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MORETON BAY REGIONAL COUNCIL

REGIONAL FLOODPLAIN DATABASE

HYDROLOGIC AND HYDRAULIC MODELLING REPORT: BYRON CREEK (BYR)

APPENDIX D: MODELLING QUALITY REPORT

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For further information about the copyright in this document, please contact:

Moreton Bay Regional Council

PO Box 159

CABOOLTURE QLD 4510

Email: mbrc@moretonbay.qld.gov.au

Phone: (07) 3205 0555

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TECHNICAL NOTE

DATE 10 July 2010

TO Moreton Bay Regional Council

FROM Leonard Cheung

COPY

PROJECT 301001-01156

SUBJECT Byron Creek Modelling Quality Report

DOC NO

FILE LOC

INTRODUCTION

A detailed TUFLOW model of the Byron (BYR) minor basin has been developed as part of Moreton Bay Regional Council's (MBRC) Regional Floodplain Database (RFD) Stage 2 project.

This technical note is prepared to demonstrate that the performance of the BYR model is suitable for the intended use and the associated model outputs can be adopted by MBRC for the RFD to deliver reliable flood information across the Byron Creek minor basin.

MODEL PERFORMANCE

Model stability, warning messages and mass errors were monitored throughout model simulation periods to ensure that the model performance was acceptable. Careful attention has been paid to ensure that flows over the 2D domain were stable during model simulation period.

Overland flow hydrographs were checked at key locations and especially at the areas near the downstream boundaries (PO lines) to ensure the simulation extended well beyond the peak throughout the BYR study area.

To demonstrate there are no significant loss or gain of flood volumes during model runs, a check of the mass balance of the flood volumes for the two selected critical durations of the 10Yr, 100Yr ARI and PMF flood events has been undertaken and presented in the following Table 1.



Table 1: Mass Balance Check

Event	10Yr ARI		100Yr ARI		PMF	
Critical Duration	60M	90M	60M	90M	30M	120M
Volume at Start (m3)	0	0	0	0	0	0
Volume at End (m3)	18298	13440	20816	15061	23357	27154
Total Volume In (m3)	363563	441979	571047	700594	1762520	3914921
Total Volume Out (m3)	342315	425336	539970	672347	1705636	3814687
Volume Error (m3)	-2950	-3203	-10262	-13186	-33527	-73080
Final Cumulative ME (%)	-0.42%	-0.37%	-0.92%	-0.96%	-0.97%	-0.95%

The above table shows that there are no significant loss and gain of flood volume during the modelling and the mass balance errors are within the range of -0.97% to -0.37% for the critical duration runs of the three design events.

CONCLUSIONS

The quality of the BYR model run has been reviewed. It is considered that the overall model performance is suitable for the intended use and the associated model outputs can be adopted for the MBRC RFD to deliver reliable flood information across the Byron Creek minor basin.



