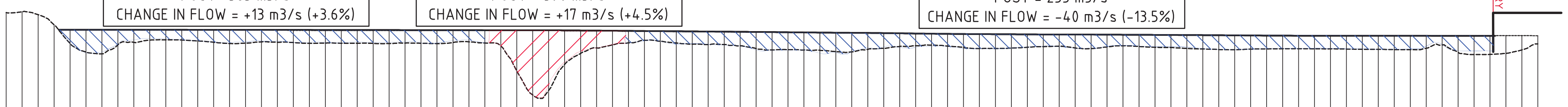
APPENDIX B

VELOCITY AFFLUX MAPS AND FLOW DISTIBUTION SECTIONS

Q WEST PLAIN
PRE = 352 m3/s
POST =365 m3/s
CHANGE IN FLOW = +13 m3/s (+3.6%)

Q CHANNEL
PRE = 373 m3/s
POST = 390 m3/s
CHANGE IN FLOW = +17 m3/s (+4.5%)

Q EAST PLAIN
PRE = 295 m3/s
POST = 255 m3/s
CHANGE IN FLOW = -40 m3/s (-13.5%)



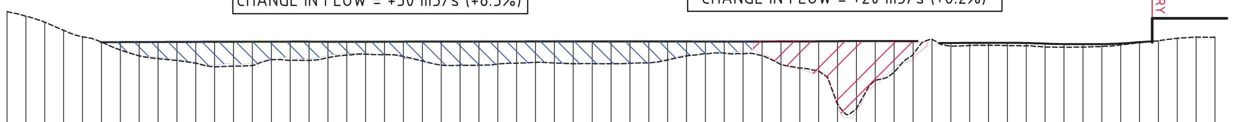
DATUM 18.000

CHAINAGE	EXISTING SURFACE LEVEL	PRE DEV WSL	POST DEV WSL
10.000	34.265		
20.000	33.899		
30.000	32.647		
40.000	30.326	31.976	32.032
50.000	29.251	31.976	32.032
60.000	29.045	31.975	32.031
70.000	30.148	31.974	32.030
80.000	30.464	31.973	32.029
90.000	30.735	31.968	32.023
100.000	30.78	31.965	32.020
110.000	30.747	31.961	32.017
120.000	30.636	31.959	32.015
130.000	30.469	31.958	32.013
140.000	30.316	31.958	32.013
150.000	30.363	31.955	32.010
160.000	30.516	31.952	32.007
170.000	30.475	31.950	32.005
180.000	30.434	31.948	32.003
190.000	30.332	31.945	32.000
200.000	30.37	31.943	31.997
210.000	30.355	31.939	31.993
220.000	30.346	31.937	31.991
230.000	30.326	31.935	31.988
240.000	30.309	31.931	31.985
250.000	30.371	31.929	31.982
260.000	30.342	31.927	31.980
270.000	30.308	31.924	31.977
280.000	30.440	31.921	31.973
290.000	30.524	31.918	31.970
300.000	30.38	31.912	31.963
310.000	30.001	31.906	31.957
320.000	26.914	31.907	31.959
330.000	23.912	31.907	31.958
340.000	24.477	31.903	31.955
350.000	27.718	31.895	31.945
360.000	29.094	31.883	31.932
370.000	29.762	31.870	31.919
380.000	30.144	31.857	31.905
390.000	30.387	31.839	31.885
400.000	30.70	31.821	31.866
410.000	30.600	31.807	31.851
420.000	30.380	31.793	31.837
430.000	30.234	31.778	31.820
440.000	30.187	31.762	31.803
450.000	30.190	31.746	31.786
460.000	30.018	31.733	31.771
470.000	29.690	31.717	31.754
480.000	29.519	31.698	31.734
490.000	29.551	31.680	31.714
500.000	29.52	31.662	31.695
510.000	29.475	31.643	31.674
520.000	29.311	31.627	31.657
530.000	29.272	31.616	31.644
540.000	29.599	31.602	31.629
550.000	29.725	31.584	31.608
560.000	29.947	31.560	31.582
570.000	30.039	31.536	31.555
580.000	30.112	31.515	31.531
590.000	29.999	31.498	31.511
600.000	29.82	31.483	31.494
610.000	29.693	31.472	31.482
620.000	29.691	31.463	31.472
630.000	29.746	31.453	31.460
640.000	29.853	31.442	31.448
650.000	29.933	31.433	31.437
660.000	29.979	31.427	31.430
670.000	29.759	31.425	31.427
680.000	29.680	31.422	31.424
690.000	29.898	31.415	31.416
700.000	30.04	31.406	31.405
710.000	29.943	31.399	31.397
720.000	29.846	31.391	31.388
730.000	29.812	31.381	31.377
740.000	29.697	31.371	31.366
750.000	29.634	31.362	31.355
760.000	29.565	31.352	31.342
770.000	29.536	31.340	31.329
780.000	29.619	31.329	31.314
790.000	29.634	31.319	31.302
800.000	29.67	31.312	31.292
810.000	29.673	31.308	31.285
820.000	29.657	31.305	31.281
830.000	29.646	31.303	31.278
840.000	29.627	31.301	31.276
850.000	29.599	31.301	31.276
860.000	29.582	31.300	31.275
870.000	29.562	31.300	31.274
880.000	29.548	31.300	31.274
890.000	29.721	31.300	31.272
900.000	30.14	31.300	31.266
910.000	29.206	31.301	31.267
920.000	28.941	31.301	31.270
930.000	28.967	31.303	31.270
940.000	29.096	31.304	
950.000	29.517	31.297	
960.000	30.256	31.284	

LONGITUDINAL SECTION - SEC 3 (3 / FC01)
HORIZONAL SCALE 1:2000
VERTICAL SCALE 1:400

Q WEST PLAIN
PRE = 600 m3/s
POST =650 m3/s
CHANGE IN FLOW = +50 m3/s (+8.3%)

Q CHANNEL
PRE = 320 m3/s
POST =340 m3/s
CHANGE IN FLOW = +20 m3/s (+6.2%)



DATUM 20.000

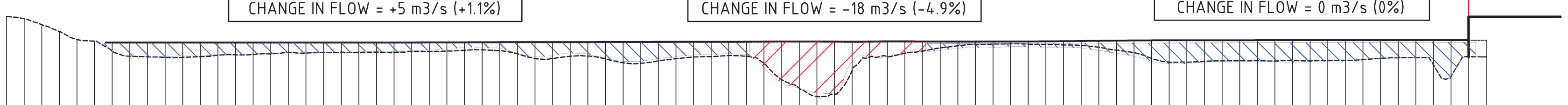
CHAINAGE	EXISTING SURFACE LEVEL	PRE DEV WSL	POST DEV WSL
10.000	34.905		
20.000	34.259		
30.000	33.396		
40.000	32.711		
50.000	32.159		32.152
60.000	31.323	32.094	32.156
70.000	30.700	32.102	32.165
80.000	30.395	32.109	32.172
90.000	30.210	32.116	32.180
100.000	29.91	32.125	32.189
110.000	29.521	32.133	32.198
120.000	29.611	32.138	32.204
130.000	29.677	32.140	32.206
140.000	30.311	32.141	32.207
150.000	30.213	32.142	32.208
160.000	30.209	32.142	32.208
170.000	30.503	32.139	32.204
180.000	30.772	32.137	32.202
190.000	30.870	32.138	32.203
200.000	30.82	32.140	32.205
210.000	30.634	32.143	32.208
220.000	30.161	32.148	32.213
230.000	29.707	32.153	32.218
240.000	29.695	32.155	32.221
250.000	29.707	32.156	32.222
260.000	29.831	32.158	32.223
270.000	29.918	32.159	32.224
280.000	30.006	32.160	32.225
290.000	29.947	32.161	32.226
300.000	29.87	32.163	32.228
310.000	29.877	32.165	32.230
320.000	29.862	32.166	32.231
330.000	29.908	32.167	32.231
340.000	29.957	32.167	32.232
350.000	30.262	32.166	32.230
360.000	30.684	32.162	32.226
370.000	30.933	32.158	32.221
380.000	30.985	32.157	32.220
390.000	30.922	32.156	32.220
400.000	30.72	32.157	32.222
410.000	29.787	32.160	32.226
420.000	29.412	32.164	32.231
430.000	29.104	32.175	32.242
440.000	25.613	32.187	32.257
450.000	25.114	32.195	32.265
460.000	28.109	32.197	32.266
470.000	28.985	32.199	32.268
480.000	30.831	32.204	32.273
490.000	32.454		
500.000	31.73	32.006	32.066
510.000	31.796	32.016	32.077
520.000	31.818	32.023	32.082
530.000	31.784	32.024	32.080
540.000	31.760	32.005	32.065
550.000	31.631	31.934	31.995
560.000	31.623	31.888	31.948
570.000	31.627	31.875	31.941
580.000	31.688	31.884	31.948
590.000	31.853	31.961	32.011
600.000	32.08	32.121	32.159
610.000	32.294		
620.000	32.558		
630.000	32.692		

LONGITUDINAL SECTION - SEC 22 (22 / FC01)
HORIZONAL SCALE 1:2000
VERTICAL SCALE 1:400

Q WEST PLAIN
PRE = 435 m3/s
POST =440 m3/s
CHANGE IN FLOW = +5 m3/s (+1.1%)

Q CHANNEL
PRE = 368 m3/s
POST =350 m3/s
CHANGE IN FLOW = -18 m3/s (-4.9%)

Q EAST PLAIN
PRE = 217 m3/s
POST =217 m3/s
CHANGE IN FLOW = 0 m3/s (0%)



DATUM 22.000

CHAINAGE	EXISTING SURFACE LEVEL	PRE DEV WSL	POST DEV WSL
10.000	35.137		
20.000	34.452		
30.000	33.687		
40.000	32.769		
50.000	32.589		
60.000	31.464	32.361	32.431
70.000	30.870	32.360	32.431
80.000	30.799	32.362	32.432
90.000	30.731	32.360	32.431
100.000	30.75	32.359	32.430
110.000	30.815	32.358	32.428
120.000	30.997	32.355	32.426
130.000	31.036	32.354	32.424
140.000	31.075	32.352	32.423
150.000	31.147	32.352	32.423
160.000	31.286	32.353	32.424
170.000	31.225	32.352	32.423
180.000	31.299	32.351	32.423
190.000	31.314	32.353	32.424
200.000	31.30	32.355	32.426
210.000	31.333	32.357	32.428
220.000	31.271	32.360	32.432
230.000	31.415	32.364	32.435
240.000	31.414	32.370	32.440
250.000	31.459	32.375	32.445
260.000	31.546	32.382	32.452
270.000	31.585	32.392	32.461
280.000	31.502	32.401	32.471
290.000	31.140	32.409	32.478
300.000	30.61	32.412	32.482
310.000	30.604	32.411	32.482
320.000	30.871	32.410	32.481
330.000	30.889	32.413	32.484
340.000	30.564	32.419	32.491
350.000	30.132	32.425	32.497
360.000	30.068	32.430	32.501
370.000	30.337	32.433	32.505
380.000	30.578	32.437	32.508
390.000	30.778	32.439	32.511
400.000	30.83	32.441	32.513
410.000	30.943	32.443	32.516
420.000	30.869	32.449	32.523
430.000	30.044	32.463	32.537
440.000	28.218	32.473	32.547
450.000	27.245	32.473	32.549
460.000	26.306	32.471	32.548
470.000	26.569	32.460	32.540
480.000	29.244	32.449	32.531
490.000	30.790	32.464	32.542
500.000	30.84	32.487	32.559
510.000	31.228	32.486	32.558
520.000	31.448	32.480	32.552
530.000	31.807	32.472	32.545
540.000	32.054	32.466	32.539
550.000	32.187	32.469	32.538
560.000	32.242	32.474	32.539
570.000	32.278	32.485	32.542
580.000	32.232	32.504	32.550
590.000	32.209	32.524	32.560
600.000	32.15	32.551	32.576
610.000	32.103	32.578	32.595
620.000	31.889	32.605	32.619
630.000	31.572	32.629	32.644
640.000	31.271	32.644	32.661
650.000	30.626	32.654	32.673
660.000	30.202	32.660	32.680
670.000	30.200	32.662	32.683
680.000	30.297	32.662	32.685
690.000	30.340	32.663	32.686
700.000	30.35	32.664	32.688
710.000	30.384	32.666	32.690
720.000	30.326	32.667	32.692
730.000	30.366	32.668	32.694
740.000	30.352	32.669	32.696
750.000	30.389	32.670	32.697
760.000	30.406	32.671	32.698
770.000	30.484	32.671	32.699
780.000	30.630	32.672	32.701
790.000	30.695	32.673	32.702
800.000	30.71	32.674	32.703
810.000	29.875	32.675	32.703
820.000	28.575	32.675	32.703
830.000	30.812	32.676	

LONGITUDINAL SECTION - SEC 1 (1 / FC01)
HORIZONAL SCALE 1:2000
VERTICAL SCALE 1:400

4m 0 10 20 30 40m
SCALE 1:200 AT A1 SHEET SIZE

20m 0 50 100 150 200m
SCALE 1:2000 AT A1 SHEET SIZE

FOR INFORMATION ONLY

AMENDMENTS	DATE	ISSUE
FOR INFORMATION ONLY	11.04.17	C
FOR INFORMATION ONLY	04.10.17	B
FOR INFORMATION ONLY	22.09.17	A

CLIENT: HB+B property

PROJECT
FLOOD ANALYSIS
SOUTH CREEK NEAR MAMRE ROAD
ORCHARD HILLS, NSW

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
M.C	M.C	22.05.17	M.W	A1	AS SHOWN	C012042.05-FC02

