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PROFESSIONAL *Skipper*

JANUARY/FEBRUARY 2017

**HISTORY OF
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**NEXT GENERATION
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KORORA

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ISSUE 115



KORORA – THE NEXT GENERATION IN FAST FERRIES

BY KEITH INGRAM

The inception of Fullers Auckland can be traced back to a family sailing trip in the summer of 1981. George Hudson and his son, Douglas, saw a tired and worn out procession of old wooden ferries slowly ebb past their own boat.

The Hudsons – who were operating a tourist coach business – quickly realised there was potential for an improved ferry service on the Waitemata Harbour. So they determined to do something about it.

By the end of 1981, the Hudsons were the proud owners of North Shore Ferries. Over the coming years the company underwent multiple developments. It purchased other small ferry operations in Auckland including Waiheke Shipping, Gulf Ferries, and Tamaki Ferries.

They recognised value of the 'Fullers' brand, so when the Julian Blue Boats and Fullers empire crashed (following, as so many business failures, the 1987 sharemarket crash) the Hudson-owned company purchased the ferry assets and name from the

receivers. They then amalgamated its operations and changed their firm's name to Fullers Group Limited.

George continued to play a significant role in the company up until 2007. After many successful years, he stepped down from his active role as Chairman and his son Douglas became the CEO – a position he holds to this day.

In 2009, Fullers became part of the Souter Holdings group of companies, headed by Scottish entrepreneur Sir Brian Souter. Souter Holdings owns a number of other transport operations in New Zealand and around the world.

Also in 2009 Souter Holdings purchased ferry operator 360 Discovery Limited. This added a unique offering to the group, with 360 Discovery's focus on eco-based tourism.

This company has seen substantial growth of its own, expanding into providing commuter ferry services to the Beach Haven, Hobsonville and Gulf Harbour communities.

Thus, the formation of the company was complete in 2015 when Souter Group was renamed as InMotion Group – reflecting the company's focus on growing its urban, city-to-city, charter, and tour service businesses.

Putting the group's bus and ferry businesses together into the newly-formed InMotion Group is the next step in the ►

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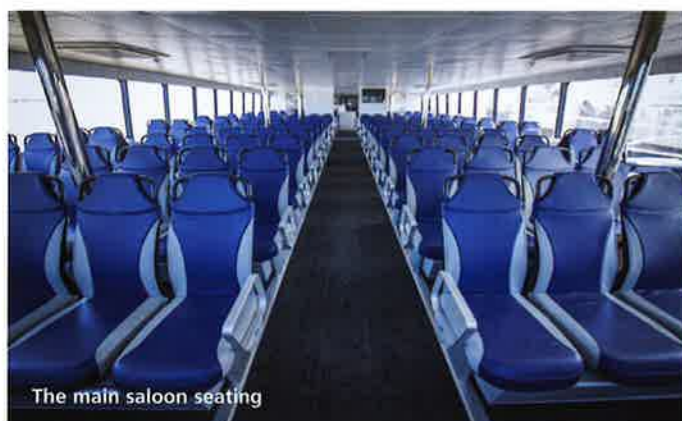
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The main saloon seating



Cafe at the rear of the main saloon

businesses growth and development.

Fullers and 360 Discovery Cruises combine to form the largest public transport ferry operator in New Zealand, operating in New Zealand's largest transport market, Auckland. Together, these brands provide ferry commuter services and tourism experiences to locals and visitors.

Today, the Group transports over 4.5 million passengers on water each year to 16 destinations and has grown its fleet to 16 vessels.

Fullers also operates a 21 vehicle bus fleet on Waiheke Island (Waiheke Bus Company) providing urban bus services to the local community and the tourist market.

While many aspects of the businesses have evolved since their relatively humble beginnings, what remains unchanged for Fullers and 360 Discovery, is the continued commitment by the

group's owners to provide a fast, efficient fleet of modern vessels for the Hauraki Gulf.

The company has built its fleet. At times it could only be described as a 'hotchpotch' mix of vessels. Some were inherited with acquisitions, some were purchased out of necessity as the company grew in times of uncertain support for the public water transport system in Auckland.

But, it must be said, the company has at long last been given some confidence by Auckland Council to make significant investments in new vessels.

Consider the difference in economies between road and water transport: Whereas you can buy a very nice coach for passenger services for, say, \$400,000, a ferry is a four to eight-million-dollar investment.

As anyone in the industry is all too painfully aware, there are



The upperdeck open lounge with second bar area



The upper deck enclosed lounge

no guarantees with Auckland Transport.

As I write this, the final arduous tendering for Auckland's ferry services is just closing. We do not expect to know the outcomes until May 2017!

This is just grotesque – a bureaucratic nightmare.

