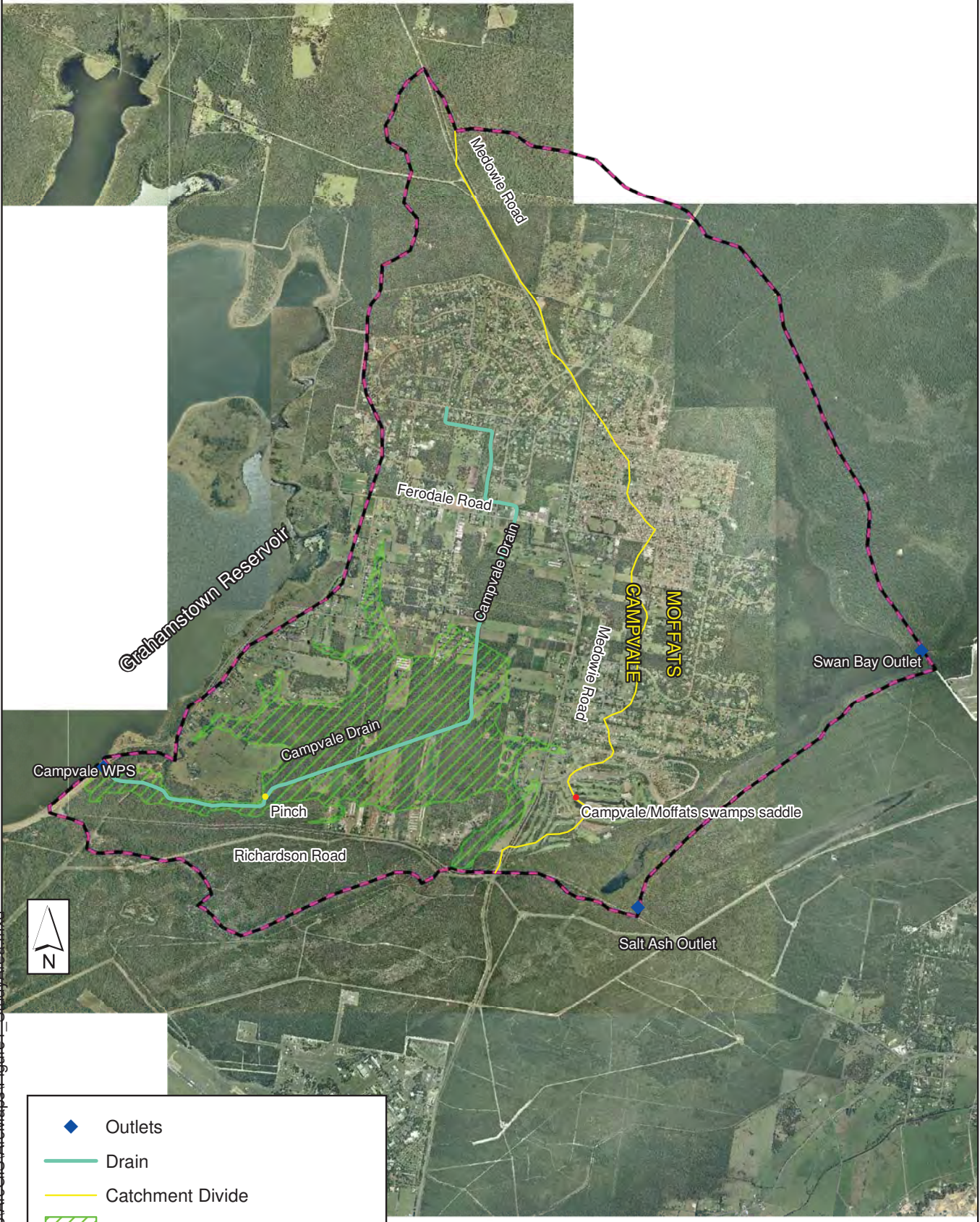


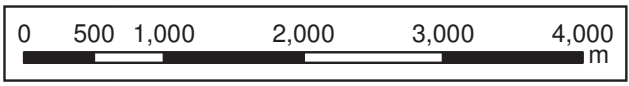


Figures

FIGURE 1
STUDY AREA



- ◆ Outlets
- Drain
- Catchment Divide
- ▨ Campvale Drain Inundation Area
- ▭ Study Area



