

NSW TIDE CHARTS

\$6.60
(incl. GST)

2015

November 27, 2014
to
January 6, 2016



Office of
Environment
and Heritage



Public Works
Manly Hydraulics Laboratory

Technical data supplied by:

NSW Public Works
Manly Hydraulics Laboratory
Office of Finance & Services
110B King Street
Manly Vale NSW 2093
Australia
T: (02) 9949 0200
F: (02) 9948 6185
W: www.mhl.nsw.gov.au
Enquiries to: The Principal Engineer

The publisher of this booklet, NSW Public Works Manly Hydraulics Laboratory, advises readers that the information contained in this booklet is in the nature of a general guide only and should not be relied upon in any critical situation, nor used for navigation.

ISSN: 1039 - 1231

© Crown in right of NSW through the Office of Finance and Services 2015

NSW Public Works Manly Hydraulics Laboratory and the NSW Office of Environment and Heritage permit this material to be reproduced, for educational or non-commercial use, in whole or in part, provided the meaning is unchanged and its source, publisher and authorship are acknowledged.

While this publication has been formulated with all due care, the State of New South Wales does not warrant or represent that this booklet is free from errors or omissions, or that it is exhaustive. The State of NSW disclaims, to the extent permitted by law, all warranties, representations or endorsements, express or implied, with regard to the booklet including but not limited to, all implied warranties of merchantability, fitness for a particular purpose, or non-infringement. The State of NSW further does not warrant or accept any liability in relation to the quality or accuracy of the booklet and no responsibility is accepted by the State of NSW for the accuracy, currency, reliability and correctness of any information in the booklet.

Contents

How to get the best from these charts	5	June 4–10, 2015	23
Tidal terms	6	June 11–17, 2015	23
November 27- December 3, 2014.....	14	June 18–24, 2015	23
December 4-10, 2014	14	June 25 – July 1, 2015.....	24
December 11-17, 2014.....	14	July 2–8, 2015.....	24
December 18–24, 2014.....	15	July 9–15, 2015.....	24
December 25–31, 2014.....	15	July 16–22, 2015	25
January 1–7, 2015.....	15	July 23–29, 2015	25
January 8–14, 2015.....	16	July 30 – August 5, 2015.....	25
January 15–21, 2015.....	16	August 6–12, 2015.....	26
January 22–28, 2015.....	16	August 13–19, 2015.....	26
January 29 – February 4, 2015.....	17	August 20–26, 2015.....	26
February 5–11, 2015	17	August 27 – September 2, 2015	27
February 12–18, 2015	17	September 3–9, 2015.....	27
February 19–25, 2015	18	September 10–16, 2015	27
February 26 – March 4, 2015.....	18	September 17–23, 2015	28
March 5–11, 2015.....	18	September 24–30, 2015	28
March 12–18, 2015.....	19	October 1–7, 2015.....	28
March 19–25, 2015.....	19	October 8-14, 2015.....	29
March 26 – April 1, 2015.....	19	October 15–21, 2015.....	29
April 2–8, 2015	20	October 22–28, 2015.....	29
April 9–15, 2015	20	October 29 – November 4, 2015	30
April 16–22, 2015	20	November 5–11, 2015.....	30
April 23–29, 2015	21	November 12–18, 2015.....	30
April 30 – May 6, 2015.....	21	November 19–25, 2015.....	31
May 7–13, 2015.....	21	November 26 – December 2, 2015.....	31
May 14–20, 2015	22	December 3–9, 2015	31
May 21–27, 2015	22	December 10–16, 2015	32
May 28 – June 3, 2015.....	22	December 17–23, 2015.....	32
		December 24–30, 2015	32
		December 31 – January 6, 2016.....	33
		Time differences for secondary locations.....	34

NEW SOUTH WALES

TIDE CHARTS

November 27, 2014 to January 6, 2016

The following pages of charted tidal predictions for New South Wales are based on data from water level recorders funded by the Environmental Programs Services Section of the **Office of Environment and Heritage, Department of Premier and Cabinet**, and operated by the **NSW Public Works Manly Hydraulics Laboratory**. The charts are produced by a Foreman¹ analysis of the historical water levels recorded by the tide gauge located at Middle Head, Sydney Harbour (Latitude 33°50' South; Longitude 151°15' East; Time Zone 1000).

The Manly Hydraulics Laboratory has adopted Middle Head as the primary reference station for obtaining and monitoring tidal data in NSW. The time differences between the primary and secondary locations in NSW were obtained from an analysis of levels recorded by the gauges at each of the secondary locations. (The 140 secondary locations and their respective time differences are tabled at the back of this booklet.)

DO NOT ADJUST FOR DAYLIGHT SAVING TIMES. Chart times are stated to Australian Eastern Standard Time or Daylight Saving Time where applicable. Daylight Saving periods begin on the first Sunday in October and end on the first Sunday in April.

Sunrise, Sunset, Moonrise and Moonset times for Sydney are included in this book. The corresponding times for the secondary locations throughout NSW will vary from those at Sydney. Tide levels are listed in metres and nearest decimetres. Predicted tidal levels for NSW ocean locations will vary from those at Sydney but the variation will generally not be more than 0.2 metres. The actual tide may differ from the predicted tide due to meteorological and oceanographic conditions. Zero on the tide charts is approximately Indian Spring Low Water.

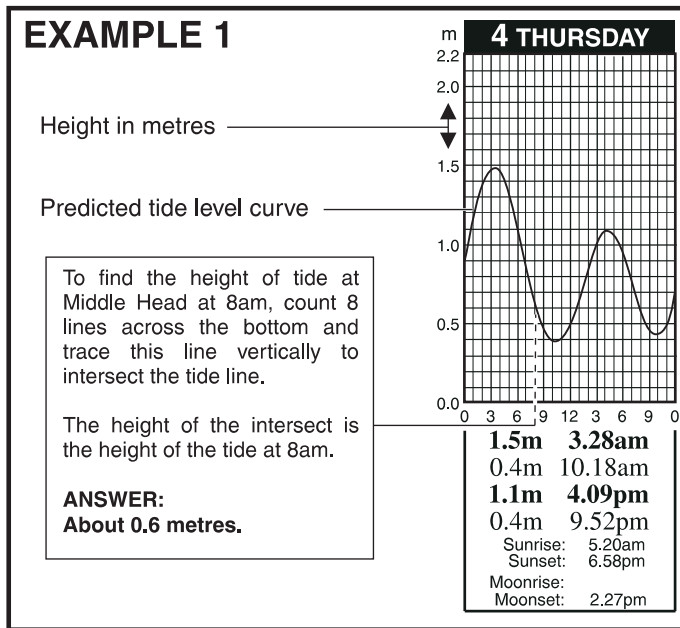
The tidal analyses have been carried out using data from the Sydney gauge and the department's secondary ocean and river gauges to determine the approximate time differences of high and low water from those at Sydney. For each river basin, locations are generally given starting from a downstream location on the estuary/river and working progressively upstream. Locations are on the main estuary, river or channel arm unless otherwise stated. The time differences will progressively increase and tidal ranges will progressively decrease the higher the secondary location is upstream in estuaries, rivers and lakes.

The time differences for the secondary locations are average values over the lunar cycle and will vary throughout that cycle and throughout the year. Other variations may occur at the primary location or the secondary locations, or both, due to unpredictable meteorological, oceanographic and hydrological conditions. The following tidal predictions and accompanying table for secondary locations must therefore be regarded as a guide only.

¹ Foreman, M.G.G., 1977. Manual for Tidal Heights Analysis and Prediction. Pacific Marine Science Report 77-10, Institute of Ocean Sciences, Patricia Bay, Sidney, B.C., 58 pp. (2004 revision).

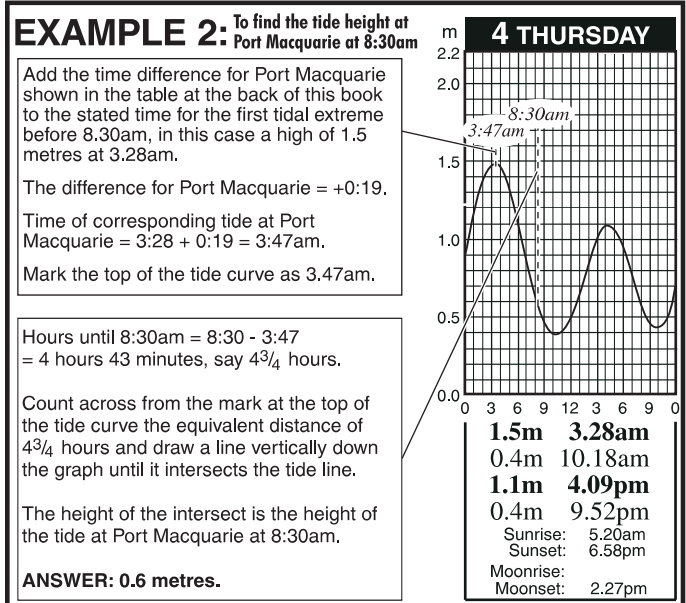
HOW TO GET THE BEST FROM THESE CHARTS

These charts, based on data obtained from the primary tide gauge located at Middle Head, Sydney Harbour, enable the user to predict the height of tide at any time on any day at Middle Head or one of the Secondary Locations tabled at the back of this book. The charts show the range or height of tide measured in metres and the nearest decimetre, scaled vertically at left from 0.0 metres to 2.2 metres in increments of 0.1 metre (one decimetre). Every 0.5 metres of scale is shown with a thicker line. Each day begins from midnight and is scaled in hourly increments marked horizontally across the bottom of each day's chart, with every three-hourly interval numbered, e.g., 0 = midnight, 12 = midday, the first 6 = 6am, the second 6 = 6pm etc. Every three-hour period is shown with a thicker line. All times in these examples are to Australian Eastern Standard Time (AEST).



EXAMPLE 1: Primary Location

To determine the height of tide at the primary reference location, Middle Head in Sydney Harbour, at 8am on Thursday, the 4th: Count 8 vertical lines across from the zero at left on that day's chart and trace up the line to where it intersects the tide line. The intersect marks the height of tide at this time, which can be read off the vertical scale — about 0.6 metres. The flow of the tide curve chronologically from left to right indicates the tide is falling. Counting down from the intersect to the horizontal line intersecting the bottom of the tide curve shows the tide has about another 0.2 metres to fall to reach low tide.



EXAMPLE 2: Secondary Locations

To find the approximate height of tide at a Secondary Location, turn to the table on the back page and note the listed time difference for the required location. Time differences are shown in hours and minutes separated by a colon, and identified as either plus (+) or minus (-). Plus values should be added to and minus values subtracted from the stated tide times on the charts to find the predicted time for the secondary location.

To determine the height of tide at Port Macquarie at 8.30am in the example above, look up Port Macquarie in the table for secondary places (listed as part of the Hastings River Basin). Port Macquarie's time difference is shown as +0:19 (zero hours and 19 minutes). Add this to the time of the required high or low for the day shown on the chart, in this case a high of 1.5 metres at 03:28 hours. The time for the corresponding tide at Port Macquarie then becomes 3:47am.

Draw a line at the top of the tide shown at 03:28 hours and mark it as 3:47am. Subtract the 3:47 from the required 8.30am, which leaves about four and three-quarter hours. Now count across four and three-quarters of the one-hour increments to locate the line which relates to 8.30am for Port Macquarie, then trace down to where it intersects the tide curve, and count off the height — about 0.6 metres. The flow of the chart indicates the tide is falling, with about 0.2 metres to the next low tide.

It is not recommended that this method be used to estimate tidal heights for upstream stations, but rather as a means of estimating the occurrence of high or low tide. However, where the time difference from Sydney is 60 minutes or less, the method may be used to gain an approximation of the tidal level.

TIDAL TERMS

Australian Height Datum (AHD): is a single reference point set by the National Mapping Council to relate all vertical measurements throughout Australia as part of the Geocentric

Datum of Australia (GDA): which is now being phased in by the Intergovernmental Committee on Surveying and Mapping to unify all the different mapping datum across Australia into one homogenous datum. The Australian Height Datum is based on the Mean Sea Level.

Charted Depth: is the vertical measurement of water from the ocean floor to a standard level from which the soundings printed on charts are calculated, known as Datum.

Datum: is the zero reference point from which tidal heights (measured up) and chart soundings (measured down) are calculated.

Depth of Water: can be calculated at any given time in any given place by adding the height of tide at that time and place to the Charted Depth as recorded on the chart for that place.

Diurnal Tides: occur once a day, i.e., one high tide and one low tide on average in any one 24-hour period.

Highest Astronomical Tide (HAT): is the highest tide which can be predicted under any combination of astronomical conditions and average meteorological conditions. Higher tides can occur under extreme meteorological and oceanographic conditions.

Indian Spring Low Water (ISLW): is the lowest level to which a tide will fall under exceptional, predictable, astronomical conditions. It seldom occurs. Meteorological and oceanographical influences, which cannot be predicted, can cause the tide to fall even lower.

King Tide: is a layman's term for the highest of the Spring tides which usually occurs during the day on the New or Full Moon in January and again, at night, on the New or Full Moon in July.

Lowest Astronomical Tide (LAT): is the lowest tide which can be predicted under any combination of astronomical conditions and average meteorological conditions. Lower tides can occur.

Mean High Water Springs (MHWS): is the average level of the Spring high tides which occur on the New and Full Moons.

Mean Low Water Springs (MLWS): is the average level of the Spring low tides.

Mean High Water Neaps (MHWN): is the average level of the Neap high tides which occur on the Quarter Moons.

Mean Low Water Neaps (MLWN): is the average level of the Neap low tides.

Mean Sea Level (MSL): is the average level of the sea surface over a 19-year period, and is approximately the level where the water would settle if there were no tides.

Neap Tides: are those which occur on the Quarter Moons (first or last) when the high tides are relatively small (a low "high") and the low tides are relatively high (a high "low").

Semi-diurnal Tides: occur twice a day, i.e., two high tides and two low tides on average in any one 24-hour period. Of the two highs, one will be higher than the other (daytime in summer, night time in winter). Of the two lows, one will be lower than the other.

Slack Water: is when a tidal current ceases to flow before reversing direction. It does not necessarily occur at the same time as the time of high or low tide. It is governed by geographical and hydrological influences as well as the tide itself.

Spring Tides: are those which occur on the New or Full Moon when the high tides are very high (a high "high") and the low tides are very low (a low "low"). Not to be confused with the season also known as spring.

Tidal Current: is the horizontal movement of water caused by the rise or fall of the tide.

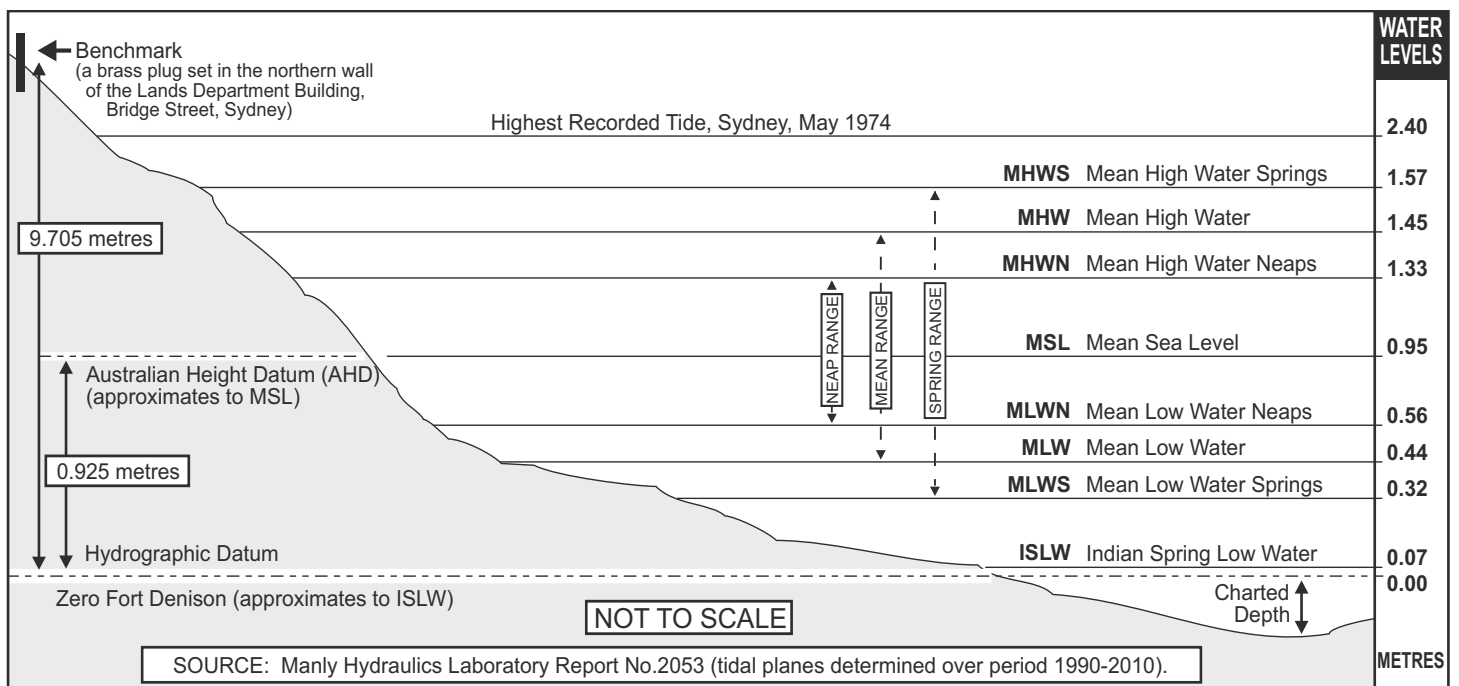
Tidal Epoch: has been set in Australia as a 20-year period (based on the Lunar Cycle of 18.6 Earth years) over which all recordings of tidal variations and influences are analysed and reviewed.

Tidal Range: is the difference in height between two sequential tidal extremes (a low tide of 0.29 metres followed by a high tide of 1.63 metres will cause a tidal range of 1.34 metres ($1.63 - 0.29 = 1.34$)).

DAYLIGHT SAVING PERIODS

Daylight Saving Time begins in New South Wales, the Australian Capital Territory, Victoria, Tasmania and South Australia at 2am on the first Sunday in October, when clocks should have been turned forward one hour to read 3am. Daylight Saving Time ends at 3am on the first Sunday of April, when clocks should be turned back one hour to read 2am. Queensland, Western Australia and the Northern Territory do not participate in Daylight Saving Time.

NOTE: Prediction times in this book are to Australian Eastern Standard Time or Daylight Saving Time where applicable. No adjustment is needed.



JANUARY 2015

FEBRUARY 2015

DAY	MOON RISE	MOON SET	NOTES
1	4:25 pm	2:32 am	
2	5:23 pm	3:17 am	
3	6:17 pm	4:04 am	
4	7:08 pm	4:54 am	
5	7:55 pm	5:46 am	○
6	8:38 pm	6:40 am	
7	9:16 pm	7:34 am	
8	9:52 pm	8:28 am	
9	10:25 pm	9:22 am	
10	10:57 pm	10:15 am	
11	11:29 pm	11:08 am	
12		12:01 pm	
13	12:01 am	12:55 pm	●
14	12:34 am	1:50 pm	
15	1:11 am	2:47 pm	
16	1:51 am	3:45 pm	
17	2:37 am	4:45 pm	
18	3:29 am	5:43 pm	
19	4:26 am	6:40 pm	
20	5:30 am	7:34 pm	
21	6:37 am	8:23 pm	●
22	7:47 am	9:09 pm	
23	8:56 am	9:52 pm	
24	10:04 am	10:32 pm	
25	11:11 am	11:12 pm	
26	12:15 pm	11:52 pm	
27	1:18 pm		●
28	2:19 pm	12:33 am	
29	3:18 pm	1:17 am	
30	4:13 pm	2:02 am	
31	5:04 pm	2:51 am	

DAY	MOON RISE	MOON SET	NOTES
1	5:52 pm	3:42 am	
2	6:36 pm	4:34 am	
3	7:15 pm	5:28 am	
4	7:52 pm	6:21 am	○
5	8:26 pm	7:15 am	
6	8:59 pm	8:08 am	
7	9:31 pm	9:01 am	
8	10:02 pm	9:54 am	
9	10:35 pm	10:47 am	
10	11:10 pm	11:41 am	
11	11:48 pm	12:36 pm	
12		1:32 pm	●
13	12:29 am	2:29 pm	
14	1:16 am	3:26 pm	
15	2:09 am	4:23 pm	
16	3:08 am	5:17 pm	
17	4:12 am	6:08 pm	
18	5:20 am	6:57 pm	
19	6:31 am	7:42 pm	●
20	7:41 am	8:25 pm	
21	8:51 am	9:06 pm	
22	9:59 am	9:48 pm	
23	11:05 am	10:30 pm	
24	12:09 pm	11:14 pm	
25	1:10 pm		
26	2:08 pm	12:00 am	●
27	3:01 pm	12:49 am	
28	3:50 pm	1:39 am	

MARCH 2015

DAY	MOON RISE	MOON SET	NOTES
1	4:34 pm	2:31 am	
2	5:15 pm	3:23 am	
3	5:53 pm	4:17 am	
4	6:28 pm	5:10 am	
5	7:01 pm	6:03 am	
6	7:33 pm	6:56 am	○
7	8:05 pm	7:49 am	
8	8:37 pm	8:42 am	
9	9:11 pm	9:36 am	
10	9:48 pm	10:30 am	
11	10:27 pm	11:25 am	
12	11:11 pm	12:21 pm	
13		1:17 pm	
14	12:00 am	2:12 pm	●
15	12:55 am	3:05 pm	
16	1:54 am	3:56 pm	
17	2:58 am	4:44 pm	
18	4:05 am	5:29 pm	
19	5:14 am	6:13 pm	
20	6:24 am	6:56 pm	●
21	7:34 am	7:38 pm	
22	8:43 am	8:21 pm	
23	9:50 am	9:06 pm	
24	10:55 am	9:53 pm	
25	11:56 am	10:42 pm	
26	12:53 pm	11:33 pm	
27	1:45 pm		●
28	2:32 pm	12:25 am	
29	3:14 pm	1:18 am	
30	3:53 pm	2:12 am	
31	4:29 pm	3:05 am	

APRIL 2015

DAY	MOON RISE	MOON SET	NOTES
1	5:02 pm	3:58 am	
2	5:34 pm	4:51 am	
3	6:06 pm	5:44 am	
4	6:39 pm	6:37 am	○
5	6:13 pm	6:31 am	
6	6:49 pm	7:25 am	
7	7:27 pm	8:21 am	
8	8:10 pm	9:16 am	
9	8:57 pm	10:12 am	
10	9:49 pm	11:07 am	
11	10:45 pm	11:59 am	
12	11:46 pm	12:50 pm	●
13		1:37 pm	
14	12:49 am	2:22 pm	
15	1:55 am	3:05 pm	
16	3:02 am	3:46 pm	
17	4:10 am	4:28 pm	
18	5:19 am	5:10 pm	
19	6:27 am	5:54 pm	●
20	7:34 am	6:40 pm	
21	8:39 am	7:29 pm	
22	9:39 am	8:21 pm	
23	10:35 am	9:14 pm	
24	11:25 am	10:09 pm	
25	12:11 pm	11:03 pm	
26	12:51 pm	11:57 pm	●
27	1:28 pm		
28	2:03 pm	12:51 am	
29	2:35 pm	1:44 am	
30	3:07 pm	2:37 am	

