

# PROFESSIONAL *Skipper*

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# MIKOTAH

## A LEADER IN PILOT BOATS

BY KEITH INGRAM

Port Taranaki is the west gate to New Zealand and the only deepwater port on the west coast capable of handling large ships and all cargo, including petrochemicals, logs, containers, dry bulk products for the agricultural sector as well as providing a base and sheltered port for much of New Zealand's offshore oil and gas industry.

An unusual feature of the port is that it has a beach within its breakwaters adjacent to its operational area. The popularity of Ngamotu Beach by the community remains testament to Port Taranaki's commitment to maintaining a healthy marine environment and safe working practices within the port confines.

When Port Taranaki decided to replace their existing pilot

boat they chose to adopt an international tender process for the design and build. This craft was to be primarily a pilot vessel, however given that it would also be used as a back-up boat for the Pohokura Gas Platform it would need the ability to adapt to both roles seamlessly, including an ability to rescue crew in the event of a fire.

In reading the port's tender documents, a prime consideration was to achieve a launch with a known pedigree in the specialised field of pilot transfer vessels and leveraging on the experience of others. The new vessel needed to be of a proven design, not an untested concept, and be in the 16m to 20m range; one that would be capable of working in the wide window of sea conditions experienced on New Zealand's west coast off Taranaki. To the best of our knowledge this is the first pilot launch in New Zealand to be built and classed to Lloyd's Register Special Service Craft Rules +100A1 SSC, pilot, mono, HSC, G3, MCH. An impressive sounding pedigree I must say.

The new vessel is named *Mikotahi* after the half-tide island at Port Taranaki located close to the foot of the present breakwater.



The smart cox'n command station



The on board pilot station

The vessel has come about as the result of a lengthy evaluation process based around the need to provide a modern pilot vessel compliant with Australasian and worldwide standards for pilot transfer safety.

The project team, consisting of pilots, marine engineers and launch crew, was tasked to develop a vessel specification and looked at proposals encompassing designs and builders from as far afield as Ireland, as well as several New Zealand and Australian companies.

The documents specified twin-engine water-jet propulsion capable of 25 knots with a service speed of 23 knots. A low noise level was deemed a priority with minimal vibration in the cabin. The cabin had to be large enough for both pilot and crew transfers and the vessel needed to have a resilient fender system capable of withstanding the operational knocks and bumps expected in a sustained working environment of pilot and crew transfers at sea.

Wanganui boat builders Q-West, the builders of the port's oil field crew transfer vessel, *Rawinia*, were keen to maintain the relationship, and to ensure they could meet the specifications they went out to the international design market to identify the best vessel to fit the requirements of Port Taranaki.

The solution was found in Scotland with the Camarc Design office recognised as one of Europe's leading small craft design firms. Camarc specialise in the design of seaworthy high speed of working craft, typically ranging from 5m – 35m with speeds up to 45 knots.

When looking at the designed pilot and workboat vessels internationally there appeared to be no one more qualified ▶



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KAB seating throughout the cabin



On the stern the body recovery lifter

than Camarc within their portfolio of designs. They currently have over 75 pilot vessels in service worldwide with more than half water jet powered, as well as another 15 vessels currently under construction around the world. It was with this impressive proven track record that Q-West engaged Camarc for the design side when submitting their tender – which proved successful.

Upon delivery *Mikotahi* will take over the role as Port Taranaki's primary pilot vessel, relegating the current 25-year-old vessel, *Westgate*, to that of reserve pilot launch.

Constructed in 5083 marine grade alloy, 6mm hull and 5mm top sides, the vessel has been built under supervision to Lloyd's Register exacting standards of Special Class Rules and Maritime New Zealand Part 40C for restricted coastal; this vessel will be one of the most advanced of its type to enter service in New Zealand.

*Mikotahi* is powered by twin Scania DI16 072M 900hp (662kW) @ 2300rpm marine diesels driving twin Hamilton HM461 water jets – the largest Hamilton jets ever sold to a New Zealand client. Of note the Hamilton HJ series are sold, marketed and installed by licensed agents, while the larger HM series may only be purchased from HamiltonJet and must be installed under their supervision, thereby maintaining the exacting standard required by HamiltonJet on these larger commercial units.

Because of the vessel configuration, connecting the drive train to the standard required and ensuring absolute dependability and integrity from its propulsion system, Beattys Driveline Technologies were called on for the design and supply of the cardan shafts. These two-piece cardan shafts connect the two Scania powerplants and ZF500 gearboxes to the HamiltonJet propulsion units. Build specifications for this vessel required

the propulsion set up and related components to meet or exceed Lloyd's class MCH standards which involves testing, appraisal and sign off by Lloyd's Register surveyors. All welding on the driveline assemblies was carried out to internationally recognised BS EN ISO 15614 weld procedure. The extensive process included crack and material testing by an accredited metallurgical laboratory. Also below is the Kohler 17.5EFOZD gen-set that supplies 400V ship's power.

