Figures

FIGURE 1
STUDY AREA

Graham Reservoir
Medowie Road
Boundary Rd
Ryan Rd
Medowie Rd
Boundary Rd
County Cl
Federation Dr
Ballat Cl
Kula Rd
Kirrang Dr
Wilga Rd
Medowie Rd
Ferodale Rd
Coolabah Rd
Kindlebark Dr
Abundance Rd
Lisadell Rd
James Rd
Medowie Rd
Moffats Swamp
Campvale WPS
Campvale Drain
Pinch
Richardson Rd
Campvale/Moffats swamps saddle
Salt Ash Outlet

N

Outlets
Campvale Drain
Catchment Divide
Campvale Drain Inundation Area
Study Area

0 0.5 1 2 3 4
km

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FIGURE 2
LEP 2013 LAND USES

N

Study Area

CDIA minimum fill level line (7.7 mAHD)

LEP Zone

- B2 Local Centre
- E1 National Parks and Nature Reserves
- E2 Environmental Conservation
- E3 Environmental Management
- IN2 Light Industrial
- R2 Low Density Residential
- R5 Large Lot Residential
- RE1 Public Recreation
- RE2 Private Recreation
- RU2 Rural Landscape
- SP1 Special Activities
- SP2 Infrastructure

0 0.5 1 2 Km

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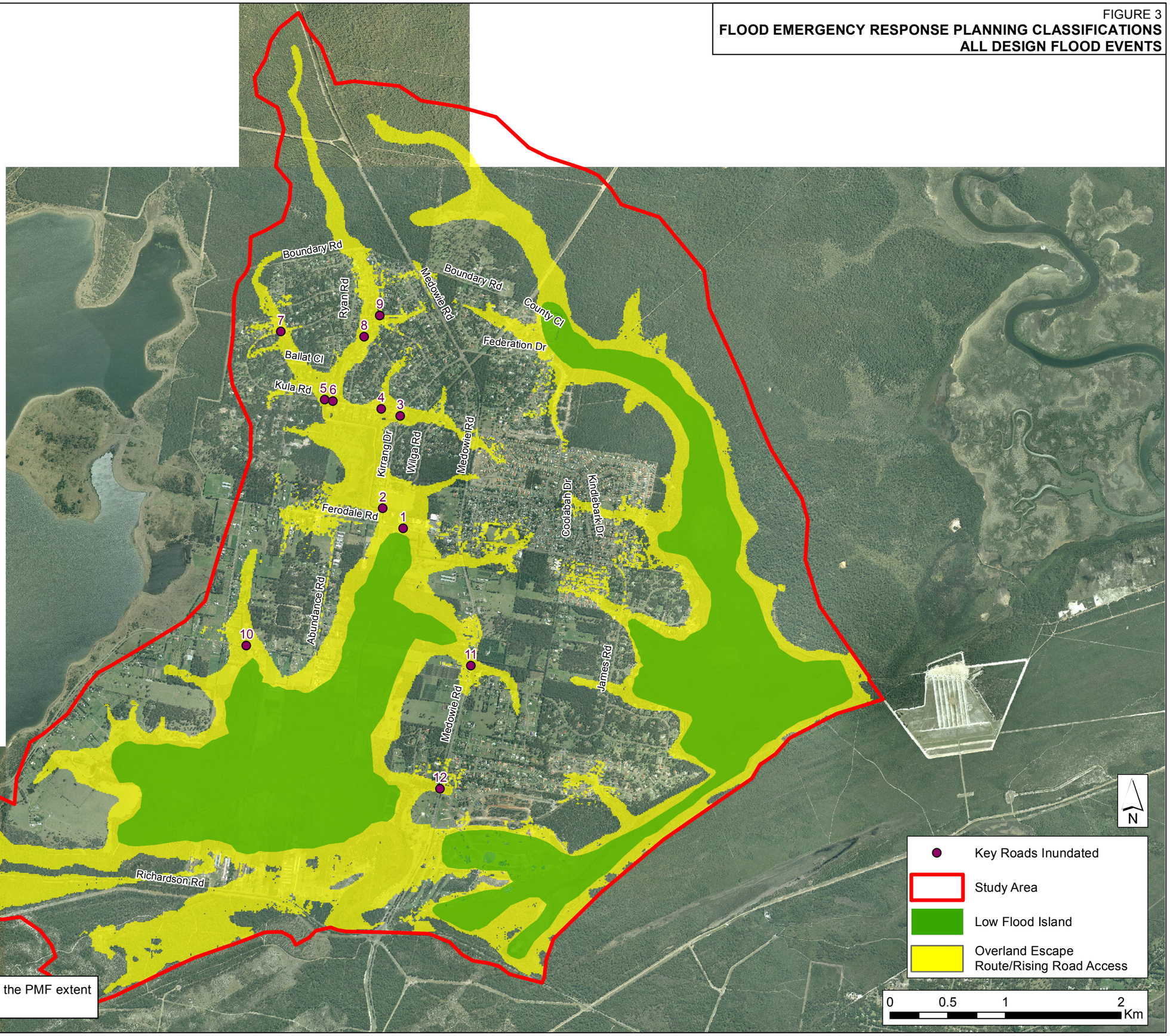
FIGURE 3

