



# Bewsher Consulting Pty Ltd

## WESTERN SYDNEY PARKLANDS PROJECT DOONSIDE PRECINCT FLOOD MODELLING SUMMARY

### 1. INTRODUCTION

Under a commission from Blacktown City Council, Bewsher Consulting undertook flood modelling along Eastern Creek (and a number of its tributaries including lower Bungarabee Creek) as part of the 1996 Blacktown Floodplain Management Study. The upstream limit of the modelling was the M4 motorway.

The 1996 modelling was undertaken using a combination of RAFTS hydrologic and MIKE-11 hydraulic models which were supplied by the then Department of Water Resources and some 'update' modifications were made to those models as part of that study.

For this flood study, the Department of Infrastructure Planning and Natural Resources (DIPNR) provided a more recent set of MIKE-11 model files.

The flood modelling for the Parklands project was discussed with Blacktown City Council staff. Arising from those discussions, Council agreed that:

- since there had been no significant flood events since the 1996 modelling had been undertaken, there is no recent data which might be used to verify the earlier model results;
- the 1996 RAFTS modelling results were still compatible with current day catchment conditions;
- subject to the incorporation of additional floodplain cross sections (to more accurately define the flood levels throughout the Parklands frontage to Eastern and Bungarabee Creeks) and information regarding current bridge waterway openings, the DIPNR MIKE-11 model may be used to derive 100 year and Probable Maximum Flood (PMF) flood levels.

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## 2. FLOODPLAIN SURVEY DATA BASE

The following survey information was used to upgrade the DIPNR MIKE-11 model upstream of the main western railway line:

- ▶ Survey data supplied by Whelans (the Parkland project surveyor):
  - 0.25 metre contours throughout the Parklands project,
  - 1.0 metre contours covering the general Eastern Creek floodplain area,
  - copy of cross section survey previously carried out by Telstra over the Eastern Creek floodplain between the Great Western Highway and Eastern Road,
  - additional project-specific floodplain cross sections as specified by Bewsher Consulting,
  - bridge structure surveys at the Eastern Creek M7-M4 east-bound on-ramp and the Great Western Highway Eastern Creek west-bound carriageway bridge;
- ▶ WAE drawings for the Bungarabee Creek crossing at Doonside Rd and the Eastern Creek Crossing at Eastern Road (using plans provided by Blacktown City Council).

## 3. DESCRIPTION OF PARKLANDS MIKE-11 MODEL

The 1996 RAFTS flow hydrographs were preserved.

While the DIPNR MIKE-11 model actually covers the Eastern Creek floodplain upstream of Garfield Rd, Riverstone and includes the Breakfast Creek, Reedy Creek, Bungarabee and Bells Creek tributaries, only the section of the model upstream of the Main Western Railway line has been reviewed and upgraded as part of this study. (It therefore follows that Bewsher Consulting has not verified the model results generated downstream of the railway line.)

The DIPNR MIKE-11 model was amended as follows:

- ▶ utilisation of the latest survey information (see **Section 2**) to both include additional floodplain cross sections and update bridge waterway openings,
- ▶ modification of various bridge structure hydraulic losses,
- ▶ improved definition of overbank flow regimes at the confluence of Eastern Creek and Bungarabee Creek.

**Tables 1 and 2** detail the resultant 100 year and PMF flood levels (and also provide a comparison with the 1996 flood model results). The tabulated flood levels between 'Eastern Creek' 6290 & 5320 and 'Bung Creek' 1560 & 650 represent the flood levels which were used to generate the flood inundation lines for the Doonside precinct. While it can be seen that the latest flood levels vary slightly from the 1996 model results, they are considered to represent an improved definition of the local area flood levels.

A handwritten signature in black ink, appearing to read "Don Still". The signature is written in a cursive style with a large initial "D" and a long horizontal stroke.

