



# Sailing on the *Borderline*

*Borderline* showed its pedigree straight out of the blocks with a discarded fourth from eight starts at the 8.5m nationals in March to finish runner-up to *Dirty Deeds*.

Words **Rebecca Hayter** Photos **Mike Hunter**

The ultimate aim of every helmsman on *Borderline* is to achieve ‘the eggs’, that is, three zeros on the speed log. That means the paddlewheel for the speed log in the starboard hull has been flying above the water for long enough that it’s no longer registering motion, and that means the Eaton 8.5m catamaran has a boat speed of around 14 knots.

Sailing on *Borderline* – the cat named for two border terrier dogs – tends to be

frenetic. She’s the latest pair of hulls to take a look at the 8.5m class introduced by the Multihull Yacht Club in 2004.

Andrew Potter was a monohull sailor, but articles in *Boating New Zealand* on earlier 8.5m cats *Attitude* and *Tigre* convinced him to build his own. Why? Speed.

Andrew commissioned the design from Andrew Eaton, best known as part of the Bakewell-White Design team in 2006. By then the 8.5m was an established racing

**“The cool thing... is that you can build it in your backyard out of relatively cheap materials.”**

class, and Andrew asked the designer for a fast, exciting racer with the option of cruising. Although a trimaran would have been better for cruising, Andrew felt a cat would be faster off the wind and wouldn’t “wobble” at anchor.

He bought a 40-foot container to use as a building shed and the Gougeon brothers’ book, *Wooden Boat Construction*.

“I’m a bricklayer by trade and thought, ‘how hard can it be?’ It wasn’t any harder than I thought but it took a hell of a lot longer than I thought. I learned an awful lot along the way,” he says.

“The cool thing about the 8.5m is that you can build it in your backyard out of relatively cheap materials, so you’re not wasting much if you stuff it up. As you

**At a glance** ▶ loa x beam 8.5m x 8.2m ▶ engine secondhand Honda 15hp 4 stroke outboard ▶ cruising speed 8 knots ▶ maximum speed 28 knots ▶ price as tested \$110,000



a whole lot differently,” Andrew says. “I should have got more involved with the guys at the Multihull Yacht Club during the build because it’s a massive wealth of knowledge there. A lot of them have built their own boats. It would have made it simpler and faster.”

As it was, *Borderline’s* gestation was 17 months.

The hulls are one-star accommodation, built for speed, not comfort. The starboard cabin has enough room for one person, a head and the odd shelf. Ditto for the port hull – but without the head – and usually a stack of sails. However, the accommodation doubles its star status with a clever addition which converts *Borderline* from sports car to caravan: the pod.

Also designed by Andrew Eaton, the pod contains a double bed, fold-down table and basic galley and is secured between the two hulls, just aft of the mast. The trampoline there is removed to provide foot room when seated in the pod, and the boom is raised to a higher gooseneck. The pod fits on a tandem trailer and weighs 140kg, so Andrew has to use the travel-lift at Gulf Harbour or the Etchells crane at Westhaven Marina to fit it onto *Borderline*.

We set off into a rainy north-easterly of around 14 knots, although the choppy, wind-against-tide sea state had the outboard doing the ‘wah-wah’ as the prop cleared the troughs. We hoisted the square top mainsail and self-tacking jib, which hanks on. The rig rotates, so all halyards are controlled at the mast.

I tried to be helpful, but sporty little catamarans have a high degree of stability and make sudden, abrupt corrections to every wave. I was also doing the heavy-footed foxtrot of walking over the trampoline so I was feeling about as graceful as an overweight corgi.

We were sailing with Chris Smith, superyacht skipper, on the helm, Andrew next to him on mainsheet and me in the forward position on jib. Then, I got soaked by bow spray. Andrew promised me that pretty soon I’d be having so much fun, I wouldn’t care. He was right.

Seconds later, it went quiet, the spray stopped and we were flying a hull. Only about 225mm of leeward hull was in the water, allowing Chris to rotate up into the breeze, increase the apparent wind and go even faster. Ten knots boat speed upwind is pretty normal, at 35 to 45 apparent

get through the process you can change the way you do things and get more complicated. We built the beams first, because they were an easier shape to build.”

