MIKE DRAKE : Director, Marine Operations - DPA

South West Pacific Operations Update

Objective Today

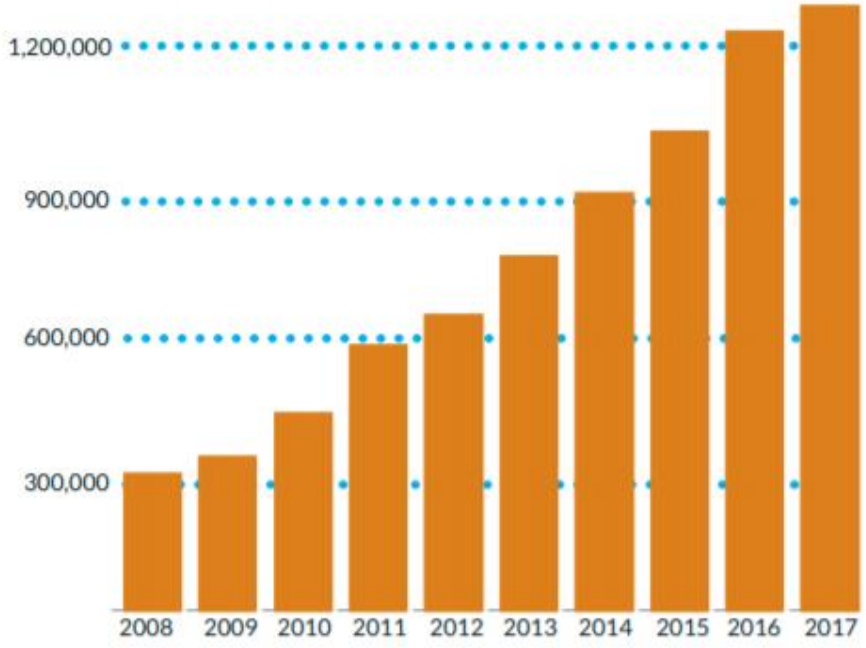
- A brief update on the evolution of cruise industry in the region
- An overview of P&O Cruises, Australia activities in the region over the past year
- Destination aspirations influenced by hydrography and charting
- Feedback from “End Users” perspective on ENC usability

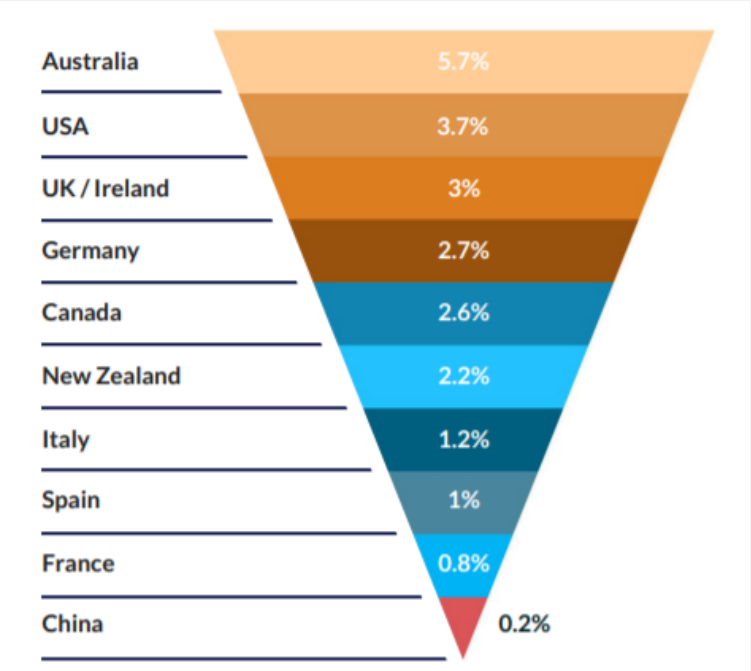
PASSENGER GROWTH

With an additional 56,000 passengers choosing to cruise in 2017, an analysis of the past 10 years shows Australian sourced cruise passenger numbers have grown by a further 30 per cent since reaching the milestone of one million annual Australian ocean cruise passengers in 2015.

Since 2008, passenger numbers have risen by an average of 18.5 per cent a year, with the market more than quadrupling in the past ten years and more than tripling since 2010.

To cater to Australia's growing appetite for cruising, CLIA cruise lines have announced a number of new deployments in the region, which will help to drive further growth in local passenger numbers. Over the coming years we will increasingly see more vessels homeporting in Brisbane, Melbourne, Fremantle and regional ports.





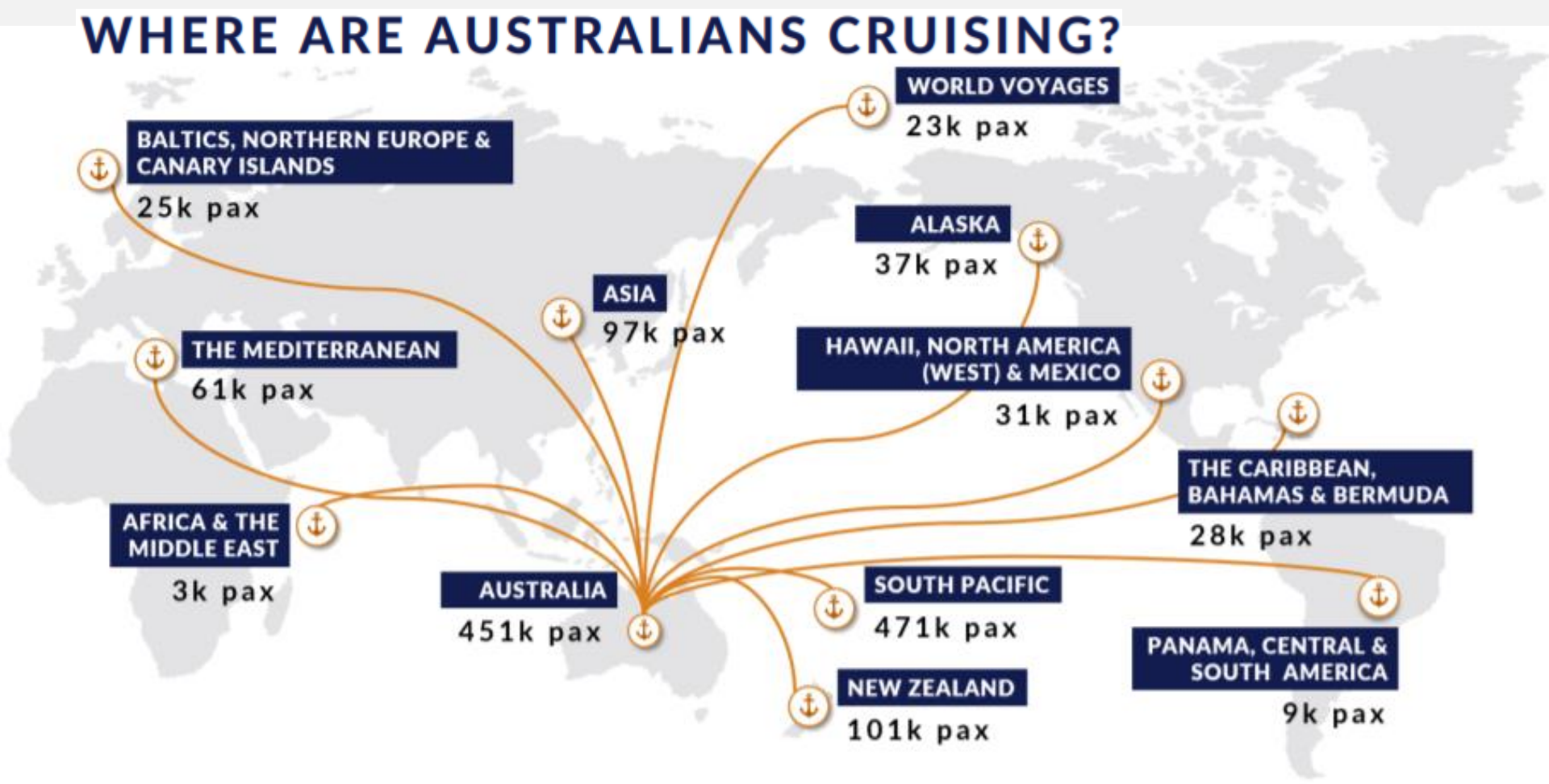
MARKET PENETRATION

With a 5.7 per cent market penetration, up from 5.3 per cent in 2016, Australia continues to lead the world when it comes to demand for cruise. Last year, almost 1 in every 18 Australians took a cruise, with Australian travellers increasingly drawn to the wide variety of cruising options being offered.

