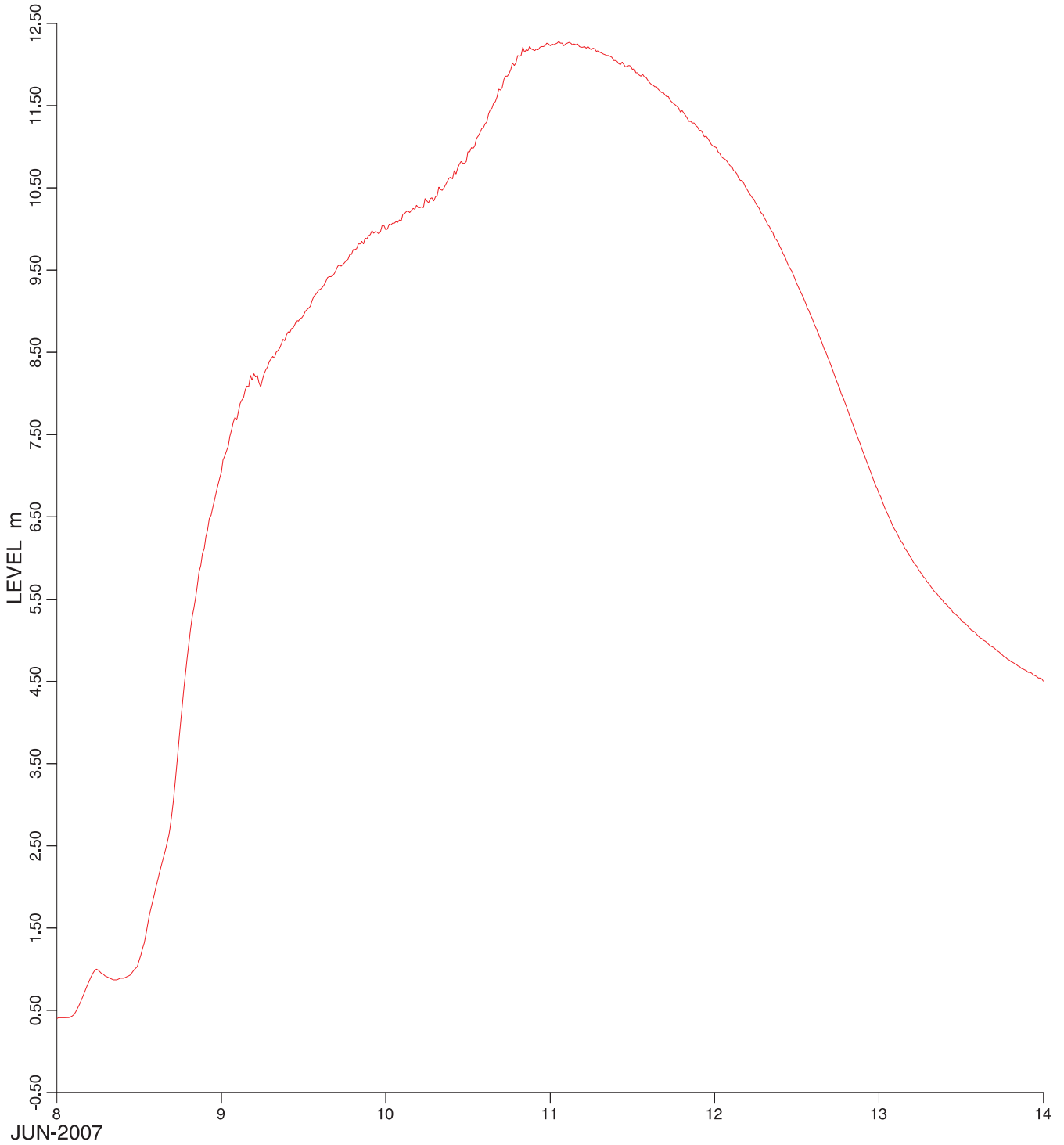


STATION: HUNTER RIVER, OAKHAMPTON  
DATUM: AUSTRALIAN HEIGHT DATUM  
Max. = 12.28 at 0115:11/06/2007 Min. = 0.40 at 0000:08/06/2007