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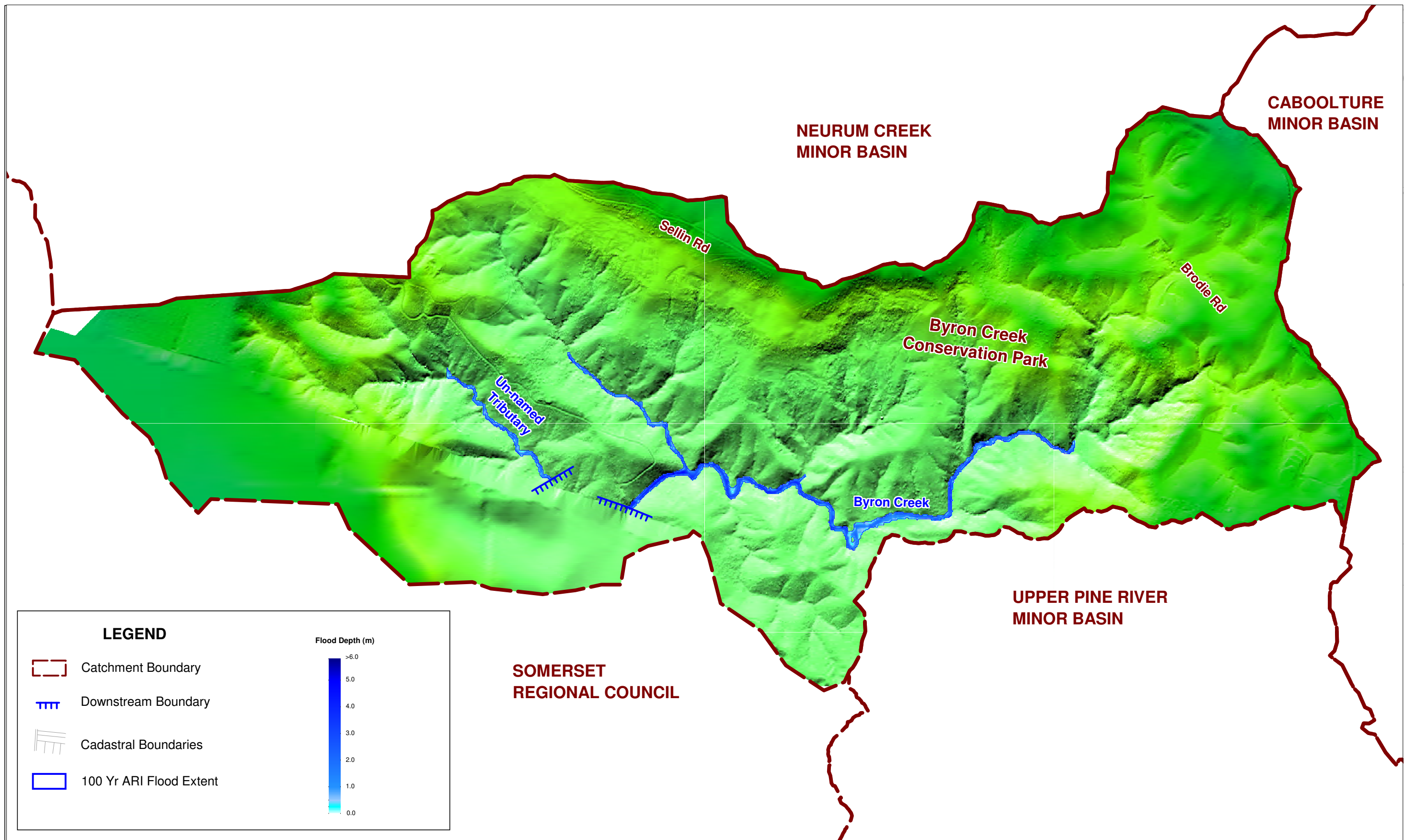
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HYDROLOGIC AND HYDRAULIC MODELLING REPORT: BYRON CREEK (BYR)


APPENDIX E: FLOOD MAPS – 100 YEAR ARI




LEGEND


 Catchment Boundary

 Downstream Boundary

 Cadastral Boundaries

 100 Yr ARI Flood Extent

Flood Depth (m)