How can anyone or any company be expected to make decision to invest millions of dollars in our water transport system with no certainty of outcome? Recent lessons from the loss of the Explore Group yellow Auckland commuter ferries in 2016 does little to imbue any confidence in the transport agency in control.

Q-WEST'S LATEST AND GREATEST FAST-FERRY

Following on from the successful new build of the 34m *Te Kotuku* in October 2014 by Q-West at its Wanganui boat

yard was the commitment a \$15million investment by Sir Brian Souter to build its *next two* new purpose-built commuter ferries here in New Zealand.

This next generation of ferries are all being named after sea birds as in the *Te Kotuku* (White Heron)

A little over a year ago, Fullers placed a \$15million order to build two new 35m, 400 passenger commuter ferries for the Waiheke Island service. The delivery of *Korora* (Blue Penguin) was the first in December 2016, with the second due in May 2017.

This will allow the company to stand down the out-dated *Jet Raider* which is now on the market for sale. Next year, after taking delivery of the next vessel, they will retire the aging *QuickCat* from service.

The *QuickCat* has been a well-liked and reliable vessel ▶

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A very smart internal bridge layout

over the past 30 years, and many will be sad to see her go. In fact, when George Hudson first introduced the *QuickCat* on to the Waiheke service, she would prove to be a vessel that would have the most significant impact on the Waiheke community. It is now recognized that the introduction of fast ferries as in the *QuickCat*, changed the nature of Waiheke Island from a holiday island in the Gulf, to a 'suburb of Auckland' with an easy, reliable 35 minute commute.

NOT JUST COPIES

Although Q-West was originally contracted by Fullers to provide exact replicas of the *Te Kotuku* catamaran design, it was decided in the very early stages to *increase the passenger capacity* – which required significant modifications to the vessel's layout and machinery. To achieve the extra passenger capacity the wheelhouse was moved further forward, and a large fly-bridge deck was added. The vessel was also modified to allow for a variety of different berthing options.

Outwardly, this new vessel appears to be of very similar design to *Te Kotuku*, but her facilities are a major step up in two respects: she incorporates a fully covered upper outer deck and a new top open observation deck.

These open decks have proved very popular with both tourists and commuters who want to feel the sea breeze through their

hair as they take in some of the magnificent views of the inner Hauraki Gulf Islands.

Displacing some 151 tonnes, *Korora* is constructed in 5083 marine grade aluminium, using a range of plate thicknesses from 12mm bottoms to 4mm in the cabin topsides. The vessel is strongly constructed, incorporating the straight stem or 'axe' bow and a displacement low-wash hull design.

Korora is surveyed to carry 401 passengers seated or standing.

Down below, its twin hulls were extended 1m over *Te Kotuku*'s, and the motive power has been increased to cater for the extra loadings.

After speed and comfort, for passengers, *windows* are the next most important feature. Commuters and tourists alike demand to be able to see out while seated.

The InCat Crowther design has ensured that there are large windows to both passenger decks. In building this vessel, Fullers has tried to capture many of the successful big boat features while retaining the best from its smaller vessels.

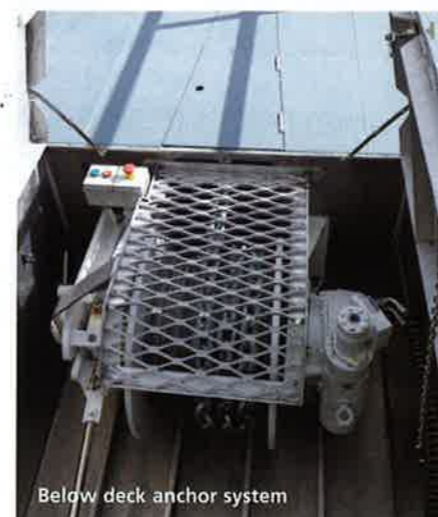
While the large windows were installed using a direct bonding method, SeaMac supplied 12 lever action multi-lug commercial grade aluminium access doors (as well as two sliding windows for the wheelhouse). Previous InCat Crowther ferry designs by had specified an Australian brand of joinery – sourced from



Palfinger Crane



Wide foredeck note the freight box stowage in front



Below deck anchor system



Port wing station



Starboard wing station

within Australia. However, on this project it was decided to source the joinery from SeaMac based in Whangarei.

SeaMac has been manufacturing marine grade windows and specialist watertight doors for more than 24 years. The firm was pleased to be given the opportunity to compete with overseas companies on quality and service.

Before being painted in Fullers' corporate livery, the vessel was fully abrasive blasted with garnet blast medium to provide the required anchor profile on the Aluminium substrate. Using International Paints, D R Marine spray painters fully coated the exterior with two coats of Intershield 300, a high-performance

abrasion resistant pure epoxy anticorrosive coating to provide the optimum corrosion protection.