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FIGURE 2
RAINFALL STATIONS

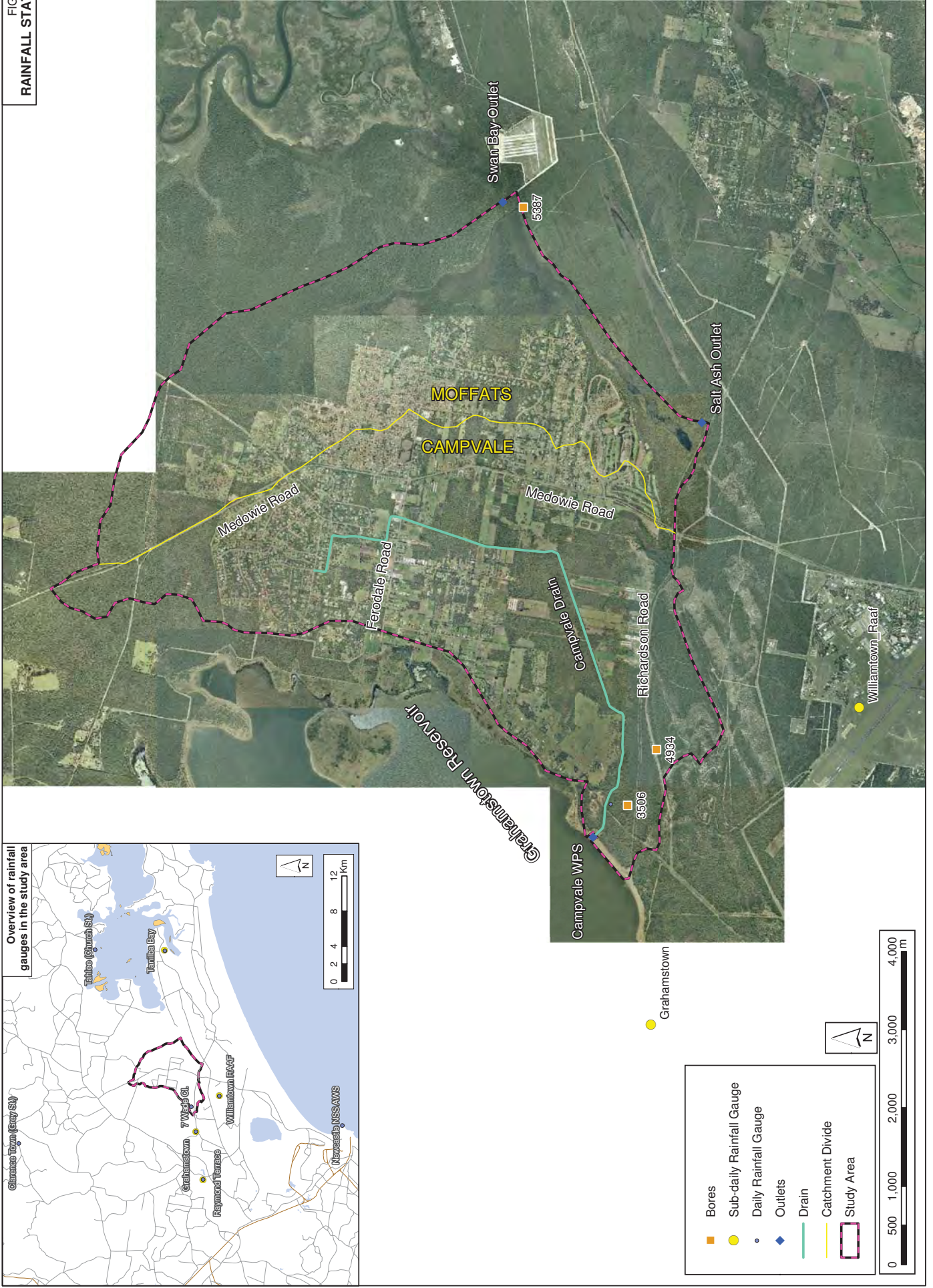


FIGURE 3
IFD PLOT OF VARIOUS EVENTS

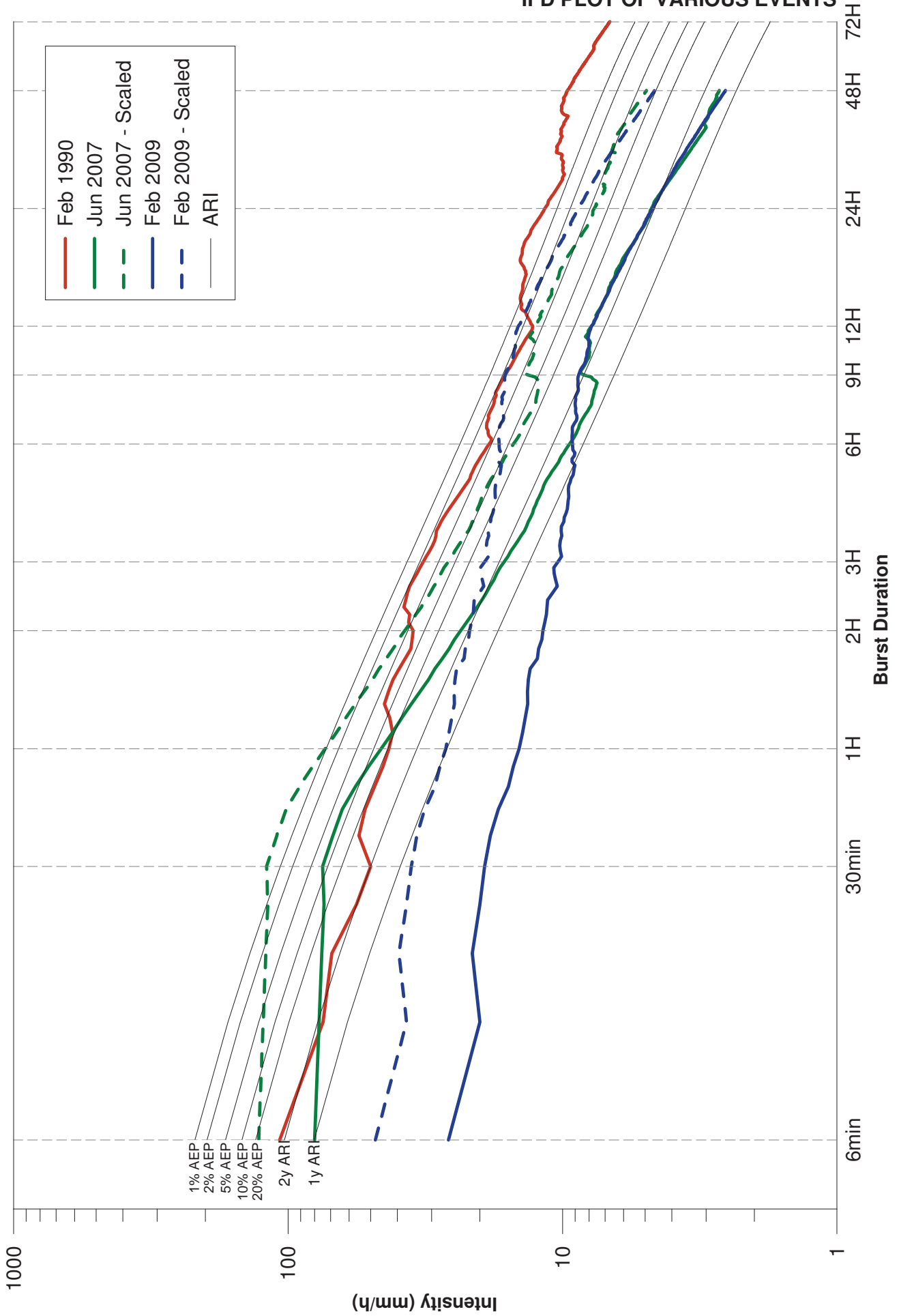


FIGURE 4
MONTHLY RAINFALL DISTRIBUTION
7 WADE CLOSE

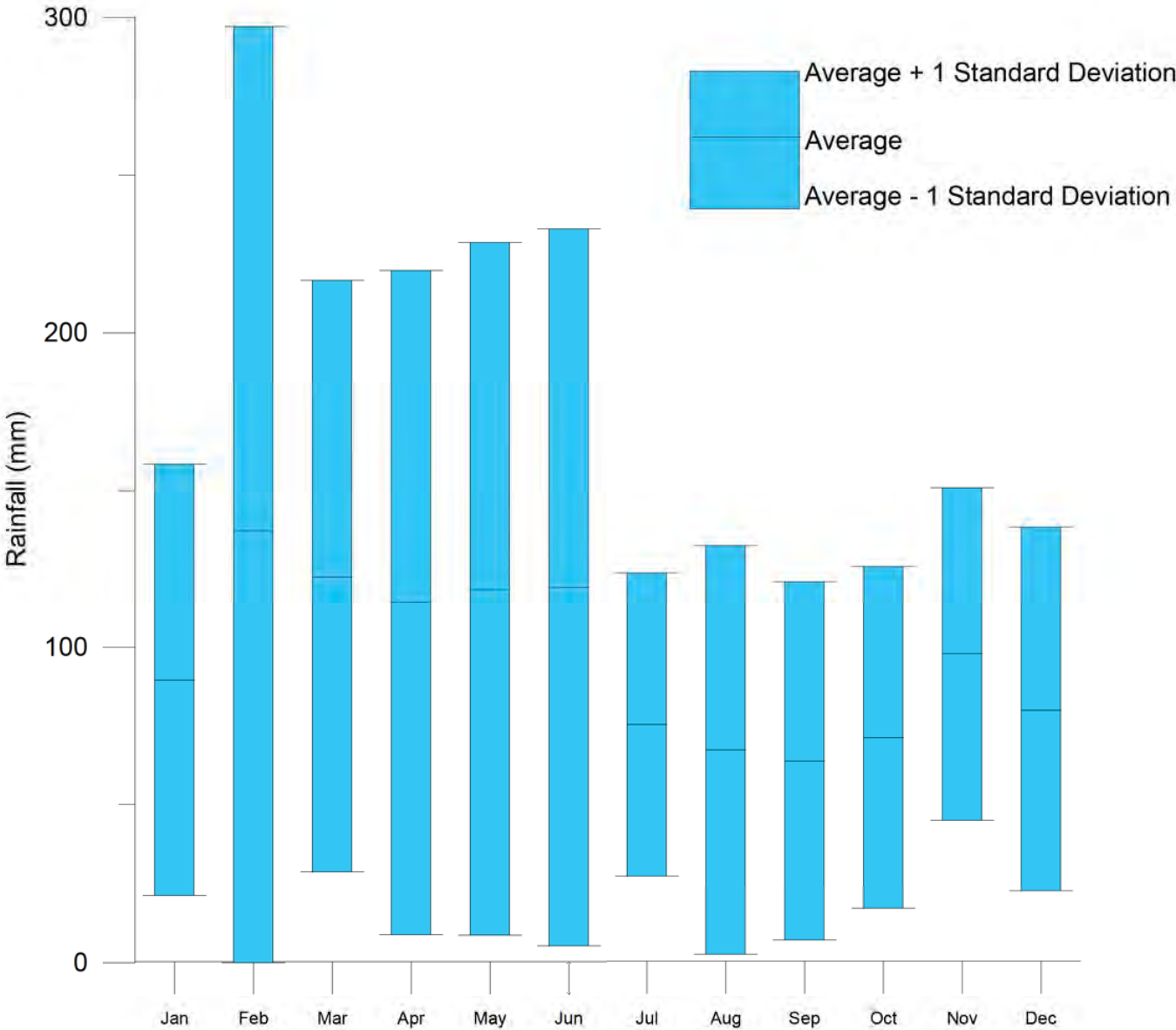


FIGURE 5
TIME SERIES OF CAMPVALE WPS DATA - PUMP DISCHARGE

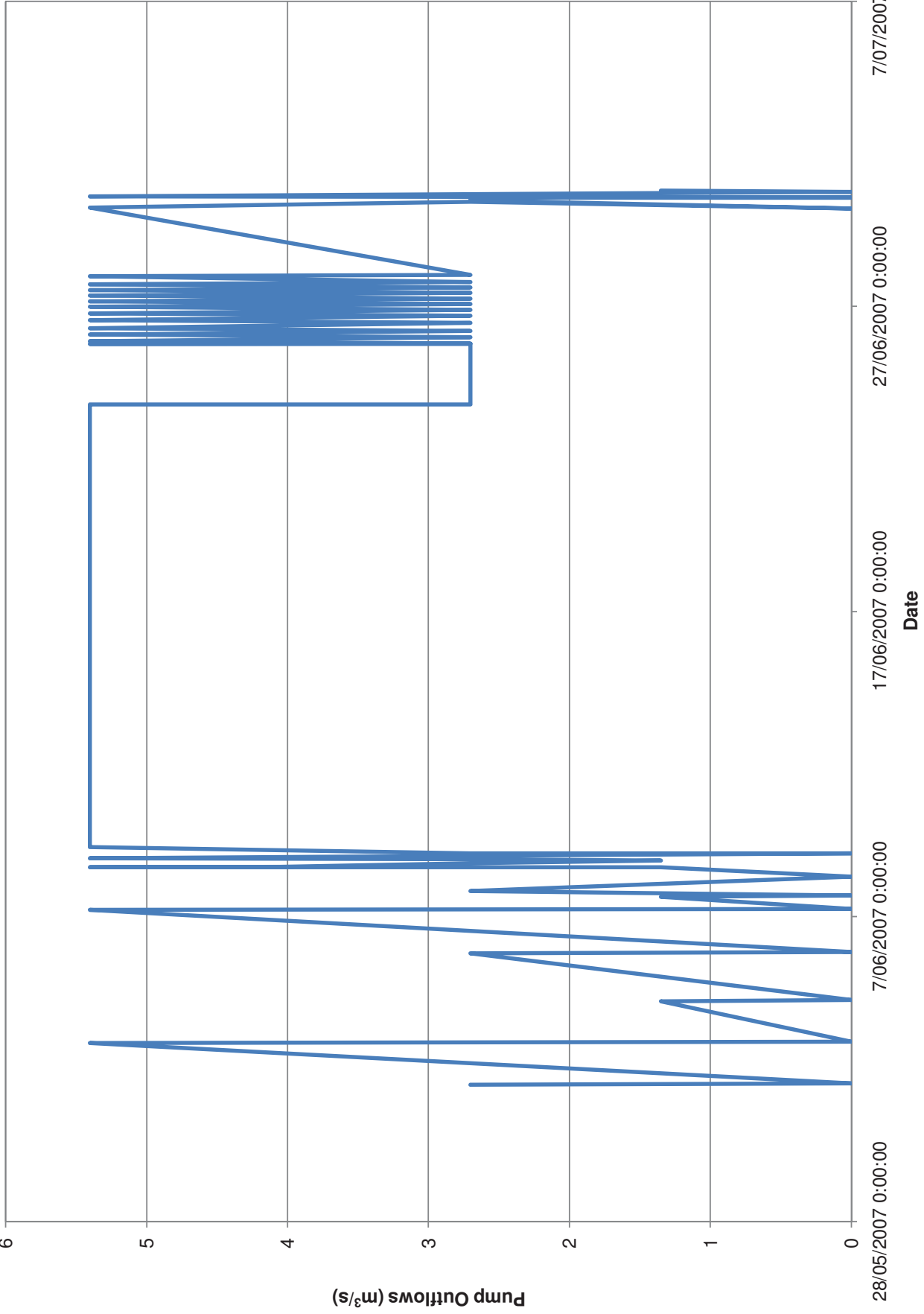


FIGURE 6
TIME SERIES OF CAMPVALE WPS DATA - STAGE

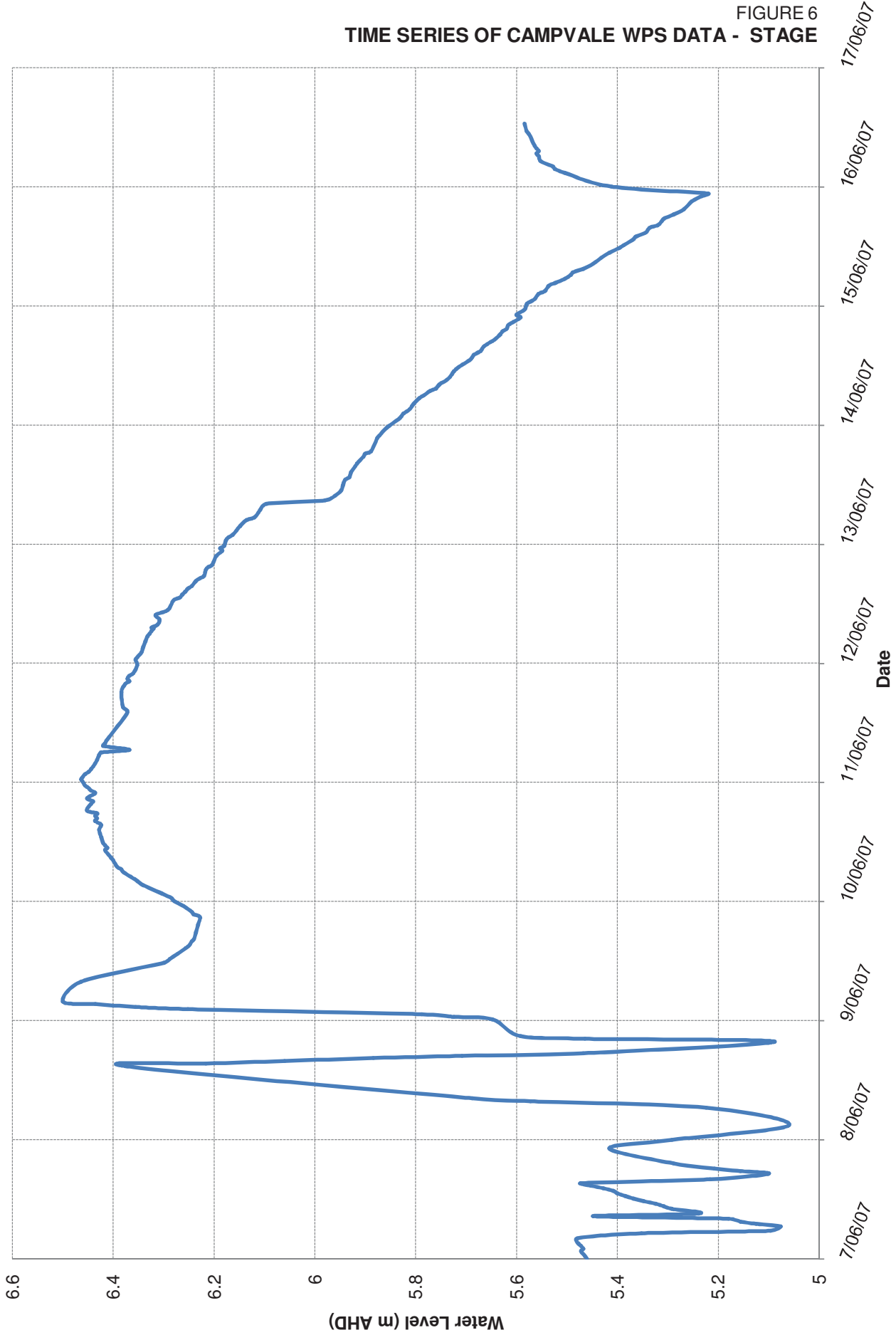


FIGURE 7
GROUNDWATER TIMESERIES

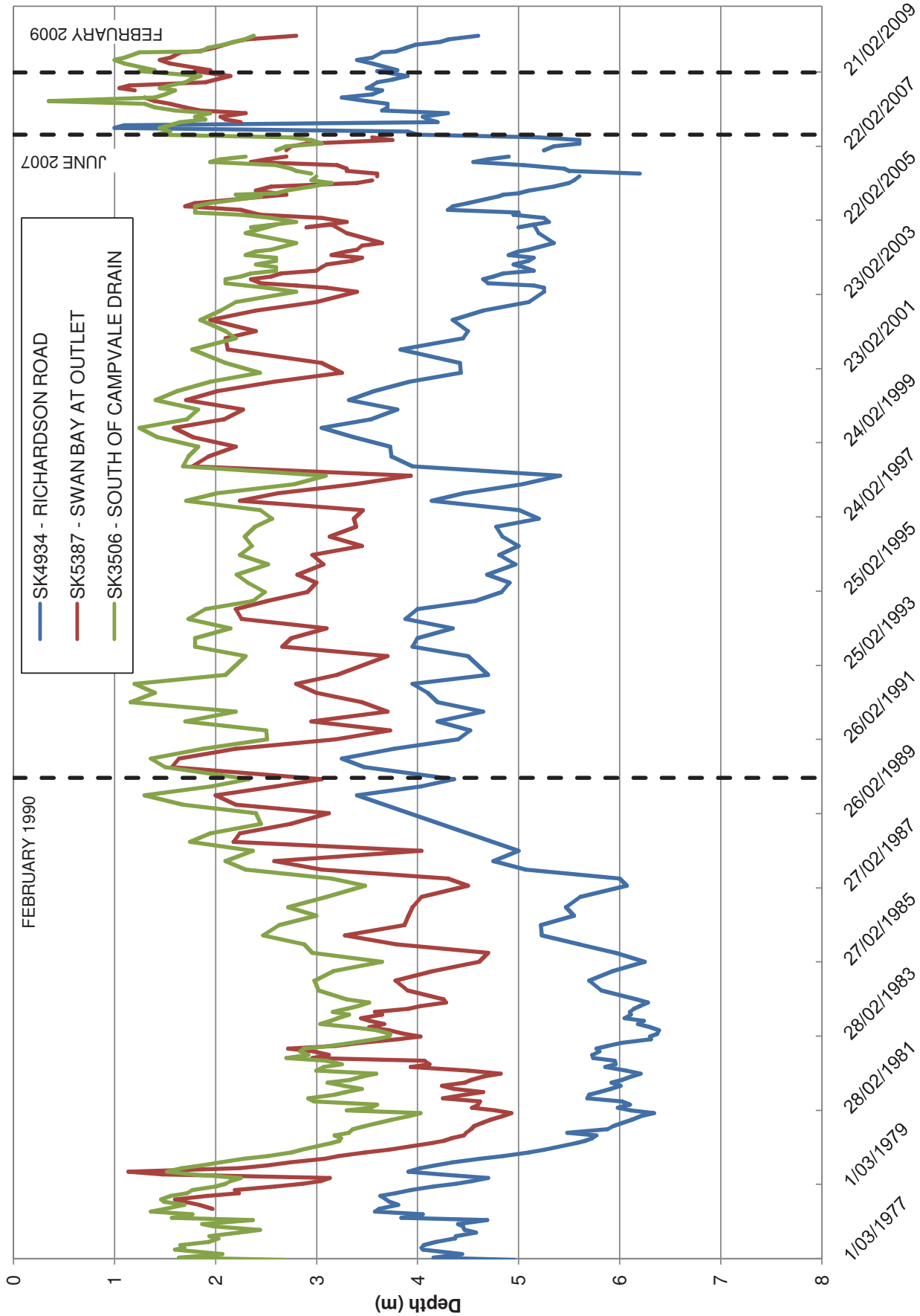


FIGURE 8
LAND USE MAP - EXISTING

Study Area
Catchment Divide
Outlets
Drain
Land Use type, Roughness, initial loss, Continuing loss, Imperviousness %

- 1a- Rural Agriculture, 0.08, 10 mm, 2 mm/h, 0%