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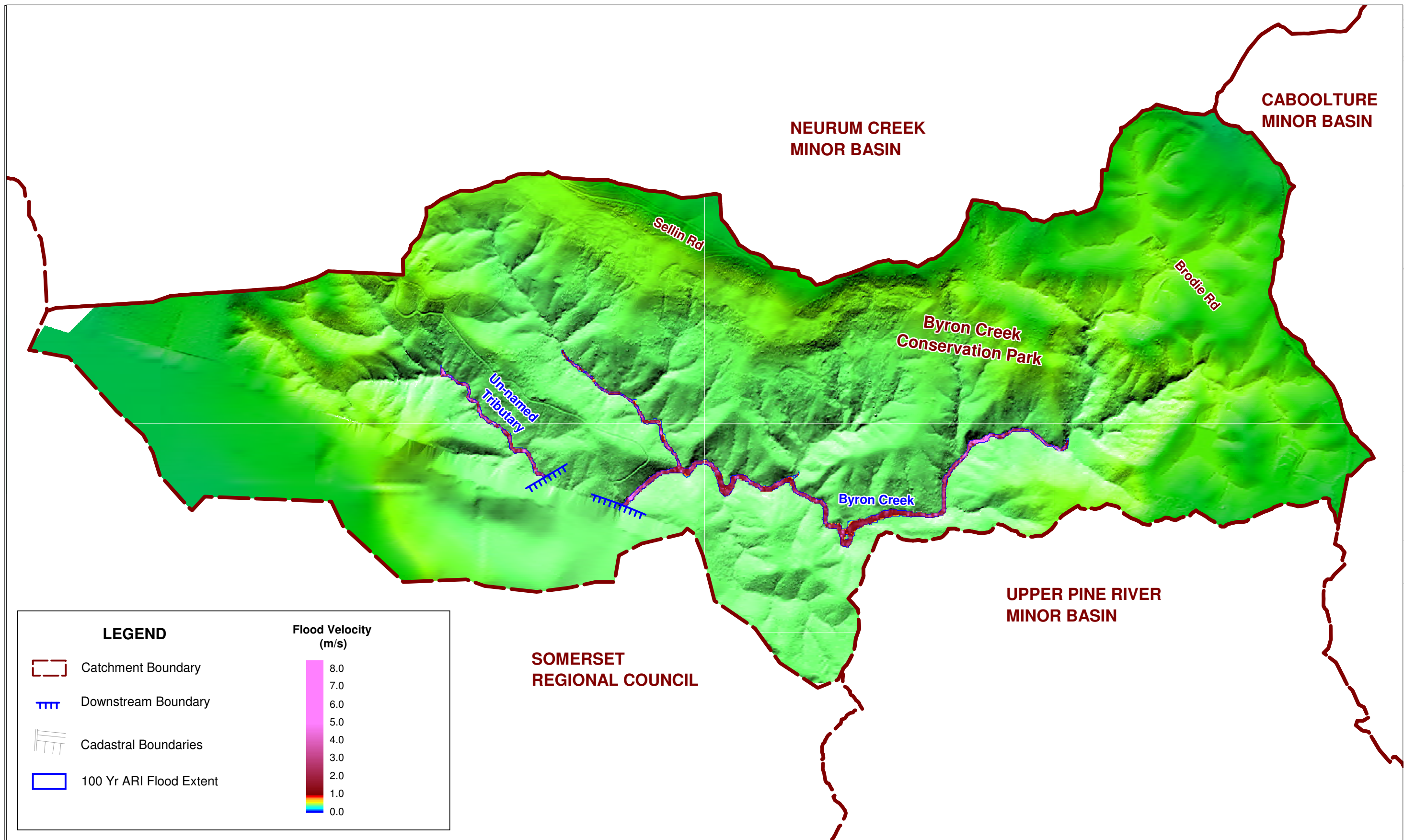
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Rev	Date	Revision Description	ORIG	CHK	ENG	QA	APPD	REGIONAL FLOODPLAIN DATABASE PROJECT (STAGE 2) BYRON CREEK FIGURE E2 PEAK FLOOD DEPTH MAP - 100 YEAR ARI		
								Project No: 301001-01156	Figure:301001-01156-EN-DAL-0110	Rev: 0





