Double High Waters and High Water Stands

What?

EasyTide shows two 'paired' High Water (HW) events at some locations, which means the HW and Low Water (LW) tables of data will look like the below image. Therefore, up to two HW's in the morning and two in the afternoon are displayed.

Any Date					
LW	HW	HW	LW	HW	HW
01:02	07:33	08:58	13:38	20:03	21:53
1.5 m	4.3 m	4.2 m	1.4 m	4.1 m	4.0 m

Why?

At some locations the tidal curve (tidal regime) shows certain characteristics and complexities which mean that the identification of these 'extra' HW events can be beneficial in the interpretation of the predictions.

In September 2015, anomalies came to light in the predictions for Portsmouth where confusion was caused over the progression in time of HW, specifically over the 10 – 12 September 2015. Instead of the usual 'approximately one hour' advancement in the time of HW from day-to-day, the automatic identification of the time of HW was affected by the HW stand (i.e. the prolonged period of little or no change in the tidal rise or fall over the HW portion of the tide curve). So, the seemingly odd progression in time of HW was affected by where the peak of the tide was identified along the flat portion of the curve.

In the current version of EasyTide, following the assessment of extensive customer feedback on this subject, Portsmouth shows two distinct sets of predictions. One is the 'traditional' singular highest point over the high water portion of the curve (simply called 'PORTSMOUTH') and the other as illustrated in the table above (i.e. two 'paired' HW's designed to convey the beginning and end of any 'HW stand', called 'PORTSMOUTH (HIGH WATER STAND)'.

For additional detail on the background to the 'paired HW' approach see 'Display of 'Paired' High Water Events' below.

Where?

The locations where the two 'paired' HW's are currently shown on EasyTide are as follows:-

Cowes
Calshot Castle
Southampton
Redbridge
Warsash
Bursledon
Portsmouth (High Water Stand)

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What about tidal streams?

Tidal streams are referred to the 'traditional' singular HW time at Portsmouth and not the 'High Water Stand' output.

Display of 'Paired' High Water Events

The decision to show the two 'paired' HW's also relates to requirements from some port authorities and harbour masters. Some of them require output of the two 'paired' High Waters in their predictions for operational reasons, which then rippled onto other customers who also expressed interest in knowing similar detail concerning the shape of the HW portion of the predicted curve (with regards the beginning and end of any HW 'stand'). For example, we were contacted by a swimmer who experienced difficulties with the tidal streams during the period 10 - 12 September 2015 prediction, which as previously described, showed High Water times progressing oddly from day-to-day. The beginning of the fall of the tide in this instance caught him unawares as he expected a longer duration before the ebb flow took hold. Knowledge of the beginning and end of the stand would help prevent this issue.
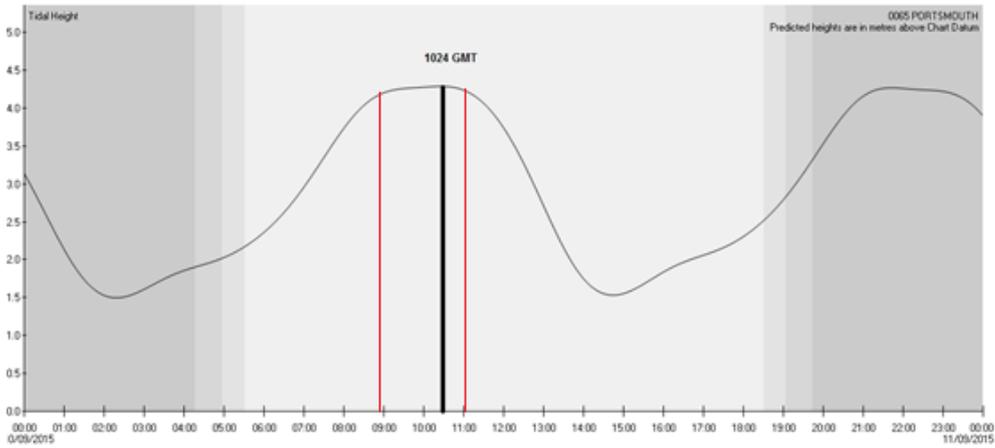
The below illustrated curves show the published times of HW in black. The red lines identify the start and end of the stand period, which is how we have now decided to output the predictions in our digital predictions software

'TotalTide' and the on-line prediction site 'EasyTide'.

So, the red lines in the following images (on the following page) illustrate how this new approach would have looked for those days in 2015.