**Public Works**  
Manly Hydraulics Laboratory

STANDARD WATER LEVEL PLOT

MHL  
Report 2157

Figure  
**B1**

DRAWING 2157-B1.cdr

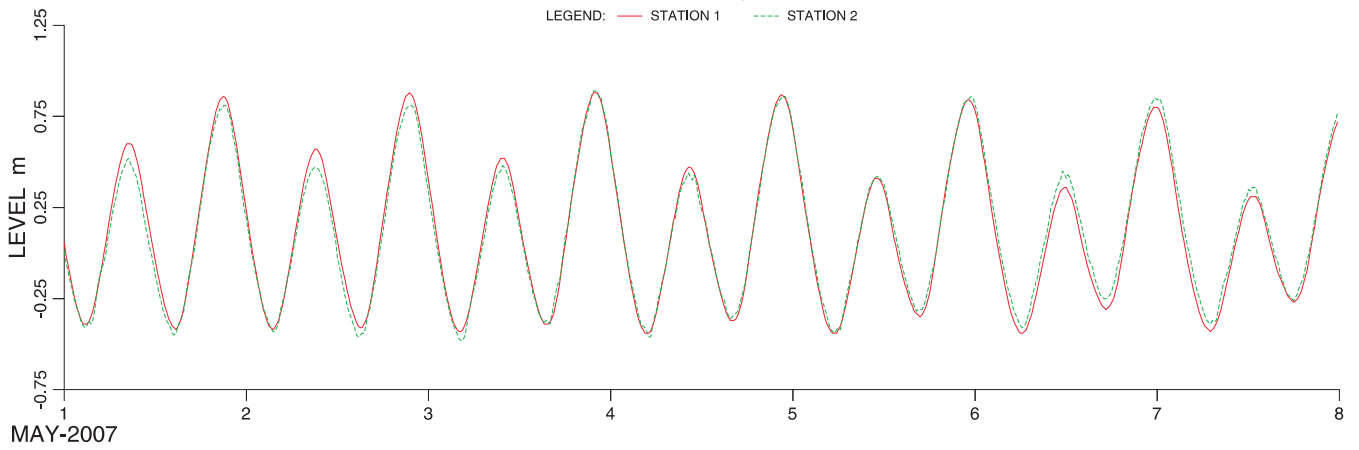
Station : HUNTER RIVER, OAKHAMPTON  
 Start : 0000:09/06/2007  
 End : 2345:09/06/2007  
 Datum : AUSTRALIAN HEIGHT DATUM  
 File created by LB using INTERACTIVE program STDSRFX V1.0 at 1632:03/10/2007

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"10:15:00 09/06/2007"	8.790
"10:30:00 09/06/2007"	8.800
"10:45:00 09/06/2007"	8.840
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"11:45:00 09/06/2007"	8.920
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"21:45:00 09/06/2007"	9.930
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"22:30:00 09/06/2007"	9.970
"22:45:00 09/06/2007"	9.960
"23:00:00 09/06/2007"	9.940
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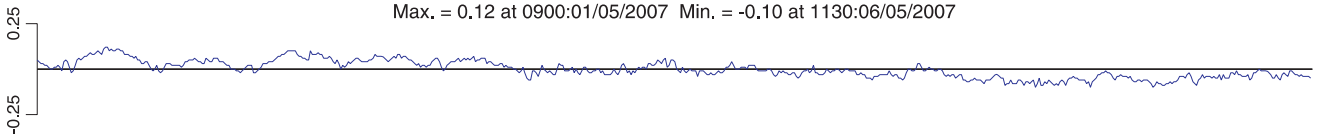