- 1c1- Rural 20ha, 0.08, 9.5 mm, 1.9 mm/h, 5%
- 1c2- Rural 2ha, 0.08, 9.5 mm, 1.9 mm/h, 5%
- 1c3- Rural 1ha, 0.045, 9 mm, 1.8 mm/h, 10%
- 1c4- Rural 5000m2, 0.045, 7.5 mm, 1.5 mm/h, 25%
- 1c5- Rural 2000m2, 0.045, 5 mm, 1 mm/h, 50%
- 2a- Residential "A", 0.045, 4 mm, 0.8 mm/h, 60%
- 3a- Business, 0.06, 1 mm, 0 mm/h, 100%
- 4a- Industrial, 0.06, 1.5 mm, 0 mm/h, 100%
- 5a- Defence Purpose, 0.08, 10 mm, 2 mm/h, 0%
- 6a- Recreational General, 0.05, 9 mm, 1.8 mm/h, 10%
- 6c- Recreational Special, 0.05, 9.5 mm, 1.9 mm/h, 5%
- 7a- Environment Protection, 0.08, 10 mm, 2 mm/h, 0%
- 7c- Water Catchment, 0.08, 10 mm, 2 mm/h, 0%
- Roads, 0.02, 1 mm, 0 mm/h, 100%

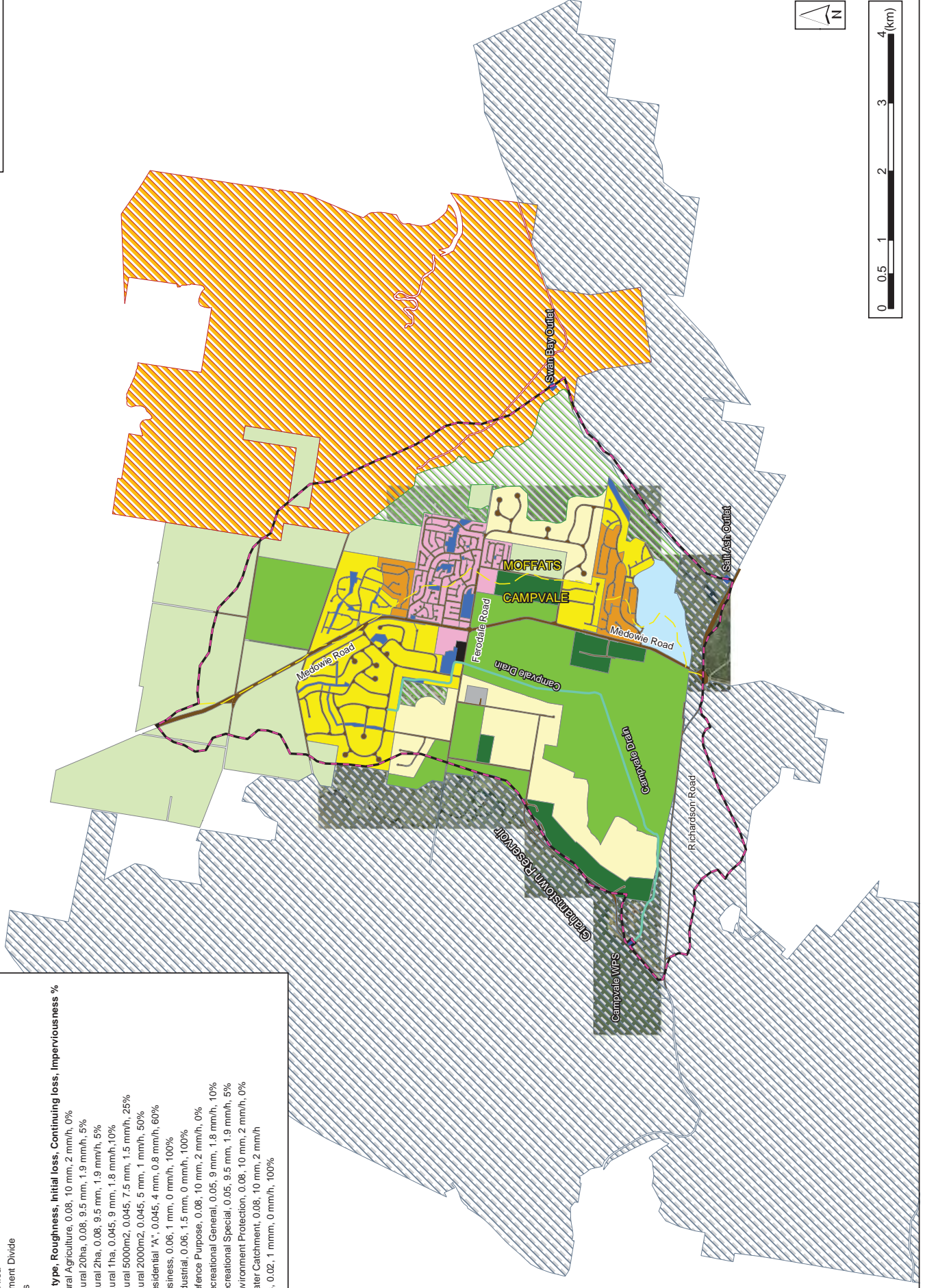
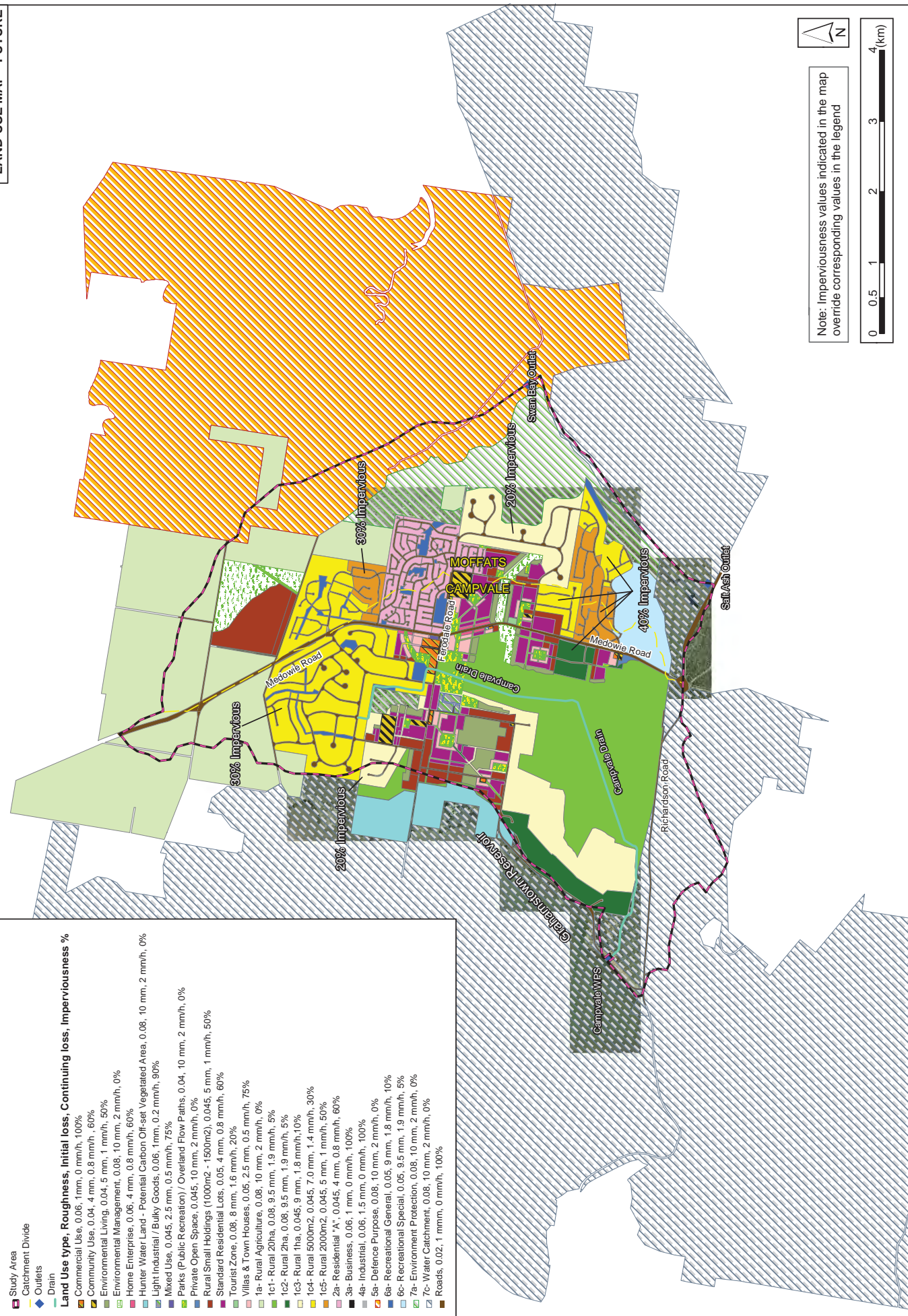