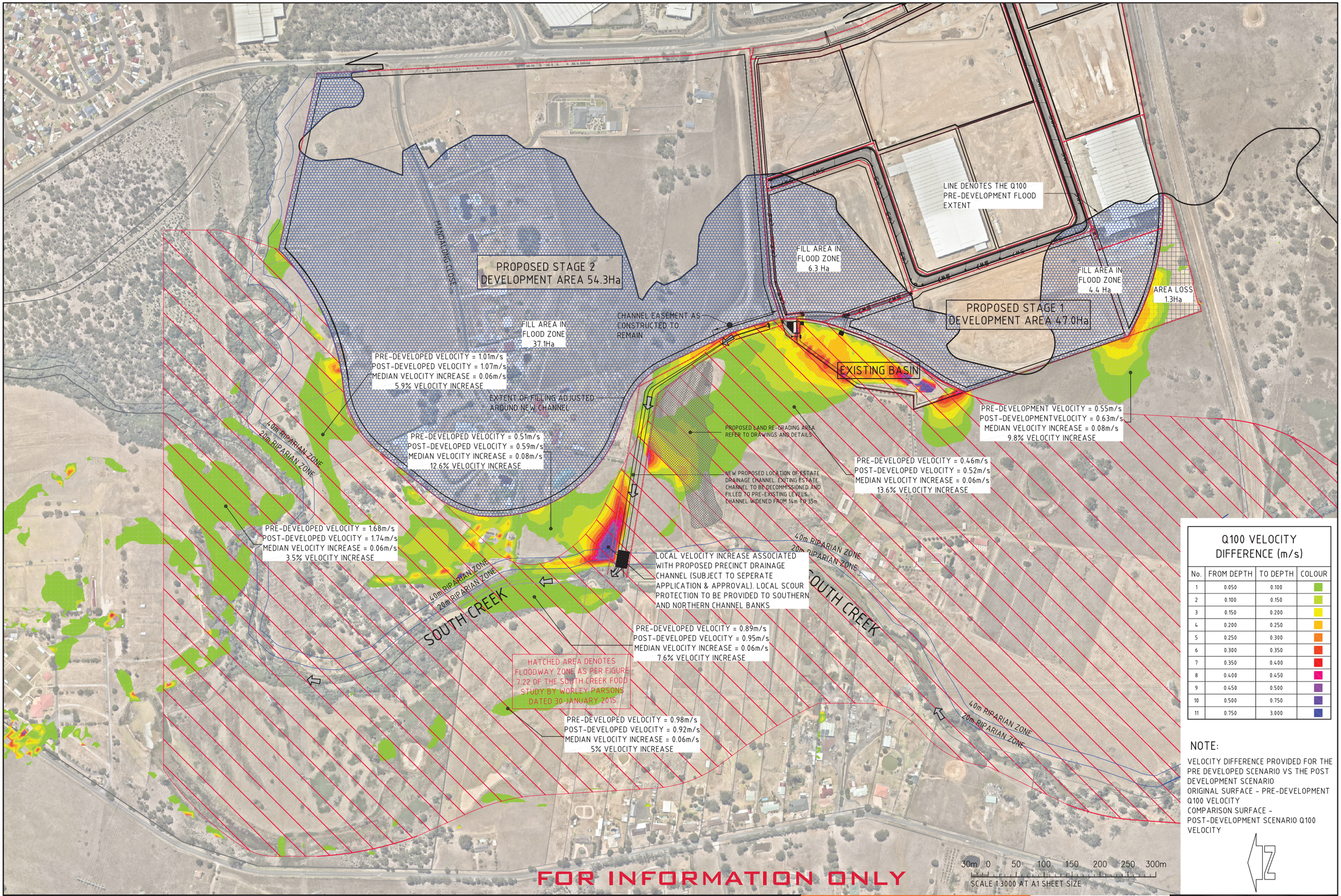
CONSULT AUSTRALIA

Costin Roe Consulting Pty Ltd.
Consulting Engineers ACN 003 696 446
Level 1, 8 Windmill Street
Walsh Bay, Sydney NSW 2000
Tel: (02) 9251-7699 Fax: (02) 9241-3731
email: mail@costinroe.com.au ©

Costin Roe Consulting
PRECISION | COMMUNICATION | ACCOUNTABILITY

DRAWING TITLE
Q100 FLOW DISTRIBUTION SECTIONS
POST DEVELOPMENT SCENARIO

DRAWING No C012042.05-FC02 | ISSUE C



FOR INFORMATION ONLY

Q100 VELOCITY DIFFERENCE (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.050	0.100	
2	0.100	0.150	
3	0.150	0.200	
4	0.200	0.250	
5	0.250	0.300	
6	0.300	0.350	
7	0.350	0.400	
8	0.400	0.450	
9	0.450	0.500	
10	0.500	0.750	
11	0.750	3.000	

NOTE:

VELOCITY DIFFERENCE PROVIDED FOR THE PRE DEVELOPED SCENARIO VS THE POST DEVELOPMENT SCENARIO
ORIGINAL SURFACE - PRE-DEVELOPMENT Q100 VELOCITY
COMPARISON SURFACE - POST-DEVELOPMENT SCENARIO Q100 VELOCITY

AMENDMENTS	DATE	ISSUE
REVISED FOR LAND RE-GRADING	08.06.18	E
FILLING LINE REVISED	27.04.18	D
FOR INFORMATION ONLY	11.04.18	C
FOR INFORMATION ONLY	04.10.17	B
FOR INFORMATION ONLY	22.09.17	A

AMENDMENTS DATE ISSUE

CLIENT: HB+B property

PROJECT: FLOOD ANALYSIS
SOUTH CREEK NEAR MAMRE ROAD
ORCHARD HILLS, NSW

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
M.C	M.C	22.05.17	M.W	A1	AS SHOWN	C012042.05-FC03

Costin Roe Consulting Pty Ltd.
Consulting Engineers ACN 003 606 446
Level 1, 8 Windmill Street
Walsh Bay, Sydney NSW 2000
Tel: (02) 9251-7699 Fax: (02) 9241-3731
email: mail@costinroe.com.au ©

Costin Roe Consulting

PRECISION | COMMUNICATION | ACCOUNTABILITY

DRAWING TITLE: Q100 A.R.I VELOCITY AFFLUX

DRAWING No: C012042.05-FC03 ISSUE: E

APPENDIX C

SENSITIVITY ANALYSIS

LETTER Co12042.00-09.ltr DATED 12 April 2016

Costin Roe Consulting

PRECISION | COMMUNICATION | ACCOUNTABILITY

Costin Roe Consulting Pty Ltd
ABN 50 003 696 446
Level 1, 8 Windmill Street, Walsh Bay
PO Box N419, Sydney, NSW, 1220, Australia
tel: (02) 9251 7699 fax: (02) 9241 3731
email: mail@costinroe.com.au
web: www.costinroe.com.au

12 April 2016

Hansen Yuncken Pty Ltd
Attention: Mr Tim Ireson
Building 1, Level 3
73-85 O'Riordan Street
ALEXANDRIA NSW 2015

Dear Sir

Re: Mamre West Precinct, Mamre Road, Orchard Hills
Sensitivity Analysis

Introduction

As requested we provide this letter relating to the upstream inflow boundary sensitivity analysis associated with the Phase 1 and Phase 2 Overland Flow Assessments of South Creek and the rezoning of the adjacent Mamre West Development Precinct.

The sensitivity analysis has been completed to address comments made by Worley Parsons in their *Overland Flow Report Stage 2 - Peer Review* (The Peer Review) document dated 15 January 2016. The Peer Review requested a sensitivity analysis of the upstream boundary be undertaken to confirm the adequacy of the modelled boundary location (taken 350m upstream of the study area) when compared to an upstream boundary located 2500m upstream of the study area. The requirements of the analysis were discussed with Mr Roy Golaszewski from Worley Parsons by myself on Thursday 21 Jan 2016. It was agreed in this discussion that the assessment would be provided as an addendum to the completed overland flow reports and the existing boundary location would be accepted, given the sensitivity assessment confirmed that there were no differences to flow behaviour through the site.

The letter also provides an update to the sensitivity assessment provided in our letter dated 15 February 2016, incorporating comments from Worley Parsons in their letter dated 11 March 2016 and meeting held between Penrith City Council, Worley Parsons, Costin Roe Consulting and Hansen Yuncken on 23 March 2016.

Modelling Methodology

The sensitivity assessment was undertaken using the TUFLOW modelling engine. It should be noted that some data input limitations within our modelling software which required manipulation of the input data to enable a model to run. The differences are further discussed in the below points and are due to the increased amount of data required over the extended model domain between the 400m and 2500m inflow boundary locations. Given the minor differences in the model input, the flood surface levels produced in the sensitivity analysis will not provide a direct comparison to that produced in the Phase 1 and 2 Overland Flow assessments. The level of accuracy of the model is however sufficient for the sensitivity

modelling and to confirm that there will be no difference in flood behaviour between the upstream inflow boundaries located at 400m and 2500m from the study area. The data constraints were also discussed with Worley Parsons on 21 January 2016.

A summary of the model parameters is provided following:

- Additional survey information was sourced from ALS mapping and a new digital terrain model (DTM) produced. Due to the increased data set required for the extended model area, some modifications to the original DTM were required to reduce the number of points in the surface and enable the model to be run. This would marginally reduce the accuracy of the surface however is suitable for the comparison between the two inflow boundary models using the same DTM surface.
- Surface roughness coefficients remain consistent with those contained in the Phase 1 and 2 assessments.
- Peak flows and flow hydrographs remain consistent with the Phase 1 and 2 assessments.
- TUFLOW mesh size was increased by 4m to ensure data limits are within the constraints of the modelling software used in the modelling.
- The pre-developed flood surface (1% AEP event) was produced with the inflow boundary located 400m and 2500m upstream of the study area. This was then repeated for the post developed conditions (noted Scenario C in our Phase 2 Model).
- A comparison of the surfaces with different boundary conditions nominated above was then made.

Results

Flood surface and velocity afflux maps have been produced for the 1% AEP event, taken at the peak of the flow, for the pre and post development conditions. These afflux maps are enclosed with this letter and have been produced to show surface differences with colour degradations at 10mm intervals for changes greater than plus or minus 10mm.

We note that the disproportionate flood surface differences which were seen in the results presented in our letter dated 15 February 2016 and during the meeting of 23 March 2016, were a result of the TUFLOW grid mesh not aligning between the two modelled boundary conditions. This misalignment provided disproportionate flood level afflux output to that actually being modelled. The modelled grid has now been aligned and the output is more representative of the expected afflux results discussed during the meeting dated 23 March 2016.

Refer enclosed drawings **Co12042.00-FS01, FS02, FS05** and **FS06**.

Pre-developed Condition

The afflux mapping for the pre-developed scenario shows the following:

- No flood surface differences are apparent in the flood plain adjacent to the development or immediately downstream of the development;
- Some minor changes (20mm) are seen around 150-200m upstream of the study area and to the west of the South Creek mainstream channel;

- Minor changes (up to 20mm) are seen at the north-west corner of the proposed First Estate boundary, extending toward South Creek;
- Surface level differences of 20-30mm can be seen around the mainstream channel and to the west of the mainstream channel; and
- Velocity differences are minor and generally confined to the flow boundary input location.

The changes in flood surface level and velocities, overall can be seen to be small and generally confined to the area immediately aligned with the inflow boundary location. The differences noted would not affect the model outcome and scenario testing completed

Post-developed Condition

The afflux mapping for the post-developed scenario shows the following:

- Some minor changes (20mm) are seen around 150-200m upstream of the study area;
- Surface minor level differences of 20-30mm can be seen around the mainstream channel and to the west of the mainstream channel and floodplain;
- The afflux footprints for the pre and post development conditions compare well with each other; and
- Velocity differences are minor and generally confined to the flow boundary input location

The changes in flood surface level and velocites, overall can be seen to be small, and within model accuracy. The differences are also considered within the bounds discussed during the meeting on 23 March 2016 and would not affect the model outcome and scenario testing completed in the Phase 1 and 2 Overland Flow assessments.

Pre and Post-developed Afflux Maps

As requested in the meeting of 23 March 2016, we have produced afflux modelling for the pre and post developed scenarios for the 400m and 2500m inflow boundaries. These are presented in drawings Co12042.00-FS03 and FS04. These afflux maps show the following:

- The afflux modelling with 400m upstream boundary location can be seen to be consistent with the modelled results in Phase 2 reporting; and
- The afflux modelling with 2500m upstream boundary location can be seen to have a slightly reduced extent of flood level change and flood level difference. This would suggest the modelled condition, at 400m would provide a more conservative output during scenario testing than one located at 2500m from the study area.

Conclusion

A sensitivity assessment has been completed, comparing model output for inflow boundaries located 400m and 2500m upstream of the Study Area (Mamre West Precinct, Orchard Hills). The assessment shows that flood surface afflux is negligible in the flood plain adjacent to the study area and that that there were no differences to flow behaviour through the site. This has been confirmed through comparisons between flood level, flow velocities and pre and post development afflux scenario output. The modelled output is consistent with the bounds discussed during the meeting of 23 March 2016.

We consider the location of the upstream inflow boundary (400m upstream of the study area) as modelled in our Phase 1 and 2 Overland Flow assessments is appropriate and the sensitivity analysis has confirmed this.

We trust this letter and enclosed information meet your current requirements. Please don't hesitate to contact the undersigned if you have any questions relating to the advice herein.