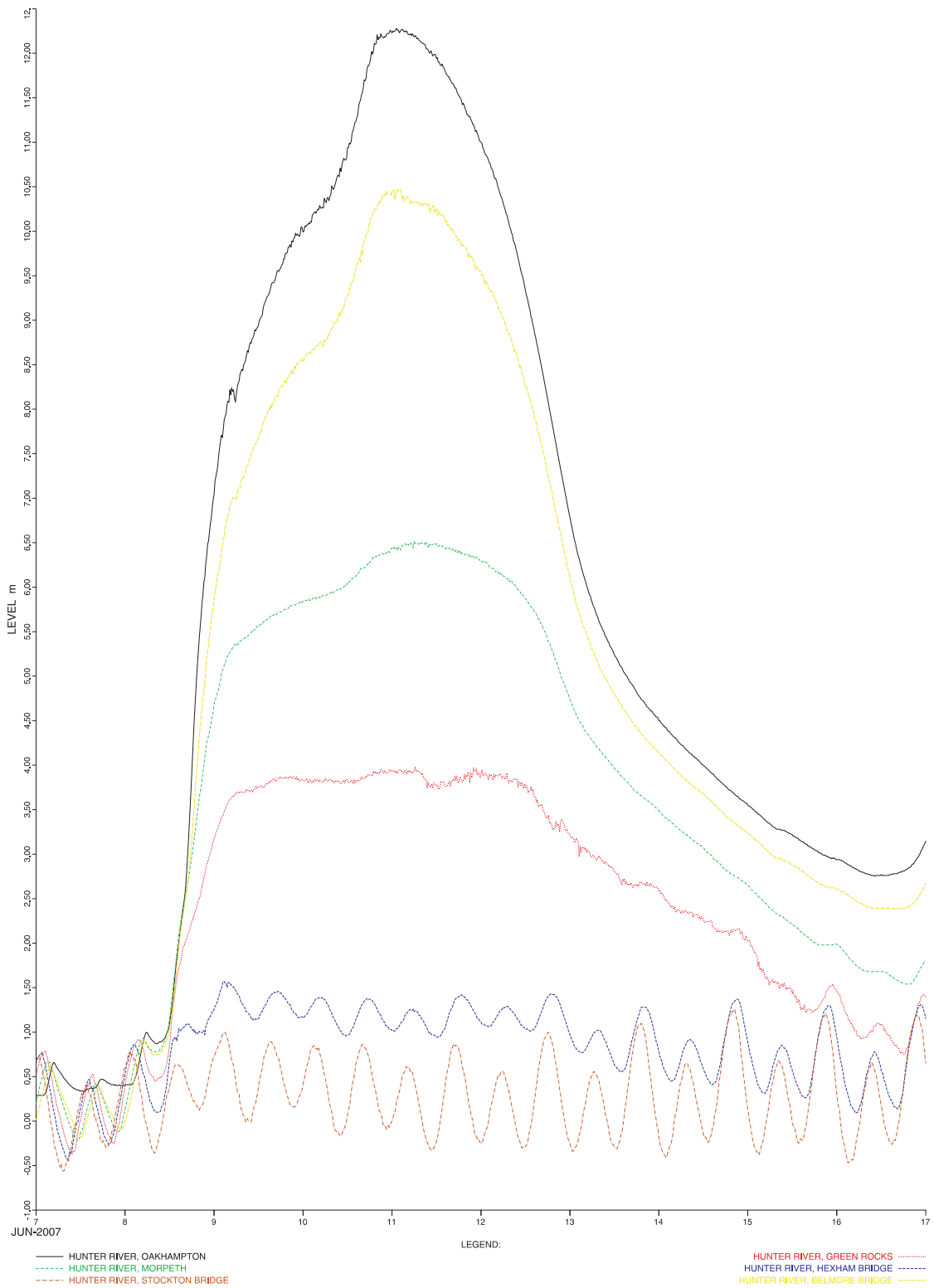
STATION: HUNTER RIVER, HEXHAM BRIDGE

LEGEND: — STATION 1    - - - STATION 2



RESIDUALS: RMS = 0.04679  
Max. = 0.12 at 0900:01/05/2007 Min. = -0.10 at 1130:06/05/2007





DEPARTMENT OF PUBLIC WORKS AND SERVICES, MANLY HYDRAULICS LABORATORY  
 110B KING STREET, MANLY VALE N.S.W. 2093, AUSTRALIA. TELEPHONE 02-9949-0200

FLOOD LEVEL STATISTICS

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STATION NAME : HUNTER RIVER, MCKIMMS CORNER  
 RECORDER TYPE : HYDROMACE 2000  
 A.W.R.C. No. : 210455  
 DATA START : 01-JUL-2006  
 DATA FINISH : 30-JUN-2007  
 TOTAL YEARS OF DATA : 1.00  
 DATABASE TIME INTERVAL (min) : 15  
 THRESHOLD LEVEL (m) : 0.89  
 DATUM : AUSTRALIAN HEIGHT DATUM  
 DATE OF ISSUE : 1717:03/10/2007  
 ANALYSIS PERFORMED BY : LB using INTERACTIVE program WDBRNKX V1.0  
 COMMENTS : Recorded levels.

RANK	PEAK (m)	DATE	TIME	START	DURATION (hr)	MAX RISE (cm/hr)	PERIOD (yr)
1	8.22	11-JUN-2007	03:30	08-JUN-2007	434.2	52.0	2.0
2	1.30	06-NOV-2006	11:30	06-NOV-2006	5.0	28.0	1.0
3	1.30	07-NOV-2006	12:00	07-NOV-2006	5.0	28.0	0.7
4	1.30	29-JUN-2007	22:30	29-JUN-2007	8.0	24.0	0.5
5	1.25	28-JUN-2007	21:30	28-JUN-2007	7.5	20.0	0.4
6	1.18	27-JUN-2007	20:30	27-JUN-2007	7.0	20.0	0.3
7	1.17	11-SEP-2006	13:30	11-SEP-2006	5.2	24.0	0.3
8	1.17	26-JUN-2007	20:15	26-JUN-2007	8.2	16.0	0.2
9	1.12	12-SEP-2006	14:00	12-SEP-2006	4.0	20.0	0.2
10	1.06	08-SEP-2006	00:00	07-SEP-2006	2.2	20.0	0.2
11	1.05	11-SEP-2006	01:15	11-SEP-2006	2.5	20.0	0.2
12	1.05	08-NOV-2006	13:00	08-NOV-2006	2.0	20.0	0.2
13	1.02	09-SEP-2006	00:30	08-SEP-2006	2.0	16.0	0.2
14	1.02	10-SEP-2006	13:15	10-SEP-2006	1.8	20.0	0.1
15	1.01	08-JUN-2007	04:45	08-JUN-2007	2.5	16.0	0.1
16	1.00	05-NOV-2006	11:00	05-NOV-2006	1.5	16.0	0.1
17	0.95	21-APR-2007	02:15	21-APR-2007	1.2	8.0	0.1
18	0.94	09-NOV-2006	13:45	09-NOV-2006	1.0	12.0	0.1
19	0.94	18-MAY-2007	00:30	17-MAY-2007	1.0	8.0	0.1
20	0.93	10-SEP-2006	01:15	10-SEP-2006	0.8	12.0	0.1
21	0.93	13-SEP-2006	15:00	13-SEP-2006	1.0	8.0	0.1
22	0.92	12-JUL-2006	00:00	11-JUL-2006	0.5	12.0	0.1
23	0.92	22-MAR-2007	01:45	22-MAR-2007	0.8	4.0	0.1
24	0.92	16-MAY-2007	23:30	16-MAY-2007	1.0	8.0	0.1
25	0.91	13-JUL-2006	00:45	13-JUL-2006	0.5	8.0	0.1
26	0.91	06-SEP-2006	23:00	06-SEP-2006	0.2	8.0	0.1
27	0.91	18-MAR-2007	10:45	18-MAR-2007	0.5	N/A	0.1
28	0.91	19-MAY-2007	01:00	19-MAY-2007	0.8	8.0	0.1
29	0.90	12-SEP-2006	01:15	12-SEP-2006	0.5	N/A	0.1
30	0.90	05-NOV-2006	23:00	05-NOV-2006	0.2	N/A	0.1
31	0.90	30-JUN-2007	10:30	30-JUN-2007	1.0	4.0	0.1
32	0.89	23-MAR-2007	02:30	23-MAR-2007	0.0	N/A	0.1
33	0.89	20-APR-2007	01:30	20-APR-2007	0.0	N/A	0.1



