

August 2017

Hardcastle/Lowe Yacht Design – Designer Comments on the Cygnet 20

The original rough design notes from our first meeting, at the end of 2013, with the builder David Bradburn from Bluewater Cruising Yachts listed the following:

- Maximum length to fit a 20ft container.
- Aesthetics to compensate for lack of size.
- Classic lines and sail plan at an affordable price.
- Carbon fibre tube spars for ease of handling rigging or unrigging.
- High peaked gaff rig for good simple sailing performance.
- An entry level cruising yacht at an affordable price.
- Water ballasted for good sailing performance but light to trailer when unballasted.
- Overnight or weekend accommodation for a couple or a family of four.
- Lead ballasted aerofoil grp swing centreboard for ease of and trailering or beaching.

After our first good sail from the Boat Show site at Darling Harbour down Sydney Harbour and up Middle Harbour to the launching ramp at Roseville upstream of the Spit Bridge we are satisfied that our design efforts have matched the original design brief. Under the easily handled jib and gaff mainsail rig performance was good with only a touch of lee helm when sailing to windward in very light breeze. Once the breeze picks up slightly the helm is nicely balanced.

We have worked with David for quite a long time now, helping with a number of different things from designing fittings to re-organising the structure of boats and stability investigations. We were delighted when David talked to us about building a trailerable traditional styled yacht. There are quite a few of this style of yacht in the UK, but very few in Australia.

Coming from just outside the “Old Cardiff”, in the Bristol Channel, I am keenly aware of this style and have long admired the likes of Cornish Crabbers, Norfolk Gypsies, not to mention the famous Bristol Channel Pilot Cutters. Their speed and seaworthiness is legendary, and for good reason: the Bristol Channel has the second highest tidal range in the world, at around 38’ on neap tides, and up to 42’ on spring tides. (11.6-12.8 m for those not familiar with Christian units). Consequently the tidal races are ferocious and a great deal of skill is required along with a superb vessel.

One of the first things we picked on was that the boat should fit into a 20’ container, thus defining the size. There were not few times when designing the boat that we thought “if we just had a few more feet...” then fitting it all in would have been so much easier. However, we stuck to the brief and I think have managed to produce a boat that belies its diminutive size.

We did have a contest between the accommodation and the cockpit size, but I believe that the result speaks for itself in that we have a dining area that four people can sit at below whilst maintaining a comfortable cockpit that three or four people can sail the boat without falling over each other. Equally as important, you can really stretch out in it!

We are very pleased with the way that the layout below has worked out. One of the conundrums when designing in an office is getting the ergonomics right. The added challenge is that the expectations vary with the size of the boat. We feel that the berths are very comfortable, especially in a yacht of this size.

A similar sized yacht I sailed in the UK had only 2 berths, which were definitely not as generous. In fairness to the vessel in question it was designed some time ago, and it has enjoyed enormous success.

There is a porta potti chemical toilet tucked under the forward berth. Add to this the opportunity to boil a kettle, create a meal and be able to wash up afterwards. A couple of eskies under the cockpit for food and beverage storage complete the picture.

The aesthetics of a boat will always be subjective. We hope in the Cygnet 20 we have achieved something that stands out in a crowd, and harks back to a time before marinas and less crowded waterways.

There will no doubt be more than a few who would question the gaff rig. It does after all have a reputation of not being very good to windward. The origins of the gaff rig are a little uncertain but it is fair to say that it developed from spritsail and lug rigs.

The development of the sprit to a gaff reduced the amount of work required to tack and gybe the vessel dramatically. Whether the rigs of the fisherman and traders who developed it would have evolved into Bermudan rigs will never be known with the advent of steam and internal combustion engines taking over from sail.

The gaff rig is synonymous with this style of yacht, of that there is no doubt. But does it stack up?

Well for one thing the mast fits within the length of the boat. This makes trailering and storage easy. The mast on the Cygnet 20 is 5.75 m long. If we were to have a conventional Bermudan rig the mast would have to be around 8.25 m long.

The gaff rig is simple. For this modern version, with the exception of the swaged turnbuckles, anything can be fixed with a lashing. Even if a shroud does break it can be jury rigged. The carbon spars have the benefit of being light, enabling the mast to be stepped easily by one person. The same applies to the gaff and boom in that it is easier to raise the mainsail.

The gaff rig is a low tension rig, especially compared to Bermudan or macaroni rig. It gives the enthusiast another string to play with, but also forgives those less experienced by being very forgiving. It will propel the boat easily despite not being set up to look like the Beken of Cowes photos of yesteryear.

Simply dropping the head of the gaff by easing the peak halyard depowers the mainsail, but the sheet can be left tight. This means that control of the boat can be maintained without the boom crashing around. The roller furler on the jib takes but a few seconds to roll the jib completely, thus making the overall sail handling simple and easy.

Now back to the question of windward performance. In the days of working sail, the boats that sported a gaff rig were all long keel boats. I think it is fair to say that long keel boats with macaroni rigs don't go to windward very well either. So the question becomes is it the rig? or is it perhaps more to do with the hull.

The Cygnet 20 has a significantly more modern hull shape, but together with a properly aerofoiled centreboard, its windward ability will be much more akin to a modern sloop than those working sail.

On our sail back from Darling Harbour to the boat ramp at Roseville we came on the wind in Middle Harbour. In fact we beat through under the Spit Bridge despite having to lower the gaff to get under the bridge. Someone with a taller rig would have to wait for the bridge! We found the helm to be light on the wind, responsive but steady in a tack. Off the breeze in a gust the helm can load up a little but as the boat accelerates quickly it eases up nicely.

Another very useful advantage of the centreboard and lift up rudder, apart from making trailering easy, is that you can nose up to the beach and jump ashore! The centreboard lifting mechanism has been engineered so that no more than 14 kg of effort need be expended to lift it up.

There are a couple of other points that we should mention.

One is the choice of using a dedicated well for the outboard motor. We decided that any detriment of having the outboard permanently in the water would be far outweighed by not having to struggle getting motor out of the cockpit locker and dangling it over the back of the boat in order to mount it on the transom.

The second is the water ballast. The idea of the water ballast is to give the boat a little extra displacement while sailing. Why do this when a lot of boats are expounding on how light they are?

Stability is governed by a few factors: vertical centre of gravity (VCG), beam and displacement.

The beam of the boat is clearly fixed, but the VCG and the displacement can be varied. By adding some water ballast the boat will be more stable, and more comfortable. By being able to discard the water ballast the boat can be trailed behind a normal family sized car. As for the VCG the shorter and lighter spars, as well as being easier to step, contribute to lowering the centre of gravity.

The water ballast is let into the boat via a skin fitting and valve in the cavernous port cockpit locker. Once the tanks are full the valve is closed. To empty the tanks a generous bilge pump is diverted to empty the tanks. Our first effort at doing this took around 150 strokes of the pump, which did not seem too hard.

It seems an interesting quirk that having grown up near the old Cardiff, “Old” South Wales, I have been involved in the design of a boat being built in the new Cardiff, Newcastle, New South Wales.

David and his team have produced a boat that will stand the test of time not only in its styling but in its construction. It should be no surprise that Bluewater Cruising Yachts have applied the same high standard of build quality and exceptional finish to the Cygnet 20.

We have enjoyed being involved with David, Kevin, and all the staff at Bluewater Cruising Yachts, and are delighted with the result.

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