FLOOD EMERGENCY RESPONSE PLANNING CLASSIFICATIONS
ALL DESIGN FLOOD EVENTS

ID	Street
1	Ferodale Rd
2	Kirrang Dr
3	Kirrang Dr
4	Kula Rd
5	Kula Rd
6	Kula Rd
7	Kula Rd
8	Ryan Rd
9	Lewis Dr
10	Lisadell Rd
11	Medowie Rd
12	Medowie Rd

NOTE: Flooding at key locations is discussed in the Floodplain Risk Management Report



NOTE: Depths less than 100 mm are removed from the PMF extent before establishing the ERP classifications.

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FIGURE 4
FLOOD PLANNING AREA

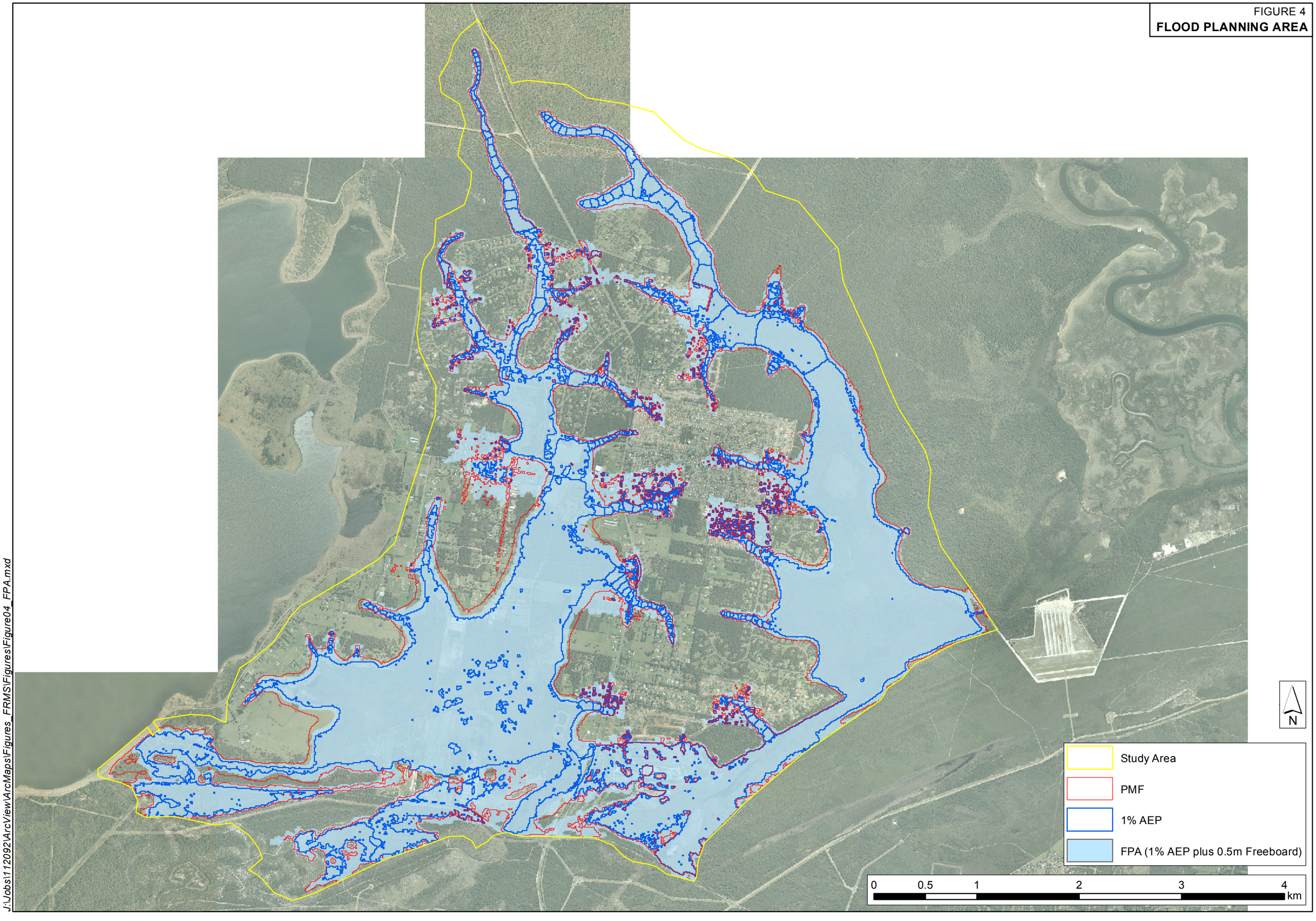

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FIGURE 5
PEAK FLOOD LEVEL IMPACT
FILLING IN THE CDIA
1% AEP EVENT

Filling above 7.0 mAHD

Filling above 7.7 mAHD

Ballat Cl
Kula Rd
Kula Rd
Kirrang Dr
Wilga Rd
Medowie Rd
Coolabah Dr
Ferodale Rd
Abundance Rd
Lisadell Rd
Medowie Rd
Richardson Rd

