried out for all of the critical runs shown in **Table 3.1**.

4. RESULTS

As described in **Section 3**, the flood model (MIKE11 Version 2003 SP3) was run for the range of critical runs shown in **Table 3.1**. For the purposes of this Addendum 1 report, the updated results were integrated with the previous model results for those cross sections outside of the area of impact to provide a replicate series of results to update and replace the September 2006 Flood Study.

The flood extents have been updated based on Aerial Laser Survey (ALS) data (**Figure 3.1**). It should be noted, that the hydraulic model was not updated based on the ALS data.

The model results are presented as Figures in **Appendices A, B and C**, with figure numbering to allow for the direct replacement of figures in the September 2006 Flood Study, Floodplain Risk Management Study and Floodplain Risk Management Plan. The figures to be updated are shown in **Table 4.1**.

Table 4.1 Updated Figures

| Flood Study | Floodplain Risk Management Study | Floodplain Risk Management Plan |
|--|--|---|
| Flood Profiles: <ul style="list-style-type: none">▪ Figure 7.1▪ Figure 7.2▪ Figure 7.3▪ Figure 7.4▪ Figure 7.5▪ Figure 7.6 Flood Extents: <ul style="list-style-type: none">▪ Figure 7.14▪ Figure 7.15▪ Figure 7.16▪ Figure 7.17▪ Figure 7.18▪ Figure 7.19 | Flood Extents: <ul style="list-style-type: none">▪ Figure 4.1 Flood Hazard and Flood Risk Precincts: <ul style="list-style-type: none">▪ Figure 4.2▪ Figure 4.3▪ Figure 4.4▪ Figure 4.5 | Flood Risk Precincts: <ul style="list-style-type: none">▪ Page 12 |

Similarly the following tables and appendices are to be updated (**Table 4.2**). The updated tables and appendices are provided in **Appendices D and E**.

Table 4.2 Updated Tables and Appendices

| Flood Study | Floodplain Risk Management Study | Floodplain Risk Management Plan |
|--|--|------------------------------------|
| Table 8.1 (Page 29) Table 8.2 (Page 30) | Table 4.1 (Page 43) Table 10.2 (Page 125) | <i>No Tables to be Updated</i> |
| Appendix F Appendix G | <i>No Appendices to be Updated</i> | <i>No Appendices to be Updated</i> |

5. SIGNIFICANT FINDINGS

Detailed results are presented in **Appendices A to E** of this report. The significant findings of the Addendum 1 modelling are discussed below. The impact of the Freeway mound removal has been assessed for change in peak water levels, flood extents and flood risk precincts.

5.1 Peak Flood Levels and Flood Extents

A comparison of the Addendum 1 and the Flood Study (2006) peak flood levels within the area of impact is provided in **Table 5.1**.

In the 5 and 10 Year ARI events there is no overtopping of the Freeway, even with the mound removed. As such there is no difference in the Addendum 1 flood levels as to those reported in the Flood Study (2006). There is one small difference in the 5 Year ARI peak flood levels at Cross Section “WALLA-BELLV 386.00”. This is related to the model numerical scheme which produced a minor anomaly not detected in the 2006 Flood Study modelling.

Flood flows overtop the Freeway in design flood events greater than the 10 Year ARI event (20, 50 and 100 Year ARI and PMF). The effect of the mound removal, generally resulted in a reduction in peak flood levels upstream of the Freeway and a slight increase in flood levels downstream of the Freeway, as would be expected.

A preliminary spatial representation of the change in peak flood levels from those previously reported is shown as a series of difference “grids” for each design event (20, 50 and 100 Year ARI and PMF) in **Figures 5.1 to 5.4**. These figures show that the 100 Year ARI flood levels upstream of the Freeway decreased on average by approximately 0.4 metres and increased on the downstream side of the Freeway by approximately 0.05 metres.

The impact on peak flood levels extends downstream into the lower reaches of Allans Creek. The impact is generally seen as a slight increase in flood levels with a maximum increase of 11 cm along the southern boundary of the Australian Iron and Steel site. Due to the channelised nature of the flow along this reach, the increase in flood levels does not result in a significant increase in flood extent. The increase in the PMF peak levels within this reached is more significant, with a maximum increase of 61cm. The flood extent along the right bank of the same reach described above has therefore increased in response to the increased flood level. There are also significant flood level reductions along this reach in the PMF.

The updated flood profiles and flood extents are shown in **Appendix A**. The revised flood extents have been based on detailed ALS ground survey provided by Council.

Table 5.1 Peak Flood Level Comparison

Addendum 1 and Allans Creek Flood Study (September, 2006)

| Cross Section | 5yr | | | 10yr | | | 20yr | | | 50yr | | | 100yr | | | PMF | | |
|------------------|----------|------------|------------|----------|------------|------------|----------|------------|------------|----------|------------|------------|----------|------------|------------|----------|------------|------------|
| | Addendum | Flood Sudy | Difference |
| ALLANS 5546.00 | 10.10 | 10.10 | - | 10.15 | 10.15 | - | 12.09 | 12.09 | - | 12.17 | 12.17 | - | 12.31 | 12.31 | - | 13.22 | 13.22 | - |
| ALLANS 5560.00 | 9.61 | 9.61 | - | 9.95 | 9.95 | - | 10.46 | 10.47 | - | 10.73 | 10.73 | - | 10.89 | 10.90 | - | 11.55 | 11.43 | 0.12 |
| ALLANS 5610.00 | 9.61 | 9.61 | - | 9.94 | 9.94 | - | 10.46 | 10.47 | - | 10.73 | 10.73 | - | 10.89 | 10.90 | - | 11.55 | 11.42 | 0.13 |
| ALLANS 5712.00 | 9.53 | 9.53 | - | 9.86 | 9.86 | - | 10.34 | 10.35 | - | 10.60 | 10.61 | - | 10.76 | 10.77 | - | 11.42 | 11.27 | 0.15 |
| ALLANS 6094.00 | 7.93 | 7.93 | - | 9.44 | 9.44 | - | 9.77 | 9.78 | - | 9.94 | 9.98 | -0.04 | 10.07 | 10.06 | - | 10.57 | 10.43 | 0.14 |
| ALLANS 6156.00 | 7.00 | 7.00 | - | 9.50 | 9.50 | - | 9.65 | 9.70 | -0.05 | 9.79 | 9.77 | 0.02 | 9.83 | 9.85 | -0.02 | 10.54 | 9.87 | 0.67 |
| ALLANS 6344.00 | 6.89 | 6.89 | - | 7.48 | 7.48 | - | 7.75 | 7.85 | -0.10 | 7.96 | 8.04 | -0.08 | 8.08 | 8.16 | -0.08 | 10.54 | 9.86 | 0.68 |
| ALLANS 6384.00 | 6.90 | 6.90 | - | 7.84 | 7.84 | - | 7.92 | 8.01 | -0.09 | 8.07 | 8.18 | -0.11 | 8.30 | 8.25 | 0.05 | 10.54 | 9.90 | 0.64 |
| ALLANS 6422.00 | 6.80 | 6.80 | - | 6.99 | 6.99 | - | 7.71 | 7.83 | -0.12 | 7.93 | 8.01 | -0.08 | 8.05 | 8.14 | -0.09 | 10.53 | 9.87 | 0.66 |
| ALLANS 6446.00 | 6.45 | 6.45 | - | 6.55 | 6.55 | - | 7.71 | 7.83 | -0.12 | 7.93 | 8.01 | -0.08 | 8.05 | 8.14 | -0.09 | 10.53 | 9.86 | 0.67 |
| ALLANS 6544.00 | 5.10 | 5.10 | - | 5.46 | 5.46 | - | 7.70 | 7.82 | -0.12 | 7.92 | 8.00 | -0.08 | 8.04 | 8.13 | -0.08 | 10.53 | 9.86 | 0.67 |
| ALLANS 6564.00 | 4.79 | 4.79 | - | 5.27 | 5.27 | - | 7.70 | 7.82 | -0.12 | 7.92 | 8.00 | -0.08 | 8.04 | 8.13 | -0.09 | 10.53 | 9.85 | 0.68 |
| ALLANS 6640.00 | 4.36 | 4.36 | - | 4.87 | 4.87 | - | 7.69 | 7.82 | -0.13 | 7.91 | 8.00 | -0.09 | 8.04 | 8.12 | -0.08 | 10.53 | 9.84 | 0.69 |
| ALLANS 6804.00 | 4.23 | 4.23 | - | 4.68 | 4.68 | - | 4.97 | 4.98 | -0.01 | 5.47 | 5.47 | - | 5.86 | 5.78 | 0.08 | 10.21 | 9.81 | 0.40 |
| ALLANS 6896.00 | 4.08 | 4.08 | - | 4.52 | 4.52 | - | 4.92 | 4.92 | - | 5.45 | 5.44 | - | 5.86 | 5.77 | 0.09 | 10.21 | 9.81 | 0.40 |
| ALLANS 7154.00 | 3.87 | 3.87 | - | 4.34 | 4.34 | - | 4.72 | 4.72 | - | 5.28 | 5.28 | - | 5.76 | 5.66 | 0.10 | 10.18 | 9.72 | 0.46 |
| ALLANS 7368.00 | 3.75 | 3.75 | - | 4.22 | 4.22 | - | 4.63 | 4.63 | - | 5.21 | 5.21 | - | 5.73 | 5.62 | 0.11 | 10.18 | 9.72 | 0.46 |
| ALLANS 7514.00 | 3.67 | 3.67 | - | 4.17 | 4.17 | - | 4.57 | 4.57 | - | 5.16 | 5.15 | - | 5.70 | 5.59 | 0.11 | 10.17 | 9.71 | 0.46 |
| ALLANS 7712.00 | 3.57 | 3.57 | - | 4.11 | 4.11 | - | 4.50 | 4.49 | - | 5.12 | 5.09 | 0.03 | 5.66 | 5.55 | 0.11 | 10.16 | 9.69 | 0.47 |
| ALLANS 7902.00 | 3.49 | 3.49 | - | 4.02 | 4.02 | - | 4.44 | 4.44 | - | 5.09 | 5.04 | 0.05 | 5.63 | 5.52 | 0.11 | 10.15 | 9.68 | 0.47 |
| ALLANS 8130.00 | 3.30 | 3.30 | - | 3.82 | 3.82 | - | 4.26 | 4.26 | - | 4.98 | 4.86 | 0.12 | 5.53 | 5.41 | 0.12 | 10.12 | 9.64 | 0.48 |
| ALLANS 8160.00 | 2.94 | 2.94 | - | 3.52 | 3.52 | - | 4.00 | 4.00 | - | 4.55 | 4.55 | - | 4.73 | 4.74 | - | 9.86 | 9.25 | 0.61 |
| ALLANS 8234.00 | 2.90 | 2.90 | - | 3.51 | 3.51 | - | 3.99 | 3.99 | - | 4.60 | 4.60 | - | 4.80 | 4.80 | - | 9.91 | 9.32 | 0.59 |
| ALLANS 8274.00 | 2.74 | 2.74 | - | 3.28 | 3.28 | - | 3.75 | 3.75 | - | 4.32 | 4.32 | - | 4.54 | 4.55 | - | 8.66 | 9.33 | -0.67 |
| ALLANS 8428.00 | 2.60 | 2.60 | - | 3.10 | 3.10 | - | 3.54 | 3.54 | - | 4.05 | 4.05 | - | 4.37 | 4.29 | 0.08 | 8.66 | 9.31 | -0.65 |
| ALLANS 8554.00 | 2.47 | 2.47 | - | 2.96 | 2.96 | - | 3.41 | 3.40 | 0.01 | 3.90 | 3.90 | - | 4.28 | 4.20 | 0.08 | 8.66 | 9.30 | -0.64 |
| ALLANS 8744.00 | 2.32 | 2.32 | - | 2.80 | 2.80 | - | 3.28 | 3.26 | 0.02 | 3.86 | 3.84 | 0.02 | 4.28 | 4.19 | 0.09 | 8.66 | 9.30 | -0.64 |
| ALLANS 8760.00 | 2.29 | 2.29 | - | 2.73 | 2.73 | - | 3.15 | 3.15 | - | 3.79 | 3.75 | 0.04 | 4.26 | 4.17 | 0.09 | 8.65 | 9.30 | -0.65 |
| ALLANS 8804.00 | 2.16 | 2.16 | - | 2.56 | 2.56 | - | 2.95 | 2.94 | 0.01 | 3.65 | 3.61 | 0.04 | 4.13 | 4.04 | 0.09 | 8.55 | 9.20 | -0.65 |
| ALLANS 8828.00 | 2.10 | 2.10 | - | 2.50 | 2.50 | - | 2.88 | 2.88 | - | 3.45 | 3.40 | 0.05 | 3.91 | 3.82 | 0.09 | 7.47 | 8.14 | -0.67 |
| ALLANS 8840.00 | 2.07 | 2.07 | - | 2.48 | 2.48 | - | 2.86 | 2.86 | - | 3.43 | 3.39 | 0.04 | 3.91 | 3.82 | 0.09 | 7.54 | 8.22 | -0.68 |
| ALLANS 8866.00 | 1.93 | 1.93 | - | 2.31 | 2.31 | - | 2.67 | 2.67 | - | 3.16 | 3.15 | 0.01 | 3.52 | 3.52 | - | 6.33 | 6.95 | -0.62 |
| ALLANS 8878.00 | 1.87 | 1.87 | - | 2.24 | 2.24 | - | 2.60 | 2.60 | - | 3.06 | 3.06 | - | 3.42 | 3.42 | - | 5.33 | 5.78 | -0.45 |
| ALLANS 9040.00 | 1.54 | 1.54 | - | 1.87 | 1.87 | - | 2.22 | 2.22 | - | 2.65 | 2.65 | - | 2.99 | 2.99 | - | 4.96 | 5.33 | -0.37 |
| ALLANS 9186.00 | 1.16 | 1.16 | - | 1.44 | 1.44 | - | 1.79 | 1.78 | - | 2.17 | 2.17 | - | 2.54 | 2.49 | 0.05 | 4.67 | 5.04 | -0.37 |
| ALLANS 9410.00 | 0.81 | 0.81 | - | 0.82 | 0.82 | - | 1.16 | 1.11 | 0.05 | 1.81 | 1.77 | 0.04 | 2.21 | 2.14 | 0.07 | 4.33 | 4.67 | -0.34 |
| ALLANS 9452.00 | 0.80 | 0.80 | - | 0.81 | 0.81 | - | 0.82 | 0.82 | - | 0.80 | 0.82 | -0.02 | 0.87 | 0.87 | - | 1.51 | 2.01 | -0.50 |
| ALLANS 9482.00 | 0.73 | 0.73 | - | 0.73 | 0.73 | - | 0.73 | 0.73 | - | 0.75 | 0.73 | 0.02 | 0.75 | 0.75 | - | 1.17 | 1.63 | -0.46 |
| ALLANS 9586.00 | 0.73 | 0.73 | - | 0.73 | 0.73 | - | 0.73 | 0.73 | - | 0.73 | 0.73 | - | 0.73 | 0.73 | - | 0.73 | 0.73 | - |
| AMERICAN 3474.00 | 13.78 | 13.78 | - | 13.92 | 13.92 | - | 14.13 | 14.13 | - | 14.36 | 14.36 | - | 14.51 | 14.51 | - | 15.68 | 15.69 | - |
| AMERICAN 3536.00 | 13.45 | 13.45 | - | 13.60 | 13.60 | - | 13.81 | 13.81 | - | 14.04 | 14.04 | - | 14.20 | 14.20 | - | 15.41 | 15.43 | -0.02 |
| AM | | | | | | | | | | | | | | | | | | |

| Cross Section | 5yr | | | 10yr | | | 20yr | | | 50yr | | | 100yr | | | PMF | | |
|-------------------------|----------|------------|------------|----------|------------|------------|----------|------------|------------|----------|------------|------------|----------|------------|------------|----------|------------|------------|
| | Addendum | Flood Sudy | Difference |
| BRANCH 3748.00 | 13.36 | 13.36 | - | 13.45 | 13.45 | - | 13.92 | 13.92 | - | 14.03 | 14.03 | - | 14.12 | 14.12 | - | 14.77 | 14.86 | -0.09 |
| BRANCH 3804.00 | 12.31 | 12.31 | - | 12.56 | 12.56 | - | 12.97 | 12.97 | - | 13.24 | 13.24 | - | 13.41 | 13.41 | - | 14.76 | 14.85 | -0.09 |
| BRANCH_TRIB 3572.00 | 13.57 | 13.57 | - | 13.59 | 13.59 | - | 13.61 | 13.61 | - | 13.66 | 13.66 | - | 13.70 | 13.70 | - | 14.80 | 14.88 | -0.08 |
| BRANCH_TRIB 3792.00 | 12.44 | 12.44 | - | 12.65 | 12.65 | - | 13.01 | 13.01 | - | 13.28 | 13.28 | - | 13.45 | 13.45 | - | 14.80 | 14.88 | -0.08 |
| BYARONG 4160.00 | 15.85 | 15.85 | - | 16.06 | 16.06 | - | 16.90 | 16.90 | - | 17.03 | 17.03 | - | 17.11 | 17.11 | - | 17.61 | 17.61 | - |
| BYARONG 4178.00 | 15.69 | 15.69 | - | 15.86 | 15.86 | - | 16.05 | 16.05 | - | 16.25 | 16.25 | - | 16.41 | 16.41 | - | 16.99 | 16.99 | - |
| BYARONG 4234.00 | 15.35 | 15.35 | - | 15.49 | 15.49 | - | 15.59 | 15.59 | - | 15.71 | 15.71 | - | 15.79 | 15.79 | - | 16.16 | 16.16 | - |
| BYARONG 4364.00 | 13.96 | 13.96 | - | 14.04 | 14.04 | - | 14.10 | 14.10 | - | 14.17 | 14.17 | - | 14.22 | 14.22 | - | 14.60 | 14.62 | -0.02 |
| BYARONG 4528.00 | 12.47 | 12.47 | - | 12.57 | 12.57 | - | 12.95 | 12.95 | - | 13.10 | 13.10 | - | 13.19 | 13.20 | - | 14.18 | 14.33 | -0.15 |
| BYARONG 4766.00 | 11.04 | 11.04 | - | 11.30 | 11.30 | - | 12.82 | 12.82 | - | 13.00 | 13.00 | - | 13.10 | 13.12 | -0.02 | 14.14 | 14.42 | -0.28 |
| BYARONG 4878.00 | 10.59 | 10.59 | - | 10.93 | 10.93 | - | 12.82 | 12.82 | - | 13.00 | 13.00 | - | 13.10 | 13.11 | - | 14.14 | 14.21 | -0.07 |
| BYARONG 4974.00 | 9.62 | 9.62 | - | 9.93 | 9.93 | - | 12.80 | 12.80 | - | 12.97 | 12.97 | - | 13.07 | 13.09 | -0.02 | 14.09 | 14.17 | -0.08 |
| BYARONG 5046.00 | 8.78 | 8.78 | - | 9.09 | 9.09 | - | 11.80 | 12.33 | -0.53 | 12.02 | 12.41 | -0.39 | 12.18 | 12.57 | -0.39 | 13.31 | 14.16 | -0.85 |
| BYARONG 5112.00 | 8.59 | 8.59 | - | 8.99 | 8.99 | - | 11.80 | 12.17 | -0.37 | 12.02 | 12.42 | -0.40 | 12.18 | 12.65 | -0.47 | 13.31 | 14.11 | -0.80 |
| BYARONG 5214.00 | 8.62 | 8.62 | - | 8.99 | 8.99 | - | 11.80 | 12.16 | -0.36 | 12.02 | 12.41 | -0.39 | 12.18 | 12.70 | -0.52 | 13.28 | 13.92 | -0.64 |
| BYARONG 5398.00 | 7.60 | 7.60 | - | 8.43 | 8.43 | - | 11.77 | 11.74 | 0.03 | 11.98 | 11.94 | 0.04 | 12.12 | 12.08 | 0.04 | 13.11 | 13.04 | 0.07 |
| BYARONG 5510.00 | 7.60 | 7.60 | - | 9.02 | 9.02 | - | 11.77 | 11.75 | 0.02 | 11.98 | 11.95 | 0.03 | 12.13 | 12.08 | 0.05 | 13.13 | 13.06 | 0.07 |
| BYARONG 5752.00 | 7.45 | 7.45 | - | 7.75 | 7.75 | - | 8.32 | 8.42 | -0.10 | 8.78 | 8.77 | - | 9.02 | 8.96 | 0.06 | 10.78 | 10.80 | -0.02 |
| CLEVERDON 4428.00 | 13.61 | 13.62 | - | 13.61 | 13.61 | - | 13.65 | 13.65 | - | 13.70 | 13.70 | - | 13.74 | 13.74 | - | 14.03 | 14.23 | -0.20 |
| CLEVERDON 4520.00 | 12.40 | 12.40 | - | 12.48 | 12.48 | - | 12.79 | 12.79 | - | 12.91 | 12.91 | - | 13.02 | 13.02 | - | 13.52 | 14.04 | -0.52 |
| CLEVERDON 4578.00 | 11.87 | 11.87 | - | 11.97 | 11.97 | - | 12.32 | 12.32 | - | 12.47 | 12.58 | -0.11 | 12.57 | 12.71 | -0.14 | 13.35 | 14.12 | -0.77 |
| CLEVERDON 4648.00 | 11.26 | 11.26 | - | 11.38 | 11.38 | - | 11.81 | 12.17 | -0.36 | 12.03 | 12.46 | -0.43 | 12.19 | 12.80 | -0.61 | 13.32 | 13.84 | -0.52 |
| CLEVERDON_DRAIN 4212.00 | 13.93 | 13.93 | - | 13.99 | 13.99 | - | 14.14 | 14.14 | - | 14.19 | 14.19 | - | 14.23 | 14.23 | - | 14.42 | 14.42 | - |
| CLEVERDON_DRAIN 4266.00 | 12.58 | 12.58 | - | 12.71 | 12.71 | - | 13.02 | 13.02 | - | 13.17 | 13.17 | - | 13.30 | 13.30 | - | 13.86 | 14.06 | -0.20 |
| CLEVERDON_DRAIN 4308.00 | 12.53 | 12.53 | - | 12.64 | 12.64 | - | 12.88 | 12.88 | - | 12.97 | 12.97 | - | 13.07 | 13.07 | - | 13.55 | 14.04 | -0.49 |
| CLEVERDON_DRAIN 4360.00 | 12.44 | 12.44 | - | 12.52 | 12.52 | - | 12.69 | 12.69 | - | 12.74 | 12.74 | - | 12.79 | 12.79 | - | 13.36 | 14.12 | -0.76 |
| CLEVERDON_DRAIN 4426.00 | 11.43 | 11.43 | - | 11.49 | 11.49 | - | 11.83 | 12.17 | -0.34 | 12.04 | 12.46 | -0.42 | 12.20 | 12.79 | -0.59 | 13.31 | 13.75 | -0.44 |
| CLEVERDON_DRAIN 4506.00 | 11.01 | 11.01 | - | 11.04 | 11.04 | - | 11.82 | 12.17 | -0.35 | 12.04 | 12.41 | -0.37 | 12.19 | 12.65 | -0.46 | 13.32 | 14.08 | -0.76 |
| CLEVERDON_DRAIN 4566.00 | 10.88 | 10.88 | - | 10.96 | 10.96 | - | 11.82 | 12.17 | -0.35 | 12.04 | 12.41 | -0.37 | 12.19 | 12.58 | -0.39 | 13.32 | 13.95 | -0.63 |
| CLEVERDON_DRAIN 4640.00 | 10.50 | 10.50 | - | 10.91 | 10.91 | - | 11.84 | 12.17 | -0.33 | 12.06 | 12.42 | -0.36 | 12.21 | 12.58 | -0.37 | 13.34 | 13.92 | -0.58 |
| CLEVERDON_DRAIN 4796.00 | 10.34 | 10.34 | - | 10.90 | 10.90 | - | 11.84 | 12.17 | -0.33 | 12.06 | 12.43 | -0.37 | 12.22 | 12.58 | -0.36 | 13.35 | 13.91 | -0.56 |
| CLEVERDON_DRAIN 4810.00 | 10.33 | 10.33 | - | 10.89 | 10.89 | - | 11.85 | 12.18 | -0.33 | 12.07 | 12.43 | -0.36 | 12.23 | 12.59 | -0.36 | 13.36 | 13.92 | -0.56 |
| FIGTREE 4178.00 | 15.40 | 15.40 | - | 15.40 | 15.40 | - | 15.43 | 15.43 | - | 15.53 | 15.53 | - | 15.55 | 15.55 | - | 15.88 | 15.88 | - |
| FIGTREE 4234.00 | 14.96 | 14.96 | - | 15.03 | 15.03 | - | 15.14 | 15.14 | - | 15.20 | 15.20 | - | 15.24 | 15.24 | - | 15.44 | 15.44 | - |
| FIGTREE 4366.00 | 13.37 | 13.37 | - | 13.42 | 13.42 | - | 13.42 | 13.43 | - | 13.46 | 13.46 | - | 13.50 | 13.50 | - | 14.19 | 14.26 | -0.07 |
| FIGTREE 4438.00 | 12.85 | 12.85 | - | 12.93 | 12.93 | - | 13.02 | 13.02 | - | 13.11 | 13.11 | - | 13.19 | 13.20 | - | 14.18 | 14.24 | -0.06 |
| FIGTREE 4622.00 | 12.47 | 12.47 | - | 12.57 | 12.57 | - | 12.83 | 12.83 | - | 13.01 | 13.01 | - | 13.11 | 13.13 | -0.02 | 14.15 | 14.22 | -0.07 |
| FIGTREE 4682.00 | 12.47 | 12.47 | - | 12.56 | 12.56 | - | 12.82 | 12.82 | - | 13.00 | 13.00 | - | 13.10 | 13.11 | - | 14.13 | 14.20 | -0.07 |
| FIGTREE 4764.00 | 12.47 | 12.47 | - | 12.56 | 12.56 | - | 12.82 | 12.82 | - | 13.00 | 13.00 | - | 13.09 | 13.11 | -0.02 | 14.12 | 14.19 | -0.07 |
| FIGTREE 4810.00 | 12.70 | 12.70 | - | 12.70 | 12.70 | - | 12.72 | 12.72 | | | | | | | | | | |

5.2 Flood Risk Precincts

5.2.1 Provisional Flood Hazard

Provisional flood hazard is determined through a relationship developed between the depth and velocity of floodwaters (Appendix L, NSW Government, 2005). The Floodplain Development Manual (2005) defines two categories for provisional hazard - High and Low.

Provisional hazard has been calculated for the 100 Year ARI flood event using the Addendum 1 results. The provisional hazard is defined accurately only at each of the model cross-sections (at each survey point along the cross section). Between cross-sections, the hazard has been interpolated using engineering judgement and available topographic data (ALS data).

It should be noted that the provisional flood hazard can not be recalculated based on the ALS data, the ALS data only assists in more accurately interpolating the high hazard extent between the cross sections.

The updated provisional hazard extent is shown in **Appendix B**. A comparison of the updated provisional flood hazard (from the Addendum results) and the provisional flood hazard previously reported in the Floodplain Risk Management Study (from the Flood Study results) is shown in **Figure 5.5**.

The greatest reduction in provisional high hazard is along the southern side of Westfield Figtree and the properties on the opposite side of The Avenue. This is primarily due to a reduction in flood depth rather than velocity.

5.2.2 True Hazard

The true hazard assessment carried out as part of the Allans Creek Floodplain Risk Management Study (Cardno Lawson Treloar, 2006b) found that of all the factors that can potentially affect true hazard, that the rate of rise of flood waters was the only one relevant for the Allans Creek Floodplain. It was determined that areas which have a rate of rise greater than 1m/hour and reach a flood depth of greater than 500mm should be categorised as true high hazard. This same principal has been applied to the Addendum 1 results.

The updated true hazard mapping is shown in **Appendix B**. A comparison of the updated true flood hazard (from the Addendum results) and the true flood hazard previously reported in the Floodplain Risk Management Study (from the Flood Study results) is shown in **Figure 5.6**.

The reduction in the true hazard extent primarily corresponds to the change in provisional hazard. The areas which are no longer within the true high hazard extent are those areas which no longer reach a depth of 0.5m. This is the determination of true high hazard for all areas which have a rate of rise greater than 1m per hour (see the Floodplain Risk Management Study, 2006 for a detailed explanation of True Hazard determination).

The areas which reach a depth of 0.5m were more accurately defined than in the Flood Study (2006) using the ALS Data. This accounts for much of the variation between the previous and updated True Hazard Extents.

5.2.3 Flood Risk Precincts

The updated PMF extent (Low Risk Precinct), 100 Year ARI Flood Extent (Medium Risk Precinct) and 100 Year ARI True Hazard Extent (High Risk Precinct) have been compiled for the updated Flood Risk Precincts for the Allans Creek Floodplain.

The Updated Flood Risk Precincts are shown in **Appendix B**.

5.3 Road Overtopping

The removal of the Freeway mound impacts on major transport link flooding at several locations. **Table 5.2** shows a comparison of the duration and depth of overtopping of the major transport links within the Allans Creek Floodplain for both the Flood Study (2006) and the Addendum 1 modelling.

Table 5.2 Major Transport Link Flooding

| | PMF | | | | 100 Year ARI | | | |
|------------------------------|---------------------------------|--------------------|----------------|--------------------|---------------------------------|--------------------|----------------|--------------------|
| | Duration of Overtopping (hours) | | Depth (metres) | | Duration of Overtopping (hours) | | Depth (metres) | |
| | Addendum 1 | Flood Study (2006) | Addendum 1 | Flood Study (2006) | Addendum 1 | Flood Study (2006) | Addendum 1 | Flood Study (2006) |
| Princes Highway | | | | | | | | |
| Allans Creek | 2 | 2 | 0.65 | 0.65 | * | * | - | * |
| American Creek | 7.7 | 9.5 | 2.83 | 3.17 | 3.7 | 8 | 1.59 | 1.69 |
| Byarong Creek | 7.8 | 5.5 | 1.19 | 1.19 | 4.9 | 4 | 0.88 | 0.88 |
| Charcoal Creek | 9 | 9 | 1.61 | 1.61 | 8 | 8 | 1.02 | 1.02 |
| Jenkins Creek | 7 | 7 | 1.13 | 1.13 | 4 | 4 | 0.89 | 0.89 |
| Unanderra Drain | 6 | 6 | 1.04 | 1.04 | 8 | 8 | 0.41 | 0.41 |
| Illawarra Railway | | | | | | | | |
| Jenkins Creek | 7.5 | 7.5 | 1.20 | 1.20 | 4.5 | 4.5 | 0.97 | 0.97 |
| Charcoal Creek | 7.5 | 7.5 | 3.04 | 3.04 | 4.5 | 4.5 | 1.76 | 1.76 |
| Allans Creek | 3 | 3 | 0.81 | 0.81 | * | * | - | * |
| Unanderra Drain | 7 | 7 | 2.27 | 2.27 | 4.5 | 4.5 | 0.55 | 0.55 |
| American Creek | 3.2 | 2 | 0.35 | 0.38 | - | - | - | - |
| F6 Freeway | | | | | | | | |
| American/Byarong Creeks | 7.9 | 8.5 | 3.70 | 3.43 | 3.9 | 8 | 2.66 | 2.17 |
| Allans Creek/Unanderra Drain | 5.5 | 5.5 | 1.20 | 1.20 | * | * | - | * |
| Freeway Trib Branch | 5 | 5 | 0.66 | 0.67 | 3 | 3 | 0.36 | 0.36 |

The locations impacted by the Freeway mound removal are the Princes Highway at American and Byarong Creeks, The Illawarra Railway at American Creek and the F6 Freeway at American and Byarong Creeks. The impacts varied for both location and flood event. At the F6 Freeway in both the PMF and the 100 Year ARI events the duration of overtopping has decreased, however, the peak depth has increased slightly.

6. REFERENCES

Cardno Lawson Treloar, (2006a), *Allans Creek Flood Study*, prepared for Wollongong City Council, R1986v6.

Cardno Lawson Treloar, (2006b), *Allans Creek Floodplain Risk Management Study*, prepared for Wollongong City Council, R1946v6.

Cardno Lawson Treloar, (2006c), *Allans Creek Floodplain Risk Management Study*, prepared for Wollongong City Council, R2073v7.

NSW Government, (2005), *Floodplain Development Manual*.