Don Still  
Director  
8 May 2007

**TABLE 1: MIKE-11 MODELLING RESULTS**

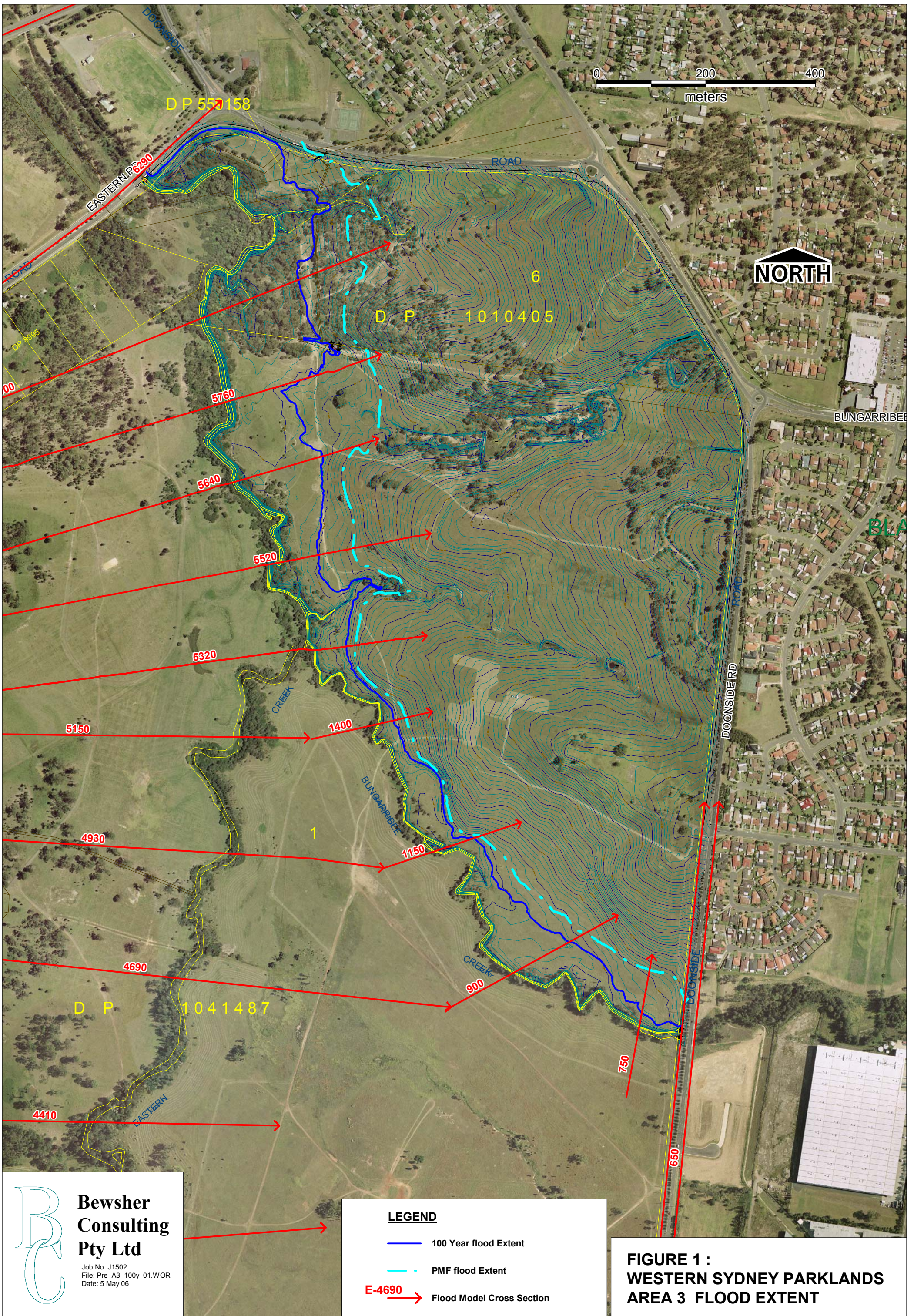
**100 YEAR FLOOD LEVELS**

2006 Parklands Study		1996 Blacktown Study	
Cross Section ID	Flood Level	Section ID	Flood Level
EASTERN CK 1750.00	45.80	EASTERN CK 1730.00	45.53
EASTERN CK 1925.00	44.73		
EASTERN CK 2100.00	44.26	EASTERN CK 2050.00	44.33
EASTERN CK 2335.00	43.50		
EASTERN CK 2570.00	43.06	EASTERN CK 2570.00	43.76
M4 Bridge (2620)			
EASTERN CK 2670.00	42.99	EASTERN CK 2670.00	43.15
EASTERN CK 2820.00	42.48		
EASTERN CK 3020.00	41.96		
EASTERN CK 3170.00	41.37	EASTERN CK 3170.00	41.82
EASTERN CK 3320.00	40.60		
EASTERN CK 3470.00	40.17	EASTERN CK 3470.00	40.46
EASTERN CK 3640.00	39.36	EASTERN CK 3640.00	39.60
EASTERN CK 3640.00	39.36		
GWH Bridge (3690)			
EASTERN CK 3720.00	39.31	EASTERN CK 3720.00	39.44
EASTERN CK 3720.00	39.31		
EASTERN CK 3900.00	38.99	EASTERN CK 3900.00	39.22
EASTERN CK 4000.00	38.74	EASTERN CK 4000.00	38.92
EASTERN CK 4190.00	38.31	EASTERN CK 4190.00	38.43
EASTERN CK 4410.00	37.64	EASTERN CK 4410.00	37.70
EASTERN CK 4550.00	37.28		
EASTERN CK 4690.00	37.05	EASTERN CK 4690.00	37.04
EASTERN CK 4930.00	36.56	EASTERN CK 4930.00	36.49