Yours faithfully,
COSTIN ROE CONSULTING PTY LTD

MARK WILSON MIEAust CPEng NER
Associate Director – Civil Engineering

Encl. Drawings **Co12042.00-FS01 to FS06**

NOTE:

WATER LEVEL DIFFERENCE PROVIDED FOR CURRENT INFLOW BOUNDARY LOCATION VS THE INFLOW BOUNDARY LOCATION 2.5KM UPSTREAM
ORIGINAL SURFACE - BOUNDARY 400m UPSTREAM
COMPARISON SURFACE - BOUNDARY 2500m UPSTREAM

FLOOD LEVEL DIFFERENCE (m)			
No.	FROM DEPTH	TO DEPTH	COLOUR
1	-0.100	-0.050	
2	-0.050	-0.040	
3	-0.040	-0.030	
4	-0.030	-0.020	
5	-0.020	-0.010	
6	0.010	0.020	
7	0.020	0.050	
8	0.050	0.100	

20m 0 50 100 150 200 250m
SCALE 1:2500 AT A1 SHEET SIZE

FOR INFORMATION ONLY

AMENDMENTS	DATE	ISSUE
FOR INFORMATION ONLY	11.04.16	A

AMENDMENTS	DATE	ISSUE

CLIENT
hansen yuncken
SYDNEY CORPORATE PARK
BUILDING 1, LEVEL 3
75-85 O'RIORDAN STREET
ALEXANDRIA NSW 2015
PO BOX 7062, ALEXANDRIA NSW 2015

PROJECT
FLOOD ANALYSIS
SOUTH CREEK NEAR MAMRE ROAD
ORCHARD HILLS, NSW

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
M.C	M.C	05.04.16	M.W	A1	AS SHOWN	C012042.00- FS01

Costin Roe Consulting Pty Ltd.
Consulting Engineers ACN 003 696 448
Level 1, 8 Windmill Street
Walsh Bay, Sydney NSW 2000
Tel: (02) 9251-7699 Fax: (02) 9241-3731
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PRECISION | COMMUNICATION | ACCOUNTABILITY

DRAWING TITLE
Q100 A.R.I PRE-DEVELOPMENT
FLOOD LEVEL DIFFERENCE
SENSITIVITY ANALYSIS

DRAWING No C012042.00-FS01
ISSUE A

NOTE:
WATER LEVEL DIFFERENCE PROVIDED FOR CURRENT INFLOW BOUNDARY LOCATION VS THE INFLOW BOUNDARY LOCATION 2.5KM UPSTREAM
ORIGINAL SURFACE - BOUNDARY 400m UPSTREAM
COMPARISON SURFACE - BOUNDARY 2500m UPSTREAM

FLOOD LEVEL DIFFERENCE (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	-0.100	-0.050	
2	-0.050	-0.040	
3	-0.040	-0.030	
4	-0.030	-0.020	
5	-0.020	-0.010	
6	0.010	0.020	
7	0.020	1.000	

20m 0 50 100 150 200 250m
SCALE 1:2500 AT A1 SHEET SIZE

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ALEXANDRIA NSW 2015
PO BOX 7002, ALEXANDRIA NSW 2015

PROJECT
FLOOD ANALYSIS
SOUTH CREEK NEAR MAMRE ROAD
ORCHARD HILLS, NSW

CONSULT AUSTRALIA

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
M.C	M.C	05.04.16	M.W	A1	AS SHOWN	C012042.00- FS02

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Consulting Engineers ACN 003 696 448
Level 1, 8 Windmill Street
Walsh Bay, Sydney NSW 2000
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DRAWING TITLE
Q100 A.R.I POST-DEVELOPMENT
FLOOD LEVEL DIFFERENCE
SENSITIVITY ANALYSIS

DRAWING No C012042.00-FS02
ISSUE A

Q100 FLOOD LEVEL DIFFERENCE (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	-0.100	-0.050	
2	-0.050	-0.040	
3	-0.040	-0.030	
4	-0.030	-0.020	
5	-0.020	-0.010	
6	0.010	0.020	
7	0.020	0.030	
8	0.030	0.040	
9	0.040	0.050	
10	0.050	0.100	
11	0.100	0.500	

NOTE:

WATER LEVEL DIFFERENCE PROVIDED FOR PRE-DEVELOPMENT SCENARIO vs POST DEVELOPMENT SCENARIO WITH THE INFLOW BOUNDARY LOCATION 0.4KM UPSTREAM OF SITE BOUNDARY
ORIGINAL SURFACE - PRE DEVELOPMENT w/400m UPSTREAM INFLOW BOUNDARY
COMPARISON SURFACE - POST DEVELOPMENT w/400m UPSTREAM INFLOW BOUNDARY

FILL AREA IN FLOOD ZONE 5.1 Ha

FILL AREA IN FLOOD ZONE 4.3 Ha

AREA LOSS 1.3Ha

AREA LOSS 1.2Ha

20m 0 50 100 150 200 250m
SCALE 1:2500 AT A1 SHEET SIZE

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AMENDMENTS	DATE	ISSUE

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PROJECT
FLOOD ANALYSIS
SOUTH CREEK NEAR MAMRE ROAD
ORCHARD HILLS, NSW

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
M.C	M.C	05.04.16	M.W	A1	AS SHOWN	C012042.00-FS03

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Consulting Engineers ACN 003 696 448
Level 1, 8 Windmill Street
Walsh Bay, Sydney NSW 2000
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DRAWING TITLE
400m UPSTREAM INFLOW BOUNDARY
Q100 A.R.I FLOOD LEVEL AFFLUX
SENSITIVITY ANALYSIS

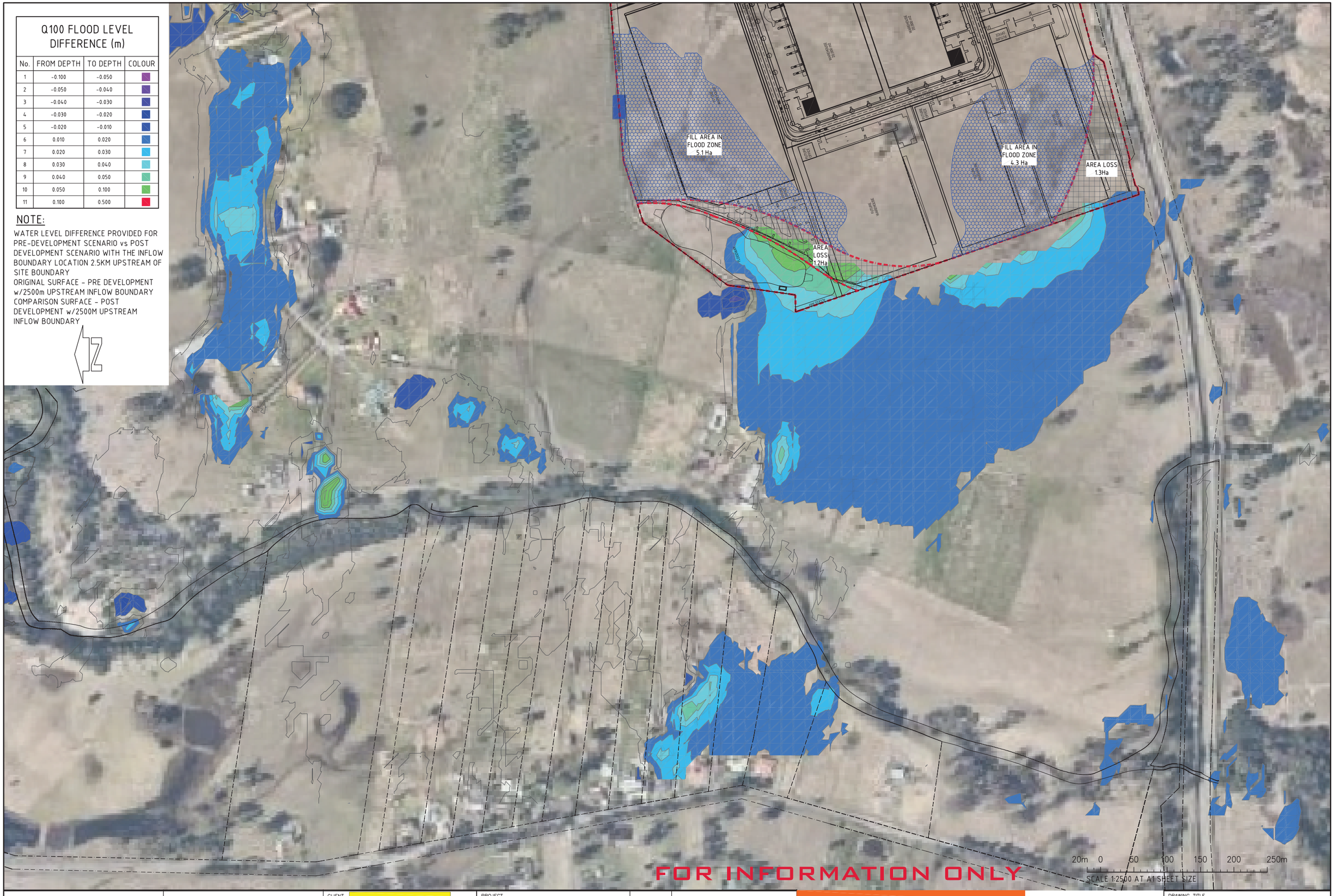
DRAWING No C012042.00-FS03 | ISSUE A

Q100 FLOOD LEVEL DIFFERENCE (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	-0.100	-0.050	
2	-0.050	-0.040	
3	-0.040	-0.030	
4	-0.030	-0.020	
5	-0.020	-0.010	
6	0.010	0.020	
7	0.020	0.030	
8	0.030	0.040	
9	0.040	0.050	
10	0.050	0.100	
11	0.100	0.500	

NOTE:

WATER LEVEL DIFFERENCE PROVIDED FOR PRE-DEVELOPMENT SCENARIO vs POST DEVELOPMENT SCENARIO WITH THE INFLOW BOUNDARY LOCATION 2.5KM UPSTREAM OF SITE BOUNDARY
ORIGINAL SURFACE - PRE DEVELOPMENT w/2500m UPSTREAM INFLOW BOUNDARY
COMPARISON SURFACE - POST DEVELOPMENT w/2500M UPSTREAM INFLOW BOUNDARY



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PROJECT
FLOOD ANALYSIS
SOUTH CREEK NEAR MAMRE ROAD
ORCHARD HILLS, NSW

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M.C	M.C	05.04.16	M.W	A1	AS SHOWN	C012042.00- FS04

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DRAWING TITLE
2500m UPSTREAM INFLOW BDY
Q100 A.R.I FLOOD LEVEL AFFLUX
SENSITIVITY ANALYSIS

DRAWING No C012042.00-FS04 | ISSUE A

Q100 VELOCITY DIFFERENCE (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	-0.300	-0.250	
2	-0.250	-0.200	
3	-0.200	-0.150	
4	-0.150	-0.100	
5	-0.100	-0.050	
6	0.050	0.100	
7	0.100	0.150	
8	0.150	0.200	
9	0.200	0.250	
10	0.250	0.300	

NOTE:

VELOCITY DIFFERENCE PROVIDED FOR CURRENT INFLOW BOUNDARY LOCATION VS THE INFLOW BOUNDARY LOCATION 2.5KM UPSTREAM
ORIGINAL SURFACE - BOUNDARY 400m UPSTREAM
COMPARISON SURFACE - BOUNDARY 2500m UPSTREAM

N

20m 0 50 100 150 200 250m
SCALE 1:2500 AT A1 SHEET SIZE

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SOUTH CREEK NEAR MAMRE ROAD
ORCHARD HILLS, NSW

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DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
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Level 1, 8 Windmill Street
Walsh Bay, Sydney NSW 2000
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DRAWING TITLE
Q100 A.R.I PRE-DEVELOPMENT
VELOCITY DIFFERENCE
SENSITIVITY ANALYSIS

DRAWING No. C012042.00-FS05 ISSUE A

Q100 VELOCITY DIFFERENCE (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	-0.300	-0.250	
2	-0.250	-0.200	
3	-0.200	-0.150	
4	-0.150	-0.100	
5	-0.100	-0.050	
6	0.050	0.100	
7	0.100	0.150	
8	0.150	0.200	
9	0.200	0.250	
10	0.250	0.300	

NOTE:

VELOCITY DIFFERENCE PROVIDED FOR CURRENT INFLOW BOUNDARY LOCATION VS THE INFLOW BOUNDARY LOCATION 2.5KM UPSTREAM
ORIGINAL SURFACE - BOUNDARY 400m UPSTREAM
COMPARISON SURFACE - BOUNDARY 2500m UPSTREAM

20m 0 50 100 150 200 250m
SCALE 1:2500 AT A1 SHEET SIZE

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PROJECT
FLOOD ANALYSIS
SOUTH CREEK NEAR MAMRE ROAD
ORCHARD HILLS, NSW

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Consulting Engineers ACN 003 696 448
Level 1, 8 Windmill Street
Walsh Bay, Sydney NSW 2000
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DRAWING TITLE
Q100 A.R.I POST DEVELOPMENT
VELOCITY DIFFERENCE
SENSITIVITY ANALYSIS

DRAWING No. C012042.00-FS06 ISSUE A

APPENDIX D

PENRITH COUNCIL Approval

Email dated 16 May 2016

From: Nicole Dukinfield [mailto:nicole.dukinfield@penrith.city]
Sent: Monday, 16 May 2016 2:04 PM
To: Bruce Colman <Bruce.Colman@planning.nsw.gov.au>; iwan.davies@planning.nsw.gov.au
Cc: Mylvaganam Senthilvasan <myl.senthilvasan@penrith.city>; Adam Wilkinson <Adam.Wilkinson@penrith.city>; Tim Ireson <TIreson@hansenyuncken.com.au>; Stephen O'Connor (stephen.oconnor@altisproperty.com.au) <stephen.oconnor@altisproperty.com.au>
Subject: FW: Mamre West Precinct

Hi Bruce and Iwan

Our engineering department have reviewed the work to date carried out by Worley Parsons regarding the Mamre West precinct Peer Review. Council's position is as follows:

I refer to the following documents for the flood impact assessment for the proposed rezoning:

1. Overland Flow Report, Stage 1 for Proposed Development Mamre West Precinct, Orchard Hills, NSW, dated 18 Sept 2015, prepared by Costin Roe Consulting for Altis Property Partners;
2. Overland Flow Report, Stage 2 for Proposed Development Mamre West Precinct, Orchard Hills, NSW, dated 30 Oct 2015 2015, prepared by Costin Roe Consulting for Altis Property Partners;
3. Peer Review Report of Stage 1by Worley parsons, dated 27 Oct 2015;
4. Peer Review Report of Stage 2 by Worley Parsons, dated 15 January 2016;
5. Email Report from Worley Parsons dated 2 May 2016;
6. Email Response from Tim Ireson with Comments to Worley Parsons' Email

Comment:
The peer review by Worley Parsons indicates that the flood levels and flow velocities produced by Costin Roe's modelling for the existing conditions are fairly matching with the flood levels and velocities predicted by Updated South Creek Flood Study, 2015. The Flood Assessment report using TUFLOW by Costin Roe could be used for the assessment of the proposed development.

Filling of the site as proposed under Scenario A and Scenario B will have the increase in flood levels more than 100 mm outside the site and these scenarios are unacceptable.