Australia remains the only country to have achieved a population penetration rate of more than 4 per cent, with the well-established US market sitting on 3.7 per cent market penetration. Meanwhile UK and Ireland achieved 3 per cent, and Germany, Canada and New Zealand are the only other countries exceeding 2 per cent penetration.

The equivalent of 2.2 per cent of New Zealand's population took an ocean cruise last year, giving the nation a greater market penetration rate than established cruise markets like Italy (1.2 per cent), Spain (1 per cent) and France (0.8 per cent).

WHERE ARE AUSTRALIANS CRUISING?



WHERE ARE NEW ZEALANDERS CRUISING?

CARNIVAL CORPORATION&PLC

CARNIVAL AUSTRALIA

AIDA

Carnival

Costa CRUISES

CUNARD

Holland America Line

ibero cruceros

P&O CRUISES

P&O AUSTRALIA

PRINCESS CRUISES

SEABOURN

P&O Cruises, Australia Fleet Transformation

The P&O Fleet – Pacific Jewel and Pacific Dawn

- Built 1991/2
- Length 245m
- GRT 70,300 T
- Lower Pax 1596/1676
- Crew 700
- Flag UK

The P&O Fleet – Pacific Eden and Pacific Aria

- Built 1992/3
- Length 219m
- GRT 55,877 T
- Lower Pax 1260
- Crew 600
- Flag UK

The P&O Fleet – Pacific Explorer

- Built 1997
- Length 262m
- GRT 77,441 T
- Lower Pax 1998
- Crew 850
- Flag UK

The Future Fleet

Pacific Adventure (2020)

- Built 2000
- Length 289m
- GRT 108,865 T
- Lower Pax 2636
- Crew 1060
- Flag UK

Pacific ……. (2021)

- Built 1999
- Length 289m
- GRT 108,977 T
- Lower Pax 2600
- Crew 1060
- Flag UK

2018 Activities

APEC: 3 Ships in Port Moresby, PNG, hosted delegates for leaders summit.
Town fresh water supply upgraded to WHO standards to meet demand.
Port infrastructure renovated and built for the event.
Harbour dredged, surveyed and charted.
Worked closely with DFAT and Australian High Commission.

EDEN : Port development to create mainstream cruise destination on Sapphire Coast.

ENCWG: Wollongong April 2018; NAV 18 (AMSA National Navigational Conference);
New Zealand Marine Pilots Conference (Wellington November 2018)

ENC: New Zealand trial service.

Port Moresby

PACIFIC EXPLORER SPEAKERS

Peter O'Neill
Prime Minister of PNG

Scott Morrison
Prime Minister of Australia

Xi Jinping
President of China

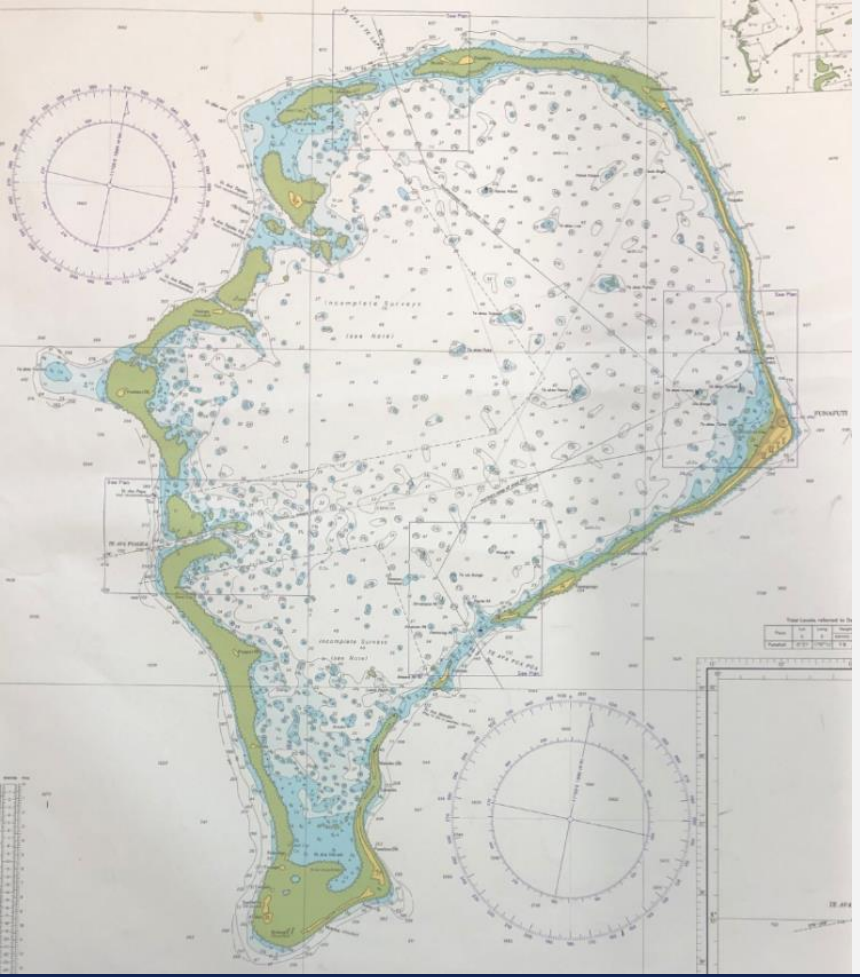
Mahathir Bin Mohamad
Prime Minister of Malaysia

Dmitry Medvedev
Prime Minister of Russia

Michael R. Pence
Vice President of the USA

Port of Eden, NSW

Sapphire Coast, NSW



Potential

Government of Tuvalu requested we deploy a ship to Funafuti this year to accommodate delegates as part of the SIDS conference.

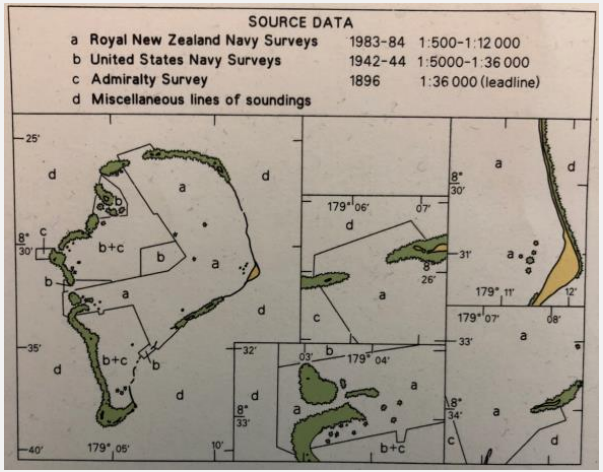
Had the chart and AtoN coverage been better we would have seriously considered.