FIGURES

Figure 1.1 Study Area

Figure 2.1 Removed Freeway Mound

Figure 2.2 Freeway (F6) Comparison

Figure 3.1 Area of Predicted Impact

Figure 5.1 20 Year ARI Peak Flood Level Impacts

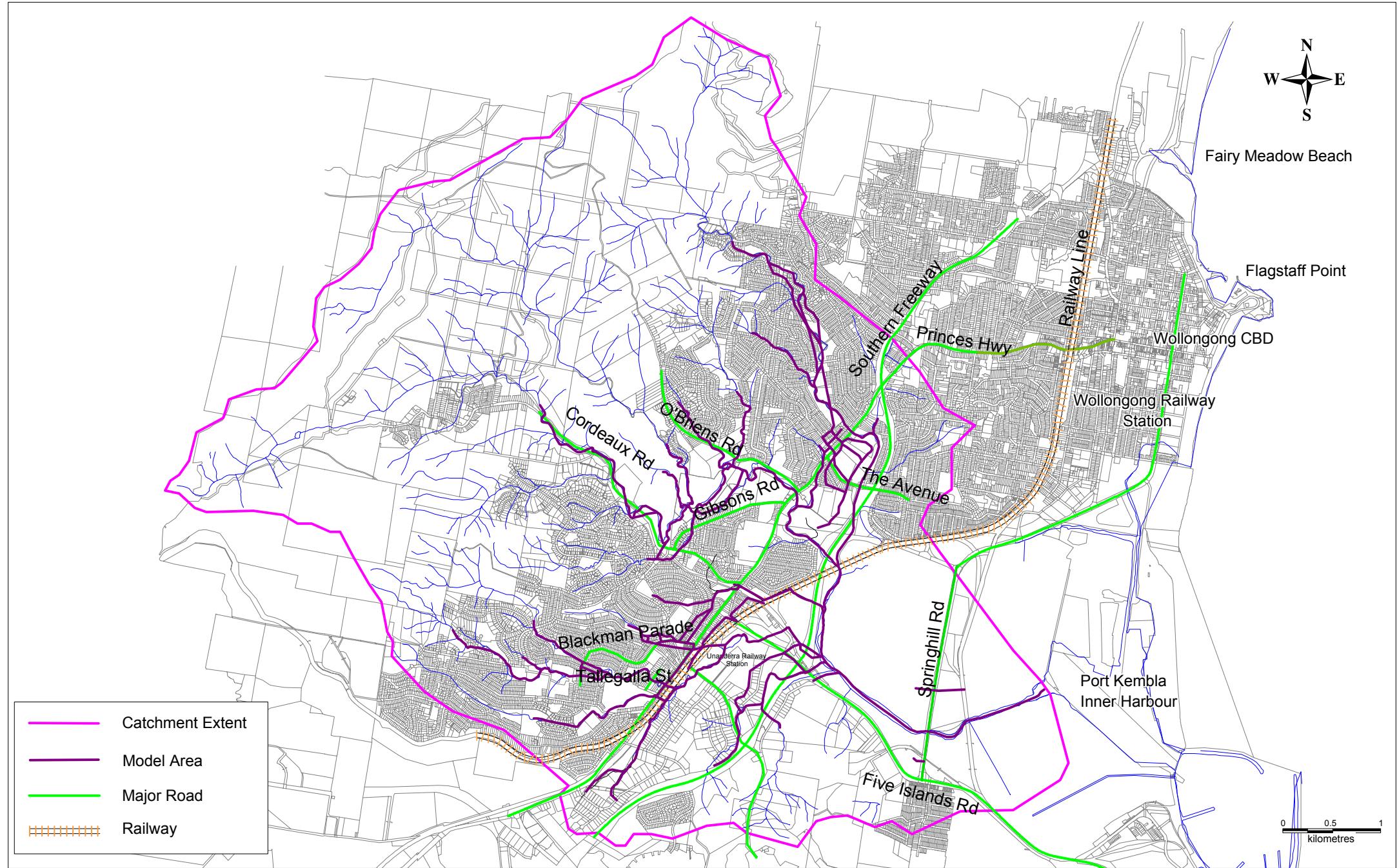
Figure 5.2 50 Year ARI Peak Flood Level Impacts

Figure 5.3 100 Year ARI Peak Flood Level Impacts

Figure 5.4 PMF Peak Flood Level Impacts

Figure 5.5 Impacts on Provisional Flood Hazard

Figure 5.6 Impacts on True Flood Hazard



**FIGURE 1.1
STUDY AREA**

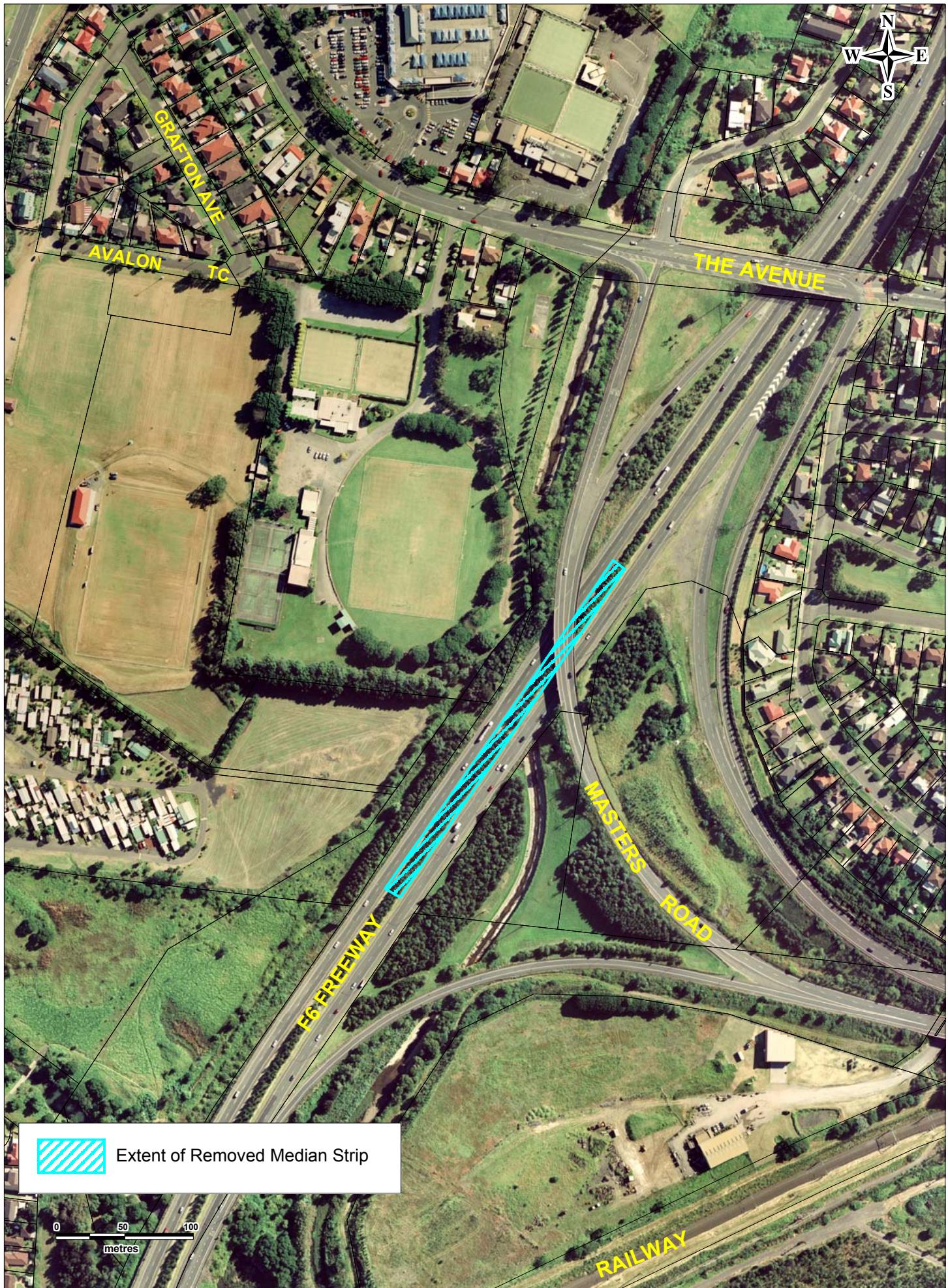
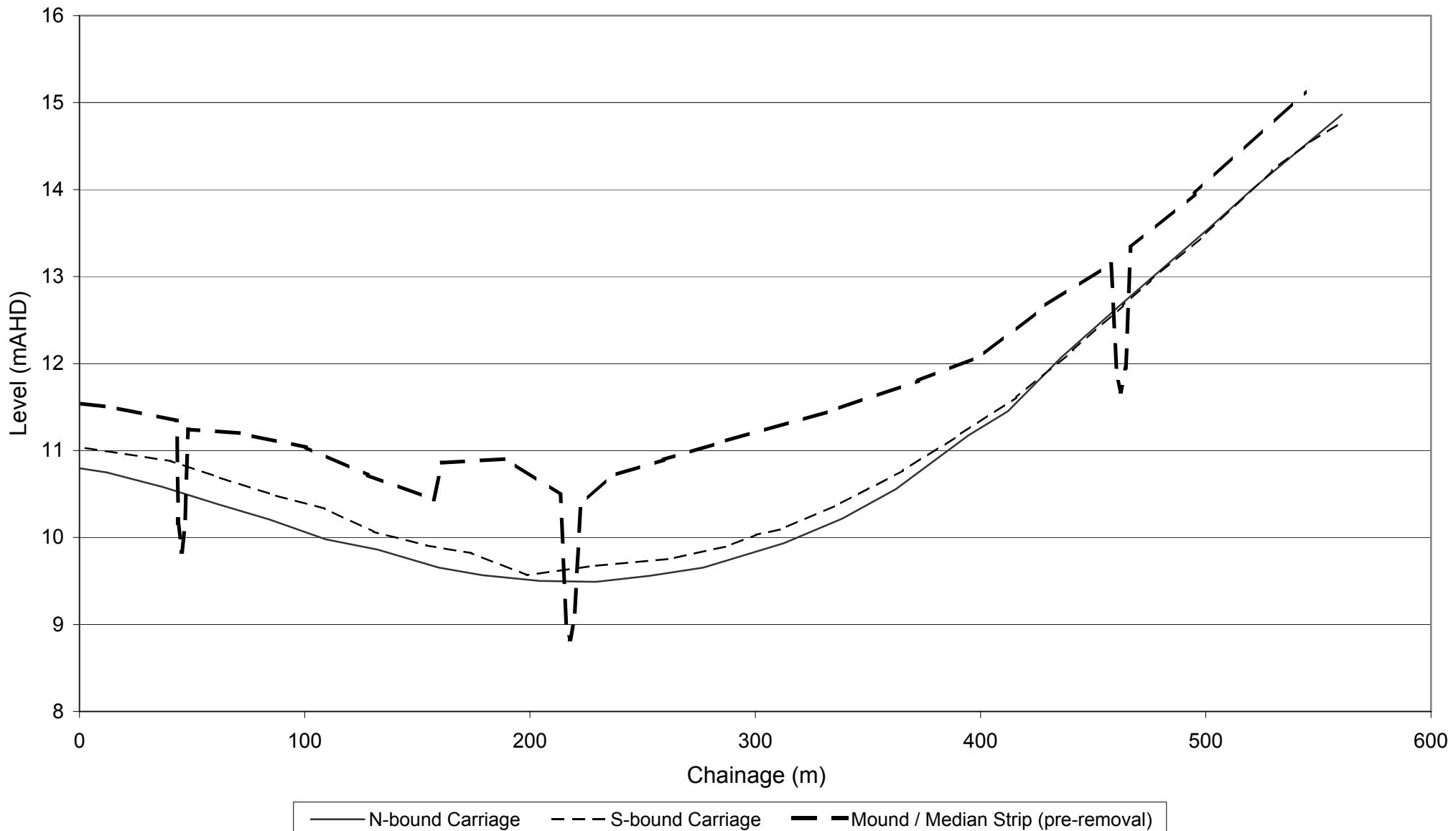


FIGURE 2.1
REMOVED MEDIAN STRIP
(F6 FREEWAY)

Freeway (F6) Long Sections

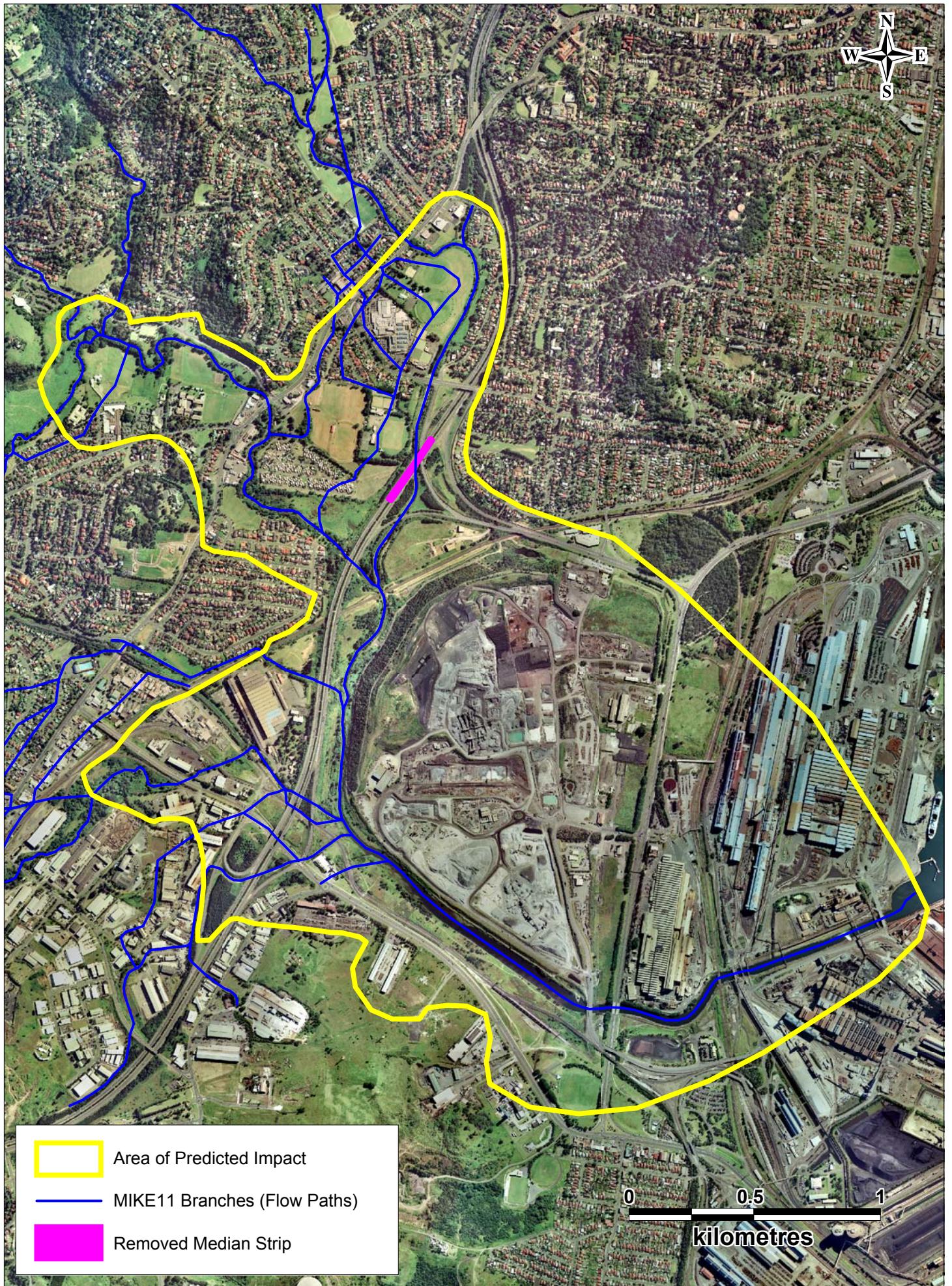


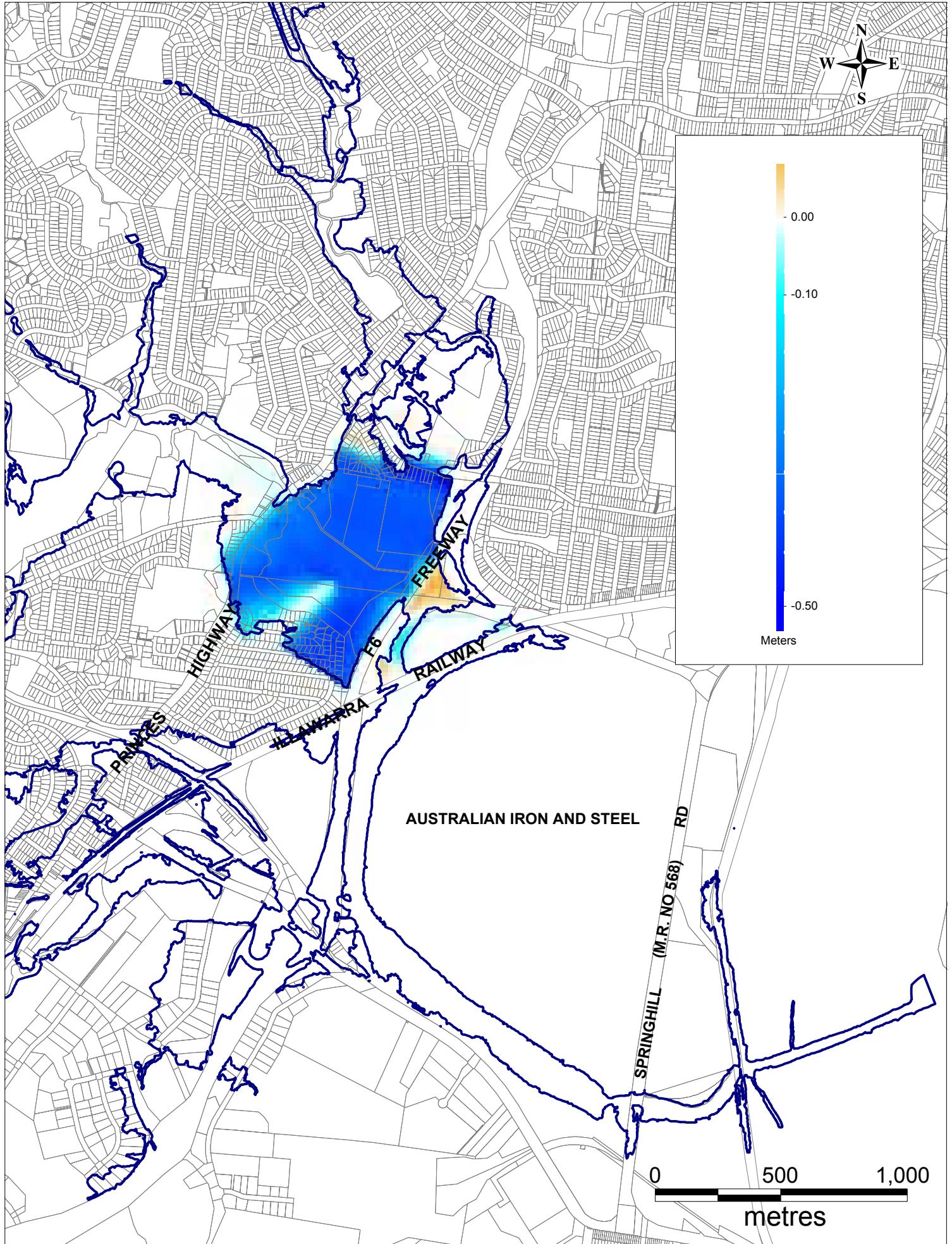
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FIGURE 2.2
FREEWAY (F6) LONG SECTIONS

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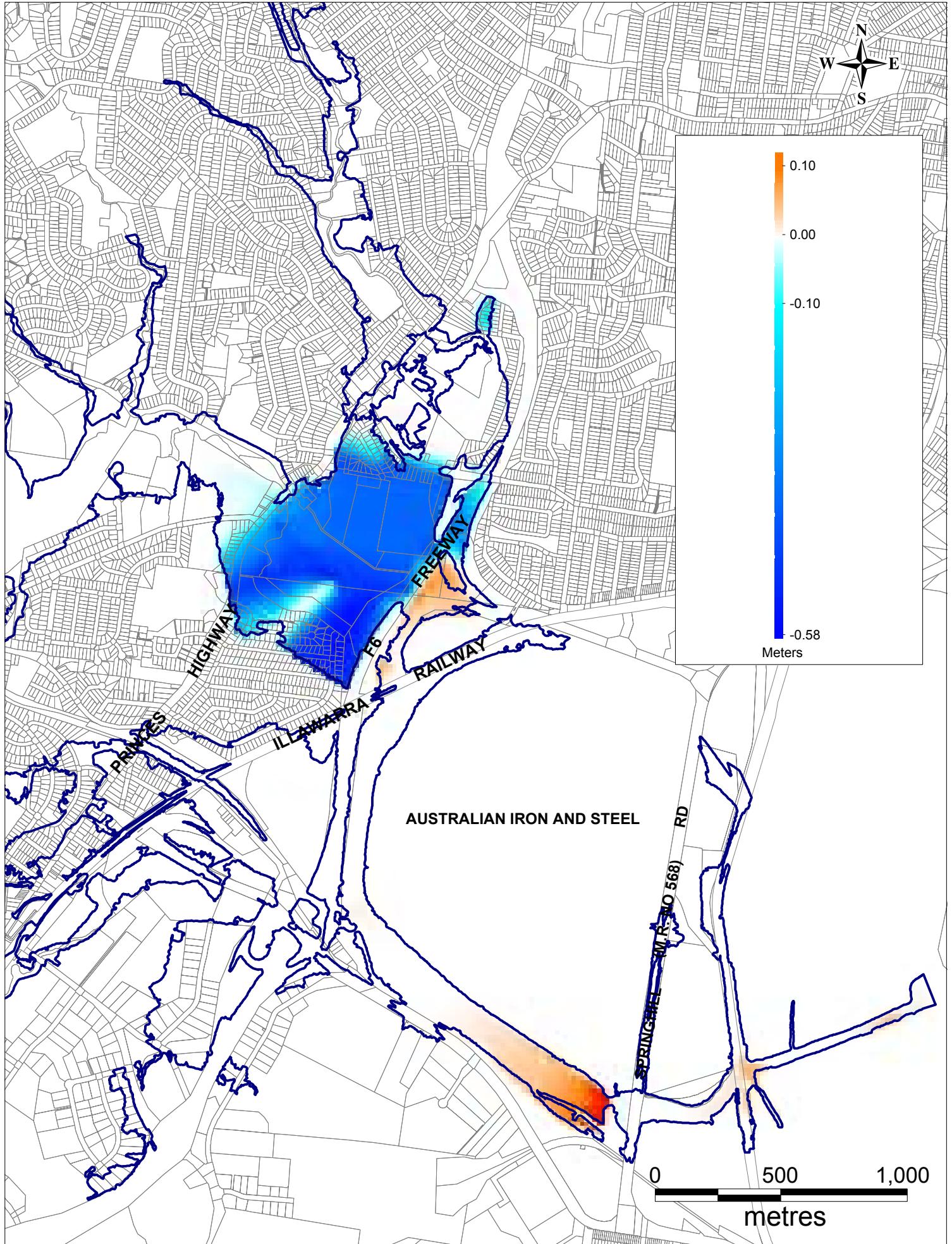
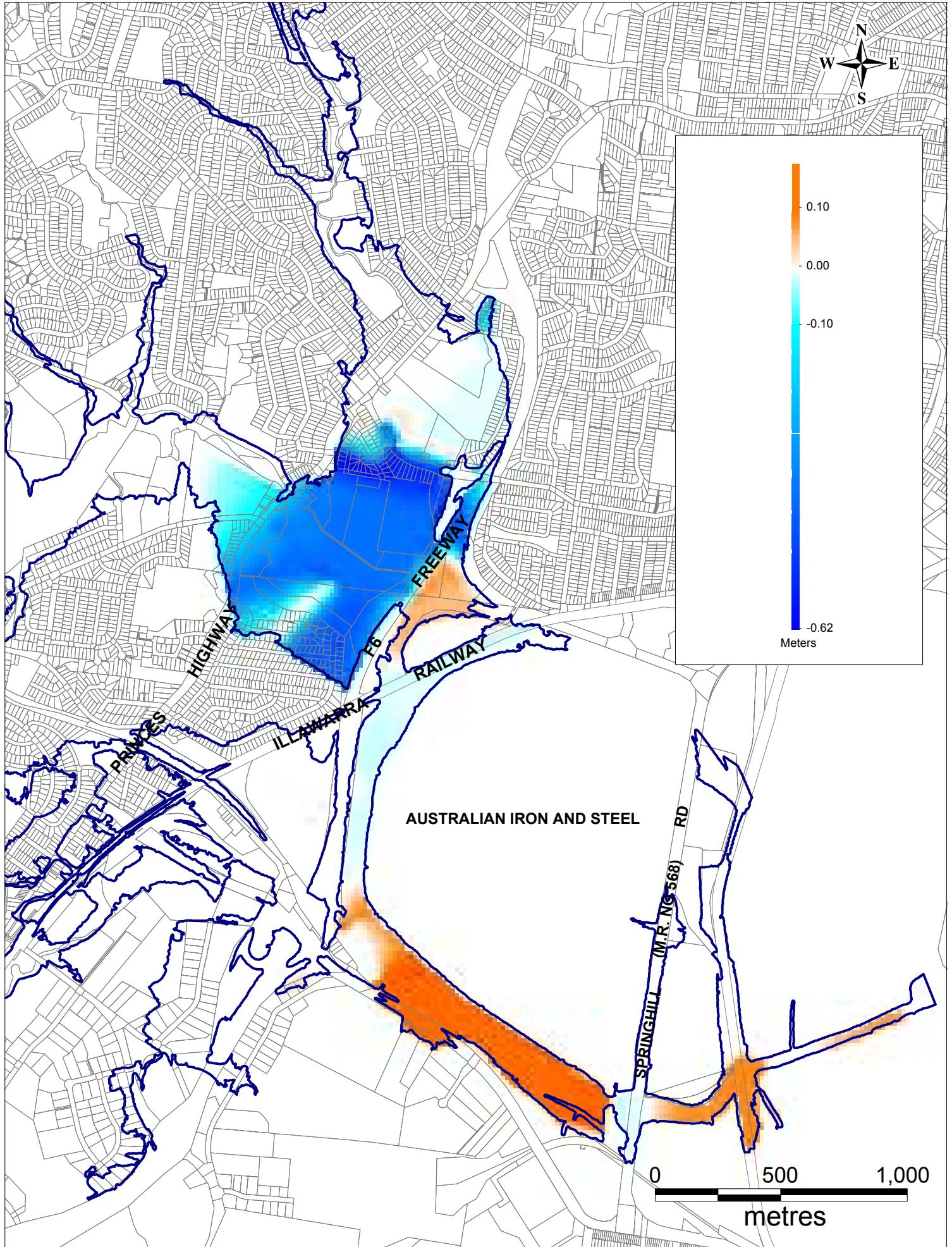
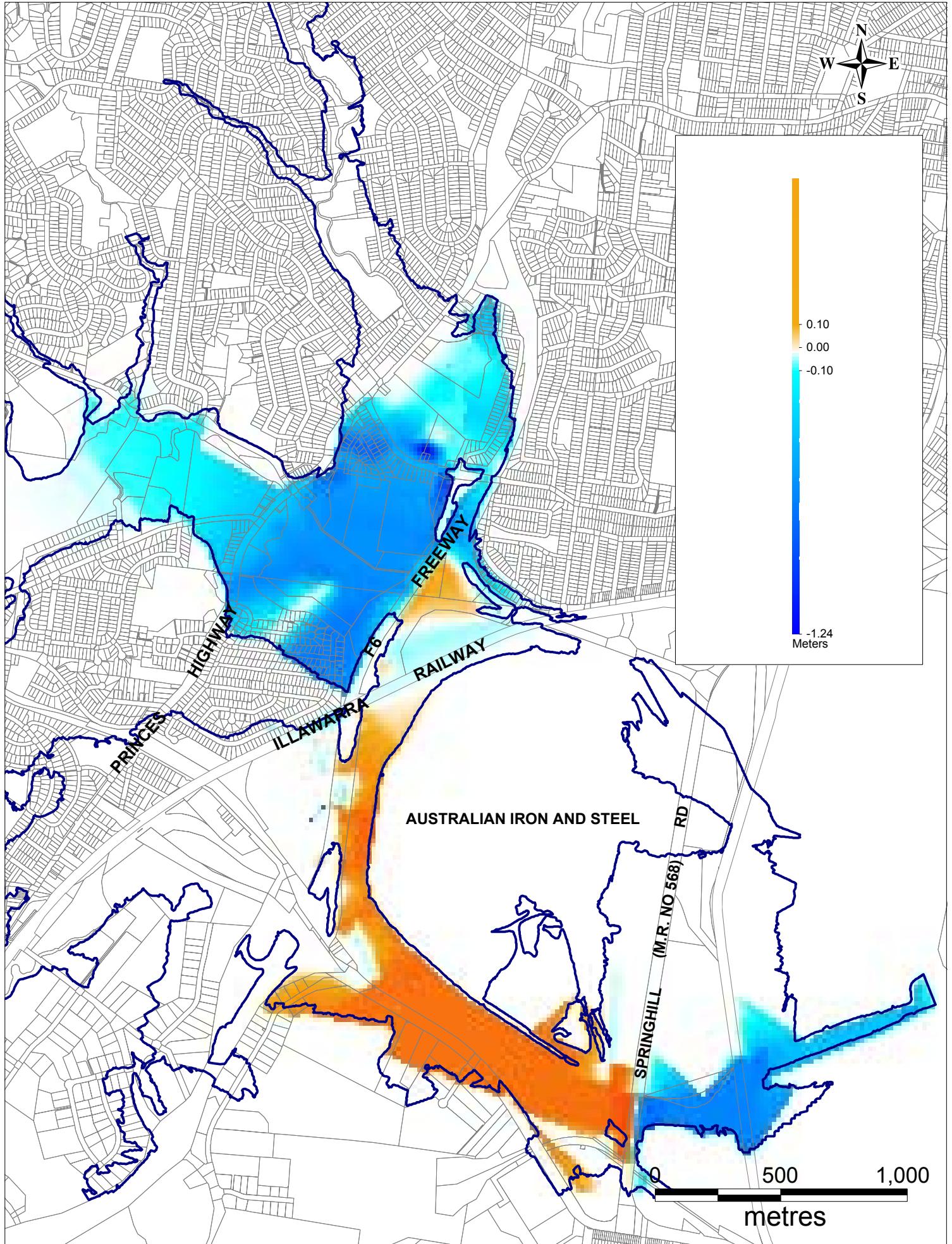


FIGURE 5.2
50 YEAR ARI
FLOOD LEVEL DIFFERENCE



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FIGURE 5.3
100 YEAR ARI
FLOOD LEVEL DIFFERENCE



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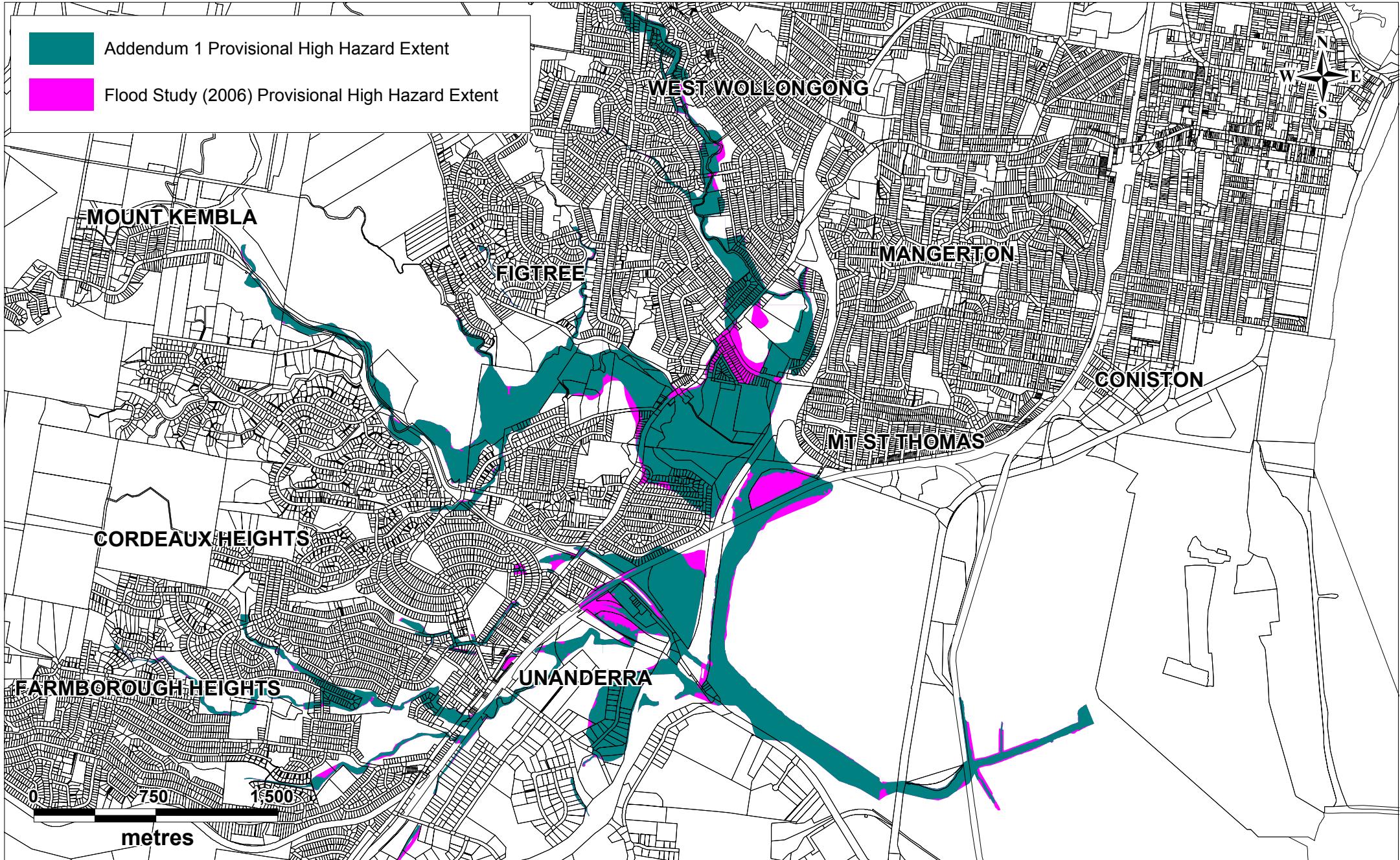


