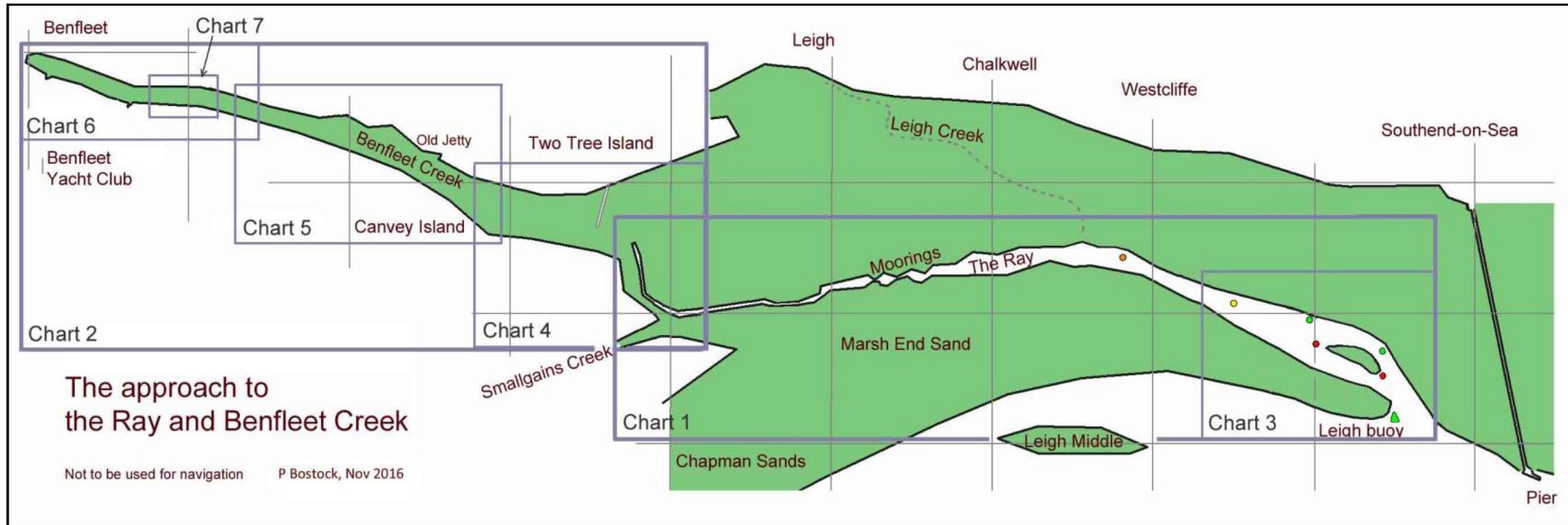


# Charts of the Ray and Benfleet Creek. Part 2



For charts and concise sailing directions see Part 1. Free for personal use.

This is Part 2 with more, background information. Suitable for reading at anchor maybe!

## Charts of the Ray and Benfleet Creek

Every year Benfleet Yacht Club members make the one hour journey to or from Southend Pier hundreds of times. A little local knowledge with tides, buoys and marks makes this trip safe and routine.

At low tide the creek and the foreshore dry to soft mud. Spring tides are 6 metres (20 ft) and currents of 2 knots (4kph) run in and out. There are almost no official visitors moorings in the area although local clubs are generally friendly if you ask them nicely. Anchoring in the Ray is possible away from the moorings and is a real pleasure in settled weather during the day, but not ideal overnight. A strong westerly wind over a rising tide in these shallow waters can make the Ray a wild place to be.

The PLA have charts showing spot depths recorded in 2011 but otherwise commercial charts of this area are generally quite poor and there are few commercial reasons to update them. I first surveyed the creek in 2011 and reaction was reassuring. In 2015 & 16 I got more candid feedback! A few boats were hitting the ground soon after the Leigh buoy. A few buoys and marks had changed and I had made a few errors. Time then for a second update.