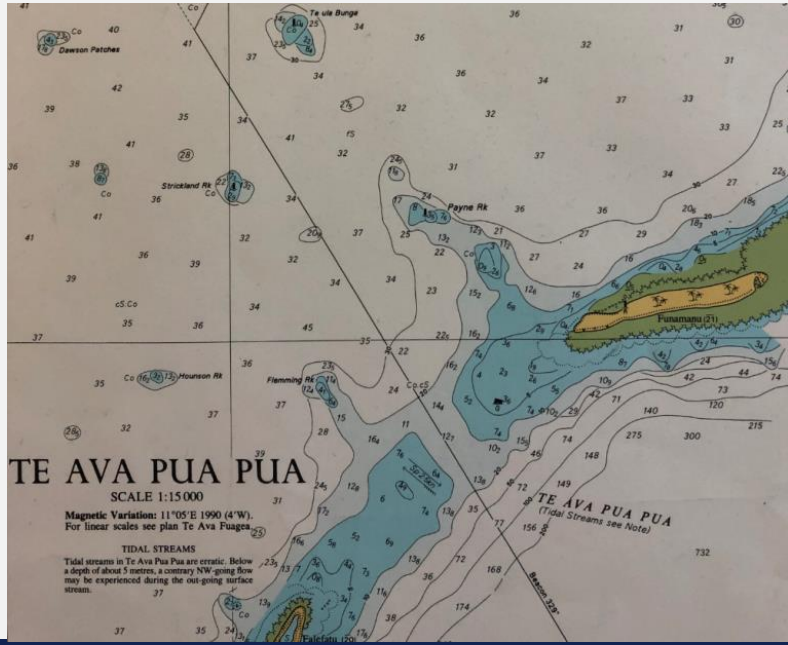
P&O advised Tuvalu Govt. they might approach UKHO (PCA) for consideration in the Commonwealth Marine Economies (CME) programme.

Tuvalu is possible on certain itineraries out of Auckland- **providing** Yasawa i Ra Ra & Funafuti (Tuvalu) are appropriately charted to permit safe access.

That could then lead to cruise ship calls to Rotuma which lies en route to Tuvalu from Yasawa i Ra Ra.

This in turn will lead to more calls in Suva & Lautoka with the associated economic benefit.





NZ ENC SERVICE
NZ ELECTRONIC NAVIGATIONAL CHARTS

Land Information New Zealand
Toitū te whenua

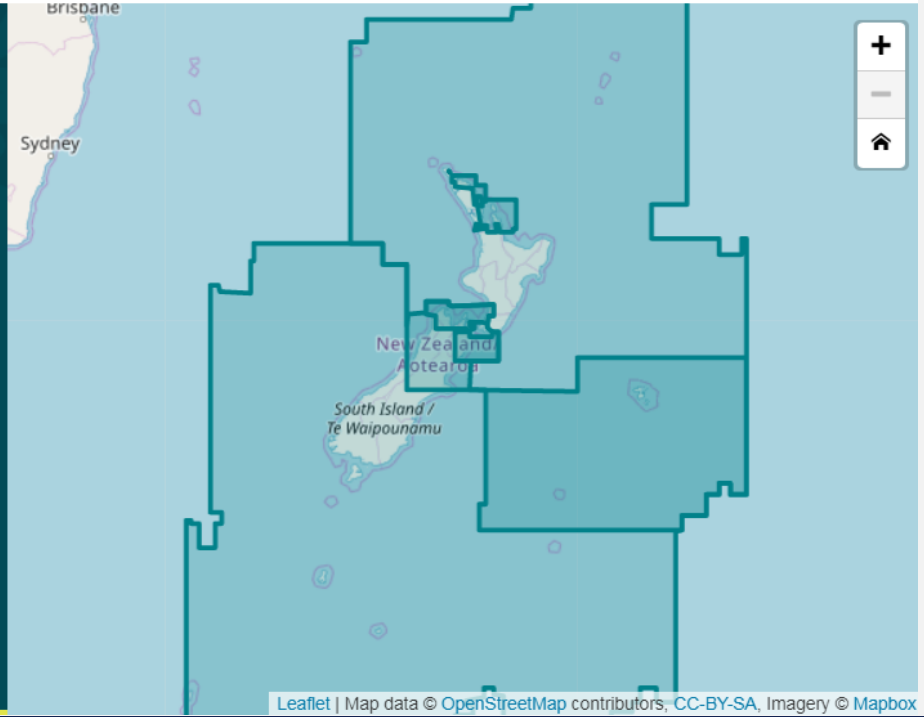
About | How to get started | Register | Download | Contact | My Account | Log out

Official New Zealand Electronic Navigational Charts

→ Six month trial for NZ ENC Service
→ Full public release targeted for mid 2019
→ All enquiries please email:

encservice@linz.govt.nz

Read more about the NZ ENC Service



AREA OF OPERATION

Aspirational Destinations

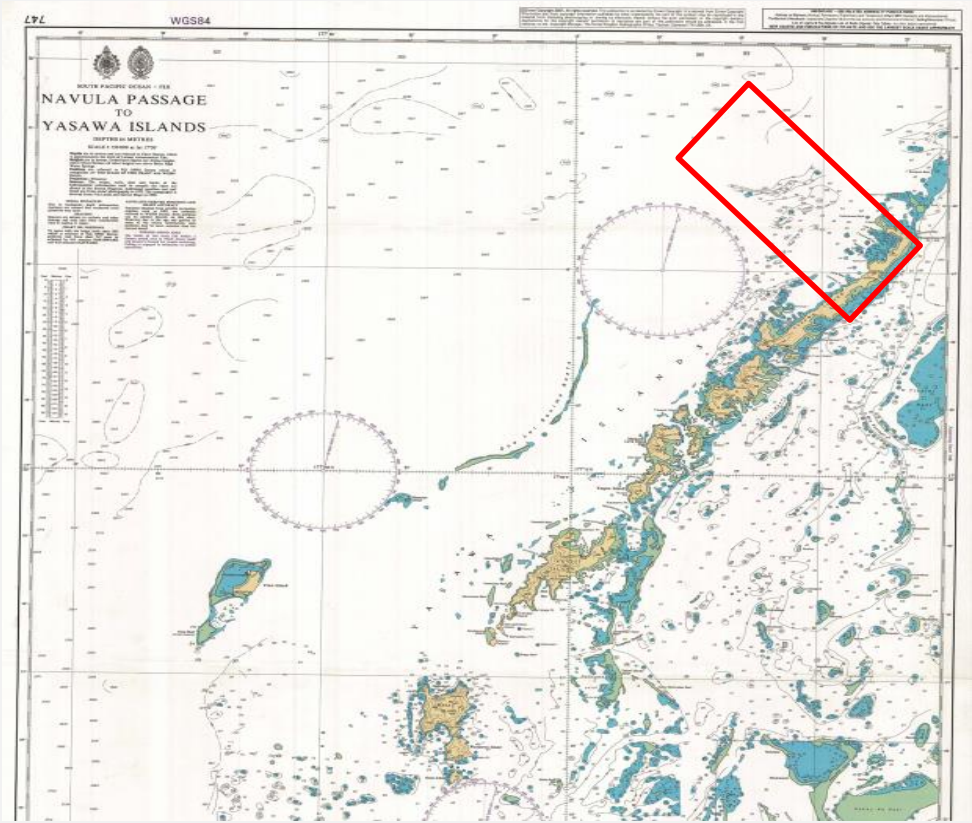
- Rotuma (Fiji)
- Funafuti (Tuvalu)
- Happai Group (Tonga)
- Torres Islands (Vanuatu)
- Lepatasi Wharf Port Vila (Vanuatu)
- Bouganville (PNG)
- Spice Islands (Indonesia)
- Savaii (Samoa)