Under Scenario C the proposed filling is up to a point, outside of the floodway corridor. Under Scenario D the proposed filling is as per Scenario C plus filling of areas north of Scenario C including Mandalong Close residential areas. Under these scenarios the change in flood levels between the existing and developed conditions is generally 25-50 mm and the increase in velocities is less than 10%. The other hydraulic changes are considered minimal and within acceptable limits. Therefore the filling of the site as proposed under Scenario C could be acceptable. Under Scenario D the proposed filling may impact the flooding Bind Kemp Creek (runs from Erskine Park Industrial area). The flood assessment by Costin Roe is not adequately assessed the flood impacts on Blind Kemp Creek and Erskine Park industrial areas. In principal the proposed filling under Scenario D could be acceptable however further analysis and / or adjustment of the extent of filling closer to Blind Kemp Creek to ensure no adverse impacts for the Erskine Park Industrial areas.

The local drainage and stormwater quality aspects are not assessed in the Costin Roe report.

Recommendation:
- Filling of Scenarios A and B are not supported.
- No objection for filling under Scenario C.

- Filling under Scenario D is supported in principal however further assessment / adjustment of the extent of filling to not impact Blind Kemp Creek/ Erskine Park Industrial areas will be required. If possible this could be addressed by a condition.
- Local drainage and water quality issues will need to be addressed. Could be addressed by a condition.

We can now be comfortable proceeding on the above basis, therefore we are satisfied that no further review is required by Worley Parsons.

Please note that both Adam Wilkinson and Myl will be out of the office for the rest of the week, so if you have any further questions regarding the above, please forward via email as they will not be contactable by phone.

Regards

Nicole Dukinfield
Senior Planner

E nicole.dukinfield@penrith.city
T +612 4732 8511 | F +612 4732 7958 |
PO Box 60, PENRITH NSW 2751
www.visitpenrith.com.au
www.penrithcity.nsw.gov.au

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CITY COUNCIL

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APPENDIX E

Penrith City Council Local Flood Plan

2012

PENRITH CITY

LOCAL FLOOD PLAN

A SUB-PLAN OF

PENRITH LOCAL DISASTER PLAN (DISPLAN)

Chair, Local Emergency Management Committee

SES Local Controller

April 2012 Edition

To be reviewed no later than April 2017

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DISTRIBUTION LIST

SES Penrith Local Controller....1
SES Penrith Unit....1
SES Sydney Western Region Headquarters....1
NSW SES State Headquarters....1
Penrith, Local Emergency Operations Controller....1
NSW Police Force, Penrith Local Area Command....1
Penrith, Local Emergency Management Committee Members....4
Penrith, Local Emergency Management Officer....1
Penrith, Local Emergency Operations Centre....1
Penrith, Mayor....1
Penrith, General Manager....1
Penrith, Technical Services Department....1
Fire & Rescue NSW, Windsor....1
Rural Fire Service, Penrith....1
Ambulance Service of NSW, Windsor....1
Marine Rescue NSW....1
Endeavour Energy....1
Telstra....1
Office of Environment and Heritage....1
Department of Primary Industries....1
Department of Community Services....1
Roads and Marine Services....1
Hospitals....1
Schools.... 1 each
Council Libraries.... 1 each
Caravan Parks.... 1 each
Spare....1

AMENDMENT LIST

Proposals for amendments to this plan should be forwarded to:

The Local Controller
State Emergency Service Penrith Unit
Gipps Street
Claremont Meadows

Amendments promulgated in the amendment list below have been entered in this plan.

Amendment List Number	Date	Amendment Entered By	Date

LIST OF ABBREVIATIONS

The following abbreviations have been used in this plan:

AEP	Annual Exceedance Probability
AHD	Australian Height Datum
AIIMS	Australasian Inter-service Incident Management System
ARI	Average Recurrence Interval (Years)
ALERT	Automated Local Evaluation in Real Time
AWRC	Australian Water Resources Council
Bureau	Australian Government Bureau of Meteorology
DCF	Dam Crest Flood
DECCW	Department of Environment, Climate Change and Water
DSC	Dams Safety Committee
DISPLAN	Disaster Plan
DSEP	Dam Safety Emergency Plan
DVR	Disaster Victim Registration
NOW	NSW Office of Water
GIS	Geographic Information System
GRN	Government Radio Network
IFF	Imminent Failure Flood
LEMO	Local Emergency Management Officer
LEOCON	Local Emergency Operations Controller
OAP	Operational Action Plan
PMF	Probable Maximum Flood
PMR	Private Mobile Radio
PMP	Probable Maximum Precipitation
RMS	Roads and Marine Services
SEOCON	State Emergency Operations Controller
SERCON	State Emergency Recovery Controller
SES	NSW State Emergency Service
SEWS	Standard Emergency Warning Signal
TMC	Transport Management Centre
VRA	Volunteer Rescue Association
WICEN	Wireless Institute Civil Emergency Network

GLOSSARY

Annual Exceedance Probability (AEP). The chance of a flood of a given or larger size occurring in any one year, usually expressed as a percentage. For example, if a peak flood level (height) has an AEP of 5%, there is a 5% chance (that is, a one-in-20 chance) of such a level or higher occurring in any one year (see also Average Recurrence Interval).

Assistance Animal. A guide dog, a hearing assistance dog or any other animal trained to assist a person to alleviate the effect of a disability (Refer to Section 9 of the Disability Discrimination Act 1992).

Australian Height Datum (AHD). A common national surface level datum approximately corresponding to mean sea level.

Average Recurrence Interval (ARI). The long-term average number of years between the occurrence of a flood as big as, or larger than, the selected event. For example, floods reaching a height as great as, or greater than, the 20 year ARI flood event will occur on average once every 20 years.

Catchment (river basin). The land area draining through the main stream, as well as tributary streams, to a particular site. It always relates to an area above a specific location.
Coastal Erosion. The loss of land along the shoreline predominantly by the offshore movement of sand during storms.

Dambreak Study. A Dambreak Study is undertaken to determine the likely downstream inundation areas in case of a dam failure. Modelling is undertaken for a range of dam breach possibilities and design floods. The dambreak study includes information such as the extent of flooding, flood travel times and flood water velocities. The study can assist dam owners, regulators, and emergency agencies in the preparations of evacuation plans, dam break and other flood warning systems, and hazard classification of affected areas.

Dam Failure. The uncontrolled release of a water storage. The failure may consist of the collapse of the dam or some part of it, or excessive seepage or discharges. The most likely causes of dam failure are:

- **Flood Induced Dam Failure:** Dam failure caused by flood, either due to overtopping erosion or by subsequent structural failure.
- **Sunny Day Dam Failure:** Dam Failure as a result of factors other than flood i.e. other than flood flow into the reservoir. Causes of "Sunny Day" dam failure can include internal erosion, landslide, piping, earthquake or sabotage.

Dam Safety Emergency Plan (DSEP). A DSEP outlines the required actions of owners and their personnel at dams in response to a range of possible emergency situations. The NSW Dam Safety Committee requires a quality controlled DSEP, with associated dambreak warning procedures to be prepared for prescribed dams where persons may be at risk downstream, if the dam failed.

Design flood (or flood standard). A flood of specified magnitude that is adopted for

planning purposes. Selections should be based on an understanding of flood behaviour and the associated flood risk, and take account of social, economic and environmental considerations. There may be several design floods for an individual area.

DisPlan (Disaster Plan). The object of a Displan is to ensure the coordinated response by all agencies having responsibilities and functions in emergencies.

Emergency Alert. A national telephony alerting based system available for use by emergency service agencies to send SMS and voice messages to landlines and/or mobile telephones (by billing address) in times of emergency.

Essential services. Those services, often provided by local government authorities, that are considered essential to the life of organised communities. Such services include power, lighting, water, gas, sewerage and sanitation clearance.

Evacuation. The temporary movement (relocation) of people from a dangerous or potentially dangerous place to a safe location, and their eventual return. It is a safety strategy which uses distance to separate people from the danger created by the hazard.

Evacuation Order. Notification to the community, authorised by the SES, when the intent of an Operations Controller is to instruct a community to immediately evacuate in response to an imminent threat.

Evacuation Warning. Notification to the community, authorised by the SES, when the intent of an Operations Controller is to warn a community of the need to prepare for a possible evacuation.

Flash flooding. Flooding which is sudden and often unexpected because it is caused by sudden local or nearby heavy rainfall. It is sometimes defined as flooding which occurs within six hours of the rain that causes it.

Flood. Relatively high water level which overtops the natural or artificial banks in any part of a stream, river, estuary, lake or dam, and/or local overland flooding associated with drainage before entering a watercourse, and/or coastal inundation resulting from super-elevated sea levels and/or waves overtopping coastline defences, including Tsunami.

Flood classifications. Locally defined flood levels used in flood warnings to give an indication of the severity of flooding (minor, moderate or major) expected. These levels are used by the State Emergency Service and the Australian Government Bureau of Meteorology in flood bulletins and flood warnings.

Flood intelligence. The product of collecting, collating, analysing and interpreting flood-related data to produce meaningful information (intelligence) to allow for the timely preparation, planning and warning for and response to a flood.

Flood fringe. The remaining area of flood prone land after floodway and flood storage have been defined.

Flood liable land (also referred to as flood prone land). Land susceptible to flooding by the Probable Maximum Flood. (PMF) event. This term also describes the maximum extent of

a floodplain which is an area of a river valley, adjacent to the river channel, which is subject to inundation in floods up to this event.

Flood of record. Maximum observed historical flood.

Floodplain Management Plan. A plan developed in accordance with the principles and guidelines in the New South Wales Floodplain Development Manual. Such a plan usually includes both written and diagrammatic information describing how particular areas of flood prone land can be used and managed to achieve defined objectives.

Flood Plan. A response strategy plan that deals specifically with flooding and is a sub-plan of a Disaster Plan. Flood plans describe agreed roles, responsibilities, functions, strategies and management arrangements for the conduct of flood operations and for preparing for them. A flood plan contains information and arrangements for all floods whereas an OAP is for a specific flood/event.

Flood Rescue: the rescue or retrieval of persons trapped by floodwaters.

Flood storage areas: Those parts of the floodplain that are important for the temporary storage of floodwaters during the passage of a flood. The extent and behaviour of flood storage areas may change with flood severity, and loss of flood storage can increase the severity of flood impacts by reducing natural flood attenuation.

Floodway. An area where a significant volume of water flows during floods. Such areas are often aligned with obvious naturally-defined channels and are areas that, if partially blocked, would cause a significant redistribution of flood flow which may in turn adversely affect other areas. They are often, but not necessarily, the areas of deeper flow or the areas where higher velocities occur.

Flood Watch. A Flood Watch is a notification of the potential for a flood to occur as a result of a developing weather situation and consists of short generalised statements about the developing weather including forecast rainfall totals, description of catchment conditions and indicates streams at risk. The Bureau will also attempt to estimate the magnitude of likely flooding in terms of the adopted flood classifications. Flood Watches are normally issued 24 to 36 hours in advance of likely flooding. Flood watches are issued on a catchment wide basis.

Flood Warning. A Flood Warning is a gauge specific forecast of actual or imminent flooding. Flood Warnings specify the river valley, the locations expected to be flooded, the likely severity of flooding and when it will occur.

Functional Area. Means a category of services involved in the preparations for an emergency, including the following:

- Agriculture and Animal Services;
- Communication Services;
- Energy and Utility Services;
- Engineering Services;

- Environmental Services;
- Health Services;
- Public Information Services;
- Transport Services; and
- Welfare Services.

Geographic Information System (GIS). A computerised database for the capture, storage, analysis and display of locationally defined information. Commonly, a GIS portrays a portion of the earth's surface in the form of a map on which this information is overlaid.

Inundation. See definition for Flood.

Indirect Effect. Indirect effects are generally a consequence of infrastructure damage or interruption of services and can affect communities distant from the actual flood footprint i.e. floodplain. Indirect effects can also refer to indirect losses due to disruption of economic activity, both in areas which are inundated or isolated. Indirect effects are one of the three primary sources of risk in the context of flooding (the other two are inundation and isolation).

Isolation. Properties and/or communities where flooding cuts access to essential services or means of supply. Isolation is one of the three primary sources of risk in the context of flooding (the other two are inundation and indirect effects).

Local overland flooding. Inundation by local runoff rather than overbank discharge from a stream, river, estuary, lake or dam.

Major flooding. Flooding which causes inundation of extensive rural areas, with properties, villages and towns isolated and/or appreciable urban areas flooded.

Minor flooding. Flooding which causes inconvenience such as closing of minor roads and the submergence of low-level bridges. The lower limit of this class of flooding, on the reference gauge, is the initial flood level at which landholders and/or townspeople begin to be affected in a significant manner that necessitates the issuing of a public flood warning by the Australian Government Bureau of Meteorology.

Moderate flooding. Flooding which inundates low-lying areas, requiring removal of stock and/or evacuation of some houses. Main traffic routes may be covered.
Operational Action Plan (OAP). An action plan for managing a specific flood event. Information from the Local Flood Plan is used to develop the OAP.

Peak height. The highest level reached, at a nominated gauging station, during a particular flood event.

Prescribed Dam. "Prescribed" dams are those listed in Schedule 1 of the Dams Safety Act 1978. The NSW Dam Safety Committee will prescribe those dams with the potential for a failure which could have a significant adverse effect on community interests.

Probable Maximum Flood (PMF). The largest flood that could conceivably be expected to occur at a particular location, usually estimated from probable maximum precipitation. The

PMF defines the maximum extent of flood prone land, that is, the floodplain. It is difficult to define a meaningful Annual Exceedance Probability for the PMF, but it is commonly assumed to be of the order of 104 to 107 (once in 10,000 to 10,000,000 years).

Runoff. The amount of rainfall which ends up as streamflow, also known as 'rainfall excess' since it is the amount remaining after accounting for other processes such as evaporation and infiltration.

Standing Operating Procedure (SOP).

Stage height. A level reached, at a nominated gauging station, during the development of a particular flood event.

Stream gauging station. A place on a river or stream at which the stage height is routinely measured, either daily or continuously, and where the discharge is measured from time to time so as to develop a relationship between stage and discharge or rating curve.

Part 1 - Introduction

1.1 Purpose

1.1.1 This plan covers the preparedness measures, the conduct of response operations and the co-ordination of immediate recovery measures for all levels of flooding on the Nepean River within the boundaries of the Penrith City.