Initial components, such as the bottoms of the hulls, were made from plywood and fibreglass, but as the build progressed the boat became increasingly race-oriented. The compression strut, added later, is vacuum-bagged carbon Nomex, post-cured.

“If I ever did another one, I’d start off

**Test conditions** > 12-18 knots north-easterly, wind against tide chop, three crew

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**At the helm**

The twin rudders are managed by a connecting rod, with tillers each side. The helms are light, requiring minimal movement to guide the boat on apparent wind. The main ergonomic challenge comes just before a tack, when the tiller must be flipped over to behind the runner and clipped into position before the helmsman crosses to the other side. All-round visibility is good, depending on headsail.

**Cockpit**

The cockpits provide leg room for the crew, working space for winches and a little shelter. The crew – usually three – sit on the flattened coamings, with the helmsman taking aft position, then mainsheet and primary trimmers who have dedicated winches. Apart from the actual cockpit, there are no hard areas; the rest is covered by trampolines.

**Engine**

An outboard resides in a cavity just aft of the mast and lowers on its conventional system for motoring. It has an electric start so the helmsman can start and stop it from the starboard cockpit. *Borderline's* 15hp outboard pushes it to 9 knots. Under class rules it must be at least 8hp.

**“The sensation at this point is borderline between thrill and fear.”**

wind angle. The sensation at this point is borderline between thrill and fear.

After all, what can go wrong? Well, at least two of the 8.5m cats have tipped up, one of them twice. *Borderline* lost her first two alloy rigs: the first was under-spec'd, the second fell to a section failure. Later in our sail when I took the helm I got even bigger doses of the fun-filled nerves, but luckily I didn't know then that about a mile

away, highly-paid professionals had tipped an AC45.

Andrew had his closest brush with capsize on the Coastal Classic across Bream Bay. The boat was doing the mid-20s, touching 28 knots.

“We stuffed it in so hard [to a wave] we ripped off a hatch on the main beam. That got a little bit scary. In a breeze they are tweaky little boats. And you've got a bit on.

Everyone in the class is so competitive, so they are pushing hard too.”

As an entry-level multihull, the Open 8.5m rule specifies a relatively short mast for the size of the boat. Andrew has taken as much mainsail area as possible, with a low boom and a square-topped mainsail.

Since *Borderline* doesn't need rail crew, she usually sails with just three people, which Andrew likes because it's always

### Sail plan

*Borderline* has a square-topped, fully battened 40m<sup>2</sup> mainsail, self-tacking 19m<sup>2</sup> blade jib and 95m<sup>2</sup> gennaker. A new addition is an overlapping 30m<sup>2</sup> jib. Jib car tracks have been installed either side of the centreline to provide high sheeting angles. The overlapping jib would be flown up to 15 knots true and the blade up to 35 true. The mainsail is reefed at 25 knots. Deckgear is Harken.

### Rig

*Borderline* has a rotating, carbon fibre, wing-shaped mast based on the section of a TP52, designed and built by Hall Spars NZ. The mast has a stainless steel towball which sits in a Teflon cup. A spanner at the mast base controls the rotation. Upwind it's set at around 15 degrees either side. Downwind, when powered up, the mast is allowed to rotate to its maximum angle. It is a simple diamond with inferiors.

### Construction

Cedar strip-planked bottom of hulls and bilge, topsides are 4mm ply with glass inside and out. There is carbon fibre reinforcing in high-load areas, and the beams are carbon fibre throughout. Andrew built the beams first because they were the easiest shape. The 8.5m rule requires boats to be capable of obtaining Cat 3 safety certificate.

### Paint

The striking orange paint is Ford Electric Orange with Pearl, mixed and supplied by Wairau Paint Centre and applied by Kevin Hilt from Mobile Boat Builders. It certainly ensures *Borderline* is noticed. The pearl paintwork reflects in the spray so from the cockpit it looks as though the boat is sailing through orange Fanta.

busy. He was constantly running about like a border terrier on perimeter duty, tweaking halyard, the jib cunningham, the spanner for the rotating mast and, prior to tacks, raising the leeward daggerboard and lowering its windward counterpart. Downwind, *Borderline* uses running backstays, which also add to the workload.