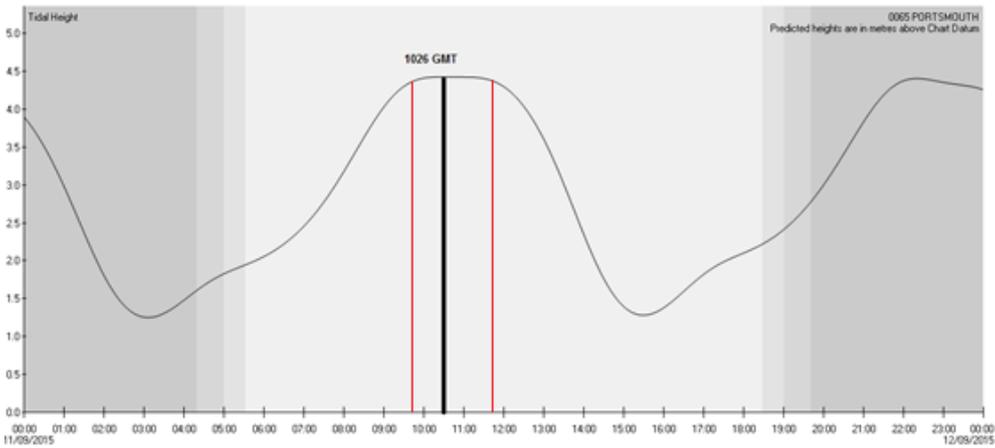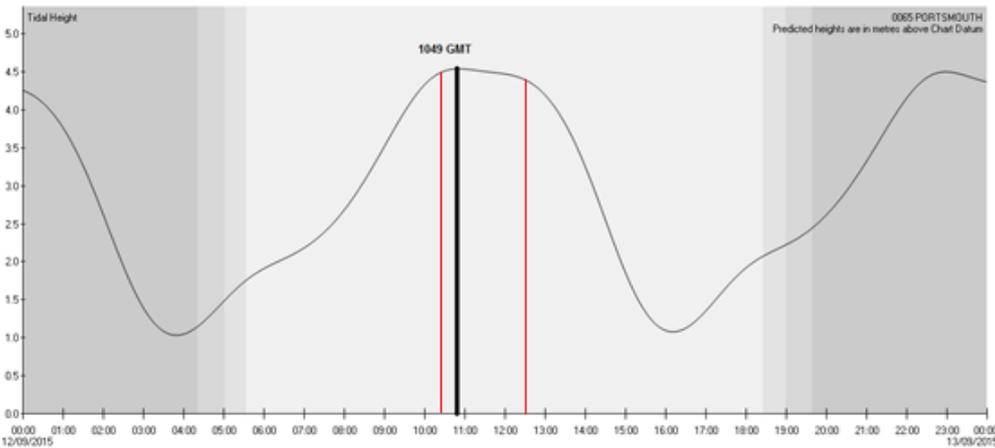UK Hydrographic
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10/09/15

Published HW at **1024** GMT (**black**)
Beginning and end of Stand: **0856** & **1101** GMT (red)

11/09/15

Published HW at **1026** GMT (**black**)
Beginning and end of Stand: **0945** & **1145** GMT (red)

12/09/15

Published HW at **1049** GMT (black)
Beginning and end of Stand: **1026** & **1226** GMT (red)

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Predictions on some specific dates at these 'complex ports'

Due to the complex tidal regime exhibited at some of these 'Double High Water' and 'High Water Stand' ports, very occasionally, in certain years, there are days in which the 'tidal behaviour', or characteristics, cause the algorithm which identifies the various 'turning points' (as described extensively above) to malfunction, thus picking undesired events in place of those required.

Essentially this can mean that a Low Water is not identified, with an erroneous 'High Water' being identified in its place.

The specific ports, dates, times and "events" (i.e. High and / or Low waters) affected are shown in the below table:

Port / Location	Date	Missing Low Water (s)				Erroneous High Water(s)			
		Time (GMT)	Height (m)	Time (GMT)	Height (m)	Time (GMT)	Height (m)	Time (GMT)	Height (m)
Southampton	22/03/2021	1000	2.0	2245	2.3	1226	2.4		
Southampton	23/03/2021					0047	2.5		
Southampton	08/04/2021	0155	1.7			0423	2.2		
Southampton	16/10/2021	1330	1.9			1558	2.3		
Southampton	28/10/2021	2055	2.1			2321	2.5		
Southampton	29/10/2021	0945	2.4			1142	2.6		
Southampton	14/11/2021	1250	1.9			1526	2.3		
Southampton	27/11/2021	0918	2.2			1133	2.6		
Redbridge	22/03/2021	0951	1.9	2236	2.2	1223	2.3		
Redbridge	23/03/2021					0043	2.4		
Redbridge	08/04/2021	0145	1.6			0404	2.1		
Redbridge	16/10/2021	1319	1.8			1538	2.2		
Redbridge	28/10/2021	2048	2.0			2324	2.4		
Redbridge	29/10/2021	0937	2.3			1143	2.5		
Redbridge	14/11/2021	1240	1.8			1508	2.2		
Redbridge	27/11/2021	0909	2.1			1135	2.5		
Warsash	22/03/2021	1011	2.3	2300	2.5	1238	2.6		
Warsash	23/03/2021					0100	2.7		
Warsash	08/04/2021	0210	2.0			0442	2.5		
Warsash	16/10/2021	1345	2.2			1617	2.6		
Warsash	28/10/2021	2107	2.4			2331	2.7		
Warsash	29/10/2021	1000	2.7			1153	2.8		
Warsash	14/11/2021	1303	2.2			1544	2.6		
Warsash	27/11/2021	0932	2.5			1144	2.8		
Bursledon	22/03/2021	1017	2.1	2303	2.4	1246	2.5		
Bursledon	23/03/2021					0107	2.6		
Bursledon	08/04/2021	0212	1.8			0443	2.3		
Bursledon	16/10/2021	1348	2.0			1618	2.4		
Bursledon	28/10/2021	2112	2.2			2341	2.6		
Bursledon	29/10/2021	0953	2.5			1202	2.7		
Bursledon	14/11/2021	1306	2.0			1546	2.4		
Bursledon	27/11/2021	0933	2.3			1153	2.7		

Last updated: 2020/11/09