Yasawa I Ra Ra (Fiji)

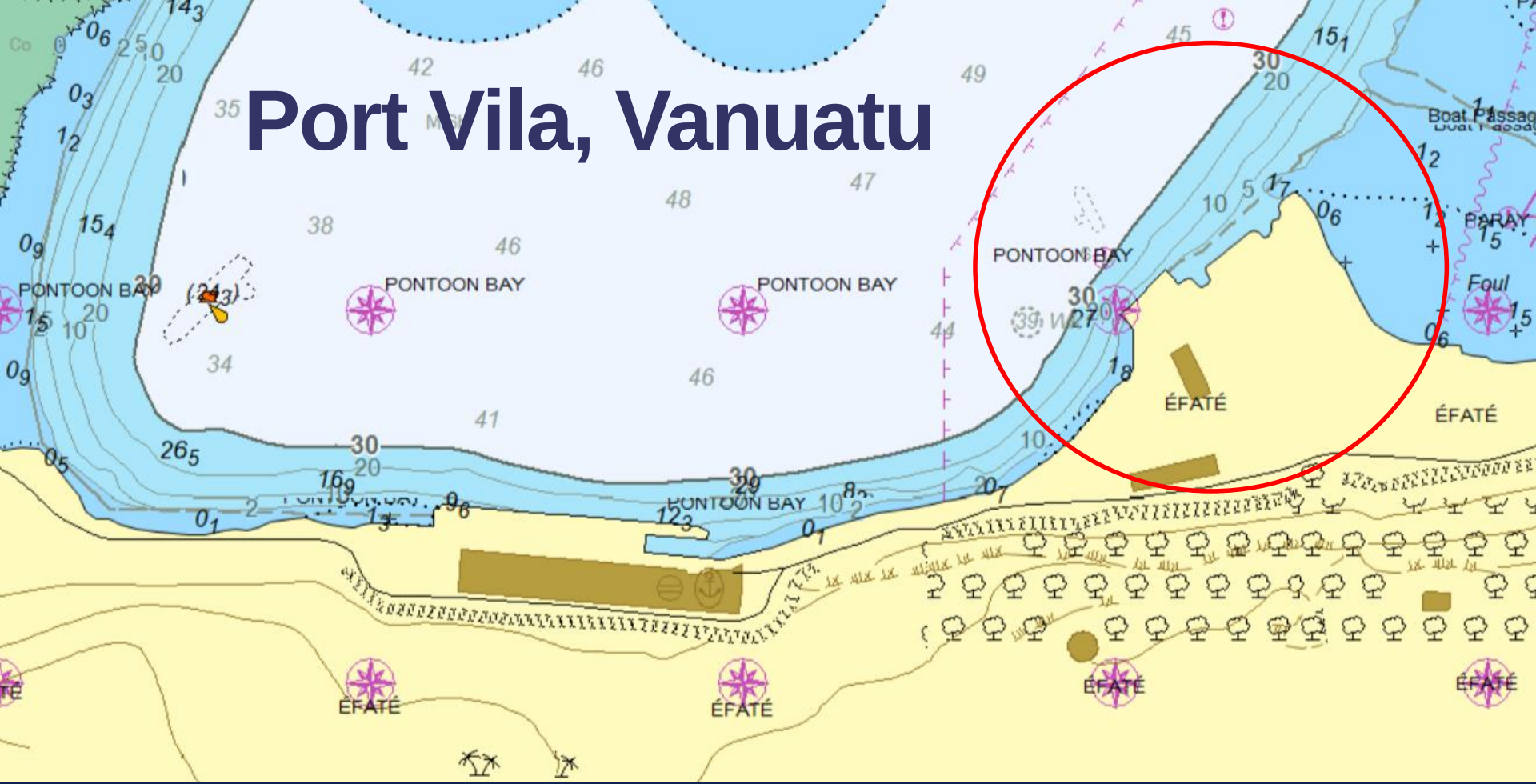
Requires an ENC, scaled 1:4,000

Swept path to anchorage

Full sea floor coverage



Port Vila, Vanuatu

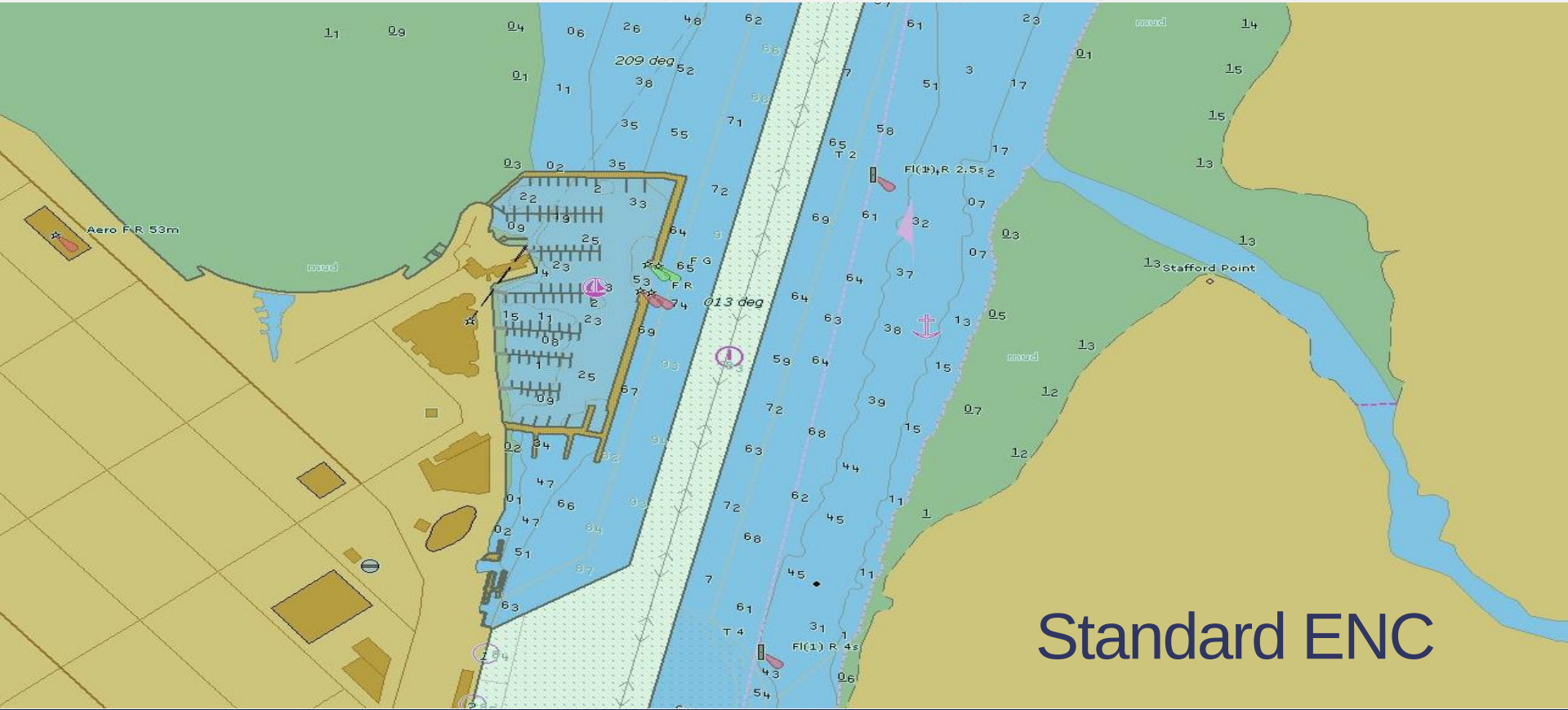


Feedback on ENC Usability

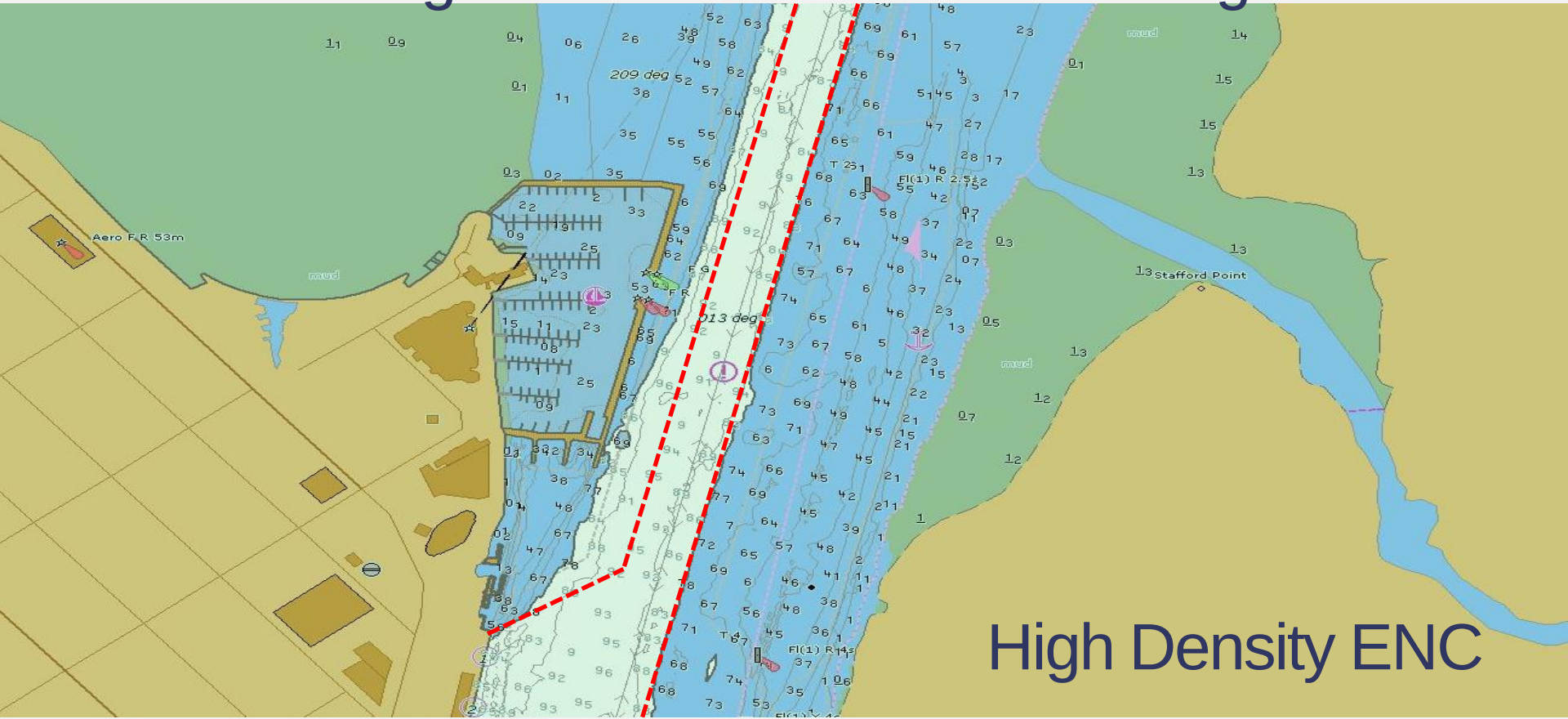
- High Density Electronic Navigation Charts allow larger ships to access some ports previously off limits (Cairns, Townsville, Benoa); N.B. *however this often requires a firm commitment from the port to the Principle Charting Authority (PCA)*
- Developments in the Marine Pilotage profession (*NZ Marine Pilotage Conference Wellington November 2018*). One outcome will result in an increased requirement for information displayed on the Portable Pilotage Unit (PPU) to be the same at the ECDIS- “shared mental model”