It seems near the Leigh Buoy a sandbank has calved off from the main sand and is moving northwards into the buoyed channel marked by two pairs of red and green buoys. If you turn sharp left at the first red then you hit it. If you go to the first green and head well north of the second then you avoid it although the tide tends to take you on to the sand. The main channel to Ray Gut has deepened during 2016 and may become useable as the main entrance in 2017. See Part 1 for the following charts:

Chart 1: The Ray. From the Leigh buoy to 'The Hole'.                      Chart 2. Benfleet Creek. From 'The Hole' to Benfleet Yacht Club.  
Charts 1 and 2 have the same scale.

Chart 3. Leigh Buoy.                      Chart 4. Benfleet Creek—Two Tree Island reach.      Chart 5. Salvation Army Jetty Reach.  
Chart 6. Benfleet Yacht Club Reach.      Charts 3 to 6 have the same scale.                      Chart 7. Crossover, detail.

At this latitude, 51deg 30min N, one degree of longitude is close to 40km. So 1000 metres covers 1.5 minutes of arc longitude. A land mile is 1.61km and a nautical mile is 1.85km.

These charts of Benfleet Creek and the Ray are based on survey work from a dinghy with an outboard, using GPS and a depth sounder. The process has been automated as much as possible but the final artwork relies on human judgement. I hope you find these charts useful but remember they are just diagrams. Please use them at your discretion.

The charts are free for personal use. If you can see a commercial opportunity then copyright is assigned to the Benfleet Yacht Club who would be unlikely to refuse a donation.

Phil Bostock, Nov 2016

## Sailing to Benfleet.

First step, make arrangements for a mooring. The creek dries completely. You will need to arrange the loan of a bankside mooring or a place to take the ground.

You have a choice when you start your approach. Four or more hours before high water should let you see the Ray and the sand banks to the south. If you have a deep keel and are a bit early on a spring tide then the shallow entrance to the Ray may stop you.

Two or three hours before high water gives you plenty of time to get up the creek and find your mooring but the sand is covered south of the Ray so you need to follow the arc of mooring buoys quite closely. Very much later and the strong ebb tide may catch you out. Part 1 has further detail; page 7 figure 1.

Leave the Leigh buoy to PORT about 60 metres away with a heading of about 330 deg. Ahead you will see a Red and Green pair of buoys; head towards the Green buoy. Keep away from the first Red buoy.

Then steer about 310 deg heading well North of the second Green buoy The deep water is much further north than that marked on older charts or C-Map cartridges with shallow water south of the first red. This section is really only a problem near low tide springs.

When about halfway to the second Green, head about 280 for the second Red. You will pass over a sandbank soon after. Then head for the Yellow buoy about 300. The deepest water is just south of the Yellow buoy. On a bearing of 300 deg beyond the Yellow buoy are fishing boat moorings. Leigh Creek goes off to the north but you need advice from others to follow it.

If you would like to anchor for lunch the region south of a line between the Yellow buoy and the first fishing boat moorings is very suitable. The holding is fair, mud and sand; fine for a lunch stop in settled weather. A small colony of grey seals may entertain you.

When anchoring keep well clear of the moorings, preferably to the south, or the anchor may snag the mooring root and be hard to lift or lost. (You may detect the voice of experience here!)

Follow the fishing boat moorings around to port. A heading of about 260 deg takes you towards the west end of the Ray. Just keep an eye on the depth. For a short stop you may be lucky with a mooring buoy here but be ready to go if challenged.

The west of the Ray has a shallow 'horse' that you can go south of. (Sadly two of the previous SBC buoys are no longer there.) Or wait for a bit more depth.

If the sands are covered you can get up the creek. At the west end of the Ray you are looking for a line of moored boats in a narrow section called 'The Hole'. This name undersells the location which is very protected and tranquil with two BYC buoys.

On the left just before the Hole a buoyed channel runs off to Smallgains Creek and Island Yacht Club.

In the Hole the mooring buoys run around to the right to a bearing of 350-360 deg. >>

Turn left after 200 metres. Two green cone 'hats' marks the end of the Two Tree Island slipway. Keep away from the concrete a couple of boat widths.