MAY 2015

DAY	MOON RISE	MOON SET	NOTES
1	3:40 pm	3:30 am	
2	4:13 pm	4:24 am	
3	4:48 pm	5:18 am	
4	5:26 pm	6:14 am	○
5	6:08 pm	7:10 am	
6	6:54 pm	8:07 am	
7	7:45 pm	9:03 am	
8	8:40 pm	9:57 am	
9	9:39 pm	10:48 am	
10	10:41 pm	11:36 am	
11	11:45 pm	12:20 pm	◐
12		1:03 pm	
13	12:49 am	1:43 pm	
14	1:55 am	2:23 pm	
15	3:01 am	3:03 pm	
16	4:08 am	3:45 pm	
17	5:14 am	4:29 pm	
18	6:19 am	5:17 pm	●
19	7:22 am	6:07 pm	
20	8:21 am	7:00 pm	
21	9:15 am	7:56 pm	
22	10:04 am	8:51 pm	
23	10:47 am	9:47 pm	
24	11:26 am	10:41 pm	
25	12:02 pm	11:35 pm	
26	12:36 pm		◑
27	1:08 pm	12:28 am	
28	1:40 pm	1:21 am	
29	2:12 pm	2:14 am	
30	2:46 pm	3:09 am	
31	3:23 pm	4:04 am	

JUNE 2015

DAY	MOON RISE	MOON SET	NOTES
1	4:03 pm	5:00 am	
2	4:48 pm	5:58 am	
3	5:38 pm	6:55 am	○
4	6:33 pm	7:51 am	
5	7:32 pm	8:44 am	
6	8:34 pm	9:34 am	
7	9:38 pm	10:21 am	
8	10:42 pm	11:04 am	
9	11:47 pm	11:45 am	
10		12:24 pm	◐
11	12:52 am	1:03 pm	
12	1:56 am	1:43 pm	
13	3:01 am	2:24 pm	
14	4:05 am	3:09 pm	
15	5:08 am	3:57 pm	
16	6:08 am	4:49 pm	
17	7:04 am	5:43 pm	●
18	7:55 am	6:38 pm	
19	8:41 am	7:34 pm	
20	9:23 am	8:30 pm	
21	10:01 am	9:25 pm	
22	10:35 am	10:19 pm	
23	11:08 am	11:12 pm	
24	11:40 am		◑
25	12:12 pm	12:05 am	
26	12:45 pm	12:58 am	
27	1:20 pm	1:52 am	
28	1:58 pm	2:48 am	
29	2:41 pm	3:44 am	
30	3:28 pm	4:42 am	

JULY 2015

AUGUST 2015

DAY	MOON RISE	MOON SET	NOTES
1	4:21 pm	5:39 am	
2	5:20 pm	6:35 am	○
3	6:22 pm	7:28 am	
4	7:27 pm	8:17 am	
5	8:33 pm	9:03 am	
6	9:39 pm	9:45 am	
7	10:45 pm	10:25 am	
8	11:50 pm	11:05 am	
9		11:44 am	●
10	12:54 am	12:25 pm	
11	1:57 am	1:08 pm	
12	2:59 am	1:53 pm	
13	3:59 am	2:42 pm	
14	4:56 am	3:34 pm	
15	5:48 am	4:28 pm	
16	6:36 am	5:24 pm	●
17	7:19 am	6:20 pm	
18	7:59 am	7:15 pm	
19	8:35 am	8:09 pm	
20	9:08 am	9:03 pm	
21	9:41 am	9:56 pm	
22	10:12 am	10:49 pm	
23	10:45 am	11:42 pm	
24	11:18 am		●
25	11:54 am	12:36 am	
26	12:34 pm	1:31 am	
27	1:18 pm	2:27 am	
28	2:08 pm	3:24 am	
29	3:03 pm	4:20 am	
30	4:04 pm	5:15 am	
31	5:09 pm	6:06 am	○

DAY	MOON RISE	MOON SET	NOTES
1	6:16 pm	6:55 am	
2	7:25 pm	7:40 am	
3	8:33 pm	8:23 am	
4	9:40 pm	9:04 am	
5	10:46 pm	9:45 am	
6	11:50 pm	10:25 am	
7		11:08 am	●
8	12:53 am	11:53 am	
9	1:53 am	12:40 pm	
10	2:51 am	1:31 pm	
11	3:44 am	2:23 pm	
12	4:33 am	3:17 pm	
13	5:17 am	4:12 pm	
14	5:57 am	5:07 pm	
15	6:35 am	6:02 pm	●
16	7:09 am	6:56 pm	
17	7:42 am	7:49 pm	
18	8:14 am	8:41 pm	
19	8:46 am	9:34 pm	
20	9:18 am	10:27 pm	
21	9:53 am	11:21 pm	
22	10:30 am		
23	11:12 am	12:16 am	●
24	11:58 am	1:11 am	
25	12:49 pm	2:06 am	
26	1:46 pm	3:00 am	
27	2:48 pm	3:52 am	
28	3:54 pm	4:42 am	
29	5:02 pm	5:29 am	
30	6:12 pm	6:14 am	○
31	7:21 pm	6:57 am	

SEPTEMBER 2015

OCTOBER 2015

DAY	MOON RISE	MOON SET	NOTES
1	8:30 pm	7:39 am	
2	9:38 pm	8:22 am	
3	10:43 pm	9:05 am	
4	11:46 pm	9:50 am	
5		10:38 am	☾
6	12:45 am	11:28 am	
7	1:40 am	12:20 pm	
8	2:30 am	1:14 pm	
9	3:16 am	2:08 pm	
10	3:57 am	3:02 pm	
11	4:35 am	3:57 pm	
12	5:10 am	4:50 pm	
13	5:44 am	5:43 pm	●
14	6:16 am	6:36 pm	
15	6:48 am	7:29 pm	
16	7:20 am	8:22 pm	
17	7:54 am	9:15 pm	
18	8:30 am	10:09 pm	
19	9:09 am	11:03 pm	
20	9:52 am	11:57 pm	
21	10:40 am		☾
22	11:33 am	12:50 am	
23	12:31 pm	1:41 am	
24	1:33 pm	2:30 am	
25	2:38 pm	3:18 am	
26	3:46 pm	4:03 am	
27	4:56 pm	4:46 am	
28	6:06 pm	5:29 am	☽
29	7:16 pm	6:12 am	
30	8:25 pm	6:56 am	

DAY	MOON RISE	MOON SET	NOTES
1	9:32 pm	7:42 am	
2	10:35 pm	8:30 am	
3	11:33 pm	9:21 am	
4		11:14 am	
5	1:26 am	12:08 pm	☾
6	2:14 am	1:03 pm	
7	2:57 am	1:58 pm	
8	3:36 am	2:52 pm	
9	4:12 am	3:46 pm	
10	4:45 am	4:39 pm	
11	5:18 am	5:31 pm	
12	5:50 am	6:24 pm	
13	6:22 am	7:17 pm	●
14	6:55 am	8:11 pm	
15	7:31 am	9:05 pm	
16	8:09 am	9:59 pm	
17	8:51 am	10:52 pm	
18	9:36 am	11:45 pm	
19	10:27 am		
20	11:21 am	12:36 am	
21	12:20 pm	1:24 am	☾
22	1:21 pm	2:11 am	
23	2:26 pm	2:55 am	
24	3:33 pm	3:37 am	
25	4:41 pm	4:19 am	
26	5:50 pm	5:00 am	
27	7:00 pm	5:43 am	☽
28	8:09 pm	6:28 am	
29	9:16 pm	7:16 am	
30	10:19 pm	8:07 am	
31	11:16 pm	9:01 am	

NOVEMBER 2015

DECEMBER 2015

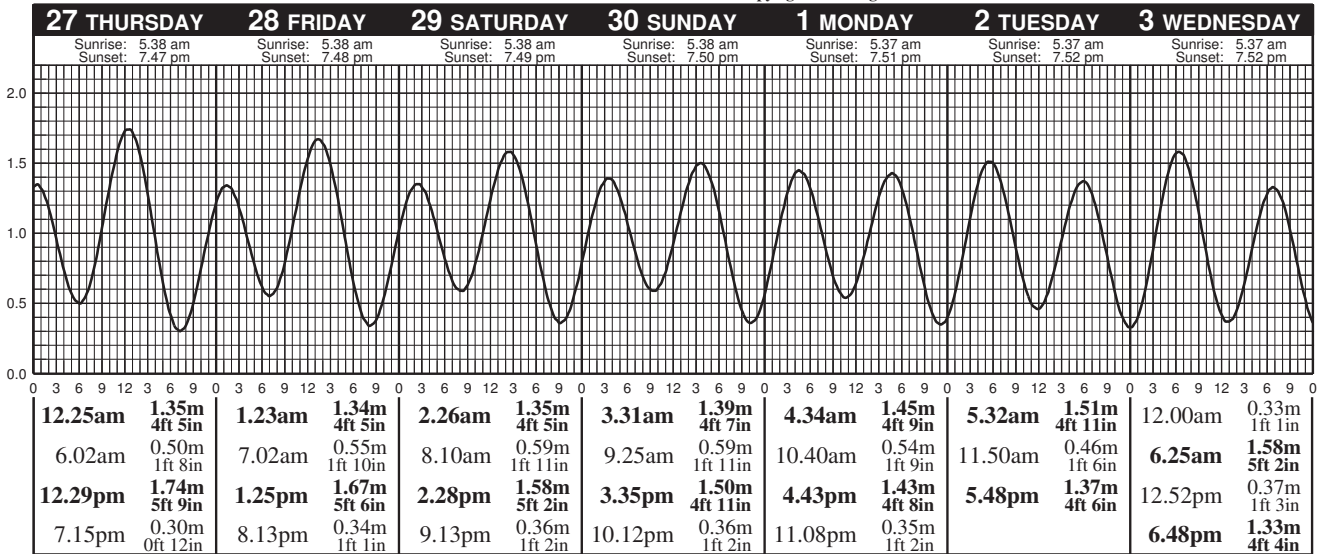
DAY	MOON RISE	MOON SET	NOTES
1		9:57 am	
2	12:08 am	10:53 am	
3	12:54 am	11:50 am	☾
4	1:35 am	12:45 pm	
5	2:13 am	1:39 pm	
6	2:47 am	2:33 pm	
7	3:20 am	3:26 pm	
8	3:51 am	4:18 pm	
9	4:23 am	5:11 pm	
10	4:56 am	6:05 pm	
11	5:31 am	6:59 pm	
12	6:08 am	7:54 pm	●
13	6:49 am	8:48 pm	
14	7:34 am	9:42 pm	
15	8:23 am	10:34 pm	
16	9:16 am	11:23 pm	
17	10:13 am		
18	11:13 am	12:09 am	
19	12:15 pm	12:53 am	☾
20	1:19 pm	1:35 am	
21	2:23 pm	2:15 am	
22	3:30 pm	2:54 am	
23	4:37 pm	3:35 am	
24	5:45 pm	4:17 am	
25	6:53 pm	5:03 am	
26	7:58 pm	5:52 am	☽
27	9:00 pm	6:44 am	
28	9:56 pm	7:40 am	
29	10:46 pm	8:38 am	
30	11:31 pm	9:36 am	

DAY	MOON RISE	MOON SET	NOTES
1		10:33 am	
2	12:11 am	11:29 am	
3	12:47 am	12:24 pm	☾
4	1:20 am	1:18 pm	
5	1:53 am	2:11 pm	
6	2:24 am	3:03 pm	
7	2:56 am	3:57 pm	
8	3:30 am	4:51 pm	
9	4:06 am	5:45 pm	
10	4:46 am	6:41 pm	
11	5:29 am	7:35 pm	●
12	6:18 am	8:29 pm	
13	7:10 am	9:21 pm	
14	8:07 am	10:09 pm	
15	9:07 am	10:54 pm	
16	10:09 am	11:36 pm	
17	11:12 am		
18	12:15 pm	12:16 am	
19	1:19 pm	12:55 am	☾
20	2:24 pm	1:34 am	
21	3:30 pm	2:14 am	
22	4:35 pm	2:56 am	
23	5:40 pm	3:42 am	
24	6:42 pm	4:31 am	
25	7:41 pm	5:24 am	☽
26	8:35 pm	6:21 am	
27	9:23 pm	7:19 am	
28	10:06 pm	8:18 am	
29	10:44 pm	9:16 am	
30	11:19 pm	10:12 am	
31	11:53 pm	11:07 am	

November 27 – December 3, 2014

Daylight Savings Time
©2014 Crown copyright in the right of NSW

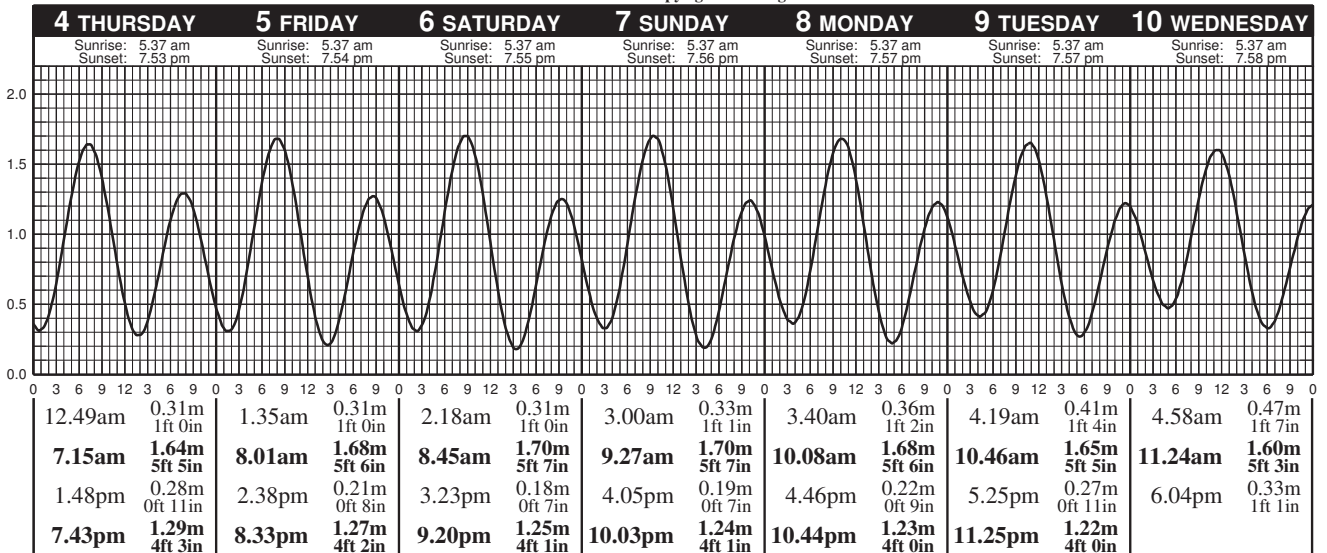
1st Quarter Nov 29



December 4–10, 2014

Daylight Savings Time
©2014 Crown copyright in the right of NSW

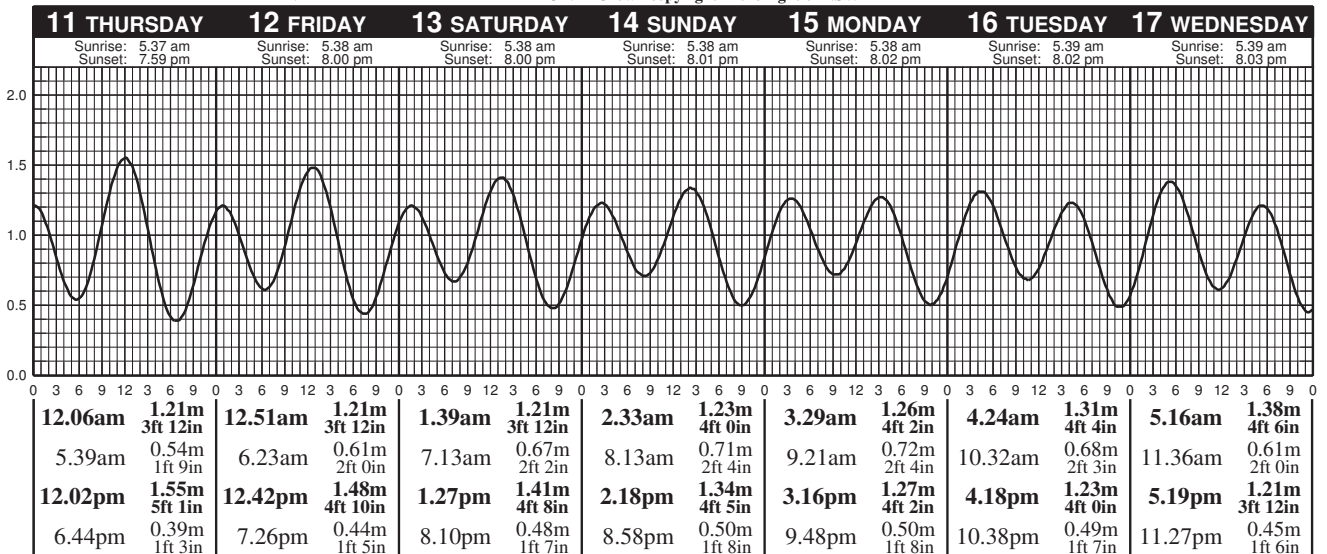
Full Moon Dec 6



December 11–17, 2014

Daylight Savings Time
©2014 Crown copyright in the right of NSW

3rd Quarter Dec 14

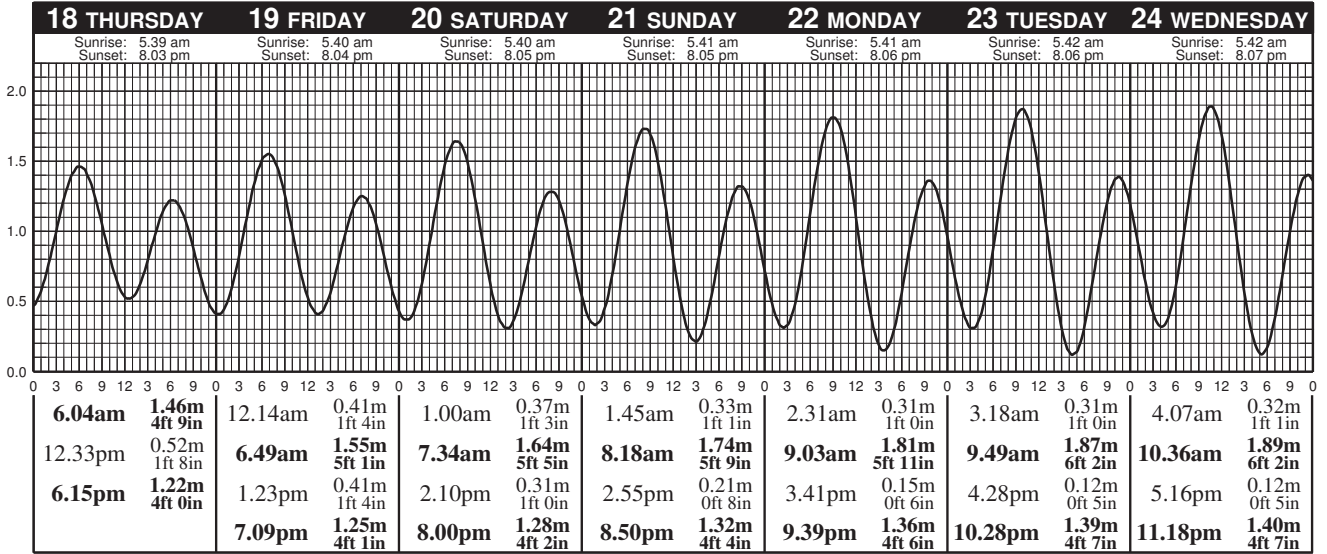


While this publication has been formulated with all due care, the State of New South Wales does not warrant or represent that this booklet is free from errors or omissions, or that it is exhaustive. The State of NSW disclaims, to the extent permitted by law, all warranties, representations or endorsements, express or implied, with regard to the booklet including but not limited to, all implied warranties of merchantability, fitness for a particular purpose, or non-infringement. The State of NSW further does not warrant or accept any liability in relation to the quality or accuracy of the booklet and no responsibility is accepted by the State of NSW for the accuracy, currency, reliability and correctness of any information in the booklet.

December 18–24, 2014

Daylight Savings Time
©2014 Crown copyright in the right of NSW

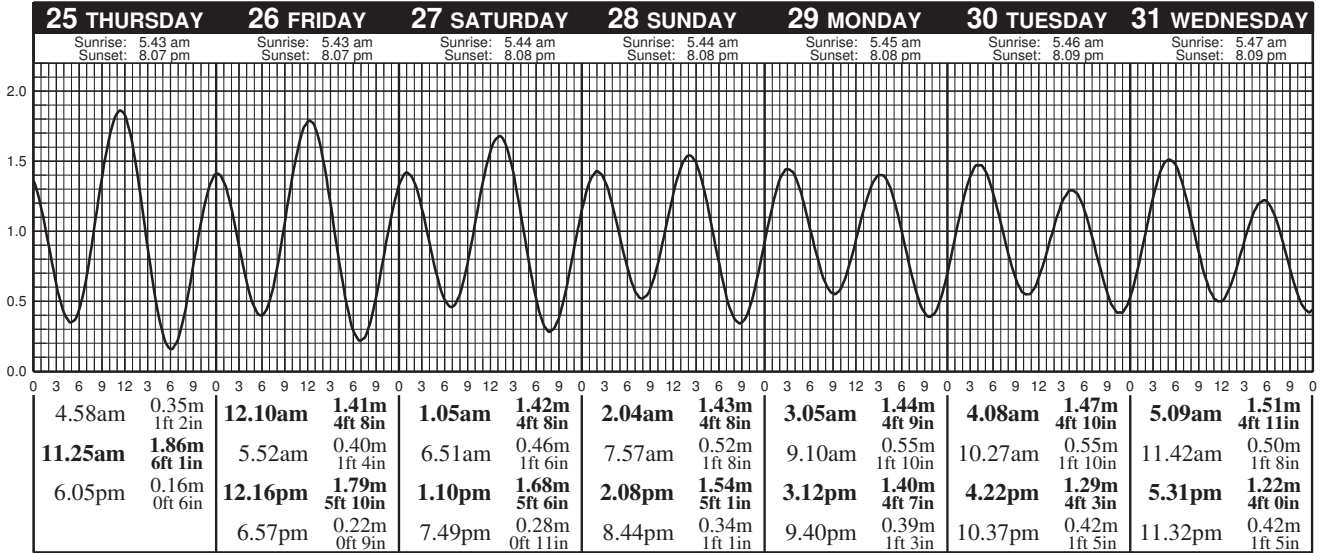
● New Moon Dec 22



December 25–31, 2014

Daylight Savings Time
©2014 Crown copyright in the right of NSW

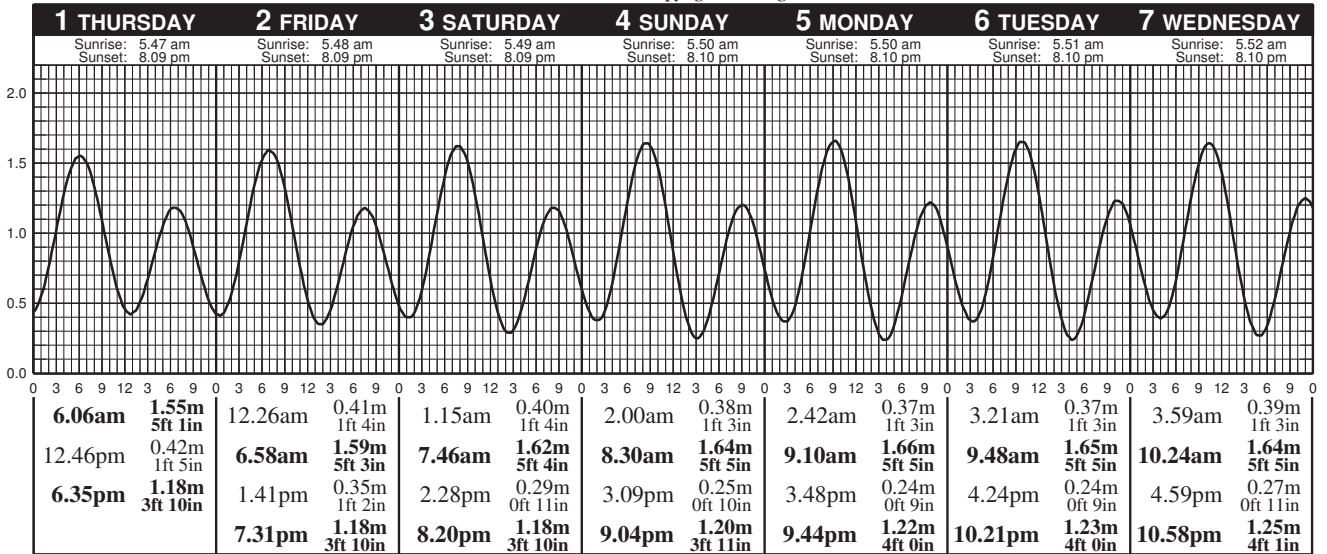
● 1st Quarter Dec 29



January 1–7, 2015

Daylight Savings Time
©2015 Crown copyright in the right of NSW

○ Full Moon Jan 5

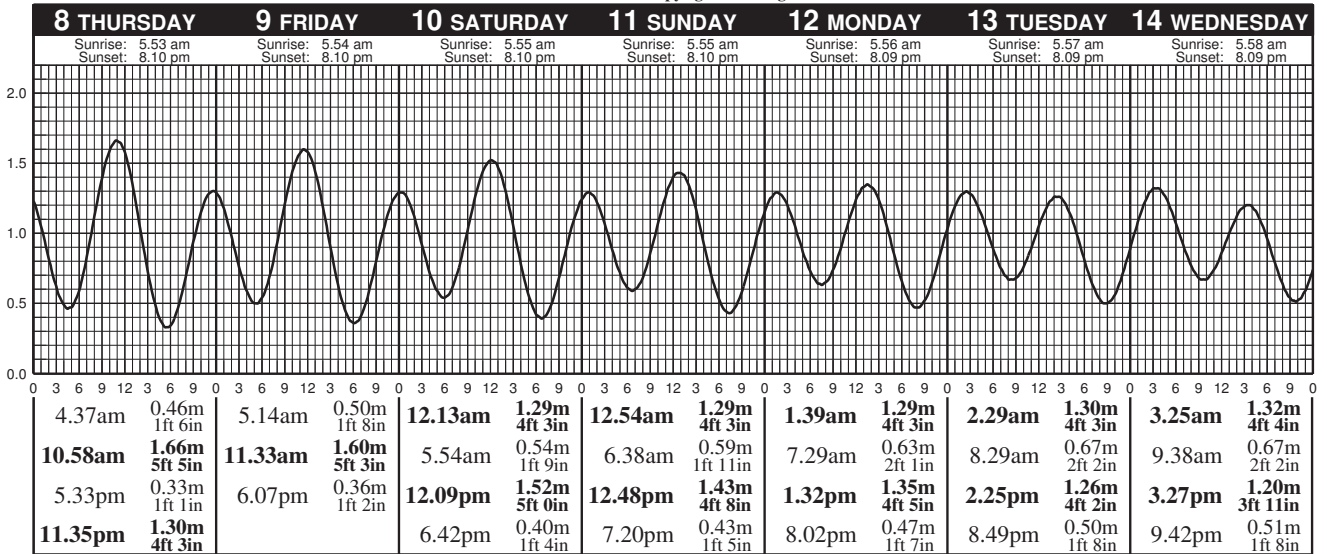


While this publication has been formulated with all due care, the State of New South Wales does not warrant or represent that this booklet is free from errors or omissions, or that it is exhaustive. The State of NSW disclaims, to the extent permitted by law, all warranties, representations or endorsements, express or implied, with regard to the booklet including but not limited to, all implied warranties of merchantability, fitness for a particular purpose, or non-infringement. The State of NSW further does not warrant or accept any liability in relation to the quality or accuracy of the booklet and no responsibility is accepted by the State of NSW for the accuracy, currency, reliability and correctness of any information in the booklet.