FIGURE 9
LAND USE MAP - FUTURE



Symbol	Description
[Red outline]	Study Area
[Blue outline]	Catchment Divide
[Blue diamond]	Outlets
[Blue line]	Drain
Land Use type, Roughness, Initial loss, Continuing loss, Imperviousness %	
[Orange]	Commercial Use, 0.06, 1mm, 0 mm/h, 100%
[Yellow]	Community Use, 0.04, 4 mm, 0.8 mm/h, 60%
[Light Green]	Environmental Living, 0.04, 5 mm, 1 mm/h, 50%
[Green]	Environmental Management, 0.08, 10 mm, 2 mm/h, 0%
[Light Blue]	Home Enterprise, 0.06, 4 mm, 0.8 mm/h, 60%
[Dark Blue]	Hunter Water Land - Potential Carbon Off-set Vegetated Area, 0.08, 10 mm, 2 mm/h, 0%
[Light Purple]	Light Industrial / Bulky Goods, 0.06, 1mm, 0.2 mm/h, 90%
[Dark Purple]	Mixed Use, 0.045, 2.5 mm, 0.5 mm/h, 75%
[Dark Green]	Parks (Public Recreation) / Overland Flow Paths, 0.04, 10 mm, 2 mm/h, 0%
[Light Green]	Private Open Space, 0.045, 10 mm, 2 mm/h, 0%
[Dark Green]	Rural Small Holdings (1000m2 - 1500m2), 0.045, 5 mm, 1 mm/h, 50%
[Light Green]	Standard Residential Lots, 0.05, 4 mm, 0.8 mm/h, 60%
[Dark Green]	Tourist Zone, 0.08, 8 mm, 1.6 mm/h, 20%
[Light Green]	Villas & Town Houses, 0.05, 2.5 mm, 0.5 mm/h, 75%
[Light Green]	1a- Rural Agriculture, 0.06, 10 mm, 2 mm/h, 0%
[Light Green]	1c1- Rural 20ha, 0.08, 9.5 mm, 1.9 mm/h, 5%
[Light Green]	1c2- Rural 2ha, 0.08, 9.5 mm, 1.9 mm/h, 5%
[Light Green]	1c3- Rural 1ha, 0.045, 9 mm, 1.8 mm/h, 10%
[Light Green]	1c4- Rural 5000m2, 0.045, 7.0 mm, 1.4 mm/h, 30%
[Light Green]	1c5- Rural 2000m2, 0.045, 5 mm, 1 mm/h, 50%
[Light Green]	2a- Residential "A", 0.045, 4 mm, 0.8 mm/h, 60%
[Light Green]	3a- Business, 0.06, 1 mm, 0 mm/h, 100%
[Light Green]	4a- Industrial, 0.06, 1.5 mm, 0 mm/h, 100%
[Light Green]	5a- Defence Purpose, 0.08, 10 mm, 2 mm/h, 0%
[Light Green]	6a- Recreational General, 0.05, 9 mm, 1.8 mm/h, 10%
[Light Green]	6c- Recreational Special, 0.05, 9.5 mm, 1.9 mm/h, 5%
[Light Green]	7a- Environment Protection, 0.08, 10 mm, 2 mm/h, 0%
[Light Green]	7c- Water Catchment, 0.08, 10 mm, 2 mm/h, 0%
[Light Green]	Roads, 0.02, 1 mm, 0 mm/h, 100%

Note: Imperviousness values indicated in the map override corresponding values in the legend

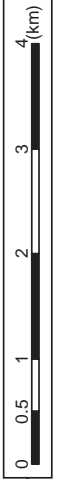
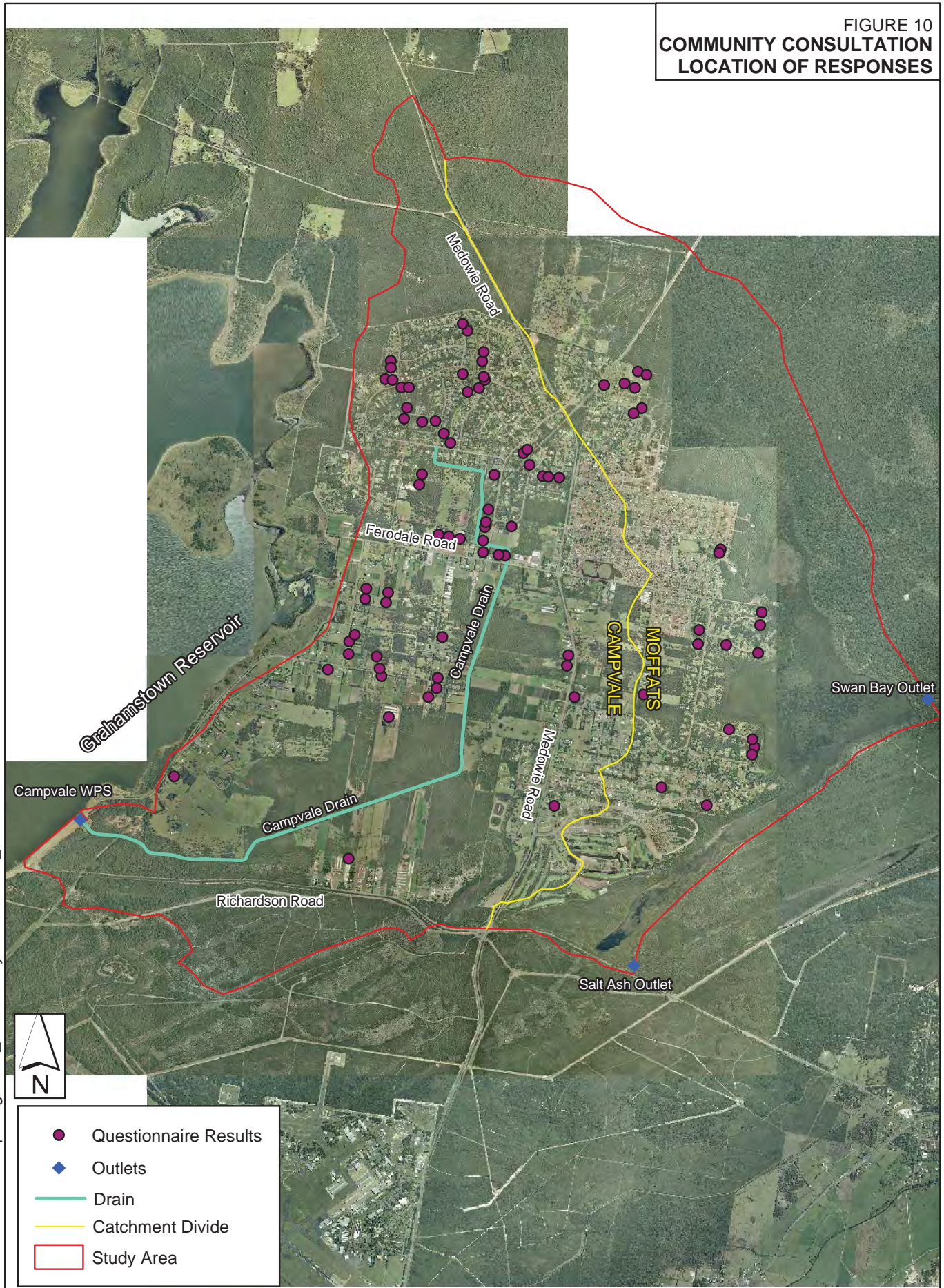
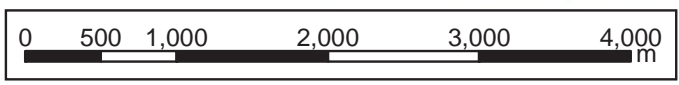


