



BLUEWATER CRUISING YACHTS

BLUEWATER 400 RAISED SALOON

DESIGN AND CONSTRUCTION DETAILS

Bluewater Cruising Yachts Pty Ltd

A.B.N. 95 076 827 515

39B Munibung Road, Cardiff NSW 2285

Tel: (02) 4956 8522 Fax: (02) 4956 8524

Email: david@bwcy.com.au

www.bwcy.com.au



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Dear Sir/Madam

Thank you for your interest in our Bluewater 400. I hope this brochure gives you an understanding to the commitment and pride which we at Bluewater have taken in developing such a craft.

The Bluewater 400 has proved to be popular in Australia as a purpose built cruising yacht with customers in every state. Its popularity is due to many features as described in more detail throughout this brochure. Essentially, however, it appeals to those who wish to cruise in safety, comfort and style. First impressions are of a solidly constructed yacht with a large amount of space due to the raised living area giving plenty of natural light, no more feeling claustrophobic.

The hull is a seaworthy design, sails well and does not get left behind against comparable yachts. You can take it anywhere in the world and have all the comforts of home. Choice of a two or three cabin layout depending on family or crew requirements, abundant storage and tankage capacity.

A large percentage of our customers are cruising the east coast of Australia and Pacific with no set plans, while some have cruised to America, and others on their way to the Mediterranean. The Bluewater 400 has encountered extreme conditions and has excelled beyond their owner's expectations.

Please read this information at your leisure, and I invite you to experience the Bluewater 400 in her natural environment and while under construction to see for yourself the dedication and craftsmanship we at Bluewater build into every yacht. Only then can you truly appreciate why they are so special.

If you require any further information please do not hesitate to call me.

Yours sincerely,

DAVID BRADBURN
MANAGING DIRECTOR

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BLUEWATER 400

RAISED SALOON

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1. DESIGN

1.1 Hull

The Bluewater 400 is designed by Adams Yacht Design, Australia's most prolific designer of cruising and racing yachts. The hull is of a medium bordering heavy displacement type, which has a Lwl/Displ. ratio of 255, canoe shaped waterline and fine bow which cuts through choppy seas reducing the pitching effect giving a more comfortable motion.

Midships the hull has sufficient buoyancy enabling it to carry the large 1050lt maximum water tankage which is essential for long distant passages. This hull can be loaded to its maximum storage capacity with little affect to its performance. It is worth noting the water and holding tanks are located under the sole which further adds to the vessels stability. This, however, is not calculated into the stability equation.

The low aspect ratio fin keel is moulded in one piece with the hull which not only provides good windward direction with minimal leeway but adds enormous structural strength. In fact one of our customers can account for this having run into rocks at six knots with only superficial damage to its credit.

The rudder is fitted to a skeg providing strength in all directions. The hulls stability is derived from a buoyant midships with a 40.35% ballast ratio, and almost 4m of beam. Using the MSA/Wolfson method to calculate stability the Bluewater 400 falls into the unrestricted safe zone.

1.2 Superstructure

The deck must be both practical and aesthetically pleasing. The Bluewater 400 has achieved this with a large amount of desirable features and a handsome profile.

Firstly, the deck is surrounded by a 75mm fibreglass bulwark with an anodised aluminium toerail attached on top which is hard wearing, practical to tie ropes to and safe when moving around the deck in rough conditions.

The flush foredeck area is unusual in that most yachts of this size need a trunk cabin to gain the headroom down below. Its advantages are being able to work more confidently in rough conditions with the large deck camber being almost horizontal when heeled.

The wide sidedeck and cabin top handrails provide plenty of security when moving forward. All essential sail controls are worked from the safety of the cockpit with the mainsheet track mounted on the cabin roof not in the cockpit which restricts usable cockpit space.

Because of the low profile cabin house, visibility is very good when sailing or berthing, and the wide companionway allows easy, safe access without a bridgedeck to climb over, further exposing the crew to the elements.

1.3 Cockpit

The high cockpit coamings keep the cockpit dry when water is rushing along the decks and the cockpit seats are long and wide enough to sleep on. With the optional cockpit cushions this is a very comfortable area when just relaxing. The cockpit can seat 6-8 comfortably, and is wide enough to brace yourself against the opposite side when heeled.