- In many cases this will require the ENC to display greater detail in port approaches
- Pilots and Ports will need to enhance engagement with PCA
- Territorial Sea Baseline marked & “alarm enabled” on ENC would make a significant contribution to environmental stewardship of the Oceans (MARPOL transparency)
- End User input into ENC presentation and symbology

  (Captain Antonio Di Lieto, CSmart Netherlands)

Cairns Showing Maintained Depth Only



Cairns Showing the 8m Contour Actual Navigable Water



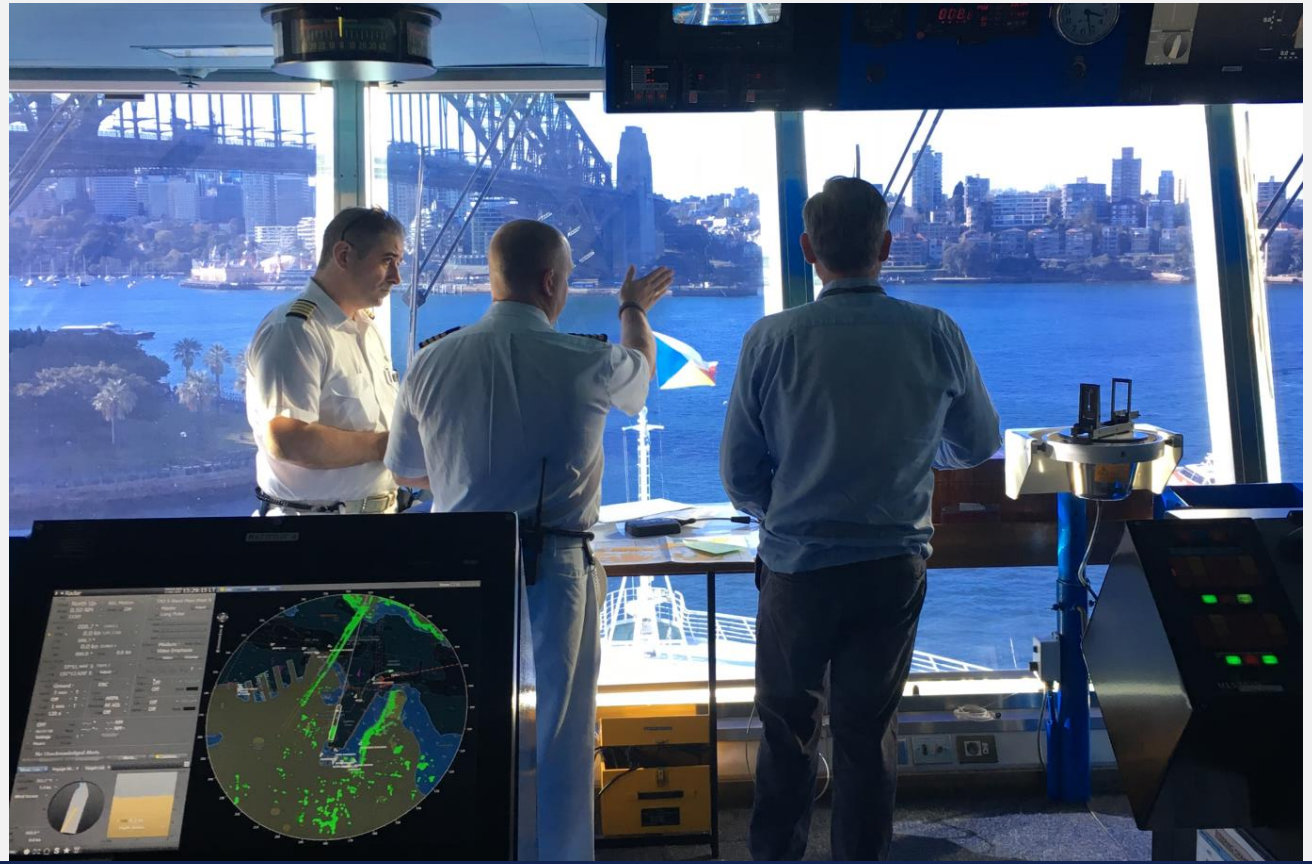
Port Simulation Trials to Define Safe Port Entry Parameters