ANALYSIS OF TIDAL OBSERVATIONS

STATION NAME: SYDNEY TIDE GAUGE  
 RECORDER TYPE: DATATAKER  
 DATUM: ZERO CAMP COVE  
 ANALYSIS OF HOURLY TIDAL HEIGHTS FROM 0000:01/07/2006 TO 2300:02/07/2007  
 NO. OF OBSERVATIONS = 8808 NO. OF POINTS ANALYSED = 8808  
 MID POINT 1100:31/12/2006 SEPARATION = 1.00  
 TIME ZONE : EST LATITUDE -33 DEG 51 MIN LONGITUDE 151 DEG 14 MIN

LIST OF HARMONIC CONSTITUENTS (none inferred)

NO	NAME	FREQUENCY (cyc/hr)	PERIOD (day,hr)	MEAN AMPLITUDE (metres)	G- PHASE (deg)	LOCAL AMPLITUDE (metres)	LOCAL PHASE (deg)
1	Z0			0.9442544		0.9442544	
2	SA	0.0001141	365d,06h	0.0687380	134.44	0.0687380	137.76
3	SSA	0.0002282	182d,15h	0.0253974	94.37	0.0253974	254.89
4	MSM	0.0013098	31d,19h	0.0127537	218.02	0.0127537	352.77
5	MM	0.0015122	27d,13h	0.0045407	231.96	0.0045407	183.42
6	MSF	0.0028219	14d,18h	0.0063242	203.81	0.0063242	290.01
7	MF	0.0030501	13d,16h	0.0197710	0.04	0.0197710	246.77
8	ALP1	0.0343966	29.07h	0.0010548	340.23	0.0012517	63.36
9	2Q1	0.0357063	28.01h	0.0042532	12.51	0.0049768	230.94
10	SIG1	0.0359087	27.85h	0.0034849	358.80	0.0040822	32.95
11	Q1	0.0372185	26.87h	0.0235868	62.04	0.0276398	231.35
12	RHO1	0.0374209	26.72h	0.0039826	47.55	0.0045466	33.57
13	Q1	0.0387307	25.82h	0.0964938	79.47	0.1132471	199.69
14	TAU1	0.0389588	25.67h	0.0048251	39.02	0.0038170	140.68
15	BET1	0.0400404	24.97h	0.0009819	119.70	0.0012014	194.88
16	NO1	0.0402686	24.83h	0.0064338	97.09	0.0101144	331.97
17	CHI1	0.0404710	24.71h	0.0013989	109.61	0.0016622	158.00
18	PI1	0.0414385	24.13h	0.0024470	110.75	0.0024282	312.08
19	P1	0.0415526	24.07h	0.0438246	113.24	0.0433163	317.91
20	S1	0.0416667	24.00h	0.0085778	350.80	0.0057799	159.80
21	K1	0.0417807	23.93h	0.1482257	119.04	0.1648004	302.91
22	PSI1	0.0418948	23.87h	0.0009772	38.01	0.0009954	226.40
23	PHI1	0.0420089	23.80h	0.0013041	170.86	0.0012738	157.71
24	THE1	0.0430905	23.21h	0.0011649	133.17	0.0013896	91.59
25	J1	0.0432929	23.10h	0.0098439	143.92	0.0110957	277.22
26	SO1	0.0446027	22.42h	0.0011343	179.38	0.0013342	89.17
27	OO1	0.0448308	22.31h	0.0055142	179.16	0.0106868	247.15
28	UPS1	0.0463430	21.58h	0.0013787	191.35	0.0025018	209.65
29	OQ2	0.0759749	13.16h	0.0019358	185.88	0.0018419	283.90
30	EPS2	0.0761773	13.13h	0.0064635	190.10	0.0061639	99.91
31	2N2	0.0774871	12.91h	0.0188741	193.07	0.0178317	240.20
32	MU2	0.0776895	12.87h	0.0202965	207.12	0.0194891	65.35
33	N2	0.0789993	12.66h	0.1102693	219.37	0.1059412	211.22
34	NU2	0.0792016	12.63h	0.0222446	227.84	0.0214290	36.16
35	H1	0.0803973	12.44h	0.0032975	75.82	0.0032149	198.67
36	M2	0.0805114	12.42h	0.4972989	236.40	0.4796013	179.67
37	H2	0.0806255	12.40h	0.0018385	116.32	0.0017993	63.20
38	MKS2	0.0807396	12.39h	0.0027644	357.01	0.0035091	97.68
39	LDA2	0.0818212	12.22h	0.0062575	239.25	0.0059819	137.31
40	L2	0.0820236	12.19h	0.0255340	205.15	0.0160559	291.53
41	T2	0.0832193	12.02h	0.0075370	284.31	0.0075370	310.99
42	S2	0.0833333	12.00h	0.1230184	259.96	0.1232939	289.97
43	R2	0.0834474	11.98h	0.0009521	234.34	0.0011622	82.81
44	K2	0.0835615	11.97h	0.0372762	250.14	0.0489554	77.56
45	MSN2	0.0848455	11.79h	0.0016331	140.10	0.0015165	121.53
46	ETA2	0.0850736	11.75h	0.0021299	262.67	0.0030466	33.34
47	MO3	0.1192421	8.39h	0.0002076	257.42	0.0002349	320.91
48	M3	0.1207671	8.28h	0.0022126	329.64	0.0020900	64.72
49	SO3	0.1220640	8.19h	0.0002182	312.04	0.0002566	102.27
50	MK3	0.1222921	8.18h	0.0004813	256.17	0.0005161	23.31
51	SK3	0.1251141	7.99h	0.0014364	115.62	0.0016006	329.50
52	MN4	0.1595106	6.27h	0.0014571	86.07	0.0013501	21.20
53	M4	0.1610228	6.21h	0.0036473	100.36	0.0033923	346.90
54	SN4	0.1623326	6.16h	0.0001853	59.21	0.0001784	81.08
55	MS4	0.1638447	6.10h	0.0013697	162.81	0.0013239	136.09
56	MK4	0.1640729	6.09h	0.0003293	221.19	0.0004171	351.87
57	S4	0.1666667	6.00h	0.0005941	317.28	0.0005968	17.31
58	SK4	0.1668948	5.99h	0.0002646	110.72	0.0003482	328.16
59	2MK5	0.2028036	4.93h	0.0001315	223.15	0.0001360	293.56
60	2SK5	0.2084474	4.80h	0.0000989	182.53	0.0001105	66.43
61	2MN6	0.2400220	4.17h	0.0005808	12.83	0.0005190	251.22
62	M6	0.2415342	4.14h	0.0017160	49.46	0.0015393	239.26
63	2MS6	0.2443561	4.09h	0.0023009	120.07	0.0021448	36.61
64	2MK6	0.2445843	4.09h	0.0004861	120.42	0.0005937	194.37
65	2SM6	0.2471781	4.05h	0.0002108	133.96	0.0002043	137.26
66	MSK6	0.2474062	4.04h	0.0002752	145.25	0.0003493	305.95
67	3MK7	0.2833149	3.53h	0.0001989	344.69	0.0001984	358.36
68	M8	0.3220456	3.11h	0.0001635	15.87	0.0001415	148.93
69	M10	0.4025570	2.48h	0.0003138	209.37	0.0002618	285.70