January 8–14, 2015

Daylight Saving Time
©2015 Crown copyright in the right of NSW

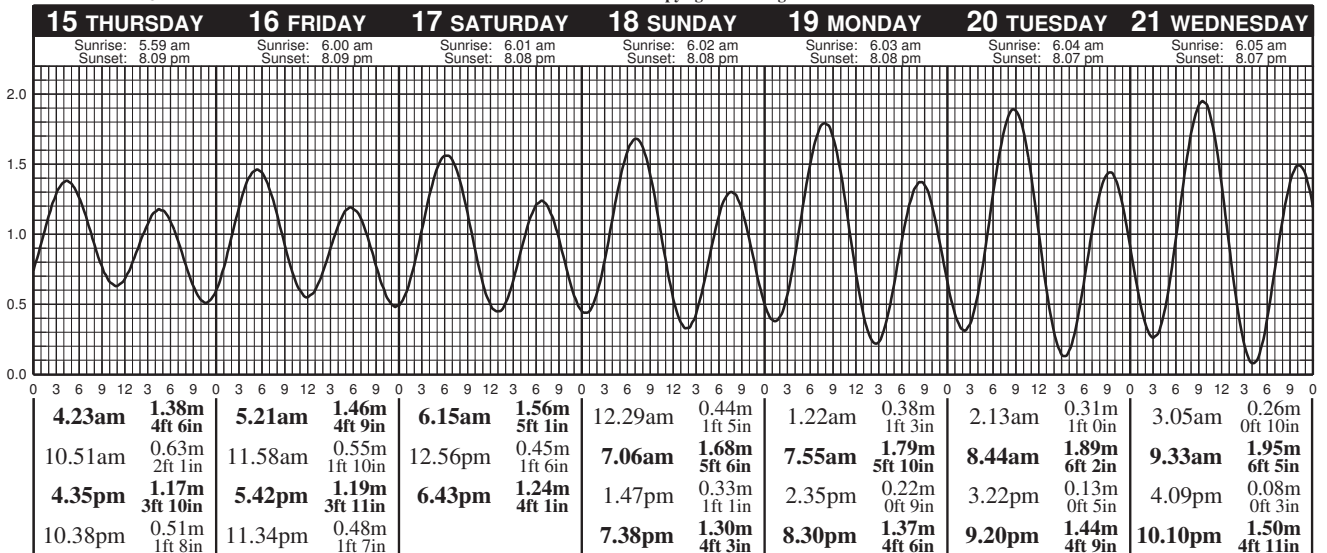
3rd Quarter Jan 13



January 15–21, 2015

Daylight Saving Time
©2015 Crown copyright in the right of NSW

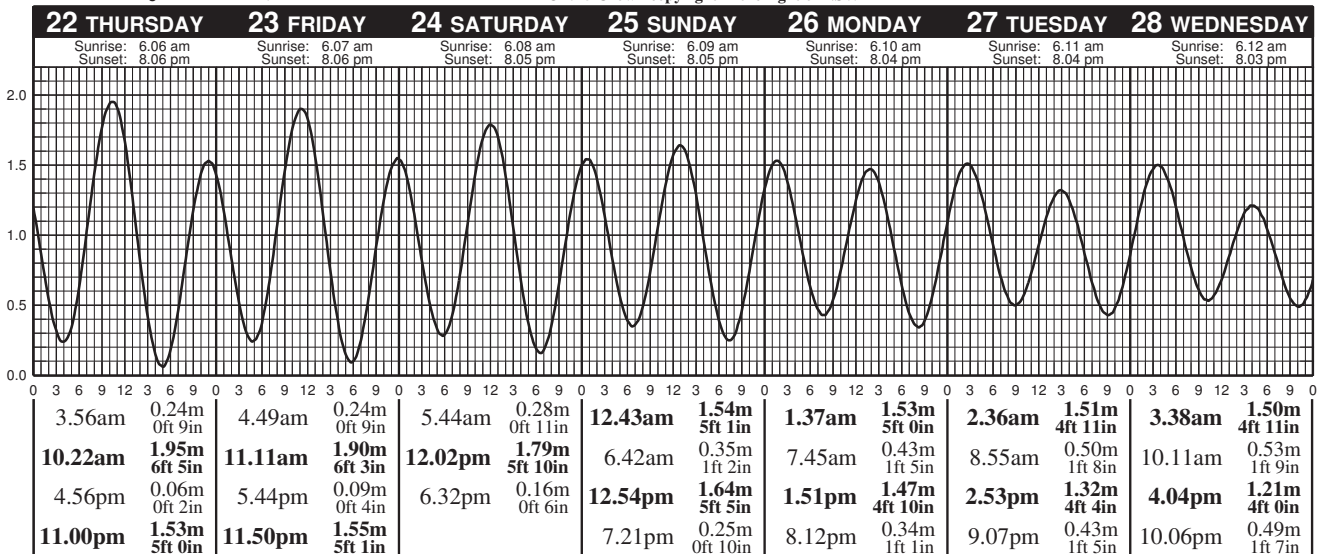
New Moon Jan 21



January 22–28, 2015

Daylight Saving Time
©2015 Crown copyright in the right of NSW

1st Quarter Jan 27

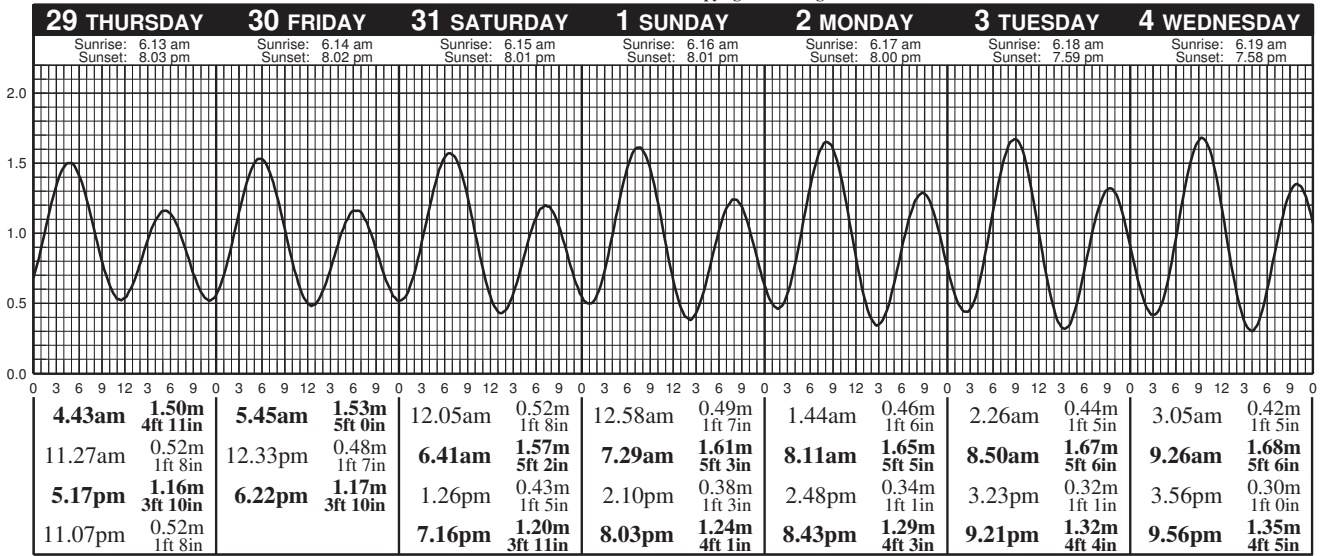


While this publication has been formulated with all due care, the State of New South Wales does not warrant or represent that this booklet is free from errors or omissions, or that it is exhaustive. The State of NSW disclaims, to the extent permitted by law, all warranties, representations or endorsements, express or implied, with regard to the booklet including but not limited to, all implied warranties of merchantability, fitness for a particular purpose, or non-infringement. The State of NSW further does not warrant or accept any liability in relation to the quality or accuracy of the booklet and no responsibility is accepted by the State of NSW for the accuracy, currency, reliability and correctness of any information in the booklet.

January 29 – February 4, 2015

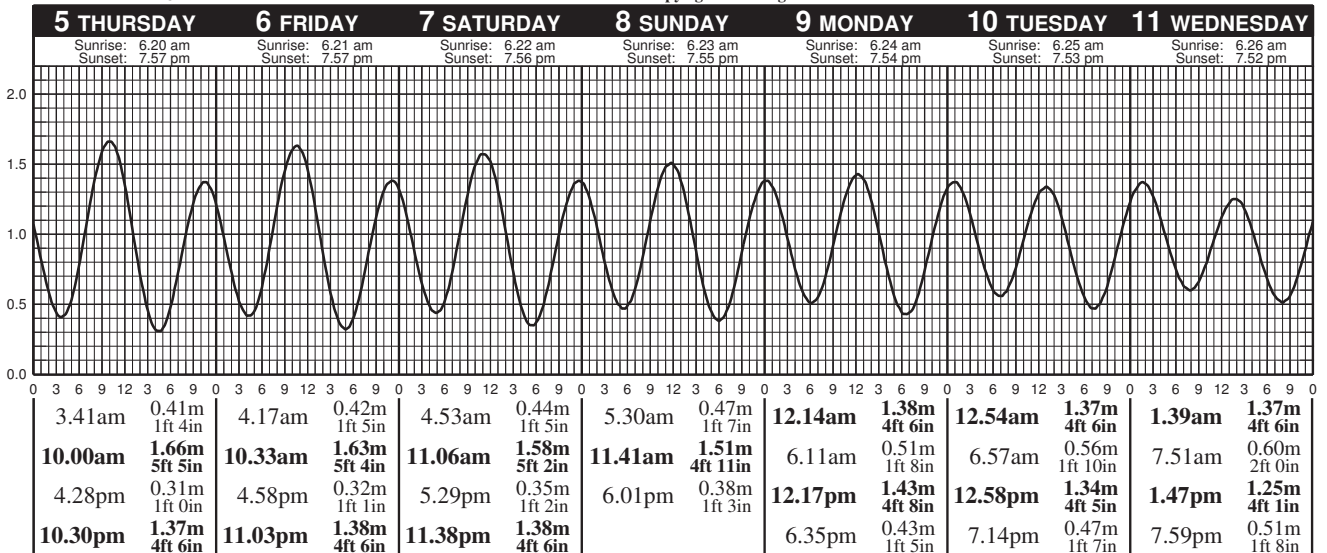
Daylight Saving Time
©2015 Crown copyright in the right of NSW

○ Full Moon Feb 4



February 5–11, 2015

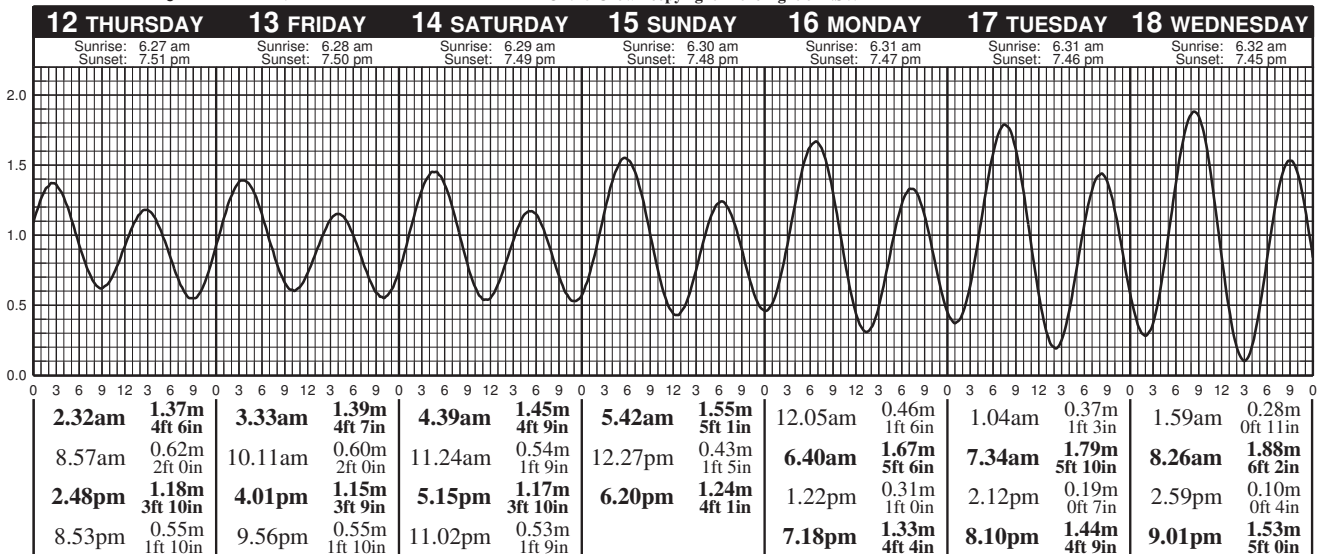
Daylight Saving Time
©2015 Crown copyright in the right of NSW



February 12–18, 2015

Daylight Saving Time
©2015 Crown copyright in the right of NSW

● 3rd Quarter Feb 12

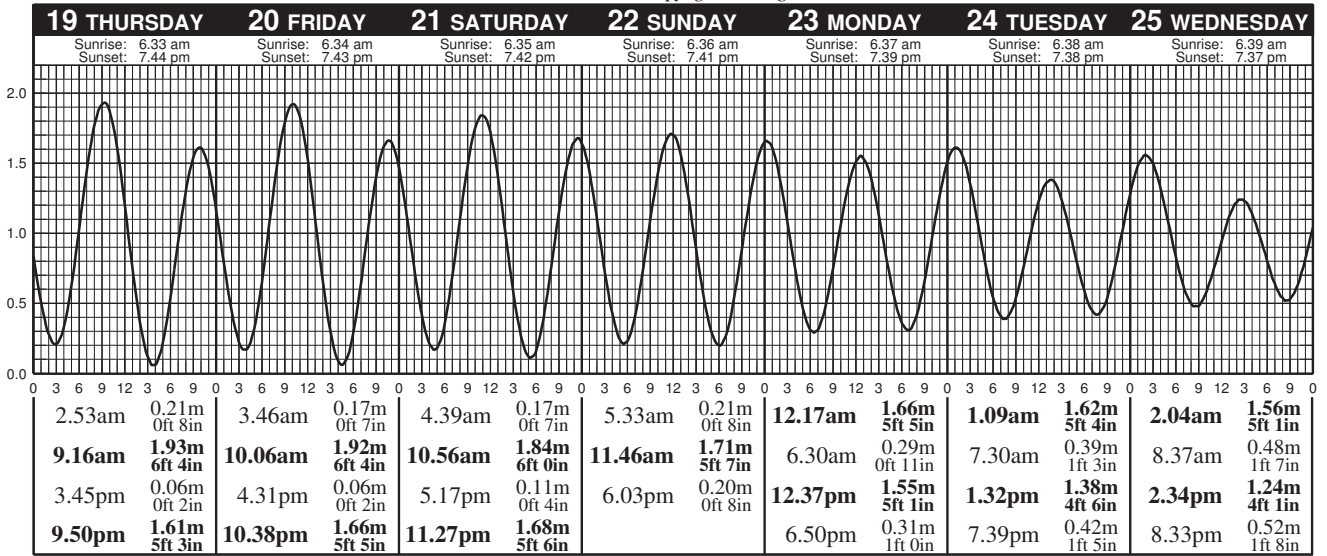


While this publication has been formulated with all due care, the State of New South Wales does not warrant or represent that this booklet is free from errors or omissions, or that it is exhaustive. The State of NSW disclaims, to the extent permitted by law, all warranties, representations or endorsements, express or implied, with regard to the booklet including but not limited to, all implied warranties of merchantability, fitness for a particular purpose, or non-infringement. The State of NSW further does not warrant or accept any liability in relation to the quality or accuracy of the booklet and no responsibility is accepted by the State of NSW for the accuracy, currency, reliability and correctness of any information in the booklet.

February 19–25, 2015

Daylight Saving Time
©2015 Crown copyright in the right of NSW

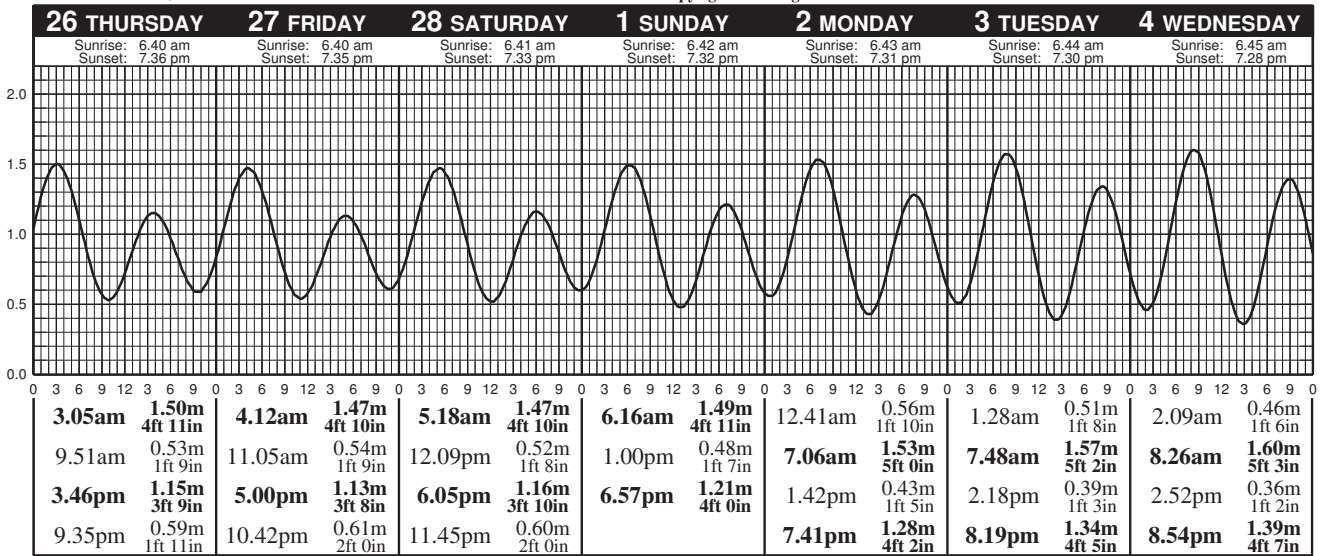
● New Moon Feb 19



February 26 – March 4, 2015

Daylight Saving Time
©2015 Crown copyright in the right of NSW

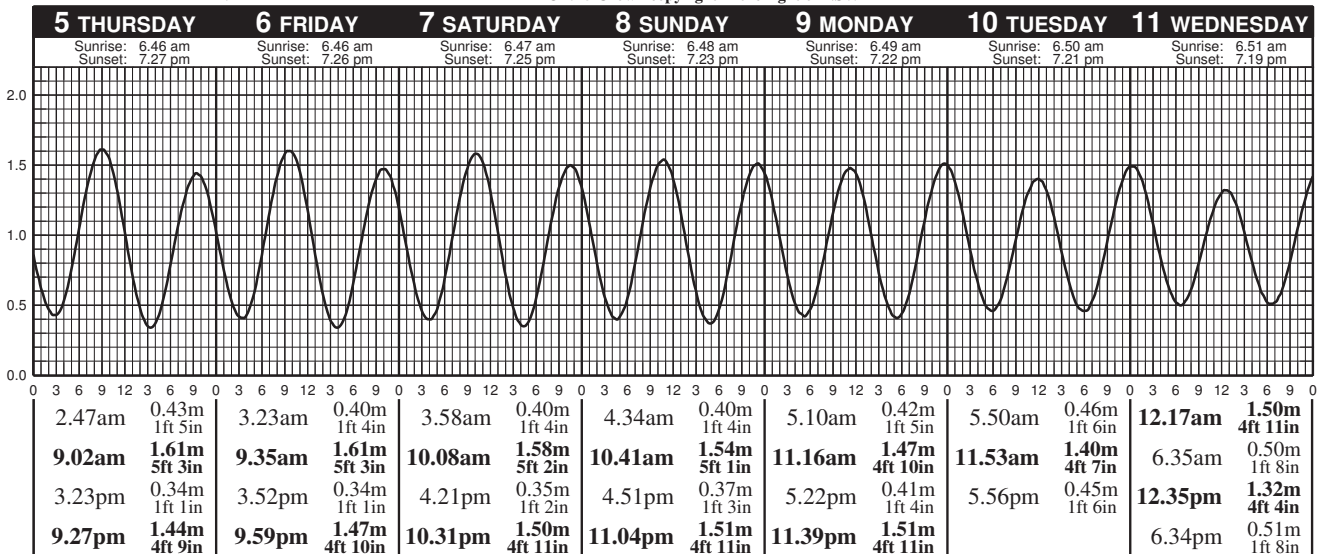
● 1st Quarter Feb 26



March 5–11, 2015

Daylight Saving Time
©2015 Crown copyright in the right of NSW

○ Full Moon Mar 6

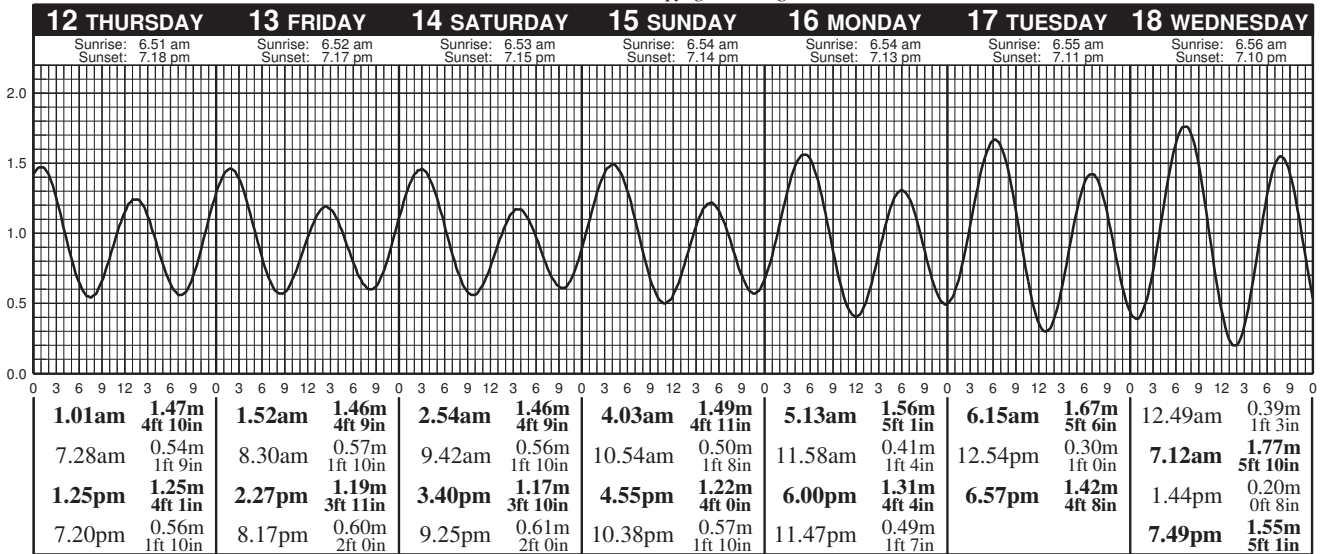


While this publication has been formulated with all due care, the State of New South Wales does not warrant or represent that this booklet is free from errors or omissions, or that it is exhaustive. The State of NSW disclaims, to the extent permitted by law, all warranties, representations or endorsements, express or implied, with regard to the booklet including but not limited to, all implied warranties of merchantability, fitness for a particular purpose, or non-infringement. The State of NSW further does not warrant or accept any liability in relation to the quality or accuracy of the booklet and no responsibility is accepted by the State of NSW for the accuracy, currency, reliability and correctness of any information in the booklet.

