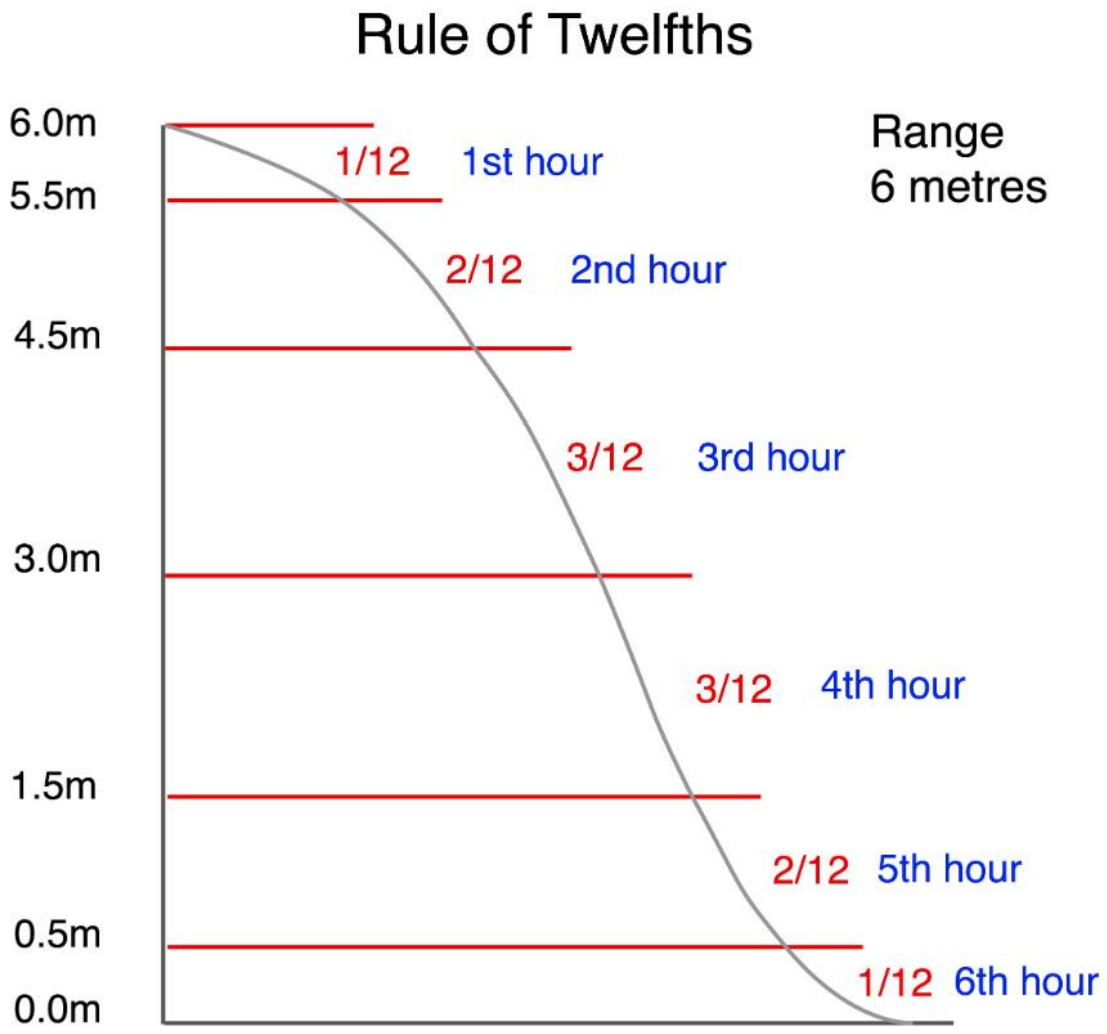
Pilotage Classes
Class one -what did we learn

Osea Island weekend

Tides; the rule of twelfths – works well of the east coast but not everywhere, especially areas with tidal anomalies like the Solent on the South Coast.

All that is required for the 'Rule of Twelfths' is to know the time and height of either high or low water together and the range for that tide - the difference between the tidal height of high and low water. *Tidal high and low tides are shown on the tide times table extract in red boxes*. You then then divide this figure into 12 equal chunks.



The rule states that over the first period the quantity increases by 1/12. Then in the second period by 2/12, in the third by 3/12, in the fourth by 3/12, fifth by 2/12 and at the end of the sixth period

reaches its maximum with an increase of 1/12. The steps are 1:2:3:3:2:1 giving a total change of 12/12. Over the next six intervals the quantity reduces in a similar manner by 1, 2, 3, 3, 2, 1 twelfths.