1.1.2 The extent and complexity of operations required to deal with a severe to extreme flood in the Hawkesbury Nepean Valley, dictate the need for a set of management arrangements for operational control different to those used for less severe levels of flooding in the valley. For the purpose of planning, a flood in the Hawkesbury-Nepean Valley can be classified as either a Level 1 flood or a Level 2 flood according to the degree of severity.

1.1.3 A Level **1 flood** is defined as one in which the water level of the Hawkesbury-Nepean River is not expected to exceed 15.0 metres on the Windsor Bridge gauge. For such a flood the operation is within the scope of normal arrangements detailed in the respective SES Region and Local Flood Plans and the respective District and Local DISPLAN's.

1.1.4 A **Level 2 flood** is defined as one in which the water level of the Hawkesbury-Nepean River is expected to exceed 15.0 metres on the Windsor Bridge gauge. In such a flood the operation will be beyond the scope of the respective SES Region and Local Flood Plans and the respective District and Local DISPLAN's. In this case the provisions of the Hawkesbury Nepean Flood Emergency Plan will apply.

1.2 Authority

1.2.1 This plan is issued under the authority of the State Emergency and Rescue Management Act 1989 and the State Emergency Service Act 1989. It has been accepted by the SES Sydney Western Region Controller and the Penrith Local Emergency Management Committee.

1.2.2 This plan is also regarded to be a sub-plan of the SES Sydney Western Region Flood Plan.

1.2.3 The plan is also to be regarded as a sub-plan of the Hawkesbury Nepean Flood Emergency State Plan.

1.3 Area Covered by the Plan

1.3.1 The area covered by the plan is the Penrith local government area.

1.3.2 Penrith City covers an area of 407 square kilometres and has a population of 184,611 (as of 2009). The City has a mixture of residential, commercial, industrial,

rural and environmentally protected areas.

1.3.3 The council area and its principal rivers and creeks are shown in Map 1.

1.3.4 The council area is in the SES Sydney Western Region and for emergency management purposes is part of the Sydney West Emergency Management District.

1.4 Description of Flooding and its Effects

1.4.1 The nature of flooding in the Penrith Council area is described in Annex A.

1.4.2 The effects of flooding on the community are detailed in Annex B.

1.5 Responsibilities

1.5.1 The general responsibilities of emergency service organisations and supporting services (functional areas) are listed in the Local Disaster Plans (DISPLAN). Some specific responsibilities are expanded upon in the following paragraphs. The extent of their implementation will depend on the severity of flooding.

1.5.2 **SES Penrith City Local Controller** The SES Local Controller is responsible for dealing with floods as detailed in the State Flood Plan, and will:

Preparedness

a. Maintain a Local Headquarters in accordance with the SES Controllers' Handbook and the SES Operations Manual.

b. Ensure that SES members are trained to undertake operations in accordance with current policy as laid down in the SES Controllers' Handbook and the SES Operations Manual.

c. Develop and operate a flood intelligence system.

d. Coordinate the development and operation of a warning service for the community.

e. Participate in floodplain risk management initiatives organised by the Hills Shire Council.

f. Coordinate a public education program.

g. Identify and monitor people and/or communities at risk of flooding and tsunami.

h. Ensure that the currency of this plan is maintained.

Response

i. Control flood operations. This includes:

   i. Directing the activities of the SES units operating within the council area.
   ii. Coordinating the activities of supporting agencies and organisations and ensuring that liaison is established with them.

j. Provide an information service in relation to:

- Flood heights and flood behaviour.
- Coastal erosion / inundation.
- Road conditions and closures.
- Advice on methods of limiting property damage.
- Confirmation of evacuation warnings.

k. Direct the conduct of flood rescue operations.

l. Direct the evacuation of people and/or communities.

m. Provide immediate welfare support for evacuated people.

n. Coordinate the provision of emergency food and medical supplies to isolated people and/or communities.

o. Coordinate operations to protect property, for example by:

- Arranging resources for sandbagging operations.
- Lifting or moving household furniture.
- Lifting or moving commercial stock and equipment.
- Moving farm animals.

p. Arrange for support (for example, accommodation and meals) for emergency service organisation members and volunteers assisting them.

q. If SES resources are available, assist with emergency fodder supply operations conducted by Department of Primary Industries.

r. If SES resources are available, assist the NSW Police Force, RTA and Council with road closure and traffic control operations.

s. Exercise financial delegations relating to the use of emergency orders as laid down in the SES Controllers' Handbook.

t. Coordinate the collection of flood intelligence.

u. Submit Situation Reports to the SES Sydney Western Region Headquarters and agencies assisting within the council area. These will contain information on:

- Road conditions and closures.
- Current flood behaviour.
- Current operational activities.
- Likely future flood behaviour.
- Likely future operational activities.
- Probable resource needs.

v. Keep the Local Emergency Operations Controller advised of the flood situation and the operational response.

w. Issue the 'All Clear' when flood operations have been completed.

x. Ensure that appropriate Debriefs/After Action Reviews are held after floods.

Recovery

y. Assist in the establishment and deliberations of the Recovery Coordinating Committee.

1.5.3 SES Penrith Unit Members

a. Carry out flood and tsunami response tasks. These may include:

- The management of the SES Hills Local Headquarters Operations Centres.
- Gathering flood and coastal erosion/inundation intelligence.
- Flood rescue.
- Evacuation.
- Providing immediate welfare for evacuated people.
- Delivery of warnings and information.
- Resupply.
- Levee monitoring.
- Sandbagging.
- Lifting and/or moving household furniture and commercial stock.
- Moving farm animals.
- Assisting in repairing or improving levees.
- Assisting with road closure and traffic control operations.
- Assisting with emergency fodder supply operations.

b. Assist with preparedness activities.

c. Undertake training in flood operations and coastal erosion/inundation.

1.5.4 Ambulance Service of NSW

a. Assist with the evacuation of elderly and/or infirm people.

1.5.5 Animal & Agricultural Services Coordinator

a. Coordinate the supply and delivery of emergency fodder.

b. Provide advice on dealing with dead and injured farm animals.

c. Provide financial, welfare and damage assessment assistance to flood affected farm people.

d. Coordinate the operation of animal shelter compound, facilitate for the domestic pets and companion animals of evacuees.

1.5.6 Australian Government Bureau of Meteorology (BoM)

a. Provide Flood Watches for the Hawkesbury River

b. Provide Flood Warnings, incorporating height-time predictions, for:

- Wallacia.
- Penrith (Victoria Bridge).

c. Provide Severe Weather Warnings and/or Severe Thunderstorm Warnings when flash flooding is likely to occur.

1.5.7 Australian Rail Track Corporation

a. Close and re-open railway lines as necessary and advise the SES Penrith Local Controller.

b. Arrange trains for evacuations and/or commuting purposes.

1.5.8 Caravan Park Proprietors

a. Prepare a Flood Management Plan for the Caravan Park.

b. Ensure that owners and occupiers of caravans are aware that the caravan park is flood liable and what they must do to facilitate evacuation and van relocation when flooding occurs.

c. Ensure that occupiers are informed of flood warnings and flood watches.

d. Coordinate the evacuation of people and the relocation of moveable vans when floods are rising and their return when flood waters have subsided.

e. Inform the SES of the progress of evacuation and/or van relocation operations and of any need for assistance in the conduct of these tasks.

1.5.9 Childcare Centres and Preschools

a. Childcare centres in flood affected areas to be contacted by the SES in the event of possible flooding.

b. When notified the child care centres should:

- Liaise with the SES and arrange for the early release of children whose travel arrangements are likely to be disrupted by flooding and/or road closures.
- Assist with coordinating the evacuation of preschools and childcare centres.

1.5.10 Communications Services Coordinator

a. Assist the SES to identify infrastructure at risk of flooding for incorporation into planning and intelligence.

b. Provide additional telecommunications support for the SES Local Headquarters as required.

c. Maintain telephone services.

d. Repair and restore telephone facilities damaged by flooding.

1.5.11 Department of Corrective Services

a. Coordinate the evacuation of correctional facilities threatened by flooding in the Penrith LGA.

1.5.12 Endeavour Energy

a. Provide advice to the SES Local Controller of any need to disconnect power supplies or of any timetable for reconnection.

b. Clear or make safe any hazard caused by power lines or electrical reticulation equipment.

c. Assess the necessity for and implement the disconnection of customers' electrical installations where these may present a hazard.

d. Advise the public with regard to electrical hazards during flooding and to the availability or otherwise of the electricity supply.

e. Inspect, test and reconnect customers' electrical installations as conditions allow.

f. Assist the SES to identify infrastructure at risk of flooding for incorporation into planning and intelligence.

1.5.13 Jemena (Gas)

a. Maintenance and repair of facilities.

1.5.14 Fire & Rescue NSW

a. Assist with the delivery of evacuation warnings.

b. Assist with the conduct of evacuations.

c. Provide equipment for pumping flood water out of buildings and from low-lying areas.

d. Assist with cleanup operations, including the hosing out of flood affected properties.

1.5.15 NSW Police

a. Assist with the delivery of evacuation warnings.

b. Assist with the conduct of evacuation operations.

c. Conduct road and traffic control operations in conjunction with council and/or the Roads and Traffic Authority (RTA).

d. Ensure evacuees at evacuation centres in the council area are registered.

e. Secure evacuated areas.

1.5.16 Office of Environment and Heritage

a. Provide specialist advice to the SES regarding flooding.

1.5.17 Penrith Local Emergency Operations Controller

a. Monitor flood operations.

b. Coordinate support to the SES Local Controller if requested to do so.

1.5.18 Penrith Local Emergency Management Officer

a. Provide executive support to the LEOCON in accordance with the Penrith Local Disaster Plan.

b. At the request of the SES Local Controller, advise appropriate agencies and officers of the activation of this plan.

1.5.19 Penrith City Council

Preparedness

a. Establish and maintain floodplain risk management committee and ensure that key agencies are represented.

b. Provide flood studies and floodplain risk management studies to the SES.

c. Maintain Dam Safety Emergency Plans and provide copies to the SES.

d. Provide information on the consequences of dam failure to the SES for incorporation into planning and flood intelligence.

e. Contribute to the development and implementation of a public education program on flooding within the council area.

f. Maintain a plant and equipment resource list for the council area.

Response

g. At the request of the SES Local Controller, deploy personnel and resources for flood-related activities and assist with warning of residents of evacuations.

h. Close and re-open council roads (specify other roads nominated by agreement with the RTA) and advise the SES Local Controller, the Police and people who telephone the council for road information.

i. Assist with the removal of caravans from caravan parks.

j. Provide back-up radio communications.

k. Provide vehicles capable of passing through shallow floodwaters.

l. In the event of evacuations, set up and operate animal shelter compound facilities for the domestic pets and companion animals of evacuees.

Recovery

m. Provide for the management of health hazards associated with flooding. This includes removing debris and waste.

n. Ensure premises are fit and safe for reoccupation and assess any need for demolition.

o. Arrange for storage of evacuees' furniture as required.

1.5.20 Penrith VRA

a. Assist the SES with evacuation operations.

1.5.21 Roads and Marine Services (RMS)

a. Close and reopen RMS roads affected by flood waters and advise the SES Hills Local Controller.

1.5.22 Rural Fire Service (RFS), Cumberland District

a. Provide personnel in rural areas and villages to:

- Inform the SES Local Controller about flood conditions and response needs in the RFS District, and
- Disseminate flood information.

b. Provide vehicles capable of passing through shallow floodwaters.

c. Assist with the delivery of evacuation warnings.

d. Assist with the conduct of evacuations.

e. Provide equipment and operators for pumping flood water out of buildings and from low-lying areas.

f. Assist with the removal of caravans.

g. Provide back-up radio communications.

h. Assist with cleanup operations, including the hosing of flood affected properties.

i. Provide equipment, communications and trained personnel for air base/support operations.

j. Assist with monitoring roads closed by flooding and rates of rise in back creeks.

1.5.23 School Administration Offices including Catholic Education Office, Department of Education & Training and Private Schools

a. Liaise with the SES and arrange for the early release of students whose travel arrangements are likely to be disrupted by flooding and/or road closures.

b. Pass information to school bus drivers/companies and/or other school principals on expected or actual impacts of flooding.

c. Assist with coordinating the evacuation of the schools.

1.5.24 Transport Services Coordinator

a. Arrange transport facilities for evacuations and/or commuting purposes.

b. On request provide a liaison officer to the SES Penrith Local Controller or SES Sydney Western Region Headquarters as required.

c. On request attend/contribute to the post event AAR/debrief.

1.5.25 Welfare Services Coordinator

a. Manage evacuation centres designated in this plan.

b. Provide clothing, accommodation, food and welfare services for flood affected people, including stranded travellers.

Part 2 - Preparedness

2.1 Maintenance of this Plan

2.1.1 The SES Local Controller will maintain the currency of this plan by:

a. Ensuring that all agencies, organisations and officers mentioned in it are aware of their roles and responsibilities.

b. Conducting exercises to test arrangements.

c. Reviewing the contents of the plan:

- After each flood operation.
- When significant changes in land use or community characteristics occur.
- When new information from flood studies becomes available.
- When flood control or mitigation works are implemented are altered.
- When there are changes, which alter agreed plan arrangements.

2.1.2 In any event, the plan is to be reviewed no less frequently than every five years.

2.2 Floodplain Management

2.2.1 The SES Local Controller will ensure that the SES:

a. Participates in floodplain management committee activities.

b. Consults with the flood prone community about the nature of the flood problem and its management.

c. Informs the SES Sydney Western Region Headquarters of involvement in floodplain management activities.

2.3 Development of Flood Intelligence

2.3.1 Flood intelligence describes flood behaviour and its effects on the community.

2.3.2 The SES will develop and maintain a flood intelligence system.

2.4 Development of Warning Systems

2.4.1 The SES will maintain a flood warning system for areas affected by flooding. This requires:

a. An identification of the potential clients of flood warning information at different levels of flooding.

b. Available information about the estimated impacts of flooding at different heights.

c. Identification of required actions and the amounts of time needed to carry them out.

d. Appropriate means of disseminating warnings to different clients and at different flood levels.

2.5 Public Education

2.5.1 The SES Penrith Local Controller with the assistance of the Penrith City Council, the SES Sydney Western Region Headquarters and SES State Headquarters, is responsible for ensuring that the residents of the council area are aware of the flood threat in their vicinity and how to protect themselves from it.