Ample stowage is provided with two large lazarette lockers and five cockpit lockers behind the backrests on the three cabin layout, and with enormous cockpit storage in the two cabin layout,



attained by the large cockpit locker which can fit pushbikes, scuba tanks, sails, inflatable dinghy, outboard motor, fenders, ropes, etc.

1.4 Stern Platform

The Bluewater 400 is the standard transom configuration, however, if a larger platform is preferred this increases the length to 42' overall. The optional extended version has many features that cruising sailors desire such as a large stern platform with walk through cockpit access. If you have ever had to climb on board with gear you would appreciate this feature.

Comment is often made to this arrangement by serious sailors as to its seaworthiness in a following sea, however, the design of the lift up seat and swing out doors is such that they are interlocking, and very heavily constructed with large fixing points. The ladder fitted to the platform when unfolded extends deep into the water making it easy to climb after a tiring swim.

1.5 Ventilation

Ventilation is extremely important for a cruising yacht and in this department the Bluewater 400 excels. Cross flow ventilation is catered for with cabin side hatches, optional four opening hull ports and standard two cockpit portholes. Flow through ventilation is achieved with five deck hatches opening both fore and aft.

The cabin windows are made from the highest quality 10mm thick acrylic which meets survey requirements. The forward windows are on a shallow angle and have a curved profile providing even extra strength against impact. Our yachts have encountered huge seas with waves crashing on deck with no affect to the windows or their waterproofness.

1.6 Pushpit Arch

The optional pushpit arch is a work of art in itself and provides many practical features. It is made with two transom seats which are comfortable for lounging, and allows passengers to be removed from sail handling but still feel a part of the experience. The main frames are made from 38mm tubing which with additional reinforcing makes it ideal for davits to store the inflatable or hard dinghy. Because of their height it is convenient to walk under the dinghy through to the cockpit, with the extended version.

Most dodgers protect the companionway from wind and water but sometimes fall short of protecting the crew. Our dodger extends far enough aft to protect two crew members when seated forward.

The optional bimini attached has 6 ft headroom from the cockpit seats, and has stood up to 50 knots plus winds. A plastic clear joins the bimini to the dodger and protects the helmsman and crew from wind and spray. Two 64w solar panels are fitted across the top of the pushpit arch which keeps them away from being damaged and clear from most shadows.

2. SAILING PERFORMANCE

Sailing performance is critical to safety at sea. The vessel must perform without vice in varied wind strength and sea state. Form follows function, and this important aspect is where the Bluewater 400 is designed to perform.

Having a SA/Disp. ratio of 18.5 puts her into the cruiser/racer category. She has sufficient horsepower to sail well in light airs without becoming overpowered in stronger wind strengths. Typically she carries full sail up to 25-30 knots comfortably before you would reef. Because of the beam, displacement and sail area makes her a very forgiving yacht to sail, which is reassuring when the weather can change quickly, catching crew off guard. Table 1 below gives typical boat speeds you



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would expect. Hull speed when motoring in ideal conditions is 7.5 – 8 knots depending on propeller type.



TYPICAL BOAT SPEEDS			
TRUE WIND SPEED (Knots)	ANGLE TO WIND (Degrees)	BOAT SPEED (Knots)	SAILS SET
10	120 (broad reach)	6	MPS only
15	35 (windward)	7	Genoa & main
25	90 (reach)	8	Genoa & main
40	120 (broad reach)	9-9.5	Genoa furled 50% with 1 reef in main
50	150 (run)	8	Staysail only

TABLE 1

The figures in Table 1 are based on a folding or feathering propeller fitted.

Sailing to far away locations, as a lifestyle is very exciting and rewarding, not only the beautiful destinations you experience, being at one with nature, but the very challenge of facing the sea and having what it takes. The vessel you choose is critical to this dream being fulfilled.

The Bluewater 400 handles rough conditions admirably. She is a dry vessel due to her 5'1" freeboard, and because of her overall design makes her an excellent sea boat. She performs well in all conditions on and off the breeze. In light to heavy conditions she will sail efficiently 30 degrees to the wind and feels positive when running square before the breeze. She will perform and handle exceptionally well even when reefed.

The sea is to be respected and never underestimated. You can never build something too strong only too weak. We at Bluewater recognise the importance of attention to every detail, and in the past have delivered the yachts we build. This includes the boatbuilder, marine electrician, mast builder and myself as it is hard to let go of something you have created.