Ahead lies the Two Tree moorings, quite closely spaced. You can weave through them on a heading of about 270 deg until you are south of all the boats.

Ahead due west you should see BYC No 1 buoy, a green starboard hand mark and you can relax a little. You just need to follow the buoys up the creek keeping them a boat width away.

The Benfleet Yacht Club maintains these buoys which are officially classed as dinghy racing marks because the authorities take no responsibility for them. You may therefore take them for guidance but keep an eye on your depth gauge. Officially you are on your own.

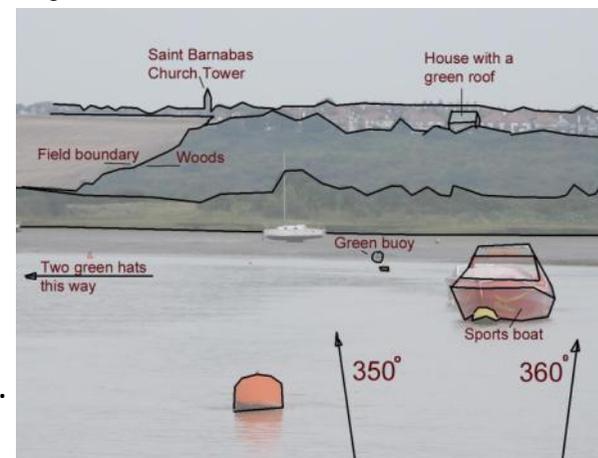
There are three dinghy racing marks to test you; ignore them: Buoy Z north of red buoy 5. Buoy Y south of red buoy 8. Buoy X north of green buoy 11.

Beyond Red buoy 16, port hand mark, lies 'The Crossover'. You will have steered from side to side in the creek about five times so far. This time it is more abrupt. Between 16 and 18 keep away from the north bank a little if you want the deepest water. Then follow 18, 20 and 22 quite closely around to the left, port. Go quite close to 22 before you turn right, starboard, passed 17.

Then you are on the home straight, passed the moored boats to the Benfleet Yacht Club with Dauntless Boatyard beyond.

I haven't suggested any waypoint coordinates as you will have your own ideas but you might find a few strategic points helpful. The charts are fairly accurate for position but remember that depths can change quickly especially near the Leigh Buoy.

Figure 1



Phil Bostock

## Depth Legend.

When the tide comes in along the Essex coast the mid grey brown water covers the mid grey brown mud and sand. On the highest reaches are the dark grey green salt tolerant marsh plants. Not too much inspiration for colour in nature then.

Modern charts show deep water as white often with darker shades of blue as the water gets shallower down to datum zero. This is counter-intuitive but does give large areas of deep sea a sensible white background. Drying heights above datum are usually one shade of light green with light brown for the land proper. It all makes good sense for commercial shipping and larger boats who would not dream of coming close to anything like the Ray and Benfleet Creek.

For recreational sailors in smaller boats these shallow tidal waters are our playground. We need an extended scale of colour to define the water depths and mud heights. Charts also use an underscore to show a height above datum - quite logical when the message is 'keep away' but tedious when almost every number is above datum.

The scheme chosen for the charts shown in Part 1 is reproduced opposite.

The shades of blue follow the convention below datum zero.

There are three shades of light green up to the three metre height above datum. This is about where the water level would be if a barrage was introduced across the Thames mouth to moderate the effect of tides.