FIGURE 10
 COMMUNITY CONSULTATION
 LOCATION OF RESPONSES



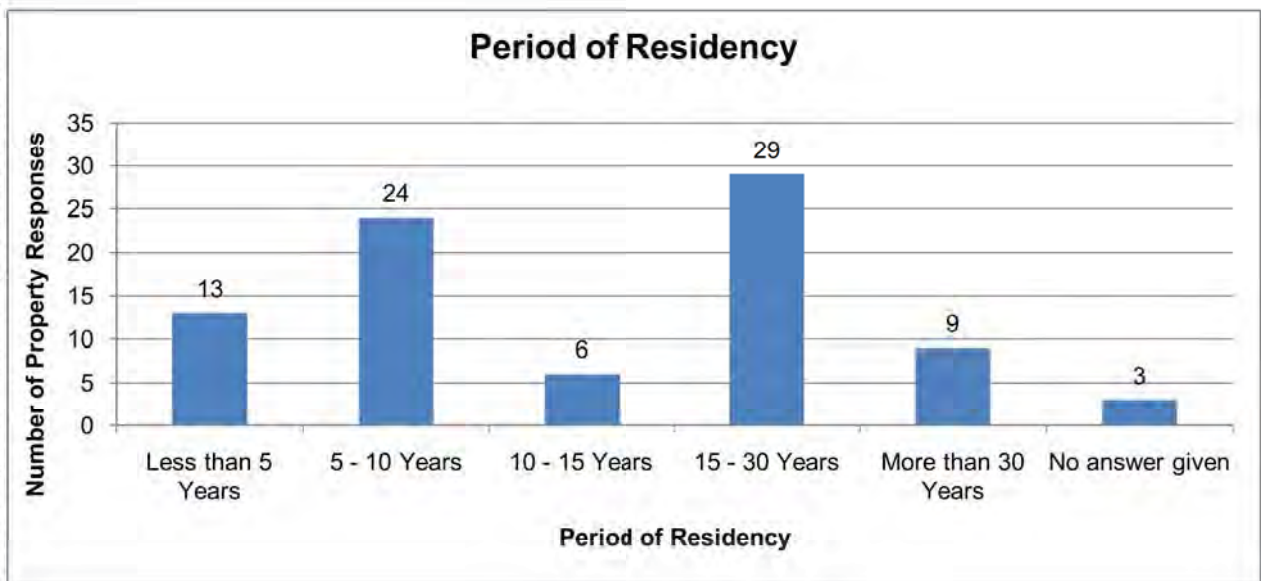
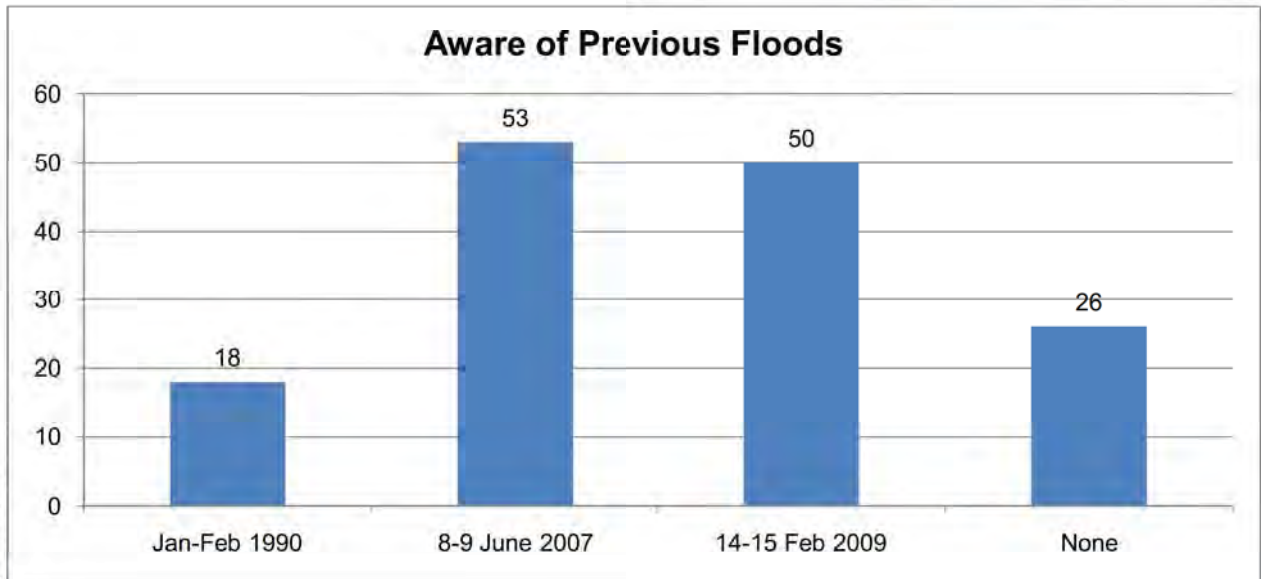
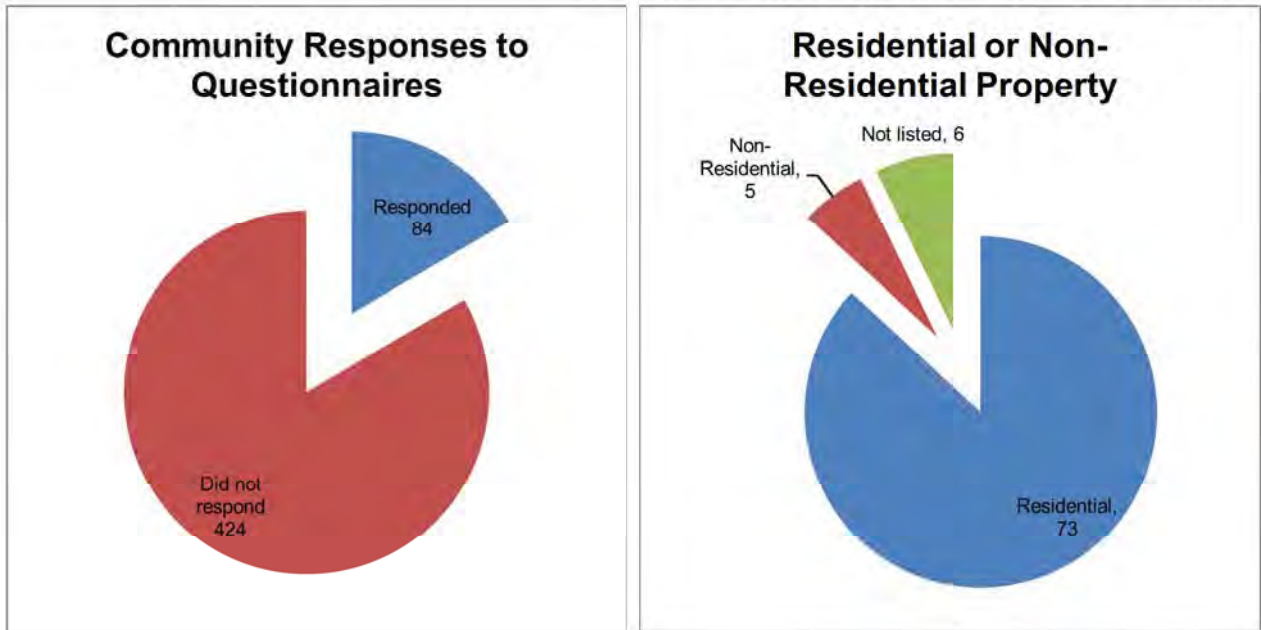
- Questionnaire Results
- ◆ Outlets
- Drain
- Catchment Divide
- Study Area



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FIGURE 11
COMMUNITY CONSULTATION - ANALYSIS OF RESPONSES



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FIGURE 12
TIME SERIES OF RAINFALL DATA
CALIBRATION/VALIDATION EVENTS

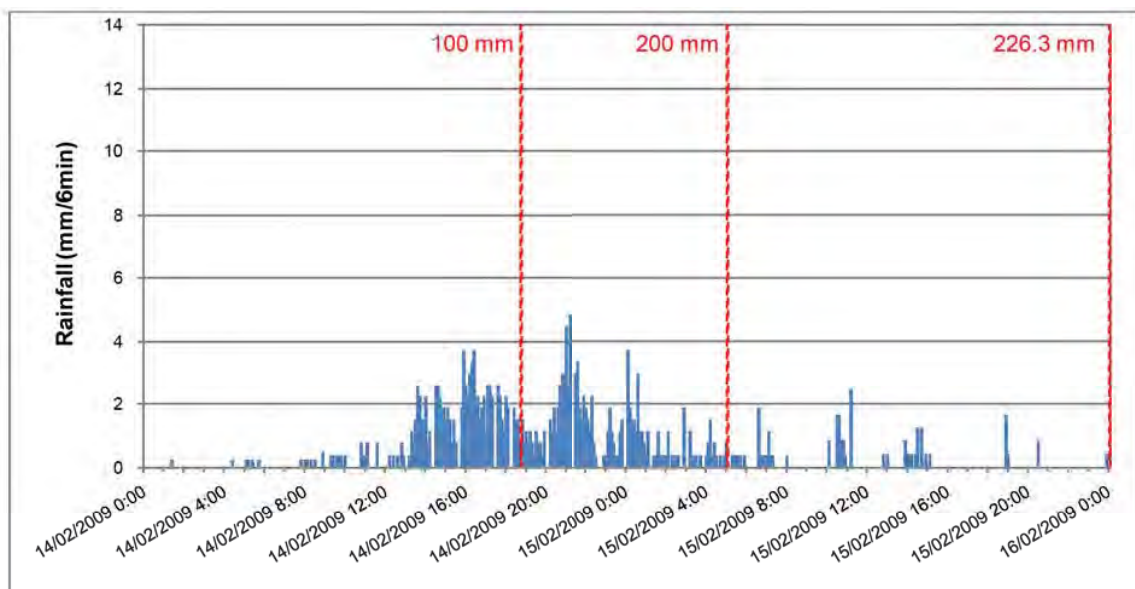
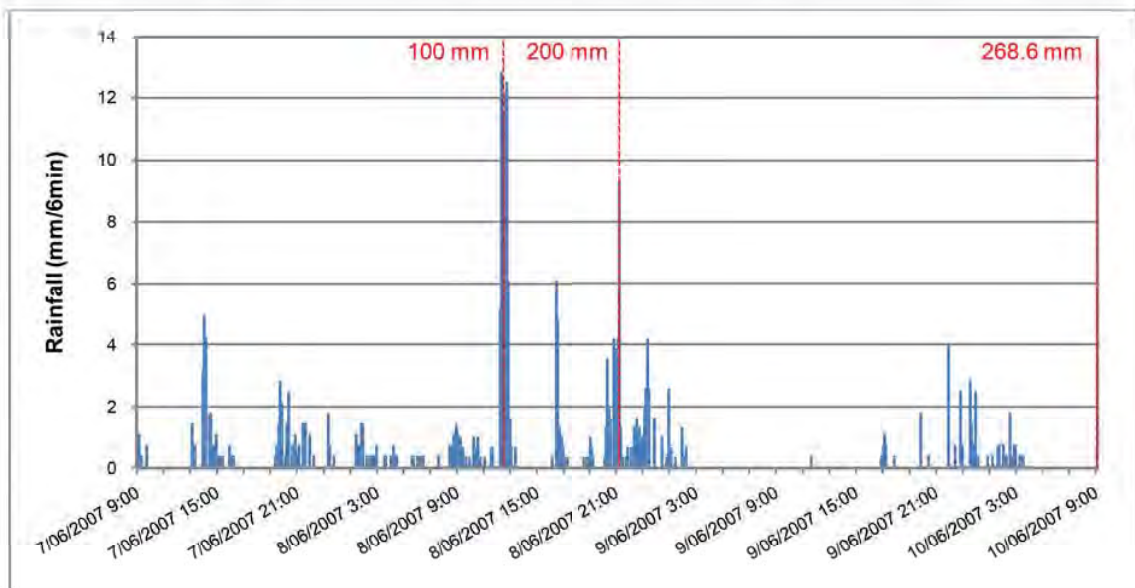
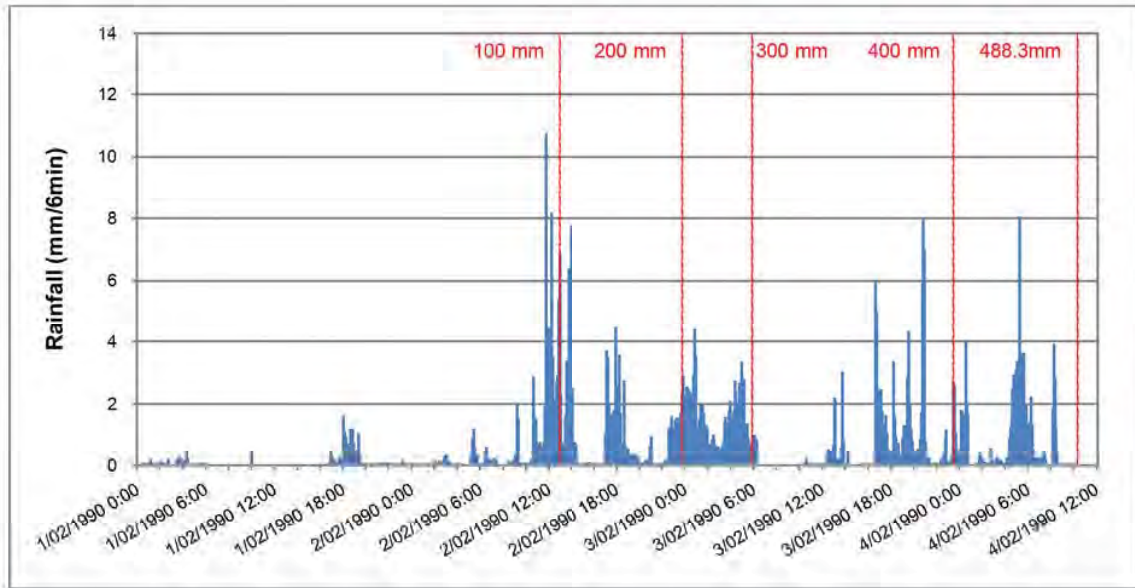
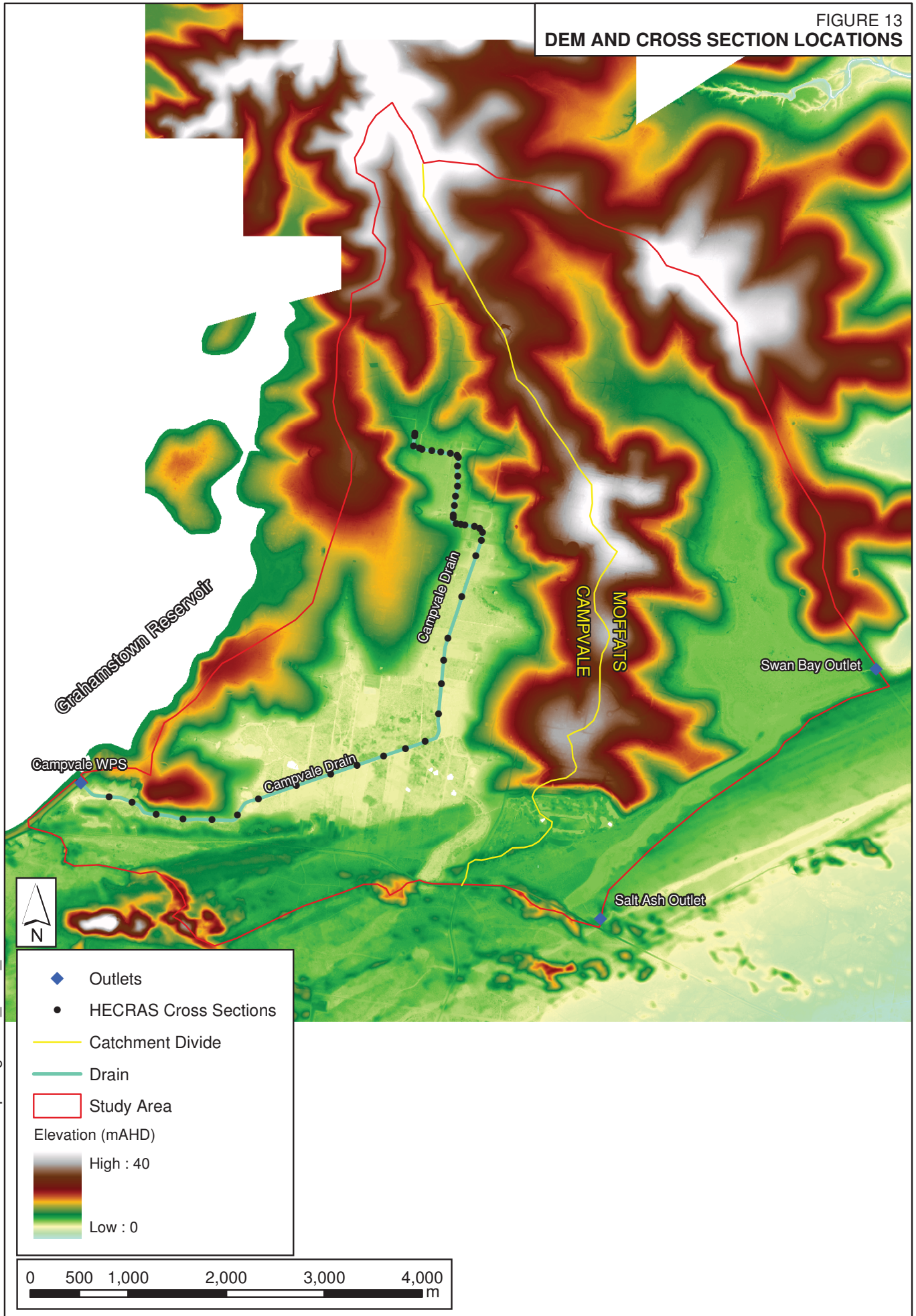