N

Dwellings
Minimum fill level line

Impact (m)

- < -0.04
- -0.04 - -0.01
- No Impact
- 0.01 - 0.05
- 0.05 - 0.10
- 0.10 - 0.15
- 0.15 - 0.20
- 0.20 - 0.25
- > 0.25
- Newly Flooded
- No Longer Flooded

0 0.25 0.5 1 1.5 2 km

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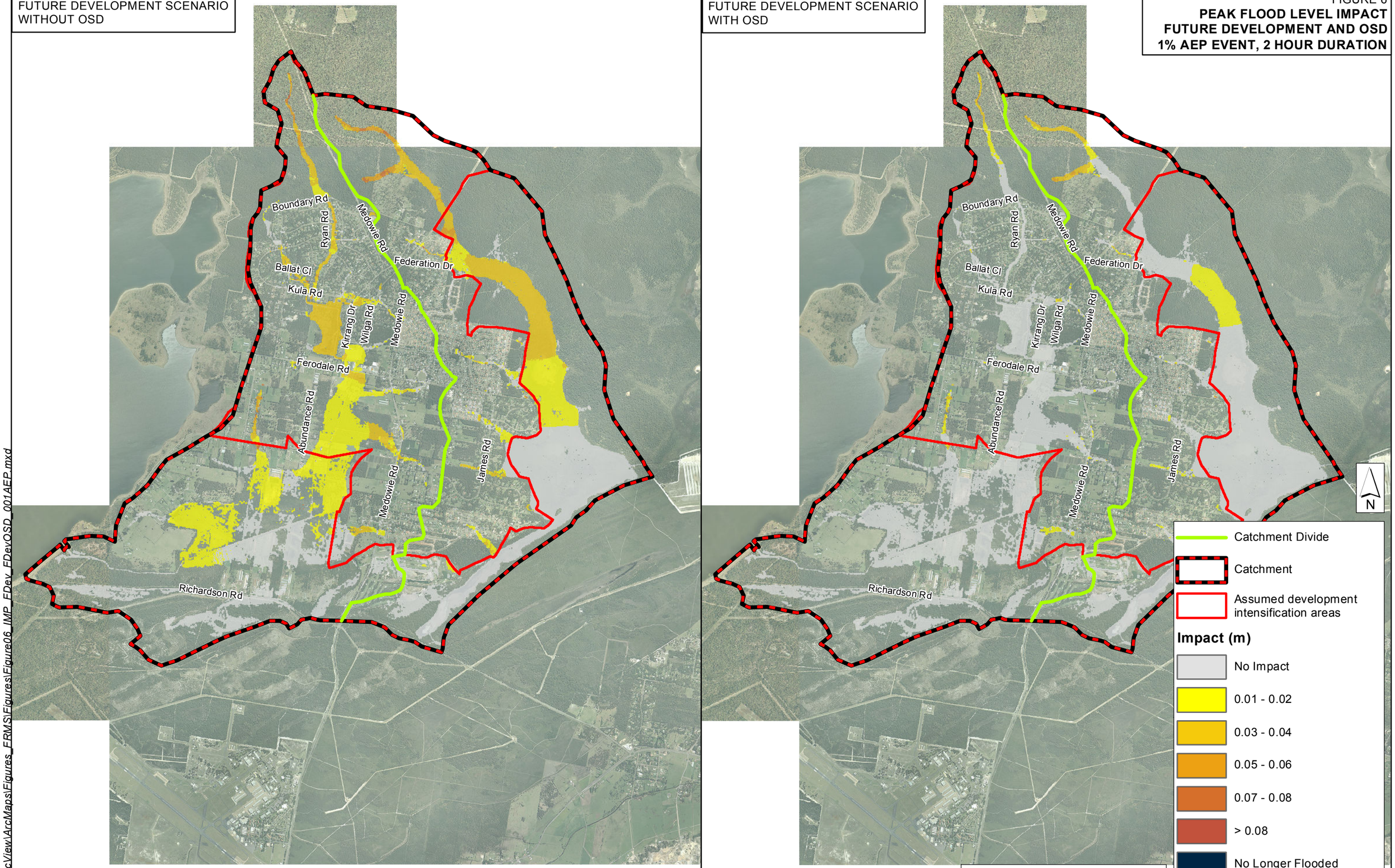
FIGURE 6