RMS (RESIDUAL ERROR) = 0.07972



ANALYSIS OF TIDAL OBSERVATIONS

TIME OF ANALYSIS : 1745:03/10/2007  
ANALYSIS PERFORMED BY : LB using INTERACTIVE program MTIDE1X V1.0A  
STATION LOCATION : SYDNEY, N.S.W., AUSTRALIA  
STATION NAME : MIDDLE HEAD, COBBLERS BAY  
STATION LATITUDE : 033 DEG 51 MIN SOUTH  
STATION LONGITUDE : 151 DEG 14 MIN EAST  
DATUM : ZERO CAMP COVE  
ANALYSIS PERIOD START TIME : 0000:01/07/2006  
ANALYSIS PERIOD FINISH TIME : 2300:30/06/2007  
MID POINT TIME : 1100:30/12/2006  
PERIOD OF ANALYSIS : 365 DAYS 00 HRS  
LOCAL TIME ZONE NAME : EASTERN STANDARD TIME  
LOCAL TIME FACTOR : GMT +10.00 HRS  
TIME MERIDIAN : -10.08 HRS

TIDAL PLANES IN METRES ABOVE ZERO OF LOCAL GAUGE VALUES

High High Water (Solstices Springs)	H.H.W.(S.S.)	:	1.907
Mean High Water Springs	M.H.W.S.	:	1.564
Mean High Water	M.H.W.	:	1.441
Mean High Water Neaps	M.H.W.N.	:	1.318
Mean Sea Level	M.S.L.	:	0.943
Mean Low Water Neaps	M.L.W.N.	:	0.569
Mean Low Water	M.L.W.	:	0.446
Mean Low water Springs	M.L.W.S.	:	0.323
Indian Spring Low Water	I.S.L.W.	:	0.078

TIDAL RANGES IN METRES

Mean Spring Range	(M.H.W.S. - M.L.W.S.)	:	1.241
Mean Neap Range	(M.H.W.N. - M.L.W.N.)	:	0.749
Mean Range	(M.H.W. - M.L.W.)	:	0.995
Range	(H.H.W.(S.S.) - I.S.L.W.)	:	1.829