2.5.2 Specific strategies to be employed include:

a. Dissemination of emergency kits, flood-related brochures, booklets and locally tailored flood action guides in flood liable areas.

b. Talks (including public meetings and FloodSafe Community Information Nights) and visual displays (including photographs and video) oriented to community organisations and schools.

c. Publicity given to this plan and to flood-orientated SES activities through local media outlets, including articles in local newspapers about the flood threat and appropriate responses.

2.6 Training

2.6.1 Throughout this document there are references to functions that must be carried out by the members of the SES Penrith City Unit. The SES Local Controller is responsible for ensuring that the members are:

a. Familiar with the contents of this plan.

b. Training in the skills necessary to carry out the tasks allocated to the SES.

2.7 Resources

2.7.1 The SES Local Controller is responsible for maintaining the condition and state of readiness of:

a. SES equipment.

b. The SES Local Headquarters.

Part 3 - Response

Control

3.1 Control Arrangements

3.1.1 The SES is the legislated combat agency for floods and is responsible for the control of flood operations. This includes the co-ordination of other agencies and organisations for flood management tasks.

3.1.2 Flood operations can occur on one or more of the following river/creek systems at the same or different times:

a. Nepean River

b. Rickabys Creek

c. South Creek

d. Ropes Creek

3.1.3 A **Level 1 flood operation** will be dealt with using those arrangements detailed in the SES Sydney Western Region Flood Plan and this Local Flood Plan.

3.1.4 A **Level 2 flood operation** will be dealt with using the arrangements described in Hawkesbury-Nepean Flood Emergency Sub Plan augmented by those Level 2 flood arrangements described within the SES Sydney Western Region Flood Plan and this Local Flood Plan.

3.1.5 The decision to commence a Level 2 flood operation is driven primarily by the potential need to completely evacuate whole communities before mainstream flooding cuts evacuation routes. A Level 2 operation may also be required to manage a large-scale resupply operation to affected areas.

3.1.6 The Local DISPLAN will operate to provide support as requested by the SES Local Controller.

3.2 Start of Response Operations

3.2.1 This plan is always active to ensure that preparedness actions detailed in this plan are completed.

3.2.2 Response operations will begin:

a. On receipt of the first of a Bureau of Meteorology Flood Watch, Preliminary Flood Warning or Flood Warning for the Nepean River.

b. On receipt of a Flood Warning for the Hawkesbury River at Windsor which

indicates backup flooding on Rickabys Creek, South Creek and Ropes Creek.

c. When other evidence leads to an expectation of flooding on the South Creek system.

d. When other evidence leads to an expectation of flooding within the Penrith local government area.

3.2.3 Contact with the BOM to discuss the development of flood warnings will normally be through the SES Sydney Western Region Headquarters.

3.2.4 The following persons and organisations will be advised of the start of response operations by the SES Local Controller regardless of the location and severity of the flooding anticipated:

a. SES Sydney Western Region Headquarters

b. Penrith Local Emergency Operations Controller

c. Penrith Local Emergency Management Officer

d. Penrith City Council (via the LEMO)

3.2.5 Other agencies listed in this plan will be advised by the LEMO on the request of the SES Hawkesbury Local Controller as appropriate to the location and nature of the threat.

3.3 Designation of Start Time

3.3.1 In Level 2 flood operations on the Nepean River the SES Sydney Western Region Controller will designate the "Start Time" to help Controllers at all levels calculate the timings that apply to their areas of responsibility. This will be done with the assistance of the Bureau of Meteorology, normally based on a Flood Warning. The "Start Time" will be based on the time the Hawkesbury River reached, or is expected to reach, 6 metres on the Windsor flood gauge.

3.4 Response Strategies

3.4.1 The key strategy for flood operations is:

a. **Provision of warnings, information and advice to communities**

Inform the community regarding the potential impacts of a flood and what actions to undertake in preparation for flooding.

Provide timely and accurate information to the community.

3.4.2 The response strategies for flood operations include:

a. **Property protection**

Protect the property of residents and businesses at risk of flood damage.

Assistance with property protection by way of sandbagging and the lifting or transporting of furniture, personal effects, commercial stock and caravans;

Assistance with the protection of essential infrastructure.

b. Evacuation

The pre-emptive movement of people away from areas that will be affected by flooding.

c. Rescue

Rescue of people from floods.

d. Resupply

Minimise disruption upon the community by resupplying towns and villages which have become isolated as a consequence of flooding.

Ensure supplies are maintained to property owners by coordinating the resupply of properties which have become isolated as a consequence of flooding.

The provision of fodder to farm animals.

3.4.3 In Level 1 flood operations the SES Local Controller will select the appropriate response strategy to deal with the expected impact of the flood in each sector. The impact may vary from sector to sector so a number of different strategies may have to be selected and implemented across the whole operational area.

3.4.4 In Level 2 flood operations the SES Sydney Western Region Controller will select the appropriate response strategy to deal with the expected impact of the flood in each sector. The impact may vary from sector to sector so a number of different strategies may to be selected and implemented across the whole operational area. The available strategies for each sector are explained in detail in Part 6 of the Hawkesbury Nepean Flood Emergency Sub Plan.

3.4.5 Supporting strategies include:

a. Protect the community from incidents involving fire and hazardous materials.

b. Maintain the welfare of communities and individuals affected by the impact of a flood.

c. Minimise disruption to the community by ensuring supply of essential energy and utility services.

d. Ensure coordinated health services are available to and accessible by the flood affected communities.

e. Maintain the welfare of animals affected by the impact of a flood.

3.4.6 The execution of these supporting strategies is detailed in the Emergency Services and Functional Area sections below.

3.5 Operations Centres

3.5.1 The SES Operations Centre is located at:

SES Penrith City Local Headquarters
Gipps Street
Claremont Meadows

3.5.2 Supporting Emergency Operations Centres (EOC's) are located as follows:

a. Penrith City Local Emergency Operations Centre – Administration Office, Local Area Command, Penrith Police Station, 317 High Street Penrith.

b. Penrith District Rural Fire Service Control Centre – 99 Cox Avenue, Kingswood.

3.6 Operational Management

3.6.1 Flood operations in the Penrith LGA will be controlled on a Sector basis. The Sectors are listed below and a description and map is included at Map 2:

a. Wallacia Sector
b. Penrith South Sector
c. Penrith Sector
d. Penrith North Sector
e. Emu Plains Sector
f. Londonderry Sector
g. South Creek A Sector

3.6.2 In Level 1 flood operations evacuations from all Sectors will initially be controlled direct from the SES Penrith City Local Headquarters.

3.6.3 In Level 1 flood operations the SES Local Controller may activate the following Sector Control Centres to coordinate possible evacuations from low lying areas and to provide a local information service and point of contact to the population in the

relevant Sector:

a. Wallacia

b. Penrith South

3.6.4 As flood operations progress the following Divisions will be established:

Division	Sectors	Comments
Nepean River Division	Wallacia Sector Penrith South Sector Penrith Sector Penrith North Sector Emu Plains Sector	Flooding in these sectors is due to flooding on the Nepean River.
South Creek Division	Londonderry Sector South Creek A Sector	Flooding in these sectors is due to backup flooding from the Hawkesbury River along Rickabys Creek, South Creek and Ropes Creek
Nepean Flood Rescue Division		This Division controls local and out of area flood rescue resources. The area of operations covered by this Division will expand into the areas inundated in the other Divisions.

3.6.5 In Level 2 flood operations the SES Local Controller will activate one or more of the following Sector Control Centres to control evacuations:

Division	Sector	Localities	Sector Control Centre
Nepean River Division	Wallacia	Wallacia	RFS Shed Pub Retirement Village
	Penrith South	Mulgoa Regentville Glenmore Park	Regentville Community Hall Jeanette Street Regentville
	Penrith	Jamisontown Penrith	SES Penrith Local HQ
	Penrith North	North Penrith Penrith Lakes (Castlreagh) Cranebrook	Community Centre Hosking Street Cranebrook

Division	Sector	Localities	Sector Control Centre
South Creek Division	Londonderry	Upper Castlereagh Agnes Banks (south) Londonderry Berkshire Park Llandilo	Test Safe Australia Londonderry Road Londonderry (to be confirmed)
	South Creek A	Colyton Dunheved Erskine Park Oxley Park St Marys St Clair Werrington	SES Penrith Local HQ

3.7 Liaison

3.7.1 At the request of the SES Penrith Local Controller, each agency with responsibilities identified in this plan will provide liaison (including a liaison officer where necessary) to the SES Penrith Operations Centre.

3.7.2 The following agencies are to provide a liaison officer initially to the SES Penrith City Local Headquarters.

a. NSW Police Force.

b. Rural Fire Service.

c. Fire & Rescue NSW.

3.7.3 Other agencies with responsibilities identified in this plan are to maintain regular contact with the SES Hawkesbury Local Headquarters or provide liaison officers as required by the SES Local Controller.

3.7.4 Liaison officers are to:

a. Have the authority to deploy the resources of their parent organisations at the request of the SES Penrith Local Controller,

b. Advise the SES Penrith Local Controller on resource availability for their service, and

c. Be able to provide communications to their own organisations.

3.8 All Clear

3.8.1 When the immediate danger to life and property has passed the SES Sydney Western Region Controller or the SES Local Controller will issue an 'all clear' message signifying that response operations have been completed. The message will be distributed through the same media outlets as earlier evacuation messages. The

relevant Controller will also advise details of recovery coordination arrangements, arrangements made for clean up operations prior to evacuees being allowed to return to their homes, and stand-down instructions for agencies not required for recovery operations.

3.8.2 A template guide to the content of an all clear message is contained in Annex E – Template Evacuation Warning, Evacuation Order and All Clear.

Planning

3.9 Collating Situational Information

Strategy

3.9.1 The SES maintains and records situational awareness of current impacts and response activities.

Actions

3.9.2 The SES Penrith Local Headquarters collates information on the current situation in the Penrith LGA and incorporates in Situation Reports.

3.9.3 The SES Sydney Western Region Headquarters collates Region-wide information for inclusion in Region SES Situation Reports.

3.9.4 Sources of flood intelligence during flood operations include:

a. **Agency Situation Reports.** Agencies and functional areas provide regular situation reports (SITREPs) to the SES.

b. **Active Reconnaissance.** The SES Local Operations Controller is responsible for coordinating the reconnaissance of impact areas, recording and communicating observations. Reconnaissance can be performed on the ground and using remote sensing (more commonly aerial).

c. The **Bureau of Meteorology's Flood Warning** Centre provides river height and rainfall information, data can is available on the website http://www.bom.gov.au/hydro/flood/nsw/

d. The Department of Services, Technology and Administration's, **Manly Hydraulics Laboratory** automated river watch system funded by the Department of Environment, Climate Change and Water. This system provides river height and rainfall readings for a number of gauges as indicated in Annex C. Recent data from this system is available on the Manly Hydraulic Laboratory website: http://www.mhl.nsw.gov.au. A history of area floods is also available upon request via the website.

e. **NSW Office of Water.** This office advises flow rates and rates of rise for the Hawkesbury-Nepean. Daily river reports containing information on gauge heights and river flows are available from the website: http://waterinfo.nsw.gov.au/

f. **SES Sydney Western Region Headquarters.** The Region Headquarters provides information on flooding and its consequences, including those in nearby council areas (this information is documented in Bulletins and Situation Reports).

g. **Community Members.** SES gauge readers, RFS personnel and other members of the community provide information on flooding.

3.9.5 During flood operations sources of information on roads closed by flooding include:

a. Penrith City Council

b. Penrith Police

c. Penrith Rural Fire Service

d. VKG Penrith

e. SES Sydney Western Region Headquarters

3.9.6 Situational information relating to consequences of flooding and/or coastal erosion should be used to verify and validate SES Flood Intelligence records.

3.10 Providing Flood Information

Strategy

3.10.1 The SES Penrith Local Headquarters provides advice to the SES Sydney Western Region Headquarters on current and expected impacts of flooding in the Penrith LGA.

Action

3.10.2 The SES Penrith Local Controller will ensure that the SES Sydney Western Region Controller is regularly briefed on the progress of operations.

3.10.3 SES Penrith Local Headquarters operations staff will be briefed regularly so that they can provide information in response to inquiries received in person or by other means such as phone or fax.

3.10.4 **BOM Flood Warnings** The SES Sydney Western Region Headquarters will send a copy of BOM Flood Warnings to the SES Penrith Unit. On receipt the SES Local Controller will provide the SES Sydney Western Region Headquarters with information on the estimated impacts of flooding at the predicted heights for inclusion in SES Region Flood Bulletins.

3.10.5 **SES Region Flood Bulletins** The SES Sydney Western Region Headquarters will regularly issue SES Region Flood Bulletins (using information from BOM Flood Warnings and SES Local Flood Advices) to SES units, media outlets and agencies on behalf of all SES units in the Region.

3.10.6 **SES Low Pump Warnings** As required, the SES Local Controller will issue Low

Level Pump Warnings for the Hawkesbury River through the Lowland Farmers Warden System. They will also be provided to local radio stations for broadcast.

3.10.7 **SES Local Flood Advices** The SES Local Controller may issue Local Flood Advices for locations not covered by the BOM Flood Warnings. They may be provided verbally in response to phone inquiries but will normally be incorporated into SES Region Flood Bulletins. They will be distributed to:

a. SES Sydney Western Region Headquarters

b. Sector Command Centres (where established)

c. Local radio stations

d. Penrith City Council

e. Penrith Police Local Area Command

f. Penrith Rural Fire Service

g. Specified individuals and local agencies

3.10.8 The SES Penrith City Local Headquarters will operate a "phone-in" information service for the community in relation to:

a. river heights,

b. flood behaviour,

c. road conditions,

d. closures of local and main roads and advice,

e. advice on safety matters and means of protecting property.

3.10.9 In Level 1 flood operations the SES Local Controller may request the SES Sydney Western Region Controller to provide an overflow "phone-in" information service at SES Sydney Western Region HQ for the community in relation to:

a. river heights,

b. flood behaviour,

c. road conditions,

d. closures of local and main roads and advice,

e. advice on safety matters and means of protecting property.