FIGURE 13
DEM AND CROSS SECTION LOCATIONS

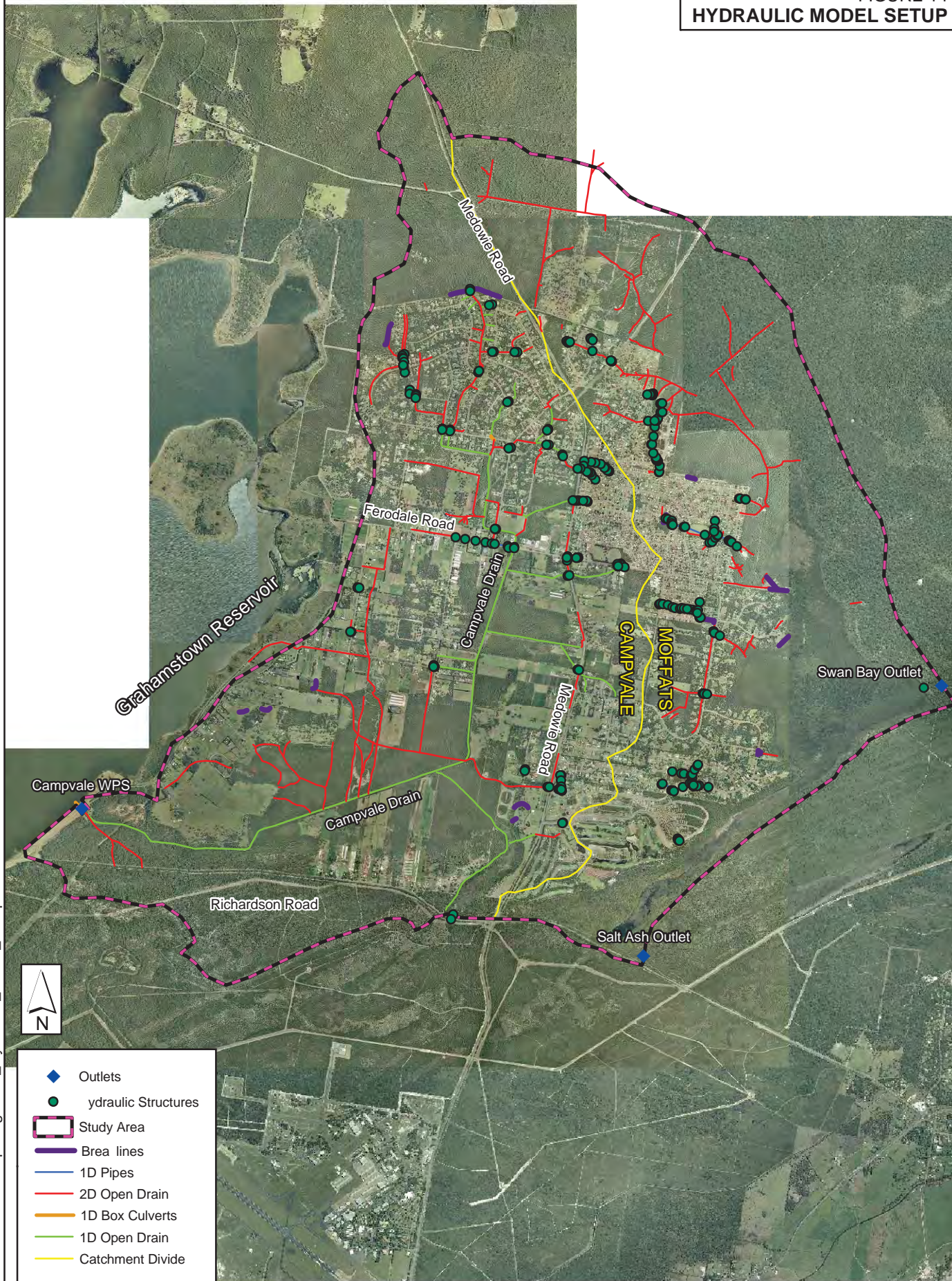


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- ◆ Outlets
 - HECRAS Cross Sections
 - Catchment Divide
 - Drain
 - Study Area
- Elevation (mAHD)
- High : 40
 - Low : 0