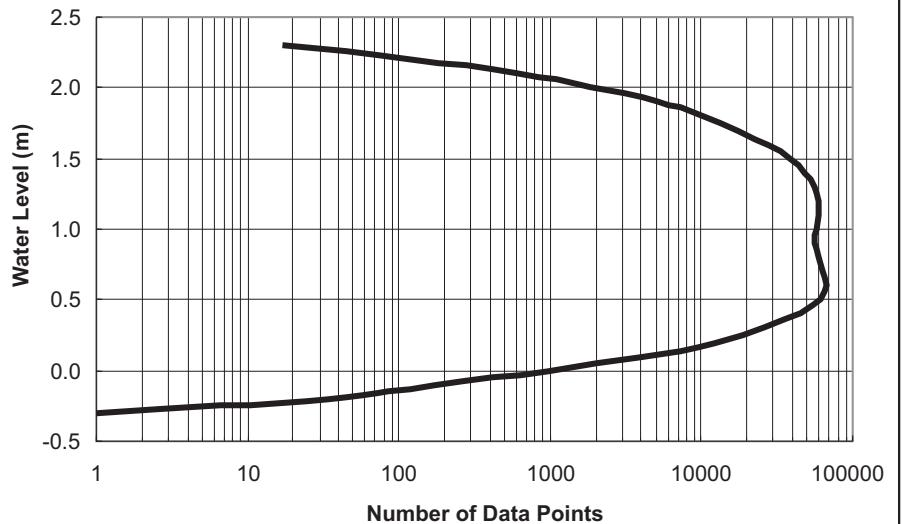


**Port Jackson at Sydney  
Frequency Distribution Analysis**

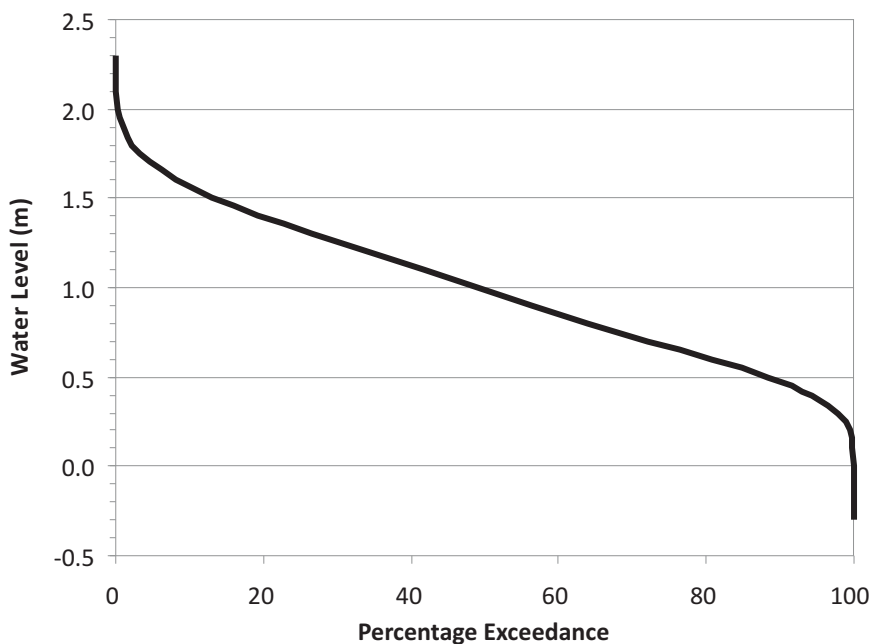
<b>Water Level (m)</b>	<b>Normalised Frequency</b>	<b>Cumulative Frequency</b>	<b>Number of Observations in Class Interval</b>	<b>Cumulative Observations</b>	<b>Percent Exceedance</b>
2.3	0.00002	0.00002	17	17	0.0022
2.2	0.00015	0.00017	117	134	0.0172
2.1	0.00077	0.00094	601	735	0.0945
2.0	0.00240	0.00335	1870	2605	0.3348
1.9	0.00649	0.00983	5048	7653	0.9835
1.8	0.01276	0.02259	9928	17581	2.2593
1.7	0.02298	0.04557	17880	35461	4.5569
1.6	0.03606	0.08163	28058	63519	8.1625
1.5	0.04940	0.13103	38442	101961	13.1025
1.4	0.06235	0.19338	48519	150480	19.3375
1.3	0.07150	0.26487	55638	206118	26.4873
1.2	0.07666	0.34153	59655	265773	34.1533
1.1	0.07640	0.41793	59453	325226	41.7933
1.0	0.07364	0.49157	57305	382531	49.1573
0.9	0.07172	0.56329	55811	438342	56.3293
0.8	0.07595	0.63924	59101	497443	63.9241
0.7	0.08219	0.72143	63959	561402	72.1432
0.6	0.08521	0.80664	66308	627710	80.6642
0.5	0.07805	0.88469	60735	688445	88.4689
0.4	0.05891	0.94360	45845	734290	94.3603
0.3	0.03415	0.97775	26572	760862	97.7749
0.2	0.01566	0.99341	12190	773052	99.3414
0.1	0.00506	0.99847	3934	776986	99.8469
0.0	0.00126	0.99973	984	777970	99.9734
-0.1	0.00022	0.99996	172	778142	99.9955
-0.2	0.00004	1.00000	34	778176	99.9999
-0.3	0.00000	1.00000	1	778177	100.0000
<b>TOTAL</b>	<b>1.00000</b>		<b>778177</b>		