3.10.10 In Level 2 flood operations the Joint Media Information Centre (established under the Hawkesbury Nepean Flood Emergency Sub Plan) will coordinate the provision of all information to the media relating to the flood event.

3.10.11 The Public Information and Inquiry Centre (operated by the Police Service) will answer calls from the public regarding registered evacuees.

3.10.12 The TMC Traffic Information Line will provide advice to callers on the status of roads.

3.10.13 Collation and dissemination of road information is actioned as follows:

a. The SES Local Controller provides road status reports for main roads in the council area to the SES Sydney Western Region Headquarters Road Information Cell and to the Penrith Police Force Local Area Command Headquarters.

b. The Road Information Cell obtains information from the NSW Police Force, Council and the RMS.

c. The SES Sydney Western Region Headquarters distributes information on main roads to SES units, media outlets and agencies as part of SES Flood Bulletins.

d. The Road Information Cell also provides a "phone-in" service to the public.

Operations

3.11 Communications Systems

3.11.1 The primary means of office-to-office communications is by telephone, email and facsimile.

3.11.2 The primary means of communication to and between deployed SES resources is by the Government Radio Network (GRN).

3.11.3 Backup communications will be provided in two ways:

a. The SES has installed a Private Mobile Radio (PMR) network, consisting of 5 repeaters, for the Hawkesbury Nepean to operate if the GRN fails.

b. To cater for the possible failure of the telephone or mobile telephone network (primarily within the flooded area) sufficient ground station independent satellite telephones are maintained by the SES to provide essential links between Sector Command Centres and the SES Hawkesbury Local Headquarters.

3.11.4 All liaison officers will provide their own communication links back to their parent agencies.

3.11.5 All other agencies will provide communications as necessary to their deployed field teams.

3.12 Road Control

3.12.1 A number of roads within the council area are affected by flooding. Details are provided in Annex B.

3.12.2 The council closes and re-opens its own roads.

3.12.3 The RMS closes and re-opens State roads.

3.12.4 The NSW Police Service has the authority to close and re-open roads but will normally only do so (if the council or the RMS has not already acted) if public safety requires such action or to secure, control and keep clear evacuation routes.

3.12.5 When resources permit, the SES assists Council or the Police by erecting road closure signs and barriers.

3.12.6 Police, RMS or Council officers closing or re-opening roads or bridges affected by flooding are to advise the SES Penrith Local Headquarters, which will then provide a road information service to local emergency services, the public and the Sydney Western SES Region Headquarters. All such information will also be passed to the Police, RMS and the Council.

3.13 Traffic Control

3.13.1 In the event of major flooding, the SES Penrith Local Controller may direct the imposition of traffic control measures. The entry into flood affected areas will be controlled in accordance with the provisions of the State Emergency Service Act, 1989 (Part 5, Sections 19, 20, 21 and 22) and the State Emergency Rescue Management Act, 1989 (Part 4, Sections 60KA, 60L and 61).

3.13.2 The following regional road evacuation routes are used for the indicated Sectors in the Hawkesbury LGA and pass through the Penrith LGA:

a. Llandilo Road Route (used for evacuation from Bligh Park and Windsor Downs Sectors).

b. Londonderry Road Route (used for evacuation from the Richmond Sector).

c. Castlereagh Road Route (used for evacuation from the Richmond Sector).

d. Northern Road Route (used for evacuation from the Windsor Sector).

3.13.3 The Londonderry Road, Llandilo Road and Castlereagh Road Routes merge on to the Northern Road Route, which continues along Parker Street to the Great Western Highway and M4 Motorway to evacuation centres in the Blacktown local government area.

3.13.4 During Level 2 flood operations the road evacuation route for the Emu Plains Sector will be managed under arrangements detailed in the Hawkesbury-Nepean Flood Emergency Sub Plan.

3.14 Aircraft Management

3.14.1 Aircraft can be used for a variety of purposes during flood operations including evacuation, rescue, resupply, reconnaissance and emergency travel.

3.14.2 Air support operations will be conducted under the control of the SES Region Headquarters, which may allocate aircraft to units if applicable. The SES Local Controller may task aircraft allocated by the Region Headquarters for flood operations within the Council area.

3.14.3 **Airport.** There are no aerodromes in the Penrith Local Government Area.

3.15 Assistance for Animals

3.15.1 Matters relating to the welfare of livestock, companion animals and wildlife are to be referred to Agriculture and Animal Services.

3.15.2 Requests for emergency supply and/or delivery of fodder to stranded livestock, or for livestock rescue, are to be referred to Agriculture and Animal Services.

3.15.3 Requests for animal rescue should be referred to the SES.

3.16 Stranded Travellers

3.16.1 Flood waters can strand travellers. Travellers seeking assistance will be referred to the Welfare Services Functional Area liaison officer for the arrangement of temporary accommodation.

3.17 Affected Communities

3.17.1 Annex F deals with the arrangements relating to the evacuation of residents and the removal of caravans.

Wallacia Sector

3.17.2 The relevant flood gauge for the Sector is the Wallacia flood gauge.

3.17.3 Lower levels of flooding may require evacuations within the Wallacia area. For higher level flooding the residents of the Wallacia/Mulgoa Road area may have to be completely evacuated during Level 2 evacuations.

3.17.4 This area can become a high flood island in Level 2 flood operations.

Penrith South Sector

3.17.5 The relevant flood gauge for the Sector is Victoria Bridge flood gauge.

3.17.6 The flood area type for this Sector is Area accessible by road.

3.17.7 Depending on expected inundation levels, a large number of persons may have to be progressively evacuated from the Regentville, Mulgoa and Glenmore Park areas during Level 2 flood evacuations.

Penrith Sector

3.17.8 The relevant flood gauge for the Sector is Victoria Bridge flood gauge.

3.17.9 The flood area type for this Sector is Area accessible by road.

3.17.10 Depending on expected inundation levels, up to a maximum of 14,500 persons may have to be progressively evacuated from the Penrith, Jamisontown, Peach Tree Creek areas during Level 2 flood evacuations.

Penrith North Sector

3.17.11 The flood area type for this Sector is Area accessible by road.

3.17.12 The relevant flood gauge for the Sector is the Victoria Bridge flood gauge.

3.17.13 Depending on expected inundation levels, up to a maximum of (TBA) persons may have to be progressively evacuated from the North Penrith, Penrith Lakes, Penrith Lakeside and Cranebrook areas during Level 2 flood evacuations.

Emu Plains Sector

3.17.14 The relevant flood gauge for the Sector is Victoria Bridge flood gauge.

3.17.15 A low flood island develops in this Sector in floods greater than 1 in 100 AEP. Most of the Area accessible by road. There is a small landlocked area that develops in Emu Heights in the larger floods.

3.17.16 Level 2 flood evacuations will be conducted under arrangements detailed in the separate Emu Plains Sector Annex to the Blue Mountains Local Flood Plan.

Londonderry Sector

3.17.17 Flooding in the Londonderry Sector is mainly due to backup flooding along Rickabys Creek and South Creek.

3.17.18 The relevant flood gauge is the Windsor Bridge flood gauge.

3.17.19 The flood area type for this Sector is Area accessible overland.

3.17.20 As the flood nears PMF levels then floodwaters from the Agnes Banks and Richmond Sectors merge into the floodwaters from Rickabys Creek in the suburb of Londonderry.

3.17.21 The population of Londonderry may have to be completely evacuated during Level 2 flood operations.

South Creek A Sector

3.17.22 Flooding in the South Creek A Sector is mainly due to flooding on South Creek or from backup flooding from the Hawkesbury River along Rickabys Creek and South Creek.

3.17.23 The flood area type for this Sector is Area accessible by road.

3.17.24 The relevant flood gauge is the Windsor Bridge flood gauge.

3.17.25 Because of local flooding initially and back up flooding in South Creek and Ropes Creek for higher level floods, up to 7,000 persons may have to be progressively evacuated from the St Marys and Werrington areas to evacuation centres during Level 2 flood evacuations.

3.18 Managing Property Protection Operations

Strategy

3.18.1 Protect the property of residents and businesses at risk of flood damage.

Actions

3.18.2 The SES is the responsible agency for the coordination of operations to protect property.

3.18.3 Property may be protected by:

a. Lifting or moving of household furniture.

b. Lifting or moving commercial stock and equipment.

c. Sandbagging to minimise entry of water into buildings.

3.18.4 The SES Penrith Local Headquarters maintains a small stock of sandbags, and back-up supplies are available through the SES Sydney Western Region Headquarters. A motorised sandbag-filling machine is available through the SES Sydney Western Region Headquarters. The Penrith City Council also has stocks of sand and bags and can provide supplies of filled bags on request. Alternatively, local concrete trucks may be used.

3.18.5 Property protection options are however, very limited in the Penrith Local Government Area due to the large number of properties that can be affected and the depth of floodwaters arising from severe flooding on the Nepean River and backup flooding on South Creek from the Hawkesbury River.

3.19 Managing Flood Rescue Operations

Strategy

3.19.1 Rescue of people from floods.

Actions

3.19.2 The SES Local Controller controls flood rescues in the Local Government Area.

3.19.3 The SES may request other agencies to undertake flood rescues on behalf of the SES. Assisting agencies must supply information regarding rescues performed to the SES.

3.19.4 Flood rescues may be carried out using high-clearance vehicles, flood rescue boats and (under some circumstances) helicopters.

3.19.5 Additional flood rescue boats and crews can be requested through the SES Sydney Western Region Headquarters. These resources must be utilised in conjunction with appropriate local resources.

3.20 Managing Evacuation Operations

Strategy

3.20.1 Evacuations will take place when there is a risk to public safety. Circumstances may include:

a. Evacuation of people when their homes or businesses are likely to flood.

b. Evacuation of people who are unsuited to living in isolated circumstances, due to flood water closing access.

c. Evacuation of people where essential energy and utility services have failed or where buildings have been made uninhabitable.

Actions

3.20.2 The evacuation operation will have the following stages:

a. Decision to Evacuate

b. Mobilisation

c. Evacuation Warning/Order Delivery

d. Withdrawal

e. Shelter

f. Return

3.20.3 Evacuations will be controlled using the Sectors described in paragraph 3.6.1.

3.20.4 The SES will advise the community of the requirements to evacuate. The SES will issue an Evacuation Warning when the intent of an SES Operations Controller is to warn the community of the need to prepare for a possible evacuation. The SES will issue an Evacuation Order when the intent of the SES Operations Controller is to instruct a community to immediately evacuate in response to an imminent threat.

3.20.5 Evacuations will be conducted in two levels:

a. **Level 1:** Evacuations of areas inundated or at threat of isolation by floods less than about the 15.0 metre level at the Windsor Bridge. The SES Local Controller controls these evacuations.

b. **Level 2:** Evacuations of areas threatened by floods of higher levels. It is expected that if such evacuations are required, the Hawkesbury Nepean Flood Emergency Sub Plan will be activated and evacuations throughout the valley will be co-ordinated centrally from the SES Sydney Western Region Headquarters.

3.20.6 The most effective means of evacuation is via road using private cars and buses. However, the other means of evacuation may also be used as backups.

3.20.7 If there is sufficient time between the activation of this plan and the evacuation of communities, the SES Sydney Western Region Controller will discuss the temporary closure of appropriate schools with the Regional Director, Western Sydney Region, Department of School Education and Training (Kingswood). This will enable pupils to stay at home or be returned home so they can be evacuated (if required) with their families.

3.20.8 The Department of School Education and Training will coordinate the evacuation of schools (High School, Primary School, Child Care facilities) if not already closed.

3.20.9 The Health Services Functions Area will coordinate the evacuation of hospitals, health centres, and aged care facilities (including nursing homes).

3.20.10 The Dept of Corrective Services and NSW Police Service will coordinate the evacuation of correctional facilities.

3.20.11 The SES Local Controller is to provide the following reports to the SES Sydney Western Region Headquarters:

a. Advice of commencement of the evacuation of each Sector;
b. Half-hourly progress reports (by Sectors) during evacuations;
c. Advice of completion of the evacuation of each Sector.

General Evacuation Arrangements

3.20.12 The evacuation operation will have the following stages:

a. Mobilisation

b. Evacuation Order Delivery

c. Withdrawal

d. Shelter

e. Return

Mobilisation

3.20.13 The SES Local Controller will mobilise the following to provide personnel for doorknock teams for designated Sectors:

a. SES Penrith Unit members,

b. RFS Cumberland District members via the RFS Fire Control Officer,

c. Local Police Force officers.

3.20.14 The SES Sydney Western Region Controller will mobilise any additional personnel required to assist with doorknock teams using:

a. SES members from the SES Sydney Western Region and surrounding SES Regions.

b. NSWFB personnel arranged via the NSWFB Liaison Officer located at SES Sydney Western Region Headquarters.

c. RFS personnel arranged via the RFS Liaison Officer located at SES Sydney Western Region Headquarters.

3.20.15 The SES Local Controller will request the Penrith City LEMO to provide Council personnel to assist with traffic coordination within Sectors.

3.20.16 The SES Local Controller will arrange liaison officers for Sector Command Centres.

3.20.17 The SES Sydney Western Region Controller will mobilise the required number of buses for Sectors via the Transport Services Functional Area Coordination Centre. Sector Commanders may request the SES Local Controller to provide additional buses.

Evacuation Order

3.20.18 A template guide to the content of evacuation warning messages is provided at Annex E.

3.20.19 In Level 1 flood operations the SES Local Controller will prepare Evacuation Warnings and Evacuation Orders and distribute them via local flood warning systems and to the SES Sydney Western Region Controller.

3.20.20 In level 2 flood operations Evacuation Orders will be issued under the direction of the SES Sydney Western Region Controller. These will be distributed to:

a. The SES State Operations Centre.

b. The SES Penrith Local Controller.

c. Metropolitan media outlets via the Joint Media Information Centre.

d. Affected communities via dial-out warning systems where installed or applicable.

3.20.21 In Level 2 flood operations the SES Local Controller will distribute Evacuation Warnings to:

a. Sector Command Centres (where established).

b. Penrith Local Emergency Operations Centre.

c. Penrith City Council.

d. Penrith Police Local Area Command.

e. Penrith Rural Fire Service Control Centre.

f. Local SES Wardens.

g. Other local agencies and specified individuals.