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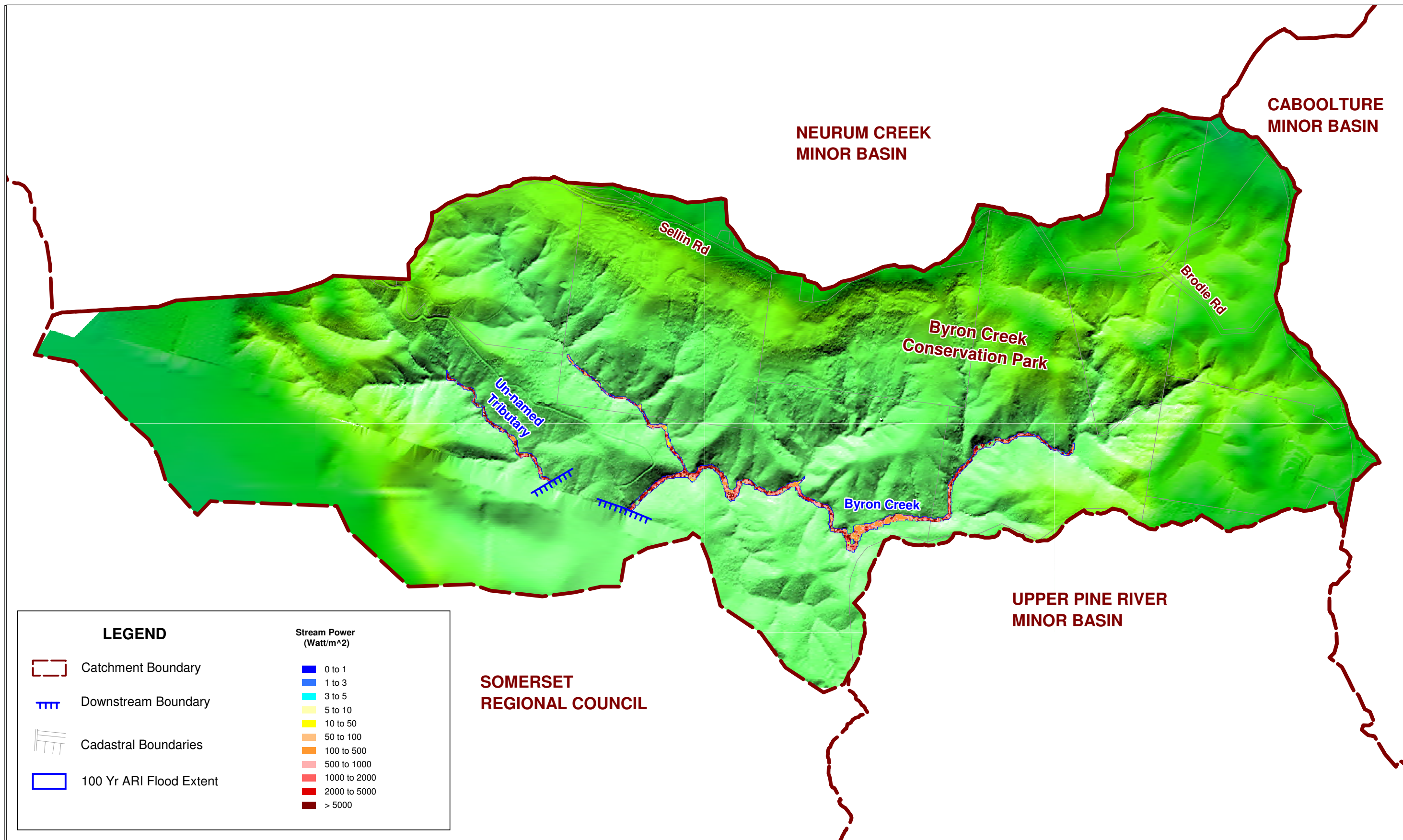
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Rev	Date	Revision Description	ORIG	CHK	ENG	QA	APPD	REGIONAL FLOODPLAIN DATABASE PROJECT (STAGE 2) BYRON CREEK FIGURE E3 PEAK FLOOD VELOCITY MAP - 100 YEAR ARI						
								Project No: 301001-01156		Figure:301001-01156-EN-DAL-0111		Rev: 0		





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Rev		Date		Revision Description		ORIG		CHK		ENG		QA		APPD						REGIONAL FLOODPLAIN DATABASE PROJECT (STAGE 2) BYRON CREEK FIGURE E4 PEAK STREAM POWER MAP - 100 YEAR ARI					
																				Project No: 301001-01156		Figure:301001-01156-EN-DAL-0112		Rev: 0	