Station Information	
River/Estuary System	Port Jackson
AWRC No.	213470
Station name	Sydney
Datum	Zero Camp Cove*
MGA Zone	56
Easting	338842
Northing	6255836



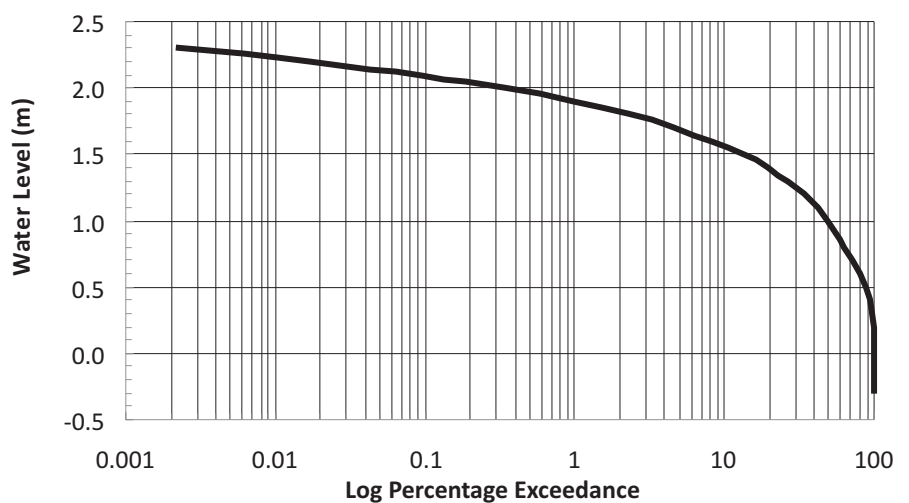
Summary Statistics	
Time Interval (mins)	15
Record start date	24/09/1987
Highest water level recorded (m)	2.32
Date recorded	27/04/1990
Lowest water level recorded (m)	-0.28
Date recorded	28/02/2010
Tidal plane annual average record	1990-2010
MHW (m)	1.45
MSL (m)	0.95
MLW (m)	0.44

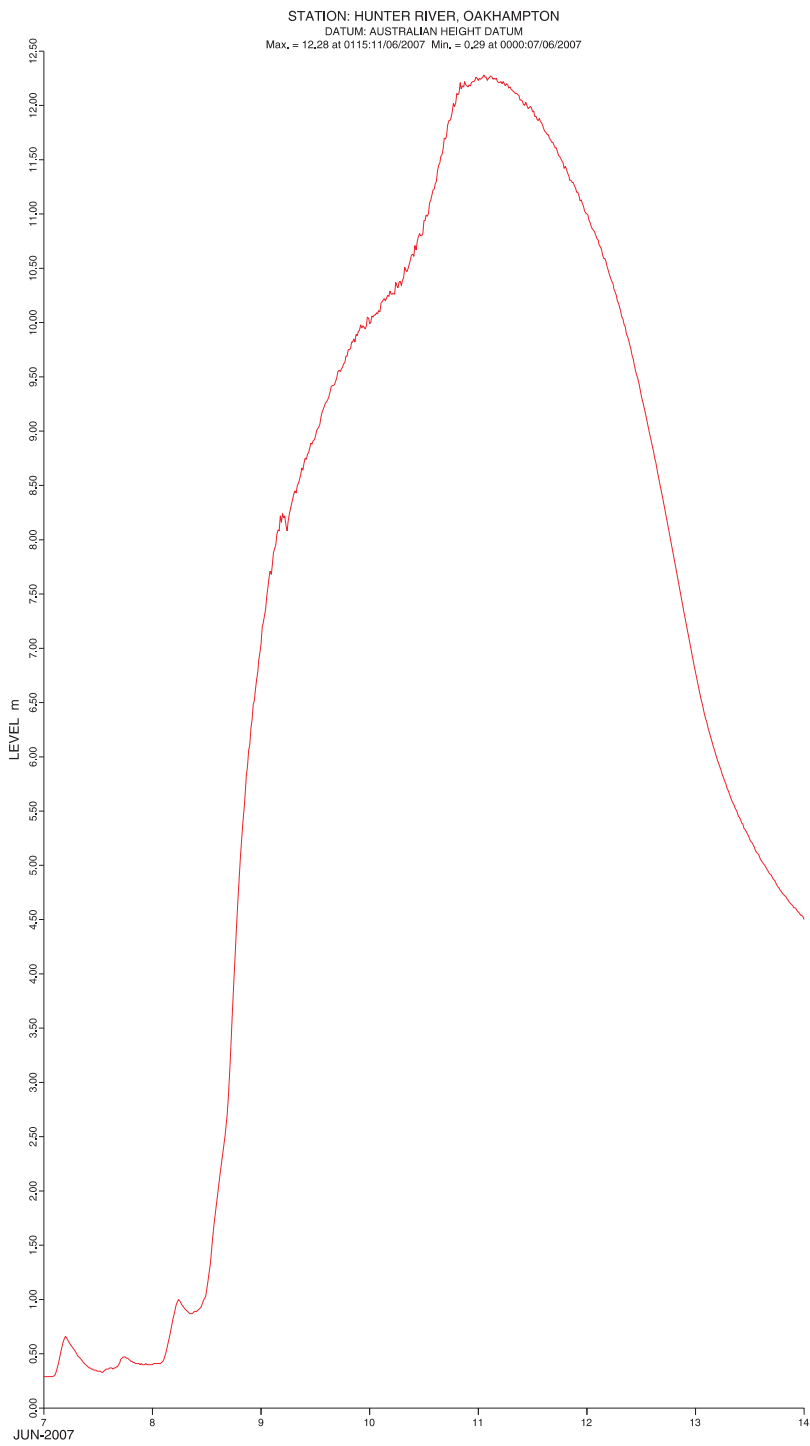
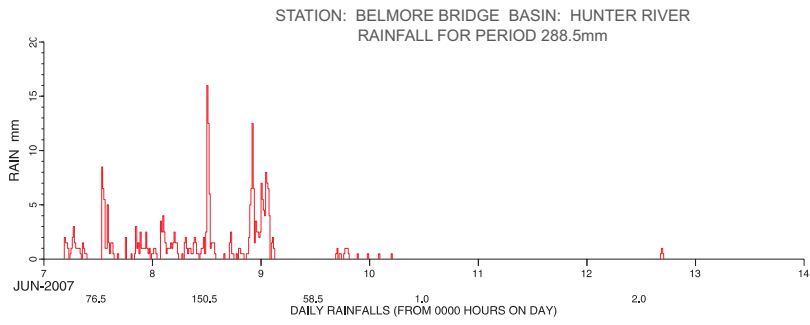


