

# Outpost eco-cruiser



**BOATING**  
NEW ZEALAND



The Roger Hill 10m powercat Outpost's super-efficient hulls can be seen in action in these pictures with the boat cruising at 16 knots. Outpost cuts cleanly through the water, attaining a top speed of around 20 knots. On one engine with the other tilted out of the water, the boat manages nearly 15 knots. There's very little fore and aft pitching, and manoeuvrability is good, even on one engine. With a beam of 4.5m, there's plenty of room for accommodation inside and a useful cockpit.

Tied up at her marina berth, *Outpost* looks bigger than her 10m overall length. With 4.5m of beam, the saloon is generous, though the boat is effectively an 8m design because the ends of the boat don't carry accommodation. The wing deck stops well short of the bows, which are bridged by a netting trampoline, sailing cat-style.

Aft, the hulls extend well beyond the cockpit, steps affording access to boarding platforms either side, also sailing cat style. Outboards are mounted right aft and tilt clear of the water. A skeg adds directional stability and allows the hulls to take the bottom, even with the engines down.

With a waterline beam to length (BTL) ratio of 13:1, *Outpost* is as radical as Hill dared to make her. He explained that the BTL ratio should be as great as possible for maximum efficiency. *Outpost* comes close to the 15:1 ratio favoured for larger displacement power cats, but a 15:1 ratio would have restricted usable space inside the hulls and reduced reserve buoyancy. Planing catamarans typically have waterline beam to length ratios of 8:1 or less.

The cockpit is wide rather than deep. It's spacious enough with plenty of stowage in bulkhead lockers and a full-width transom locker. A pair of dinghy davits on the transom accept the inflatable tender. Engine control cabling is routed into the transom locker where it's directed into a conduit running under the wingdeck to the helm station. Although exposed cabling and plumbing for the boat's exterior shower take up some of the space, there's still ample room inside the locker for bulky items.

There's heaps more room in huge

**THIS BOAT OWNER'S FIRST EXPERIENCE WITH A POWER CAT WAS A TORNADO SAILING CAT, ITS RIG removed and a cabin added, powered by an 18hp Tohatsu outboard. The resulting powerboat was fast, stable and popular with the family, opening his eyes to the possibilities of displacement power cats.**



It also taught him a valuable lesson: the modified Tornado managed 16 knots with the 18hp Tohatsu, exactly the same speed it later achieved with a 40hp outboard. Hull shape, not horsepower, determines a displacement craft's velocity.

*Outpost* is a modern and far more comfortable interpretation of the owner's first displacement catamaran. It's the first design of its type for Roger Hill, better known for planing and semi-displacement power cats, built to a high standard by Peter Brooking of

Windblades in Pakuranga.

Construction is in composite – the cabin top and hulls below the chine are female-moulded, with computer-cut, resin-infused flat panels in the remainder of the boat. Resin infusion imparts superior lightness and strength; computer cut panels are easily supplied in kitset form for future production runs.

Hill's brief was for a fuel-efficient boat capable of reasonably fast, comfortable cruising in the Hauraki Gulf in most condi-

tions. It also had to be easy to operate and maintain. Initially, *Outpost's* owner looked overseas, becoming interested in a production displacement power catamaran from an Australian manufacturer. But once he took freight into account, the Aussie cat worked out no cheaper than having a custom boat built in New Zealand where he could have more input into the design and build.

Brian McMahon of Superyacht Services introduced the owner to designer Roger Hill. McMahon has continued his association with the project, adding ideas and helping in other ways to make it a success. He intends to promote and market the boat for production building.

For the owner, an unexpected bonus of building the boat here was the team of excellent craftsmen at Windblades, under the leadership of Peter Brooking.

"The build and finish quality are superior to the Australian production boat we looked at," he told us. "We now have a better, more practical boat that performs brilliantly in the conditions we experience here."

From the outset, Hill was keen on the project, which posed interesting design and build challenges. He enlisted the help of another naval architect who had specialised in narrow hull resistance calculations as part of his degree course, and whose numbers correlated with Hill's in-house calculations.

The long, narrow hulls incorporate deep-vee sections forward, to slice through the waves, morphing into U-sections in the middle and flat sections aft. There's no immersed canoe body aft, as is commonly seen on displacement catamarans, while knuckle and bow immersion are minimal to reduce

any tendency to bow-steer. Hill relies on the boat's asymmetrical hulls to provide sufficient buoyancy forward.

The resistance calculation figures were encouraging, predicting 18 knots with twin 50hp outboards. The owner opted for 60hp high-thrust Yamaha four-strokes since these were available at a comparable price and offer 17-amp alternators for extra charging capacity. Hill was a little worried about the bigger engines' extra weight as too much weight in the ends can cause pitching; he moved the batteries forward slightly to compensate.

*Outpost* exhibits all the signs of a successful project: the participants were full of praise for one another and we joined a happy crew of owner, designer and McMahon, as promoter, for a run in the boat. Brooking was unable to join us due to work commitments.