FIGURE 5.5
IMPACT ON PROVISIONAL HIGH HAZARD

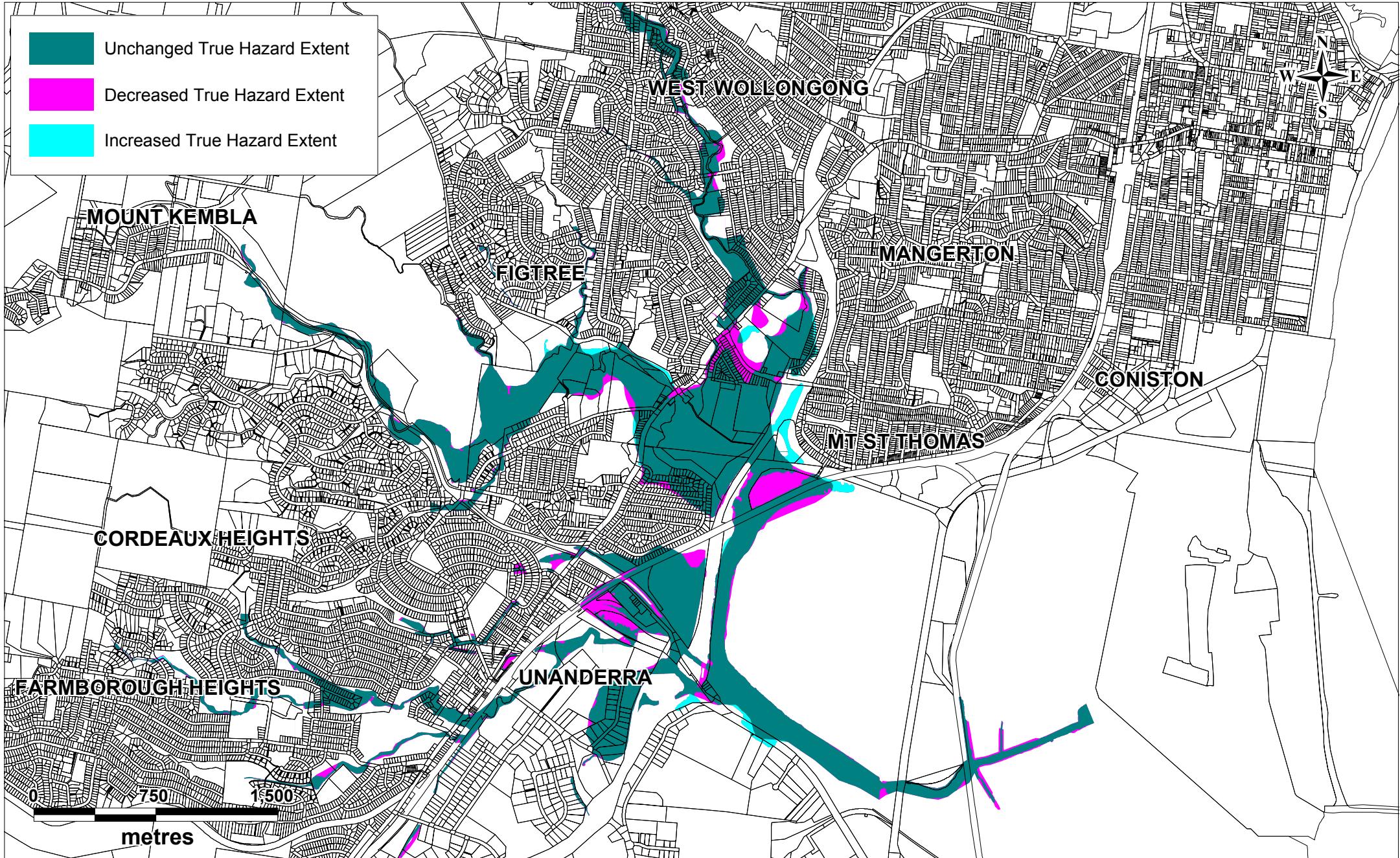
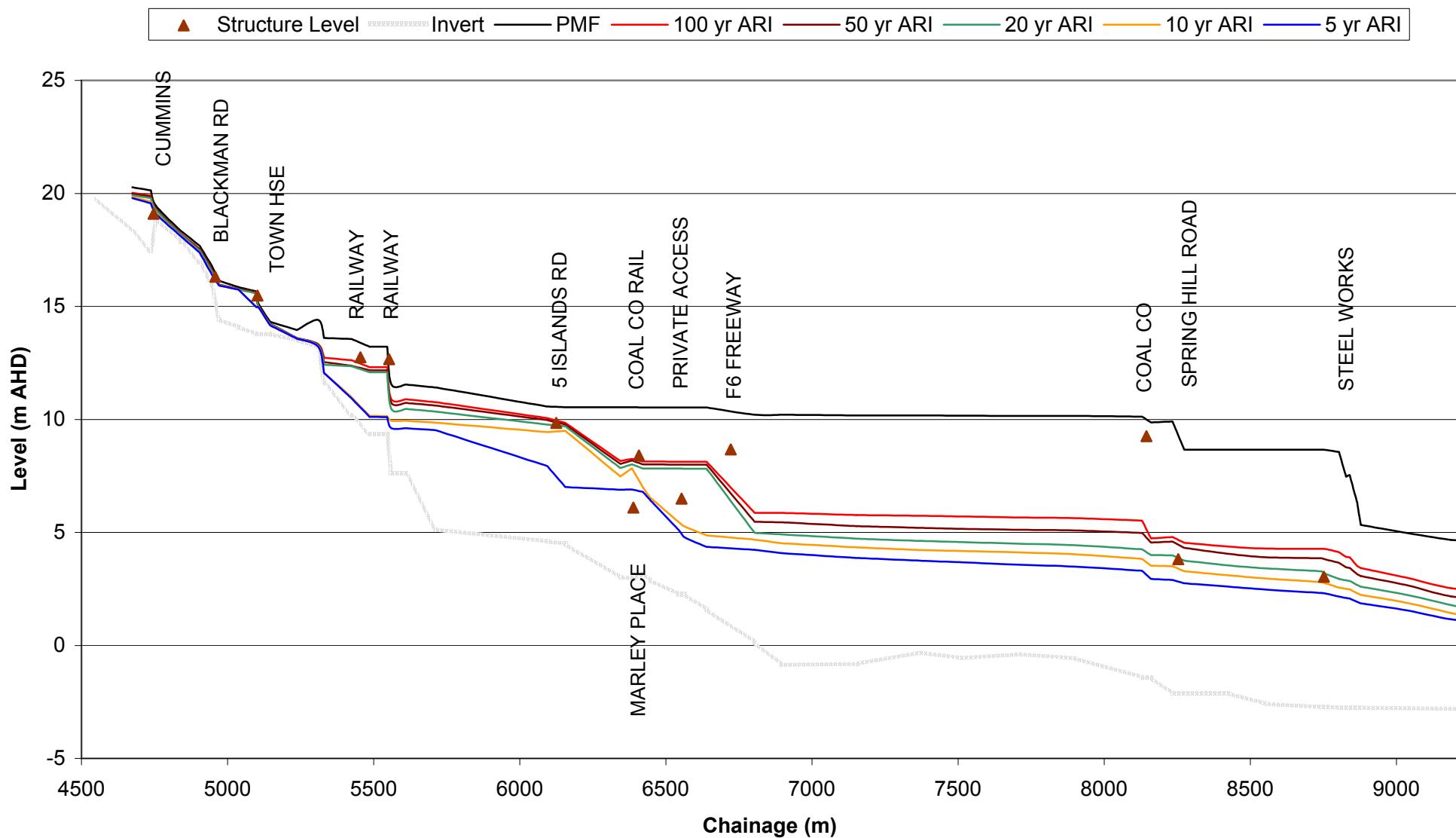


FIGURE 5.6
IMPACT ON TRUE HIGH HAZARD

APPENDIX A

Allans Creek Flood Study – Updated Figures

Flood Profile Allans Creek



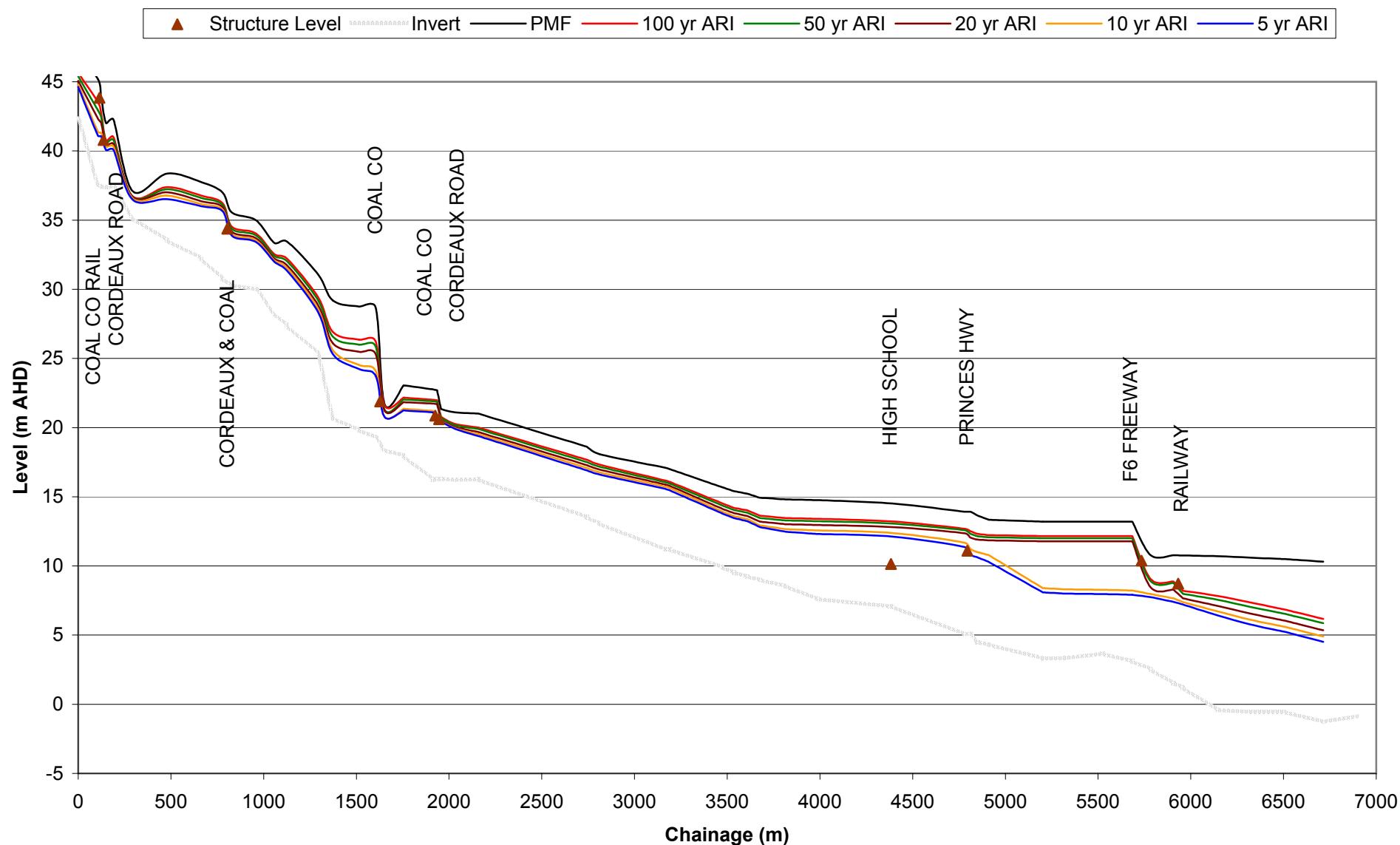
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FIGURE 7.1
DESIGN FLOOD LEVEL PROFILES
ALLANS CREEK

Flood Profile American Creek

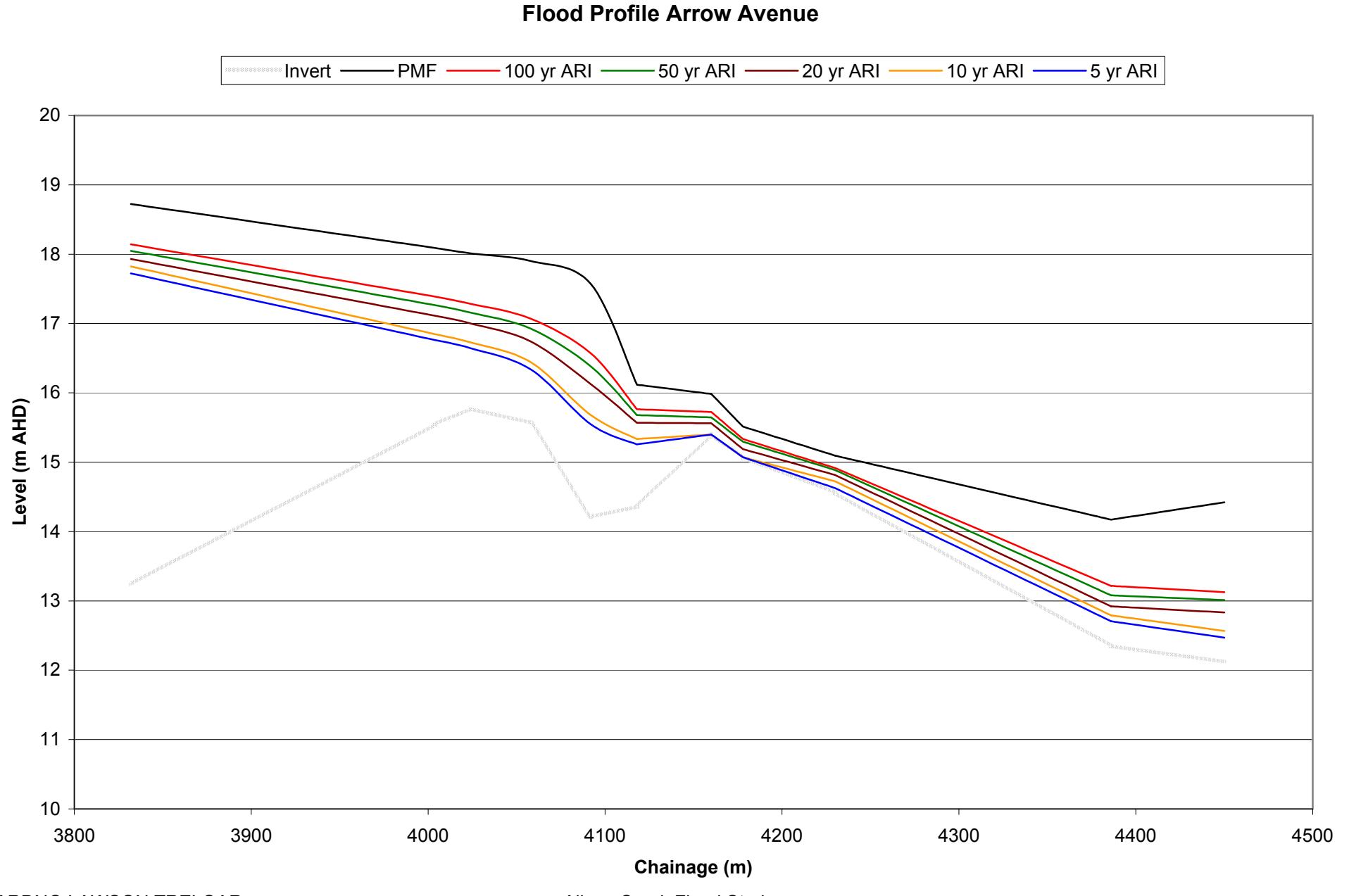


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FIGURE 7.2
DESIGN FLOOD LEVEL PROFILES
AMERICAN CREEK



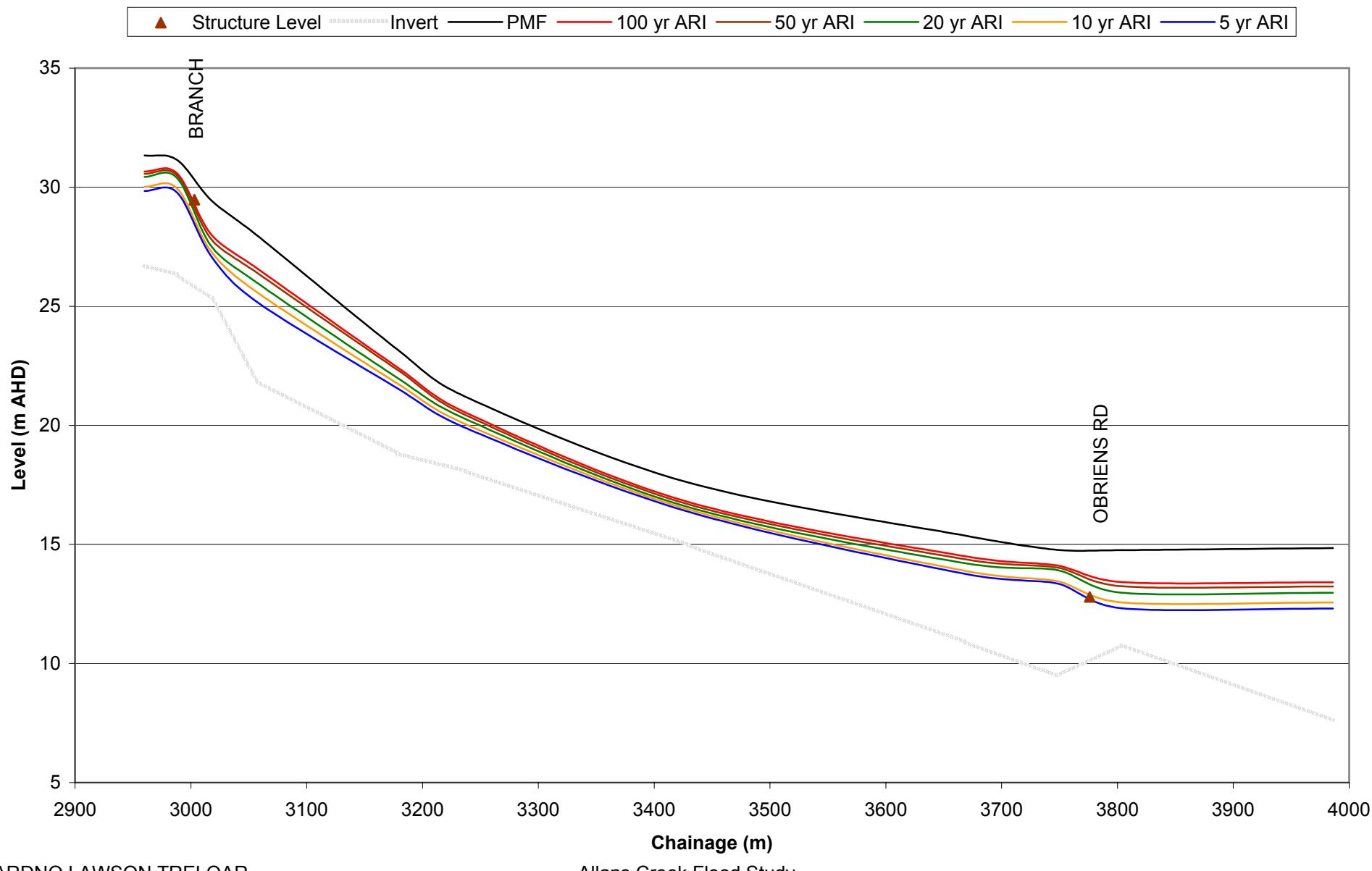
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FIGURE 7.3
DESIGN FLOOD LEVEL PROFILES
ARROW AVENUE

Flood Profile Branch Creek



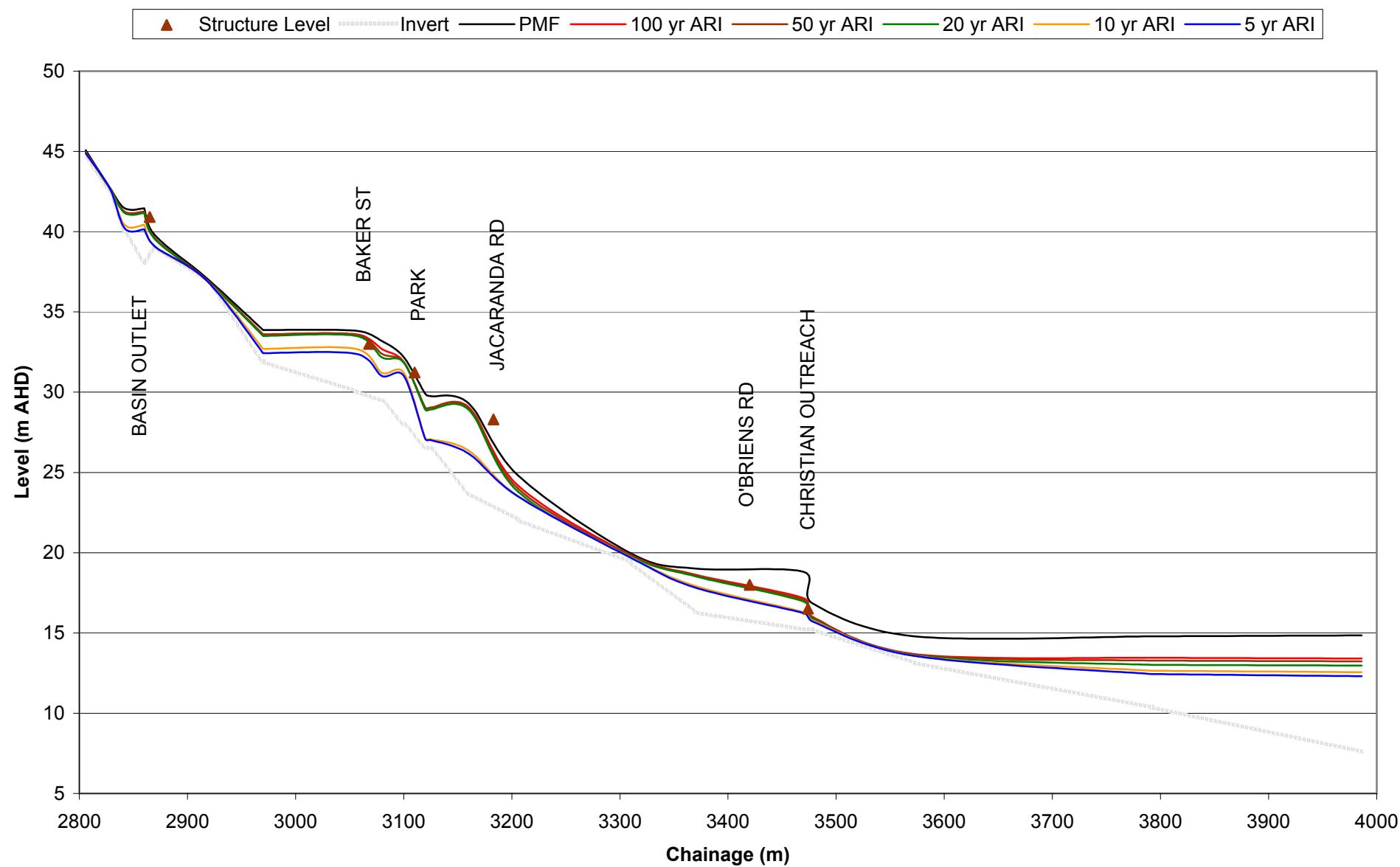
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FIGURE 7.4
DESIGN FLOOD LEVEL PROFILES
BRANCH CREEK

Flood Profile Branch Tributary



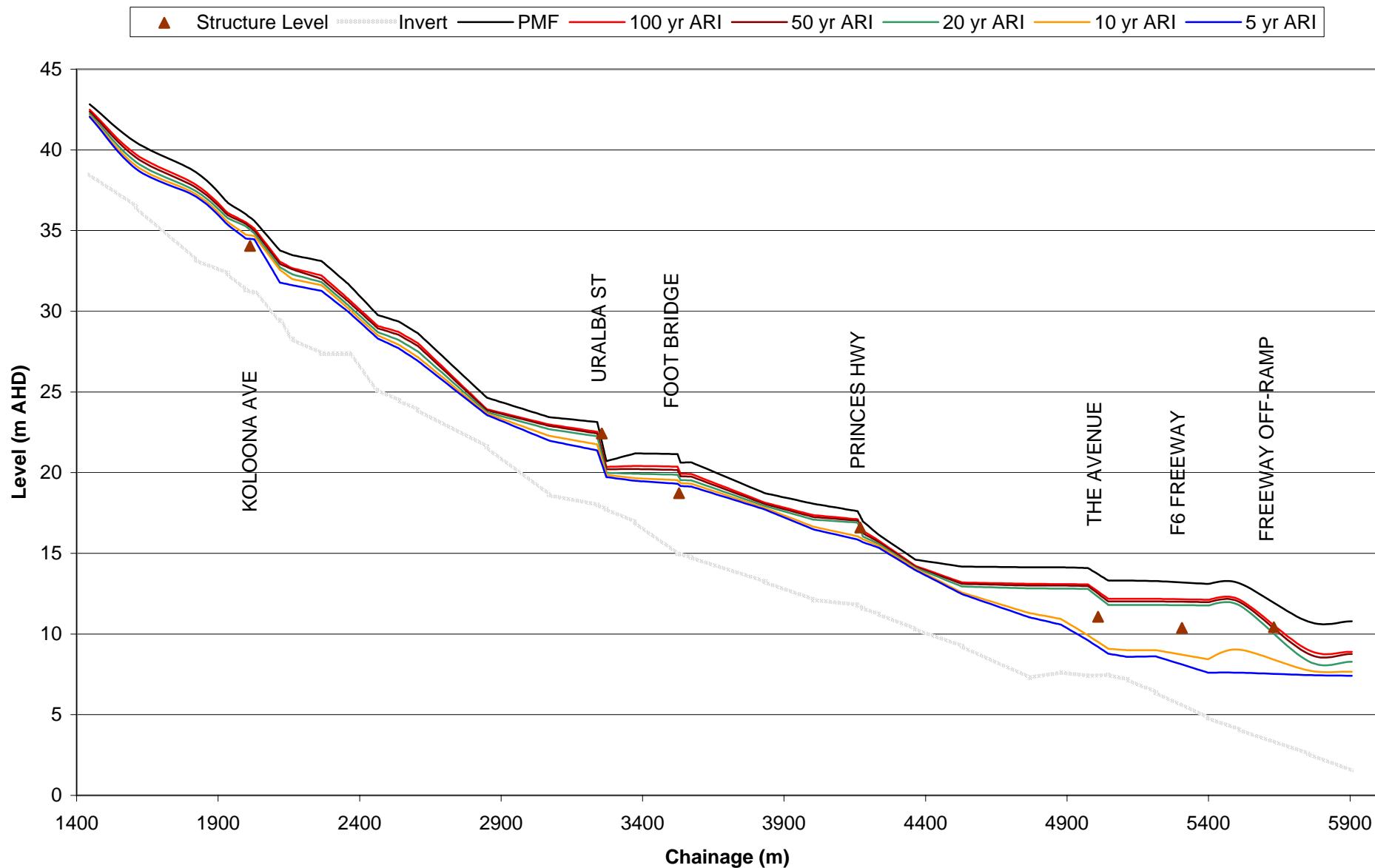
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FIGURE 7.5
DESIGN FLOOD LEVEL PROFILES
BRANCH TRIBUTARY