3. SAIL HANDLING

As most cruising yachts are sailed by a husband and wife team, sail handling is very important when short-handed. Our yachts have sailed in southern ocean conditions in swells of 11m with seas of 4m. These extreme conditions make it almost impossible for crew to move around the deck.

With this in mind all essential controls should be worked from the safety and convenience of the cockpit. All primary halyards lead to the cockpit through rope clutches. Genoa cars are fully adjustable from the cockpit.

The standard mainsail controls are Selden single line reefing leading back to the cockpit. There is the option of a push button electric halyard winch and Hood Furlboom which makes it even easier to reef. Along with the standard Profurl furling headsail there is the optional staysail furler which both also lead back to the cockpit.

The optional spinnaker pole is stowed on the mast to keep the deck clear of obstacles in case you do have to move forward in rough conditions.



An optional boom brake will help prevent injury and damage caused by involuntary gybing. The standard boom vang strut will prevent the boom dropping if by accident the topping lift is unlocked. It will also support the boom with 6'4" headroom underneath standing in the cockpit.

Spectra running backstays support the mast when the staysail is set. Main and genoa halyards run aft, and an extra genoa halyard can be fitted for backup. The staysail halyard also runs aft. All are made from high grade Spectra rope.

The inclusion of the optional trisail track will mean there is no need to remove the mainsail from its own track. This makes hoisting the trisail much easier in rough conditions.

We only use Hood who are recognised worldwide for their quality and design of good cruising sails. By leading the controls aft this allows the Bluewater 400 to be sailed with shorthanded crew even in extreme conditions.

4. CONSTRUCTION

The construction of the Bluewater 400 which conforms with Australian USL survey requirements is what really sets it apart from most other vessels in its class. The hull is of a solid GRP layup which is preferred over a cored hull due to its impact resistance. The hull ranges in thickness from 11mm on the topsides progressively getting thicker to 26mm around the keel. A 4,500kg lead casting is fitted internally then heavily laminated over. No more keel bolts or leakages to worry about.

The hull and superstructure mouldings are laid up using a glass/resin depositor. This method is preferred over a hand laminating technique because of less air entrapment. Each layer is monitored for glass thickness and resin ratios. Only the most up to date modern equipment is used resulting in a strong, troublefree foundation from which to build from.

High quality ISO/NPG gelcoats are used for their UV stability and gloss retention. The hull tie layer is a resin rich vinylester layer of approximately 2mm thick which prevents any water ingress resulting in osmosis. The hull is further protected from osmosis by epoxy coating the underwater body. We use a solventless clear epoxy resin for the first two coats followed by three epoxy primer coats. This is total overkill according to the epoxy manufacturer (International/Epiglass). We believe osmosis protection should last the lifetime of the vessel.

The deck is foam cored ranging in thickness from 28-32mm which provides maximum stiffness over large areas such as the foredeck and coachroof. The latter is further reinforced with GRP deck beams on the two cabin layout, while all deck fittings are fitted to solid GRP areas with aluminium backing plates on high load areas, laminate thickness is approximately 18-22mm.

Unlike mass produced yachts every floor bearer, bulkhead, engine mount, chainplate knee, mast step, toilet module, furniture structure are bonded to the heavily constructed hull and deck mouldings creating an enormously strong honeycomb structure.

The bulkheads range in thickness from 20-25mm and all furniture is made from 12mm ply. The compression post is made from a 100mm stainless steel box section with 12mm load distribution plates which are bolted to the mast step bearers and mast base. The chainplate knees, forepeak and backstay attachments are extensively reinforced.

All integral tanks are built within the structural floors to maximise tankage capacity. They are protected by two coats of clear epoxy followed by three coats of a non-tasting food grade epoxy tank lining. The water tankage is further supplemented by a stainless steel drinking water tank.



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The strength of construction of the Bluewater 400 can only be described as being massive which is sometimes overlooked when being compared to our competitors. When all is said and done this aspect is what is most critical and must be relied upon in an extreme, unforgiving environment.



5. INTERIOR FITOUT

The interior of a cruising yacht needs to fulfil many criteria. Its purpose is to provide comfortable living within the constraints of a complex hull shape. It must have all the comforts and conveniences one would expect yet be practical and safe in an inhospitable environment. Because of limited space every square inch must be fully utilised, not only storage capacity and tankage but every aspect of the interior must be painstakingly designed to maximise every aspect.