PEAK FLOOD LEVEL IMPACT
FUTURE DEVELOPMENT AND OSD
1% AEP EVENT, 2 HOUR DURATION

FUTURE DEVELOPMENT SCENARIO WITHOUT OSD

FUTURE DEVELOPMENT SCENARIO WITH OSD



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Appendix B - FIGURES

FIGURE B1
MODEL SETUP

CAMPVALE CATCHMENT

MOFFATS CATCHMENT

Study Area
Inflow Location
Outlets
Hydraulic Structures
Breaklines
1D Pipes
1D Open Drain
2D Open Drain
Campvale Drain Profile Line
Moffats Drain Profile Line
Catchment Divide
WBNM Subcatchments

N

0 0.5 1 2 3 4 Km

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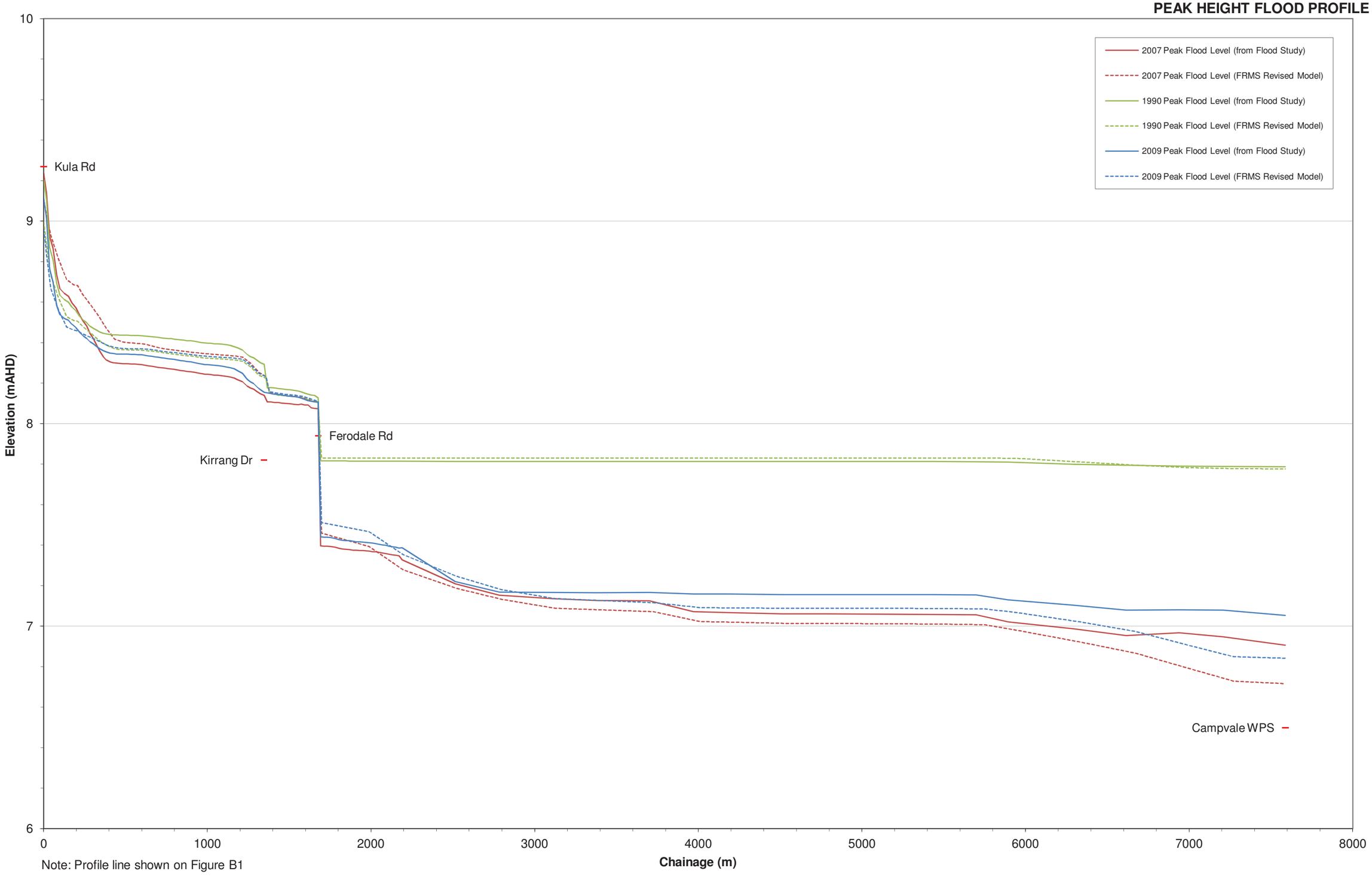
FIGURE B2