“Always work your tides”

Most small sailing yachts will achieve an average sailing speed of 4 knots through the water. In contrast, a typical modern 10 metre yacht will average 5. It may achieve 7 knots in perfect sailing conditions, but equally, when the wind falls light, the speed may be half that.

The smaller the boat, the greater the influence of the tide over the distance you plan to travel.

Practical exercise one:

1a. Tide times Burnham on Crouch or the Osea Island weekend were used for the practical exercise.

DAY June 2024	High Tides				Low Tides			
	AM	M	PM	M	AM	M	PM	M
28 Fri	05:58	4.83	18:02	4.71	11:57	0.70		
29 Sat	06:51	4.72	18:56	4.63	00:45	0.30	12:51	0.77
30 Sun	07:50	4.62	19:57	4.56	01:44	0.37	13:52	0.82

1b. Tidal differences: know the tide times where you are sailing, check the tidal constants.

Tidal Constants

Place		Add (+) to or Subtract (-) from times of HW at:		Height relative to Chart Datum (metres)			
				SPRINGS		NEAPS	
		Dover	Harwich	MHW	MLW	MHW	MLW
10 River Blackwater	Bench Head Buoy	+1.20	+0.40	5.1	0.5	3.8	1.2
	Weat Mersea (Nass Beacon)	+1.10	+0.30	5.1	0.5	3.8	1.2
	Tollesbury Mill Creek	+1.00	+0.20	4.9	–	3.6	–
	Bradwell Quay	+1.10	+0.30	5.3	0.5	4.2	1.3
	Osea Island	+1.25	+0.45	5.3	0.4	4.3	1.2
	Heybridge Basin	+1.30	+0.50	5.0	–	4.1	–
	Maldon	+1.35	+0.55	2.9	–	2.3	–
11 River Crouch	Whitaker Beacon	+0.50	0.10	4.8	0.5	3.9	1.3
	Burnham-on-Crouch	+1.10	+0.30	5.2	0.2	4.2	1.0
	Fambridge	+1.20	+0.40	5.3	0.3	4.2	1.1
	Hullbridge	+1.25	+0.45	5.3	0.3	4.2	1.1

HW at Hullbridge is 15 minutes after Burnham (average) and 35 mins after the Whitaker (Swin Spitway). Our exercises focused upon departure times from Burnham on Crouch marina. High water at Burnham is 20 minutes after the Whitaker / Swin Spitway.

Tidal Gates: We learned that our time of arrival at the Swin Spitway at low water was the critical 'tidal gate' we wanted to achieve, therefore our departure time from Burnham, and our arrival time(s) at Osea were geared to arriving at the Swin Spitway at low water which was at 12.31 (i.e. 20 minutes earlier than the time given for LW at Burnham). Hence our departure time from Burnham was calculated backwards from the low water time at the Spitway (09.30-09.45). And our arrival time at Osea was 15.30 assuming a favourable wind direction (say Southerly).

Notes regarding tides:

1c. **Why 'Tidal gates' are important**. These are the points on your route you should arrive at to make best use of the tide. For example, sailing to Osea, plan to be at the Swin Spitway by low water at the latest as you don't want to be sailing against the flood tide. You want the flood tide to start running in your favour once you have turned to port at the Wallet Spitway buoy, so time it so it helps you to make your way toward the Blackwater.

Its worth remembering that 30 minutes either side of low water, and high water, the tide is mostly slack, so you have flexibility in terms of achieving your tidal gates. This is why there were no wrong answers for the practical exercise where we identified our departure time from Burnham.

1d. Yacht Cruising is not just sailing. More accurately, it should be described as **passage making**. For example, you calculate the distance you must cover before the tide turns against you. You know your boat can sail at 4 knots with a favourable breeze, plus you have at least I knot of tide in your favour (probably more like 1.5 knots if a spring tide). This means if the wind falls light you may have to start your engine and run it just enough to maintain an average speed of 5 knots over the ground.

Practical exercise 2 – calculating how sailing against a North East wind from Holiwell point (entrance of the Crouch) to the Swin Spitway would affect our passage plan;

If the wind is dead on the nose, you will have to tack. This will effectively reduce your speed over the ground (SOG) in that direction to 2 knots, plus a knot from the tide = 3 knots. If you know the wind direction is adverse from the weather forecast, you should recalculate at 3 knots SOG and, assuming its possible, leave earlier to have enough time to cover that part of the trip during which the wind is against you.

The distance from Holiwell point to the Spitway is 9 miles approx. – we therefore calculated it would take us 1 hour to sail from outside Burnham Marina to Holiwell point at 5 knots SOG. From that point onwards, by altering course Northeast we would be tacking and therefore our SOG for the remaining 9 miles was 3 knots.