Cabins and bunks must be of a comfortable length, width and height, sufficient clothes hanging space, and general cupboard shelving. Heads need to be large enough to move unrestricted yet not too large so you cannot brace yourself when caught with your pants down or showering.

The galley must provide all the features of a fully equipped kitchen such as twin sinks, fridge/freezer, microwave, manual and pressurised water, gas stove and oven, drawers and cupboard space with sufficient bench space to prepare a banquet.

The navigation area must be usable when heeled at 45 degrees with at least a navigation table of sufficient size to lay a ½ size chart. Navigational instruments must be within easy reach and have good visibility to all screen monitors.

The dinnette must be sufficient in size to seat and dine at least six around the table with the settee opposite to provide good interaction when entertaining.

Of course all furnishings, fabrics and fittings must reflect the style, character and quality of the yacht. At Bluewater Cruising Yachts whether it be the apprentice, qualified boatbuilder or the interior designer we all understand what makes our Bluewater 400 so special.

The practical aspects of the Bluewater 400 includes 6' 8" headroom in the main saloon with 6'1" in the forward cabin. Enormous storage capacity is available under the dinnette and settee as water tanks are located under the sole. Accessibility to the internal structure is critical to maintenance so all headliners are removable to access wiring and deck fastenings.

Cabin sole inspection lids are located throughout to access the bilges. Only positive pushbutton latches to secure doors and inspection lids are used. Well ventilated storage lockers keep foodstuffs and gear from mildew and bad odours. The cabin sole and inside lockers are all sealed with epoxy to prevent water damage / ingress.

There are user friendly features such as drawers fitted on roller runners to allow for easy sliding, gas struts are fitted to the lift up stairs accessing the engine room, and fridge/freezer lids which leaves both hands free.

The timber fitout is what is generally thought of when comparing quality. Even though it is only one aspect of a yacht it probably has the most impact after the exterior styling. We take great pride in our interior joinery and enjoy the challenge of building intricate, practical and stylish interiors.

We have mainly used teak and cherry, however, other timbers are available. Only hand selected veneers and timbers are chosen for their consistency and quality. All furniture corners are rounded for safety and visual appearance. Toe recesses are built into the galley and navigation station giving extra floor space.

Our interiors are designed to give a feeling of spaciousness which totally utilises the raised saloon concept of upstairs living. Choice of two or three cabin layout with variations between them are available.



6. ELECTRICS

This is an area of most frustration with cruising sailors combining complex systems to operate faultlessly in a corrosive environment. We have overcome this by using only large capacity double insulated tinned copper wiring, with all connections double ratchet crimped and sealed which are protected in conduits.

Circuits are individually wired to prevent overloading which if one electrical component develops a fault this does not affect other equipment. All electrical installations are only fitted by qualified licensed marine electricians to international ISO standards 10133 (Small Craft Electrical System).

Good battery charging systems are essential as electricity supply is limited on board. The standard house bank is 4 x 6v deep cycle batteries giving 430 amp capacity with an isolated 21 plate 720 CCA engine start battery. The battery bank can be further increased as an option by 2 x 6v deep cycle batteries giving 215 amp capacity for the electronics and radios only. This provides an important safety feature if the house batteries are flattened in an emergency.

The standard battery charging system is by an 80 amp engine alternator and 2 x 64w solar panels through a smart regulator which trickle charges the batteries. Optional charging systems we have fitted include: engine smart chargers, water turbine, wind generators and inverter/chargers. We are available to discuss and advise you on your individual requirements.

Autohelm instruments have been popular with our customers and have the advantage of being fully interfaced with one another, however, we can fit Navico or Brookes & Gatehouse if it is preferred as they are all comparable.

Refrigeration as standard is an Engel 12/240v air cooled system with extra cooling provided for the motor by a thermostatically controlled fan. This is fitted to a top opening icebox with 75mm insulation around the sides and 100mm on the bottom with aluminium sialation fitted externally. By fitting an adjustable partition separating the fridge from the freezer enables it to freeze more efficiently. Power consumption is approximately 4.5 amps per hour. If an engine driven eutectic refrigeration system is preferred this can be fitted as an option.

240v outlets are conveniently positioned throughout the vessel. These cater for such things as TV/video, computer, galley appliances, microwave and mobile phone. 12v outlet positions include navigation area, cockpit and mast base. The outside outlets are a waterproof two pin type and are great for a hand held spotlight.