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Flood Profile Byarong Creek



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FIGURE 7.6
DESIGN FLOOD LEVEL PROFILES
BYARONG CREEK

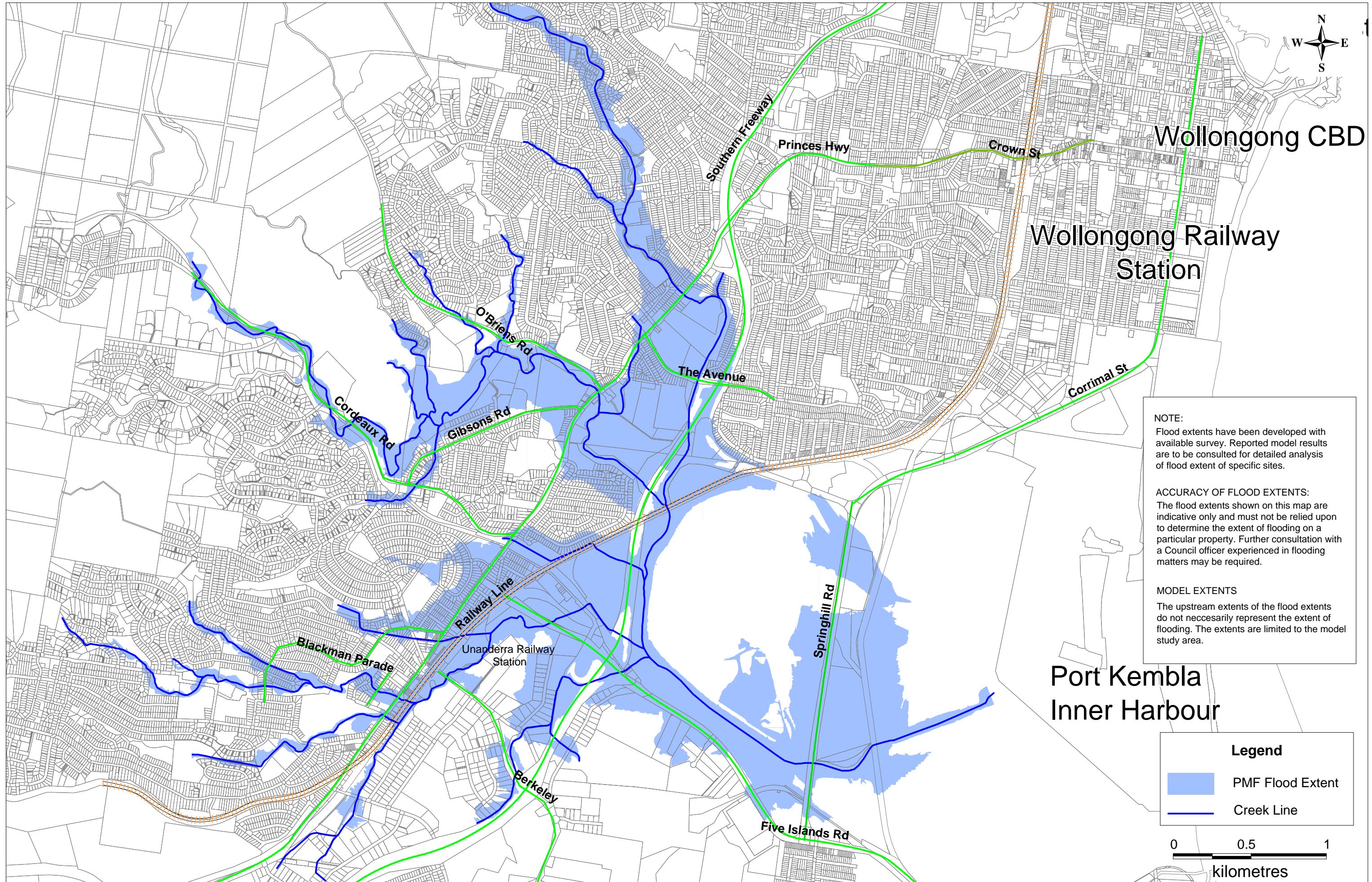


FIGURE 7.14
PMF FLOOD EXTENT

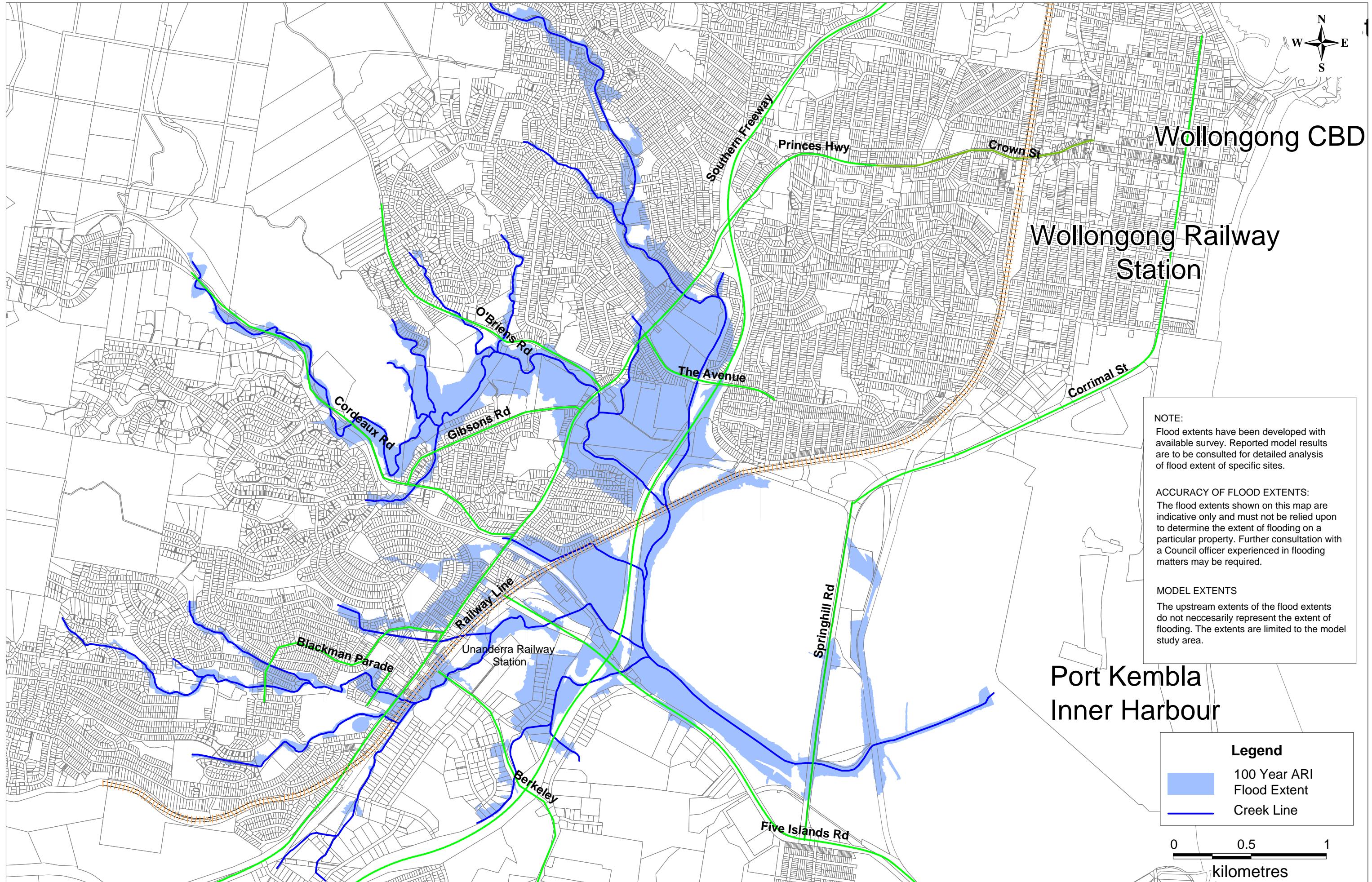


FIGURE 7.15
100 YEAR ARI FLOOD EXTENT

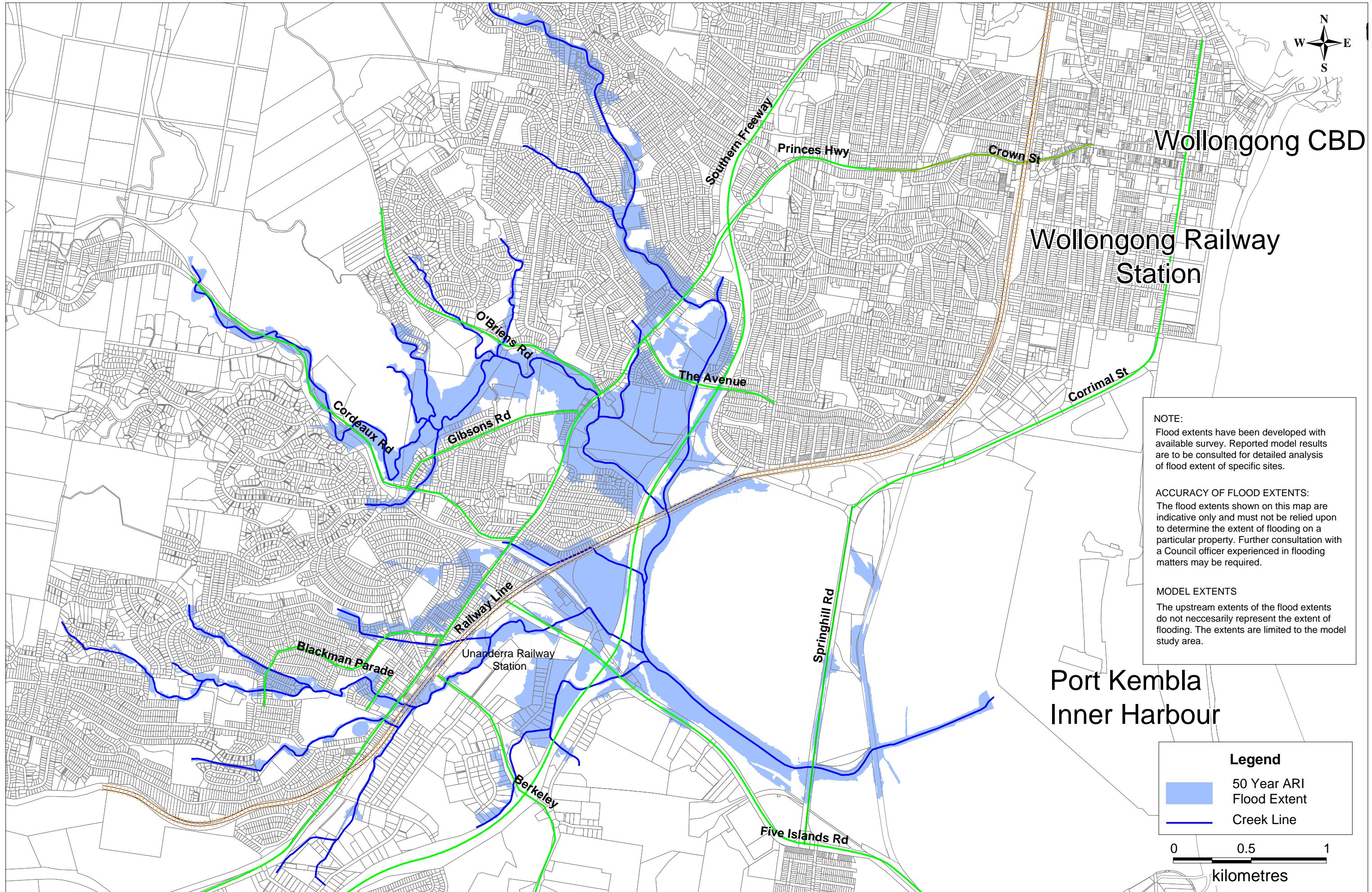


FIGURE 7.16

50 YEAR ARI FLOOD EXTENT

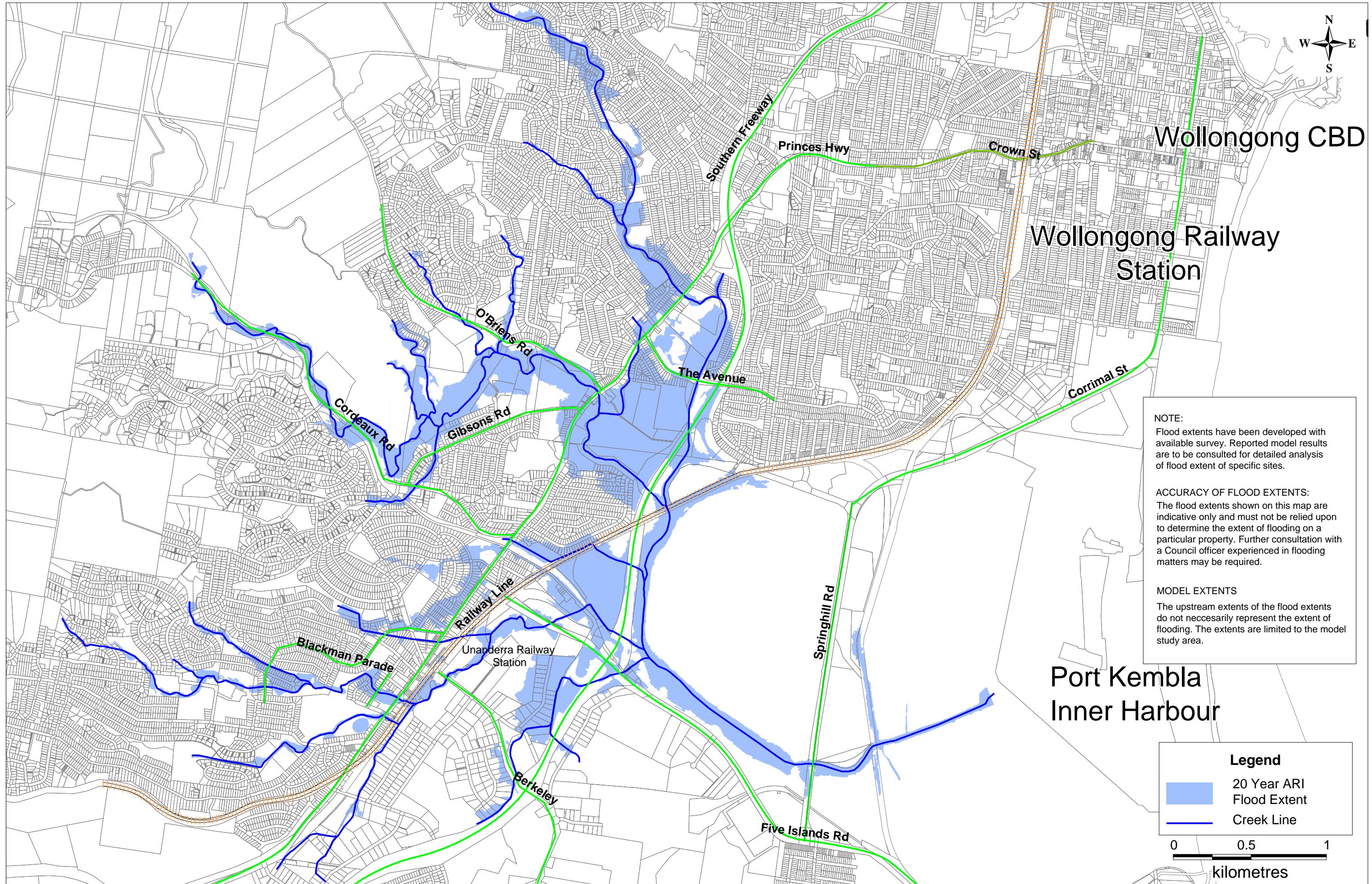


FIGURE 7.17
20 YEAR ARI FLOOD EXTENT

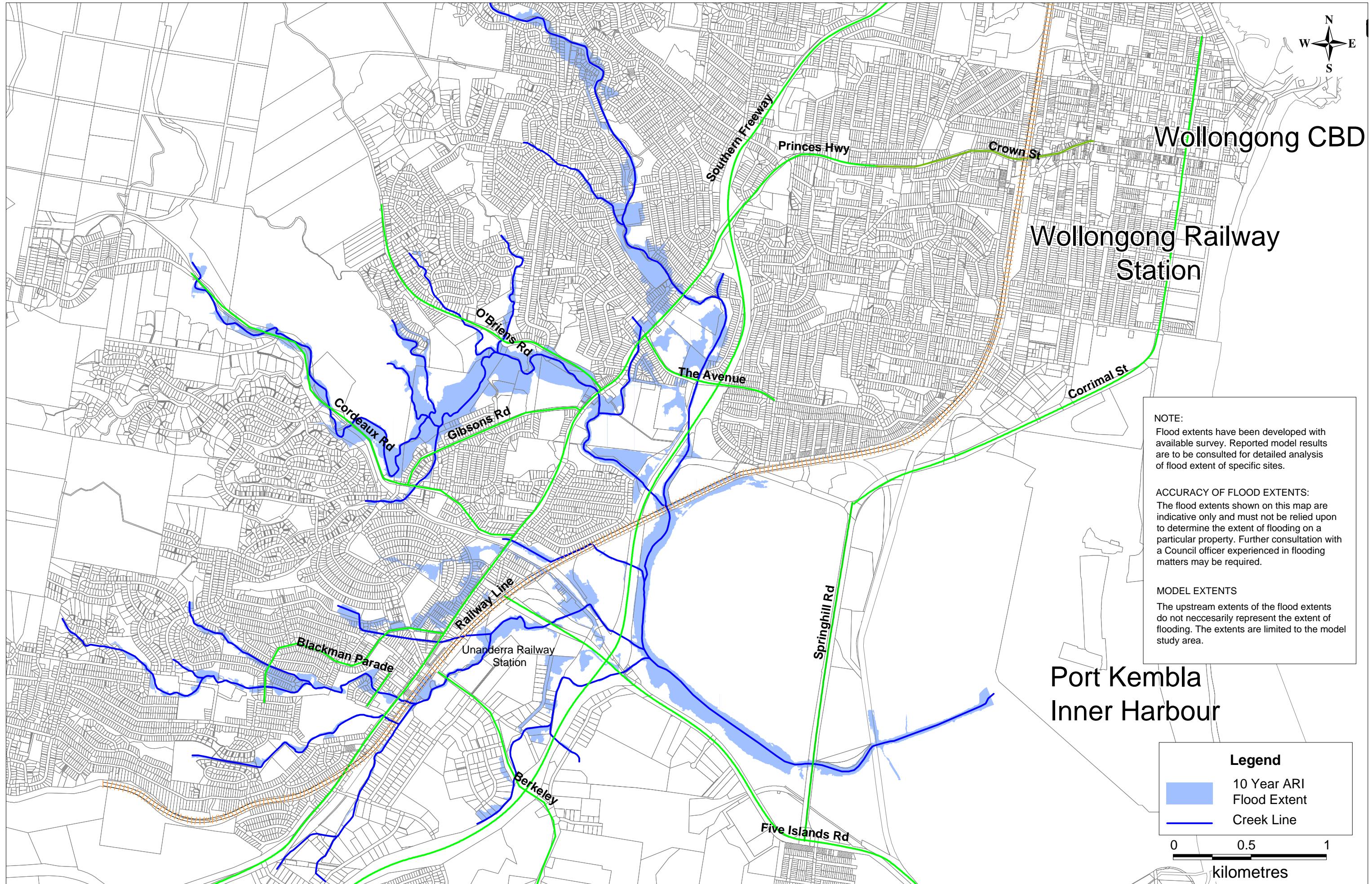


FIGURE 7.18
10 YEAR ARI FLOOD EXTENT

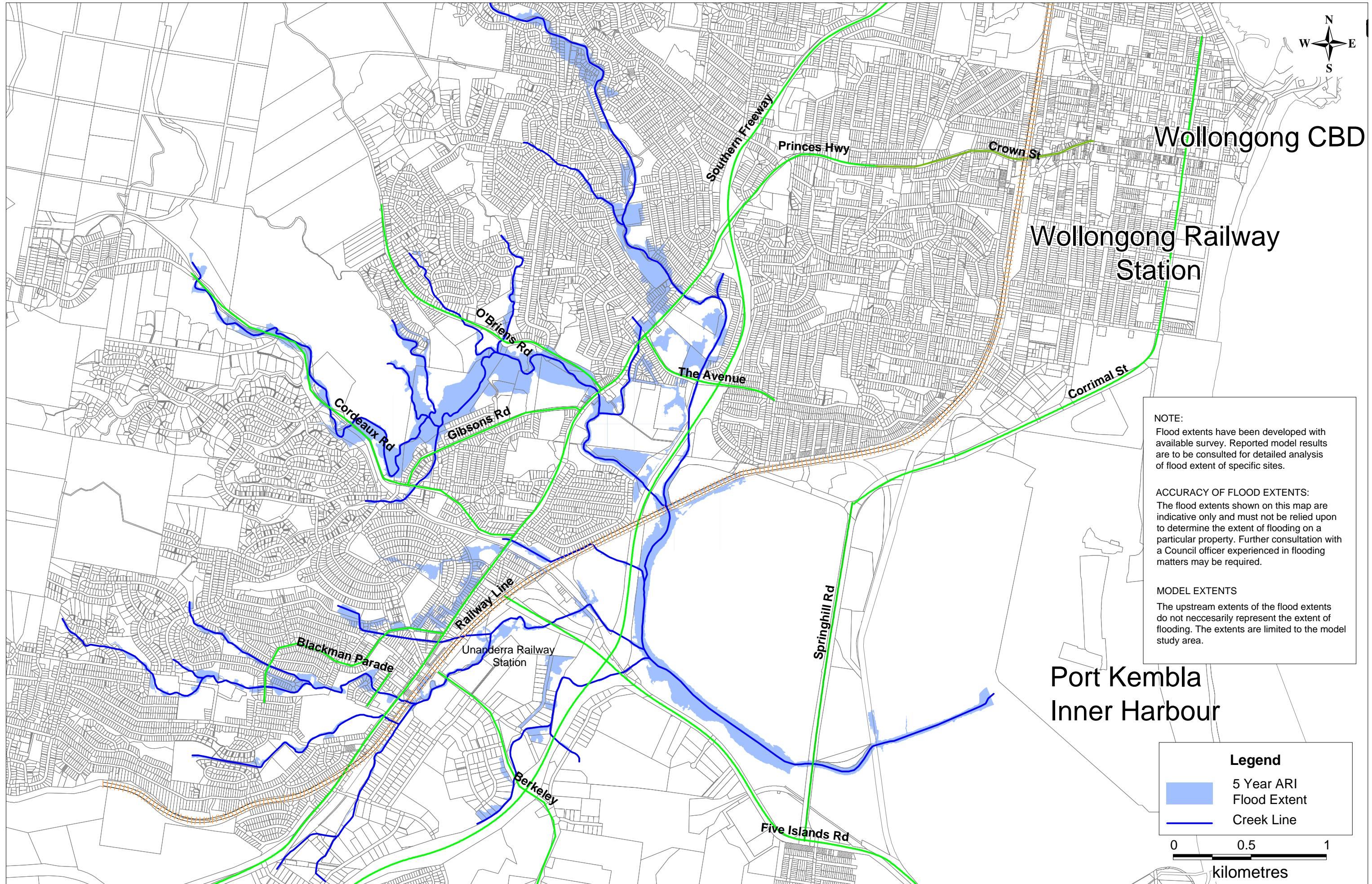


FIGURE 7.19
5 YEAR ARI FLOOD EXTENT

APPENDIX B

Allans Creek Floodplain Risk Management Study – Updated Figures

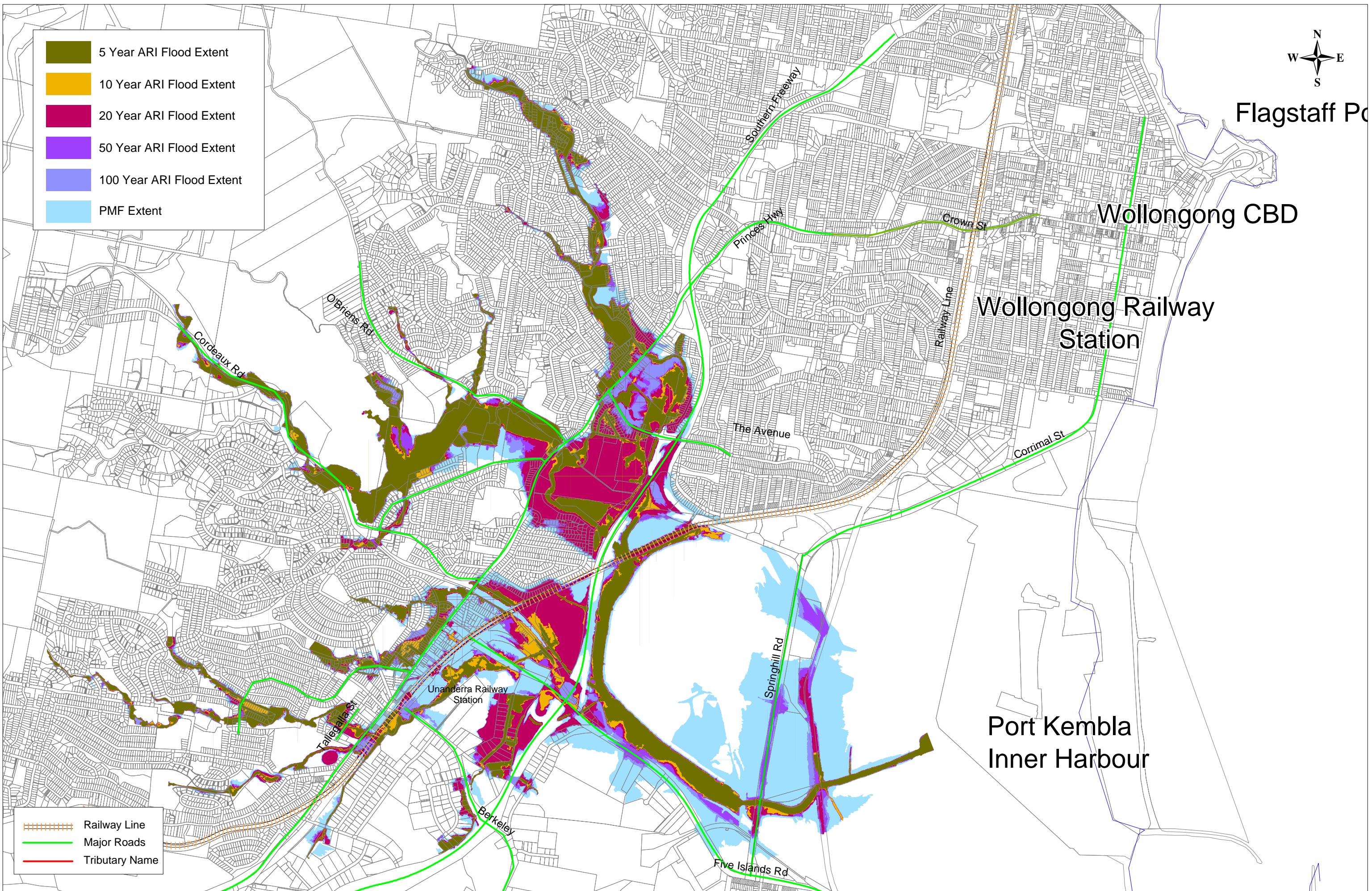


FIGURE 4.1
FLOOD EXTENT MAPS

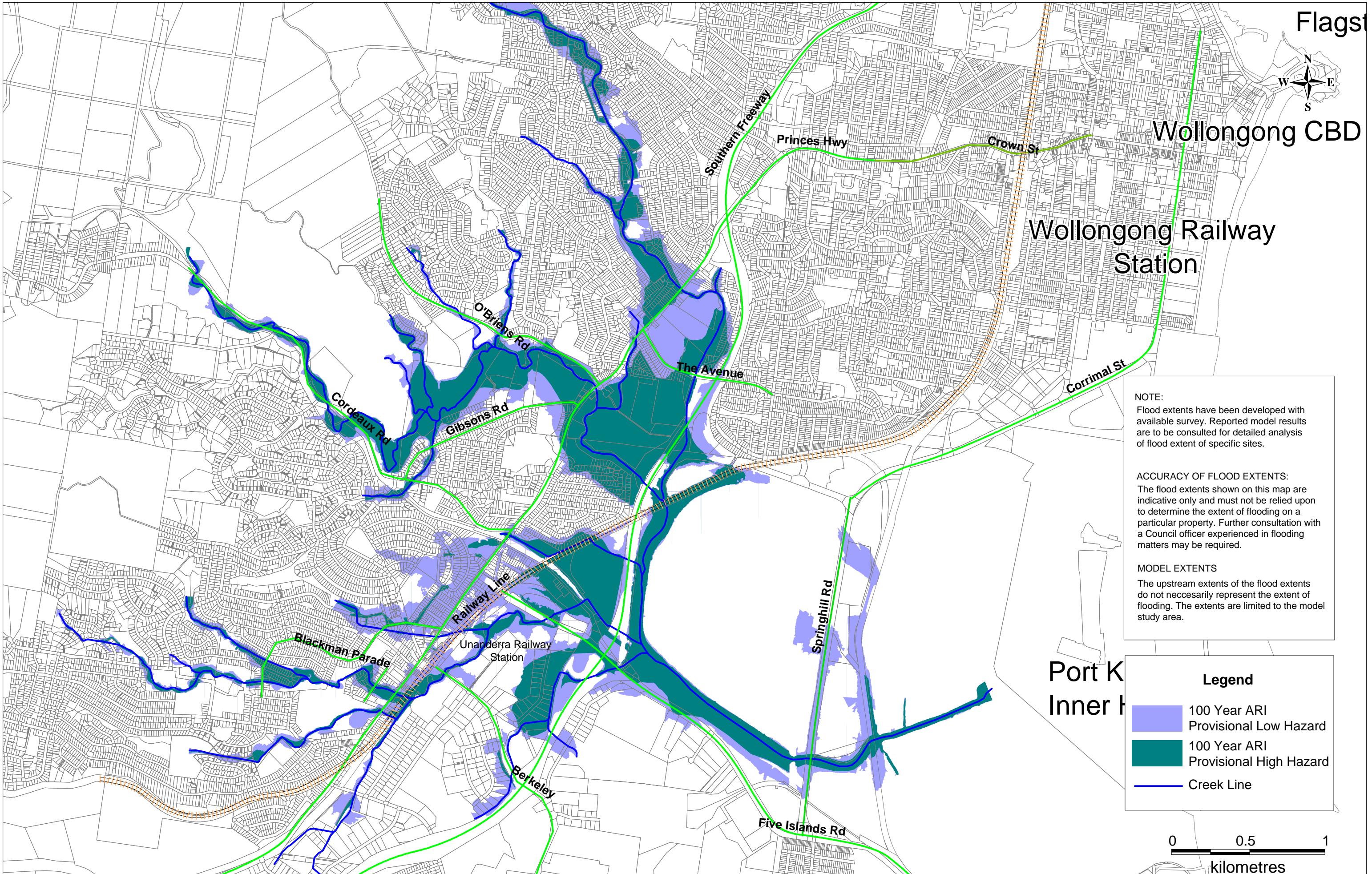


FIGURE 4.2

100 YEAR ARI PROVISIONAL FLOOD HAZARD

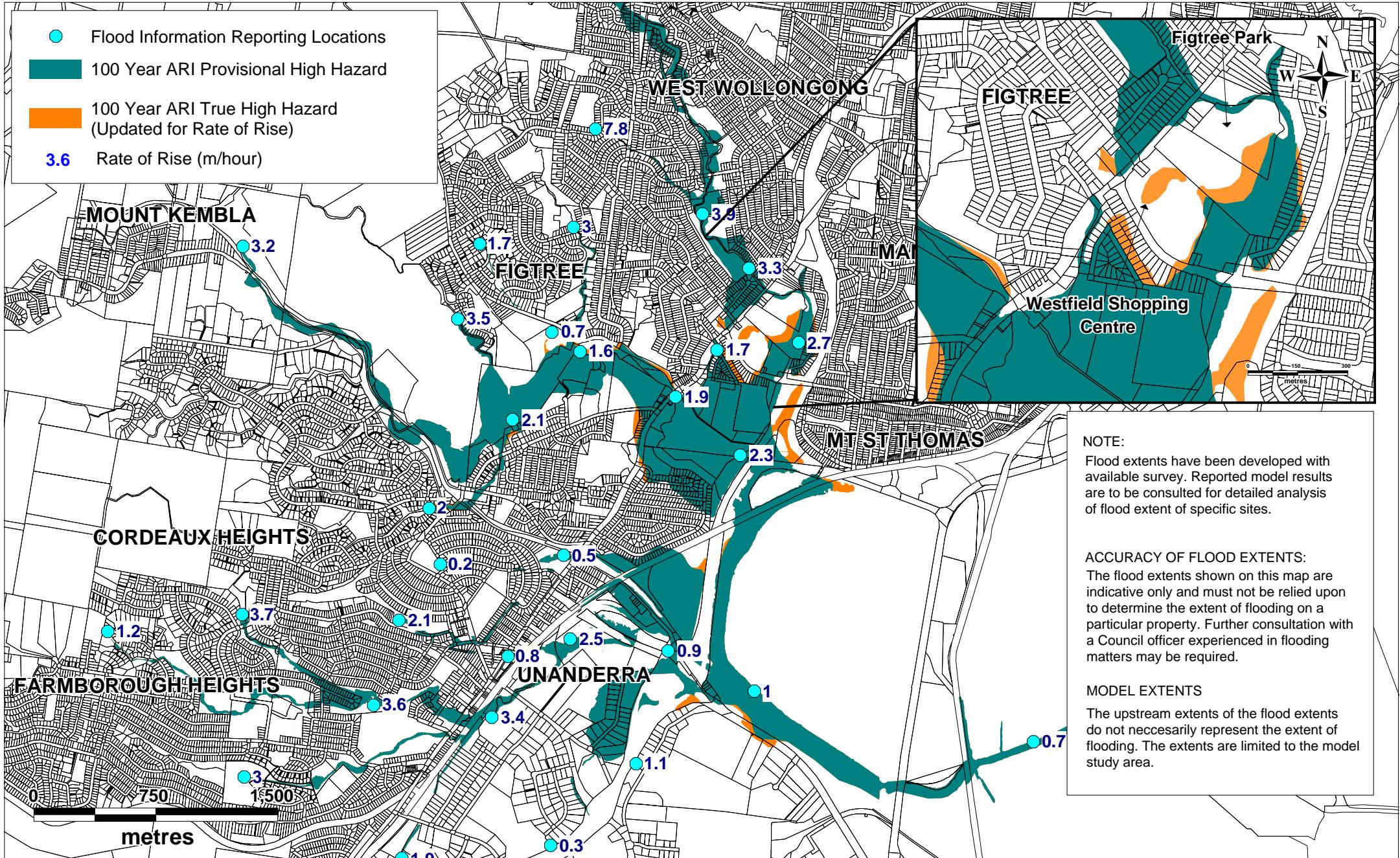


FIGURE 4.3
RATE OF RISE ADDITIONAL HIGH HAZARD AREAS

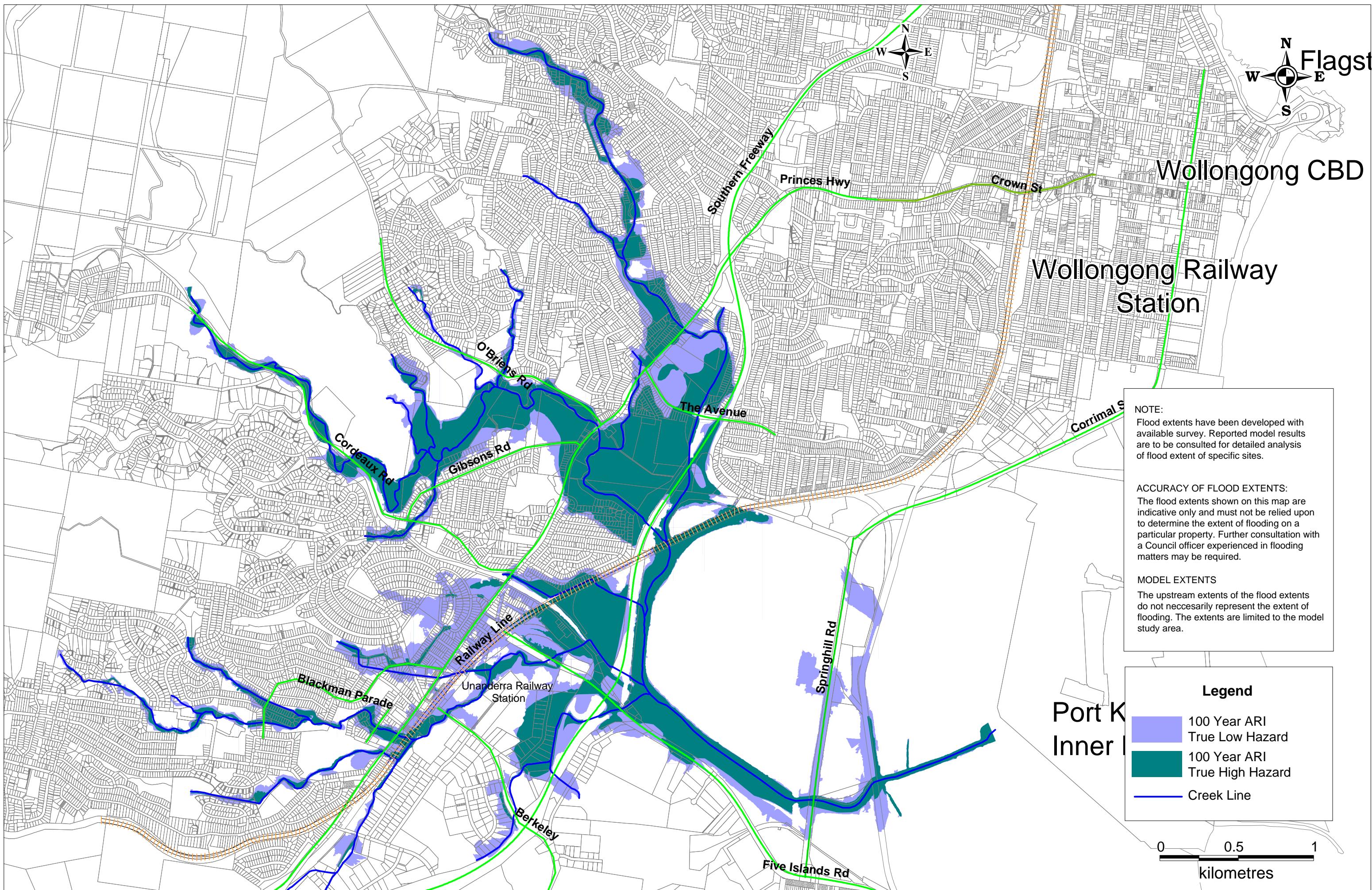
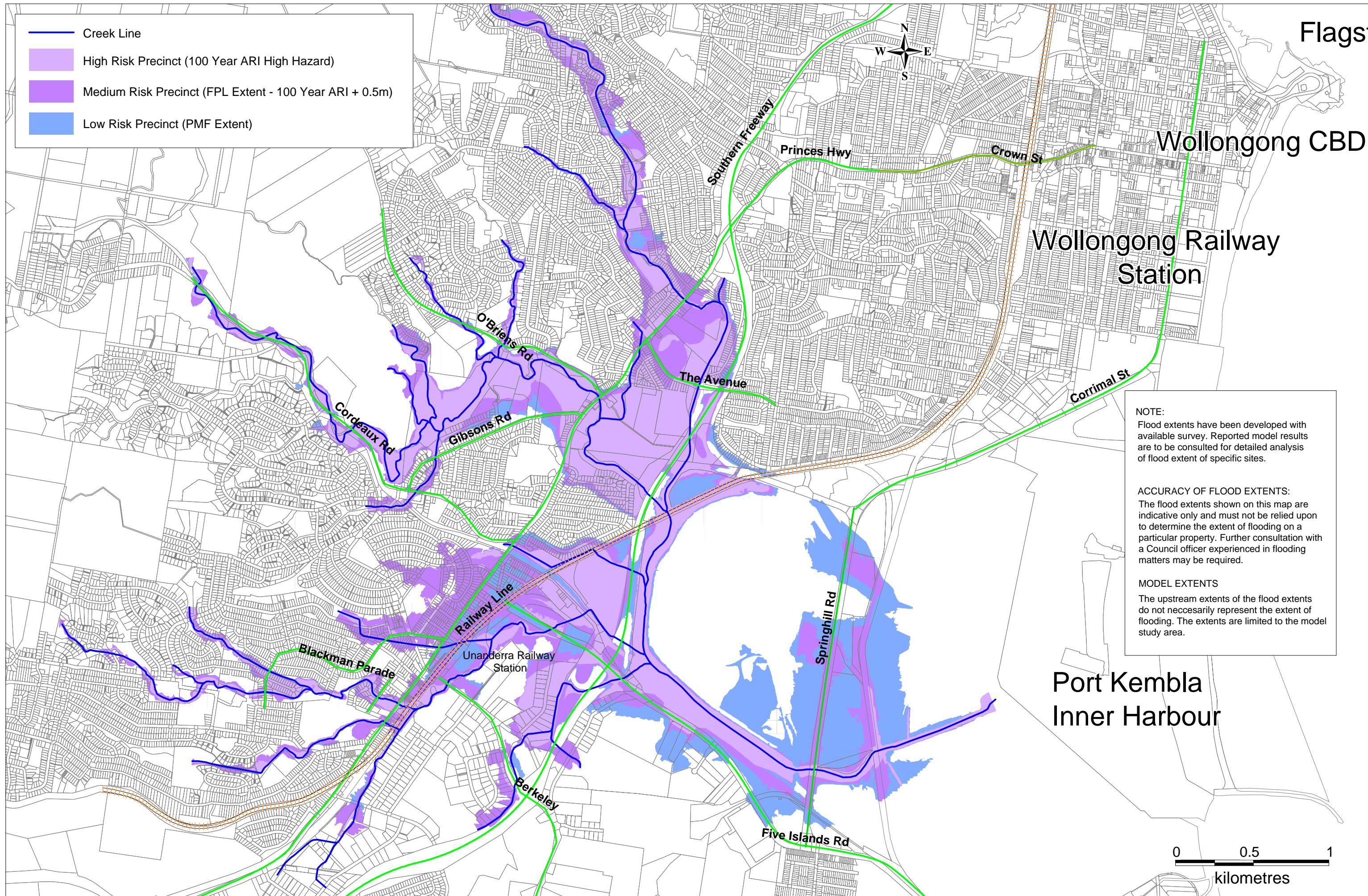