Cairns Pacific Dawn Project
19th - 20th October 2017

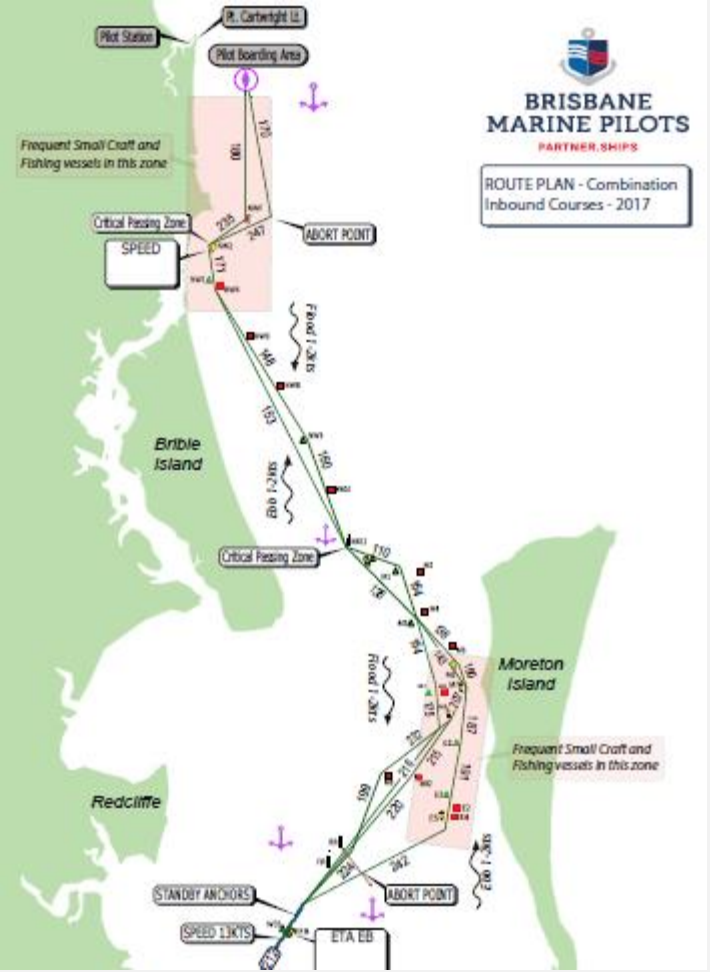
From left: Michael Barnett(MSQ), Peter Listrup(Smartship), Mike Drake(P&O), Trond Kildal(Ports North), Salvatori Lupo(P&O), Doug Bird(P&O), Andrew McClymont(SmartShip), Par Fridolf(Ports North), Darren Oates(Ports North), Darryl Bolger(Svitzer), Steve Midgley(Svizter).