CAMPVALE DRAIN
1990, 2007 AND 2009 CALIBRATION EVENTS
PEAK HEIGHT FLOOD PROFILE



Note: Profile line shown on Figure B1

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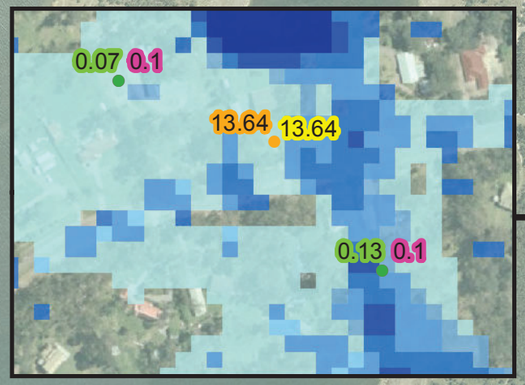
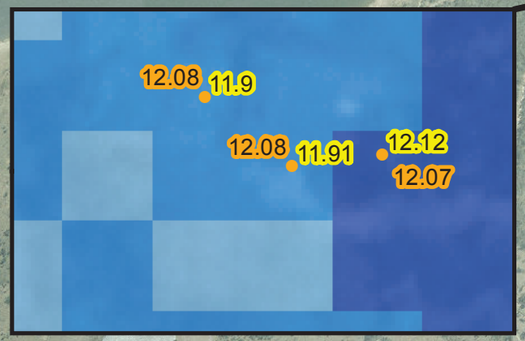
FIGURE B3
FLOOD EXTENT
2007 CALIBRATION EVENT





N

Study Area

Campvale Drain Profile Line

Calibration Points

Modelled Depth (m)

Modelled Heights (mAHD)

Observed Depth (m)

Observed Heights (mAHD)

Depth (m)

< 0.1

0.1 to 0.25

0.25 to 0.5

0.5 to 1

> 1

0 0.5 1 2 km

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FIGURE B4
FLOOD EXTENT
2009 CALIBRATION EVENT

0.08
0.1
0.09
0.1
0.13
0.3
0.33
13.39
13.39
0.33
0.4
13.47
13.39
13.45
13.39
0.19
8.19
0.2
8.19
0.19
0.5
0.18
0.3

N

Study Area

Campvale Profile Line

Calibration Points

Modelled Depth (m)

Modelled Heights (mAHD)

Observed Depth (m)

Observed Heights (mAHD)

Depth (m)

< 0.1

0.1 to 0.25

0.25 to 0.5

0.5 to 1

> 1

0 0.5 1 2 km

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FIGURE B5
FLOOD EXTENT
1990 CALIBRATION EVENT

N

Study Area

Campvale Profile Line

Calibration Points

Modelled Depth (m)

Modelled Heights (mAHD)

Observed Depth (m)

Observed Heights (mAHD)

Depth (m)