Added to this was the requirement for minimal vibrations and exhaust noise both on and away from the vessel. We all know how well noise travels over water, and with the Taranaki pilot station only two nautical miles off the coast it is well within earshot of the residential community. Insulation and sound

The pilot-house is fully isolated and mounted on rubber mounts; meeting the noise and vibration specifications

proofing material throughout the vessel was supplied in two parts; with Foreman Insulation providing the fire-proofing and Pyrotek the sound insulation. To ensure minimal noise escape, the Q-West boat builders painstakingly installed both. To assist in the elimination of vibration, the pilot-house is fully isolated and mounted on rubber mounts; meeting the noise and vibration specifications of 75db in the pilot-house when underway at service speeds.

The main cabin and lower accommodation are serviced ▶



Crew galley and mess room below





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Mikotahi is one of New Zealand's most modern vessels meeting the highest of international standards

by independent water cooled air conditioning units as well as a dedicated demisting unit for the helm windows which is critical for maintaining adequate visibility in a vessel with so much glass.

KAB seating in the pilot-house is trimmed in custom leather. These KAB 514C mid high back seats feature arm and head rests along with four-point integrated full harness safety belts. Ergonomically designed with a range of adjustments for comfort, and to provide correct support for the spine, the two-spring mechanical suspension also protects from harmful vibration.

The conning position is supported by a vast modern electronic package supplied and fitted by Bay Marine Electronics. The vessel features a full NMEA2000 monitoring system from Maretron, including touchscreen control, cloud monitoring and recording of all vessel data, and an SMS module to text staff should a loss of shore power occur, or in the case of fire or bilge alarm activation when the vessel is unattended. Likewise the duty pilot has his own station where he may update all the latest navigational data and information on the ship he is about to board via the onboard PC. This computer gives direct access to the company network via a

pepwave router and 3G connection.

The electronics system is based around four main touchscreens; three 15" Garmin GPSMAP 8015 MFD's plus a Maretron TSM800C touchscreen for alarm system management. The alarm and navigation system shares a NMEA2000 backbone – meaning the maximum amount of information is shared between the two systems. In practical terms, this means the vessel data recorder on the Maretron system can track all of the navigation parameters: speed over ground, rudder angle, depth and so on. The ease of having all of the Maretron information displayed on any of the Garmin displays, such

In the event of someone falling overboard full concentration can be given to spotting the victim, rather than steering the boat

as tank level information, engine RPM and fuel usage, is a further aid to monitoring the internal vessels systems.

Also on the NMEA2000 network, and controlled by the 8000 series touchscreens, is the Fusion stereo and GHP12 autopilot.

Full autopilot control has been limited to

caption



Hand rail and pilot car track, note the midships bollards

the two helm screens, and allows for MOB integration, so in the event of someone falling overboard full concentration can be given to spotting the victim, rather than steering the boat. The Garmin GHP12 autopilot works flawlessly with the twin jet set up, even when given a complicated path from the touchscreen helm.

In addition to having the NMEA2000 network capability, there is also extensive integration using the Garmin Marine Network. Radar, depth sounder, chart-plotters and touchscreen control of the FLIR camera is available at any of the three GPSMAP8015 displays. The four cameras on board are recorded and video can be viewed later or saved using the boat's PC, which is displayed on the pilot's GPSMAP 8015 screen.

The two Icom M504 VHF radios both have command microphones attached, effectively making a four-station installation while using only two radios and antennas. Further helm space was saved by also utilising the hailer function ▶

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Stern view showing the aft deck layout with wide clear side decks



within the M504 instead of a separate hailer. But the VHF icing is the custom made stalk microphone mounted on the dash – used for both VHF and hailer input.

The coxswain is afforded excellent operational vision around the vessel; the windows supplied by Glasshape of Warkworth are “body-bonded”, which have a fresher appearance than the traditional framed windows normally seen on a pilot boat.

Designed to be self-righting in heavy seas, the cabin windscreen

and glass had to be hydrostatically tested to withstand 9M of water pressure (nine tonnes of water per square metre), which is four times the design pressure of the boat. The strength of DuraShield® marine glass meant that the yard could reduce thickness from 19mm glass to 15mm glass, a great weight saving. A Lloyd’s Register surveyor witnessed and approved the testing of all glass.