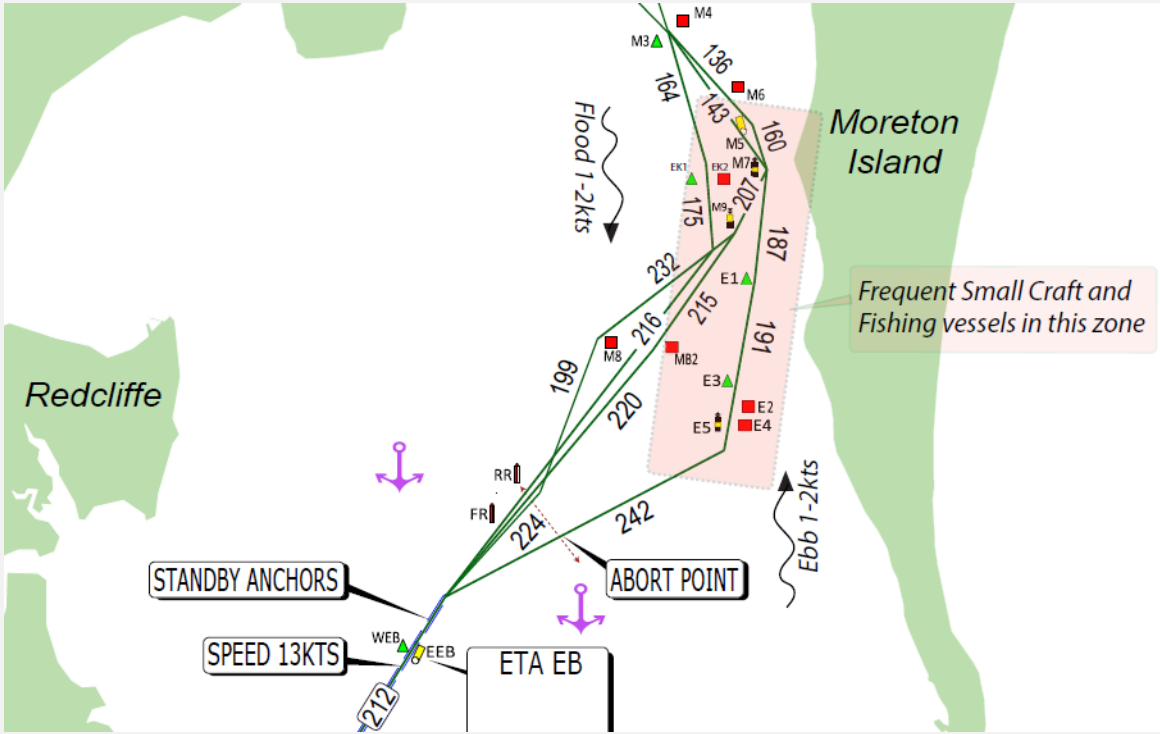
PPU Passage Plan = ECDIS Passage Plan

Portable Pilot Units

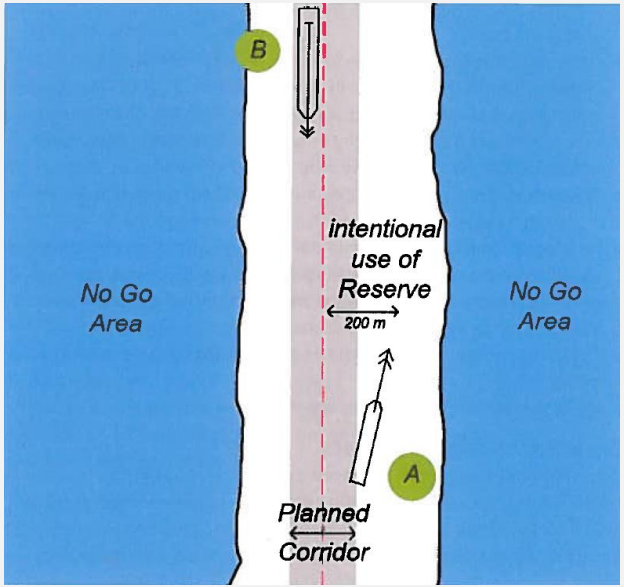


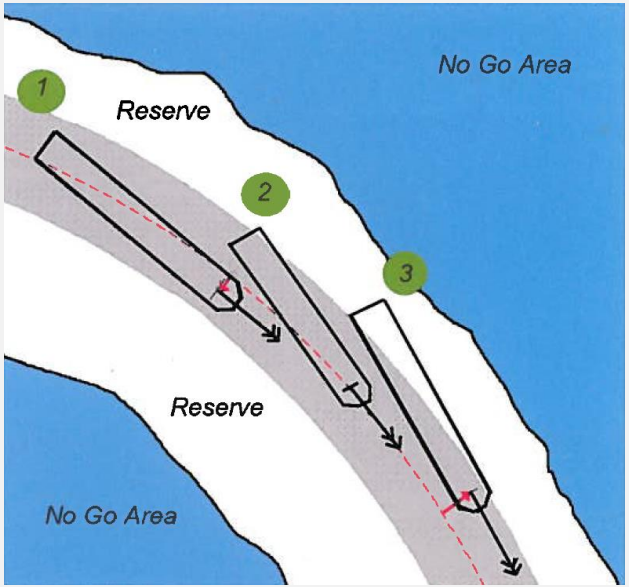
Pilotage - Shared Mental Model





Port Pilotage Plan require high density ENC's





There is less risk involved when a ship is kept strictly to the intended track by increasing or decreasing its rate of turn in response to the influences of factors such as tide and wind

Practical use of ENC's - Safety settings

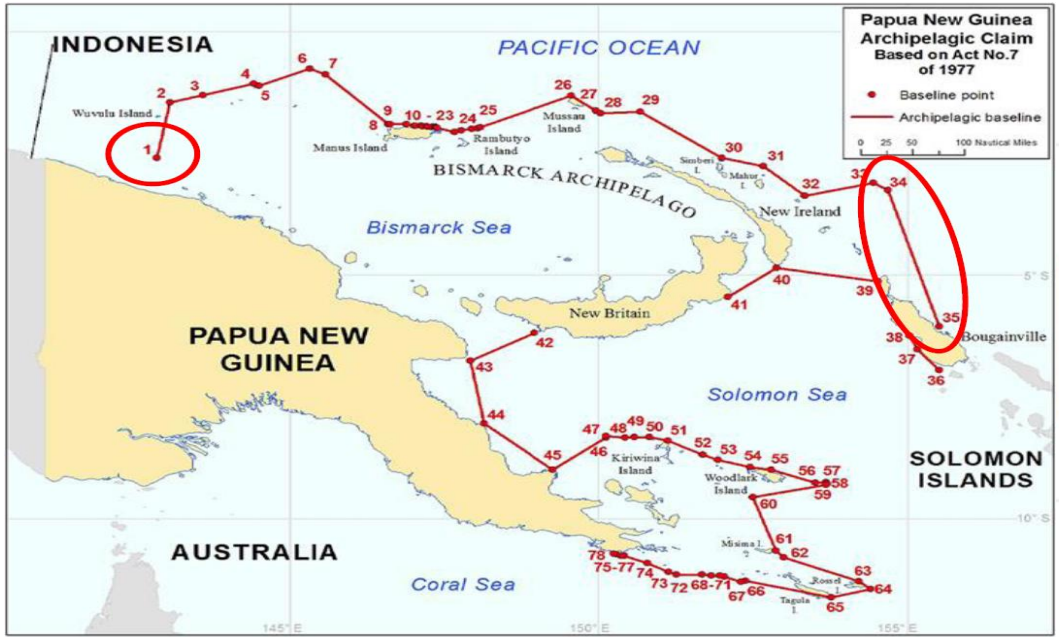
- Nautical Publication (NP) 231- Safety Settings in ECDIS Display
- " However the limited range of depth contours that are commonly available in ENC data reduces the benefit of the safety contour feature, especially where the difference between the value of the safety contour entered and the value being displayed is quite large.
- It is therefore possible that not all danger features sitting in waters shallower than the displayed safety contour pose a danger to the vessel"
- End result – unable to display "go/no go areas" and an over abundance of the isolated danger symbol in ENC 

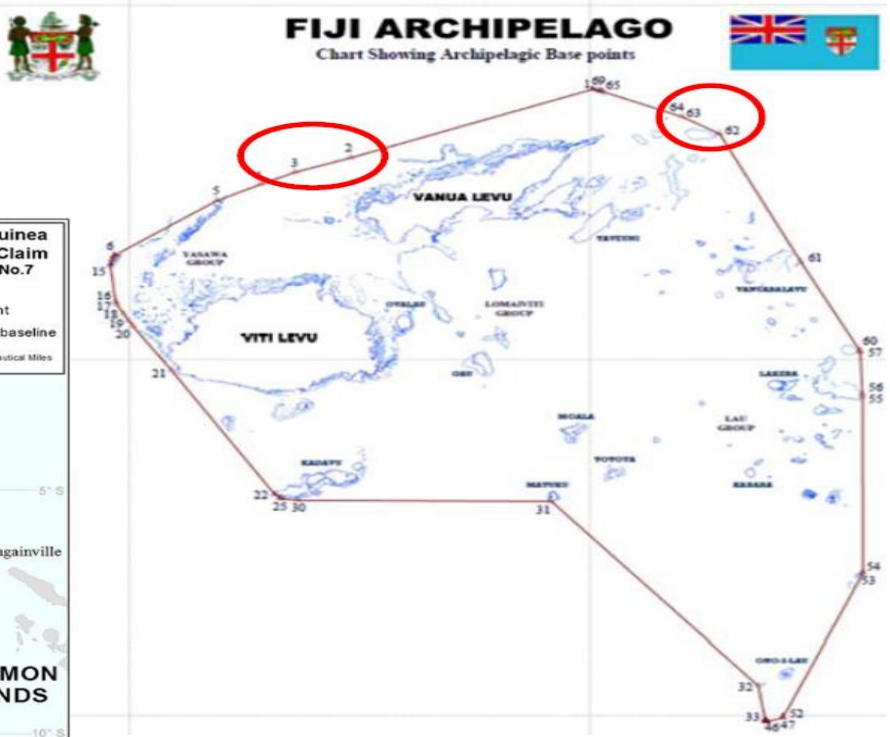
Example Ports that would benefit from hdENC (with 1m contours)

- Noumea
- Port Vila
- Suva
- Tuvalu (Funafuti)
- Surabaya
- Eden
- Auckland
- Tauranga