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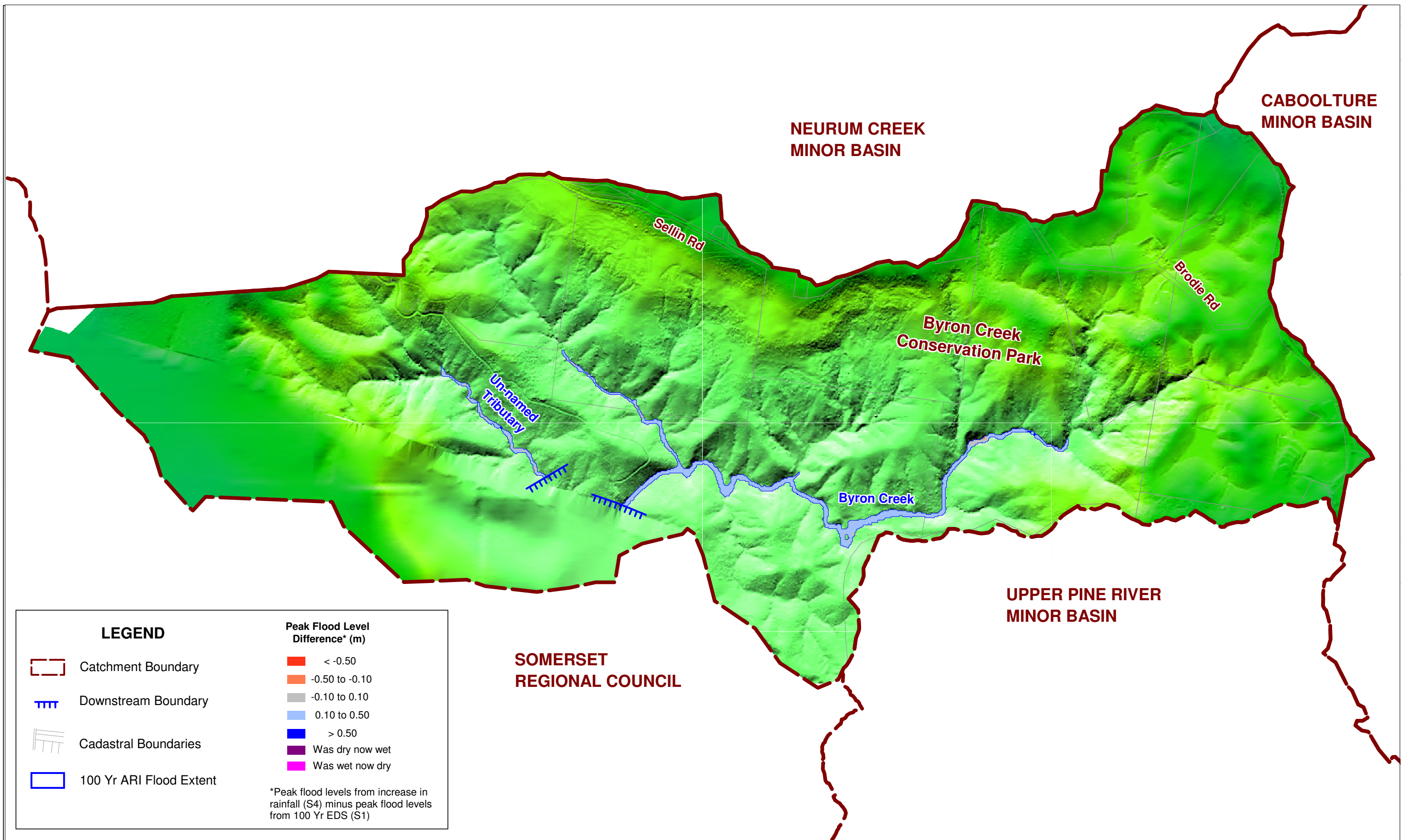
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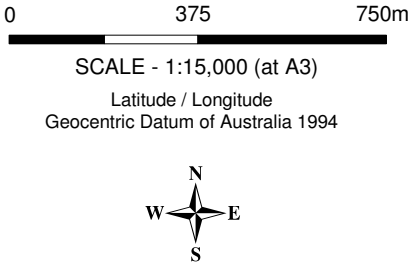