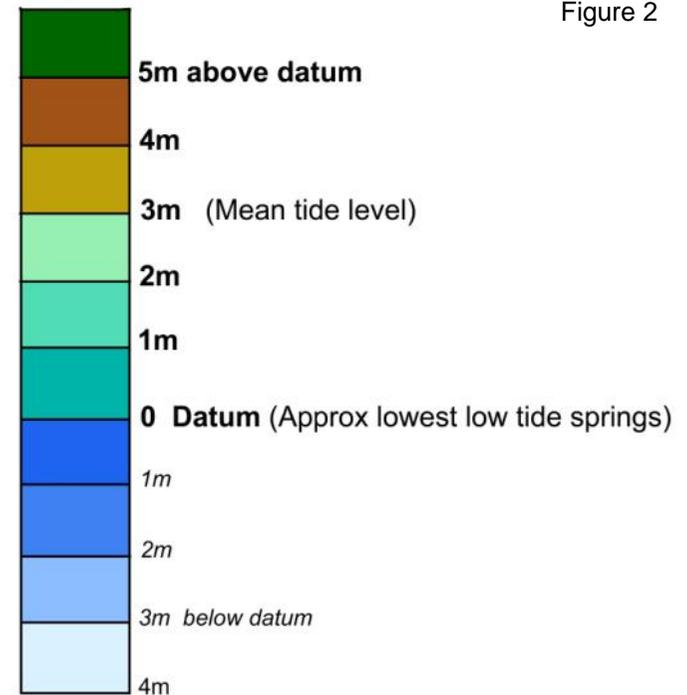
The drier mud is shown as light and dark brown up to 5 metres. A generous interpretation of the natural colours. Dark green above 5 metres represents the marsh plants. You can't survey many areas with this height from a small boat.

Depths below datum are shown in small italic numbers. Depths above in bold, larger letters. Datum is about the lowest level reached by the sea in our area at low water on a spring tide with high air pressure.

## Lidar Survey.

A Lidar survey for the UK government in 2013 has just been released. It shows features down to mean sea level, about 3m above datum. It shows the drainage of the marshes quite clearly but that is not an area of interest so hasn't been referred to for these charts.

## Legend



## Naming of features.

When it comes to naming various sandbanks and stretches of water then modern references can be inconsistent. Clearly the names come down to us from history but because of changes in the drainage pattern they seem a bit odd.

Why is there a 'Low way', with no sign of a 'Hi way'?

Why is 'Marsh End Sand' nowhere near a marsh and sometimes called Chapman Sands.

Why is 'Hadleigh Ray' many miles from the town of the same name.

And why is the Crow Stone where it is?

Luckily we have some early maps and charts of the area and if we squeeze them into a modern frame of reference then some of these questions might have answers. See page 6.

Figure 3

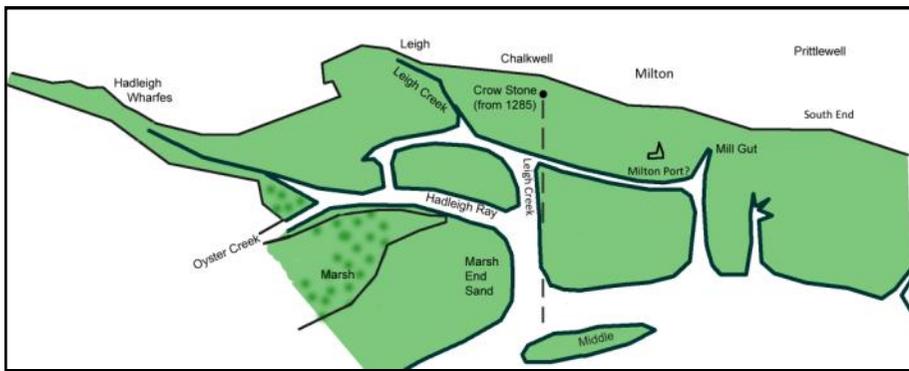


Figure 3 is the work of imagination. The area was probably never quite like this. But it does show some features from references scattered through history.

The village of Milton, mentioned in Domesday, had a fishing port and a church which washed away sometime in the 1700's with the ruined church visible at low water. Ptolemy's mention of 'Counas Island' (AD150) probably referred to Thanet.

'Richard the Lionheart' sold off the rights to collect duties from the lower Thames to the City of London and about 1285, stones were erected to mark the extent of their control. The 'Crow Stone' has been replaced several times since but is thought to occupy the same location. Logically it would mark the eastern edge of the entrance from the Thames leading to the Canvey and Hadleigh wharfs. On the Kent side the 'London Stone' has this relationship with the Yantlet Creek.

A small fishing village was settled east of Milton in the 1300's at the south end of priory lands at Prittlewell. It may be that Mill Gut, the 'Low Way', was important because it was just outside the region of control of the City of London. We can only guess what advantage that might bring!