Baselines

Currently not marked on all charts, disputed in some instances

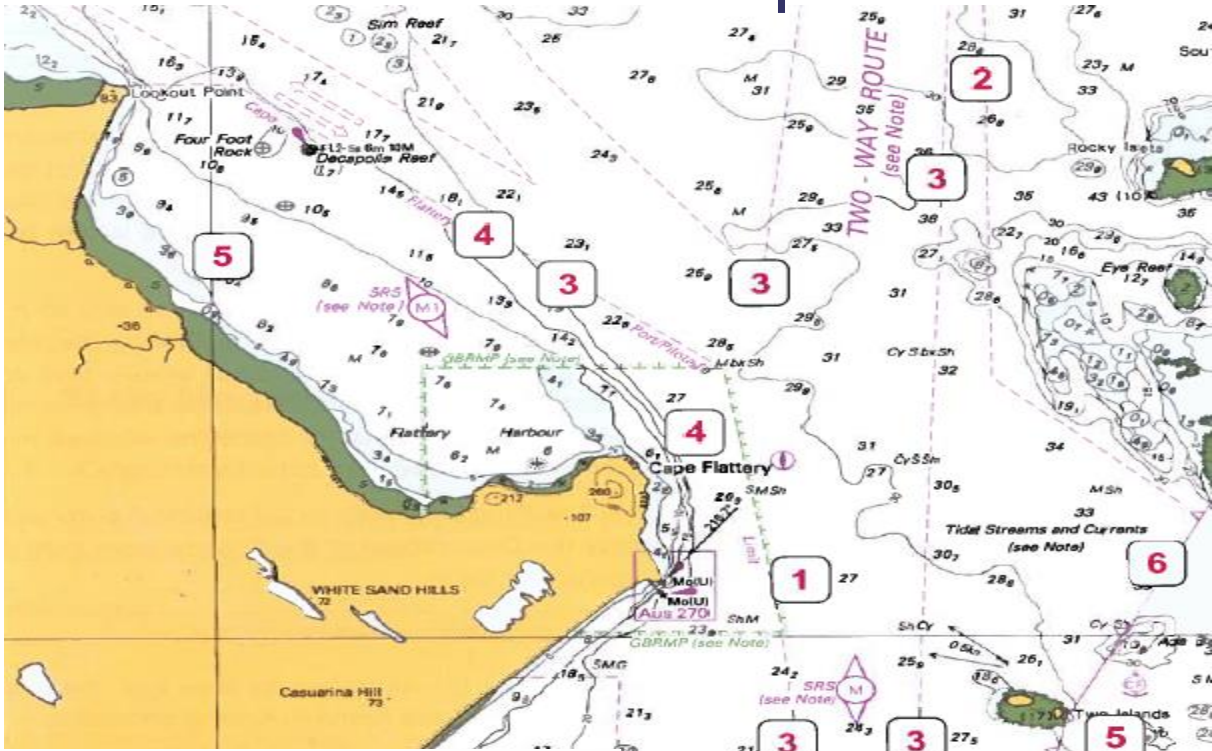




Some Complex areas are Clearer on Paper/RNC

One reason is the clearer differentiation in symbology.

Attached narrative is also helpful in complex areas (imbedded within ENC's)

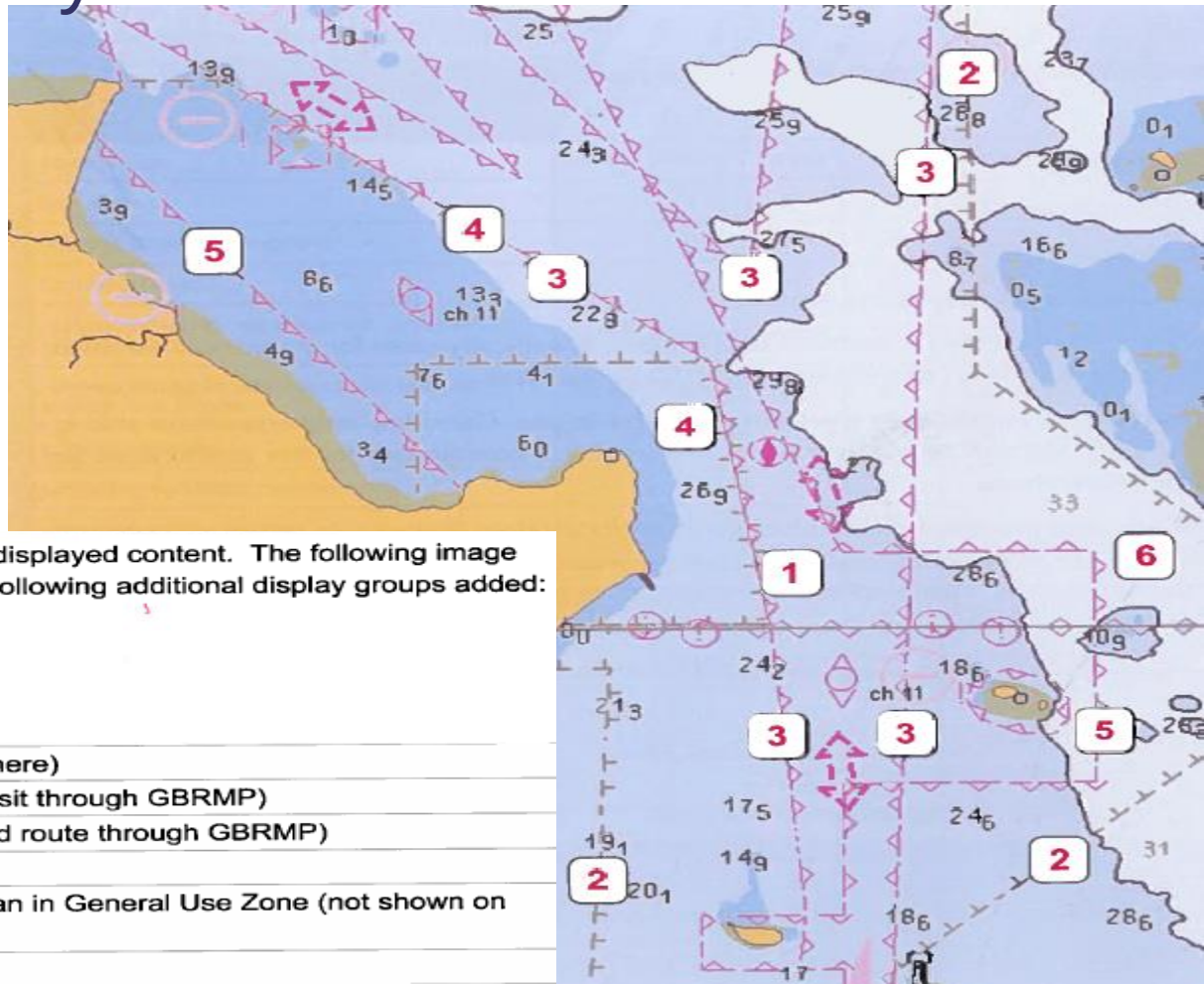


1	ESSA boundary (inner limit of GBRMP shown here)
2	Designated Shipping Area (limit for normal transit through GBRMP)
3	Two Way Route (limit of navigationally preferred route through GBRMP)
4	Port Limit
5	Marine reserve limit with greater restrictions than in General Use Zone (not shown on paper charts)
6	Territorial Sea Baseline

Clarity of Presentation

In some cases ENC display of navigational information is less clear than the equivalent paper chart.

A good example is shown on p74/75 of AHP20 regarding the Great Barrier Reef



Note: ECDIS display settings can alter the level of displayed content. The following image shows an ENC in standard display mode, with the following additional display groups added:

- Additional boundaries
- Depth contours
- Soundings

1	ESSA boundary (inner limit of GBRMP shown here)
2	Designated Shipping Area (limit for normal transit through GBRMP)
3	Two Way Route (limit of navigationally preferred route through GBRMP)
4	Port Limit
5	Marine reserve limit with greater restrictions than in General Use Zone (not shown on paper charts)
6	Territorial Sea Baseline

THANK YOU