The exterior of the vessel is fully fire protected by a saltwater

deluge/water shield that encompasses the vessel in a curtain of water when in operation. This still allows for the coxswain to navigate while wetting the vessel with the cooling spray – essential when trying to rescue crew from a burning gas platform.

There is a large boarding platform aft across the transom that incorporates a man overboard or body recovery cradle. The cradle may be lowered and used to scoop a dead weight in the water by operating the vessel in a frontend loader motion astern, using the rear controls. Once the object or person is in the cradle, it is raised and rolled so that there is ease of access for the crew to affect immediate first aid or transfer to a stretcher for further attention. A timely reminder for pilots not to lose their footing during the leap between the ship’s ladder and the pilot boat.

Protecting the vessel during close quarters encounters with ships of all sizes is the resilient fender system called a “Popsure” fender which is used extensively on the Dutch Pilots’ Association vessels. This system comprises a polyethylene closed cell foam that will not deflate or retain water when punctured, and is capable of taking the hard knocks and abrasions that are an operational hazard on these vessels.

Outwardly the finished look is primarily natural alloy with bright yellow trim on the beltings and painted yellow cabin top; this and the underwater protection are using International Paint’s protection system.

His leap must be timed to meet the waiting arms of the deckie ready to clip him onto the safety car

On walking around the upper deck, apart from at the transom where there are stern quarter safety rails and the rescue cradle, the sides remain clear of obstructions. There is a main pilot safety handrail and safety harness track and cars where anyone on the upper deck can be clipped to a pilot car before going forward. On the bow is a safety landing point where the pilot may disengage his harness from the car before making a leap for the ladder. At this point, while there may be a deckhand in support, he is on his own. Jump and climb like hell or face the prospect of an untimely swim. On return, the transfer is just as risky – or exciting – as his leap from the ladder to the landing point must be timed to meet the waiting arms of the deckie ready to clip him onto the safety car.

While there is a pair of mooring bitts on the stern quarters, the forward breast bitts are recessed into the pilot-house structure on ▶



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During seatrials *Mikotahi* proved to be pretty slick

the shoulder and a further set of bits are forward under the fo'c'sle safety rails. Also to port under this central safety rail is a Maxwell anchor winch mounted over both the hawse and naval pipes.

The pilot vessel carries two 12-man RFD SeaSava inflatable life rafts. One forward in its recessed quick release cradle and the other aft, equally securely strapped down behind the raised central island containing the main engine room Seaworth Defence air vents and aft escape hatch from the water jet machinery space below. This island also contains the main safety handrails for the crew when working aft.

Additionally there are two life rings mounted either side in ready release brackets.

When survey slipping or servicing is needed the vessel has four certified lifting lugs built in and concealed below deck hatches for lifting the boat using a harbour mobile crane,

negating the requirement for spreaders, complicated rigging and the risk of strops slipping.

The main crew accommodation and heads are below. There is a comfortable mess room, a galley complete with fridge, microwave oven and sink; all the facilities to make a brew or heat a meal.

Forward through a watertight door is the mid void and stowage space with another door leading to the forepeak space including the chain locker.

Further aft is the main door to the engine room with a further door to the lazarette and water jet machinery space.

During sea and acceptance trials *Mikotahi* performed to the expectations of both designers and builders. While she is a heavily constructed vessel with a heap of machinery and extras on board, at 30 tonnes she is no slug and delivered a top speed of 33-35 knots, well above expectations and meeting her specified service speed of 23 knots with ease. She has ample thrust, delivered from the larger than usual HM461 jets, resulting in good manoeuvring ability. She rides well, with a gentle landing and a good feel downhill in the seas off Wanganui seen so far. She is exceptionally quiet with sound levels below 72db in the cabin.

The spacious engine room means she will be easily maintainable – another prime consideration in the original specification.

The final proof will be working alongside a ship at Port Taranaki, but we believe that the combined project team have achieved what they set out to do; a pilot vessel built to a high construction standard with crew and pilot safety as a primary consideration, utilising a proven design from one of the world's leading pilot vessel designers.

Q-West is proud to say they can work with owners and designers worldwide to provide a design that best meets the requirements of the end user – as well as bringing their industry experience and independent advice to the table to ensure the process of any new build is both efficient and cost effective.

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**SPECIFICATIONS**

LOA	19.5m
Beam	5.7m
Draft	1.0m
Construction	5083 Marine aluminium
Power	2 x Scania D116 072M 900hp (662kW)
Propulsion	Hamilton HM461
Service speed	23 knots
Fuel capacity	4000 litres
Survey	Lloyd's Register
Owner	Port Taranaki Limited
Designer	Camarc Design, Scotland
Builder	Q-West Boat Builders Limited