March 12–18, 2015

Daylight Saving Time
©2015 Crown copyright in the right of NSW

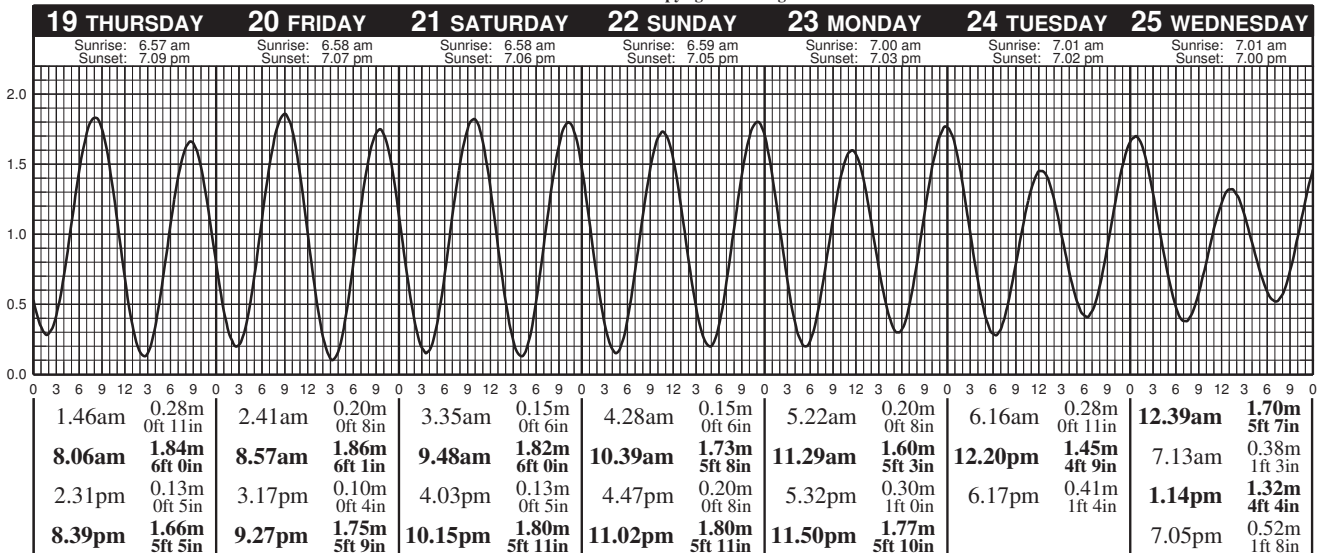
3rd Quarter Mar 14



March 19–25, 2015

Daylight Saving Time
©2015 Crown copyright in the right of NSW

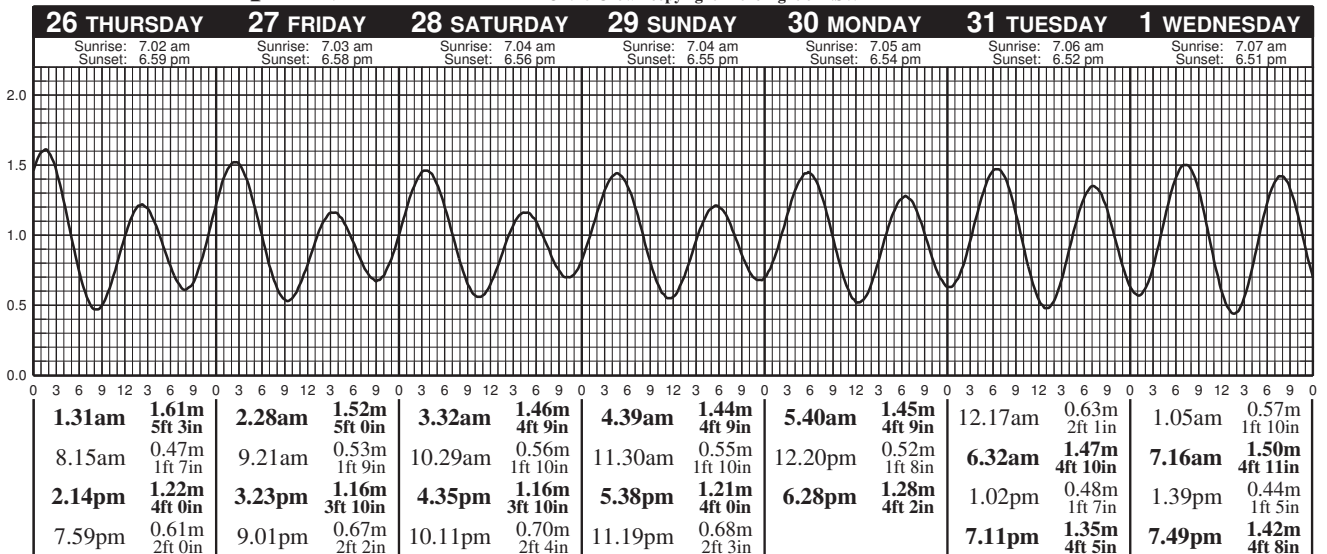
New Moon Mar 20



March 26 – April 1, 2015

Daylight Saving Time
©2015 Crown copyright in the right of NSW

1st Quarter Mar 27

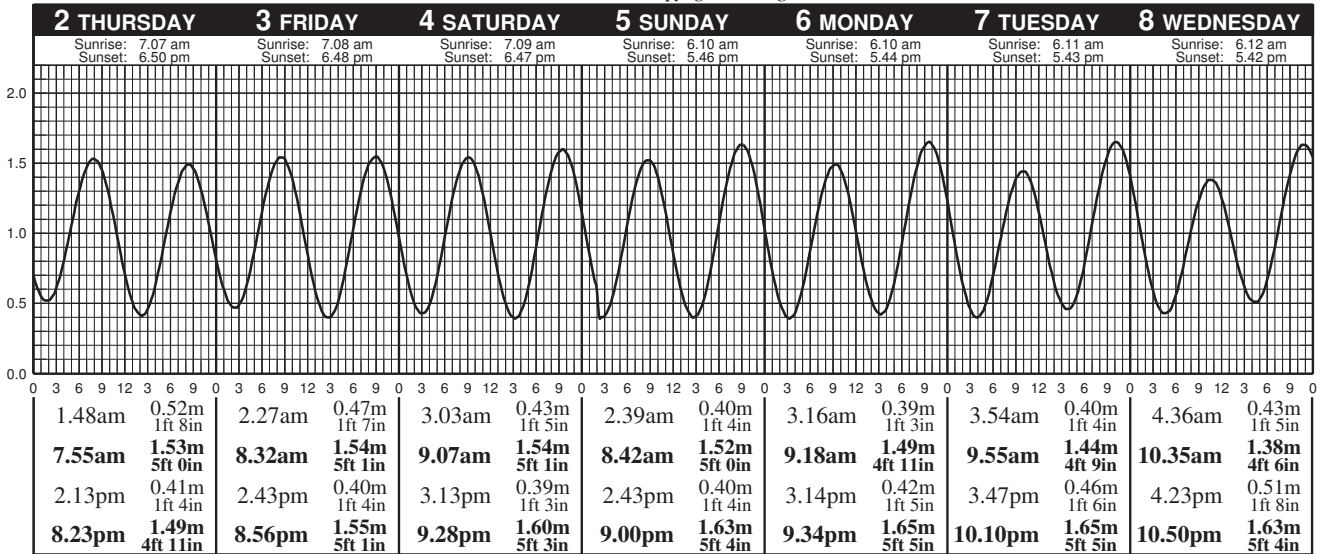


While this publication has been formulated with all due care, the State of New South Wales does not warrant or represent that this booklet is free from errors or omissions, or that it is exhaustive. The State of NSW disclaims, to the extent permitted by law, all warranties, representations or endorsements, express or implied, with regard to the booklet including but not limited to, all implied warranties of merchantability, fitness for a particular purpose, or non-infringement. The State of NSW further does not warrant or accept any liability in relation to the quality or accuracy of the booklet and no responsibility is accepted by the State of NSW for the accuracy, currency, reliability and correctness of any information in the booklet.

April 2–8, 2015

Daylight Saving Time adjustment ends Sunday April 5
©2015 Crown copyright in the right of NSW

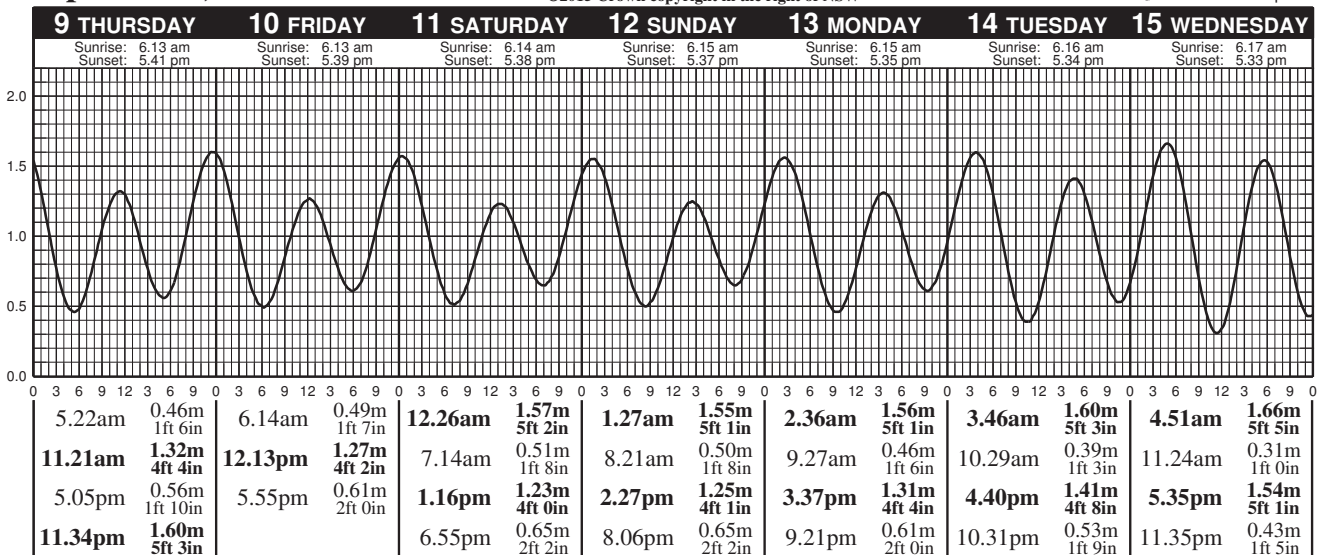
○ Full Moon Apr 4



April 9–15, 2015

Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW

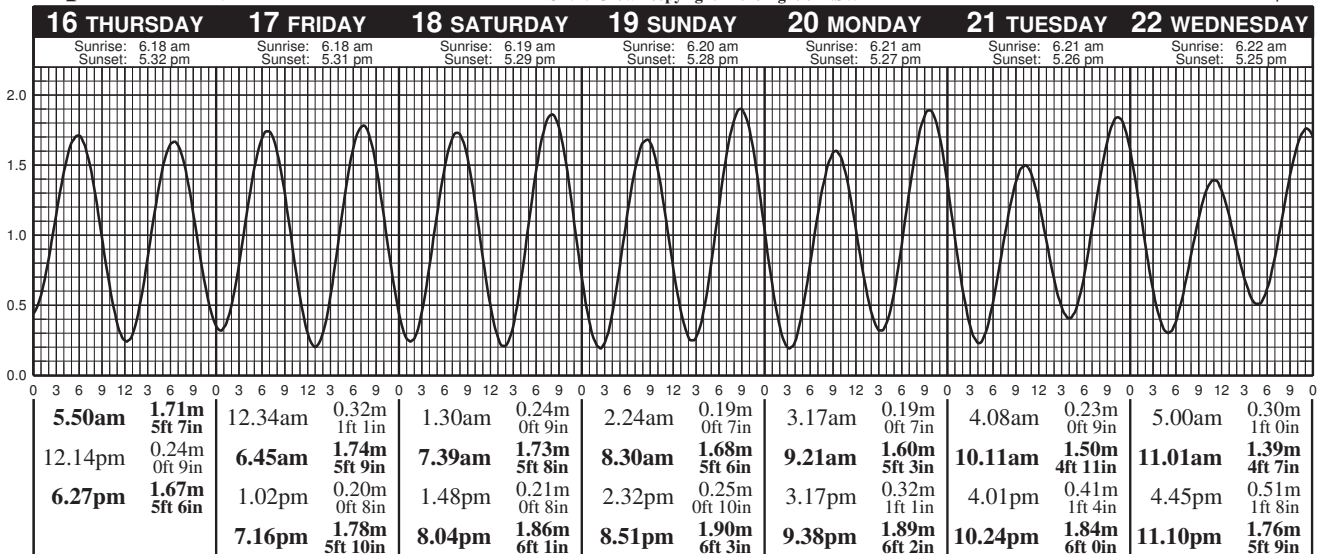
● 3rd Quarter Apr 12



April 16–22, 2015

Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW

● New Moon Apr 19

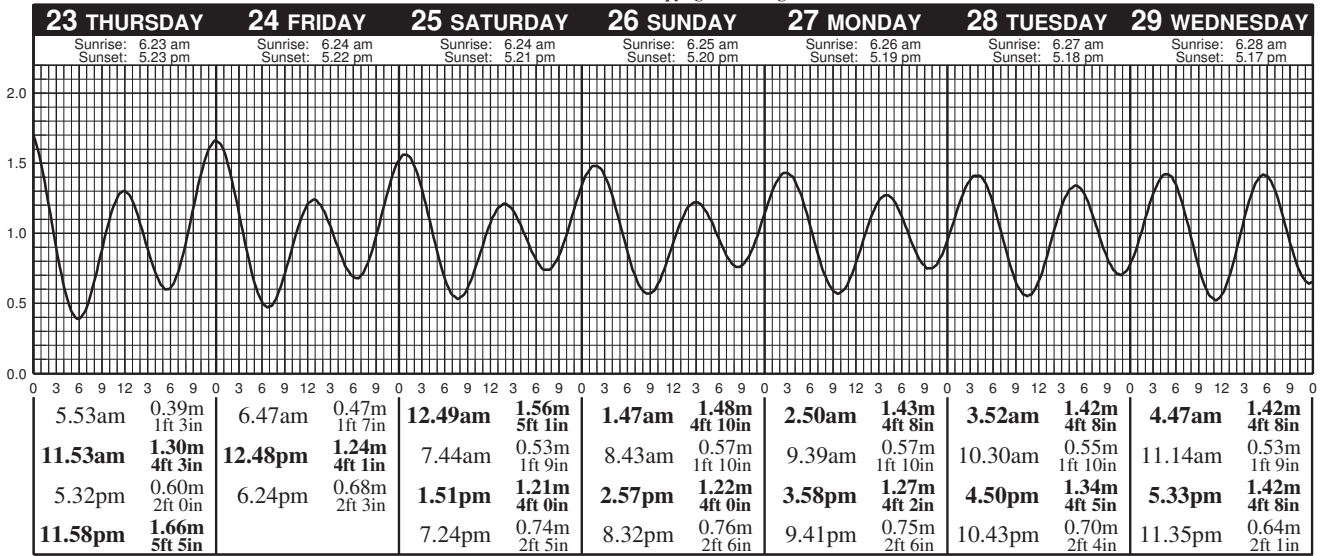


While this publication has been formulated with all due care, the State of New South Wales does not warrant or represent that this booklet is free from errors or omissions, or that it is exhaustive. The State of NSW disclaims, to the extent permitted by law, all warranties, representations or endorsements, express or implied, with regard to the booklet including but not limited to, all implied warranties of merchantability, fitness for a particular purpose, or non-infringement. The State of NSW further does not warrant or accept any liability in relation to the quality or accuracy of the booklet and no responsibility is accepted by the State of NSW for the accuracy, currency, reliability and correctness of any information in the booklet.

April 23–29, 2015

Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW

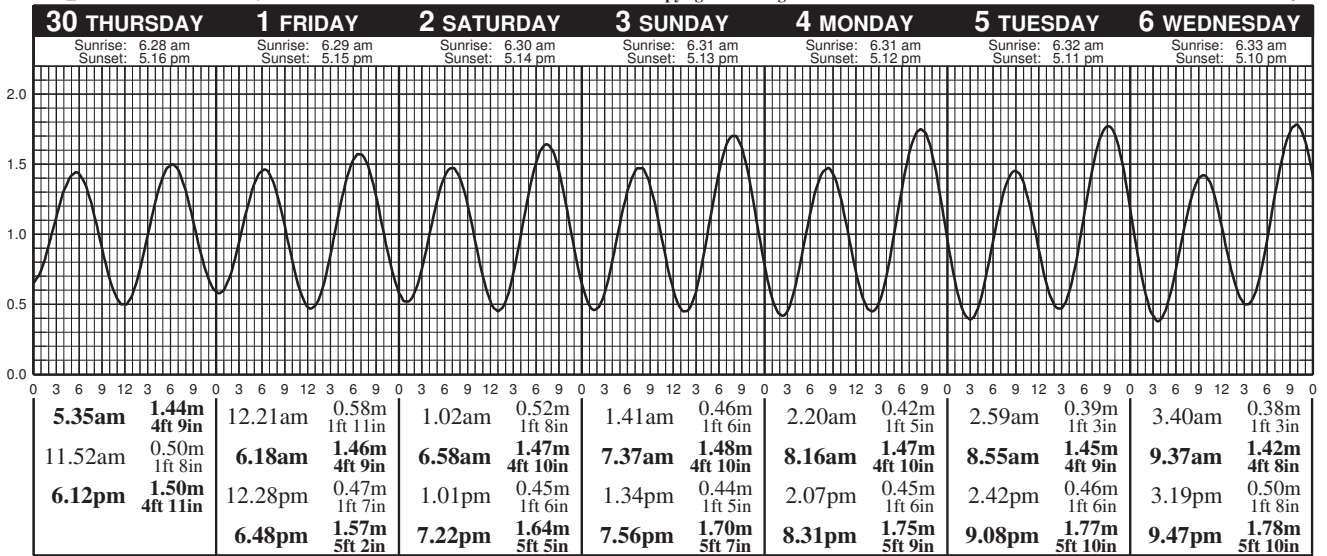
☉ 1st Quarter Apr 26



April 30 – May 6, 2015

Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW

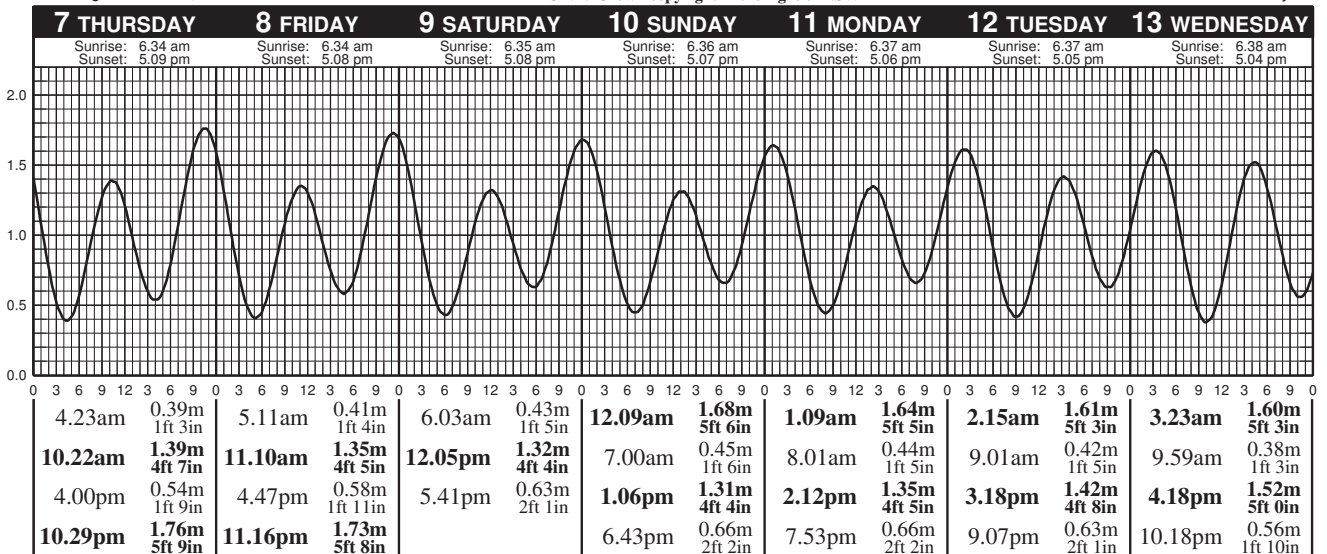
☾ Full Moon May 4



May 7–13, 2015

Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW

☾ 3rd Quarter May 11

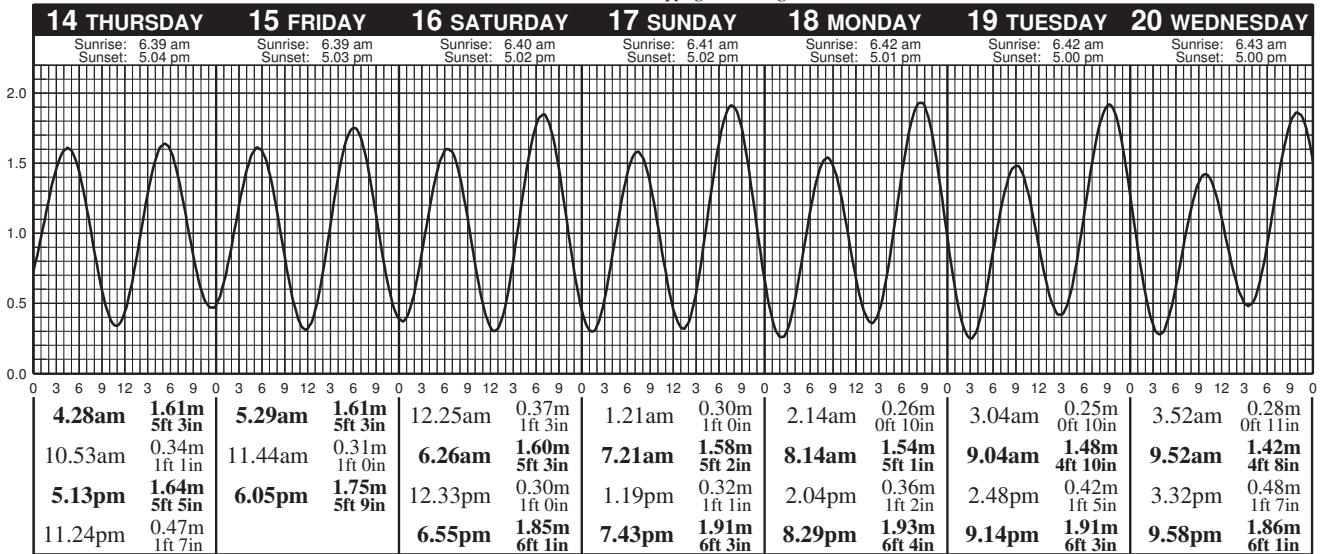


While this publication has been formulated with all due care, the State of New South Wales does not warrant or represent that this booklet is free from errors or omissions, or that it is exhaustive. The State of NSW disclaims, to the extent permitted by law, all warranties, representations or endorsements, express or implied, with regard to the booklet including but not limited to, all implied warranties of merchantability, fitness for a particular purpose, or non-infringement. The State of NSW further does not warrant or accept any liability in relation to the quality or accuracy of the booklet and no responsibility is accepted by the State of NSW for the accuracy, currency, reliability and correctness of any information in the booklet.