The daggerboards are carbon fibre and have a 1.8m draft when down.

"We went asymmetric because we were

looking for any advantage we could get upwind," Andrew says.

Being asymmetric, the leeward daggerboard produces a lot of lift but this becomes drag if left down in a tack to become the windward daggerboard. They bear significant loads so they have to be strong but this also means they are heavy and hard to move. Lifting them involves a mighty heave on a spade handle followed by a quick flip-over to lock the daggerboard



Andrew Potter

in the raised position. One of the spade handles is on a carbon fibre shaft, the other is timber, courtesy of a gear failure during the Bay Week Regatta.

"Mitre 10 in Paihia doesn't sell carbon fibre spade handles," Andrew explains.

The mainsheet effectively controls the self-tacking jib as well as the mainsail.

"As the mainsheet comes in, the forestay gets tighter.

Coming out of the tack, you give a bit of ease in the mainsheet and that leaves the jib a little fat in depth. As you accelerate, the mainsheet flattens the main and jib by pulling the forestay tighter."

My job in the tack was to cleat off my sheet and get to the other side. To clear the low boom, I tried to drop and roll like Harrison Ford diving beneath the dungeon door in an Indiana Jones movie, but somehow grace, elegance and me never quite got together on *Borderline*.

When it was my turn on the helm, I was given strict instructions to never, ever bear away if things started getting dicey. Well, after that I was always coming up too high and being told to bear away, but "gently, gently".

Originally *Borderline* had a small carbon prod that only just handled the compression load. Andrew wanted to run an inner forestay, remove the bobstay and set up for a code zero so he added a new compression strut designed by Maxwell-Hall.

It seemed like only minutes before we were off Rangitoto Light, so we tacked around to extend the prod and hoist the gennaker. The true wind dropped, taking the apparent with it – it was almost dull with both hulls in the water. We dropped the kite, heated up, and once around North Head, hoisted again. Seventeen knots is no sweat, as Andrews points out.

"You get so comfortable so quickly, blast reaching at 24 knots just seems normal."

Reaching is "the angle of death" he says, because if a gust hits and you want to depower by coming up into the wind, it's a long way before you'll stop generating apparent, and if you want to depower by bearing away, you've got the same problem. So you can start burying the bow and that's frightening.

Or in other words, *borderline*.

## SPECS

**model** Eaton 8.5m Catamaran  
**loa** 8.5m  
**lwl** 8.2m  
**beam** 6.3m  
**displacement** 1000kg  
**draft** 1.8m boards down, 0.250m boards up  
**maximum air draft** 1.26m  
**engine** Honda 15hp four-stroke outboard  
**propeller** Yamaha high thrust  
**fuel** 20 litres  
**holding tank** 40 litres  
**cruising speed** under motor 8 knots  
**max speed** 28 knots  
**price as tested** \$110,000  
**designer** Andrew Eaton, Bakewell-White Yacht Design  
**builder** Andrew Potter

## OUR VERDICT

**I'm full of admiration for anyone who builds their own boat, especially in just 17 months. It's also fantastic to see the Open 8.5m class well-established, spawning seven boats in four years – Tigre, Dirty Deeds, Attitude, Epsom Salts, Lucifer, Meltdown and Borderline – and fulfilling its intended destiny in providing some stunning racing.**

**The newer boats are faster, which is as it should be, and Borderline regularly sails five times a week.**

**"Fast yachts attract good yachties so that helps you go fast too," Andrew says. "You're never short of crew who know what they're doing."**

**Borderline may be the cat named for dogs, but she delivers on-the-edge thrills. It's well set-up, and is no more of a physical challenge to sail than any sports-oriented yacht. Technically, it's also a progression, from plywood in the hulls to vacuum-bagged carbon fibre, so the class is providing a platform for learning the physics and chemistry of boat design, which in turn provides a deeper understanding of the sailing.**

**Andrew's verdict?**

**"I would recommend anyone to build one for themselves because it's good fun."**