Hadleigh Castle was built 1215 onwards of Kentish ragstone probably from a quarry near Maidstone, imported to Essex via the Hadleigh Ray.

In 1594 John Norden drew a group of islands for Canvey stretching eastwards past Southend and extending further south, before reclamation began in 1622

Figure 4 borrows from a map by William Mudge of 1801 and an OS of 1805. This shows Hadleigh Ray giving fairly direct access to the wharfs serving Hadleigh. Leigh Creek directly connects to the main river. A shallow passage across the sand was marked with a yellow buoy into the 1960's

Figure 4

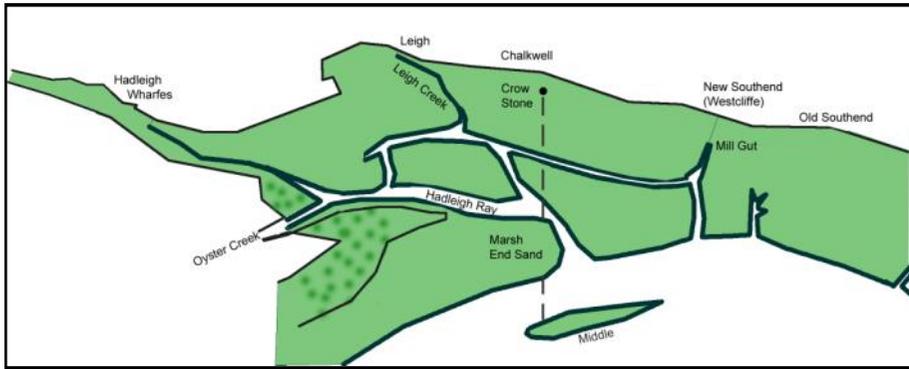


Figure 5

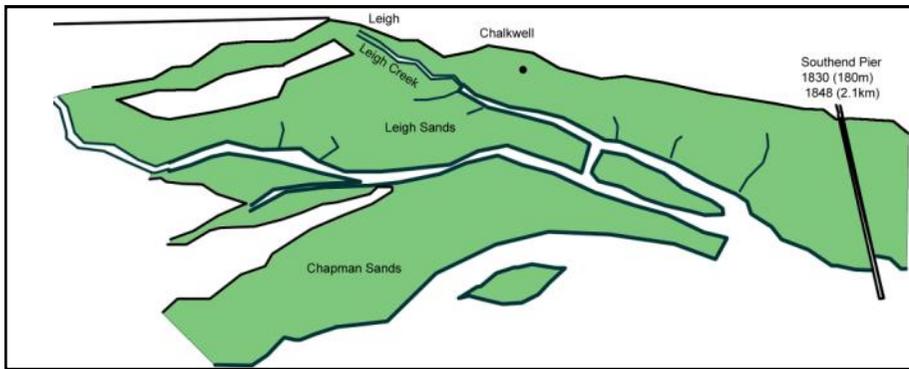


Figure 5. Southend Pier was built 1830 to 180 metres, then 1833 to 540m then 1848 to 2.1km. The railway to London opened 1854. An Ordinance Survey map first showing these features also shows that the drainage of the foreshore has been dramatically changed by the presence of the pier, with two separate channels to Hadleigh and Leigh.

Figure 6

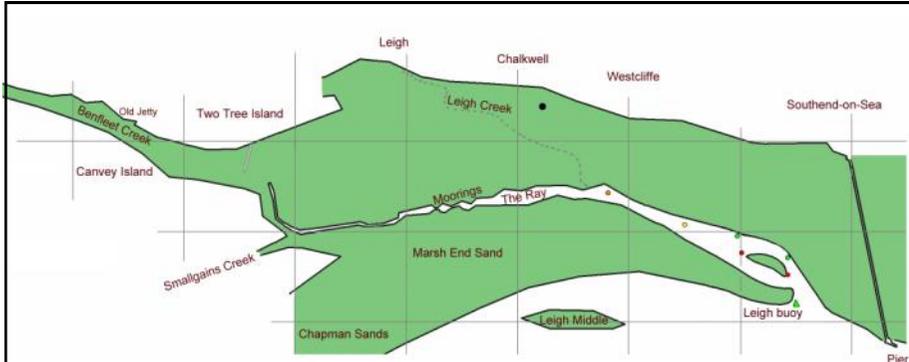


Figure 6. 2016. The sand between these two channels has washed away leaving them sharing the Ray Gut. The new sandbank is an interesting echo of the past.