May 14–20, 2015

Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW

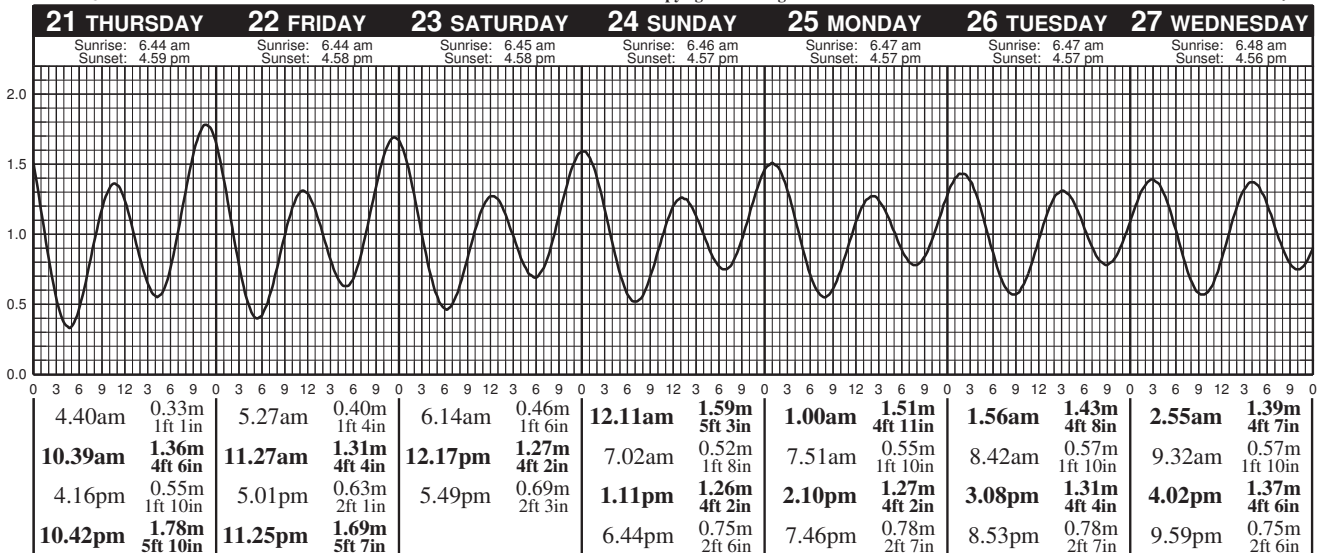
● New Moon May 18



May 21–27, 2015

Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW

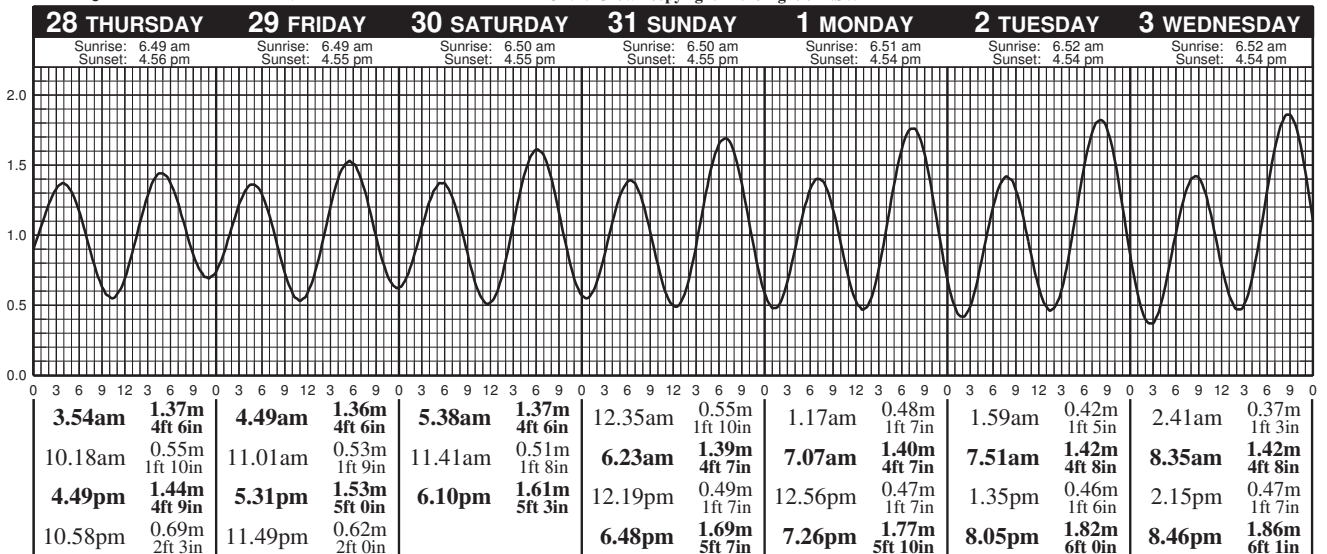
● 1st Quarter May 26



May 28 – June 3, 2015

Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW

○ Full Moon Jun 3

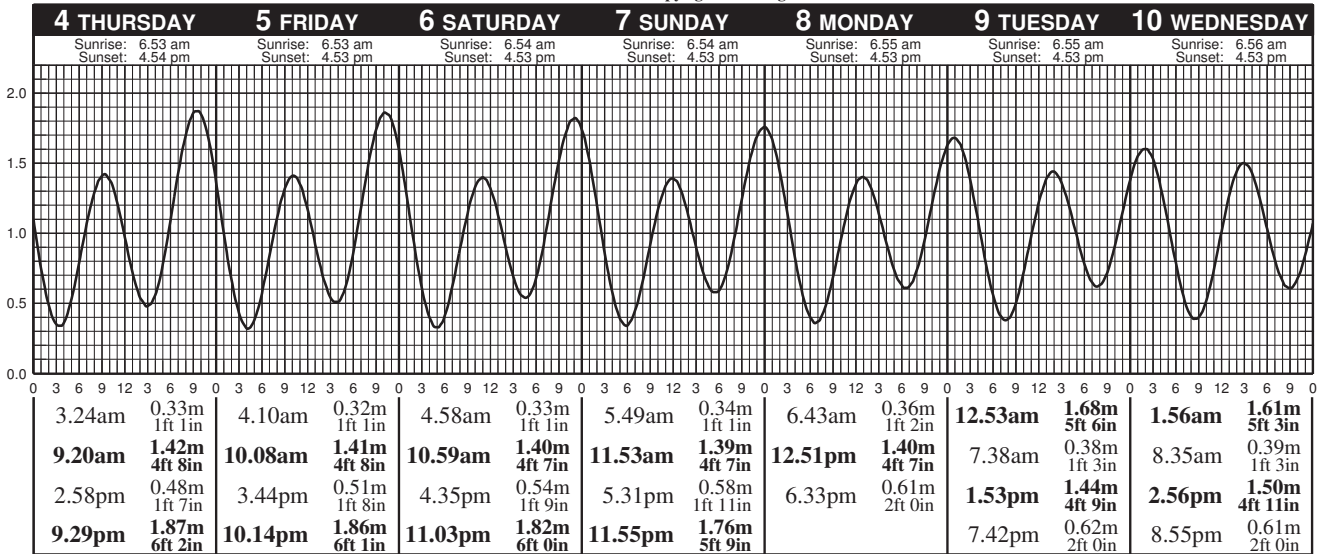


While this publication has been formulated with all due care, the State of New South Wales does not warrant or represent that this booklet is free from errors or omissions, or that it is exhaustive. The State of NSW disclaims, to the extent permitted by law, all warranties, representations or endorsements, express or implied, with regard to the booklet including but not limited to, all implied warranties of merchantability, fitness for a particular purpose, or non-infringement. The State of NSW further does not warrant or accept any liability in relation to the quality or accuracy of the booklet and no responsibility is accepted by the State of NSW for the accuracy, currency, reliability and correctness of any information in the booklet.

June 4–10, 2015

Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW

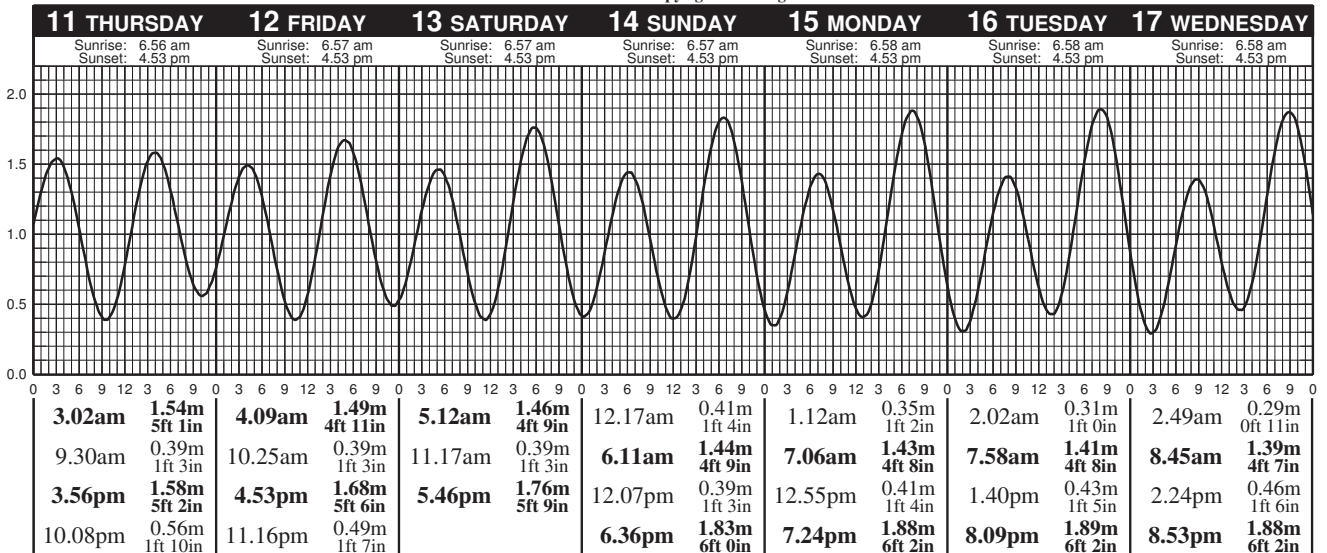
3rd Quarter Jun 10



June 11–17, 2015

Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW

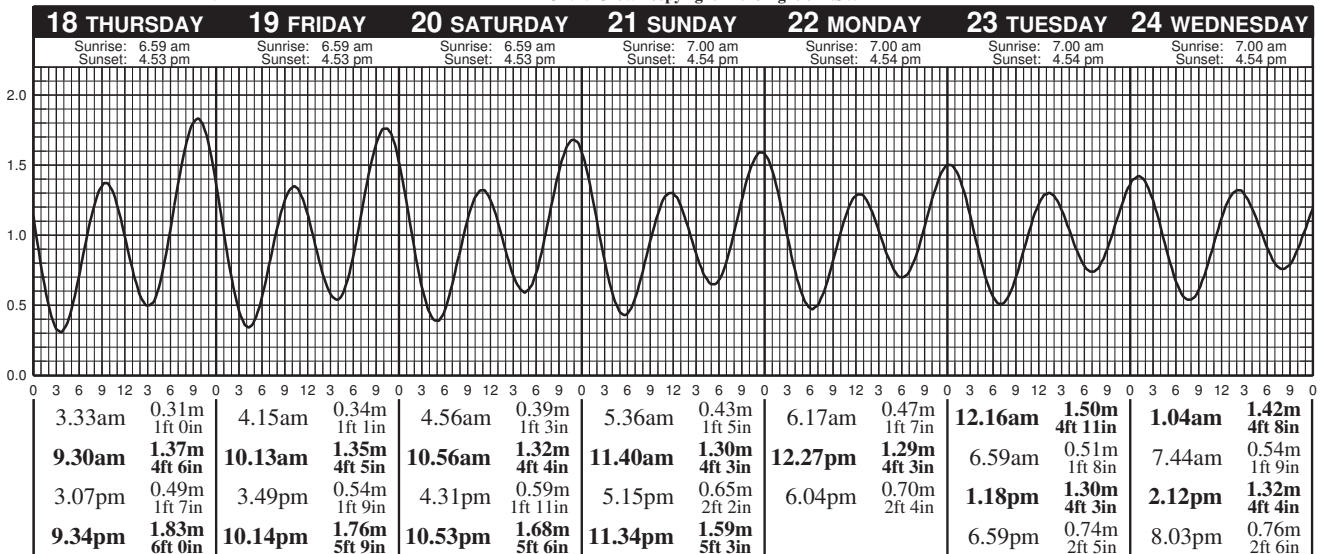
New Moon Jun 17



June 18–24, 2015

Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW

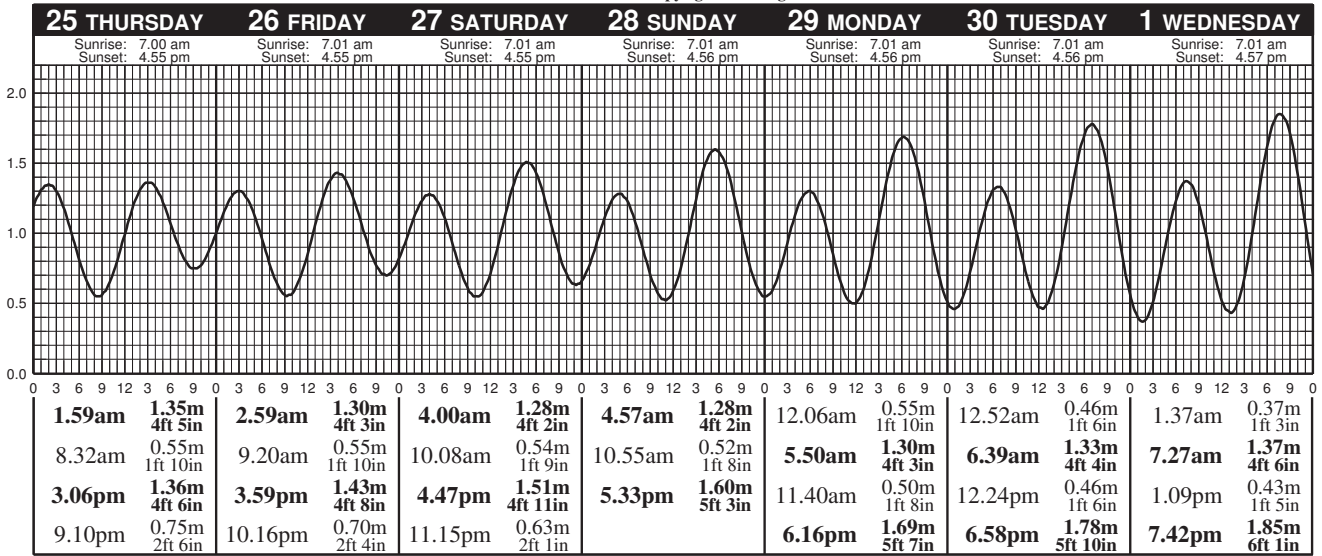
1st Quarter Jun 24



While this publication has been formulated with all due care, the State of New South Wales does not warrant or represent that this booklet is free from errors or omissions, or that it is exhaustive. The State of NSW disclaims, to the extent permitted by law, all warranties, representations or endorsements, express or implied, with regard to the booklet including but not limited to, all implied warranties of merchantability, fitness for a particular purpose, or non-infringement. The State of NSW further does not warrant or accept any liability in relation to the quality or accuracy of the booklet and no responsibility is accepted by the State of NSW for the accuracy, currency, reliability and correctness of any information in the booklet.

June 25 – July 1, 2015

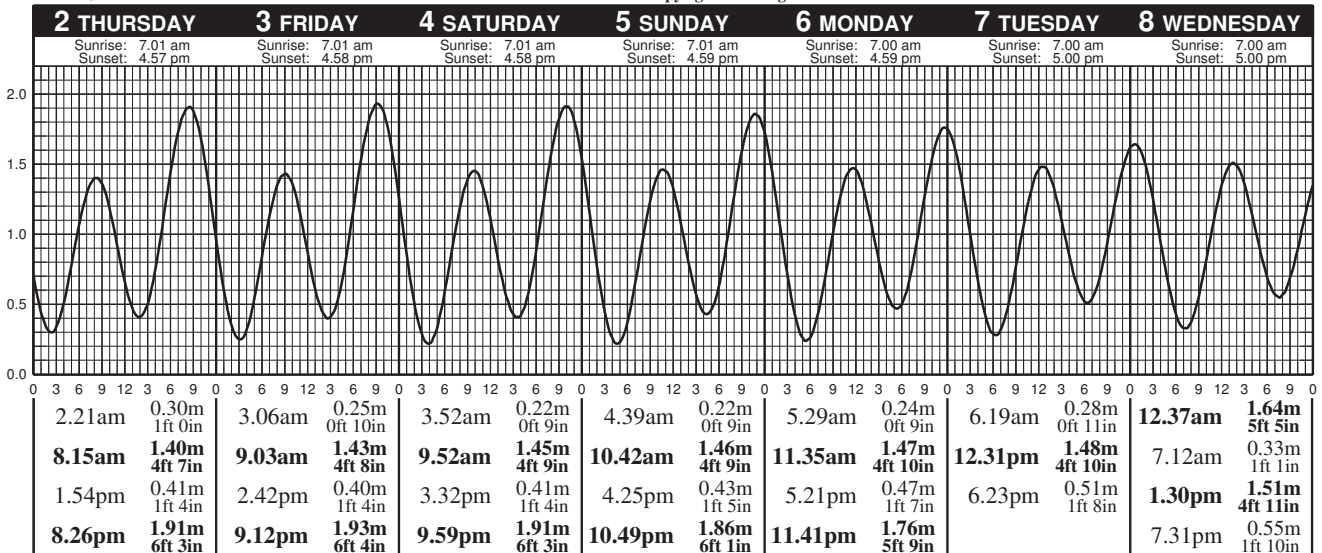
Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW



July 2–8, 2015

Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW

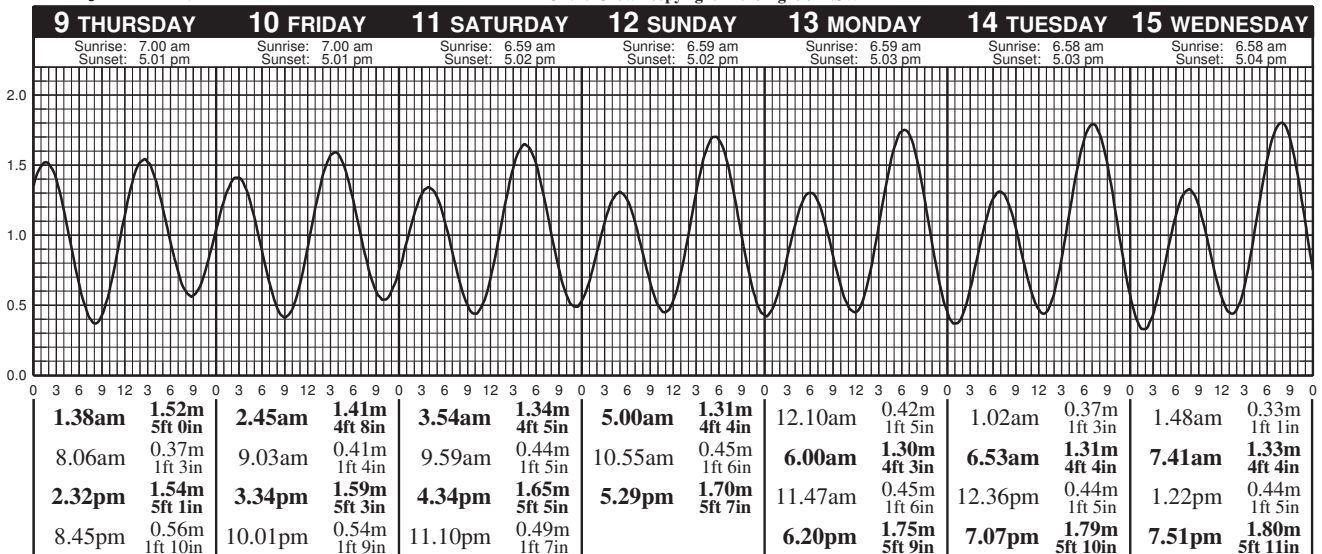
○ Full Moon Jul 2



July 9–15, 2015

Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW

● 3rd Quarter Jul 9

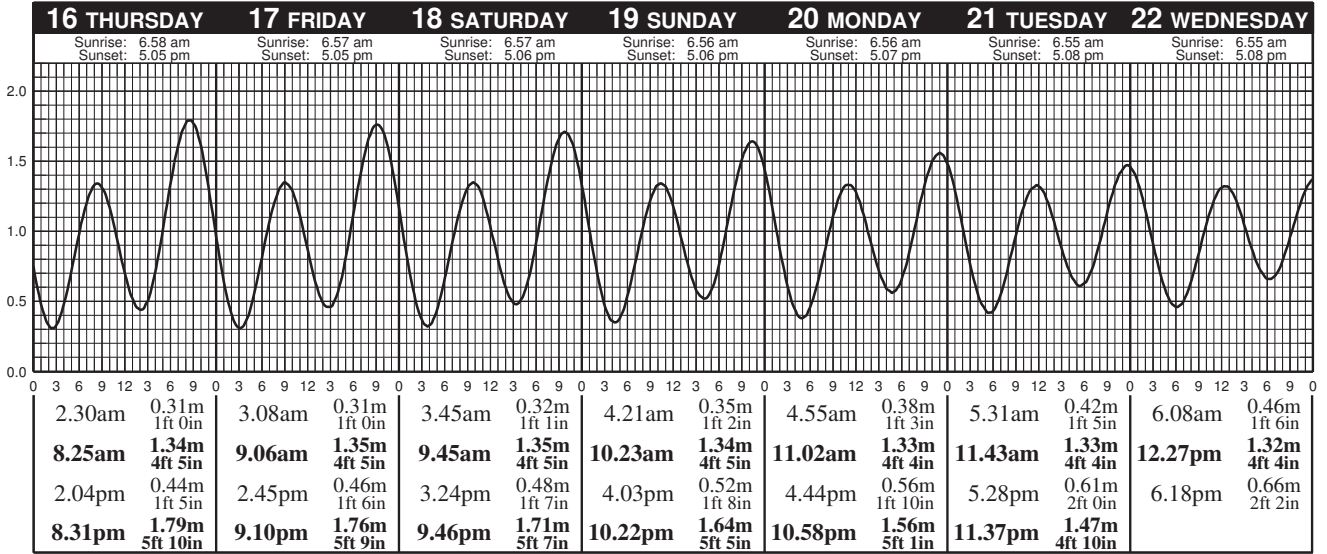


While this publication has been formulated with all due care, the State of New South Wales does not warrant or represent that this booklet is free from errors or omissions, or that it is exhaustive. The State of NSW disclaims, to the extent permitted by law, all warranties, representations or endorsements, express or implied, with regard to the booklet including but not limited to, all implied warranties of merchantability, fitness for a particular purpose, or non-infringement. The State of NSW further does not warrant or accept any liability in relation to the quality or accuracy of the booklet and no responsibility is accepted by the State of NSW for the accuracy, currency, reliability and correctness of any information in the booklet.