The exterior surfaces were then coated with YRA600, a premium Polyurethane undercoat. The surfaces were fully sanded and then Top coated with International Devthane 4379 White and Devthane 4379 Fullers Corporate colours,

The underwater hull system was coated using Intershield 300 and the new Intersleek 1100SR (slime release) advanced fluoropolymer foul-release coating for all types of vessels with a designed in service period of 60 months.

The high wear passenger decks and stair areas were primed ►



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with two coats of Intershield 300 incorporating a non-skid slip-resistant particle finish.

The decks were over coated with Awlgrip 545, a thin film finishing primer for the hard wearing Awlgrip High gloss topcoat. This system has been used extensively on existing vessels in the Fullers fleet and has performed as a hard wearing, easy cleaning coating system requiring minimum maintenance.

The engine rooms and void space bilges were abrasive blasted, coated with Intershield 300/YRA 600 & International Devthane 4379 white providing excellent corrosion protection and chemical resistance to oil & fuel spills.

WALK AROUND

In walking around the vessel, we note the Palfinger PK4501M knuckle boom crane on the foredeck. This sturdy little crane has a 7.1m reach capable of lifting 520kg at full stretch, or 1130kg at 3.6m – which is more than adequate to handle the four weather-protected cargo boxes designed to be carried on deck.

While on deck, we note a solid spare anchor secured on deck – and no winch gear. Lifting a deck hatch (as you do) we find the ship's anchoring system below: a Muir SD150 drum winch. Chains, Ropes and Anchors has supplied the heavy duty the certified chain coupled to the 184kg SHHP Pool TW HDG anchor.

Crew access to the foredeck is either from the main saloon via the port door below, or by stepping down the ladder from the bridge via the port wing. This is a suitable arrangement, given these ferries almost always berth starboard side to. The enclosed starboard bridge wing and controls are incorporated as part of the sheltered bridge – whereas the portside controls are outside, in the open wing position, ready if on occasion a berth portside to is required.

This three-quarter bridge design already proven to be successful on *Te Kotuku* offers ready access forward.

The bridge features three large reverse sheer forward-facing windows, incorporating

thicker glass and fast-acting wipers. This move was in response to a crew recommendation in an effort to improve visibility by reducing glare. Also, it's a recognition that the harbour is getting busier both night and day.

ELECTRONICS

ATL has been a supplier of electronics to Fullers over many years and provided the electronics for the previous vessel *Te Kotuku*. Fullers, being a leading marine transport company, remained pragmatic in its view that everything successful on the *Te Kotuku* would be carried through to the new ferries, and so approached Blair Geldard and Scott Bailey from Advance Trident to design and work with the Fullers team to put together a comprehensive Navigation, CCTV and communications package, this package was commissioned by ATL.

Two radars: a RC JMA-5212, 10kW radar with 6ft open array scanner and a Simrad "Halo" broadband radar with open array scanner. This combination offers Fullers redundancy by having two radars, and the extended range of the JRC combined with the close in target definition with the broadband radar – which is particularly good in the inner harbour and when approaching vessels at speed.

Chartplotting: a Simrad NSO EVO2 Navigation system providing full charting with radar overlay, and AIS targets ▶



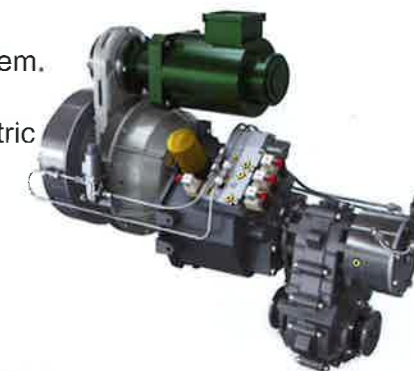
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on screen. The AIS targets are coming from the Class A JRC JHS-183.

Displays: There are three 17 inch Litemax displays which the radar, CCTV, and navigation run through.

Communications: Two Simrad RS35 VHF marine radios are fitted.

A full PA System has been installed across the three Deck levels offering multizone control for audio and PA Announcements.

CCTV: A Full Panasonic CCTV system has been installed utilising 13 Cameras with full visibility of each deck, engine room, and the ability to record on all cameras to identify any

issues that may arise.

TV – there are ten 40 inch Panasonic TV and two Panasonic 32 inch TVs spread throughout the vessel allowing for Fullers to have full audio visual on board.

The interior layout of the vessel comes from literally years of experience in operating these type of vessels in New Zealand's trying conditions.

The designers have been quick to ensure both crew access and passenger comfort has not been compromised in any way, while maintaining the ability for passengers to freely move about.

Korora has been designed and built to cater for the ever-



Korora | 35m Catamaran Passenger Ferry Builder: Q-West Boat Builders Operator: Fullers Auckland



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Observation deck seating

demanding Waiheke commuters. Where else in Auckland's public transport system can you enjoy a morning coffee and a muffin on the 35 minute commute to the CBD and then a cold beer or wine on the return journey at night?