The high quality Enertec circuit board is a modular type so this can be customised to fit your requirements. As standard we fit an engraved mimic panel which displays all navigation lights when lit. Lightning protection is catered for by a lightning rod on top of the mast connected to a copper ground plate bolted through the hull.

We have access to the best marine electrical engineers and coupled with our experience you are assured of a reliable and troublefree installation.

7. ENGINE

It is important that a yacht has enough engine power to motor against strong headwinds, currents and seas without having to overwork it. It must also be able to cover long distances if unable to sail due to lack of wind or when fuel supplies are scarce.

We prefer a direct drive installation over a sail drive due to less maintenance worries. The engine and gearbox can be worked on without the need to slip the vessel and electrolysis can affect the aluminium sail drive leg.



The Bluewater 400 is fitted with a 55hp Yanmar diesel which will comfortably motor at 7 knots speed and has a range of 1000nm at 6 knots speed with the standard tanks, or the optional third fuel tank gives a 1500nm range.

Engine controls are located on the pedestal for ease of use with engine instruments in the cockpit protected by a perspex cover. This is the ideal spot because in an emergency you can start the engine without leaving the helm.

The engine is fitted with a highrise manifold as standard which prevents water returning into the cylinder head causing extensive damage.

All fuel tanks are made from 2.5mm thick stainless steel pressure tested, of course, with the fuel outlet drawing from a sump which can be drained. Only the best quality racor filters, fuel lines and fittings are used.

The engine room is fully sound insulated including rubber seals around doors and compressing style locks to ensure a tight seal.

8. STEERING AND RUDDER

The standard steering system is a Whitlock Premiere 'Cobra' drag link. This is a high powered extremely responsive system. Coupled to the 50 mm 316 stainless steel rudder shaft a separated aluminium/bronze tiller arm is fitted for the optional autopilot. The shaft is secured by three rudder bearings with a roller bearing race fitted to the middle bearing giving even extra feel. A stainless emergency tiller can be fitted by removing the cap on the top bearing.

The rudder has 5 x 6mm tangs wrapped then welded around the 50mm shaft. The rudder stock is then heavily laminated to one half of the rudder then joined using a special glass filler with CSM reinforcing.

Superior rudder security is obtained by using the skeg hung construction method rather than the spade hung rudder concept.

9. PLUMBING

The plumbing in all Bluewater Cruising Yachts are designed to be efficient while keeping it simple and user friendly. This is achieved by minimising the amount of through hull fittings with systems sharing common inlets and outlets where possible.

All through hull fittings are of bronze construction with ¼" turn ball valve seacocks. Hoses connected to through hull fittings are double hose clamped to ensure no leakages. Only the best equipment is used such as Whale high volume pumps, and reinforced hoses throughout.

The large 50lt hot water service is heated by the engine and 240v shore power. While on shore power it will give an almost endless supply of hot water and will easily shower 4-5 people from stored heat alone.

10. MAST AND RIGGING

The mast section is 230 x 160mm made from 6061 T6 which is considered the best grade aluminium for this purpose. The finish is enhanced by a silver anodised coating which protects the aluminium



from corrosion. The mast has an extruded RCB (recirculating ballbearing) track which takes the batten cars for easy mainsail hoisting.

The rigging is made from 316 stainless steel 1 x 19 wire. Wire sizes are:

Forestay	3/8"	10mm
Inner Forestay	9/32"	7.2mm
Fore and aft lowers	3/8"	10mm
Capshroud	3/8"	10mm
Intermediate	9/32"	7.2mm
Twin Backstays	5/16"	8mm

11. GENERAL EQUIPMENT

Only the most proven equipment is chosen for its designed purpose, reliability, aesthetics and serviceability throughout the world which will compliment the Bluewater 400's reputation for quality, function and style. (Please refer to the specifications for further description).

Only 316 grade stainless steel is used on all manufactured components. Pulpit, pushpit arch, staunchions, handrails and chainplates are all welded and polished to a high quality finish. All staunchions and railings are 1 1/4" tubing with 5 mm plate bases fastened with 4 x 5/16" stainless steel bolts which makes them very strong in both directions, inboard and outboard.

12. FUTURE

Thank you for spending the time reading through this information. I hope you now have a better understanding as to the design features, integrity of construction and passion Bluewater Cruising Yachts has in building this fine craft. We have enjoyed a steady growth built on satisfied customers, and look forward to continued success from building high quality cruising yachts.

Good Sailing and Bon Voyage.