STORY BY JOHN EICHELSHEIM ■ PHOTOS BY MIKE HUNTER



## DIESELCRAFT EVALUATIONS

Vessel tested with 4 POB and 300 litres diesel.

Indicated Eng. RPM	Litres/Hour Single	Litres/Hour Both	Gals/Hour Both	Ind. Speed Knots	Corrected Speed	Litres per Nautical Mile	Nautical Miles per Gall	Range Naut.Miles
4500	4.4	8.8	1.94	n/a	13.7	0.64	7.08	560
5000	6.9	13.8	3.04	n/a	15.6	0.88	5.14	407
5500	11.0	22.0	4.84	n/a	17.4	1.26	3.60	285
5900	13.7	27.4	6.03	n/a	18.7	1.47	3.10	246
Single Engine (other engine tilted up)								
4500	5.8	n/a	1.28	n/a	9.7	0.60	7.58	602
5000	8.9	n/a	1.96	n/a	11.6	0.77	5.93	469
5400	11.5	n/a	2.53	n/a	13.3	0.86	5.26	416

NOTE: RANGE IS BASED ON 90% OF TOTAL FUEL CAPACITY, AND CALM CONDITIONS.

Measured Mile Time	3 min 12.17 sec
RPM	5900
Speed	18.73 knots

Helm station and galley are simple but functional. The opening window in front of the helm was welcome on a hot day.

Outboards tilt completely out of the water, reducing maintenance. They can be freshwater flushed in that position.

underfloor lockers in each hull running all the way aft. However, in keeping with Hill's instructions, these and similar spaces in the bows have been left largely empty to keep weight out of the ends. They're really suitable for only light, bulky items, though the lockers do house *Outpost's* starting batteries tucked up high under the cockpit sole, one in each hull. House batteries are kept in the forward end of the port forward cabin. A solar panel mounted on the cabin top supplements the engine alternators to charge *Outpost's* house batteries.

*Outpost's* bow lockers are much less deep; the bottom half of the hulls are sealed compartments to remove any temptation to fill them with gear. Ground tackle and the boat's Dorado rope-chain capstan are relatively light-

weight. Access to the bows is good via non-slip side decks. There's no railing around the foredeck but handrails on the coachroof are useful.

Weight control has been central to the boat's success. It was closely monitored during construction and the owner has been careful to heed the designer and not overload the vessel. When it went into the water it floated well above the designer's datum line, indicating the builders had successfully kept weight down, shaving 300kg off Hill's initial design displacement estimate. Loaded displacement is 4135kg. As a light displacement design, she doesn't need heavy, structural bracing so most components are lightweight.

Most of the boat's weight is concentrated in the middle, which is also where her occupants will be. For trim reasons, tanks are positioned in various places in the central portion of the boat. The 150L duty water tank is in the port hull; a 150L top-up tank in the starboard hull transfers water to the duty tank as required. Each motor has its own 200L

fuel tank, so fuel levels should drop at roughly equal rates.

The light-filled saloon is relatively simple: a C-shaped settee on the starboard side with a demountable table facing a simply equipped galley to port. A sliding door opens onto the cockpit, as does a sliding window in the aft bulkhead. *Outpost's* galley features a fridge, two-burner gas hob, califont and a stainless steel sink and drainer. Under-bench stowage is generous.

There's plenty of head room. The owner got Hill to raise the cabin top slightly to accommodate his 6-foot 4-inch sons. With hindsight, Hill feels he could have lowered the wingdeck slightly to achieve the same result, especially since *Outpost* floats above datum. So far, the wingdeck – 700mm above the water – has yet to make contact with a wave.

Steps lead down into the hulls where sleeping accommodation is surprisingly generous, as is the easy-clean head/shower in the starboard hull. To port there's a single berth aft with a slide-in, open

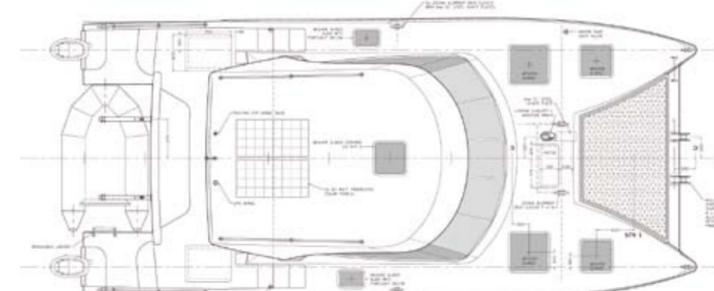
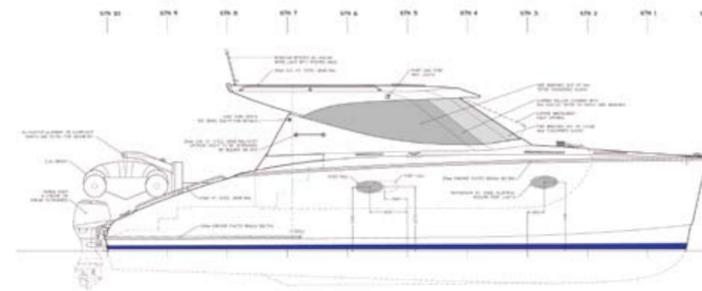


fronted double berth forward. Both are well endowed with gear stowage.