EASTERN CK 5150.00	35.95	EASTERN CK 5150.00	35.83
EASTERN CK 5320.00	35.72	EASTERN CK 5320.00	35.54
EASTERN CK 5520.00	34.98	EASTERN CK 5520.00	35.31
EASTERN CK 5640.00	34.56		
EASTERN CK 5760.00	34.13		
EASTERN CK 5900.00	33.97	EASTERN CK 5910.00	35.00
EASTERN CK 6095.00	33.93		
EASTERN CK 6290.00	33.89	EASTERN CK 6290.00	34.17
Eastern Rd (6320)			
EASTERN CK 6340.00	33.58	EASTERN CK 6340.00	34.03
EASTERN CK 6340.00	33.58		
EASTERN CK 6485.00	32.52		
EASTERN CK 6630.00	32.22	EASTERN CK 6630.00	32.27
Western Railway (6660)			
EASTERN CK 6680.00	32.08	EASTERN CK 6680.00	32.09
EASTERN CK 6840.00	31.92		
EASTERN CK 7000.00	31.76	EASTERN CK 7000.00	31.77
EASTERN CK 7200.00	31.52		
EASTERN CK 7400.00	31.24		
EASTERN CK 7600.00	30.84	EASTERN CK 7600.00	30.85
EASTERN CK 7800.00	30.22		
EASTERN CK 8000.00	29.40	EASTERN CK 8000.00	29.40
BUNG CK 0.00	40.36	BUNG CK 0	41.22
BUNG CK 200.00	39.34	BUNG CK 200	40.59
BUNG CK 400.00	39.08	BUNG CK 400	40.15
BUNG CK 600.00	38.89	BUNG CK 600	39.95
Doonside Rd (625)			
BUNG CK 650.00	38.87	BUNG CK 650	39.57
BUNG CK 750.00	38.56		
BUNG CK 900.00	37.61	BUNG CK 900	37.86
BUNG CK 1150.00	36.47	BUNG CK 1140	36.79
BUNG CK 1400.00	35.76	BUNG CK 1380	35.92
BUNG CK 1560.00	35.72		