FIGURE 14
HYDRAULIC MODEL SETUP



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FIGURE 15
STAGE LEVEL COMPARISON AT CAMPVALE WPS

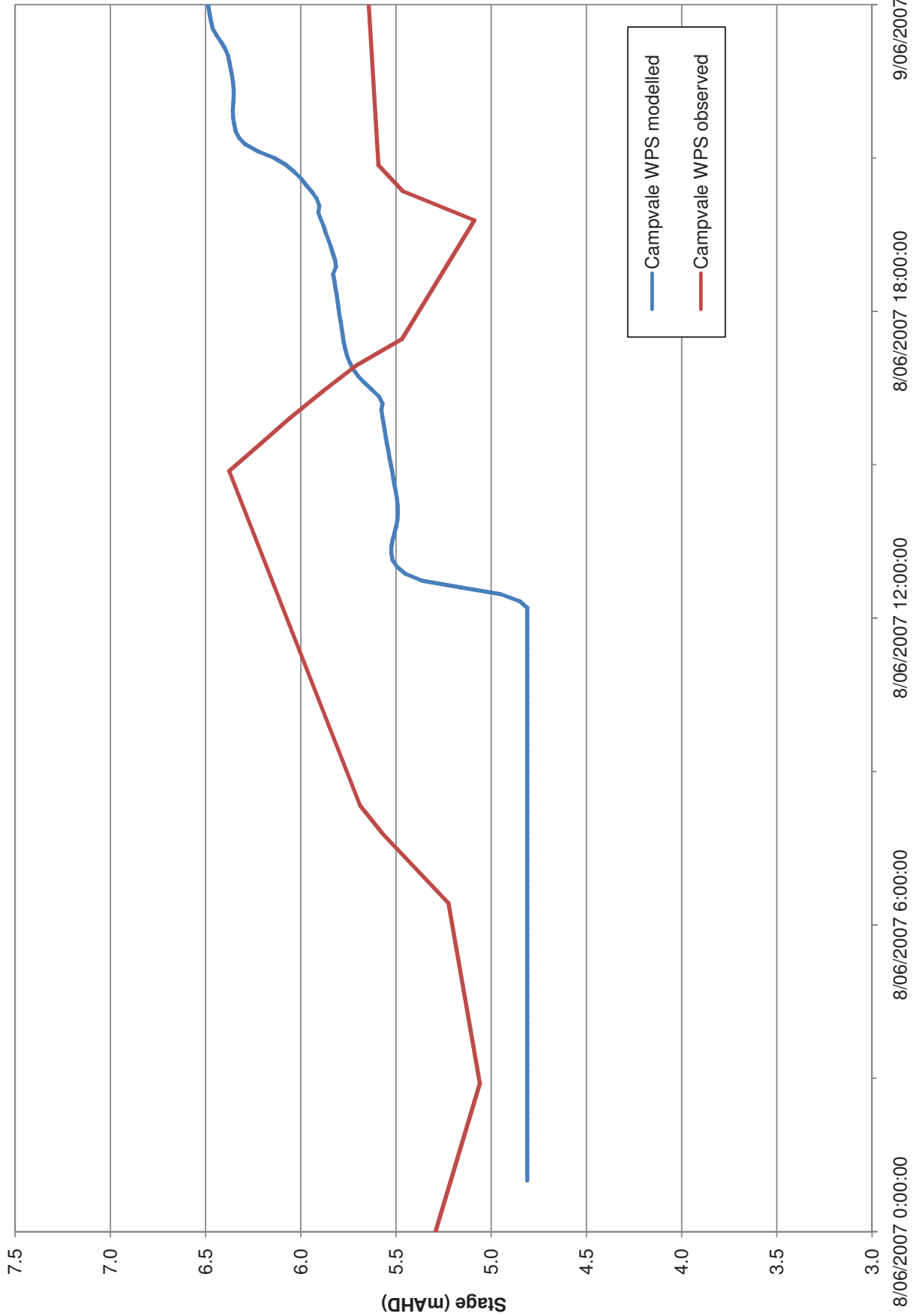


FIGURE 16
2007 CALIBRATION RESULT
VERSUS COMMUNITY DATA

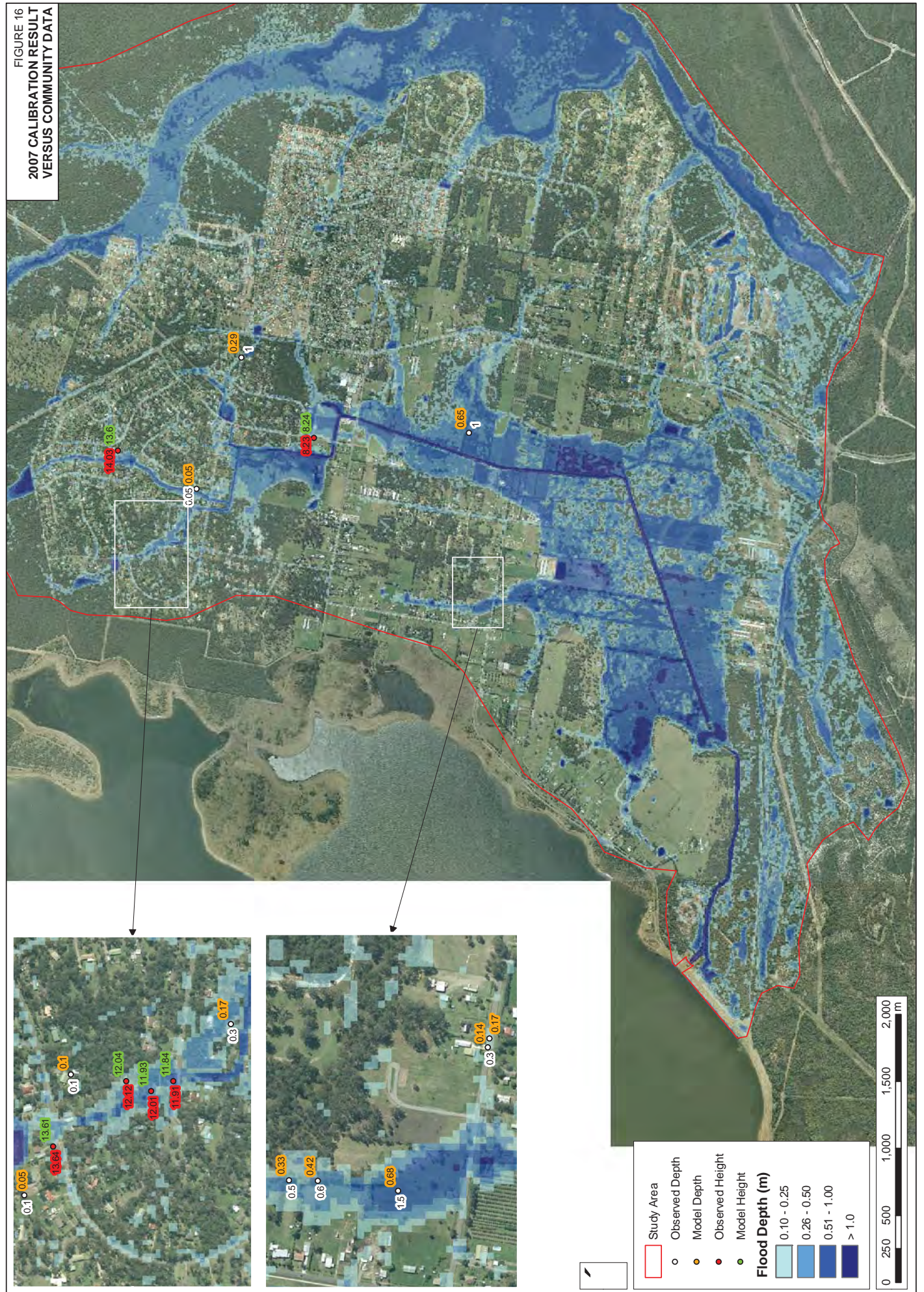
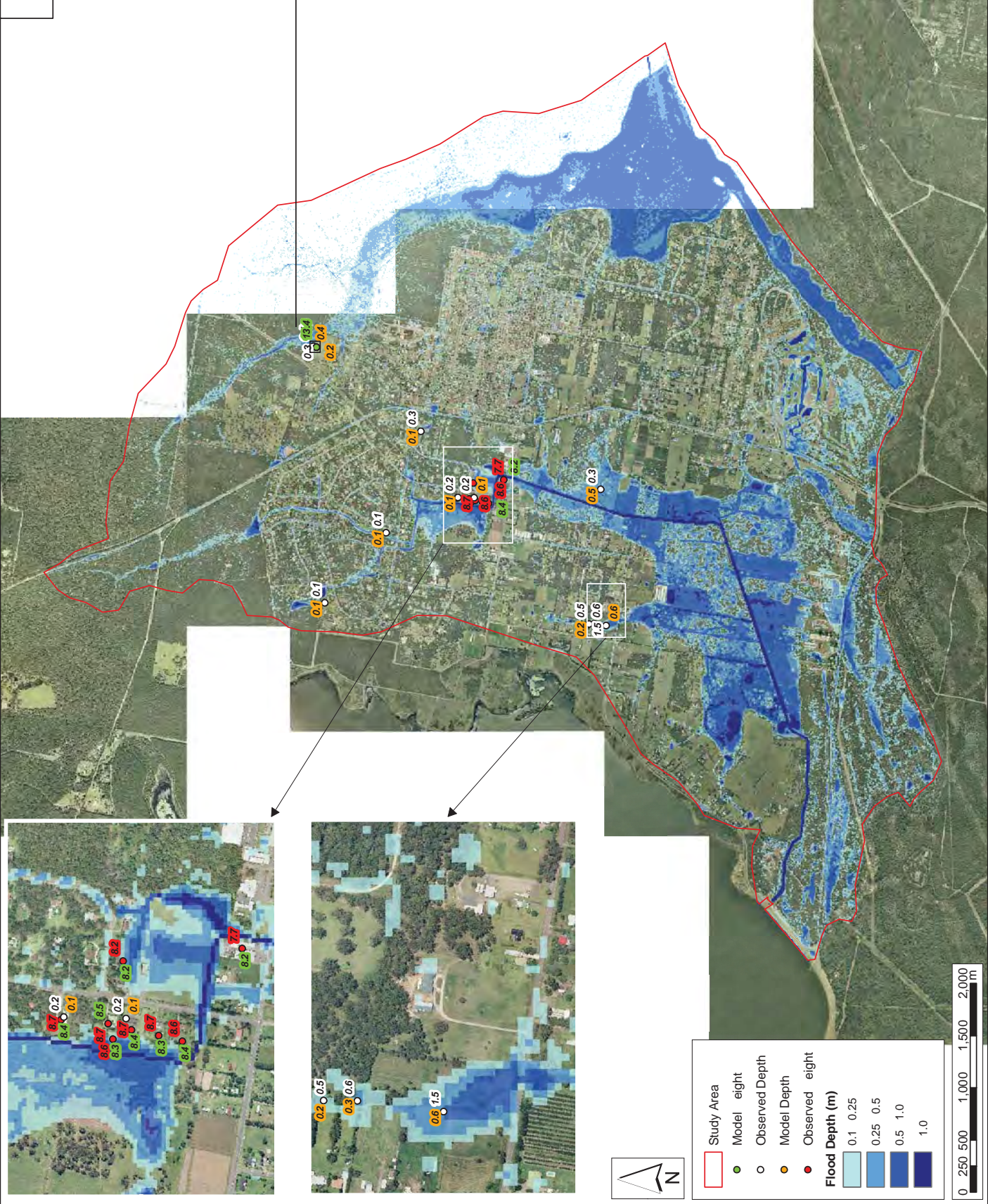