To cater for these demands there is a modern café and bar area on the main deck and on the next level is a second bar to ensure there are no delays getting that cold drink on the way home.

Seating throughout the vessel has once again been supplied by Beurteaux from Australia. Yes, when faced with a lot of competition, time served and a reputation for service still counts.

With over 50 years of experience and seating solutions supplied to over 1,000 vessels all over the world, Beurteaux continue to expand and improve on their products and services. Their flexibility and experience has allowed Fullers to work with the Beurteaux design team to 'customise' the look of their seats – which distinguishes their image in the market.

Safety is always to the fore and this vessel is no different

With seats still in service after 20 years, the Beurteaux support and service also guarantees any future replacement or upgrading necessary to satisfy passenger and operator expectations in what is a hugely demanding commuter business.

Safety is always to the fore and this vessel is no different. There's a full range of firefighting equipment and individual lifejackets stowed in easy-to-get-to lockers at the muster stations. Five of the new 'Ferryman' 65 person MNZ-C RFD reversible life rafts are stowed up top in their quick release racks.

Below in the voids there is tankage for 11,000 litres of fuel, 3000 litres of fresh water and 4000 litres of grey water.

POWER

Next we head below to see just what makes this 'penguin' manoeuvre and handle so well on the water. The secret for the ultimate smoothness with no discerning vibrations appears to be as a result of lessons learnt from *Te Kotuku*.

The company opted to engage Mark Power's team from Henleys Propellers at the start to design and develop a comprehensive drive chain including the steering gear. ▶

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Powered by twin Cummins QSK 50-M1 1800hp @ 1900rpm HD rated, these engines are a 400hp step up from those powering *Te Kotuku*. 3600hp is some grunt for a 35m ferry.

Cummins remains proud that Fullers have chosen them as the engine supplier for the new larger series of ferries as part of their fleet replacement programme. It is equally proud of its new Quantum Series engines.

The QSK50 M1 engines powering *Korora*, rated 1800hp at 1900 rpm, deliver best-in-class performance and fuel efficiency, taking uptime to a new level says Cummins.

240v power is supplied by two 100kVA Cummins 6B-CP Gen-sets. This arrangement allows for redundancy, but can quickly take up any overload in heavy demands.

But it's the next in the drive chain that we found to be



most significant – the gearboxes. At the business end she has twin Tiger five-bladed 52.5 inch Henley high performance propellers. With this sort of horse-power below, engage 'both ahead' and the vessel will be leaping out of the dock at eight knots while laying every standing commuter flat on their back. That wouldn't be a good health and safety look.

So these engines have been fitted with the latest Twin Disc MGX6848SC free standing gearboxes. While the principle is not new, only Twin Disc supply a twin clutch system in which the shaft rpm is reduced to 50rpm when first engaging the gears at express mode – eliminating the horrible jolt.

As the levers are increased in speed, the boxes respond in a similar fashion to an auto transmission (as opposed to 'dropping' a clutch). This system offers the skipper fingertip low speed control on large powerful engines.



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Between the main engine and transmission there is a large Vulcan Drive coupling – designed specifically for island mount gearboxes. This coupling and the associated mounts totally isolate the main engines with no associated vibrations into the vessel.

The result is a smooth fast transition from dead slow to full ahead with no vibration evident – even at 30 knots during sea trials.

This feature alone is a breakthrough. And especially welcome for a harbour ferry. With commuters being so fickle and discerning, I find myself speculating that it will be only a matter of time before *Te Kotuku* is retro-fitted with such a system, thus bringing the three sisters into line.

70 DESIGN VARIATIONS

When taking delivery of *Korora* Fullers CEO Douglas Hudson advised that, including the increased power and drive line changes, there were about 70 variations, many of them small, that the company and its crew saw as being significant improvements on *Te Kotuku*.

While some of those delayed delivery a little bit, the changes have also been incorporated in the next vessel due early May. The staff at Q-West are excellent to deal with, Douglas reported, and "very accommodating to ensure we get the best vessel for our needs."

From Douglas's comments and the crews first reactions on taking over the vessel, it would be fair to say that the collective effort of crew input, designer know-how, and the excellent workmanship from one of our leading boat building yards has delivered the *ultimate* in fast commuter ferry designs for Auckland's Harbour.

SPECIFICATIONS

Length overall	35.995m
Beam	9.5m
Draught	1.9m
Construction	5083 marine alloy plate
Power	Twin Cummins QSK 50-M1 1800hp @ 1900rpm
Propulsion	Twin Disc MGX6848SC gear boxes
Service speed (at 85 percent power)	26 knots
Crew	Five
Builder	Q-West Boat Builders Ltd
Designer	InCat Crowther Design

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