< 0.1

0.1 to 0.25

0.25 to 0.5

0.5 to 1

> 1

0 0.5 1 2 km

0.3 0.3

0.5 0.5

7.9 8.1

0.3 0.5 0.6

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FIGURE B6

FLOOD EXTENT DIFFERENCE
FLOOD STUDY AND UPDATED MODELLING
1% AEP DESIGN EVENT

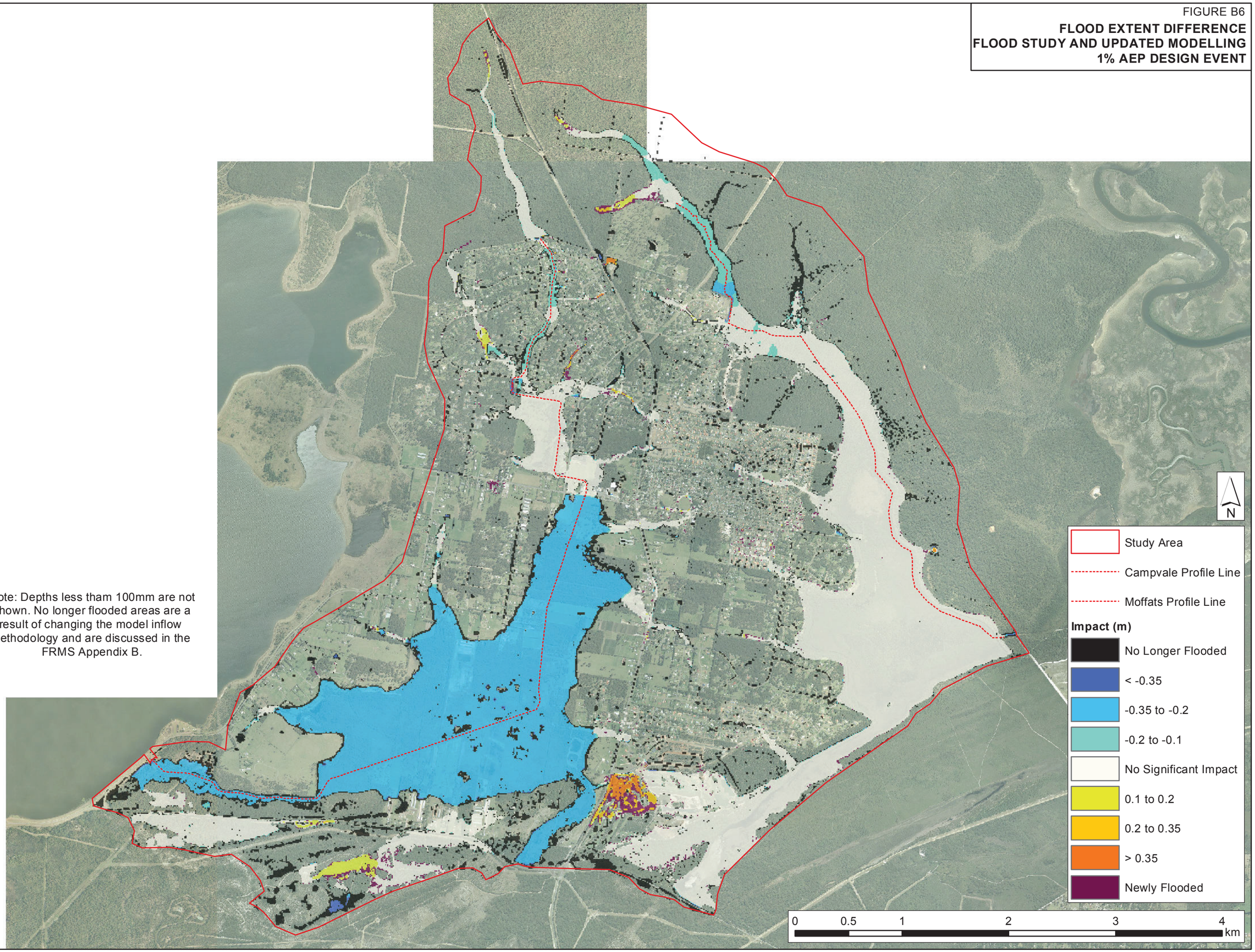

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Figure B7
2009 FLOOD MARK SURVEY

No. 13

House Floor RL 9.14
Garage Floor RL 8.90
Rear Shed RL 8.45
Flood RL 8.67
Pool Deck - NW Cnr RL 8.69

No. 9

House Floor RL 8.77
Garage Floor RL 8.63
Flood RL 8.67 - Garage
Flood RL 8.64 - Rear Shed
Floor Rear Shed RL 8.09

Owner says water comes from side drain - explains higher level at garage than shed

No. 7

House Floor RL 8.683
Flood RL8.685
Gareage Floor RL 8.41
Pooll Surround RL 8.50
Water comes from front of No. 9

No.5

House Floor RL 8.876
Flood RL 8.666
Pool Surround RL 8.50

No. 3

House Floor RL 8.59
Garage Floor RL 8.586
Flood Level RL 8.588
Water entered house through door to garage.

No. 8

House Floor RL 8.62
Floor of Covered Area
Between Buildings Rl 8.29
Flood RL 8.19