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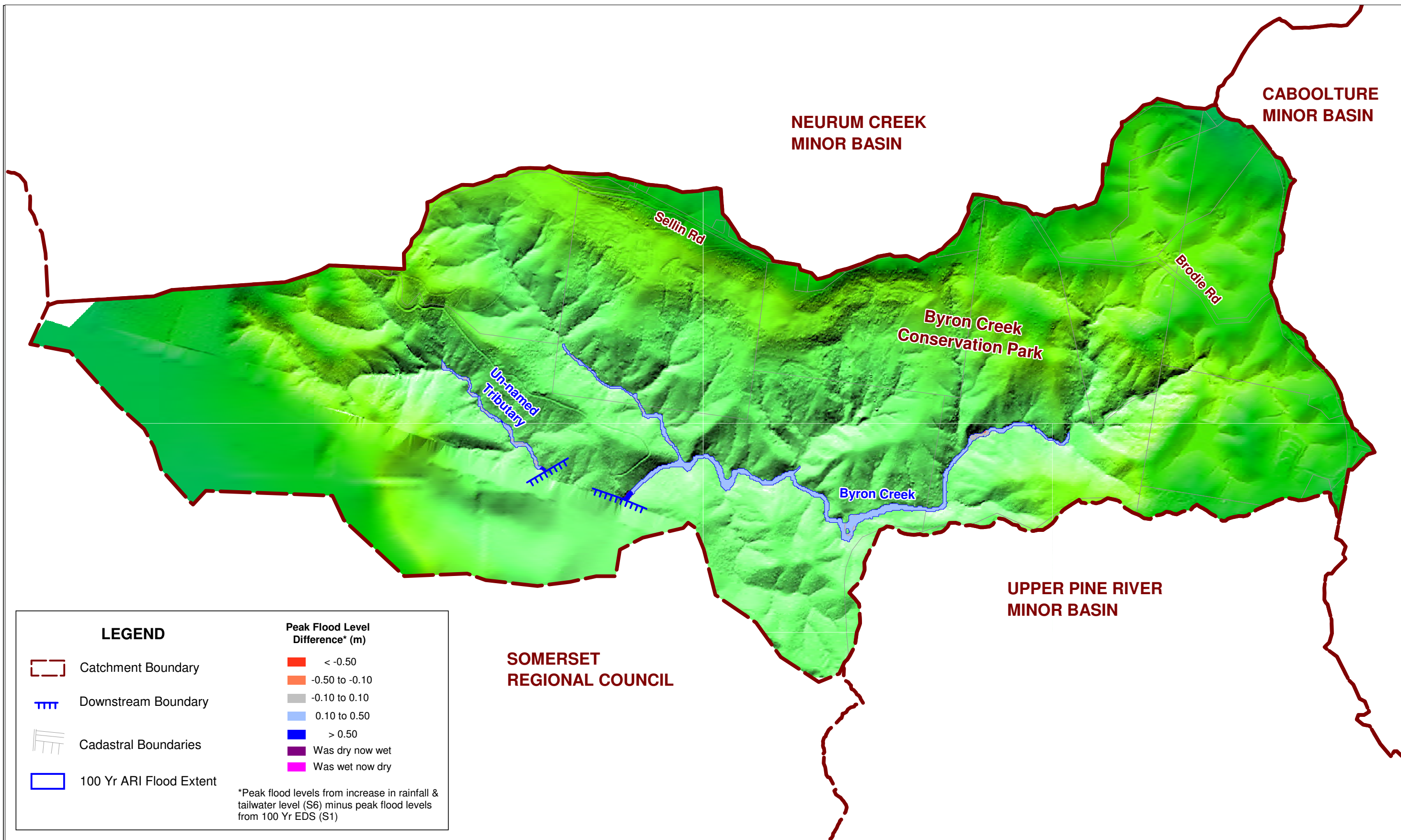
APPENDIX F: MODEL SENSITIVITY ANALYSIS MAPS