July 16–22, 2015

Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW

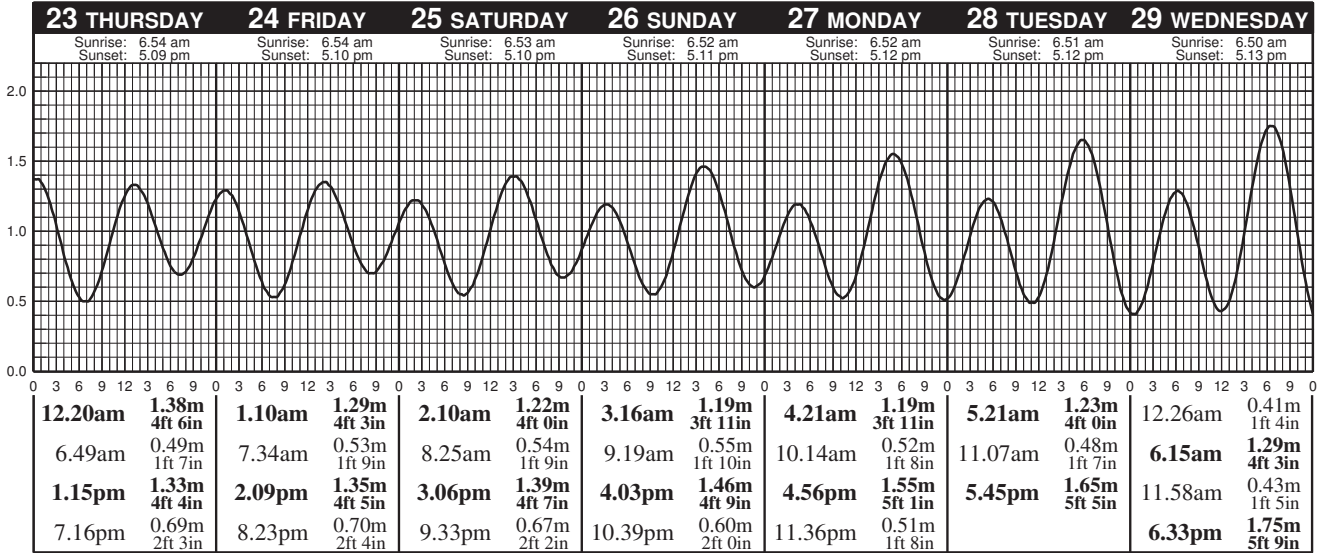
● New Moon Jul 16



July 23–29, 2015

Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW

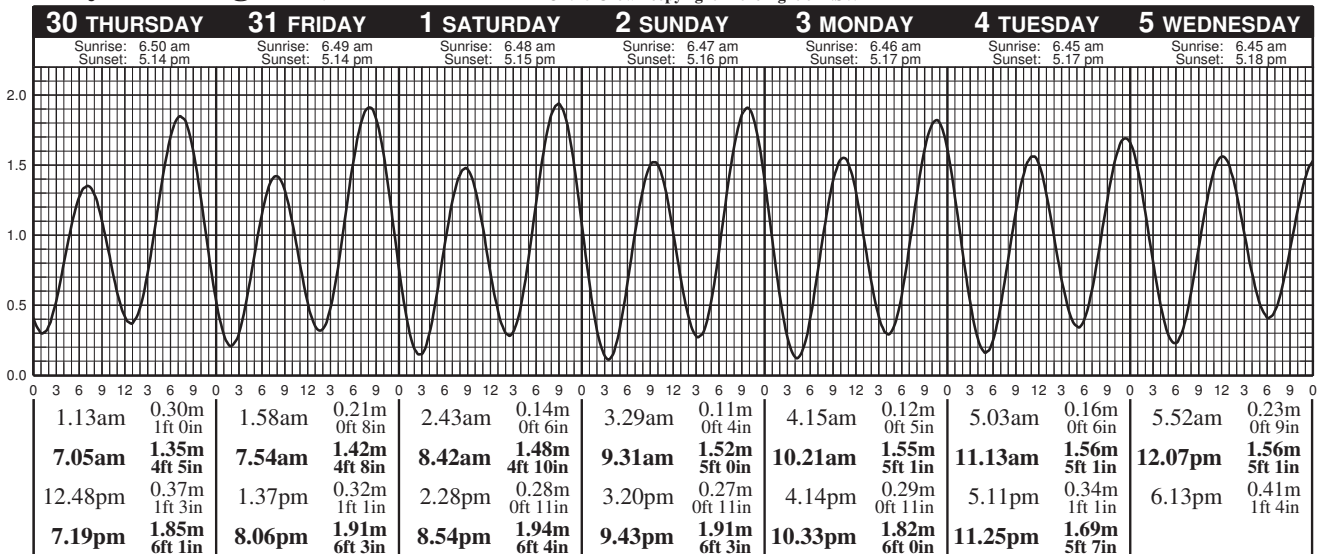
● 1st Quarter Jul 24



July 30 – August 5, 2015

Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW

○ Full Moon Jul 31

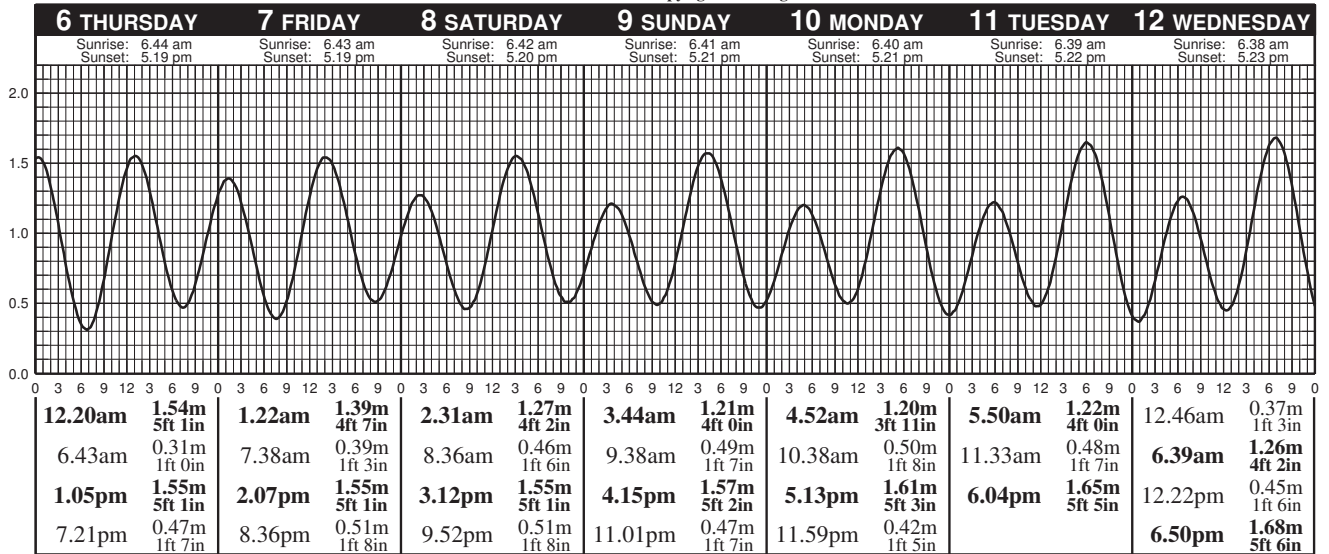


While this publication has been formulated with all due care, the State of New South Wales does not warrant or represent that this booklet is free from errors or omissions, or that it is exhaustive. The State of NSW disclaims, to the extent permitted by law, all warranties, representations or endorsements, express or implied, with regard to the booklet including but not limited to, all implied warranties of merchantability, fitness for a particular purpose, or non-infringement. The State of NSW further does not warrant or accept any liability in relation to the quality or accuracy of the booklet and no responsibility is accepted by the State of NSW for the accuracy, currency, reliability and correctness of any information in the booklet.

August 6–12, 2015

Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW

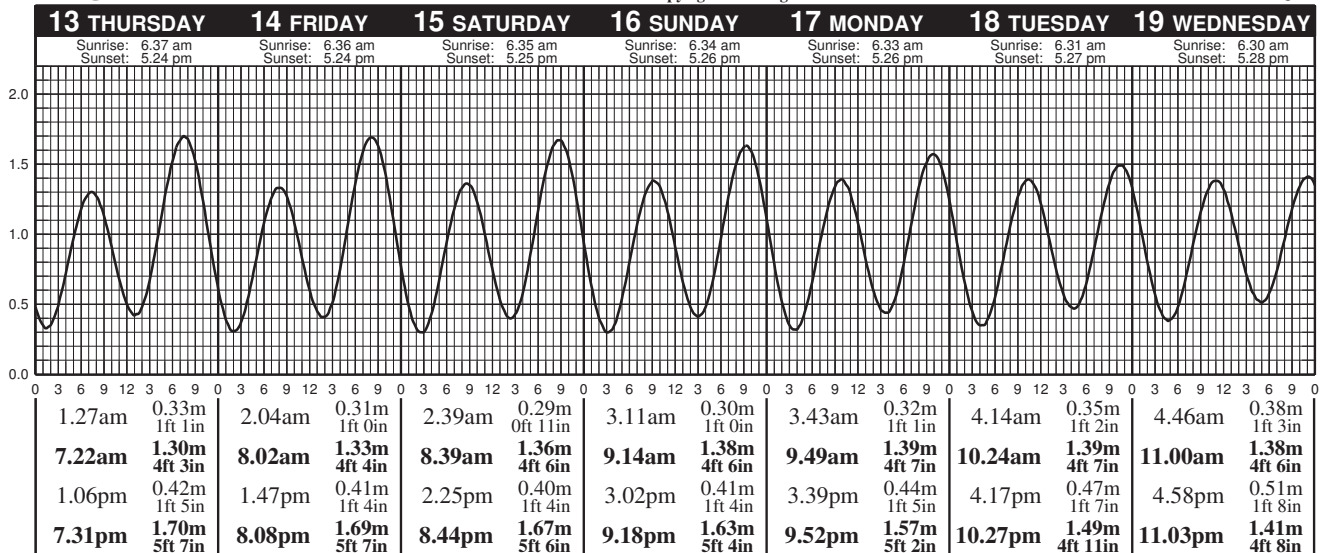
3rd Quarter Aug 7



August 13–19, 2015

Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW

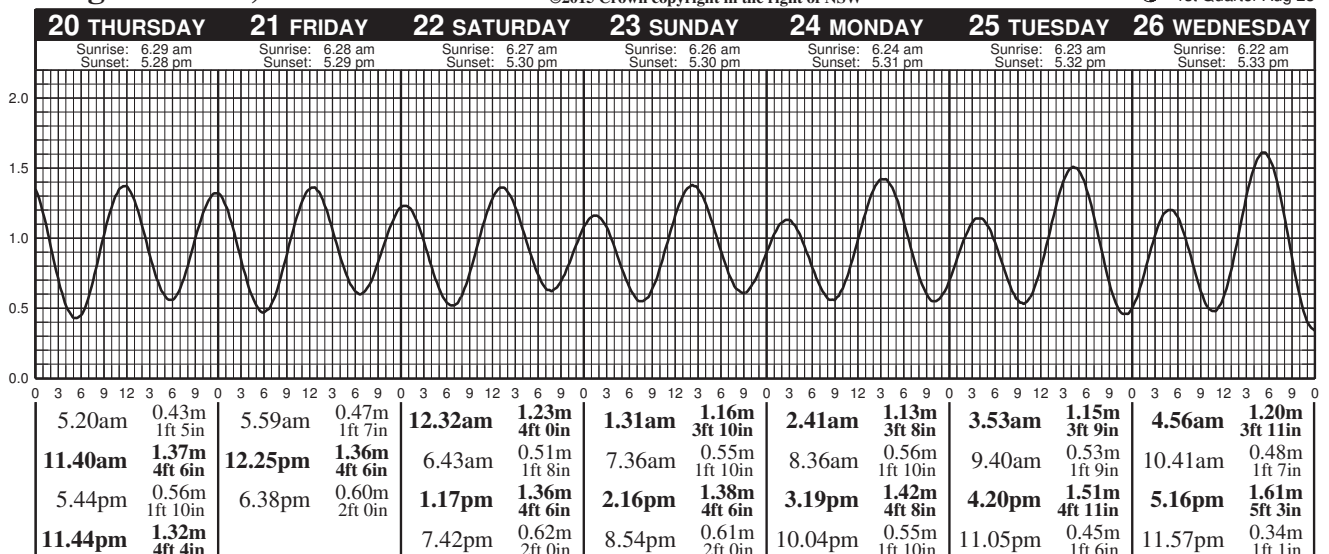
New Moon Aug 15



August 20–26, 2015

Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW

1st Quarter Aug 23

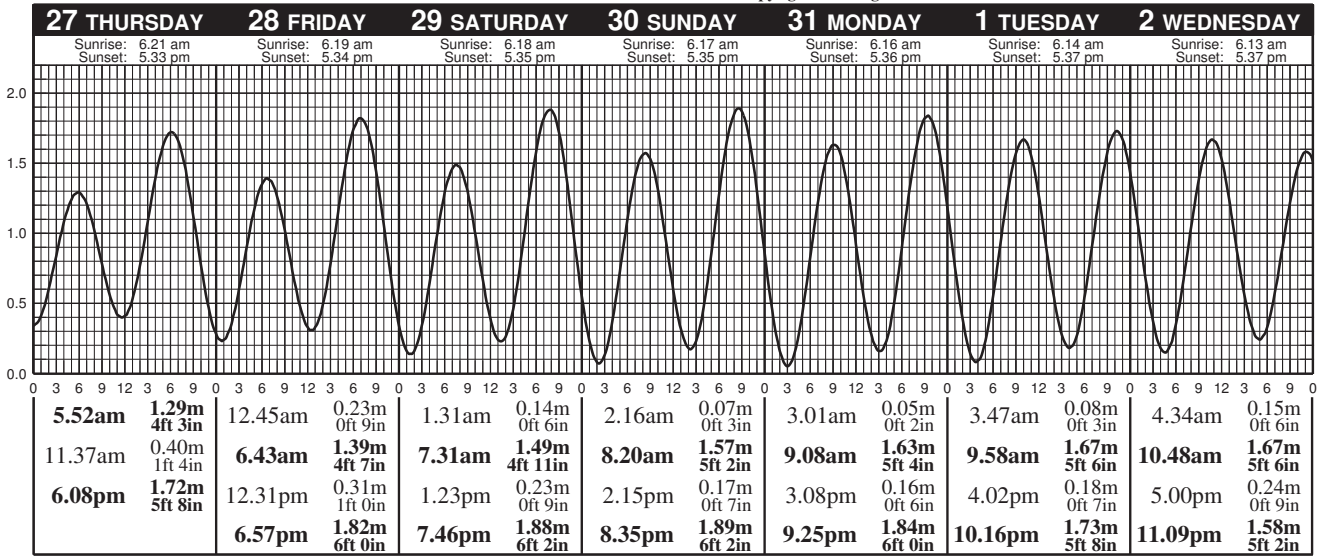


While this publication has been formulated with all due care, the State of New South Wales does not warrant or represent that this booklet is free from errors or omissions, or that it is exhaustive. The State of NSW disclaims, to the extent permitted by law, all warranties, representations or endorsements, express or implied, with regard to the booklet including but not limited to, all implied warranties of merchantability, fitness for a particular purpose, or non-infringement. The State of NSW further does not warrant or accept any liability in relation to the quality or accuracy of the booklet and no responsibility is accepted by the State of NSW for the accuracy, currency, reliability and correctness of any information in the booklet.

August 27 – September 2, 2015

Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW

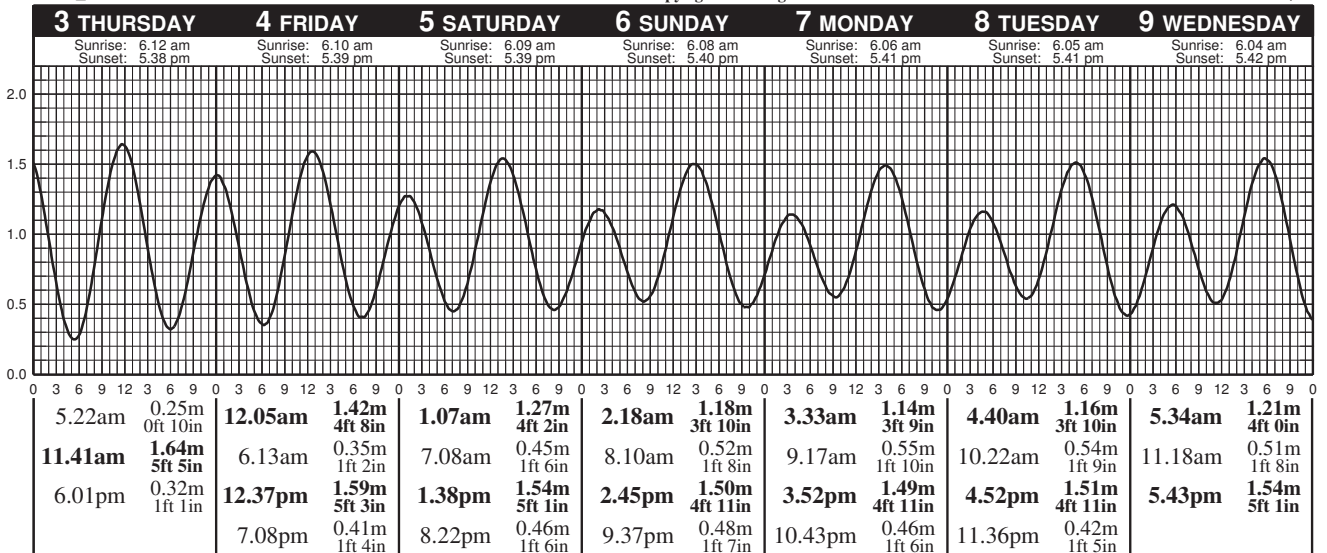
○ Full Moon Aug 30



September 3–9, 2015

Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW

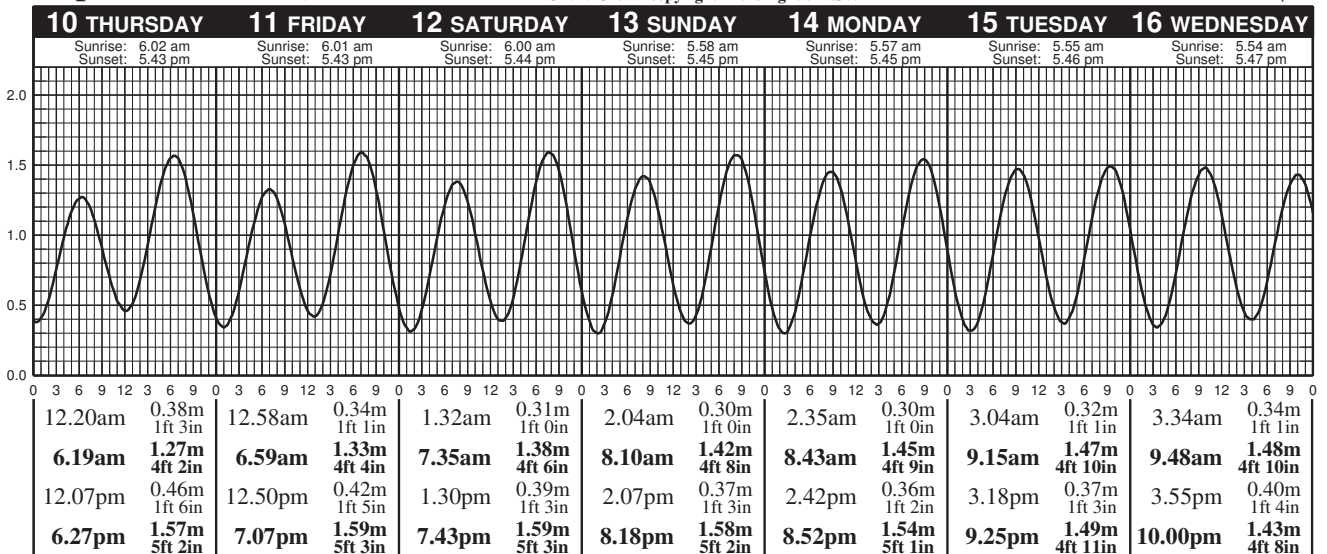
● 3rd Quarter Sep 5



September 10–16, 2015

Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW

● New Moon Sep 13

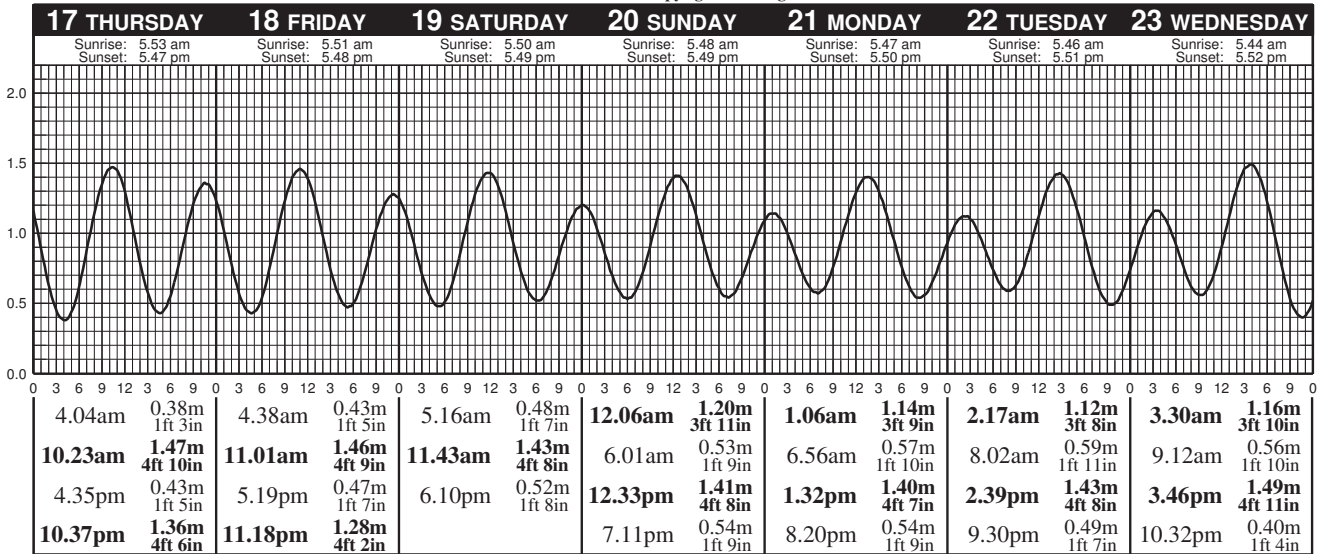


While this publication has been formulated with all due care, the State of New South Wales does not warrant or represent that this booklet is free from errors or omissions, or that it is exhaustive. The State of NSW disclaims, to the extent permitted by law, all warranties, representations or endorsements, express or implied, with regard to the booklet including but not limited to, all implied warranties of merchantability, fitness for a particular purpose, or non-infringement. The State of NSW further does not warrant or accept any liability in relation to the quality or accuracy of the booklet and no responsibility is accepted by the State of NSW for the accuracy, currency, reliability and correctness of any information in the booklet.