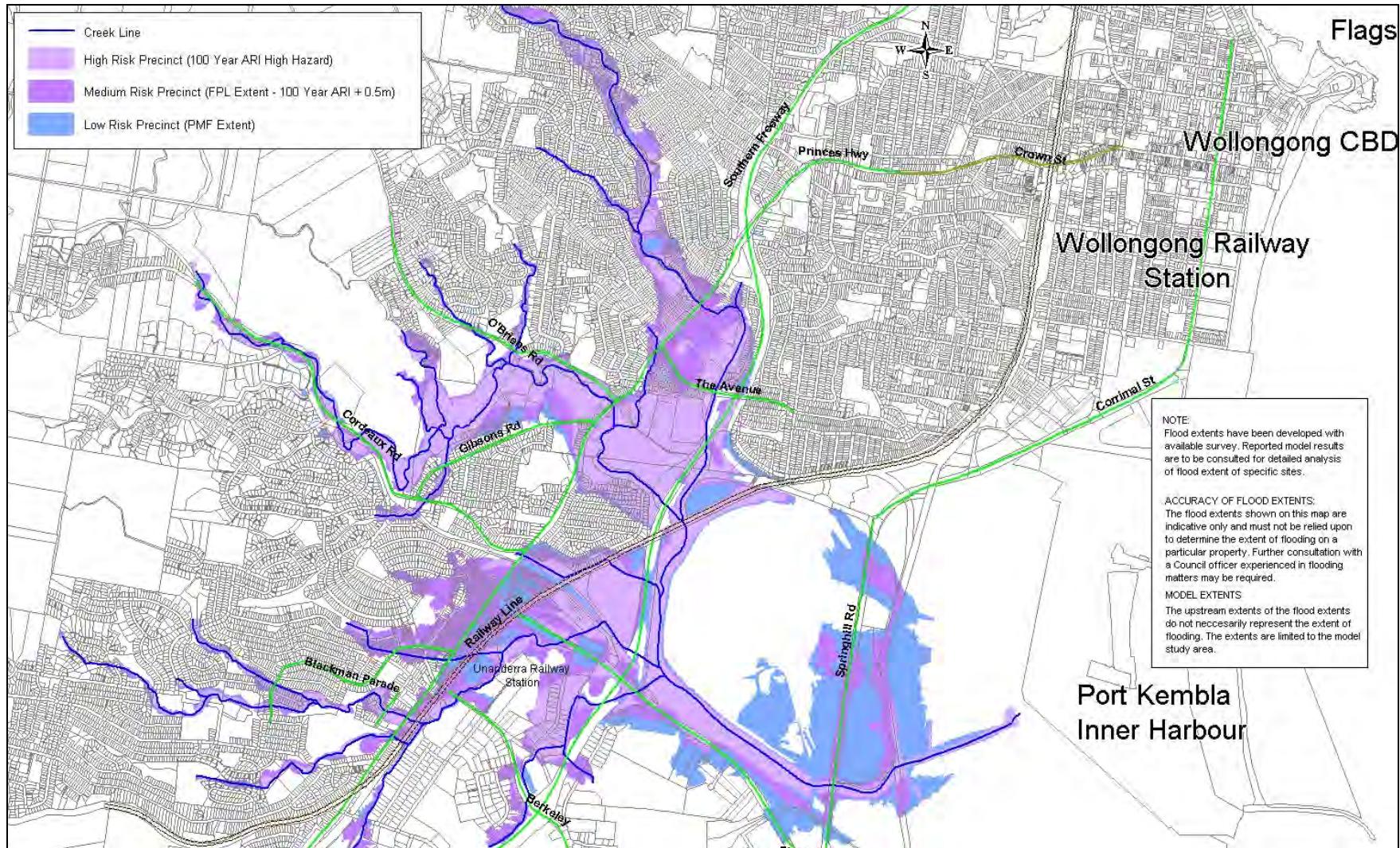
FIGURE 4.4

100 YEAR ARI TRUE FLOOD HAZARD



APPENDIX C

Allans Creek Floodplain Risk Management Plan – Updated Figures



APPENDIX D

Allans Creek Flood Study – Updated Tables and Appendices

Table 8.1 Major Transport Link Flooding

| | Duration of Overtopping in PMF (Hours) | Depth of Flood over Road/Rail at PMF (m) | Duration of Overtopping (100 Year ARI) | Depth of Flood over Road/Rail at 100 Year ARI (m) |
|-------------------------------|--|--|--|---|
| Princes Highway | | | | |
| Allans Creek | 2 | 0.65 | * | * |
| American Creek | 7.7 | 2.83 | 3.7 | 1.59 |
| Byarong Creek | 7.8 | 1.19 | 4.9 | 0.88 |
| Charcoal Creek | 9 | 1.61 | 8 | 1.02 |
| Jenkins Creek | 7 | 1.13 | 4 | 0.89 |
| Unanderra Drain | 6 | 1.04 | 8 | 0.41 |
| Illawarra Railway | | | | |
| Jenkins Creek | 7.5 | 1.20 | 4.5 | 0.97 |
| Charcoal Creek | 7.5 | 3.04 | 4.5 | 1.76 |
| Allans Creek | 3 | 0.81 | * | * |
| Unanderra Drain | 7 | 2.27 | 4.5 | 0.55 |
| American Creek | 3.2 | 0.35 | - | - |
| F6 Freeway | | | | |
| American/Byarong Creeks | 7.9 | 3.70 | 3.9 | 2.66 |
| Allans Creek/ Unanderra Drain | 5.5 | 1.20 | * | * |
| Freeway Trib Branch | 5 | 0.66 | 3 | 0.36 |

* These roads are not overtapped immediately above the creek, however they are overtapped in the immediate area as shown in the flood extent mapping (Figures 7.15 and 7.20).

Note: The times provided are for the peak overtapping duration which may not coincide with the storm duration that yielded the peak overtapping depth.

Table 8.2 Flood Behaviour at Key Locations

| Location | PMF | | | 100 year ARI | | | 50 year ARI | | | 20 year ARI | | | 10 year ARI | | | 5 year ARI | | |
|-----------------------|-----------|----------|---------|--------------|----------|---------|-------------|----------|---------|-------------|----------|---------|-------------|----------|---------|------------|----------|---------|
| | H (m AHD) | Q (m³/s) | V (m/s) | H (m AHD) | Q (m³/s) | V (m/s) | H (m AHD) | Q (m³/s) | V (m/s) | H (m AHD) | Q (m³/s) | V (m/s) | H (m AHD) | Q (m³/s) | V (m/s) | H (m AHD) | Q (m³/s) | V (m/s) |
| Byarong Creek | | | | | | | | | | | | | | | | | | |
| U/S Koloona Ave | 36.02 | 387 | 1.4 | 35.51 | 214 | 1.3 | 35.42 | 184 | 1.4 | 35.27 | 144 | 1.3 | 34.74 | 117 | 1.3 | 34.51 | 93 | 1.3 |
| U/S Princes Hwy | 17.61 | 448 | 0.7 | 17.11 | 210 | 0.5 | 17.03 | 177 | 0.5 | 16.9 | 138 | 0.5 | 16.06 | 111 | 0.4 | 15.85 | 91 | 0.4 |
| U/S The Avenue | 14.09 | 710 | 2.6 | 13.071 | 401 | 2.6 | 12.97 | 258 | 2.6 | 12.80 | 252 | 2.6 | 9.93 | 88 | 2.5 | 9.62 | 72 | 2.4 |
| American Creek | | | | | | | | | | | | | | | | | | |
| U/S Princes Hwy | 13.93 | 965 | 1.5 | 12.68 | 712 | 1.5 | 12.58 | 370 | 1.6 | 12.37 | 721 | 1.6 | 11.67 | 188 | 1.5 | 11.36 | 155 | 1.5 |
| U/S Freeway* | 13.20 | 1426 | 0.7 | 12.16 | 1529 | 0.6 | 12.00 | 886 | 0.6 | 11.79 | 721 | 0.7 | 8.23 | 294 | 0.7 | 7.92 | 241 | 0.6 |
| Jenkins Creek | | | | | | | | | | | | | | | | | | |
| U/S Princes Hwy | 18.53 | 79 | 1.2 | 18.28 | 38 | 1.2 | 18.22 | 33 | 1.1 | 18.13 | 25 | 1.2 | 15 | 21 | 1.1 | 14.71 | 19 | 1.1 |
| Charcoal Creek | | | | | | | | | | | | | | | | | | |
| U/S Blackman Pde | 26.60 | 103 | 1 | 26.19 | 52 | 0.9 | 26.11 | 45 | 0.9 | 25.98 | 35 | 0.9 | 25.62 | 28 | 0.9 | 25.48 | 22 | 0.9 |
| U/S Princes | 17.46 | 360 | 1.7 | 16.88 | 115 | 1.4 | 16.80 | 96 | 1.4 | 16.71 | 74 | 1.5 | 15.04 | 58 | 1.4 | 14.48 | 47 | 1.4 |
| Allans Creek | | | | | | | | | | | | | | | | | | |
| U/S Springhill Rd | 10.43 | 1279 | 0.8 | 10.06 | 545 | 1.6 | 9.98 | 476 | 1.6 | 9.78 | 385 | 1.6 | 9.44 | 334 | 1.4 | 7.93 | 261 | 1.3 |

Note: H Flood Height

Q Flood Flow

V Flood Velocity

* American Creek flows at the Freeway include the cross catchment flow from Byarong Creek

APPENDIX F SUMMARY OF HYDRAULIC MODEL RESULTS

| MIKE11 | Creek Name | Chainage | Peak Water Level (mAHD) | | | | | | Critical 100 Year ARI Run |
|----------------|------------|----------|-------------------------|-------------|-------------|-------------|--------------|-------|---------------------------|
| | | | 5 Year ARI | 10 Year ARI | 20 Year ARI | 50 Year ARI | 100 Year ARI | PMF | |
| ALLANS 4552.00 | ALLANS | 4552 | 21.68 | 21.72 | 21.78 | 21.83 | 21.87 | 22.06 | DESIGN BLOCKAGE 1-2hr |
| ALLANS 4674.00 | ALLANS | 4674 | 19.79 | 19.85 | 19.92 | 19.98 | 20.02 | 20.28 | DESIGN BLOCKAGE 2-2hr |
| ALLANS 4738.00 | ALLANS | 4738 | 19.56 | 19.63 | 19.80 | 19.86 | 19.90 | 20.14 | DESIGN BLOCKAGE 2-2hr |
| ALLANS 4756.00 | ALLANS | 4756 | 19.09 | 19.12 | 19.26 | 19.31 | 19.31 | 19.44 | DESIGN BLOCKAGE 2-0.5hr |
| ALLANS 4840.00 | ALLANS | 4840 | 18.10 | 18.11 | 18.18 | 18.18 | 18.23 | 18.34 | DESIGN BLOCKAGE 2-2hr |
| ALLANS 4904.00 | ALLANS | 4904 | 17.39 | 17.40 | 17.49 | 17.53 | 17.55 | 17.69 | DESIGN BLOCKAGE 2-2hr |
| ALLANS 4946.00 | ALLANS | 4946 | 16.41 | 16.45 | 16.56 | 16.60 | 16.63 | 16.79 | DESIGN BLOCKAGE 2-2hr |
| ALLANS 4970.00 | ALLANS | 4970 | 15.93 | 15.94 | 15.95 | 15.96 | 15.97 | 16.13 | DESIGN BLOCKAGE 1-2hr |
| ALLANS 5038.00 | ALLANS | 5038 | 15.74 | 15.75 | 15.75 | 15.76 | 15.76 | 15.85 | DESIGN BLOCKAGE 1-2hr |
| ALLANS 5098.00 | ALLANS | 5098 | 14.97 | 14.98 | 15.58 | 15.63 | 15.63 | 15.66 | DESIGN BLOCKAGE 2-2hr |
| ALLANS 5106.00 | ALLANS | 5106 | 14.96 | 14.97 | 14.99 | 15.01 | 15.03 | 15.13 | DESIGN BLOCKAGE 1-1hr |
| ALLANS 5146.00 | ALLANS | 5146 | 14.16 | 14.17 | 14.21 | 14.22 | 14.23 | 14.32 | DESIGN BLOCKAGE 3-1hr |
| ALLANS 5238.00 | ALLANS | 5238 | 13.57 | 13.57 | 13.59 | 13.59 | 13.60 | 13.96 | DESIGN BLOCKAGE 3-1hr |
| ALLANS 5330.00 | ALLANS | 5330 | 12.06 | 12.08 | 12.41 | 12.53 | 12.73 | 13.60 | DESIGN BLOCKAGE 4-2hr |
| ALLANS 5424.00 | ALLANS | 5424 | 10.94 | 10.98 | 12.36 | 12.37 | 12.62 | 13.56 | DESIGN BLOCKAGE 4-2hr |
| ALLANS 5486.00 | ALLANS | 5486 | 10.12 | 10.16 | 12.09 | 12.17 | 12.31 | 13.22 | DESIGN BLOCKAGE 2-2hr |
| ALLANS 5546.00 | ALLANS | 5546 | 10.10 | 10.15 | 12.09 | 12.17 | 12.31 | 13.22 | 100Y-DES2-2H |
| ALLANS 5560.00 | ALLANS | 5560 | 9.61 | 9.95 | 10.47 | 10.73 | 10.89 | 11.55 | 100Y-DES1-2H |
| ALLANS 5610.00 | ALLANS | 5610 | 9.61 | 9.94 | 10.47 | 10.73 | 10.89 | 11.55 | 100Y-DES1-2H |
| ALLANS 5712.00 | ALLANS | 5712 | 9.53 | 9.86 | 10.35 | 10.61 | 10.77 | 11.42 | 100Y-DES1-2H |
| ALLANS 6094.00 | ALLANS | 6094 | 7.93 | 9.44 | 9.78 | 9.98 | 10.06 | 10.57 | 100Y-DES6-6H |
| ALLANS 6156.00 | ALLANS | 6156 | 7.00 | 9.50 | 9.70 | 9.77 | 9.85 | 10.54 | 100Y-DES1-6H |
| ALLANS 6344.00 | ALLANS | 6344 | 6.89 | 7.48 | 7.85 | 8.04 | 8.16 | 10.54 | 100Y-DES2-6H |
| ALLANS 6384.00 | ALLANS | 6384 | 6.90 | 7.84 | 8.01 | 8.18 | 8.25 | 10.54 | 100Y-DES3-6H |
| ALLANS 6422.00 | ALLANS | 6422 | 6.80 | 6.99 | 7.83 | 8.01 | 8.14 | 10.53 | 100Y-DES2-6H |
| ALLANS 6446.00 | ALLANS | 6446 | 6.45 | 6.55 | 7.83 | 8.01 | 8.14 | 10.53 | 100Y-DES2-6H |
| ALLANS 6544.00 | ALLANS | 6544 | 5.10 | 5.46 | 7.82 | 8.00 | 8.13 | 10.53 | 100Y-DES2-6H |
| ALLANS 6564.00 | ALLANS | 6564 | 4.79 | 5.27 | 7.82 | 8.00 | 8.13 | 10.53 | 100Y-DES2-6H |
| ALLANS 6640.00 | ALLANS | 6640 | 4.36 | 4.87 | 7.82 | 8.00 | 8.12 | 10.53 | 100Y-DES2-6H |
| ALLANS 6804.00 | ALLANS | 6804 | 4.23 | 4.68 | 4.98 | 5.47 | 5.86 | 10.21 | 100Y-DES2-6H |
| ALLANS 6896.00 | ALLANS | 6896 | 4.08 | 4.52 | 4.92 | 5.45 | 5.86 | 10.21 | 100Y-DES2-6H |
| ALLANS 7154.00 | ALLANS | 7154 | 3.87 | 4.34 | 4.72 | 5.28 | 5.76 | 10.18 | 100Y-DES2-6H |
| ALLANS 7368.00 | ALLANS | 7368 | 3.75 | 4.22 | 4.63 | 5.21 | 5.73 | 10.18 | 100Y-DES2-6H |
| ALLANS 7514.00 | ALLANS | 7514 | 3.67 | 4.17 | 4.57 | 5.16 | 5.70 | 10.17 | 100Y-DES2-6H |
| ALLANS 7712.00 | ALLANS | 7712 | 3.57 | 4.11 | 4.50 | 5.12 | 5.66 | 10.16 | 100Y-DES2-6H |
| ALLANS 7902.00 | ALLANS | 7902 | 3.49 | 4.02 | 4.44 | 5.09 | 5.63 | 10.15 | 100Y-DES2-6H |
| ALLANS 8130.00 | ALLANS | 8130 | 3.30 | 3.82 | 4.26 | 4.98 | 5.53 | 10.12 | 100Y-DES2-6H |
| ALLANS 8160.00 | ALLANS | 8160 | 2.94 | 3.52 | 4.00 | 4.55 | 4.73 | 9.86 | 100Y-DES1-6H |
| ALLANS 8234.00 | ALLANS | 8234 | 2.90 | 3.51 | 3.99 | 4.60 | 4.80 | 9.91 | 100Y-DES1-6H |
| ALLANS 8274.00 | ALLANS | 8274 | 2.74 | 3.28 | 3.75 | 4.32 | 4.54 | 8.66 | 100Y-DES1-6H |
| ALLANS 8428.00 | ALLANS | 8428 | 2.60 | 3.10 | 3.54 | 4.05 | 4.37 | 8.66 | 100Y-DES2-6H |
| ALLANS 8554.00 | ALLANS | 8554 | 2.47 | 2.96 | 3.41 | 3.90 | 4.28 | 8.66 | 100Y-DES2-6H |
| ALLANS 8744.00 | ALLANS | 8744 | 2.32 | 2.80 | 3.28 | 3.86 | 4.28 | 8.66 | 100Y-DES2-6H |

APPENDIX F SUMMARY OF HYDRAULIC MODEL RESULTS

| MIKE11 | Creek Name | Chainage | Peak Water Level (mAHD) | | | | | | Critical 100 Year ARI Run |
|------------------|------------|----------|-------------------------|-------------|-------------|-------------|--------------|-------|---------------------------|
| | | | 5 Year ARI | 10 Year ARI | 20 Year ARI | 50 Year ARI | 100 Year ARI | PMF | |
| ALLANS 8760.00 | ALLANS | 8760 | 2.29 | 2.73 | 3.15 | 3.79 | 4.26 | 8.65 | 100Y-DES2-6H |
| ALLANS 8804.00 | ALLANS | 8804 | 2.16 | 2.56 | 2.95 | 3.65 | 4.13 | 8.55 | 100Y-DES2-6H |
| ALLANS 8828.00 | ALLANS | 8828 | 2.10 | 2.50 | 2.88 | 3.45 | 3.91 | 7.47 | 100Y-DES2-6H |
| ALLANS 8840.00 | ALLANS | 8840 | 2.07 | 2.48 | 2.86 | 3.43 | 3.91 | 7.54 | 100Y-DES2-6H |
| ALLANS 8866.00 | ALLANS | 8866 | 1.93 | 2.31 | 2.67 | 3.16 | 3.52 | 6.33 | 100Y-DES2-6H |
| ALLANS 8878.00 | ALLANS | 8878 | 1.87 | 2.24 | 2.60 | 3.06 | 3.42 | 5.33 | 100Y-DES1-6H |
| ALLANS 9040.00 | ALLANS | 9040 | 1.54 | 1.87 | 2.22 | 2.65 | 2.99 | 4.96 | 100Y-DES1-6H |
| ALLANS 9186.00 | ALLANS | 9186 | 1.16 | 1.44 | 1.79 | 2.17 | 2.54 | 4.67 | 100Y-DES2-6H |
| ALLANS 9410.00 | ALLANS | 9410 | 0.81 | 0.82 | 1.16 | 1.81 | 2.21 | 4.33 | 100Y-DES2-6H |
| ALLANS 9452.00 | ALLANS | 9452 | 0.80 | 0.81 | 0.82 | 0.80 | 0.87 | 1.51 | 100Y-DES1-6H |
| ALLANS 9482.00 | ALLANS | 9482 | 0.73 | 0.73 | 0.73 | 0.75 | 0.75 | 1.17 | 100Y-DES3-3H |
| ALLANS 9586.00 | ALLANS | 9586 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 100Y-DES2-6H |
| AMERICAN 0.00 | AMERICAN | 0 | 44.63 | 44.82 | 45.06 | 45.40 | 45.65 | 46.85 | DESIGN BLOCKAGE 1-2hr |
| AMERICAN 106.00 | AMERICAN | 106 | 41.12 | 41.38 | 42.35 | 42.95 | 43.53 | 45.20 | DESIGN BLOCKAGE 2-2hr |
| AMERICAN 124.00 | AMERICAN | 124 | 41.06 | 41.30 | 42.03 | 42.44 | 42.72 | 43.86 | DESIGN BLOCKAGE 2-2hr |
| AMERICAN 150.00 | AMERICAN | 150 | 40.05 | 40.28 | 40.39 | 40.58 | 40.72 | 42.01 | DESIGN BLOCKAGE 1-2hr |
| AMERICAN 190.00 | AMERICAN | 190 | 40.07 | 40.32 | 40.50 | 40.80 | 41.00 | 42.26 | DESIGN BLOCKAGE 1-2hr |
| AMERICAN 294.00 | AMERICAN | 294 | 36.49 | 36.59 | 36.68 | 36.68 | 36.72 | 37.10 | DESIGN BLOCKAGE 1-2hr |
| AMERICAN 480.00 | AMERICAN | 480 | 36.51 | 36.78 | 37.02 | 37.24 | 37.39 | 38.37 | DESIGN BLOCKAGE 1-2hr |
| AMERICAN 664.00 | AMERICAN | 664 | 36.00 | 36.16 | 36.36 | 36.60 | 36.76 | 37.76 | DESIGN BLOCKAGE 2-2hr |
| AMERICAN 778.00 | AMERICAN | 778 | 35.64 | 35.76 | 35.94 | 36.11 | 36.23 | 36.99 | DESIGN BLOCKAGE 2-2hr |
| AMERICAN 830.00 | AMERICAN | 830 | 33.87 | 33.99 | 34.15 | 34.36 | 34.51 | 35.54 | DESIGN BLOCKAGE 1-2hr |
| AMERICAN 958.00 | AMERICAN | 958 | 33.42 | 33.54 | 33.69 | 33.89 | 34.03 | 35.00 | DESIGN BLOCKAGE 1-2hr |
| AMERICAN 1058.00 | AMERICAN | 1058 | 31.99 | 32.09 | 32.23 | 32.41 | 32.53 | 33.35 | DESIGN BLOCKAGE 1-2hr |
| AMERICAN 1126.00 | AMERICAN | 1126 | 31.35 | 31.53 | 31.75 | 32.04 | 32.23 | 33.46 | DESIGN BLOCKAGE 1-2hr |
| AMERICAN 1292.00 | AMERICAN | 1292 | 28.38 | 28.59 | 28.87 | 29.23 | 29.45 | 31.09 | DESIGN BLOCKAGE 1-2hr |
| AMERICAN 1374.00 | AMERICAN | 1374 | 25.29 | 25.57 | 26.08 | 26.56 | 26.89 | 29.18 | DESIGN BLOCKAGE 2-2hr |
| AMERICAN 1514.00 | AMERICAN | 1514 | 24.23 | 24.52 | 25.47 | 25.99 | 26.35 | 28.75 | DESIGN BLOCKAGE 2-2hr |
| AMERICAN 1604.00 | AMERICAN | 1604 | 23.74 | 24.09 | 25.34 | 25.87 | 26.23 | 28.68 | DESIGN BLOCKAGE 2-2hr |
| AMERICAN 1652.00 | AMERICAN | 1652 | 20.75 | 20.77 | 21.20 | 21.30 | 21.60 | 21.69 | DESIGN BLOCKAGE 2-3hr |
| AMERICAN 1754.00 | AMERICAN | 1754 | 21.25 | 21.37 | 21.83 | 22.03 | 22.17 | 23.05 | DESIGN BLOCKAGE 4-2hr |
| AMERICAN 1914.00 | AMERICAN | 1914 | 21.11 | 21.20 | 21.73 | 21.90 | 22.02 | 22.76 | DESIGN BLOCKAGE 4-2hr |
| AMERICAN 1936.00 | AMERICAN | 1936 | 20.72 | 20.78 | 21.70 | 21.87 | 21.98 | 22.69 | DESIGN BLOCKAGE 4-2hr |
| AMERICAN 1956.00 | AMERICAN | 1956 | 20.45 | 20.49 | 20.55 | 20.70 | 20.78 | 21.34 | DESIGN BLOCKAGE 1-2hr |
| AMERICAN 2032.00 | AMERICAN | 2032 | 19.90 | 19.96 | 20.04 | 20.19 | 20.27 | 21.11 | DESIGN BLOCKAGE 1-2hr |
| AMERICAN 2156.00 | AMERICAN | 2156 | 19.39 | 19.53 | 19.68 | 19.91 | 20.01 | 21.02 | DESIGN BLOCKAGE 1-2hr |
| AMERICAN 2742.00 | AMERICAN | 2742 | 16.92 | 17.08 | 17.28 | 17.51 | 17.68 | 18.63 | DESIGN BLOCKAGE 1-2hr |
| AMERICAN 2812.00 | AMERICAN | 2812 | 16.60 | 16.77 | 16.97 | 17.17 | 17.32 | 18.08 | DESIGN BLOCKAGE 1-2hr |
| AMERICAN 3166.00 | AMERICAN | 3166 | 15.58 | 15.73 | 15.89 | 16.05 | 16.17 | 17.10 | DESIGN BLOCKAGE 4-2hr |
| AMERICAN 3194.00 | AMERICAN | 3194 | 15.44 | 15.61 | 15.77 | 15.94 | 16.06 | 16.99 | DESIGN BLOCKAGE 4-2hr |
| AMERICAN 3474.00 | AMERICAN | 3474 | 13.78 | 13.92 | 14.13 | 14.36 | 14.51 | 15.68 | 100Y-DES3-2H |
| AMERICAN 3536.00 | AMERICAN | 3536 | 13.45 | 13.60 | 13.81 | 14.04 | 14.20 | 15.41 | 100Y-DES3-2H |
| AMERICAN 3608.00 | AMERICAN | 3608 | 13.23 | 13.38 | 13.60 | 13.86 | 14.02 | 15.22 | 100Y-DES3-3H |