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Rev	Date	Revision Description	ORIG	CHK	ENG	QA	APPD					
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								Project No: 301001-01156		Figure:301001-01156-EN-DAL-0116		Rev: 0



LEGEND

- Catchment Boundary
- Downstream Boundary
- Cadastral Boundaries
- 100 Yr ARI Flood Extent

Peak Flood Level Difference* (m)

- < -0.50
- 0.50 to -0.10
- 0.10 to 0.10
- 0.10 to 0.50
- > 0.50
- Was dry now wet
- Was wet now dry

*Peak flood levels from increase in rainfall & tailwater level (S6) minus peak flood levels from 100 Yr EDS (S1)



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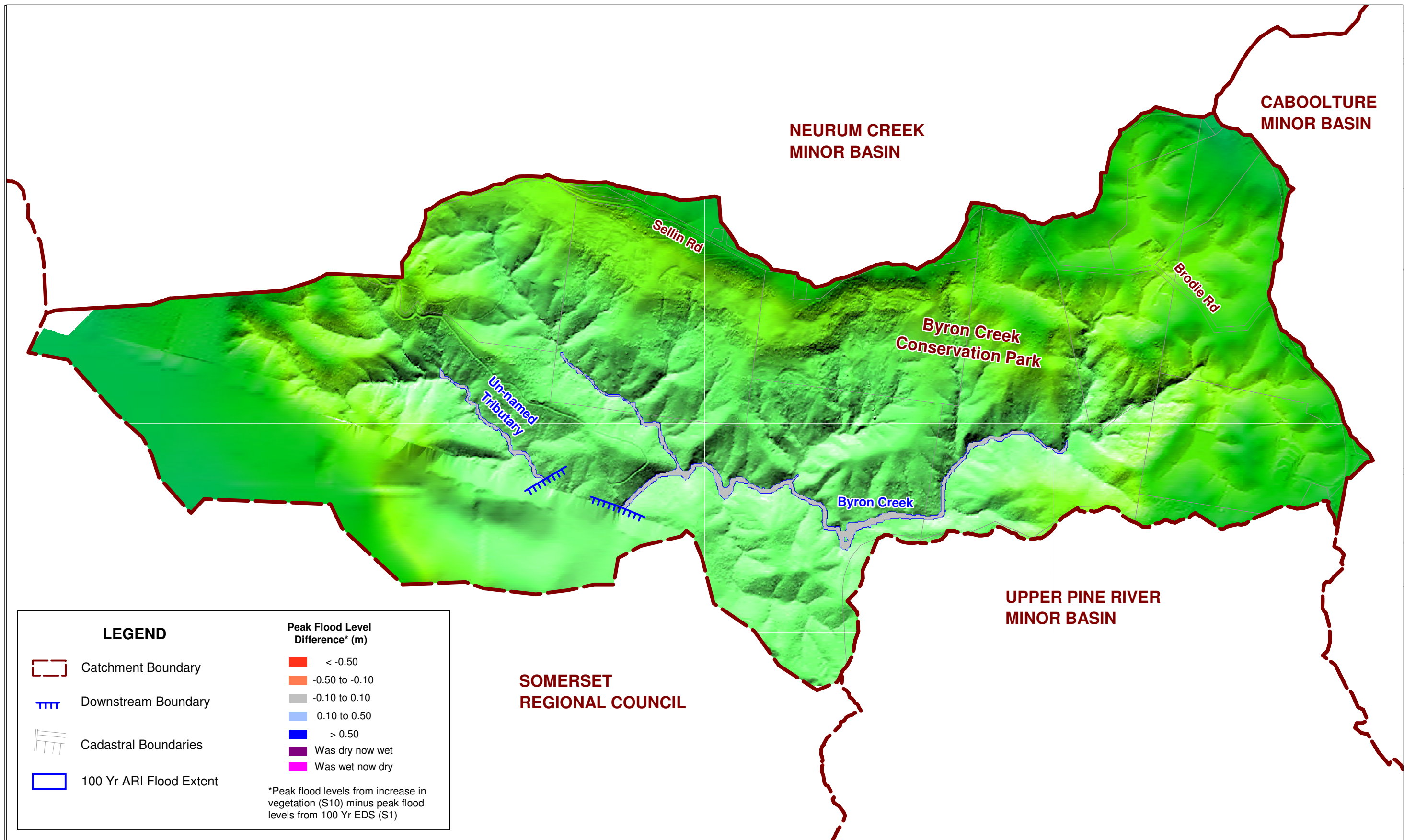
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Rev	Date	Revision Description	ORIG	CHK	ENG	QA	APPD								
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				Project No: 301001-01156				Figure:301001-01156-EN-DAL-0118				Rev: 0			



LEGEND

- Catchment Boundary
- Downstream Boundary
- Cadastral Boundaries
- 100 Yr ARI Flood Extent

- Peak Flood Level Difference* (m)**
- < -0.50
 - 0.50 to -0.10
 - 0.10 to 0.10
 - 0.10 to 0.50
 - > 0.50
 - Was dry now wet
 - Was wet now dry

*Peak flood levels from increase in vegetation (S10) minus peak flood levels from 100 Yr EDS (S1)



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 WorleyParsons resources & energy								FIGURE F10 INCREASE IN VEGETATION FLOOD LEVEL					
								IMPACT - 100 EDS (S10)					
								Project No: 301001-01156		Figure:301001-01156-EN-DAL-119		Rev: 0	