'Marsh End Sand' extends 3km from Canvey, the 'marsh' also being washed away. The 'Low way' might be a folk memory that there was another entrance running to Leigh Creek. Oyster Creek became Smallgains Creek in the 1930's.

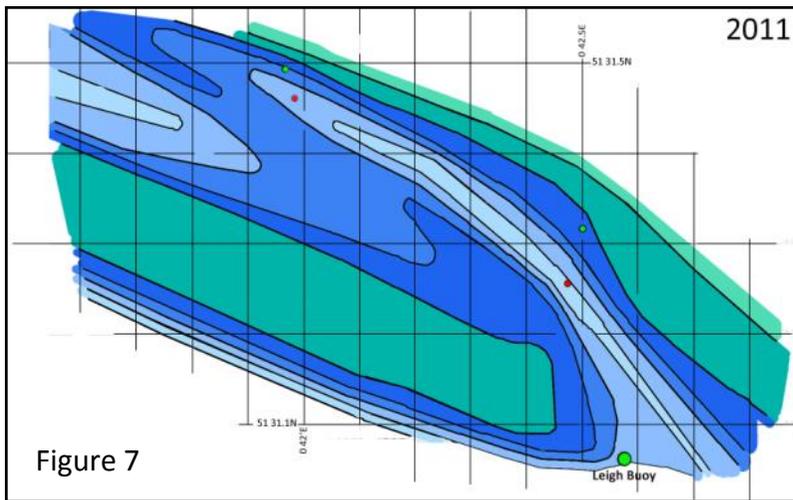


Figure 7

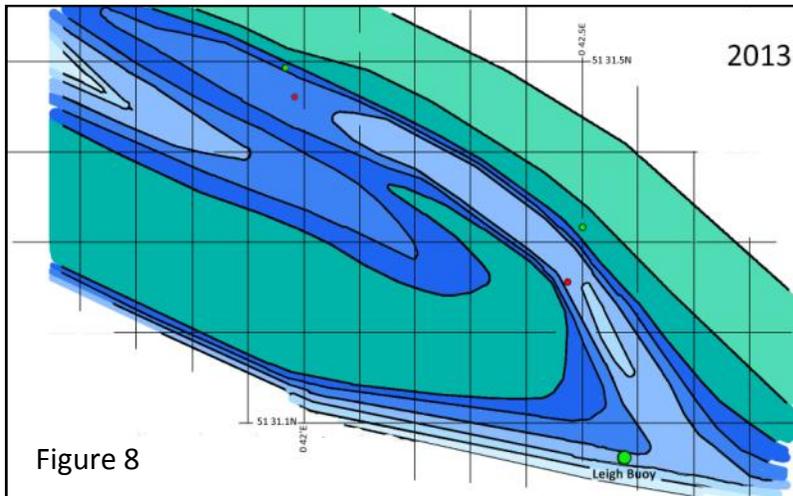


Figure 8

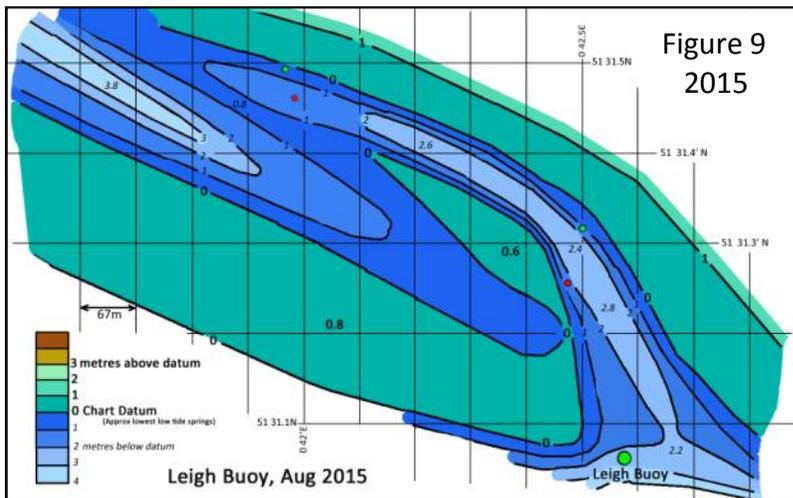


Figure 9  
2015