APPENDIX F SUMMARY OF HYDRAULIC MODEL RESULTS

| | | Peak Water Level (mAHD) | | | | | | | |
|------------|------------|-------------------------|------------|-------------|-------------|-------------|--------------|-------|---------------------------|
| MIKE11 | Creek Name | Chainage | 5 Year ARI | 10 Year ARI | 20 Year ARI | 50 Year ARI | 100 Year ARI | PMF | Critical 100 Year ARI Run |
| AMERICAN | AMERICAN | 3676 | 12.80 | 12.92 | 13.19 | 13.45 | 13.62 | 14.93 | 100Y-DES3-6H |
| AMERICAN | AMERICAN | 3818 | 12.46 | 12.66 | 13.02 | 13.28 | 13.46 | 14.81 | 100Y-DES3-6H |
| AMERICAN | AMERICAN | 3986 | 12.31 | 12.56 | 12.97 | 13.24 | 13.41 | 14.76 | 100Y-DES3-6H |
| AMERICAN | AMERICAN | 4388 | 12.12 | 12.38 | 12.81 | 13.06 | 13.22 | 14.52 | 100Y-DES3-6H |
| AMERICAN | AMERICAN | 4780 | 11.36 | 11.67 | 12.37 | 12.58 | 12.68 | 13.93 | 100Y-DES2-6H |
| AMERICAN | AMERICAN | 4810 | 10.82 | 11.23 | 12.05 | 12.32 | 12.52 | 13.92 | 100Y-DES2-6H |
| AMERICAN | AMERICAN | 4850 | 10.61 | 11.00 | 11.90 | 12.14 | 12.32 | 13.64 | 100Y-DES2-6H |
| AMERICAN | AMERICAN | 4910 | 10.29 | 10.79 | 11.85 | 12.07 | 12.22 | 13.34 | 100Y-DES2-6H |
| AMERICAN | AMERICAN | 5202 | 8.08 | 8.39 | 11.79 | 12.00 | 12.16 | 13.20 | 100Y-DES2-6H |
| AMERICAN | AMERICAN | 5320 | 8.00 | 8.30 | 11.79 | 12.00 | 12.16 | 13.20 | 100Y-DES2-6H |
| AMERICAN | AMERICAN | 5524 | 7.96 | 8.27 | 11.79 | 12.00 | 12.16 | 13.20 | 100Y-DES2-6H |
| AMERICAN | AMERICAN | 5684 | 7.92 | 8.23 | 11.79 | 12.00 | 12.16 | 13.20 | 100Y-DES2-6H |
| AMERICAN | AMERICAN | 5784 | 7.74 | 7.96 | 8.44 | 8.90 | 9.04 | 10.77 | 100Y-DES6-6H |
| AMERICAN | AMERICAN | 5906 | 7.41 | 7.67 | 8.28 | 8.77 | 8.88 | 10.77 | 100Y-DES6-6H |
| AMERICAN | AMERICAN | 5958 | 7.21 | 7.39 | 7.65 | 7.98 | 8.20 | 10.76 | 100Y-DES1-6H |
| AMERICAN | AMERICAN | 6144 | 6.43 | 6.71 | 7.12 | 7.56 | 7.84 | 10.70 | 100Y-DES3-6H |
| AMERICAN | AMERICAN | 6318 | 5.79 | 6.12 | 6.56 | 7.05 | 7.36 | 10.60 | 100Y-DES6-6H |
| AMERICAN | AMERICAN | 6504 | 5.24 | 5.61 | 6.05 | 6.55 | 6.85 | 10.50 | 100Y-DES6-6H |
| AMERICAN | AMERICAN | 6714 | 4.51 | 4.91 | 5.35 | 5.86 | 6.18 | 10.32 | 100Y-DES1-6H |
| ARROW | ARROW | 4004 | 16.76 | 16.85 | 17.11 | 17.26 | 17.39 | 18.09 | DESIGN BLOCKAGE 3-2hr |
| ARROW | ARROW | 4024 | 16.64 | 16.73 | 17.00 | 17.16 | 17.29 | 18.01 | DESIGN BLOCKAGE 3-2hr |
| ARROW | ARROW | 4058 | 16.34 | 16.44 | 16.74 | 16.93 | 17.07 | 17.90 | DESIGN BLOCKAGE 3-2hr |
| ARROW | ARROW | 4092 | 15.55 | 15.68 | 16.13 | 16.38 | 16.57 | 17.57 | DESIGN BLOCKAGE 3-2hr |
| ARROW | ARROW | 4118 | 15.26 | 15.33 | 15.57 | 15.68 | 15.76 | 16.12 | DESIGN BLOCKAGE 2-2hr |
| ARROW | ARROW | 4160 | 15.40 | 15.40 | 15.56 | 15.65 | 15.73 | 15.98 | 100Y-DES2-2H |
| ARROW | ARROW | 4178 | 15.07 | 15.07 | 15.19 | 15.30 | 15.34 | 15.51 | 100Y-DES2-2H |
| ARROW | ARROW | 4230 | 14.63 | 14.72 | 14.81 | 14.89 | 14.92 | 15.10 | 100Y-DES1-2H |
| ARROW | ARROW | 4386 | 12.71 | 12.79 | 12.92 | 13.08 | 13.22 | 14.17 | 100Y-DES4-2H |
| BELLV-LANE | BELLV-LANE | 24 | 14.80 | 14.85 | 14.95 | 14.99 | 15.04 | 15.24 | DESIGN BLOCKAGE 2-2hr |
| BELLV-LANE | BELLV-LANE | 46 | 14.22 | 14.25 | 14.31 | 14.34 | 14.36 | 14.47 | DESIGN BLOCKAGE 2-2hr |
| BERKELEY | BERKELEY | 6684 | 6.43 | 6.43 | 6.63 | 6.65 | 6.66 | 9.72 | DESIGN BLOCKAGE 4-6hr |
| BERKELEY | BERKELEY | 6734 | 4.49 | 4.49 | 4.94 | 5.28 | 5.66 | 9.72 | DESIGN BLOCKAGE 2-6hr |
| BERKELEY | BERKELEY | 6790 | 3.87 | 4.42 | 4.72 | 5.28 | 5.66 | 9.72 | DESIGN BLOCKAGE 2-6hr |
| BERKELEY | BERKELEY | 6836 | 3.87 | 4.36 | 4.72 | 5.28 | 5.66 | 9.72 | DESIGN BLOCKAGE 2-6hr |
| BLACKMAN | BLACKMAN | 50 | 16.17 | 16.21 | 16.34 | 16.38 | 16.40 | 16.51 | DESIGN BLOCKAGE 2-1hr |
| BLACKMAN | BLACKMAN | 106 | 15.25 | 15.28 | 15.31 | 15.33 | 15.34 | 15.46 | DESIGN BLOCKAGE 2-2hr |
| BLACKMAN | BLACKMAN | 176 | 14.79 | 14.85 | 14.99 | 15.06 | 15.10 | 15.26 | DESIGN BLOCKAGE 2-2hr |
| BLACKMAN-S | BLACKMAN-S | 0 | 25.39 | 25.51 | 25.75 | 25.87 | 25.93 | 26.31 | DESIGN BLOCKAGE 2-2hr |
| BLACKMAN-S | BLACKMAN-S | 70 | 24.32 | 24.37 | 24.49 | 24.51 | 24.52 | 24.64 | DESIGN BLOCKAGE 2-2hr |
| BLACKMAN-S | BLACKMAN-S | 120 | 24.52 | 24.65 | 25.05 | 25.17 | 25.24 | 25.69 | DESIGN BLOCKAGE 2-2hr |
| BRANCH | BRANCH | 2960 | 29.85 | 30.02 | 30.44 | 30.57 | 30.66 | 31.33 | DESIGN BLOCKAGE 2-2hr |
| BRANCH | BRANCH | 2988 | 29.78 | 29.95 | 30.39 | 30.50 | 30.58 | 31.15 | DESIGN BLOCKAGE 2-2hr |
| BRANCH | BRANCH | 3018 | 27.08 | 27.28 | 27.50 | 27.80 | 28.00 | 29.43 | DESIGN BLOCKAGE 4-2hr |

APPENDIX F SUMMARY OF HYDRAULIC MODEL RESULTS

| | | Peak Water Level (mAHD) | | | | | | | |
|---------------------------|-------------------|-------------------------|------------|-------------|-------------|-------------|--------------|-------|---------------------------|
| MIKE11 | Creek Name | Chainage | 5 Year ARI | 10 Year ARI | 20 Year ARI | 50 Year ARI | 100 Year ARI | PMF | Critical 100 Year ARI Run |
| BRANCH 3058.00 | BRANCH | 3058 | 25.15 | 25.56 | 25.96 | 26.38 | 26.57 | 27.94 | DESIGN BLOCKAGE 2-1hr |
| BRANCH 3178.00 | BRANCH | 3178 | 21.57 | 21.77 | 22.00 | 22.34 | 22.45 | 23.20 | DESIGN BLOCKAGE 1-2hr |
| BRANCH 3238.00 | BRANCH | 3238 | 19.88 | 20.03 | 20.25 | 20.41 | 20.52 | 21.18 | DESIGN BLOCKAGE 2-1hr |
| BRANCH 3430.00 | BRANCH | 3430 | 16.36 | 16.46 | 16.56 | 16.67 | 16.78 | 17.60 | DESIGN BLOCKAGE 1-2hr |
| BRANCH 3668.00 | BRANCH | 3668 | 13.77 | 13.89 | 14.21 | 14.38 | 14.51 | 15.37 | DESIGN BLOCKAGE 2-2hr |
| BRANCH 3748.00 | BRANCH | 3748 | 13.36 | 13.45 | 13.92 | 14.03 | 14.12 | 14.77 | 100Y-DES2-2H |
| BRANCH 3804.00 | BRANCH | 3804 | 12.31 | 12.56 | 12.97 | 13.24 | 13.41 | 14.76 | 100Y-DES3-6H |
| BRANCH_TRIB 2806.00 | BRANCH_TRIB | 2806 | 44.88 | 44.90 | 44.91 | 44.94 | 44.95 | 45.07 | DESIGN BLOCKAGE 1-1hr |
| BRANCH_TRIB 2828.00 | BRANCH_TRIB | 2828 | 42.72 | 42.72 | 42.72 | 42.72 | 42.72 | 42.77 | DESIGN BLOCKAGE 1-6hr |
| BRANCH_TRIB 2842.00 | BRANCH_TRIB | 2842 | 40.21 | 40.42 | 41.17 | 41.22 | 41.26 | 41.46 | DESIGN BLOCKAGE 2-2hr |
| BRANCH_TRIB 2860.00 | BRANCH_TRIB | 2860 | 40.16 | 40.43 | 41.17 | 41.22 | 41.26 | 41.47 | DESIGN BLOCKAGE 2-2hr |
| BRANCH_TRIB 2870.00 | BRANCH_TRIB | 2870 | 39.07 | 39.07 | 39.52 | 39.55 | 39.58 | 39.77 | DESIGN BLOCKAGE 2-2hr |
| BRANCH_TRIB 2918.00 | BRANCH_TRIB | 2918 | 36.95 | 36.95 | 36.96 | 36.99 | 36.99 | 37.09 | DESIGN BLOCKAGE 2-0.5hr |
| BRANCH_TRIB 2970.00 | BRANCH_TRIB | 2970 | 32.43 | 32.70 | 33.51 | 33.57 | 33.62 | 33.87 | DESIGN BLOCKAGE 2-2hr |
| BRANCH_TRIB 3056.00 | BRANCH_TRIB | 3056 | 32.39 | 32.69 | 33.50 | 33.57 | 33.61 | 33.83 | DESIGN BLOCKAGE 2-2hr |
| BRANCH_TRIB 3080.00 | BRANCH_TRIB | 3080 | 31.00 | 31.19 | 32.17 | 32.39 | 32.68 | 33.18 | DESIGN BLOCKAGE 2-2hr |
| BRANCH_TRIB 3100.00 | BRANCH_TRIB | 3100 | 31.02 | 31.21 | 31.84 | 31.86 | 31.89 | 32.18 | DESIGN BLOCKAGE 2-6hr |
| BRANCH_TRIB 3120.00 | BRANCH_TRIB | 3120 | 27.10 | 27.12 | 28.92 | 29.02 | 29.04 | 29.90 | DESIGN BLOCKAGE 2-2hr |
| BRANCH_TRIB 3125.00 | BRANCH_TRIB | 3125 | 27.03 | 27.06 | 28.93 | 29.04 | 29.04 | 29.75 | DESIGN BLOCKAGE 2-3hr |
| BRANCH_TRIB 3160.00 | BRANCH_TRIB | 3160 | 26.17 | 26.35 | 28.90 | 29.01 | 29.06 | 29.30 | DESIGN BLOCKAGE 2-2hr |
| BRANCH_TRIB 3206.00 | BRANCH_TRIB | 3206 | 23.49 | 23.52 | 23.79 | 23.98 | 24.17 | 24.80 | DESIGN BLOCKAGE 2-2hr |
| BRANCH_TRIB 3310.00 | BRANCH_TRIB | 3310 | 19.69 | 19.71 | 19.78 | 19.82 | 19.86 | 19.97 | DESIGN BLOCKAGE 2-2hr |
| BRANCH_TRIB 3370.00 | BRANCH_TRIB | 3370 | 17.81 | 17.92 | 18.52 | 18.58 | 18.63 | 19.01 | DESIGN BLOCKAGE 2-2hr |
| BRANCH_TRIB 3470.00 | BRANCH_TRIB | 3470 | 16.23 | 16.29 | 16.96 | 17.05 | 17.15 | 18.81 | DESIGN BLOCKAGE 2-2hr |
| BRANCH_TRIB 3478.00 | BRANCH_TRIB | 3478 | 15.72 | 15.80 | 15.89 | 15.95 | 16.01 | 16.85 | DESIGN BLOCKAGE 2-2hr |
| BRANCH_TRIB 3572.00 | BRANCH_TRIB | 3572 | 13.57 | 13.59 | 13.61 | 13.66 | 13.70 | 14.80 | 100Y-DES2-2H |
| BRANCH_TRIB 3792.00 | BRANCH_TRIB | 3792 | 12.44 | 12.65 | 13.01 | 13.28 | 13.45 | 14.80 | 100Y-DES3-6H |
| BRANDY&WATER 2202.00 | BRANDY&WATER | 2202 | 21.94 | 22.20 | 22.62 | 22.99 | 23.17 | 24.15 | DESIGN BLOCKAGE 1-2hr |
| BRANDY&WATER 2268.00 | BRANDY&WATER | 2268 | 21.26 | 21.46 | 21.70 | 22.05 | 22.20 | 23.00 | DESIGN BLOCKAGE 1-2hr |
| BRANDY&WATER 2348.00 | BRANDY&WATER | 2348 | 20.01 | 20.15 | 20.32 | 20.51 | 20.65 | 21.37 | DESIGN BLOCKAGE 1-2hr |
| BRANDY&WATER 2474.00 | BRANDY&WATER | 2474 | 19.32 | 19.46 | 19.62 | 19.82 | 19.97 | 20.72 | DESIGN BLOCKAGE 1-2hr |
| BRANDY&WATER 2722.00 | BRANDY&WATER | 2722 | 17.26 | 17.31 | 17.39 | 17.46 | 17.51 | 17.86 | DESIGN BLOCKAGE 1-2hr |
| BRANDY&WATER_TRIB 2494.00 | BRANDY&WATER_TRIB | 2494 | 19.72 | 19.80 | 19.87 | 19.96 | 20.02 | 20.41 | DESIGN BLOCKAGE 1-6hr |
| BRANDY&WATER_TRIB 2558.00 | BRANDY&WATER_TRIB | 2558 | 18.30 | 18.33 | 18.36 | 18.41 | 18.44 | 18.62 | DESIGN BLOCKAGE 1-2hr |
| BRANDY&WATER_TRIB 2754.00 | BRANDY&WATER_TRIB | 2754 | 16.23 | 16.34 | 16.47 | 16.65 | 16.77 | 17.52 | DESIGN BLOCKAGE 1-2hr |
| BYARONG 1446.00 | BYARONG | 1446 | 42.05 | 42.13 | 42.24 | 42.38 | 42.48 | 42.82 | DESIGN BLOCKAGE 1-2hr |
| BYARONG 1610.00 | BYARONG | 1610 | 38.82 | 39.01 | 39.25 | 39.53 | 39.72 | 40.47 | DESIGN BLOCKAGE 1-2hr |
| BYARONG 1822.00 | BYARONG | 1822 | 37.10 | 37.25 | 37.44 | 37.66 | 37.84 | 38.61 | DESIGN BLOCKAGE 1-2hr |
| BYARONG 1934.00 | BYARONG | 1934 | 35.35 | 35.53 | 35.77 | 35.97 | 36.09 | 36.73 | DESIGN BLOCKAGE 2-2hr |
| BYARONG 1998.00 | BYARONG | 1998 | 34.51 | 34.74 | 35.27 | 35.42 | 35.51 | 36.02 | DESIGN BLOCKAGE 2-2hr |
| BYARONG 2028.00 | BYARONG | 2028 | 34.46 | 34.67 | 34.83 | 35.00 | 35.14 | 35.60 | DESIGN BLOCKAGE 1-2hr |
| BYARONG 2118.00 | BYARONG | 2118 | 31.77 | 32.57 | 32.73 | 32.94 | 33.06 | 33.77 | DESIGN BLOCKAGE 2-1hr |
| BYARONG 2162.00 | BYARONG | 2162 | 31.61 | 31.99 | 32.29 | 32.60 | 32.67 | 33.48 | DESIGN BLOCKAGE 1-1hr |

APPENDIX F SUMMARY OF HYDRAULIC MODEL RESULTS

| MIKE11 | Creek Name | Chainage | Peak Water Level (mAHD) | | | | | | Critical 100 Year ARI Run |
|------------------|------------|----------|-------------------------|-------------|-------------|-------------|--------------|-------|---------------------------|
| | | | 5 Year ARI | 10 Year ARI | 20 Year ARI | 50 Year ARI | 100 Year ARI | PMF | |
| BYARONG 2266.00 | BYARONG | 2266 | 31.26 | 31.62 | 31.81 | 32.01 | 32.21 | 33.11 | DESIGN BLOCKAGE 1-2hr |
| BYARONG 2362.00 | BYARONG | 2362 | 29.94 | 30.15 | 30.34 | 30.57 | 30.74 | 31.65 | DESIGN BLOCKAGE 1-2hr |
| BYARONG 2464.00 | BYARONG | 2464 | 28.31 | 28.51 | 28.71 | 28.94 | 29.08 | 29.77 | DESIGN BLOCKAGE 1-2hr |
| BYARONG 2538.00 | BYARONG | 2538 | 27.71 | 27.93 | 28.23 | 28.54 | 28.72 | 29.37 | DESIGN BLOCKAGE 2-2hr |
| BYARONG 2606.00 | BYARONG | 2606 | 26.93 | 27.15 | 27.51 | 27.84 | 28.01 | 28.63 | DESIGN BLOCKAGE 2-2hr |
| BYARONG 2850.00 | BYARONG | 2850 | 23.57 | 23.67 | 23.75 | 23.86 | 23.92 | 24.65 | DESIGN BLOCKAGE 1-1hr |
| BYARONG 3070.00 | BYARONG | 3070 | 21.98 | 22.29 | 22.69 | 22.89 | 22.98 | 23.44 | DESIGN BLOCKAGE 2-2hr |
| BYARONG 3240.00 | BYARONG | 3240 | 21.38 | 21.75 | 22.25 | 22.43 | 22.53 | 23.13 | DESIGN BLOCKAGE 2-2hr |
| BYARONG 3272.00 | BYARONG | 3272 | 19.72 | 19.85 | 19.99 | 20.22 | 20.36 | 20.71 | DESIGN BLOCKAGE 2-2hr |
| BYARONG 3374.00 | BYARONG | 3374 | 19.49 | 19.66 | 19.94 | 20.22 | 20.41 | 21.19 | DESIGN BLOCKAGE 2-2hr |
| BYARONG 3524.00 | BYARONG | 3524 | 19.31 | 19.53 | 19.87 | 20.16 | 20.37 | 21.16 | DESIGN BLOCKAGE 2-2hr |
| BYARONG 3534.00 | BYARONG | 3534 | 19.16 | 19.34 | 19.54 | 19.77 | 19.94 | 20.63 | DESIGN BLOCKAGE 1-2hr |
| BYARONG 3572.00 | BYARONG | 3572 | 19.14 | 19.32 | 19.52 | 19.75 | 19.92 | 20.63 | DESIGN BLOCKAGE 1-2hr |
| BYARONG 3832.00 | BYARONG | 3832 | 17.72 | 17.82 | 17.93 | 18.05 | 18.14 | 18.72 | DESIGN BLOCKAGE 3-2hr |
| BYARONG 4004.00 | BYARONG | 4004 | 16.48 | 16.65 | 17.09 | 17.24 | 17.36 | 18.07 | DESIGN BLOCKAGE 3-2hr |
| BYARONG 4160.00 | BYARONG | 4160 | 15.85 | 16.06 | 16.90 | 17.03 | 17.11 | 17.61 | 100Y-DES3-2H |
| BYARONG 4178.00 | BYARONG | 4178 | 15.69 | 15.86 | 16.05 | 16.25 | 16.41 | 16.99 | 100Y-DES1-2H |
| BYARONG 4234.00 | BYARONG | 4234 | 15.35 | 15.49 | 15.59 | 15.71 | 15.79 | 16.16 | 100Y-DES4-2H |
| BYARONG 4364.00 | BYARONG | 4364 | 13.96 | 14.04 | 14.10 | 14.17 | 14.22 | 14.60 | 100Y-DES4-2H |
| BYARONG 4528.00 | BYARONG | 4528 | 12.47 | 12.57 | 12.95 | 13.10 | 13.19 | 14.18 | 100Y-DES4-2H |
| BYARONG 4766.00 | BYARONG | 4766 | 11.04 | 11.30 | 12.82 | 13.00 | 13.10 | 14.14 | 100Y-DES4-2H |
| BYARONG 4878.00 | BYARONG | 4878 | 10.59 | 10.93 | 12.82 | 13.00 | 13.10 | 14.14 | 100Y-DES4-2H |
| BYARONG 4974.00 | BYARONG | 4974 | 9.62 | 9.93 | 12.80 | 12.97 | 13.07 | 14.09 | 100Y-DES4-2H |
| BYARONG 5046.00 | BYARONG | 5046 | 8.78 | 9.09 | 11.80 | 12.02 | 12.18 | 13.31 | 100Y-DES2-6H |
| BYARONG 5112.00 | BYARONG | 5112 | 8.59 | 8.99 | 11.80 | 12.02 | 12.18 | 13.31 | 100Y-DES2-6H |
| BYARONG 5214.00 | BYARONG | 5214 | 8.62 | 8.99 | 11.80 | 12.02 | 12.18 | 13.28 | 100Y-DES2-6H |
| BYARONG 5398.00 | BYARONG | 5398 | 7.60 | 8.43 | 11.77 | 11.98 | 12.12 | 13.11 | 100Y-DES2-6H |
| BYARONG 5510.00 | BYARONG | 5510 | 7.60 | 9.02 | 11.77 | 11.98 | 12.13 | 13.13 | 100Y-DES2-6H |
| BYARONG 5752.00 | BYARONG | 5752 | 7.45 | 7.75 | 8.32 | 8.78 | 9.02 | 10.78 | 100Y-DES2-6H |
| CHARCOAL 2086.00 | CHARCOAL | 2086 | 60.34 | 60.40 | 60.47 | 60.55 | 60.60 | 60.76 | DESIGN BLOCKAGE 2-2hr |
| CHARCOAL 2192.00 | CHARCOAL | 2192 | 56.56 | 56.60 | 56.66 | 56.72 | 56.77 | 56.99 | DESIGN BLOCKAGE 1-2hr |
| CHARCOAL 2248.00 | CHARCOAL | 2248 | 53.92 | 53.99 | 54.07 | 54.15 | 54.21 | 54.48 | DESIGN BLOCKAGE 2-2hr |
| CHARCOAL 2348.00 | CHARCOAL | 2348 | 48.87 | 49.01 | 49.19 | 49.38 | 49.52 | 50.02 | DESIGN BLOCKAGE 1-2hr |
| CHARCOAL 2456.00 | CHARCOAL | 2456 | 46.50 | 46.60 | 46.91 | 47.01 | 47.09 | 47.42 | DESIGN BLOCKAGE 2-2hr |
| CHARCOAL 2534.00 | CHARCOAL | 2534 | 43.63 | 43.84 | 44.08 | 44.44 | 44.54 | 44.90 | DESIGN BLOCKAGE 1-2hr |
| CHARCOAL 2586.00 | CHARCOAL | 2586 | 40.90 | 41.05 | 41.17 | 41.31 | 41.46 | 41.79 | DESIGN BLOCKAGE 2-2hr |
| CHARCOAL 2648.00 | CHARCOAL | 2648 | 39.88 | 40.08 | 40.49 | 40.58 | 40.64 | 41.00 | DESIGN BLOCKAGE 2-2hr |
| CHARCOAL 2742.00 | CHARCOAL | 2742 | 38.45 | 38.59 | 38.87 | 38.97 | 39.04 | 39.35 | DESIGN BLOCKAGE 2-2hr |
| CHARCOAL 2772.00 | CHARCOAL | 2772 | 38.40 | 38.54 | 38.83 | 38.92 | 38.99 | 39.28 | DESIGN BLOCKAGE 2-2hr |
| CHARCOAL 2842.00 | CHARCOAL | 2842 | 37.11 | 37.20 | 37.35 | 37.51 | 37.61 | 38.00 | DESIGN BLOCKAGE 1-2hr |
| CHARCOAL 2970.00 | CHARCOAL | 2970 | 35.48 | 35.58 | 35.78 | 35.94 | 36.07 | 36.55 | DESIGN BLOCKAGE 2-2hr |
| CHARCOAL 3116.00 | CHARCOAL | 3116 | 32.99 | 33.11 | 33.23 | 33.37 | 33.49 | 33.99 | DESIGN BLOCKAGE 2-2hr |
| CHARCOAL 3232.00 | CHARCOAL | 3232 | 30.92 | 31.31 | 32.08 | 32.16 | 32.22 | 32.50 | DESIGN BLOCKAGE 2-2hr |

APPENDIX F SUMMARY OF HYDRAULIC MODEL RESULTS

| MIKE11 | Creek Name | Chainage | Peak Water Level (mAHD) | | | | | | Critical 100 Year ARI Run |
|---------------------------|-------------------|----------|-------------------------|-------------|-------------|-------------|--------------|-------|---------------------------|
| | | | 5 Year ARI | 10 Year ARI | 20 Year ARI | 50 Year ARI | 100 Year ARI | PMF | |
| CHARCOAL 3262.00 | CHARCOAL | 3262 | 29.70 | 29.86 | 30.19 | 30.38 | 30.52 | 31.30 | DESIGN BLOCKAGE 2-2hr |
| CHARCOAL 3412.00 | CHARCOAL | 3412 | 27.72 | 27.86 | 28.13 | 28.40 | 28.62 | 29.90 | DESIGN BLOCKAGE 2-2hr |
| CHARCOAL 3608.00 | CHARCOAL | 3608 | 26.60 | 26.81 | 27.50 | 27.86 | 28.14 | 29.55 | DESIGN BLOCKAGE 2-2hr |
| CHARCOAL 3630.00 | CHARCOAL | 3630 | 25.73 | 25.91 | 26.22 | 26.39 | 26.51 | 27.13 | DESIGN BLOCKAGE 2-2hr |
| CHARCOAL 3720.00 | CHARCOAL | 3720 | 25.48 | 25.62 | 25.98 | 26.11 | 26.19 | 26.60 | DESIGN BLOCKAGE 2-2hr |
| CHARCOAL 3752.00 | CHARCOAL | 3752 | 24.07 | 24.23 | 24.32 | 24.46 | 24.56 | 25.20 | DESIGN BLOCKAGE 8-2hr |
| CHARCOAL 3918.00 | CHARCOAL | 3918 | 21.09 | 21.30 | 21.48 | 21.73 | 21.87 | 22.75 | DESIGN BLOCKAGE 3-2hr |
| CHARCOAL 4094.00 | CHARCOAL | 4094 | 20.10 | 20.35 | 20.64 | 20.95 | 21.18 | 22.42 | DESIGN BLOCKAGE 1-2hr |
| CHARCOAL 4230.00 | CHARCOAL | 4230 | 19.03 | 19.18 | 19.39 | 19.65 | 19.78 | 20.59 | DESIGN BLOCKAGE 1-2hr |
| CHARCOAL 4536.00 | CHARCOAL | 4536 | 16.41 | 16.56 | 16.98 | 17.12 | 17.24 | 17.98 | DESIGN BLOCKAGE 2-2hr |
| CHARCOAL 4638.00 | CHARCOAL | 4638 | 15.22 | 15.66 | 16.73 | 16.84 | 16.93 | 17.58 | DESIGN BLOCKAGE 2-2hr |
| CHARCOAL 4648.00 | CHARCOAL | 4648 | 14.31 | 14.89 | 16.70 | 16.79 | 16.86 | 17.37 | DESIGN BLOCKAGE 3-2hr |
| CHARCOAL 4776.00 | CHARCOAL | 4776 | 14.48 | 15.04 | 16.71 | 16.80 | 16.88 | 17.46 | DESIGN BLOCKAGE 3-2hr |
| CHARCOAL 4814.00 | CHARCOAL | 4814 | 14.18 | 14.51 | 15.79 | 16.12 | 16.32 | 17.30 | DESIGN BLOCKAGE 2-6hr |
| CHARCOAL 4862.00 | CHARCOAL | 4862 | 14.22 | 14.55 | 15.83 | 15.97 | 16.12 | 17.40 | DESIGN BLOCKAGE 2-2hr |
| CHARCOAL 4890.00 | CHARCOAL | 4890 | 14.19 | 14.51 | 15.04 | 15.35 | 15.59 | 17.02 | DESIGN BLOCKAGE 1-2hr |
| CHARCOAL 4976.00 | CHARCOAL | 4976 | 14.18 | 14.50 | 14.87 | 15.15 | 15.38 | 16.48 | DESIGN BLOCKAGE 5-2hr |
| CHARCOAL 5178.00 | CHARCOAL | 5178 | 13.37 | 13.80 | 14.41 | 14.76 | 14.99 | 15.75 | DESIGN BLOCKAGE 5-2hr |
| CHARCOAL 5228.00 | CHARCOAL | 5228 | 13.24 | 13.64 | 13.96 | 14.40 | 14.67 | 15.52 | DESIGN BLOCKAGE 4-2hr |
| CHARCOAL 5618.00 | CHARCOAL | 5618 | 10.10 | 10.22 | 10.49 | 10.75 | 10.92 | 11.43 | DESIGN BLOCKAGE 6-2hr |
| CHARCOAL_MAJ_TRIB 3036.00 | CHARCOAL_MAJ_TRIB | 3036 | 37.01 | 37.43 | 38.40 | 38.54 | 38.65 | 39.16 | DESIGN BLOCKAGE 2-2hr |
| CHARCOAL_MAJ_TRIB 3094.00 | CHARCOAL_MAJ_TRIB | 3094 | 36.98 | 37.41 | 38.41 | 38.54 | 38.65 | 39.16 | DESIGN BLOCKAGE 2-2hr |
| CHARCOAL_MAJ_TRIB 3126.00 | CHARCOAL_MAJ_TRIB | 3126 | 35.76 | 36.03 | 36.31 | 36.64 | 36.85 | 37.53 | DESIGN BLOCKAGE 2-2hr |
| CHARCOAL_MAJ_TRIB 3256.00 | CHARCOAL_MAJ_TRIB | 3256 | 33.85 | 34.06 | 34.21 | 34.38 | 34.51 | 35.16 | DESIGN BLOCKAGE 1-2hr |
| CHARCOAL_MAJ_TRIB 3414.00 | CHARCOAL_MAJ_TRIB | 3414 | 30.42 | 30.50 | 30.75 | 30.84 | 30.90 | 31.41 | DESIGN BLOCKAGE 2-2hr |
| CHARCOAL_MAJ_TRIB 3544.00 | CHARCOAL_MAJ_TRIB | 3544 | 27.90 | 28.03 | 28.26 | 28.48 | 28.65 | 29.44 | DESIGN BLOCKAGE 1-2hr |
| CHARCOAL_MAJ_TRIB 3732.00 | CHARCOAL_MAJ_TRIB | 3732 | 24.61 | 24.81 | 25.24 | 25.38 | 25.47 | 26.00 | DESIGN BLOCKAGE 2-2hr |
| CHARCOAL_MAJ_TRIB 3764.00 | CHARCOAL_MAJ_TRIB | 3764 | 24.44 | 24.57 | 24.65 | 24.80 | 24.88 | 25.29 | DESIGN BLOCKAGE 8-2hr |
| CHARCOAL_MAJ_TRIB 3944.00 | CHARCOAL_MAJ_TRIB | 3944 | 21.34 | 21.53 | 21.72 | 21.85 | 21.96 | 22.75 | DESIGN BLOCKAGE 2-2hr |
| CHARCOAL_MIN_TRIB 3052.00 | CHARCOAL_MIN_TRIB | 3052 | 39.56 | 39.58 | 39.61 | 39.65 | 39.67 | 39.79 | DESIGN BLOCKAGE 1-2hr |
| CHARCOAL_MIN_TRIB 3232.00 | CHARCOAL_MIN_TRIB | 3232 | 32.47 | 32.47 | 32.52 | 32.52 | 32.53 | 32.56 | DESIGN BLOCKAGE 2-0.5hr |
| CLEVERDON 4428.00 | CLEVERDON | 4428 | 13.61 | 13.61 | 13.65 | 13.70 | 13.74 | 14.03 | 100Y-DES2-2H |
| CLEVERDON 4520.00 | CLEVERDON | 4520 | 12.40 | 12.48 | 12.79 | 12.91 | 13.02 | 13.52 | 100Y-DES2-2H |
| CLEVERDON 4578.00 | CLEVERDON | 4578 | 11.87 | 11.97 | 12.32 | 12.47 | 12.57 | 13.35 | 100Y-DES2-2H |
| CLEVERDON 4648.00 | CLEVERDON | 4648 | 11.26 | 11.38 | 11.81 | 12.03 | 12.19 | 13.32 | 100Y-DES2-6H |
| CLEVERDON_DRAIN 4052.00 | CLEVERDON_DRAIN | 4052 | 15.07 | 15.10 | 15.14 | 15.19 | 15.23 | 15.38 | DESIGN BLOCKAGE 1-2hr |
| CLEVERDON_DRAIN 4100.00 | CLEVERDON_DRAIN | 4100 | 14.41 | 14.43 | 14.46 | 14.48 | 14.50 | 14.57 | DESIGN BLOCKAGE 2-2hr |
| CLEVERDON_DRAIN 4140.00 | CLEVERDON_DRAIN | 4140 | 13.99 | 14.04 | 14.18 | 14.22 | 14.26 | 14.45 | DESIGN BLOCKAGE 2-2hr |
| CLEVERDON_DRAIN 4212.00 | CLEVERDON_DRAIN | 4212 | 13.93 | 13.99 | 14.14 | 14.19 | 14.23 | 14.42 | 100Y-DES2-2H |
| CLEVERDON_DRAIN 4266.00 | CLEVERDON_DRAIN | 4266 | 12.58 | 12.71 | 13.02 | 13.17 | 13.30 | 13.86 | 100Y-DES3-2H |
| CLEVERDON_DRAIN 4308.00 | CLEVERDON_DRAIN | 4308 | 12.53 | 12.64 | 12.88 | 12.97 | 13.07 | 13.55 | 100Y-DES2-2H |
| CLEVERDON_DRAIN 4360.00 | CLEVERDON_DRAIN | 4360 | 12.44 | 12.52 | 12.69 | 12.74 | 12.79 | 13.36 | 100Y-DES2-2H |
| CLEVERDON_DRAIN 4426.00 | CLEVERDON_DRAIN | 4426 | 11.43 | 11.49 | 11.83 | 12.04 | 12.20 | 13.31 | 100Y-DES2-6H |