September 17–23, 2015

Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW

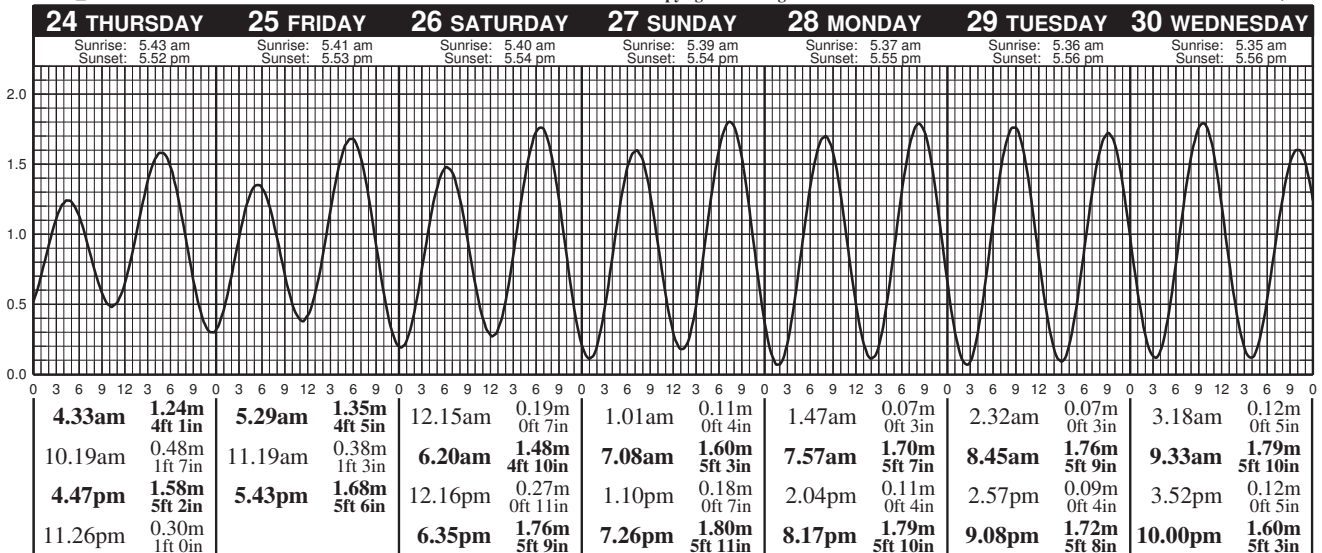
1st Quarter Sep 21



September 24–30, 2015

Australian Eastern Standard Time
©2015 Crown copyright in the right of NSW

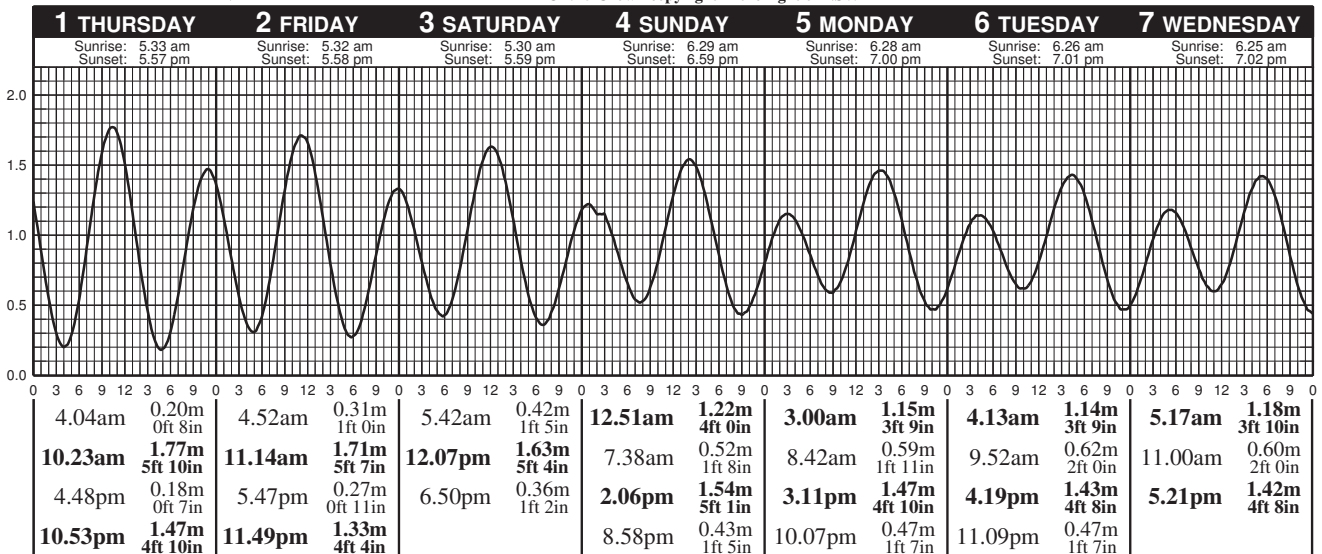
Full Moon Sep 28



October 1–7, 2015

Daylight Saving Time adjustment starts Sunday October 4
©2015 Crown copyright in the right of NSW

3rd Quarter Oct 5

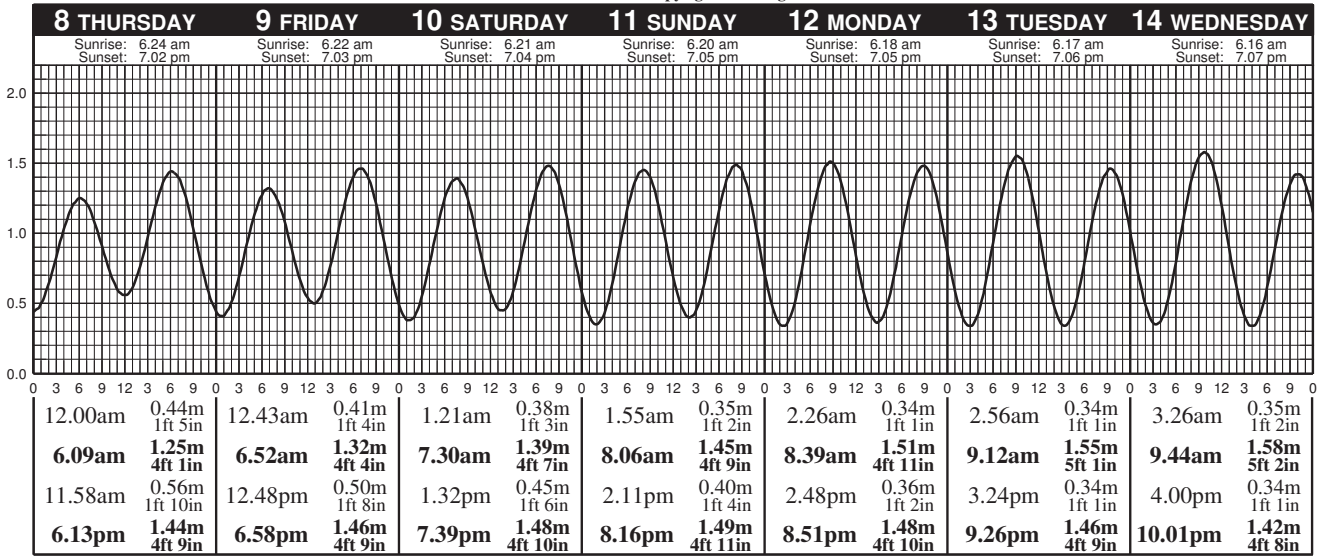


While this publication has been formulated with all due care, the State of New South Wales does not warrant or represent that this booklet is free from errors or omissions, or that it is exhaustive. The State of NSW disclaims, to the extent permitted by law, all warranties, representations or endorsements, express or implied, with regard to the booklet including but not limited to, all implied warranties of merchantability, fitness for a particular purpose, or non-infringement. The State of NSW further does not warrant or accept any liability in relation to the quality or accuracy of the booklet and no responsibility is accepted by the State of NSW for the accuracy, currency, reliability and correctness of any information in the booklet.

October 8–14, 2015

Daylight Saving Time
©2015 Crown copyright in the right of NSW

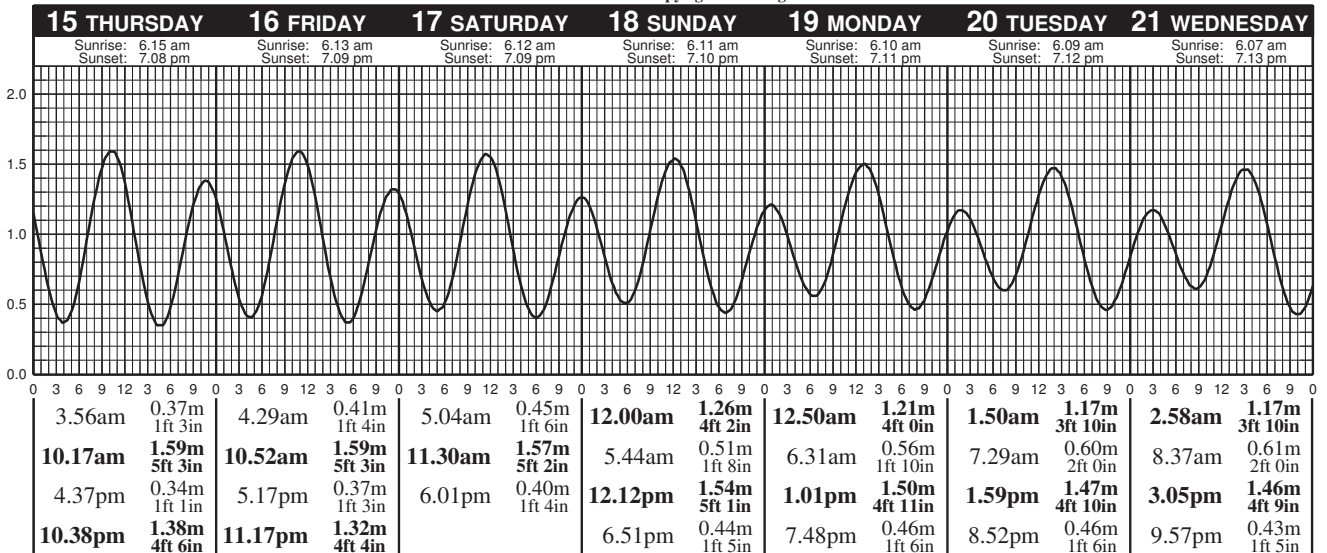
● New Moon Oct 13



October 15–21, 2015

Daylight Saving Time
©2015 Crown copyright in the right of NSW

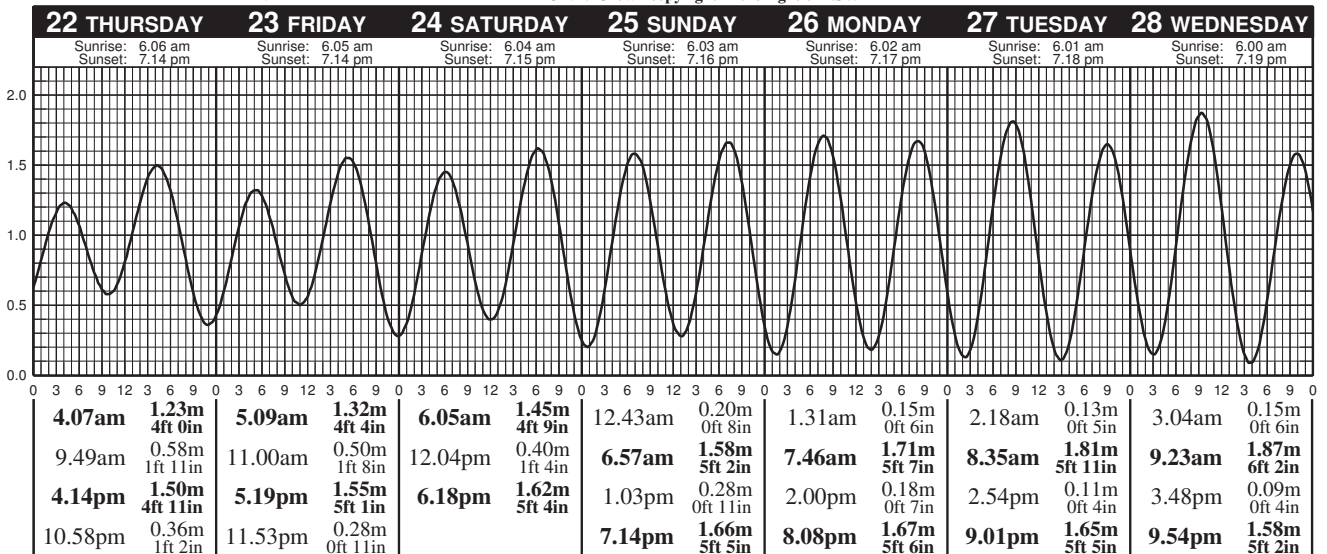
● 1st Quarter Oct 21



October 22–28, 2015

Daylight Saving Time
©2015 Crown copyright in the right of NSW

○ Full Moon Oct 27

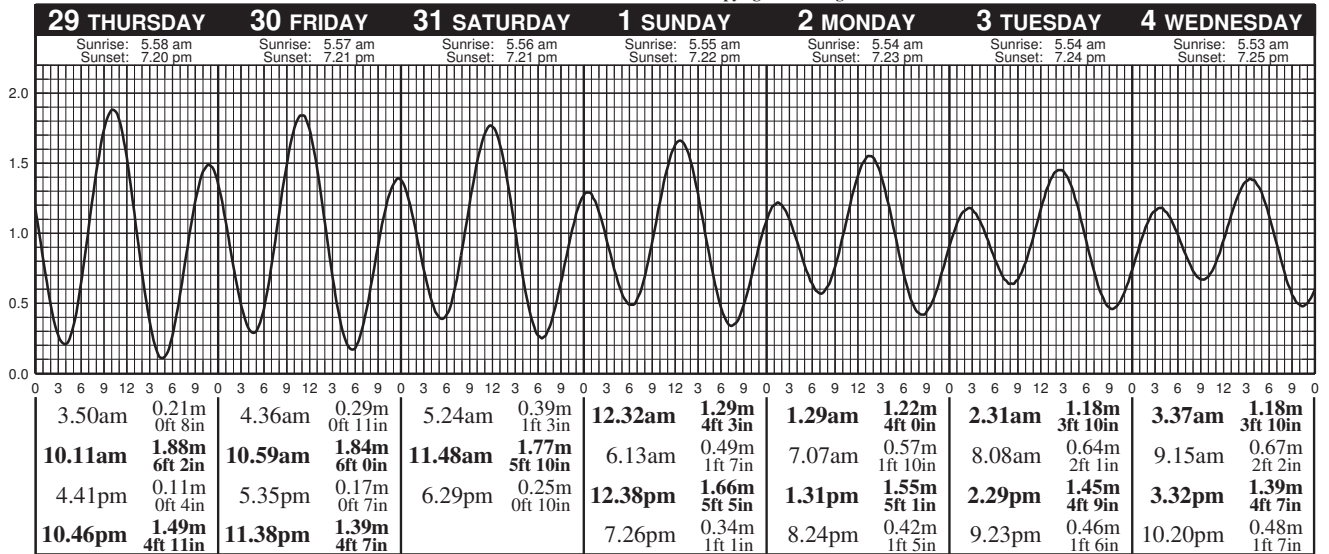


While this publication has been formulated with all due care, the State of New South Wales does not warrant or represent that this booklet is free from errors or omissions, or that it is exhaustive. The State of NSW disclaims, to the extent permitted by law, all warranties, representations or endorsements, express or implied, with regard to the booklet including but not limited to, all implied warranties of merchantability, fitness for a particular purpose, or non-infringement. The State of NSW further does not warrant or accept any liability in relation to the quality or accuracy of the booklet and no responsibility is accepted by the State of NSW for the accuracy, currency, reliability and correctness of any information in the booklet.

October 29 – November 4, 2015

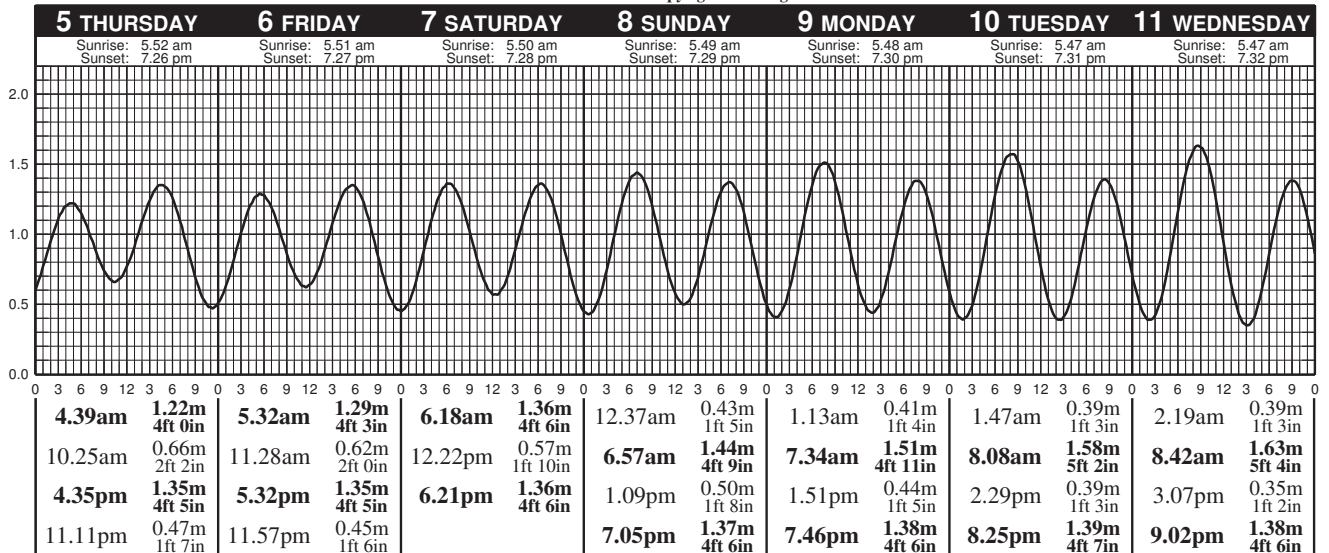
Daylight Saving Time
©2015 Crown copyright in the right of NSW

3rd Quarter Nov 3



November 5–11, 2015

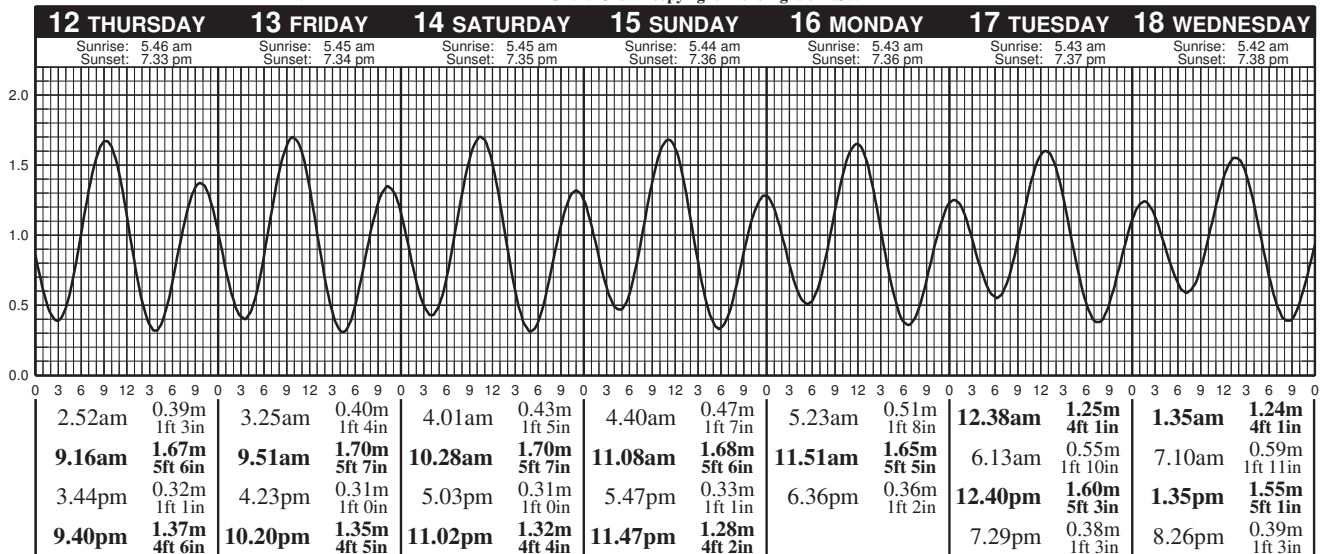
Daylight Saving Time
©2015 Crown copyright in the right of NSW



November 12–18, 2015

Daylight Saving Time
©2015 Crown copyright in the right of NSW

New Moon Nov 12

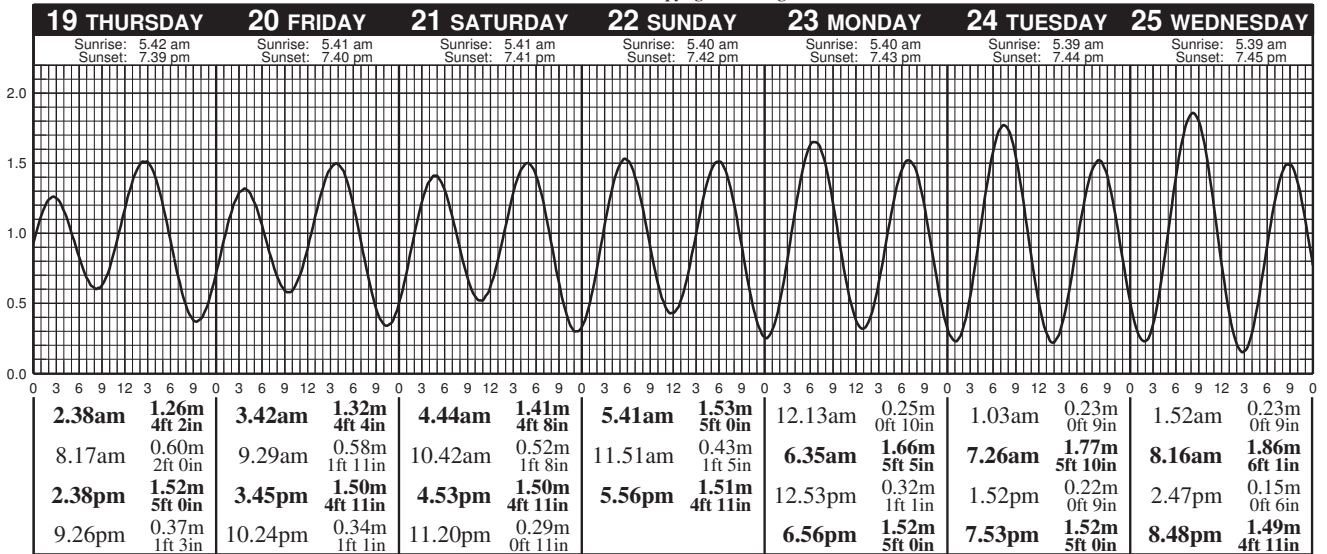


While this publication has been formulated with all due care, the State of New South Wales does not warrant or represent that this booklet is free from errors or omissions, or that it is exhaustive. The State of NSW disclaims, to the extent permitted by law, all warranties, representations or endorsements, express or implied, with regard to the booklet including but not limited to, all implied warranties of merchantability, fitness for a particular purpose, or non-infringement. The State of NSW further does not warrant or accept any liability in relation to the quality or accuracy of the booklet and no responsibility is accepted by the State of NSW for the accuracy, currency, reliability and correctness of any information in the booklet.