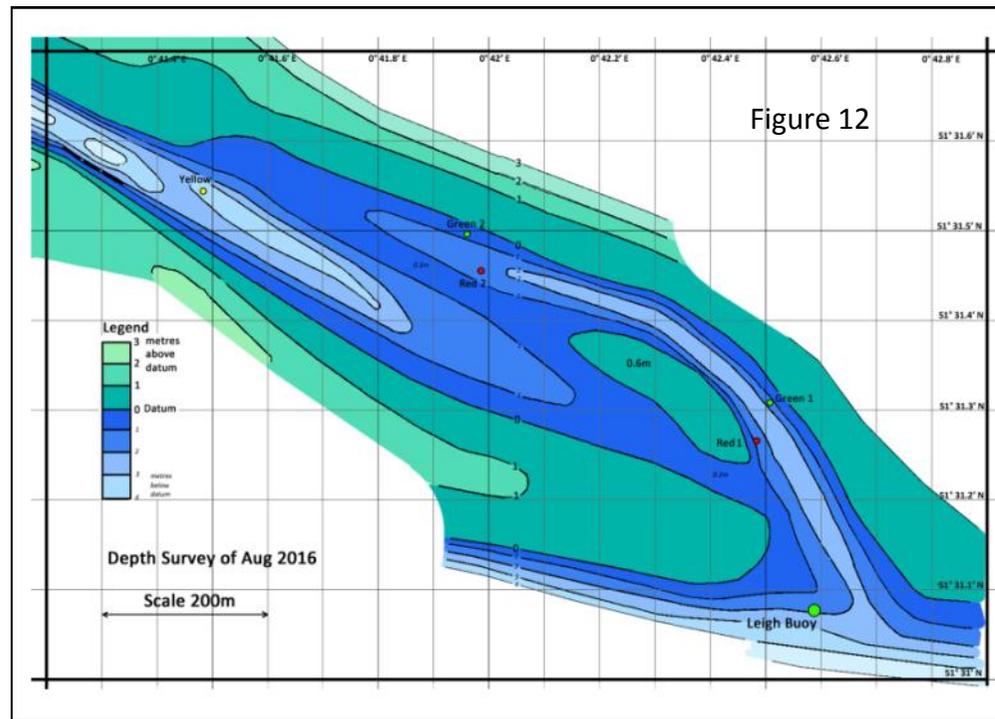


Figure 12

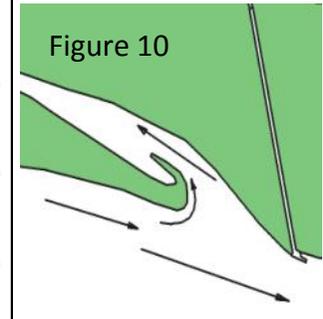


Figure 10

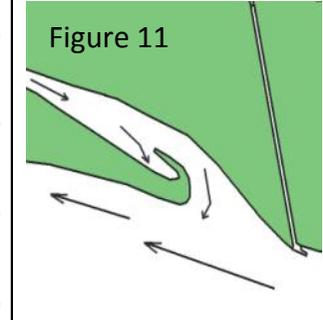


Figure 11

**Surveys over the last few years** show a hook of sand forming on the end of the main sandbank and moving away north. This forming and shedding over a cycle time of about seven or eight years may be a regular feature but it's not been recorded before as far as I know.