3.20.22 The Standard Emergency Warning Signal (SEWS) may be used to precede all Evacuation Warnings broadcast on Hawkesbury Radio.

3.20.23 The SES Sydney Western Region Controller will distribute Evacuation Warnings and Orders to metropolitan media outlets.

3.20.24 Sector Command Centres, where established, will distribute Evacuation Orders via Emergency Service personnel in doorknock teams to areas under threat of inundation.

3.20.25 Doorknock teams will work at the direction of:

a. The Sector Commander if a Sector Command Centre is established.

b. The relevant Division Commander where a Sector Command Centre has not been established.

3.20.26 Field teams conducting doorknocks will record and report back the following information to their Sector Commander:

a. Addresses and locations of houses doorknocked and/or evacuated.

b. The number of occupants.

c. Details of support required (such as transport, medical evacuation, assistance to

secure house and/or property and raise or move belongings).

d. Details of residents who refuse to comply with the Evacuation Order.

3.20.27 **Refusal to evacuate**. Field teams cannot afford to waste time dealing with people who are reluctant or refuse to comply with any Evacuation Order. These cases are to be referred to the NSW Police Liaison Officer who will arrange for Police to ensure their evacuation.

Withdrawal

3.20.28 In each Sector, evacuations will generally be done in stages starting from the lowest areas and progressively from higher areas.

3.20.29 Sector Commanders will direct evacuees who require accommodation or welfare assistance to designated evacuation centres. Evacuees who have their own accommodation arrangements will not be directed to Evacuation Centres. It is not possible to determine in advance how many will fall into this category.

3.20.30 The SES Local Controller, through Sector Commanders, will manage the evacuation of people within each Sector up to the point where people enter the Sector's designated regional road evacuation route.

3.20.31 Evacuees will:

a. Move under local traffic arrangements from the relevant Sectors to the route Entry Point as detailed in the evacuation Annexes;

b. Move under traffic management arrangements to the route Exit Points;

c. Continue along the suburban road network to allocated Evacuation Centres.

3.20.32 In the flood island Sectors evacuees will be directed onto regional evacuation routes established under arrangement in the Hawkesbury Nepean Flood Emergency Sub Plan.

3.20.33 **Management of Pets and Companion Animals of Evacuees**: Assistance for animals (guide dogs, hearing assistance animals, etc) will remain in the care of their owners throughout the evacuation. This includes transport and access into evacuation centres etc. Due to safety restrictions, it may not be possible to allow companion animals to accompany their owners when being transported via aircraft or flood rescue boats. DPI will make separate arrangements for the evacuation and care of companion animals.

3.20.34 **Transport and storage**: Transport and storage of furniture from flood threatened properties will be arranged as time and resources permit.

3.20.35 **Security**: The NSW Police Force will provide security for evacuated areas.

Shelter

3.20.36 **Evacuation centres/areas**. The usual purpose of evacuation centres is to meet the immediate needs of victims, not to provide them with accommodation. Evacuees will be advised to go to or be taken to the nearest accessible evacuation centre, which may initially be established at the direction of the SES Hawkesbury Local Controller, but managed as soon as possible by DoCS.

3.20.37 **Registration**: The NSW Police Force will ensure that all evacuees are registered on arrival at the designated evacuation centres.

3.20.38 **Animal shelter compounds**: Animal shelter compounds will be set up for the domestic pets and companion animals of evacuees if required. Facilities will be managed by DPI.

Return

3.20.39 Once it is considered safe to do so, the SES Local Controller will authorise the return of evacuees to their normal or alternative place of residence. This decision will be made in consultation with the following:

a. Health Service Functional Area Coordinator (public health),
b. Engineering Services Functional Area Co-coordinator (electrical safety of buildings),
c. Transport Services Functional Areas Coordinator (status of roads).

3.20.40 The return will be controlled by the SES Local Controller and may be conducted, at their request, by DoCS.

3.20.41 In Level 2 flood operations the return will be coordinated by the SES Sydney Western Region Controller.

3.21 Managing Resupply Operations

Resupply of Isolated Towns and Villages

Strategy

3.21.1 Minimise disruption upon the community by resupplying towns and villages which have become isolated as a consequence of flooding.

Actions

3.21.2 The SES is responsible for the coordination of the resupply of isolated communities.

3.21.3 If flood predictions indicate that areas are likely to become isolated, the SES Local Operations Controller should advise retailers that they should stock up.

3.21.4 When isolation occurs, retailers will be expected to place orders with suppliers where they have a line of credit and to instruct those suppliers to package their goods and deliver them to loading points designated by the SES.

3.21.5 The SES is prepared to deliver mail to isolated communities but may not be able to do so according to normal Australia Post timetables.

3.21.6 The SES will assist hospitals with resupply of linen and other consumables where able.

Resupply of Isolated Properties

Strategy

3.21.7 Ensure supplies are maintained to property owners by coordinating the resupply of properties which have become isolated as a consequence of flooding.

Actions

3.21.8 The resupply of isolated properties is a common requirement during floods and coordination can be difficult because requests can emanate from a variety of sources. Isolated properties may call their suppliers direct, place their orders through their own social networks or contact the SES.

3.21.9 The principles to be applied when planning for the resupply of isolated properties are:

a. The SES will coordinate resupply and establish a schedule.

b. Some isolated households will not have the ability to purchase essential grocery items due to financial hardship. If an isolated household seeks resupply from the SES and claims to be, or is considered to be, in dire circumstances, he/she is to be referred to Welfare Services for assessment of eligibility. Where financial eligibility criteria are met, Welfare Services will assist with the purchase of essential grocery items. Welfare Services will deliver the essential grocery items to the SES designated loading point for transport.

c. Local suppliers will liaise with the SES regarding delivery of resupply items to the designated loading point.

d. Local suppliers are responsible for packaging resupply items for delivery.

3.21.10 A flowchart illustrating the Resupply process is shown in Annex G. Please note that the flowchart outlines the resupply process but does not encompass all potential situations and/or outcomes.

Logistics

Strategy

3.21.11 Maintain resources to ensure operational effectiveness.

Actions

3.21.12 If local SES and other local resources are insufficient or likely to be exhausted, additional SES resources (people and equipment) within the relevant SES Region may be deployed by the SES Region Headquarters. If further SES resources are required from other Regions, they will be deployed by the SES State Headquarters.

3.21.13 The SES may request support directly from a supporting agency whilst keeping the appropriate Emergency Operations Controller informed or request the relevant Emergency Operations Controller to coordinate support to it.

3.21.14 As far as possible, supporting agencies are to provide their own logistic support in consultation with SES where appropriate.

Emergency Services

Strategy

3.21.15 Protect the community from incidents involving fire and hazardous materials.

Actions

3.21.16 Fire & Rescue NSW respond to fire and land based HAZMAT incidents in the flood affected areas as detailed in the NSW HAZMAT Plan.

3.21.17 The Rural Fire Service will respond to fire in rural fire districts within flood affected areas.

3.21.18 NSW Ambulance will provide:

a. Pre-hospital care

b. Ambulance service management of multiple evacuation sites where ambulance assistance in facilities / patient evacuations is necessary

c. Aero-medical evacuation.

3.21.19 In Sectors that will be completely evacuated the emergency services will need to coordinate their operations with the SES Sydney Western Region Headquarters, via their Liaison Officers, so that their personnel and assets can be safely evacuated from the area before evacuation routes are cut.

3.21.20 The SES Local Controller will ensure that the providers of essential services (electricity, water, sewerage, medical and public health) are kept advised of the flood situation. Essential service providers must keep the SES Local Controller abreast of their status and ongoing ability to provide their services.

3.21.21 The Functional Areas identified in NSW DISPLAN will provide support to the SES in the conduct of flood operations. The Functional Areas will liaise with the SES Local Controller as per the Local DISPLAN. However, in Level 2 flood operations the provisions of the Hawkesbury Nepean Flood Emergency Sub Plan will apply.

3.22 Agriculture and Animal Services

Strategy

3.22.1 Maintain the welfare of animals affected by the impact of a flood.

Actions

3.22.2 Matters relating to the welfare of livestock, pets, companion animals and wildlife (including feeding and rescue) are to be referred to the Agriculture and Animal Services Functional Area.

3.22.3 Requests for emergency supply and/or delivery of fodder to stranded livestock, or for livestock rescue, are to be passed to the Agriculture and Animal Services Functional Area.

3.22.4 During Level 2 flood operations the provisions to Agriculture and Animal services in the Hawkesbury Nepean Flood Emergency Sub Plan will apply.

3.23 Communications Services

3.23.1 The Communications Services Functional Area will coordinate the restoration of telecommunications.

3.23.2 During Level 2 flood operations the provisions to Communications Services in the Hawkesbury Nepean Flood Emergency Sub Plan will apply.

3.24 Energy and Utilities

Strategy

3.24.1 Minimise disruption to the community by ensuring supply of essential energy and utility services.

Actions

3.24.2 The Energy and Utilities Functional Area will minimise disruption to the community

by ensuring supply of essential energy and utility services.

3.24.3 During Level 2 flood operations the provisions to Energy and Utilities in the Hawkesbury Nepean Flood Emergency Sub Plan will apply.

3.25 Engineering Services

3.25.1 The Engineering Services Functional Area will coordinate the restoration of critical public buildings for example hospitals.

3.25.2 During Level 2 flood operations the provisions to Engineering Services in the Hawkesbury Nepean Flood Emergency Sub Plan will apply.

3.26 Health Services

Strategy

3.26.1 Ensure coordinated health services are available to and accessible by the flood affected communities.

Actions

3.26.2 The Health Services Functional Areas will:

a. Treat sick and injured people, including the provision of pre-hospital care and transport by Ambulance Service of NSW.

b. Provide and coordinate immediate mental health support to persons both directly and indirectly affected.

c. Assess public health risks and provide advice to emergency services and communities.

d. Provide environmental health advice.

3.26.3 All matters relating to the primary production, manufacturing, processing and handling of all food from "paddock/ocean" to retail, inclusive of all restaurants, food services and catering businesses should be referred to the NSW Food Authority through the Agriculture and Animal Services Functional Area.

3.26.4 During Level 2 flood operations the provisions relating to Health Services in the Hawkesbury Nepean Flood Emergency Sub Plan will apply.

3.27 Transport Services

3.27.1 During Level 2 flood operations the provisions relating to Transport Services in the Hawkesbury Nepean Flood Emergency Sub Plan will apply.

3.28 Welfare Services

Strategy

3.28.1 Maintain the welfare of communities and individuals affected by the impact of a flood.

Actions

3.28.2 The Welfare Services Functional Area will manage evacuation centres for affected residents and travellers.

3.28.3 The Welfare Services Functional Area is to activate the Welfare Services Functional Area Supporting Plan if required to coordinate disaster welfare services to communities affected.

3.28.4 SES will provide immediate welfare for evacuees where required but will hand the responsibility over to the Welfare Services Functional Area as soon as possible. In these cases the SES will brief the Welfare Services Functional Area at the earliest opportunity regarding the assistance provided.

3.28.5 Details of all residents assisted must be available to the Welfare Services Functional Area as early as possible so that they can conduct follow-up visits.

3.28.6 During Level 2 flood operations the provisions relating to Welfare Services in the Hawkesbury Nepean Flood Emergency Sub Plan will apply.

Part 4 - Recovery

4.1 Recovery Coordination at the Local Level

4.1.1 In Level 1 flood operations the SES Local Controller will ensure that planning for long-term recovery operations begins at the earliest opportunity, initially through briefing the Local Emergency Management Committee (LEMC). As soon as possible the LEMC will meet to discuss recovery implications including the need for a Local Recovery Committee. The LEMC will consider any impact assessment in determining the need for recovery arrangements. This is conveyed in the first instance to the State Emergency Operations Controller (SEOCON) for confirmation with the State Emergency Recovery Controller (SERCON).

4.1.2 Once the need for recovery has been identified, the SERCON, in consultation with the SEOCON, may recommend the appointment of a Local Recovery Coordinator and nominate an appropriate candidate to the Minister for Emergency Services.

4.1.3 The SERCON may send a representative to the LEMC and subsequent recovery meetings to provide expert recovery advice and guidance.

4.1.4 The SES Local Controller and Local Emergency Operations Controller (LEOCON) attend recovery meetings to provide an overview of the emergency response operation.

4.1.5 The SES Region Operations Controller, the District Emergency Management Officer (DEMO) and appropriate District Functional Area Coordinators will be invited to the initial local meeting and to subsequent meetings as required.

4.1.6 The recovery committee will:

a. Develop and maintain a Recovery Action Plan with an agreed exit strategy

b. Monitor and coordinate the activities of agencies with responsibility for the delivery of services during recovery.

c. Ensure that relevant stakeholders, especially the communities affected, are involved in the development and implementation of recovery objectives and strategies and are informed of progress made.

d. Provide the SERCON with an end of recovery report.

e. Ensure the recovery is in line with the National Principles of Disaster Recovery and the NSW tenets.

4.2 Recovery Coordination at the District and State Level

4.2.1 In the event that an emergency affects several local areas, a District Emergency Management Committee (DEMC) will meet to discuss recovery implications including the need for a District Recovery Committee. This is conveyed in the first instance to the SEOCON for confirmation with the SERCON.

4.2.2 In the event of an emergency which affects multiple districts, or is of state or national consequence, or where complex, long term recovery and reconstruction is required, it may be necessary to establish a State Recovery Committee and the appointment of a State Recovery Coordinator.

4.2.3 For Level 2 flood operations recovery operations will be coordinated as per the recovery arrangements in Part 8 of the Hawkesbury Nepean Flood Emergency Sub Plan.

4.3 Arrangements for Debriefs / After Action Reviews

4.3.1 As soon as possible after flooding has abated, the SES Local Controller will advise participating organizations of details of response operation after action review arrangements.

4.3.2 The SES Local Controller will ensure that adequate arrangements are in place to record details of the after action review and each item requiring further action is delegated to an organisation or individual to implement.

4.3.3 The SES Local Controller will pass the results of the debrief to the SES Sydney Western Region Controller.

4.3.4 Follow-up to ensure the satisfactory completion of these actions will be undertaken by the Penrith Local Emergency Management Committee.