November 19–25, 2015

Daylight Saving Time
©2015 Crown copyright in the right of NSW

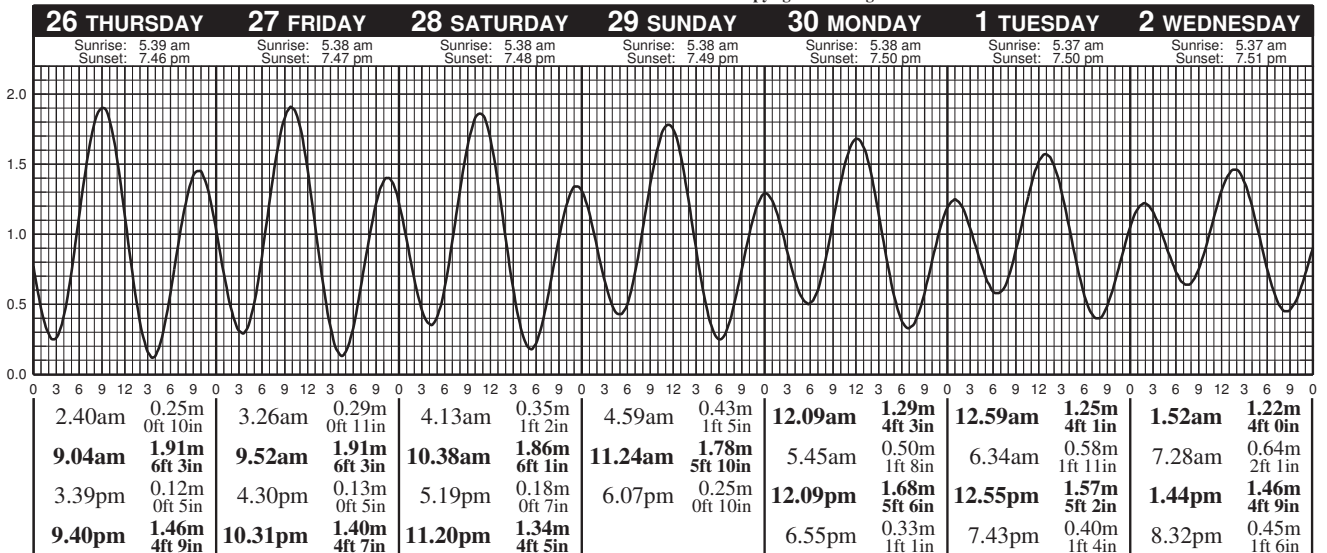
1st Quarter Nov 19



November 26 – December 2, 2015

Daylight Saving Time
©2015 Crown copyright in the right of NSW

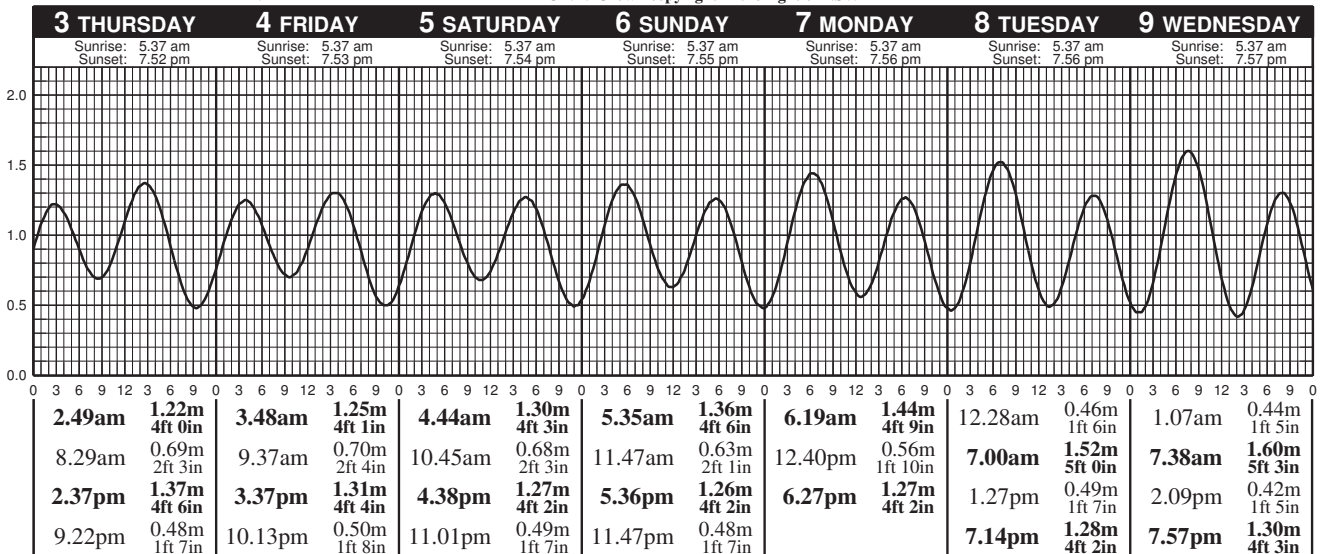
Full Moon Nov 26



December 3–9, 2015

Daylight Saving Time
©2015 Crown copyright in the right of NSW

3rd Quarter Dec 3

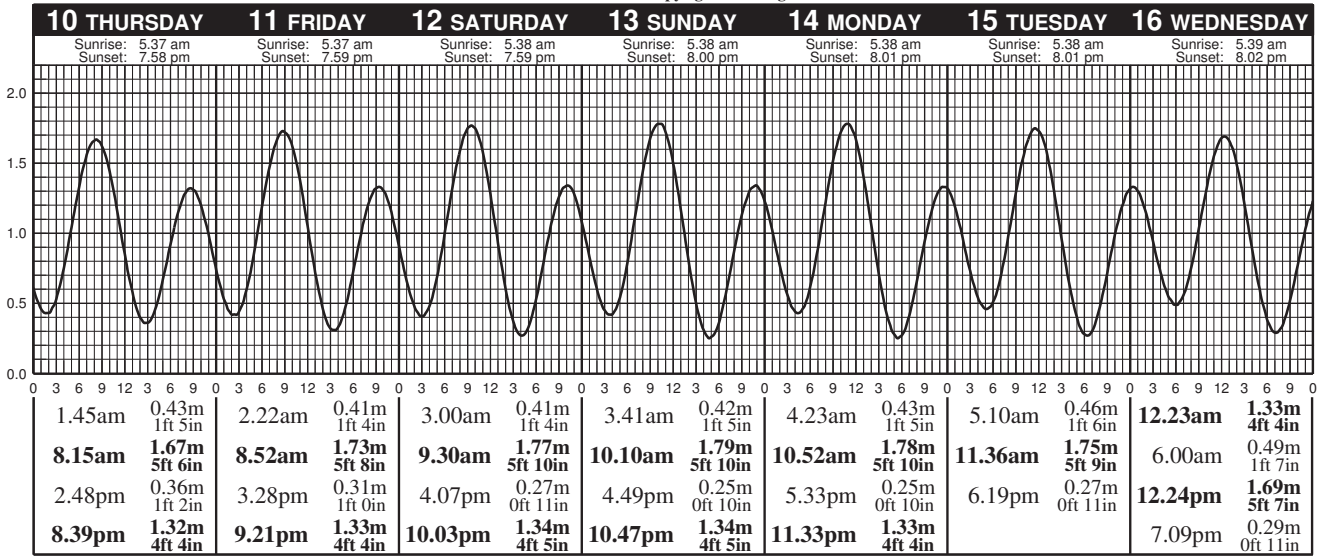


While this publication has been formulated with all due care, the State of New South Wales does not warrant or represent that this booklet is free from errors or omissions, or that it is exhaustive. The State of NSW disclaims, to the extent permitted by law, all warranties, representations or endorsements, express or implied, with regard to the booklet including but not limited to, all implied warranties of merchantability, fitness for a particular purpose, or non-infringement. The State of NSW further does not warrant or accept any liability in relation to the quality or accuracy of the booklet and no responsibility is accepted by the State of NSW for the accuracy, currency, reliability and correctness of any information in the booklet.

December 10–16, 2015

Daylight Saving Time
©2015 Crown copyright in the right of NSW

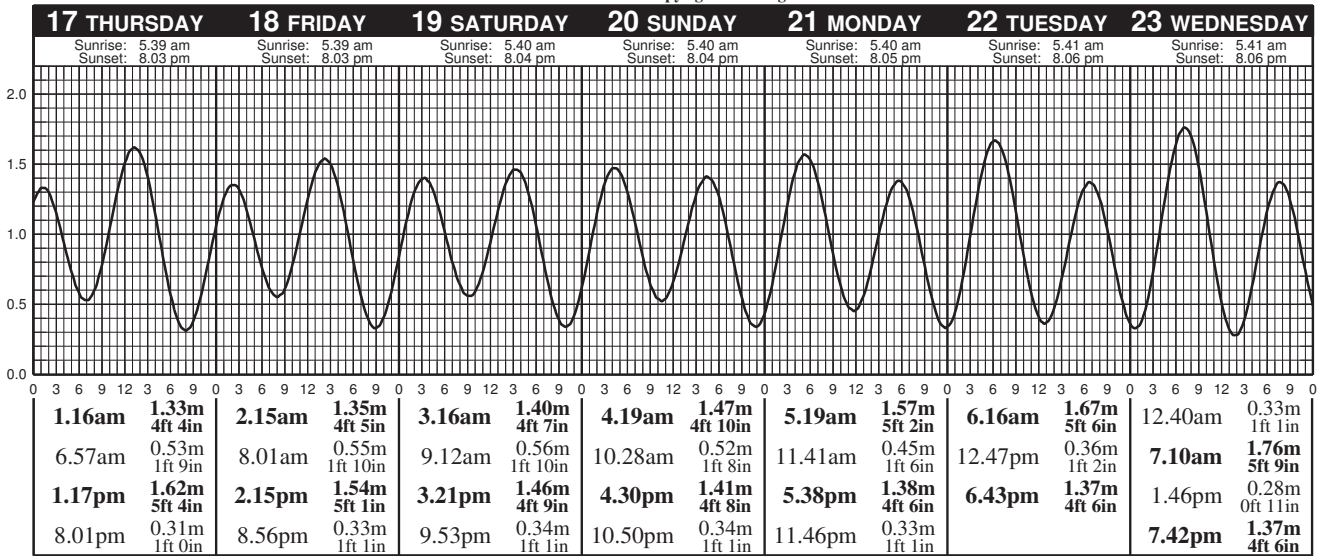
● New Moon Dec 11



December 17–23, 2015

Daylight Saving Time
©2015 Crown copyright in the right of NSW

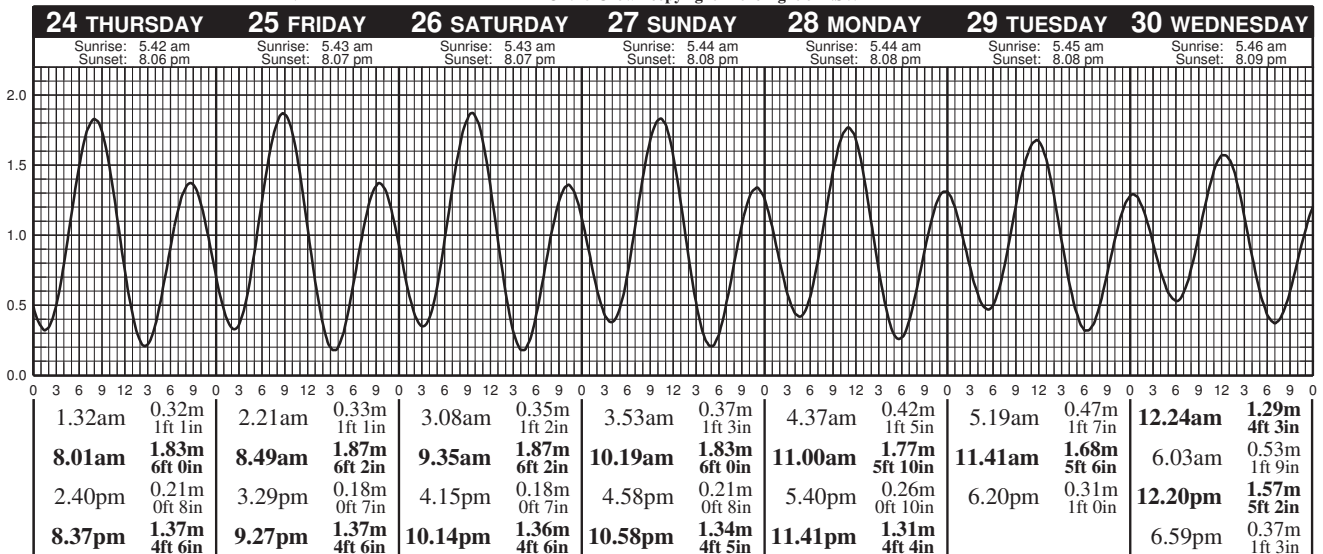
● 1st Quarter Dec 19



December 24–30, 2015

Daylight Saving Time
©2015 Crown copyright in the right of NSW

○ Full Moon Dec 25

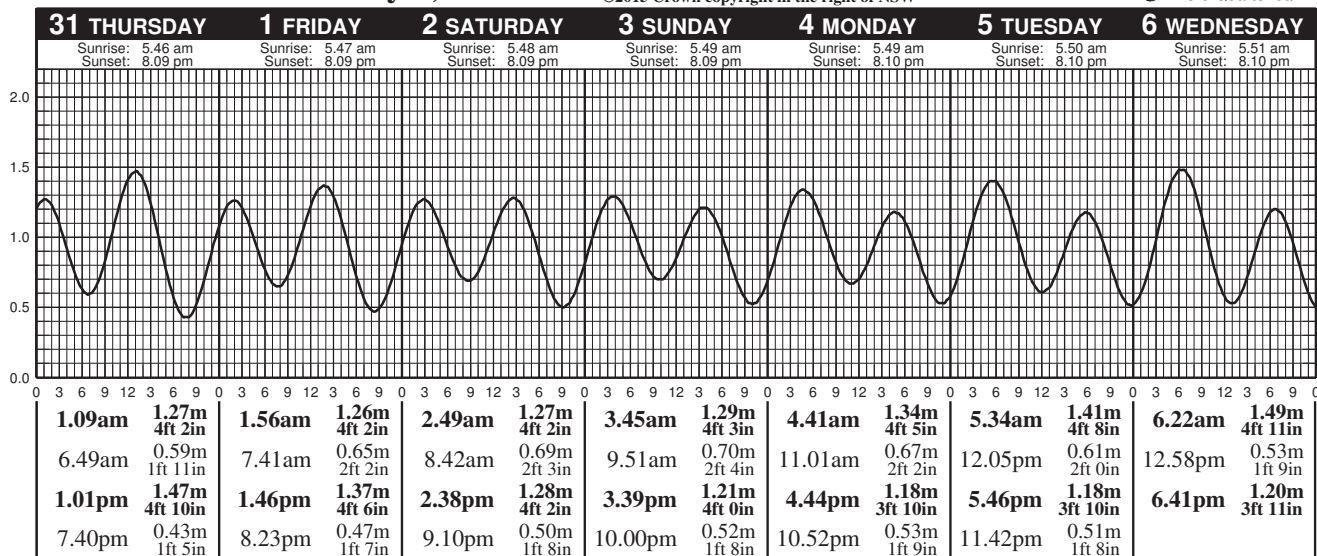


While this publication has been formulated with all due care, the State of New South Wales does not warrant or represent that this booklet is free from errors or omissions, or that it is exhaustive. The State of NSW disclaims, to the extent permitted by law, all warranties, representations or endorsements, express or implied, with regard to the booklet including but not limited to, all implied warranties of merchantability, fitness for a particular purpose, or non-infringement. The State of NSW further does not warrant or accept any liability in relation to the quality or accuracy of the booklet and no responsibility is accepted by the State of NSW for the accuracy, currency, reliability and correctness of any information in the booklet.

December 31 – January 6, 2016

Daylight Saving Time
©2015 Crown copyright in the right of NSW

3rd Quarter Jan 2



TIME DIFFERENCES FOR SECONDARY LOCATIONS

(* Indicates secondary ocean location) Secondary Locations have been grouped according to river basins or ocean locations listed from north to south down the New South Wales coastline — from the Tweed River Basin to the Far South Coast Region.

Add or subtract the appropriate hours and/or minutes listed here to adjust for the time difference between when high or low tide occurs at Middle Head, Sydney Harbour, and when the corresponding tide will occur at the secondary location. Lows will be fractionally later than the highs because the falling water levels will no longer have the tidal force behind them.

LOCATION	HOUR:MIN	LOCATION	HOUR:MIN
Tweed River Basin		Coffs Harbour Region	
Tweed Heads, River Entrance	+0:04*	Harbour Jetty	-0:07*
Greenbank Island	+0:40	Highway Bridge, Coffs Creek	+1:50
Cave Point	+0:50	Newports Creek Junction	+1:50
Barneys Point	+1:25	Boambee, Boambee Creek	+1:50
Tumbulgum	+2:35	Bellingen River Basin	
Murwillumbah	+2:40	Repton Railway Bridge	+1:30
Caddys Island, Terranora Creek	+1:40	East Bellingen	+2:10
Cobaki Broadwater	+2:10	Urunga Bridge, Kalang River	+1:45
Birds Bay, Terranora Broadwater	+2:20	West Newry Island, Kalang River	+2:05
Kynnumboon, Rous Creek	+3:15	Nambucca River Basin	
Kingscliff, Cudgen Creek Mouth	+0:17	Stuarts Island	+1:10
Brunswick River Basin		Macksville	+2:00
Brunswick Heads, River Entrance	+0:06*	Utungun	+2:40
Billinudgel, Marshalls Creek	+3:55	Macleay River Basin	
Mullumbimby	+1:10	South West Rocks (Kemps Corner)	+0:23
Richmond River Basin		Smithtown	+2:10
Ballina, River Entrance	+0:07*	Kempsey	+3:25
Byrnes Point Ferry	+0:30	West Euroka	+4:05
Woodburn	+2:30	Hastings River Basin	
Highway Bridge, Tucombil Creek	+2:30	Port Macquarie, River Entrance	+0:19*
Floodgate, Evans River	+2:25	Settlement Point	+0:50
Coraki	+4:05	Dennis Bridge	+1:25
Lismore Airfield, Wilsons River	+5:10	Wauchope Railway Bridge	+1:55
Woodlawn College, Wilsons River	+6:05	Telegraph Point, Wilson River	+3:05
Tuncester, Leycester Creek	+6:05	Greenville, Maria River	+3:45
Clarence River Basin		Camden Haven Basin	
Yamba, River Entrance	0:00*	North Haven	+0:18
Palmers Island, Palmers Channel	+2:40	Laurieton	+0:45
Macleay	+2:00	West Haven, Stingray Creek	+1:00
Brushgrove	+3:45	Manning River Basin	
Grafton	+4:15	Crowdy Head, Harbour Marina	-0:02
Cave Point	+0:50	Harrington	+0:11
Wooli River Entrance	+0:12	Croki	+2:05
Wooli Caravan Park	+1:40	Taree	+2:25
		Wingham	+3:45
		Farquhar Inlet, South Channel	+1:50

LOCATION	HOUR:MIN
Wallis Lake	
Forster, Harbour Entrance	+0:01*
Wallamba Island, North Tuncurry	+2:05
Tiona	+3:25
Hunter River Basin	
Tomaree, Port Stephens	+0:05*
Nelson Bay, Port Stephens	+0:30
Stockton Bridge	+0:20
Hexham Bridge	+1:10
Tea Gardens, Port Stephens	+1:30
Raymond Terrace	+1:55
Green Rocks	+2:20
Hinton Bridge, Paterson River	+3:25
Morpeth	+3:30
McKimms Corner	+3:40
Dunmore, Paterson River	+3:55
Maitland, Wallis Creek	+4:10
Paterson, Paterson River	+4:30
Maitland, Belmore Bridge	+4:50
Swansea, Lake Mouth	0:00*
Brisbane Waters/Broken Bay	
Ettalong	+0:40
Woy Woy Bridge	+2:15
East Gosford	+2:20
Little Patonga (Juno Point)	+0:09
Patonga	+0:10
Newport Wharf, Pittwater	+0:08
Berowra Waters Ferry	+1:00
Hawkesbury River	
Gentlemans Halt	+1:00
Spencer	+1:10
Gunderman	+1:45
Wisemans Ferry	+2:25
Lower Portland	+3:10
Sackville	+3:55
Ebeneezer	+4:50
Windsor	+5:40
Freemans Reach	+7:30
Sydney Harbour	
Roseville Bridge Marina	+0:03
Gladesville Bridge	+0:05
Ryde Railway Bridge	+0:12
Silverwater Bridge	+0:14
Homebush Bay	+0:23
Georges River Basin	
Canterbury Bridge, Cooks River	+0:40
Picnic Point	+1:10
Milperra	+2:15
Lansdowne Bridge, Prospect Creek	+2:25
Lansvale	+2:35
Irelands Bridge, Cabramatta Creek	+2:35
Warwick Farm	+2:45
Cabbage Tree Point, Port Hacking	+0:03*

LOCATION	HOUR:MIN
Lake Illawarra Basin	
Port Kembla	-0:01*
Shoalhaven River Basin	
South Shoalhaven Heads	+0:55
Shoalhaven Heads Inlet	+1:05
Nowra Bridge	+2:00
Crookhaven River Entrance	+0:16
Greenwell Point, Crookhaven River	+0:40
Jervis Bay	
Huskisson	+0:08*
Captains Point	+0:01*
St Georges Basin	
Lumeah	+0:18
Sussex Inlet Coastal Patrol Jetty	+0:35
Talofa Caravan Park	+1:15
Island Point	+3:40
Lake Conjola Entrance	+1:35
Narrawallee Inlet	+0:45
Burrill Lake, Highway Bridge	+0:55
Batemans Bay	
Snapper Island	+0:03*
Princes Highway Bridge	+0:20
Nelligen, Clyde River	+0:45
Moruya River	
Tuross River, West Tuross Head	+1:40
Moruya Quarry Wharf	+0:35
Moruya Hospital	+0:55
Wagonga Inlet (Narooma)	
MSB Boatshed/Jetty	+0:15
Narooma Old Municipal Wharf	+0:40
Apex Park Boat Ramp	+0:55
Princes Highway Bridge	+1:15
Barlows Bay	+2:00
Far South Coast Region	
Bermagui, Boat Harbour	+0:08*
Merimbula Wharf	+0:40
Bonnie Doon, Merimbula Lake	+2:40
Wallaga Lake Entrance	+1:40
Wallaga Lake, Regatta Point	+2:50
Tee Tree Point, Pambula Lake	+1:10
Eden, Fishing Co-operative Jetty	+0:08*

LEADERS IN WATER, COASTAL AND ENVIRONMENTAL SOLUTIONS

**Manly Hydraulics Laboratory -
specialist consulting services in the
fields of water, coastal and
environmental solutions; making
use of physical models, computer
models and data capture and
management.**

Environmental Data Capture

weather, tides, waves, water levels,
flows, water quality
oceanographic monitoring

Investigations

beach erosion and foreshore protection
ports, harbours and breakwaters
offshore and coastal structures
rivers, floodplains, bridges and
river training works
dams
fishways
water supply and wastewater systems
water quality, effluent management and stormwater
pumps, flows in pipes and open channels

Environmental and water quality engineering

**Development of specialised
instruments and logging systems**

Manly Hydraulics Laboratory



Public Works

110B King Street
Manly Vale NSW 2093
T: (02) 9949 0200
F: (02) 9948 6185

www.mhl.nsw.gov.au

quality system certified to AS/NSZ ISO 9001:2008