APPENDIX F SUMMARY OF HYDRAULIC MODEL RESULTS

| MIKE11 | Creek Name | Chainage | Peak Water Level (mAHD) | | | | | | Critical 100 Year ARI Run |
|-----------------|-----------------|----------|-------------------------|-------------|-------------|-------------|--------------|-------|---------------------------|
| | | | 5 Year ARI | 10 Year ARI | 20 Year ARI | 50 Year ARI | 100 Year ARI | PMF | |
| CLEVERDON_DRAIN | CLEVERDON_DRAIN | 4506 | 11.01 | 11.04 | 11.82 | 12.04 | 12.19 | 13.32 | 100Y-DES2-6H |
| CLEVERDON_DRAIN | CLEVERDON_DRAIN | 4566 | 10.88 | 10.96 | 11.82 | 12.04 | 12.19 | 13.32 | 100Y-DES2-6H |
| CLEVERDON_DRAIN | CLEVERDON_DRAIN | 4640 | 10.50 | 10.91 | 11.84 | 12.06 | 12.21 | 13.34 | 100Y-DES2-6H |
| CLEVERDON_DRAIN | CLEVERDON_DRAIN | 4796 | 10.34 | 10.90 | 11.84 | 12.06 | 12.22 | 13.35 | 100Y-DES2-6H |
| CLEVERDON_DRAIN | CLEVERDON_DRAIN | 4810 | 10.33 | 10.89 | 11.85 | 12.07 | 12.23 | 13.36 | 100Y-DES2-6H |
| CORDOHTS | CORDOHTS | 2328 | 20.36 | 20.58 | 21.61 | 21.66 | 21.72 | 22.20 | DESIGN BLOCKAGE 2-2hr |
| CORDOHTS | CORDOHTS | 2388 | 19.77 | 20.32 | 21.60 | 21.64 | 21.70 | 22.16 | DESIGN BLOCKAGE 2-2hr |
| CORDOHTS | CORDOHTS | 2424 | 19.61 | 20.04 | 21.58 | 21.61 | 21.64 | 21.90 | DESIGN BLOCKAGE 2-2hr |
| CORDOHTS | CORDOHTS | 2462 | 19.60 | 20.04 | 21.58 | 21.61 | 21.64 | 21.89 | DESIGN BLOCKAGE 2-2hr |
| CORDOHTS | CORDOHTS | 2508 | 19.44 | 19.79 | 21.57 | 21.60 | 21.63 | 21.86 | DESIGN BLOCKAGE 2-2hr |
| CORDOHTS | CORDOHTS | 2558 | 19.37 | 19.73 | 21.57 | 21.60 | 21.63 | 21.86 | DESIGN BLOCKAGE 2-2hr |
| CORDOHTS | CORDOHTS | 2612 | 17.35 | 17.43 | 17.99 | 18.07 | 18.13 | 18.69 | DESIGN BLOCKAGE 2-2hr |
| CORDOHTS | CORDOHTS | 2676 | 16.66 | 16.93 | 17.96 | 18.02 | 18.06 | 18.38 | DESIGN BLOCKAGE 2-2hr |
| CORDOHTS | CORDOHTS | 2718 | 15.70 | 15.88 | 17.56 | 17.65 | 17.69 | 18.32 | DESIGN BLOCKAGE 4-2hr |
| CORDOHTS | CORDOHTS | 2934 | 15.62 | 15.79 | 17.54 | 17.63 | 17.67 | 18.27 | DESIGN BLOCKAGE 4-2hr |
| CORDOHTS | CORDOHTS | 2988 | 15.58 | 15.73 | 15.89 | 16.05 | 16.17 | 17.10 | DESIGN BLOCKAGE 1-2hr |
| CORDOOLAND | CORDOOLAND | 2506 | 21.15 | 21.15 | 21.56 | 21.59 | 21.62 | 21.85 | DESIGN BLOCKAGE 2-2hr |
| CORDOOLAND | CORDOOLAND | 2566 | 18.25 | 18.25 | 18.61 | 18.74 | 18.83 | 19.05 | DESIGN BLOCKAGE 2-2hr |
| CORONATA | CORONATA | 1998 | 34.80 | 34.88 | 35.26 | 35.41 | 35.51 | 36.01 | DESIGN BLOCKAGE 2-2hr |
| CORONATA | CORONATA | 2028 | 34.58 | 34.67 | 34.88 | 35.02 | 35.15 | 35.61 | DESIGN BLOCKAGE 2-2hr |
| CORONATA | CORONATA | 2118 | 33.46 | 33.53 | 33.67 | 33.75 | 33.80 | 34.12 | DESIGN BLOCKAGE 2-2hr |
| CORONATA | CORONATA | 2154 | 32.25 | 32.31 | 32.45 | 32.58 | 32.73 | 33.41 | DESIGN BLOCKAGE 2-2hr |
| CORONATA | CORONATA | 2208 | 31.37 | 31.52 | 31.76 | 32.02 | 32.21 | 33.10 | DESIGN BLOCKAGE 1-2hr |
| CORONATA | CORONATA | 2284 | 30.64 | 30.68 | 30.72 | 30.77 | 30.80 | 31.00 | DESIGN BLOCKAGE 1-2hr |
| CORONATA | CORONATA | 2328 | 29.43 | 29.50 | 29.60 | 29.74 | 29.82 | 30.36 | DESIGN BLOCKAGE 1-2hr |
| CORONATA | CORONATA | 2368 | 29.42 | 29.49 | 29.57 | 29.65 | 29.70 | 29.98 | DESIGN BLOCKAGE 2-2hr |
| CORONATA | CORONATA | 2444 | 27.66 | 27.66 | 27.66 | 27.67 | 27.68 | 27.96 | DESIGN BLOCKAGE 2-2hr |
| CUMMINS-ALBERT | CUMMINS-ALBERT | 6 | 19.27 | 19.33 | 19.44 | 19.54 | 19.56 | 19.77 | DESIGN BLOCKAGE 2-2hr |
| CUMMINS-ALBERT | CUMMINS-ALBERT | 66 | 18.13 | 18.14 | 18.22 | 18.22 | 18.25 | 18.36 | DESIGN BLOCKAGE 2-1hr |
| CUMMINS-ALBERT | CUMMINS-ALBERT | 120 | 17.28 | 17.31 | 17.41 | 17.41 | 17.42 | 17.46 | DESIGN BLOCKAGE 1-0.5hr |
| CUMMINS-ALBERT | CUMMINS-ALBERT | 180 | 16.39 | 16.44 | 16.55 | 16.59 | 16.63 | 16.78 | DESIGN BLOCKAGE 2-2hr |
| CUMMINS-ALBERT | CUMMINS-ALBERT | 270 | 15.25 | 15.29 | 15.32 | 15.34 | 15.35 | 15.47 | DESIGN BLOCKAGE 2-2hr |
| CUMMINS-ALBERT | CUMMINS-ALBERT | 310 | 14.80 | 14.85 | 14.99 | 15.05 | 15.09 | 15.25 | DESIGN BLOCKAGE 2-2hr |
| CUMMINS-ALBERT | CUMMINS-ALBERT | 350 | 13.96 | 13.97 | 14.06 | 14.08 | 14.11 | 14.30 | DESIGN BLOCKAGE 2-1hr |
| CUMMINS-ALBERT | CUMMINS-ALBERT | 376 | 13.89 | 13.92 | 14.03 | 14.08 | 14.13 | 14.30 | DESIGN BLOCKAGE 2-2hr |
| CUMMINS-ALBERT | CUMMINS-ALBERT | 490 | 12.97 | 12.99 | 13.04 | 13.07 | 13.08 | 13.15 | DESIGN BLOCKAGE 2-2hr |
| CUMMINS-ALBERT | CUMMINS-ALBERT | 580 | 11.96 | 11.99 | 12.17 | 12.20 | 12.21 | 12.31 | DESIGN BLOCKAGE 2-2hr |
| CUMMINS-ALBERT | CUMMINS-ALBERT | 670 | 11.13 | 11.15 | 11.21 | 11.25 | 11.28 | 11.38 | DESIGN BLOCKAGE 2-0.5hr |
| CUMMINS-ALBERT | CUMMINS-ALBERT | 830 | 9.97 | 10.00 | 10.05 | 10.08 | 10.12 | 10.26 | DESIGN BLOCKAGE 5-2hr |
| EUROKA | EUROKA | 2538 | 28.30 | 28.47 | 28.60 | 28.73 | 28.80 | 29.37 | DESIGN BLOCKAGE 1-2hr |
| EUROKA | EUROKA | 2606 | 27.34 | 27.54 | 27.70 | 27.84 | 28.01 | 28.63 | DESIGN BLOCKAGE 2-2hr |
| EUROKA | EUROKA | 2850 | 25.92 | 26.07 | 26.12 | 26.17 | 26.19 | 26.31 | DESIGN BLOCKAGE 2-2hr |
| FIGTREE | FIGTREE | 4178 | 15.40 | 15.40 | 15.43 | 15.53 | 15.55 | 15.88 | 100Y-DES2-2H |

APPENDIX F SUMMARY OF HYDRAULIC MODEL RESULTS

| | | Peak Water Level (mAHD) | | | | | | | |
|----------------------|--------------|-------------------------|------------|-------------|-------------|-------------|--------------|-------|---------------------------|
| MIKE11 | Creek Name | Chainage | 5 Year ARI | 10 Year ARI | 20 Year ARI | 50 Year ARI | 100 Year ARI | PMF | Critical 100 Year ARI Run |
| FIGTREE 4234.00 | FIGTREE | 4234 | 14.96 | 15.03 | 15.14 | 15.20 | 15.24 | 15.44 | 100Y-DES1-2H |
| FIGTREE 4366.00 | FIGTREE | 4366 | 13.37 | 13.42 | 13.42 | 13.46 | 13.50 | 14.19 | 100Y-DES4-2H |
| FIGTREE 4438.00 | FIGTREE | 4438 | 12.85 | 12.93 | 13.02 | 13.11 | 13.19 | 14.18 | 100Y-DES4-2H |
| FIGTREE 4622.00 | FIGTREE | 4622 | 12.47 | 12.57 | 12.83 | 13.01 | 13.11 | 14.15 | 100Y-DES4-2H |
| FIGTREE 4682.00 | FIGTREE | 4682 | 12.47 | 12.56 | 12.82 | 13.00 | 13.10 | 14.13 | 100Y-DES4-2H |
| FIGTREE 4764.00 | FIGTREE | 4764 | 12.47 | 12.56 | 12.82 | 13.00 | 13.09 | 14.12 | 100Y-DES4-2H |
| FIGTREE 4810.00 | FIGTREE | 4810 | 12.70 | 12.70 | 12.72 | 12.80 | 12.83 | 13.66 | 100Y-DES4-2H |
| FIGTREE 4874.00 | FIGTREE | 4874 | 11.23 | 11.23 | 12.17 | 12.28 | 12.35 | 13.44 | 100Y-DES4-2H |
| FIGTREE 4908.00 | FIGTREE | 4908 | 10.58 | 10.71 | 11.94 | 12.06 | 12.22 | 13.34 | 100Y-DES2-6H |
| FIGTREE 4984.00 | FIGTREE | 4984 | 10.56 | 10.70 | 11.80 | 12.02 | 12.18 | 13.31 | 100Y-DES2-6H |
| FIGTREE 5064.00 | FIGTREE | 5064 | 9.64 | 9.70 | 11.79 | 12.01 | 12.17 | 13.27 | 100Y-DES2-6H |
| FIGTREE 5154.00 | FIGTREE | 5154 | 9.52 | 9.56 | 11.79 | 12.01 | 12.17 | 13.27 | 100Y-DES2-6H |
| FIGTREE 5252.00 | FIGTREE | 5252 | 8.82 | 8.86 | 11.79 | 12.01 | 12.17 | 13.27 | 100Y-DES2-6H |
| FIGTREE 5344.00 | FIGTREE | 5344 | 8.43 | 8.53 | 11.79 | 12.01 | 12.16 | 13.25 | 100Y-DES2-6H |
| FIGTREE 5428.00 | FIGTREE | 5428 | 8.32 | 8.40 | 11.78 | 12.00 | 12.15 | 13.19 | 100Y-DES2-6H |
| FIVE_ISLAND 128.00 | FIVE_ISLAND | 128 | 7.03 | 7.37 | 7.86 | 8.02 | 8.10 | 9.82 | DESIGN BLOCKAGE 6-2hr |
| FIVE_ISLAND 192.00 | FIVE_ISLAND | 192 | 6.85 | 7.24 | 7.83 | 8.01 | 8.09 | 9.82 | DESIGN BLOCKAGE 6-2hr |
| FIVE_ISLAND 282.00 | FIVE_ISLAND | 282 | 6.97 | 7.00 | 7.14 | 7.23 | 7.37 | 9.71 | DESIGN BLOCKAGE 7-6hr |
| FIVE_ISLAND 292.00 | FIVE_ISLAND | 292 | 6.17 | 6.32 | 6.94 | 7.18 | 7.34 | 9.71 | DESIGN BLOCKAGE 7-6hr |
| FREEWAY 5078.00 | FREEWAY | 5078 | 22.35 | 22.41 | 22.51 | 22.59 | 22.63 | 22.95 | DESIGN BLOCKAGE 2-2hr |
| FREEWAY 5394.00 | FREEWAY | 5394 | 13.71 | 13.76 | 14.09 | 14.16 | 14.20 | 14.70 | DESIGN BLOCKAGE 2-6hr |
| FREEWAY 5456.00 | FREEWAY | 5456 | 12.93 | 13.04 | 14.07 | 14.12 | 14.16 | 14.55 | DESIGN BLOCKAGE 2-6hr |
| FREEWAY 5566.00 | FREEWAY | 5566 | 10.41 | 10.45 | 10.49 | 10.54 | 10.58 | 10.99 | DESIGN BLOCKAGE 1-2hr |
| FREEWAY 5734.00 | FREEWAY | 5734 | 9.42 | 9.47 | 9.57 | 9.61 | 9.64 | 9.93 | DESIGN BLOCKAGE 5-2hr |
| FREEWAY 5770.00 | FREEWAY | 5770 | 9.16 | 9.22 | 9.41 | 9.45 | 9.48 | 9.92 | DESIGN BLOCKAGE 5-2hr |
| FREEWAY 5850.00 | FREEWAY | 5850 | 8.77 | 8.80 | 8.89 | 9.04 | 9.12 | 9.91 | DESIGN BLOCKAGE 6-6hr |
| FREEWAY 5984.00 | FREEWAY | 5984 | 8.24 | 8.33 | 8.88 | 9.03 | 9.12 | 9.91 | DESIGN BLOCKAGE 6-6hr |
| FREEWAY 6146.00 | FREEWAY | 6146 | 7.71 | 7.74 | 8.88 | 9.03 | 9.12 | 9.91 | DESIGN BLOCKAGE 6-6hr |
| FREEWAY 6316.00 | FREEWAY | 6316 | 6.01 | 6.26 | 8.88 | 9.03 | 9.12 | 9.91 | DESIGN BLOCKAGE 6-6hr |
| FREEWAY 6352.00 | FREEWAY | 6352 | 5.41 | 5.68 | 8.88 | 9.03 | 9.12 | 9.91 | DESIGN BLOCKAGE 6-6hr |
| FREEWAY 6390.00 | FREEWAY | 6390 | 5.35 | 5.62 | 8.86 | 9.01 | 9.10 | 9.89 | DESIGN BLOCKAGE 7-6hr |
| FREEWAY 6492.00 | FREEWAY | 6492 | 5.32 | 5.60 | 8.86 | 9.01 | 9.10 | 9.89 | DESIGN BLOCKAGE 7-6hr |
| FREEWAY 6618.00 | FREEWAY | 6618 | 5.25 | 5.51 | 7.62 | 7.67 | 7.71 | 9.72 | DESIGN BLOCKAGE 4-6hr |
| FREEWAY 6684.00 | FREEWAY | 6684 | 4.08 | 4.35 | 7.61 | 7.65 | 7.68 | 9.72 | DESIGN BLOCKAGE 4-6hr |
| FREEWAY 6776.00 | FREEWAY | 6776 | 3.92 | 4.33 | 5.65 | 5.71 | 5.74 | 9.71 | DESIGN BLOCKAGE 3-6hr |
| FREEWAY 6848.00 | FREEWAY | 6848 | 3.88 | 4.30 | 5.65 | 5.71 | 5.74 | 9.73 | DESIGN BLOCKAGE 3-6hr |
| FREEWAY 6922.00 | FREEWAY | 6922 | 3.87 | 4.29 | 4.73 | 5.28 | 5.66 | 9.72 | DESIGN BLOCKAGE 2-6hr |
| FREEWAY_TRIB 5686.00 | FREEWAY_TRIB | 5686 | 11.31 | 11.34 | 11.52 | 11.59 | 11.65 | 12.10 | DESIGN BLOCKAGE 2-2hr |
| FREEWAY_TRIB 5786.00 | FREEWAY_TRIB | 5786 | 11.27 | 11.30 | 11.50 | 11.56 | 11.61 | 12.04 | DESIGN BLOCKAGE 2-2hr |
| FREEWAY_TRIB 5806.00 | FREEWAY_TRIB | 5806 | 10.57 | 10.72 | 11.46 | 11.54 | 11.60 | 12.03 | DESIGN BLOCKAGE 2-2hr |
| FREEWAY_TRIB 5866.00 | FREEWAY_TRIB | 5866 | 10.16 | 10.38 | 11.41 | 11.47 | 11.52 | 11.83 | DESIGN BLOCKAGE 2-2hr |
| FREEWAY_TRIB 5946.00 | FREEWAY_TRIB | 5946 | 8.37 | 8.45 | 8.88 | 9.03 | 9.12 | 9.92 | DESIGN BLOCKAGE 6-6hr |
| FREEWAY_TRIB 5986.00 | FREEWAY_TRIB | 5986 | 8.28 | 8.35 | 8.88 | 9.03 | 9.12 | 9.91 | DESIGN BLOCKAGE 6-6hr |

APPENDIX F SUMMARY OF HYDRAULIC MODEL RESULTS

| MIKE11 | Creek Name | Chainage | Peak Water Level (mAHD) | | | | | | Critical 100 Year ARI Run |
|----------------------|--------------|----------|-------------------------|-------------|-------------|-------------|--------------|-------|---------------------------|
| | | | 5 Year ARI | 10 Year ARI | 20 Year ARI | 50 Year ARI | 100 Year ARI | PMF | |
| GHOST 4258.00 | GHOST | 4258 | 12.82 | 12.94 | 13.07 | 13.13 | 13.21 | 14.21 | 100Y-DES4-2H |
| GHOST 4318.00 | GHOST | 4318 | 12.80 | 12.92 | 13.07 | 13.13 | 13.21 | 14.22 | 100Y-DES4-2H |
| GHOST 4358.00 | GHOST | 4358 | 12.79 | 12.91 | 13.05 | 13.13 | 13.21 | 14.22 | 100Y-DES4-2H |
| GHOST 4398.00 | GHOST | 4398 | 12.61 | 12.73 | 12.96 | 13.12 | 13.21 | 14.21 | 100Y-DES4-2H |
| GOVETT 3194.00 | GOVETT | 3194 | 15.44 | 15.61 | 15.78 | 15.95 | 16.07 | 17.00 | DESIGN BLOCKAGE 4-2hr |
| GOVETT 3474.00 | GOVETT | 3474 | 13.78 | 13.93 | 14.13 | 14.36 | 14.51 | 15.68 | 100Y-DES3-2H |
| GOVETT 3536.00 | GOVETT | 3536 | 13.45 | 13.59 | 13.80 | 14.03 | 14.17 | 15.39 | 100Y-DES3-2H |
| GOVETT 3608.00 | GOVETT | 3608 | 13.33 | 13.48 | 13.70 | 13.95 | 14.11 | 15.23 | 100Y-DES3-3H |
| GOVETT 3648.00 | GOVETT | 3648 | 12.70 | 12.79 | 13.08 | 13.33 | 13.50 | 14.84 | 100Y-DES3-6H |
| GOVETT 3688.00 | GOVETT | 3688 | 12.43 | 12.64 | 13.01 | 13.28 | 13.45 | 14.81 | 100Y-DES3-6H |
| GOVETT 3788.00 | GOVETT | 3788 | 12.30 | 12.56 | 12.97 | 13.24 | 13.41 | 14.77 | 100Y-DES3-6H |
| GRACE 6.00 | GRACE | 6 | 13.40 | 13.42 | 13.45 | 13.44 | 13.46 | 13.82 | DESIGN BLOCKAGE 3-2hr |
| GRACE 90.00 | GRACE | 90 | 12.89 | 12.90 | 12.92 | 12.93 | 12.95 | 13.06 | DESIGN BLOCKAGE 3-2hr |
| GRACE 180.00 | GRACE | 180 | 12.14 | 12.17 | 12.19 | 12.22 | 12.24 | 12.33 | DESIGN BLOCKAGE 2-2hr |
| GRACE 270.00 | GRACE | 270 | 11.31 | 11.33 | 11.35 | 11.36 | 11.38 | 11.47 | DESIGN BLOCKAGE 2-0.5hr |
| HARGRV 76.00 | HARGRV | 76 | 15.78 | 15.87 | 15.95 | 15.98 | 16.00 | 16.06 | DESIGN BLOCKAGE 2-2hr |
| HARRY_G_PK 3374.00 | HARRY_G_PK | 3374 | 19.50 | 19.67 | 19.93 | 20.22 | 20.42 | 21.19 | DESIGN BLOCKAGE 2-2hr |
| HARRY_G_PK 3454.00 | HARRY_G_PK | 3454 | 19.47 | 19.64 | 19.92 | 20.20 | 20.40 | 21.18 | DESIGN BLOCKAGE 2-2hr |
| HARRY_G_PK 3470.00 | HARRY_G_PK | 3470 | 19.47 | 19.64 | 19.92 | 20.20 | 20.40 | 21.17 | DESIGN BLOCKAGE 2-2hr |
| HARRY_G_PK 3480.00 | HARRY_G_PK | 3480 | 19.47 | 19.64 | 19.91 | 20.20 | 20.40 | 21.17 | DESIGN BLOCKAGE 2-2hr |
| HARRY_G_PK 3510.00 | HARRY_G_PK | 3510 | 20.03 | 20.03 | 20.03 | 20.20 | 20.39 | 21.12 | DESIGN BLOCKAGE 2-2hr |
| HIGHWAY 3396.00 | HIGHWAY | 3396 | 25.66 | 25.68 | 25.72 | 25.75 | 25.76 | 25.82 | DESIGN BLOCKAGE 2-2hr |
| HIGHWAY 3432.00 | HIGHWAY | 3432 | 25.65 | 25.67 | 25.71 | 25.73 | 25.74 | 25.80 | DESIGN BLOCKAGE 2-2hr |
| HIGHWAY 3668.00 | HIGHWAY | 3668 | 22.68 | 22.69 | 22.76 | 22.82 | 22.88 | 23.15 | DESIGN BLOCKAGE 2-2hr |
| HIGHWAY 3922.00 | HIGHWAY | 3922 | 20.19 | 20.28 | 20.41 | 20.53 | 20.60 | 20.95 | DESIGN BLOCKAGE 4-2hr |
| HIGHWAY 4124.00 | HIGHWAY | 4124 | 18.29 | 18.56 | 19.37 | 19.43 | 19.48 | 19.82 | DESIGN BLOCKAGE 2-2hr |
| HIGHWAY 4182.00 | HIGHWAY | 4182 | 17.58 | 17.70 | 17.86 | 18.02 | 18.15 | 19.11 | DESIGN BLOCKAGE 8-2hr |
| HIGHWAY 4548.00 | HIGHWAY | 4548 | 16.20 | 16.28 | 16.44 | 16.62 | 16.80 | 17.49 | DESIGN BLOCKAGE 3-2hr |
| HIGHWAY 4708.00 | HIGHWAY | 4708 | 14.76 | 14.92 | 15.14 | 15.40 | 15.59 | 16.84 | DESIGN BLOCKAGE 5-2hr |
| HIGHWAY 4762.00 | HIGHWAY | 4762 | 14.52 | 14.71 | 15.02 | 15.35 | 15.55 | 16.82 | DESIGN BLOCKAGE 5-2hr |
| HIGHWAY_TRIB 3512.00 | HIGHWAY_TRIB | 3512 | 28.81 | 28.84 | 28.87 | 28.89 | 28.91 | 29.00 | DESIGN BLOCKAGE 1-2hr |
| HIGHWAY_TRIB 3620.00 | HIGHWAY_TRIB | 3620 | 27.19 | 27.26 | 27.43 | 27.79 | 27.86 | 28.24 | DESIGN BLOCKAGE 1-2hr |
| HIGHWAY_TRIB 3720.00 | HIGHWAY_TRIB | 3720 | 24.61 | 24.70 | 24.73 | 24.74 | 24.75 | 24.87 | DESIGN BLOCKAGE 1-2hr |
| JENKINS 3176.00 | JENKINS | 3176 | 36.85 | 36.90 | 36.96 | 37.03 | 37.09 | 37.27 | DESIGN BLOCKAGE 1-2hr |
| JENKINS 3272.00 | JENKINS | 3272 | 32.95 | 33.03 | 33.20 | 33.36 | 33.47 | 33.67 | DESIGN BLOCKAGE 2-2hr |
| JENKINS 3400.00 | JENKINS | 3400 | 31.61 | 31.69 | 31.84 | 31.95 | 32.06 | 32.57 | DESIGN BLOCKAGE 2-2hr |
| JENKINS 3606.00 | JENKINS | 3606 | 27.07 | 27.10 | 27.11 | 27.13 | 27.14 | 27.22 | DESIGN BLOCKAGE 2-2hr |
| JENKINS 3626.00 | JENKINS | 3626 | 26.31 | 26.44 | 26.52 | 26.56 | 26.61 | 26.80 | DESIGN BLOCKAGE 2-2hr |
| JENKINS 3706.00 | JENKINS | 3706 | 24.93 | 25.03 | 25.13 | 25.25 | 25.31 | 25.65 | DESIGN BLOCKAGE 1-2hr |
| JENKINS 3856.00 | JENKINS | 3856 | 22.84 | 23.11 | 24.00 | 24.11 | 24.19 | 24.56 | DESIGN BLOCKAGE 2-2hr |
| JENKINS 4032.00 | JENKINS | 4032 | 22.11 | 22.60 | 23.91 | 24.01 | 24.06 | 24.34 | DESIGN BLOCKAGE 2-2hr |
| JENKINS 4094.00 | JENKINS | 4094 | 21.02 | 21.13 | 21.47 | 21.73 | 21.88 | 22.63 | DESIGN BLOCKAGE 2-2hr |
| JENKINS 4334.00 | JENKINS | 4334 | 18.05 | 18.13 | 18.55 | 18.76 | 18.87 | 19.64 | DESIGN BLOCKAGE 3-2hr |

APPENDIX F SUMMARY OF HYDRAULIC MODEL RESULTS

| | | Peak Water Level (mAHD) | | | | | | | |
|-----------------------|---------------|-------------------------|------------|-------------|-------------|-------------|--------------|-------|---------------------------|
| MIKE11 | Creek Name | Chainage | 5 Year ARI | 10 Year ARI | 20 Year ARI | 50 Year ARI | 100 Year ARI | PMF | Critical 100 Year ARI Run |
| JENKINS 4452.00 | JENKINS | 4452 | 16.17 | 16.24 | 18.16 | 18.28 | 18.35 | 18.75 | DESIGN BLOCKAGE 2-2hr |
| JENKINS 4594.00 | JENKINS | 4594 | 14.71 | 15.00 | 18.13 | 18.22 | 18.28 | 18.53 | DESIGN BLOCKAGE 2-2hr |
| JENKINS 4656.00 | JENKINS | 4656 | 14.63 | 14.94 | 16.71 | 16.83 | 16.89 | 17.14 | DESIGN BLOCKAGE 4-2hr |
| JENKINS 4688.00 | JENKINS | 4688 | 14.41 | 14.80 | 16.70 | 16.81 | 16.87 | 17.10 | DESIGN BLOCKAGE 4-2hr |
| JENKINS 4726.00 | JENKINS | 4726 | 14.28 | 14.57 | 14.92 | 15.22 | 15.43 | 16.54 | DESIGN BLOCKAGE 5-2hr |
| JENKINS 4866.00 | JENKINS | 4866 | 14.28 | 14.58 | 14.92 | 15.22 | 15.43 | 16.56 | DESIGN BLOCKAGE 5-2hr |
| LANGSON 3070.00 | LANGSON | 3070 | 22.80 | 22.81 | 22.82 | 22.84 | 22.89 | 23.17 | DESIGN BLOCKAGE 2-2hr |
| LANGSON 3240.00 | LANGSON | 3240 | 21.77 | 21.79 | 22.00 | 22.26 | 22.44 | 23.12 | DESIGN BLOCKAGE 2-2hr |
| LANGSON 3272.00 | LANGSON | 3272 | 21.36 | 21.38 | 21.65 | 21.96 | 22.15 | 22.64 | DESIGN BLOCKAGE 2-2hr |
| NUDJIA 76.00 | NUDJIA | 76 | 13.44 | 13.45 | 13.46 | 13.46 | 13.47 | 13.81 | DESIGN BLOCKAGE 3-1hr |
| NUDJIA 170.00 | NUDJIA | 170 | 12.97 | 12.97 | 12.97 | 12.97 | 12.97 | 13.56 | DESIGN BLOCKAGE 3-0.5hr |
| PRINCES 0.00 | PRINCES | 0 | 17.20 | 17.20 | 17.73 | 17.79 | 17.81 | 17.86 | DESIGN BLOCKAGE 2-1hr |
| PRINCES 70.00 | PRINCES | 70 | 16.33 | 16.33 | 16.84 | 16.96 | 17.04 | 17.60 | DESIGN BLOCKAGE 3-2hr |
| PRINCES 160.00 | PRINCES | 160 | 15.58 | 15.58 | 16.69 | 16.79 | 16.88 | 17.41 | DESIGN BLOCKAGE 3-2hr |
| PRINCES 320.00 | PRINCES | 320 | 16.60 | 16.60 | 16.69 | 16.79 | 16.86 | 16.98 | DESIGN BLOCKAGE 3-2hr |
| PRINCES 550.00 | PRINCES | 550 | 14.01 | 14.01 | 14.30 | 14.53 | 14.55 | 15.51 | DESIGN BLOCKAGE 3-2hr |
| RAILWAY 0.00 | RAILWAY | 0 | 6.62 | 6.62 | 7.74 | 7.91 | 8.03 | 9.84 | DESIGN BLOCKAGE 7-6hr |
| RAILWAY 68.00 | RAILWAY | 68 | 6.24 | 6.24 | 7.57 | 7.73 | 7.84 | 9.84 | DESIGN BLOCKAGE 7-6hr |
| RAILWAY 108.00 | RAILWAY | 108 | 6.02 | 6.07 | 7.06 | 7.25 | 7.36 | 9.81 | DESIGN BLOCKAGE 7-6hr |
| RAILWAY 148.00 | RAILWAY | 148 | 5.95 | 6.07 | 6.94 | 7.17 | 7.29 | 9.81 | DESIGN BLOCKAGE 7-6hr |
| RESOLUTION 5850.00 | RESOLUTION | 5850 | 8.60 | 8.69 | 8.88 | 9.03 | 9.12 | 9.91 | DESIGN BLOCKAGE 6-6hr |
| RESOLUTION 5984.00 | RESOLUTION | 5984 | 8.24 | 8.22 | 8.88 | 9.03 | 9.12 | 9.91 | DESIGN BLOCKAGE 6-6hr |
| RESOLUTION 6146.00 | RESOLUTION | 6146 | 6.96 | 7.12 | 8.88 | 9.03 | 9.12 | 9.91 | DESIGN BLOCKAGE 6-6hr |
| RESOLUTION 6316.00 | RESOLUTION | 6316 | 6.86 | 6.91 | 8.88 | 9.03 | 9.12 | 9.91 | DESIGN BLOCKAGE 6-6hr |
| RESOLUTION 6566.00 | RESOLUTION | 6566 | 8.67 | 8.67 | 8.88 | 9.03 | 9.12 | 9.90 | DESIGN BLOCKAGE 6-6hr |
| RESOLUTION 6706.00 | RESOLUTION | 6706 | 7.03 | 7.44 | 8.03 | 8.19 | 8.25 | 9.83 | DESIGN BLOCKAGE 6-6hr |
| RESOLUTION 6746.00 | RESOLUTION | 6746 | 7.80 | 7.81 | 8.02 | 8.18 | 8.26 | 9.83 | DESIGN BLOCKAGE 4-6hr |
| RESOLUTION 6828.00 | RESOLUTION | 6828 | 7.17 | 7.18 | 7.81 | 7.99 | 8.12 | 9.84 | DESIGN BLOCKAGE 7-6hr |
| RESOLUTION 6872.00 | RESOLUTION | 6872 | 6.71 | 6.72 | 7.81 | 7.99 | 8.12 | 9.84 | DESIGN BLOCKAGE 7-6hr |
| RICKARD 30.00 | RICKARD | 30 | 23.87 | 24.03 | 24.34 | 24.47 | 24.52 | 24.94 | DESIGN BLOCKAGE 2-2hr |
| RICKARD 180.00 | RICKARD | 180 | 21.71 | 21.80 | 22.11 | 22.18 | 22.36 | 22.46 | DESIGN BLOCKAGE 4-2hr |
| RICKARD 196.00 | RICKARD | 196 | 21.76 | 21.99 | 22.15 | 22.34 | 22.43 | 22.76 | DESIGN BLOCKAGE 4-3hr |
| RUNNING_BROOK 2628.00 | RUNNING_BROOK | 2628 | 41.45 | 41.48 | 41.51 | 41.56 | 41.59 | 41.75 | DESIGN BLOCKAGE 1-2hr |
| RUNNING_BROOK 2648.00 | RUNNING_BROOK | 2648 | 37.16 | 37.28 | 37.54 | 37.65 | 37.73 | 38.04 | DESIGN BLOCKAGE 2-2hr |
| RUNNING_BROOK 2688.00 | RUNNING_BROOK | 2688 | 34.29 | 34.48 | 35.24 | 35.34 | 35.42 | 35.79 | DESIGN BLOCKAGE 2-2hr |
| RUNNING_BROOK 2738.00 | RUNNING_BROOK | 2738 | 33.35 | 34.02 | 35.05 | 35.11 | 35.14 | 35.36 | DESIGN BLOCKAGE 2-2hr |
| RUNNING_BROOK 2778.00 | RUNNING_BROOK | 2778 | 30.57 | 30.66 | 31.01 | 31.23 | 31.46 | 32.26 | DESIGN BLOCKAGE 2-1hr |
| RUNNING_BROOK 2848.00 | RUNNING_BROOK | 2848 | 28.69 | 28.80 | 29.72 | 29.84 | 29.97 | 30.51 | DESIGN BLOCKAGE 2-1hr |
| RUNNING_BROOK 2898.00 | RUNNING_BROOK | 2898 | 27.24 | 27.32 | 28.14 | 28.32 | 28.41 | 29.49 | DESIGN BLOCKAGE 2-0.5hr |
| RUNNING_BROOK 3058.00 | RUNNING_BROOK | 3058 | 23.62 | 23.69 | 23.75 | 23.82 | 23.92 | 24.39 | DESIGN BLOCKAGE 1-2hr |
| RUNNING_BROOK 3198.00 | RUNNING_BROOK | 3198 | 21.26 | 21.32 | 21.65 | 21.72 | 21.77 | 22.04 | DESIGN BLOCKAGE 2-2hr |
| RUNNING_BROOK 3298.00 | RUNNING_BROOK | 3298 | 19.51 | 19.60 | 19.88 | 20.18 | 20.38 | 21.17 | DESIGN BLOCKAGE 2-2hr |
| RUNNING_BROOK 3378.00 | RUNNING_BROOK | 3378 | 19.31 | 19.53 | 19.87 | 20.17 | 20.37 | 21.16 | DESIGN BLOCKAGE 2-2hr |

