



# 'Mokare'

## Hart Marine's pilot boat design goes nationwide

**Western Australia's Albany Port Authority has recently taken delivery of the pilot vessel 'Mokare', built by Victorian boat builder Hart Marine.**

Named after a member of the Minang clan who was a guide and mediator during Albany's European settlement, the 'Mokare' is based on the successful 'ORC 15.6' pilot craft design from French naval architects Pantocarene.

The vessel is 16.0 metres in length, with a beam of 5.4 metres and a depth of 2.1 metres. The vessel's draught is 1.4 metres, with propulsion provided by two Cummins QSM11 turbo-charged diesel engines; each rated for 454kW and driving twin propellers. These powerful engines give the vessel an impressive 25 knot operational speed with good fuel efficiency. The vessel is also equipped with an Ocean 3 fender system, and hydraulic lifting man overboard recovery platform.

The 'Mokare's unique self-righting hull form is constructed from moulded FRP carbon composites, ensuring the vessel is both durable and lightweight. This

specialised construction material provides a stable platform for pilot transfer, as well as good manoeuvrability in all conditions. A suspended wheelhouse reduces structural noise and vibration.

Fundamental to the design is the wave-piercing "Beak" hull. A concept evolution after significant research and development, tank testing and sea trials, this hull form combines the characteristics of both planing and semi-planing hulls. It has inherent roll damping qualities, only moderately slowing as the "Beak" bow pierces the next wave.

The stability from the hull's low sailing trim, together with wide decks provides safer pilot transfer when un-berthing at speed. These features also reduce the risk of superstructure damage. Lastly, the vessel's soft landing greatly improves overall asset protection and provides an attractive whole of life cost for the vessel.

The shape and line of the hull, together with its integrated fender system, minimises the risk of the 'Venturi effect', where the pilot boat's hull is 'sucked' to the side of a large ship at speed due to pressure differentials between the two vessels.

Hart Marine has several decades of production know-how in building commercial workboats, specialising in advanced carbon composite construction materials.

After Victoria's Port Phillip Sea Pilots (PPSP) lost a pilot vessel to overturning in Port Phillip's notoriously rough entrance, a global study of the world's best practice pilot boats was undertaken. The study concluded that the self-righting 'ORC pilot boat' of French naval architects Pantocarene was the best all-round design, and Port Phillip Sea Pilots commissioned Hart Marine to build the ORC 14.3 'Ranger' and ORC 18.1 'Akuna IV' in 2008. The vessels were delivered in 2010, and PPSP were so pleased with the vessels that a third craft was ordered.

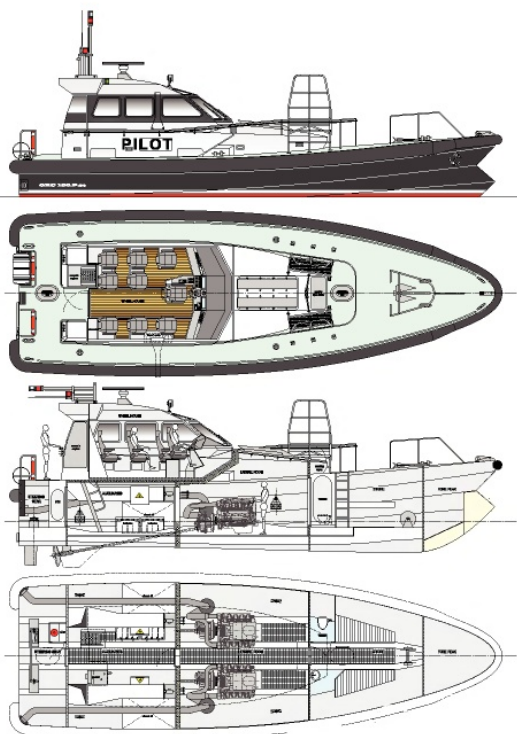
Recognising the success of this design collaboration, Western Australia's Albany Port Authority also commissioned an 'ORC 15.6', requiring a pilot vessel that is able to handle the large swell conditions encountered around the Southdown mining project northeast of Albany. Global oil firm Chevron have also chosen the 'ORC 15.6' design as the pilot vessel for their Greater Gorgon



offshore gas project off Western Australia's Barrow Island.

The Hart Marine story demonstrates the value of collaboration and innovation as a recipe for success, as well as the capabilities of the Australian boat building industry, capable of delivering best practice vessel with unrivalled design and quality.

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'Mokare'	
SPECIFICATIONS	
<b>Type of vessel:</b>	Pilot boat
<b>Port of registry:</b>	Albany, Western Australia
<b>Owner/operator:</b>	Albany Port Authority, Western Australia
<b>Designer:</b>	Pantocarene Naval Architects, France
<b>CAD software:</b>	Maxsurf/Powercad
<b>Builder:</b>	Hart Marine, Victoria
<b>Construction material:</b>	Composite FRP
<b>Length overall:</b>	16.0 metres
<b>Beam:</b>	5.4 metres
<b>Draught:</b>	1.5 metres
<b>Depth:</b>	2.2 metres
<b>Displacement:</b>	22 tonnes
<b>Main engines:</b>	2 x Cummins QSM11 each 440kW
<b>Gearboxes:</b>	2 x ZF 510-1A
<b>Propellers:</b>	2
<b>Steering system:</b>	Hydraulic
<b>Maximum speed:</b>	28 knots
<b>Cruising speed:</b>	25 knots
<b>Fuel capacity:</b>	2,000 litres
<b>Freshwater capacity:</b>	300 litres
<b>Range:</b>	600nm
<b>Radar:</b>	Furuno 4kW
<b>Depth sounder:</b>	Furuno
<b>Radio:</b>	Sailor-VHF
<b>GPS:</b>	Furuno GP-330B
<b>Plotter:</b>	Furuno NN30
<b>Winches:</b>	Muir
<b>Capstan:</b>	Muir
<b>Paints/coatings:</b>	Jotun
<b>Type of fuel:</b>	Diesel
<b>Crew:</b>	2
<b>Passengers:</b>	8 pilots