Box Culvert
5 / 3.6 * 1.0
Inv In 6.57
Inv Out 6.47

No. 31

Floor RL 8.45

No.33

Floor RL 8.59

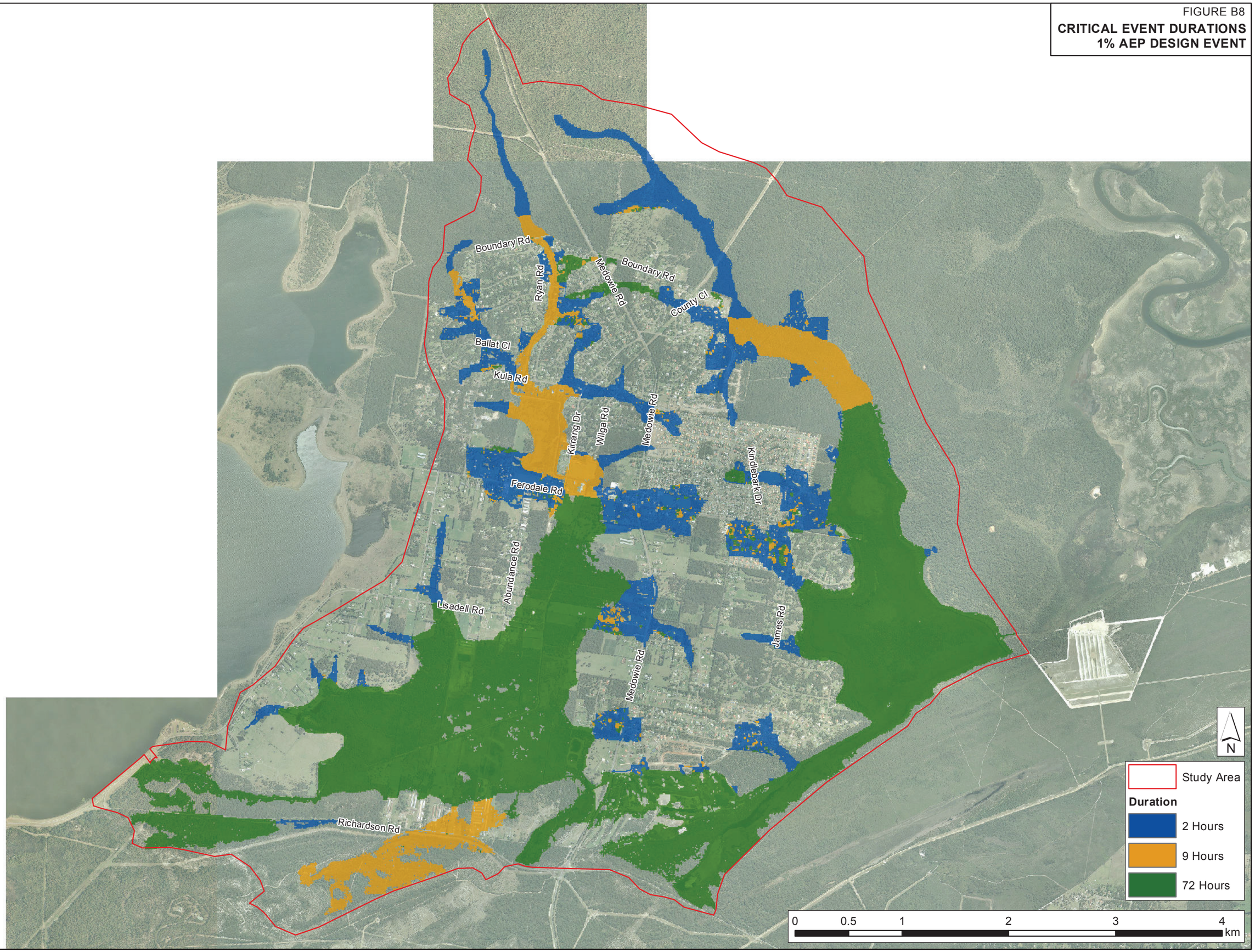
No.35

Flood RL 7.66 2/09
Flood RL 7.69 6/07
Floor RL 8.56

Box Culvert
Inv In RL 6.20
Inv Out RL 6.11

FIGURE B8

CRITICAL EVENT DURATIONS
1% AEP DESIGN EVENT



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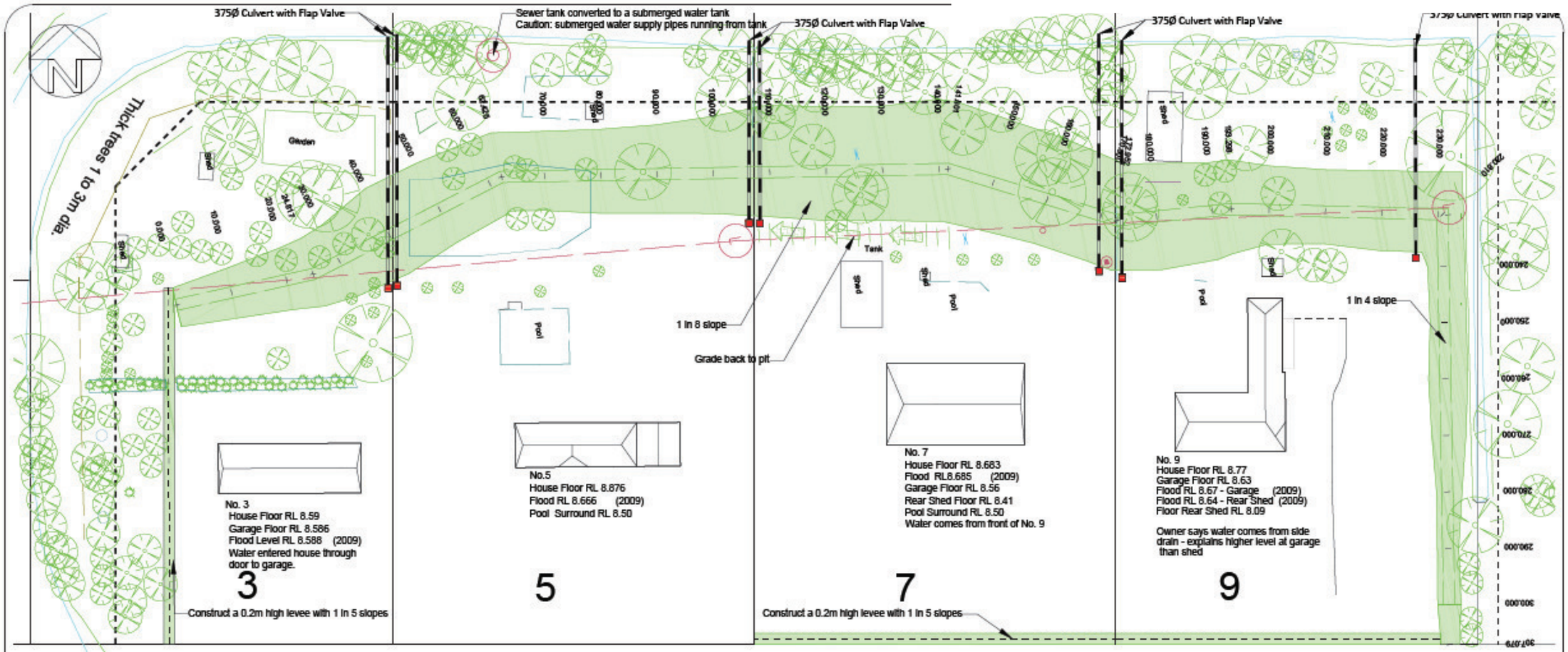
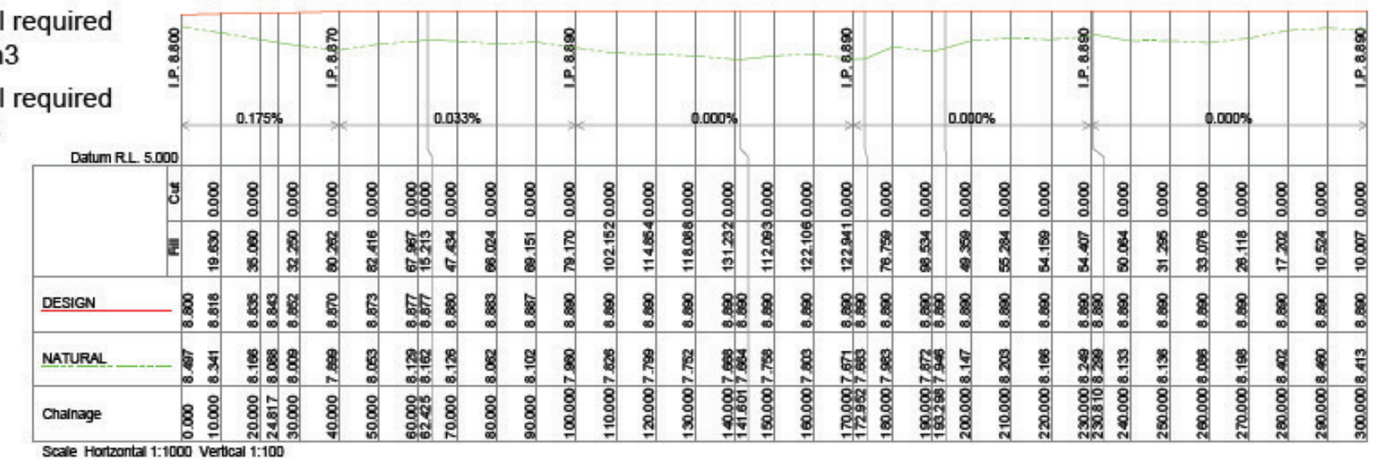
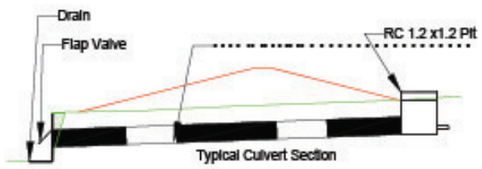


Total volume of fill required for levee = 2106m3

Total volume of fill required for berms = 32m3





DATUM PM 71563
A.H.D. RL 8.557

SURVEY: A Wilt 13/03/2009
DESIGNED: S Avery / /2012
CHECKED: H Stefanian / /2012

SCALES
Plan
Hor.
Vert.

Date	Amendment	Officer

Port Stephens COUNCIL ...a community partnership

KIRRANG DRIVE LEVEE OPTION 1
DRAINAGE SECTION
PORT STEPHENS COUNCIL

FILE No: PSC2005-3143	SHEET No: 2	No OF SHEETS: 9
SHEET DESCRIPTION: Plan View and Long Section of Levee	PLAN No: 05 - 3143 - 162	
Location: M:\jobs\nacle\05\05-3143-162		A2

DRAWING RESIZED
NOT TO SCALE