To starboard there's the head aft and an enclosed, transverse double berth forward. A locker in the forward bulkhead contains batteries, switches and a voltage/amperage monitor for the solar powered charger and house batteries. Hill has designed an alternative layout for an Australian client featuring two enclosed double cabins, one in each hull, by slightly extending the wingdeck.

To keep costs under control, the boat's electronics package is relatively simple, reflecting its intended family cruising role. A Lowrance LCD chart-plotter-GPS-sounder takes care of navigation duties; there's a VHF radio, stereo system, stainless wheel, BEP switch panels and standard Yamaha gauges taking up the rest of the boat's dashboard space at the central helm station. Yamaha controls incorporate a handy synchronised trim feature. An opening front window and overhead hatch were welcome on a hot day.

There's no helm seat, which would



The walk-in master cabin is spacious. House batteries and voltage monitors are mounted in the bulkhead locker.

probably intrude too much into the saloon, though a freestanding stool would suffice in most conditions, such is the boat's ride and stability.

The ride is remarkable. We experienced fairly benign sea conditions, but *Outpost* has since been tested in much less pleasant conditions. The bows slice through the water, barely lifting on the wave faces, producing an uncannily smooth, relaxed ride. All the good work put in by designer, builder and owner have ensured *Outpost* pitches hardly at all, so there is no tendency to lift her props clear in a big following sea – always a possibility in displacement power cats if weight in the ends make them pitch excessively.

In a beam sea there's some choppiness, the result of the design's inherent stability, which produces a quick motion, but this is a feature common to all catamaran hulls.

Top speed is close to 20 knots – we clocked a little more with the tide pushing us – but *Outpost* will do 15 knots on one engine. We tried it, tilting the port engine completely clear of the water. Sure enough, we quickly reached 15 knots and

control and manoeuvrability were only slightly compromised. Not only is this a useful safety feature, it means some owners willing to accept a lesser top speed might opt for smaller engines. Twin 30hp engines cost much less but should still give 15 knots boat speed.

A cruise speed of between 13 and 15 knots was comfortable and economical, as the fuel consumption figures show. At a shade under 14 knots, with the engines spinning at 4500rpm, total fuel consumption is just 8.8 litres per hour, giving a range of 560 nautical miles. Dieselcraft Evaluations was unable to measure fuel consumption at lower horsepower/revolutions.

The engines provide excellent low speed manoeuvrability, helped by their wide separation and oversized propellers. Acceleration is smooth and linear. Of course, there's no sensation of 'getting over the hump,' as experienced in planing hulls, but it's hard to look back at the wake and convince yourself the boat isn't planing when you're doing 20 knots.

Although naturally quiet, especially at low revolutions, there is quite a bit of hull resonance when the motors are on song. The noise isn't bad, just a little more assertive than we expected.



The owner agrees, putting the booming right down to the large, empty spaces directly in front of the outboards. There's no soundproofing – on purpose to keep weight down – but he's considering fitting some since they've done so well in the weight department. He's also thinking about fitting Vibra-Stop to isolate the engines from the hulls, either in conjunction with internal sound insulation, or by itself. At present, closing the saloon doors and aft window effectively shuts out engine noise.

*Outpost* is an unusual boat, but it would seem a good fit with the current trend towards simpler, more economical, affordable cruising launches. As fuel prices continue to rise, fuel efficiency is likely to become increasingly important to new boat buyers and there is a large portion of boaters unable or unwilling to contemplate luxury launches costing millions of dollars.

A boat like *Outpost* is within reach for many Kiwis. It will deliver reasonably fast, comfortable family boating in an easy to operate, fuel-efficient package. As far as its owner is concerned, it has exceeded his expectations in every way.

The head and shower are unexpectedly large. Huge lockers fore and aft are suitable only for light objects. The empty spaces are not sound-proofed, so there is some resonance when the engines are on song.

## specifications

boat name	Outpost
design name/type	10m displacement power cat
designer	Roger Hill Yacht Design Ltd
builder	Windblades
construction	foam-cored composite
loa	10m
lwl	9.61m
boa	4.55m
draft	0.57m
displacement light	3007kg
heavy	4135kg
deadrise	transitional round bilge displacement hull
max speed	19kts
cruising speed	15kts
fuel capacity	400L
range	560nm @ 13.7kt
water capacity	300L
engines	2 x Yamaha 60hp High Thrust four-stroke outboards
propellers	High Thrust aluminium
price as reviewed	\$400,000 plus GST
kits and hull and deck packages available	

**Suppliers to Outpost include** – High Modulus: reinforcing fabrics and cores; Adhesive Technologies: resins and glues; International Paint: paints; Seamac: windows, sliding door; Cascade Auto Electrical: electrical installation; Giddens Sailmakers: trampoline; Leach Stainless: stainless steel fabrication; Richard Howe Upholstery: interior linings; Hose & Fittings Ltd: plumbing; Weaver: hatches.