**TABLE 2: MIKE-11 MODELLING RESULTS**

**PMF FLOOD LEVELS**

2006 Parklands Study		1996 Blacktown Study	
Section ID	Flood Level	Section ID	Flood Level
EASTERN CK 1750.00	46.32	EASTERN CK 1730.00	47.20
EASTERN CK 1925.00	45.53		
EASTERN CK 2100.00	45.40	EASTERN CK 2050.00	47.00
EASTERN CK 2335.00	45.14		
EASTERN CK 2570.00	45.02	EASTERN CK 2570.00	46.90
M4 Bridge (2620)			
EASTERN CK 2670.00	44.15	EASTERN CK 2670.00	44.29
EASTERN CK 2820.00	43.76		
EASTERN CK 3020.00	43.29	EASTERN CK 3170.00	42.86
EASTERN CK 3170.00	42.81		
EASTERN CK 3320.00	42.24	EASTERN CK 3470.00	42.06
EASTERN CK 3470.00	41.93		
EASTERN CK 3640.00	41.75	EASTERN CK 3640.00	41.68
EASTERN CK 3640.00	41.75		
GWH Bridge (3690)			
EASTERN CK 3720.00	40.42	EASTERN CK 3720.00	41.04
EASTERN CK 3720.00	40.42		
EASTERN CK 3900.00	40.02	EASTERN CK 3900.00	40.04
EASTERN CK 4000.00	39.73	EASTERN CK 4000.00	39.77
EASTERN CK 4190.00	39.33	EASTERN CK 4190.00	39.38
EASTERN CK 4410.00	38.65	EASTERN CK 4410.00	38.62
EASTERN CK 4550.00	38.20		
EASTERN CK 4690.00	37.97	EASTERN CK 4690.00	37.83
EASTERN CK 4930.00	37.49	EASTERN CK 4930.00	37.30
EASTERN CK 5150.00	36.89	EASTERN CK 5150.00	36.70
EASTERN CK 5320.00	36.66	EASTERN CK 5320.00	36.53
EASTERN CK 5520.00	36.15	EASTERN CK 5520.00	36.39
EASTERN CK 5640.00	36.05		
EASTERN CK 5760.00	36.00		
EASTERN CK 5900.00	35.96	EASTERN CK 5910.00	36.11
EASTERN CK 6095.00	35.91		
EASTERN CK 6290.00	35.78	EASTERN CK 6290.00	35.52
Eastern Rd (6320)			
EASTERN CK 6340.00	35.77	EASTERN CK 6340.00	35.41
EASTERN CK 6340.00	35.77		
EASTERN CK 6485.00	35.72		
EASTERN CK 6630.00	35.70	EASTERN CK 6630.00	35.29
Western Railway (6660)			
EASTERN CK 6680.00	33.61	EASTERN CK 6680.00	33.47
EASTERN CK 6840.00	33.43		
EASTERN CK 7000.00	33.24	EASTERN CK 7000.00	33.10
EASTERN CK 7200.00	32.95		
EASTERN CK 7400.00	32.64		
EASTERN CK 7600.00	32.30	EASTERN CK 7600.00	32.17
EASTERN CK 7800.00	31.90		
EASTERN CK 8000.00	31.36	EASTERN CK 8000.00	31.34
BUNG CK 0.00	41.41	BUNG CK 0	42.51
BUNG CK 200.00	40.76	BUNG CK 200	41.83
BUNG CK 400.00	40.72	BUNG CK 400	41.17
BUNG CK 600.00	40.64	BUNG CK 600	40.79
Doonside Rd (625)			
BUNG CK 650.00	40.10	BUNG CK 650	40.38
BUNG CK 750.00	39.46		
BUNG CK 900.00	38.15	BUNG CK 900	38.68
BUNG CK 1150.00	37.03		
BUNG CK 1400.00	36.69		
BUNG CK 1560.00	36.66	BUNG CK 1560	36.53



**Bewsher Consulting Pty Ltd**  
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**LEGEND**

- 100 Year flood Extent
- - - PMF flood Extent
- E-4690 Flood Model Cross Section

**FIGURE 1 :  
 WESTERN SYDNEY PARKLANDS  
 AREA 3 FLOOD EXTENT**