FIGURE 1
2009 VALIDATION RESULT
VERSUS COMMUNITY DATA



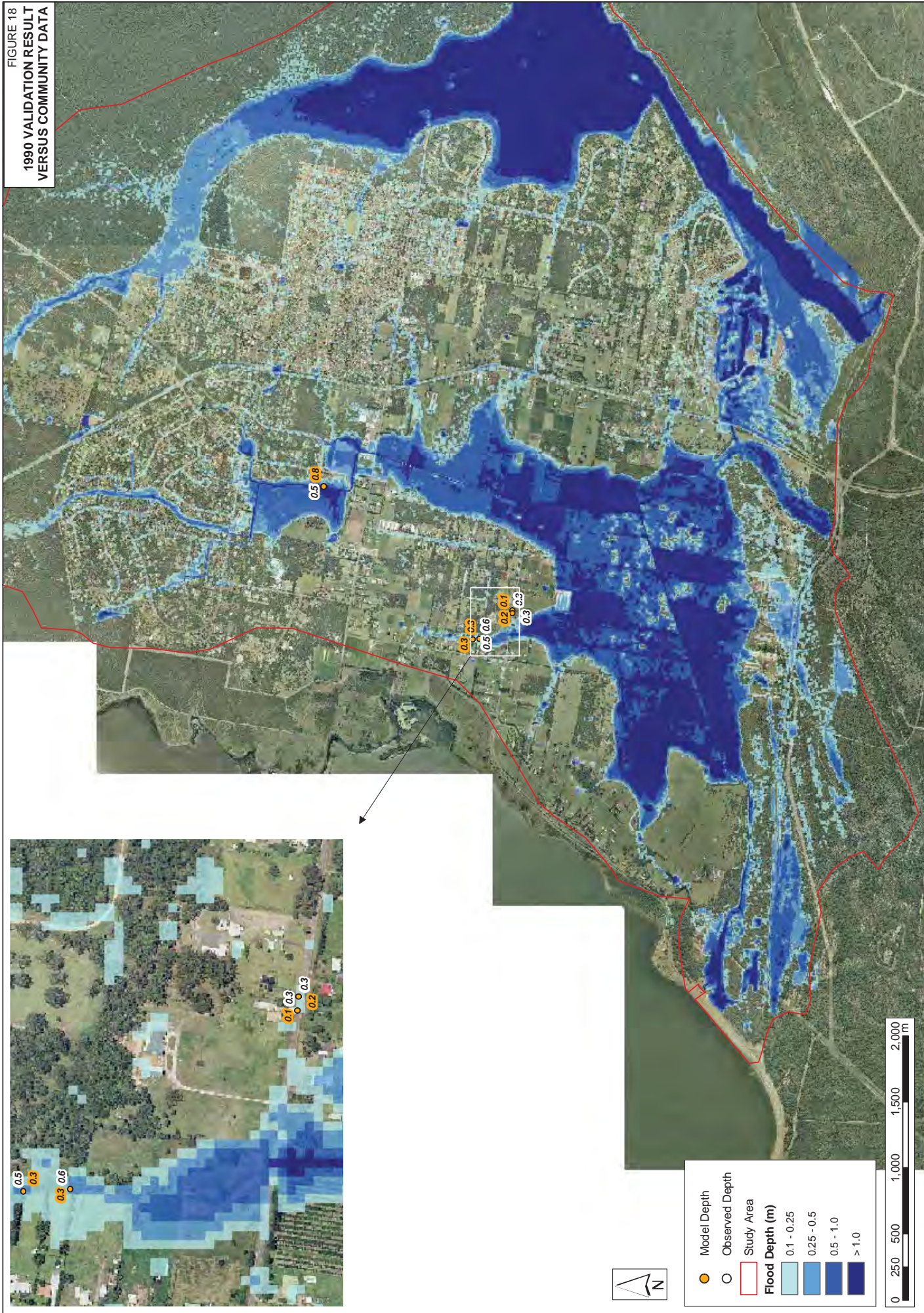


FIGURE 19
 PROFILE LOCATIONS AND
 EXTRACTION POINTS

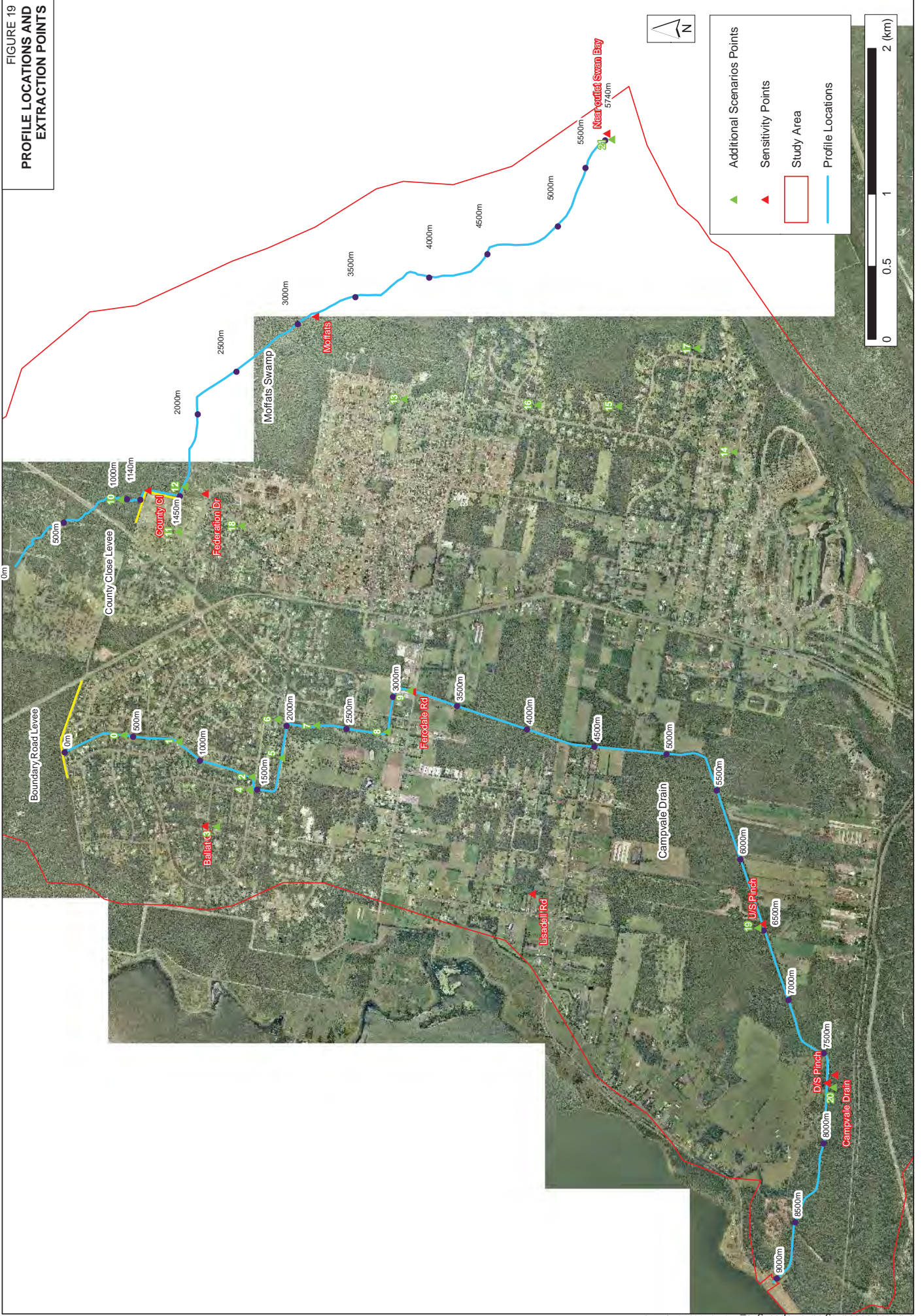


FIGURE 20
**CAMPVALE DRAIN - 2007 CALIBRATION EVENT
 PEAK HEIGHT FLOOD PROFILE**

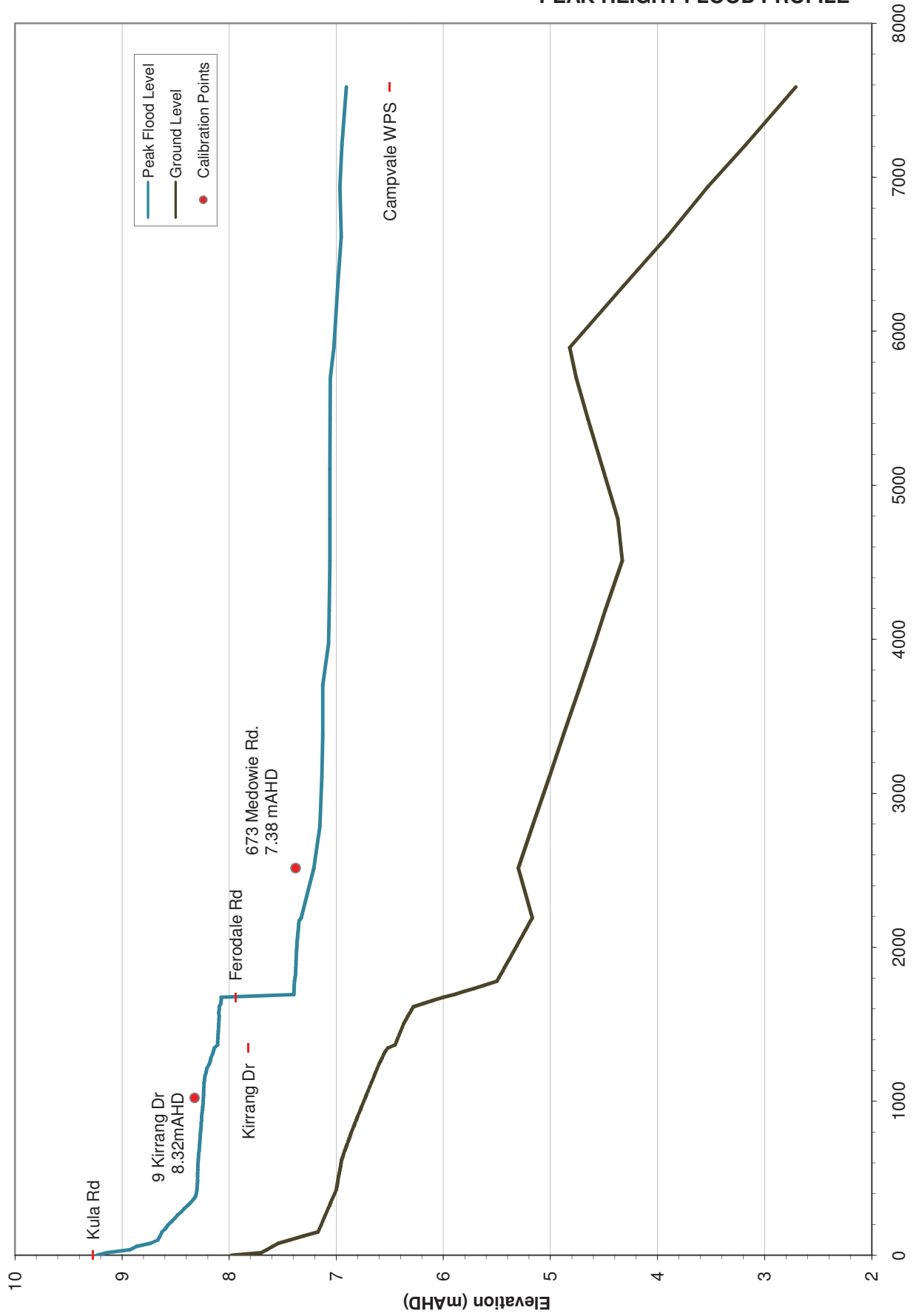


FIGURE 21
**CAMPVALE DRAIN - 2009 VALIDATION EVENT
 PEAK HEIGHT FLOOD PROFILE**

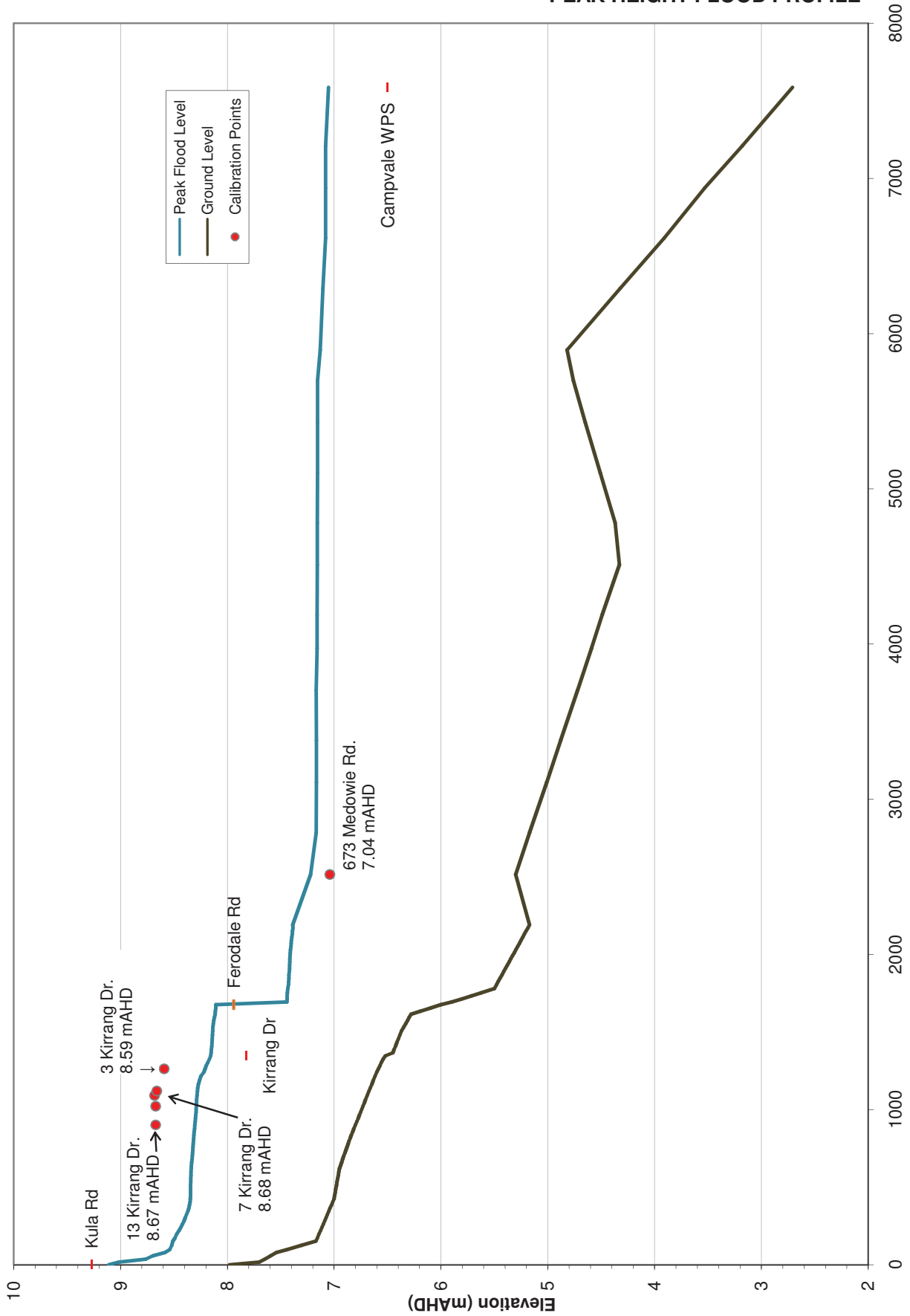


FIGURE 22
**CAMPVALE DRAIN - 1990 CALIBRATION EVENT
 PEAK HEIGHT FLOOD PROFILE**