After low tide the water in the Thames continues to flow east for about an hour due to its inertia. At the same time the Ray is filling with the new tide. The effect is to carry material in a hook around into the Ray. Fig 10

After high water the water in the Ray is flowing out while the main river flow continues west for an hour. It may be this tends to excavate behind the hook material eventually separating it from the main sand. Fig 11.

The survey of August 2016 (Figure 12) show that the sandbank was starting to detach and move northwards. The deepest water for an incoming boat at low tide is a bit to the north of a direct line between the buoys Green 1 and Green 2. But the water over the sand ridge after the second Red/Green pair is getting shallower, whereas the direct route into the Ray is getting a little deeper. In future years the direct route may become the favoured way into the Ray until a new hook forms.

**Disclaimer:** If you use these charts, you do so at your own risk.

Mapping the local seabed with home-made equipment takes time and ingenuity. The resulting charts should be accurate enough to help a boat find it's way into the Ray and up Benfleet Creek without running aground too often, and this is their main purpose. The sea floor and buoyage changes with time and there will almost certainly be inaccuracies in the manually drawn charts, but they are the best I can do. Please use them with your usual caution of published material.

**How to survey a creek.** If you know the date and time then you can use tide tables to predict the water level above a datum. A depth sounder can measure the distance down to the bottom so you know the mud height above the datum. If you know your position (Lat and Long) you could write this number on a chart, then estimate contours.

**Equipment.** From a dinghy a depth sounder is put over the side and connected to a custom recorder. This takes a signal from a GPS module, combines the data and writes it to a micro SD card. Later, on a PC, tide information is added and knowing time, position and depth a chart can be drawn. Effectively you are using the water surface as a spirit level. There can be various adjustments with the aim of improving accuracy.

The picture shows me using an older level of equipment which used a chart plotter for position information.

The yellow 'blob' is a newer development with all equipment in one unit towed behind a big boat, which is a quicker way to get to the area near the Leigh Buoy.

Phil Bostock, November 2016

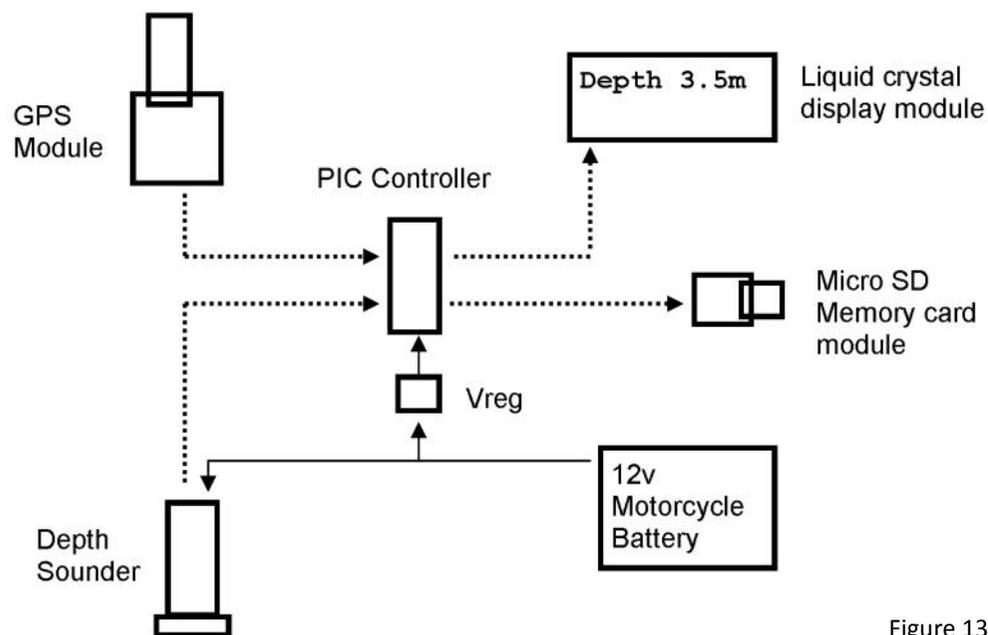


Figure 13