APPENDIX F SUMMARY OF HYDRAULIC MODEL RESULTS

| MIKE11 | Creek Name | Chainage | Peak Water Level (mAHD) | | | | | | Critical 100 Year ARI Run |
|---------------------------|--------------------|----------|-------------------------|-------------|-------------|-------------|--------------|-------|---------------------------|
| | | | 5 Year ARI | 10 Year ARI | 20 Year ARI | 50 Year ARI | 100 Year ARI | PMF | |
| RUNNING_BROOK 3524.00 | RUNNING_BROOK | 3524 | 19.31 | 19.53 | 19.87 | 20.16 | 20.37 | 21.16 | DESIGN BLOCKAGE 2-2hr |
| SHERINGA 1914.00 | SHERINGA | 1914 | 21.10 | 21.19 | 21.70 | 21.87 | 21.98 | 22.71 | DESIGN BLOCKAGE 4-2hr |
| SHERINGA 1936.00 | SHERINGA | 1936 | 19.44 | 19.58 | 19.74 | 20.00 | 20.15 | 20.09 | DESIGN BLOCKAGE 1-2hr |
| SHERINGA 1956.00 | SHERINGA | 1956 | 19.44 | 19.58 | 19.77 | 19.99 | 20.13 | 21.15 | DESIGN BLOCKAGE 1-2hr |
| SPRINGHILL-N 8130.00 | SPRINGHILL-N | 8130 | 6.86 | 6.86 | 6.86 | 6.86 | 6.86 | 9.31 | DESIGN BLOCKAGE 1-0.5hr |
| SPRINGHILL-N 8160.00 | SPRINGHILL-N | 8160 | 5.07 | 5.07 | 5.07 | 5.07 | 5.07 | 9.31 | DESIGN BLOCKAGE 1-0.5hr |
| SPRINGHILL-N 8234.00 | SPRINGHILL-N | 8234 | 3.46 | 3.46 | 3.46 | 3.74 | 4.20 | 9.31 | DESIGN BLOCKAGE 2-6hr |
| SPRINGHILL-N 8274.00 | SPRINGHILL-N | 8274 | 3.46 | 3.46 | 3.46 | 3.72 | 4.20 | 9.31 | DESIGN BLOCKAGE 2-6hr |
| SPRINGHILL-N 8744.00 | SPRINGHILL-N | 8744 | 3.16 | 3.16 | 3.16 | 3.67 | 4.20 | 9.31 | DESIGN BLOCKAGE 2-6hr |
| SPRINGHILL-N 8760.00 | SPRINGHILL-N | 8760 | 3.16 | 3.16 | 3.16 | 3.67 | 4.20 | 9.31 | DESIGN BLOCKAGE 2-6hr |
| SPRINGHILL-S 8130.00 | SPRINGHILL-S | 8130 | 3.50 | 3.50 | 3.50 | 4.59 | 4.80 | 9.72 | DESIGN BLOCKAGE 1-6hr |
| SPRINGHILL-S 8160.00 | SPRINGHILL-S | 8160 | 4.29 | 4.29 | 4.29 | 4.59 | 4.80 | 9.33 | DESIGN BLOCKAGE 1-6hr |
| SPRINGHILL-S 8234.00 | SPRINGHILL-S | 8234 | 4.50 | 4.50 | 4.50 | 4.59 | 4.80 | 7.69 | DESIGN BLOCKAGE 1-6hr |
| SPRINGHILL-S 8274.00 | SPRINGHILL-S | 8274 | 4.50 | 4.50 | 4.50 | 4.50 | 4.56 | 9.39 | DESIGN BLOCKAGE 1-6hr |
| TRESNAN 5.00 | TRESNAN | 5 | 18.20 | 18.34 | 18.53 | 18.64 | 18.69 | 19.29 | DESIGN BLOCKAGE 2-2hr |
| TRESNAN 50.00 | TRESNAN | 50 | 17.85 | 17.87 | 17.92 | 17.93 | 17.94 | 18.00 | DESIGN BLOCKAGE 2-0.5hr |
| UNANDERRA_CULV 5370.00 | UNANDERRA_CULV | 5370 | 8.19 | 8.22 | 9.19 | 9.23 | 9.26 | 9.87 | DESIGN BLOCKAGE 3-2hr |
| UNANDERRA_CULV 5394.00 | UNANDERRA_CULV | 5394 | 8.01 | 8.05 | 9.19 | 9.23 | 9.26 | 9.87 | DESIGN BLOCKAGE 3-2hr |
| UNANDERRA_CULV 5414.00 | UNANDERRA_CULV | 5414 | 7.96 | 8.01 | 9.19 | 9.23 | 9.26 | 9.87 | DESIGN BLOCKAGE 3-2hr |
| UNANDERRA_DRAIN 4454.00 | UNANDERRA_DRAIN | 4454 | 17.73 | 17.73 | 17.73 | 17.73 | 17.73 | 17.75 | DESIGN BLOCKAGE 1-0.5hr |
| UNANDERRA_DRAIN 4500.00 | UNANDERRA_DRAIN | 4500 | 17.34 | 17.34 | 17.34 | 17.35 | 17.36 | 17.37 | DESIGN BLOCKAGE 1-1hr |
| UNANDERRA_DRAIN 4596.00 | UNANDERRA_DRAIN | 4596 | 14.71 | 14.72 | 14.73 | 14.75 | 14.77 | 14.83 | DESIGN BLOCKAGE 1-2hr |
| UNANDERRA_DRAIN 4744.00 | UNANDERRA_DRAIN | 4744 | 12.69 | 12.70 | 12.71 | 12.73 | 12.75 | 12.87 | DESIGN BLOCKAGE 1-2hr |
| UNANDERRA_DRAIN 4760.00 | UNANDERRA_DRAIN | 4760 | 12.55 | 12.55 | 12.56 | 12.56 | 12.57 | 12.63 | DESIGN BLOCKAGE 1-2hr |
| UNANDERRA_DRAIN 4832.00 | UNANDERRA_DRAIN | 4832 | 11.84 | 11.85 | 11.86 | 11.88 | 11.89 | 11.98 | DESIGN BLOCKAGE 1-2hr |
| UNANDERRA_DRAIN 4892.00 | UNANDERRA_DRAIN | 4892 | 11.30 | 11.32 | 11.34 | 11.36 | 11.37 | 11.49 | DESIGN BLOCKAGE 1-2hr |
| UNANDERRA_DRAIN 4908.00 | UNANDERRA_DRAIN | 4908 | 10.93 | 10.94 | 10.95 | 10.97 | 10.98 | 11.06 | DESIGN BLOCKAGE 3-2hr |
| UNANDERRA_DRAIN 4982.00 | UNANDERRA_DRAIN | 4982 | 10.07 | 10.09 | 10.11 | 10.13 | 10.15 | 10.29 | DESIGN BLOCKAGE 1-0.5hr |
| UNANDERRA_DRAIN 5096.00 | UNANDERRA_DRAIN | 5096 | 9.25 | 9.29 | 9.37 | 9.44 | 9.48 | 9.88 | DESIGN BLOCKAGE 2-2hr |
| UNANDERRA_DRAIN 5160.00 | UNANDERRA_DRAIN | 5160 | 9.02 | 9.08 | 9.23 | 9.28 | 9.32 | 9.88 | DESIGN BLOCKAGE 2-2hr |
| UNANDERRA_DRAIN 5192.00 | UNANDERRA_DRAIN | 5192 | 9.01 | 9.06 | 9.22 | 9.27 | 9.30 | 9.88 | DESIGN BLOCKAGE 2-2hr |
| UNANDERRA_DRAIN 5288.00 | UNANDERRA_DRAIN | 5288 | 8.99 | 9.04 | 9.20 | 9.24 | 9.26 | 9.87 | DESIGN BLOCKAGE 2-2hr |
| UNANDERRA_DRAIN 5326.00 | UNANDERRA_DRAIN | 5326 | 8.99 | 9.04 | 9.20 | 9.23 | 9.26 | 9.88 | DESIGN BLOCKAGE 2-2hr |
| UNANDERRA_DRAIN 5400.00 | UNANDERRA_DRAIN | 5400 | 8.98 | 9.03 | 9.18 | 9.21 | 9.24 | 9.87 | DESIGN BLOCKAGE 2-2hr |
| UNANDERRA_DRAIN 5454.00 | UNANDERRA_DRAIN | 5454 | 7.10 | 7.19 | 7.85 | 8.03 | 8.16 | 9.87 | DESIGN BLOCKAGE 7-6hr |
| UNANDERRA_DRAIN 5674.00 | UNANDERRA_DRAIN | 5674 | 6.32 | 6.39 | 7.84 | 8.02 | 8.15 | 9.87 | DESIGN BLOCKAGE 7-6hr |
| UNANDERRA_DRAIN 5974.00 | UNANDERRA_DRAIN | 5974 | 5.37 | 5.78 | 7.84 | 8.02 | 8.15 | 9.87 | DESIGN BLOCKAGE 7-6hr |
| UNANDERRA_DRAIN 6054.00 | UNANDERRA_DRAIN | 6054 | 5.35 | 5.74 | 7.83 | 8.02 | 8.14 | 9.87 | DESIGN BLOCKAGE 7-6hr |
| UNANDERRA_DRAIN 6254.00 | UNANDERRA_DRAIN | 6254 | 5.27 | 5.66 | 7.83 | 8.02 | 8.14 | 9.87 | DESIGN BLOCKAGE 7-6hr |
| UNANDERRA_DRAIN 6364.00 | UNANDERRA_DRAIN | 6364 | 5.25 | 5.61 | 6.05 | 6.55 | 6.87 | 9.96 | DESIGN BLOCKAGE 6-6hr |
| UNANDERRA-5I_UNDER 455.00 | UNANDERRA-5I_UNDER | 455 | 9.50 | 9.53 | 9.56 | 9.56 | 9.59 | 10.04 | DESIGN BLOCKAGE 4-2hr |
| UNANDERRA-N 90.00 | UNANDERRA-N | 90 | 12.02 | 12.02 | 12.33 | 12.34 | 12.51 | 13.20 | DESIGN BLOCKAGE 4-2hr |
| UNANDERRA-N 180.00 | UNANDERRA-N | 180 | 11.25 | 11.25 | 11.43 | 11.44 | 11.60 | 12.38 | DESIGN BLOCKAGE 4-2hr |

APPENDIX F SUMMARY OF HYDRAULIC MODEL RESULTS

| MIKE11 | Creek Name | Chainage | Peak Water Level (mAHD) | | | | | | Critical 100 Year ARI Run |
|--------------------|-------------|----------|-------------------------|-------------|-------------|-------------|--------------|-------|---------------------------|
| | | | 5 Year ARI | 10 Year ARI | 20 Year ARI | 50 Year ARI | 100 Year ARI | PMF | |
| UNANDERRA-N 270.00 | UNANDERRA-N | 270 | 10.83 | 10.84 | 10.96 | 10.97 | 11.06 | 11.49 | DESIGN BLOCKAGE 4-2hr |
| UNANDERRA-N 430.00 | UNANDERRA-N | 430 | 9.78 | 9.80 | 9.82 | 9.83 | 9.88 | 10.33 | DESIGN BLOCKAGE 4-2hr |
| UNANDERRA-N 480.00 | UNANDERRA-N | 480 | 9.41 | 9.46 | 9.52 | 9.54 | 9.61 | 10.06 | DESIGN BLOCKAGE 4-2hr |
| UNANDERRA-N 520.00 | UNANDERRA-N | 520 | 8.41 | 8.42 | 8.48 | 8.57 | 8.64 | 9.88 | DESIGN BLOCKAGE 4-2hr |
| UNANDERRA-N 620.00 | UNANDERRA-N | 620 | 7.79 | 7.85 | 7.91 | 8.02 | 8.15 | 9.87 | DESIGN BLOCKAGE 7-6hr |
| UNANDERRA-N 710.00 | UNANDERRA-N | 710 | 7.77 | 7.83 | 7.91 | 8.02 | 8.15 | 9.83 | DESIGN BLOCKAGE 7-6hr |
| UNANDERRA-N 740.00 | UNANDERRA-N | 740 | 7.26 | 7.30 | 7.83 | 8.02 | 8.14 | 9.83 | DESIGN BLOCKAGE 7-6hr |
| UNANDERRA-S 0.00 | UNANDERRA-S | 0 | 13.31 | 13.31 | 13.31 | 13.41 | 14.28 | 15.52 | DESIGN BLOCKAGE 4-2hr |
| UNANDERRA-S 120.00 | UNANDERRA-S | 120 | 14.15 | 14.15 | 14.15 | 14.15 | 14.39 | 15.50 | DESIGN BLOCKAGE 4-2hr |
| WALLA-BELLV 322.00 | WALLA-BELLV | 322 | 14.97 | 15.03 | 15.16 | 15.22 | 15.27 | 15.50 | DESIGN BLOCKAGE 2-2hr |
| WALLA-BELLV 360.00 | WALLA-BELLV | 360 | 14.93 | 15.06 | 15.26 | 15.35 | 15.42 | 15.73 | 100Y-DES2-2H |
| WALLA-BELLV 386.00 | WALLA-BELLV | 386 | 14.53 | 14.55 | 14.63 | 14.67 | 14.70 | 14.83 | 100Y-DES2-2H |
| WESTFIELD 4232.00 | WESTFIELD | 4232 | 14.59 | 14.59 | 14.61 | 14.69 | 14.73 | 15.08 | 100Y-DES2-2H |
| WESTFIELD 4264.00 | WESTFIELD | 4264 | 13.85 | 13.85 | 14.07 | 14.23 | 14.34 | 14.96 | 100Y-DES2-2H |
| WESTFIELD 4338.00 | WESTFIELD | 4338 | 13.68 | 13.68 | 13.82 | 13.90 | 13.95 | 14.26 | 100Y-DES2-2H |
| WESTFIELD 4428.00 | WESTFIELD | 4428 | 13.60 | 13.60 | 13.75 | 13.78 | 13.80 | 13.93 | 100Y-DES2-2H |
| WESTFIELD 4542.00 | WESTFIELD | 4542 | 13.01 | 13.01 | 13.04 | 13.06 | 13.07 | 13.44 | 100Y-DES2-2H |

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5 September 2008

Allans Creek Flood Study,
Allans Creek Floodplain Risk Management Study &
Allans Creek Floodplain Risk Management Plan

APPENDIX F
SUMMARY OF HYDRAULIC MODEL RESULTS

APPENDIX G - SUMMARY OF FLOW RESULTS AT BRIDGES

| BRANCH | LOCATION | PMF (m ³ /s) | | 100 year (m ³ /s) | | 50 year (m ³ /s) | | 20 year (m ³ /s) | | 10 year (m ³ /s) | 5 year (m ³ /s) |
|-----------------------------|---|----------------------------|--------|---------------------------------|--------|--------------------------------|--------|--------------------------------|--------|--------------------------------|-------------------------------|
| | | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Open |
| ALLANS | TOP OF REACH | 58 | 58 | 34 | 34 | 29 | 29 | 23 | 23 | 19 | 16 |
| ALLANS | PRINCES HIGHWAY | 10 | 4 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | 2 |
| ALLANS | FIVE ISLANDS ROAD | 180 | 164 | 213 | 118 | 199 | 107 | 153 | 92 | 156 | 70 |
| ALLANS | F6 (INCLUDING OVERFLOW THROUGH FIVE ISLANDS ROAD AND COAL RAIL) | 471 | 440 | 144 | 93 | 120 | 69 | 100 | 45 | 78 | 67 |
| ALLANS | SPRINGHILL ROAD | 1279 | 1132 | 545 | 431 | 476 | 362 | 385 | 273 | 334 | 261 |
| ALLANS | BHP BRIDGES | 1112 | 880 | 542 | 405 | 474 | 352 | 396 | 269 | 333 | 270 |
| ALLANS | OUTLET | 1111 | 888 | 547 | 407 | 478 | 354 | 395 | 270 | 336 | 273 |
| AMERICAN CREEK | CORDEAUX ROAD TOP OF REACH | 263 | 263 | 133 | 127 | 110 | 109 | 86 | 86 | 71 | 59 |
| AMERICAN CREEK | CORDEAUX ROAD NEAR WILLIAM JAMES DRIVE | 464 | 466 | 225 | 224 | 193 | 192 | 152 | 152 | 123 | 102 |
| AMERICAN CREEK | COAL CO RAIL UNDER CORDEAUX ROAD NEAR BOORIA BOLUEVARD | 601 | 599 | 286 | 285 | 248 | 246 | 196 | 194 | 158 | 129 |
| AMERICAN CREEK | COAL CO RAIL AND CORDEAUX ROAD NEAR BOORIA BVD | 603 | 603 | 336 | 284 | 263 | 246 | 197 | 194 | 158 | 130 |
| AMERICAN CREEK | TOP OF GOVETT CRESCENT | 960 | 961 | 413 | 410 | 357 | 353 | 281 | 279 | 222 | 182 |
| AMERICAN CREEK | FIGTREE HIGHSCHOOL FOOTBRIDGE | 969 | 951 | 711 | 368 | 370 | 311 | 311 | 238 | 190 | 155 |
| AMERICAN CREEK | PRINCES HIGHWAY | 965 | 964 | 712 | 367 | 370 | 310 | 310 | 236 | 188 | 155 |
| AMERICAN CREEK | F6 (INCLUDES BYARONG CREEK) | 1426 | 1295 | 1529 | 877 | 886 | 840 | 721 | 627 | 294 | 241 |
| AMERICAN CREEK | SOUTH COAST RAILWAY | 1179 | 1276 | 1034 | 470 | 451 | 402 | 357 | 320 | 259 | 209 |
| BRANCH CREEK | BRANCH AVENUE | 96 | 96 | 43 | 43 | 37 | 38 | 30 | 30 | 24 | 20 |
| BRANCH CREEK | O'BRIENS ROAD | 121 | 121 | 61 | 52 | 45 | 45 | 36 | 35 | 29 | 24 |
| BRANCH CREEK TRIBUTARY | FOY AVENUE | 11 | 17 | 4 | 9 | 2 | 8 | 1 | 7 | 1 | 1 |
| BRANCH CREEK TRIBUTARY | BAKER CRESCENT | 20 | 19 | 7 | 10 | 6 | 9 | 4 | 7 | 4 | 4 |
| BRANCH CREEK TRIBUTARY | JACARANDE AVENUE | 25 | 23 | 7 | 12 | 6 | 10 | 5 | 7 | 5 | 4 |
| BRANCH CREEK TRIBUTARY | O'BRIENS ROAD | 32 | 33 | 9 | 14 | 8 | 12 | 7 | 9 | 6 | 5 |
| BRANDY AND WATER CREEK | TOP OF REACH | 398 | 398 | 208 | 208 | 179 | 179 | 143 | 143 | 116 | 94 |
| BRANDY AND WATER CREEK TRIB | TOP OF REACH | 20 | 20 | 8 | 8 | 6 | 6 | 5 | 5 | 4 | 3 |
| BYARONG CREEK | TOP OF REACH | 342 | 342 | 196 | 196 | 169 | 169 | 133 | 133 | 106 | 87 |
| BYARONG CREEK | KOLOONA AVENUE | 387 | 379 | 214 | 210 | 184 | 178 | 144 | 144 | 117 | 93 |
| BYARONG CREEK | URALBA AVENUE | 409 | 411 | 218 | 218 | 179 | 185 | 142 | 140 | 120 | 96 |
| BYARONG CREEK | LINDSAY PARK PUBLIC SCHOOL FOOTBRIDGE | 433 | 436 | 215 | 215 | 179 | 180 | 142 | 138 | 116 | 97 |
| BYARONG CREEK | PRINCES HIGHWAY | 440 | 448 | 206 | 210 | 173 | 177 | 138 | 134 | 111 | 91 |
| BYARONG CREEK | THE AVENUE | 710 | 361 | 401 | 347 | 258 | 237 | 216 | 252 | 88 | 72 |
| BYARONG CREEK | F6 (INCLUDES AMERICAN CREEK FLOW) | 1426 | 1295 | 1529 | 877 | 886 | 840 | 721 | 627 | 294 | 241 |
| CHARCOAL | UPSTREAM OF SAN DAW WOOD ROAD | 46 | 46 | 27 | 27 | 24 | 24 | 18 | 18 | 15 | 12 |
| CHARCOAL | OAK ROAD | 61 | 61 | 36 | 36 | 30 | 30 | 24 | 24 | 19 | 15 |

APPENDIX G - SUMMARY OF FLOW RESULTS AT BRIDGES

| BRANCH | LOCATION | PMF (m ³ /s) | | 100 year (m ³ /s) | | 50 year (m ³ /s) | | 20 year (m ³ /s) | | 10 year (m ³ /s) | 5 year (m ³ /s) |
|---------------------|----------------------------|----------------------------|--------|---------------------------------|--------|--------------------------------|--------|--------------------------------|--------|--------------------------------|-------------------------------|
| | | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Open |
| CHARCOAL | WAPLES ROAD AT SUSAN PLACE | 74 | 74 | 43 | 43 | 37 | 37 | 27 | 29 | 22 | 17 |
| CHARCOAL | WAPLES ROAD | 86 | 86 | 48 | 48 | 41 | 42 | 30 | 33 | 23 | 19 |
| CHARCOAL | BLACKMAN PARADE | 103 | 95 | 52 | 49 | 45 | 43 | 35 | 34 | 28 | 22 |
| CHARCOAL | TALLEGALLA ST FOOTBRIDGE | 251 | 245 | 116 | 111 | 96 | 105 | 81 | 79 | 59 | 48 |
| CHARCOAL | PRINCES HIGHWAY | 360 | 307 | 124 | 112 | 92 | 96 | 71 | 74 | 58 | 47 |
| CHARCOAL | SOUTH COAST RAILWAY | 684 | 761 | 357 | 489 | 88 | 383 | 70 | 307 | 57 | 46 |
| CHARCOAL | BERKELEY ROAD | 357 | 333 | 155 | 152 | 131 | 127 | 106 | 99 | 86 | 71 |
| CHARCOAL MAJOR TRIB | COACHWOOD DRIVE | 123 | 123 | 63 | 64 | 54 | 54 | 42 | 42 | 34 | 27 |
| CHARCOAL MAJOR TRIB | BLACKMAN PARADE | 140 | 139 | 72 | 70 | 62 | 61 | 47 | 47 | 38 | 30 |
| COROADO HEIGHTS | ALUKEA ROAD | 69 | 69 | 27 | 30 | 22 | 25 | 18 | 19 | 15 | 12 |
| COROADO HEIGHTS | CENTRAL ROAD | 54 | 51 | 26 | 23 | 22 | 19 | 18 | 15 | 15 | 12 |
| COROADO HEIGHTS | COAL COMPANY RAILWAY | 56 | 49 | 22 | 17 | 20 | 14 | 17 | 11 | 15 | 12 |
| COROADO HEIGHTS | CORDEAUX ROAD | 59 | 52 | 23 | 18 | 21 | 15 | 18 | 11 | 15 | 12 |
| COROADO HEIGHTS | GIBBSON ROAD | 64 | 55 | 24 | 19 | 22 | 16 | 19 | 11 | 16 | 13 |
| FREEWAY BRANCH | TOP OF REACH | 27 | 27 | 13 | 13 | 11 | 11 | 9 | 9 | 8 | 7 |
| FREEWAY BRANCH | BERKELEY ROAD (SOUTH) | 30 | 32 | 9 | 9 | 8 | 7 | 6 | 5 | 5 | 5 |
| FREEWAY BRANCH | BERKELEY ROAD (NORTH) | 52 | 55 | 17 | 15 | 15 | 13 | 12 | 9 | 10 | 9 |
| FREEWAY BRANCH | F6 NORTHBOUND OFF RAMP | 49 | 1 | 33 | 1 | 30 | 1 | 23 | 1 | 16 | 12 |
| FREEWAY BRANCH | F6 FREEWAY | 51 | 1 | 33 | 1 | 30 | 1 | 23 | 1 | 16 | 12 |
| FREEWAY BRANCH | FIVE ISLANDS ROAD | 53 | 2 | 34 | 1 | 31 | 1 | 23 | 1 | 17 | 12 |
| HIGHWAY BRANCH | TOP OF REACH | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| HIGHWAY BRANCH | NOLAN STREET | 97 | 95 | 43 | 42 | 36 | 36 | 29 | 29 | 23 | 20 |
| HIGHWAY BRANCH TRIB | DOYLE AVENUE | 45 | 45 | 21 | 21 | 18 | 18 | 14 | 14 | 12 | 10 |
| JENKINS CREEK | TOP OF REACH | 52 | 52 | 33 | 33 | 28 | 28 | 23 | 23 | 19 | 16 |
| JENKINS CREEK | WAPLES ROAD | 70 | 70 | 34 | 37 | 29 | 32 | 22 | 25 | 19 | 17 |
| JENKINS CREEK | PRINCES HIGHWAY | 79 | 69 | 35 | 38 | 30 | 33 | 24 | 25 | 21 | 19 |
| JENKINS CREEK | SOUTH COAST RAILWAY | 70 | 9 | 33 | 6 | 29 | 5 | 23 | 4 | 21 | 19 |
| RUNNING BROOK | JACARANDA AVENUE | 17 | 17 | 11 | 11 | 10 | 10 | 8 | 8 | 7 | 6 |
| RUNNING BROOK | CYPRESS AVENUE | 22 | 22 | 12 | 13 | 10 | 12 | 8 | 9 | 6 | 6 |
| RUNNING BROOK | KOLOONA AVENUE | 28 | 28 | 15 | 15 | 12 | 13 | 9 | 11 | 8 | 7 |
| RUNNING BROOK | URALBA STREET | 44 | 44 | 20 | 23 | 17 | 20 | 14 | 16 | 12 | 10 |
| SWIMMING POOL | GRACE STREET | 71 | 72 | 37 | 38 | 31 | 32 | 25 | 25 | 19 | 16 |
| SWIMMING POOL | RICKARDS STREET | 21 | 21 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 5 |
| SWIMMING POOL | COAL COMPANY RAIL | 52 | 47 | 26 | 20 | 23 | 18 | 19 | 15 | 19 | 15 |
| SWIMMING POOL | SOUTH COAST RAILWAY | 29 | 0 | 20 | 0 | 19 | 0 | 17 | 0 | 15 | 13 |
| SWIMMING POOL | F6 FREEWAY | 45 | 1 | 27 | 1 | 24 | 1 | 18 | 1 | 14 | 12 |

APPENDIX E

Allans Creek Floodplain Risk Management Study – Updated Tables

Table 4.1 Flood Behaviour at Key Locations

| Location | PMF | | | 100 year ARI | | | 50 year ARI | | | 20 year ARI | | | 10 year ARI | | | 5 year ARI | | |
|-----------------------|-----------|----------|---------|--------------|----------|---------|-------------|----------|---------|-------------|----------|---------|-------------|----------|---------|------------|----------|---------|
| | H (m AHD) | Q (m³/s) | V (m/s) | H (m AHD) | Q (m³/s) | V (m/s) | H (m AHD) | Q (m³/s) | V (m/s) | H (m AHD) | Q (m³/s) | V (m/s) | H (m AHD) | Q (m³/s) | V (m/s) | H (m AHD) | Q (m³/s) | V (m/s) |
| Byarong Creek | | | | | | | | | | | | | | | | | | |
| U/S Koloona Ave | 36.02 | 387 | 1.4 | 35.51 | 214 | 1.3 | 35.42 | 184 | 1.4 | 35.27 | 144 | 1.3 | 34.74 | 117 | 1.3 | 34.51 | 93 | 1.3 |
| U/S Princes Hwy | 17.61 | 448 | 0.7 | 17.11 | 210 | 0.5 | 17.03 | 177 | 0.5 | 16.90 | 138 | 0.5 | 16.06 | 111 | 0.4 | 15.85 | 91 | 0.4 |
| U/S The Avenue | 14.09 | 710 | 2.6 | 13.07 | 401 | 2.6 | 12.97 | 258 | 2.6 | 12.80 | 252 | 2.6 | 9.93 | 88 | 2.5 | 9.62 | 72 | 2.4 |
| American Creek | | | | | | | | | | | | | | | | | | |
| U/S Princes Hwy | 13.93 | 965 | 1.5 | 12.68 | 712 | 1.5 | 12.58 | 370 | 1.6 | 12.37 | 721 | 1.6 | 11.67 | 188 | 1.5 | 11.36 | 155 | 1.5 |
| U/S Freeway* | 13.20 | 1426 | 0.7 | 12.16 | 1529 | 0.6 | 12.00 | 886 | 0.6 | 11.79 | 721 | 0.7 | 8.23 | 294 | 0.7 | 7.92 | 241 | 0.6 |
| Jenkins Creek | | | | | | | | | | | | | | | | | | |
| U/S Princes Hwy | 18.53 | 79 | 1.2 | 18.28 | 38 | 1.2 | 18.22 | 33 | 1.1 | 18.13 | 25 | 1.2 | 15 | 21 | 1.1 | 14.71 | 19 | 1.1 |
| Charcoal Creek | | | | | | | | | | | | | | | | | | |
| U/S Blackman Pde | 26.60 | 103 | 1 | 26.19 | 52 | 0.9 | 26.11 | 45 | 0.9 | 25.98 | 35 | 0.9 | 25.62 | 28 | 0.9 | 25.48 | 22 | 0.9 |
| U/S Princes | 17.46 | 360 | 1.7 | 16.88 | 115 | 1.4 | 16.8 | 96 | 1.4 | 16.71 | 74 | 1.5 | 15.04 | 58 | 1.4 | 14.48 | 47 | 1.4 |
| Allans Creek | | | | | | | | | | | | | | | | | | |
| U/S Springhill Rd | 10.43 | 1279 | 0.8 | 10.06 | 545 | 1.6 | 9.98 | 476 | 1.6 | 9.78 | 385 | 1.6 | 9.44 | 334 | 1.4 | 7.93 | 261 | 1.3 |

Note: H Flood Height

Q Flood Flow

V Flood Velocity

* American Creek flows at the Freeway include the cross catchment flow from Byarong Creek

Table 10.2 Major Transport Link Flooding

| | Duration of Overtopping in PMF (Hours) | Depth of Flood over Road/Rail at PMF (m) | Duration of Overtopping (100 Year ARI) | Depth of Flood over Road/Rail at 100 Year ARI (m) |
|-------------------------------|--|--|--|---|
| Princes Highway | | | | |
| Allans Creek | 2 | 0.65 | * | * |
| American Creek | 7.7 | 2.83 | 3.7 | 1.59 |
| Byarong Creek | 7.8 | 1.19 | 4.9 | 0.88 |
| Charcoal Creek | 9 | 1.61 | 8 | 1.02 |
| Jenkins Creek | 7 | 1.13 | 4 | 0.89 |
| Unanderra Drain | 6 | 1.04 | 8 | 0.41 |
| Illawarra Railway | | | | |
| Jenkins Creek | 7.5 | 1.20 | 4.5 | 0.97 |
| Charcoal Creek | 7.5 | 3.04 | 4.5 | 1.76 |
| Allans Creek | 3 | 0.81 | * | * |
| Unanderra Drain | 7 | 2.27 | 4.5 | 0.55 |
| American Creek | 3.2 | 0.35 | - | - |
| F6 Freeway | | | | |
| American/Byarong Creeks | 7.9 | 3.70 | 3.9 | 2.66 |
| Allans Creek/ Unanderra Drain | 5.5 | 1.20 | * | * |
| Freeway Trib Branch | 5 | 0.66 | 3 | 0.36 |

* These roads are not overtapped immediately above the creek, however they are overtapped in the immediate area as shown in the flood extent mapping (Figures 7.15 and 7.20).

Note: The times provided are for the peak overtapping duration which may not coincide with the storm duration that yielded the peak overtapping depth.