Therefore, rather than covering the whole distance from Burnham to the Spitway in under 3 hours with a favourable wind, if the wind was Northeasterly we would have to tack from Holiwell Point, and therefore, take 4 hours.

1e. A final word on tides. Wind over tide conditions can be surprisingly boisterous. For example, a strong spring tide pushing against a fresh westerly breeze can turn the entrance of the Blackwater into a rough spray drench beat. In this case a strong tide under your boat is only making things worse. Consider if you would make better and far easier progress by timing your arrival at the most exposed part of the trip during slack water. An alternative, with a rising tide, is to head into shallower water on the port side of the river and skirt the sand banks in about 2 to 3 meters of water.

This way you reduce the fetch of the waves (the distance over which the wind can build up the waves) plus the strength of the tide is massively reduced in the shallows. You might need to furl your

genoa, harden in the mainsail and just motor, keeping a keen eye on your echo sounder. Crucially this would enable you to make progress in relatively smooth water. Much easier compared to the conditions further out where the tide is running hard. This is passage making. It can also be good seamanship, especially if you don't have a strong crew.

The idea is to arrive safely at your destination and not turn a sailing trip into a battle against the elements.

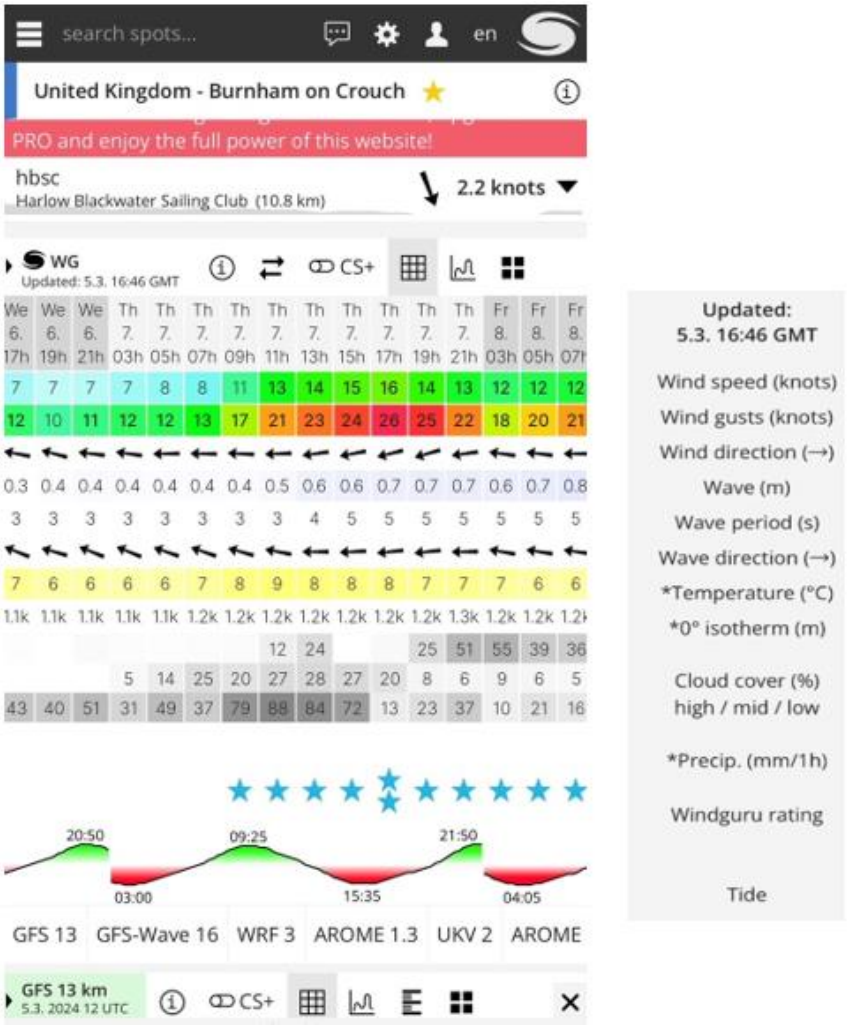
Every passage plan should be flexible enough to handle a variety of conditions.