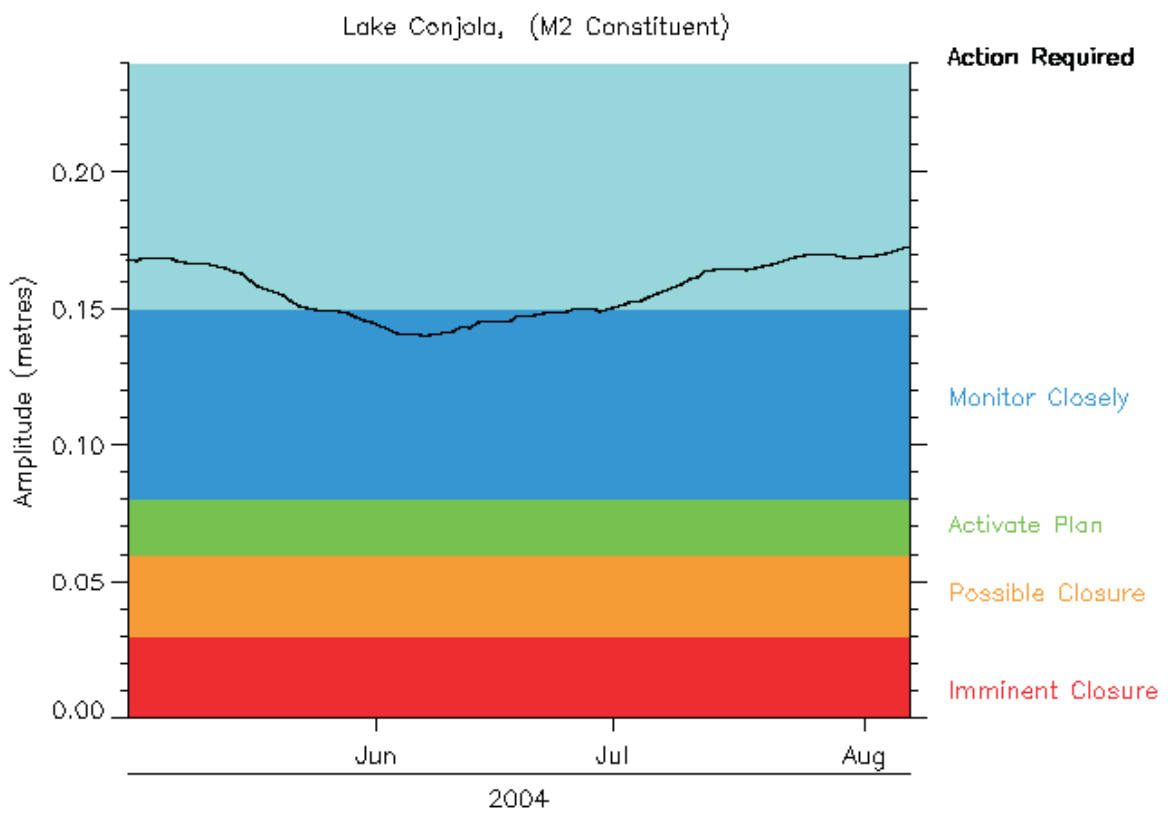
**Notes:**

Refer to Appendix B for frequency distribution analysis table.

\*The information supplied has been collected for use by the Office of Environment & Heritage, and the water levels only approximately relate to Australian Height Datum (AHD) or other specified datum. Other users should independently verify the suitability of this data for their particular use.







Period 15 Day Plot Start 00:00\_10/06/2011  
 Interval 30 Minute Plot End 00:00\_25/06/2011  
 Hinton Bridge