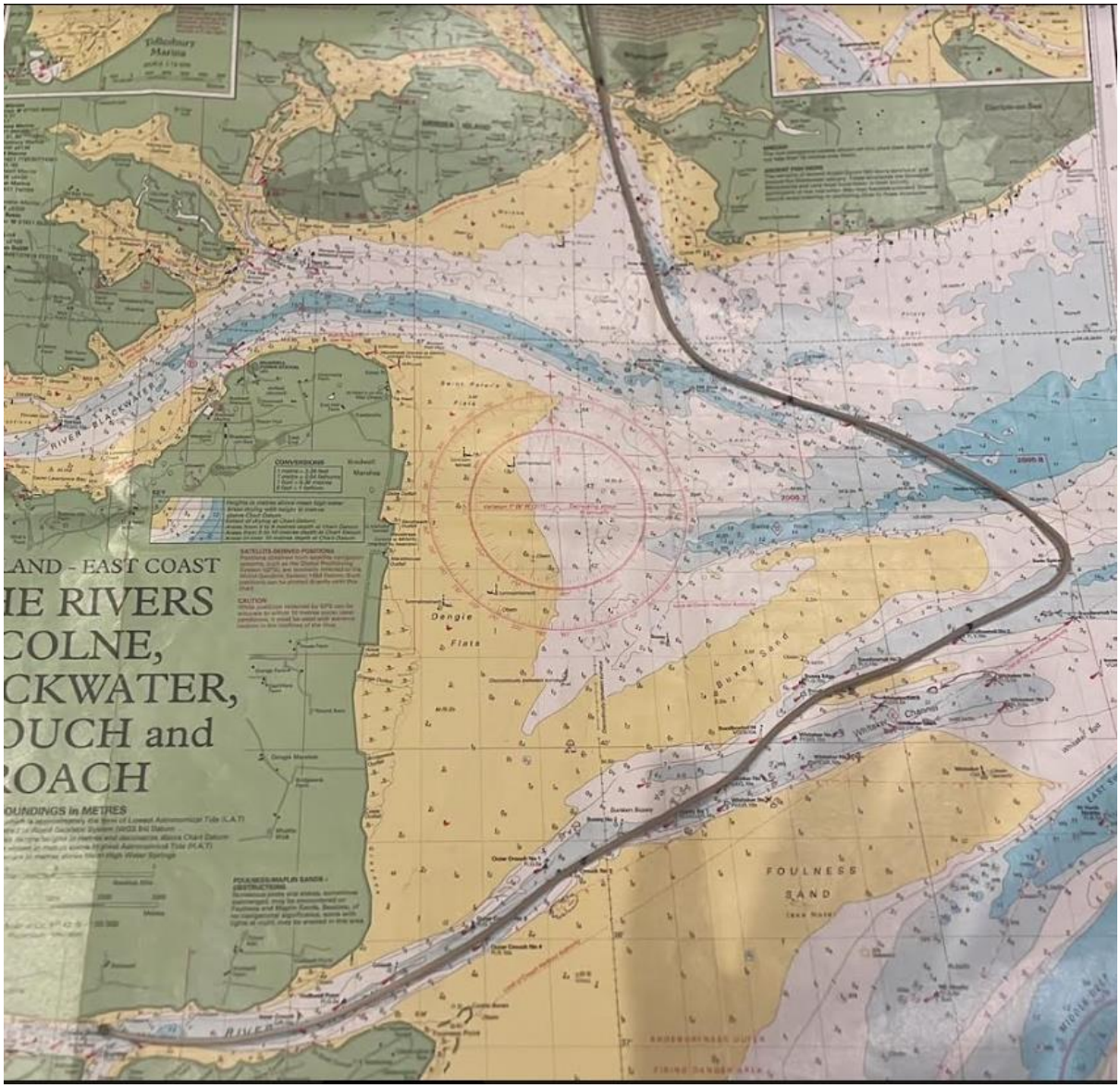
Weather Forecast and outlook.

Consider the likely impact on your passage plan, your likely SOG, or indeed if it is sensible to go at all and perhaps wait a day for better conditions.

Postponing a trip to the next day may transform the ability of your boat to get there as well as comfort of the crew. If the prevailing conditions are unsettled agree a 'go or no go' day and time. Check the forecast then and weigh up the ability to achieve your passage plan.

Know your weather app: Windguru
Blues and greens, it will be serene,
Orange and yellow, great on the beam and downwind just follow,
Wind on the nose and gusting red? Unless river sailing… stay in bed.





String Hack;

Use a piece of string or flexible cord about 3mm diameter (an iPhone power cable would do). Lay your cord along a vertical edge of your chart and use a felt pen to mark off five mile intervals on the string. (Each ‘ division on the chart vertical scale is one nautical mile).

For the purposes of passage planning, if we sail at four knots, plus one knot of tide, that’s 5 knots over the ground. Hence, by using the piece of string to carefully track your most likely course down a river and thread through the sand banks you can simply check the length of the string to instantly indicate how many hours it should take your boat to get from A to B on the planned route.

One glance at this picture tells me if I plan for tides to be behind me and the wind is favourable (say southerly) it would take four hours to get from the entrance of the River Roach to Brightlingsea via the Swin Spitway.

Final tip: a piece of string is easier to use at sea than dividers, especially if you only want to pop below for a few seconds to check your progress.