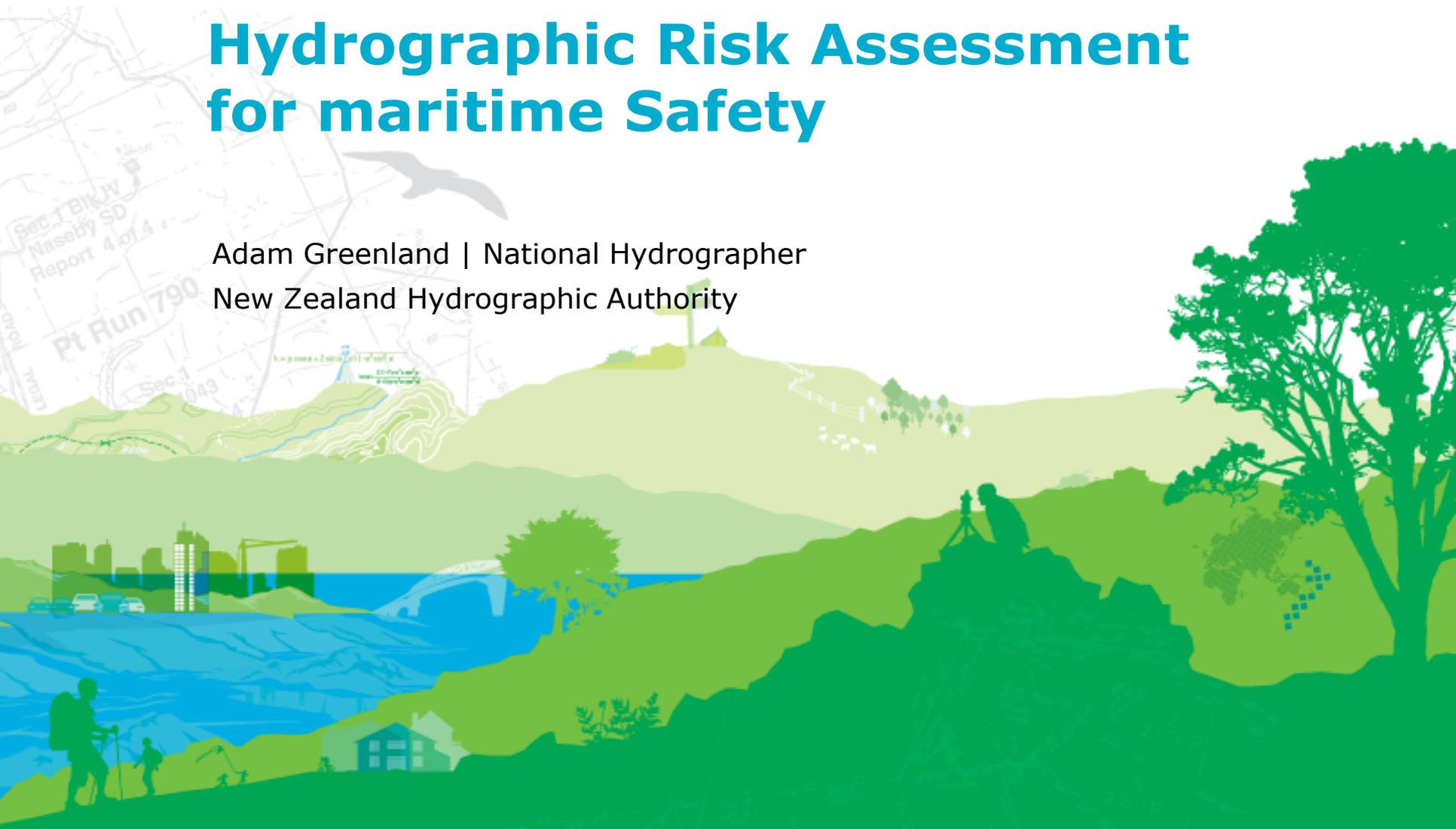


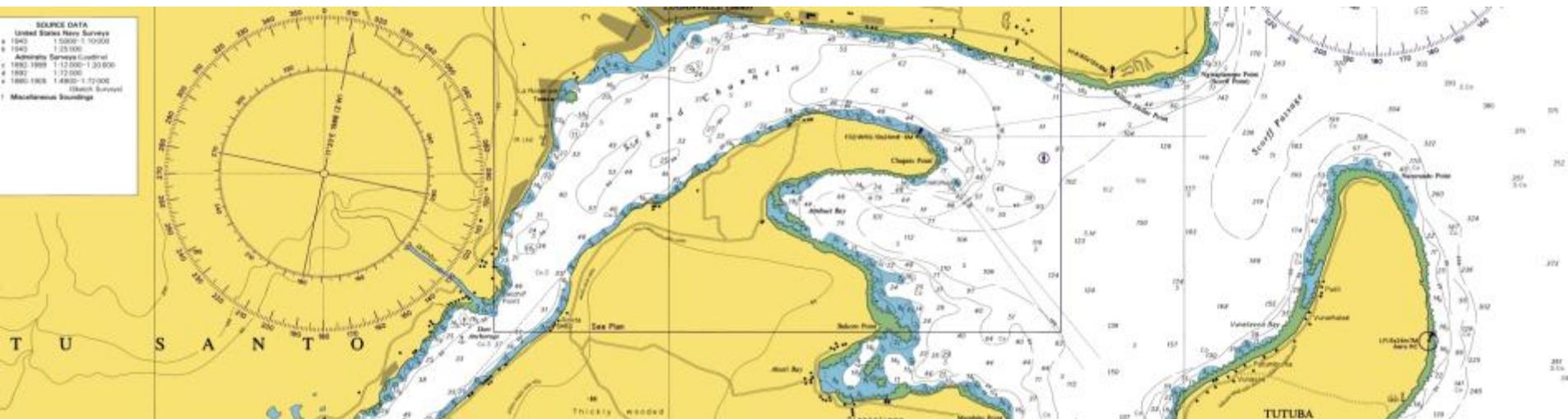
Hydrographic Risk Assessment for maritime Safety

Adam Greenland | National Hydrographer
New Zealand Hydrographic Authority



Background

- Maritime safety a major concern in the South West Pacific for a number of years
- December 2011 LINZ & MFAT signed MOU, to improve navigational & maritime safety in SWP region
- Overarching goal: achieve accurate & adequate charting coverage in SWP



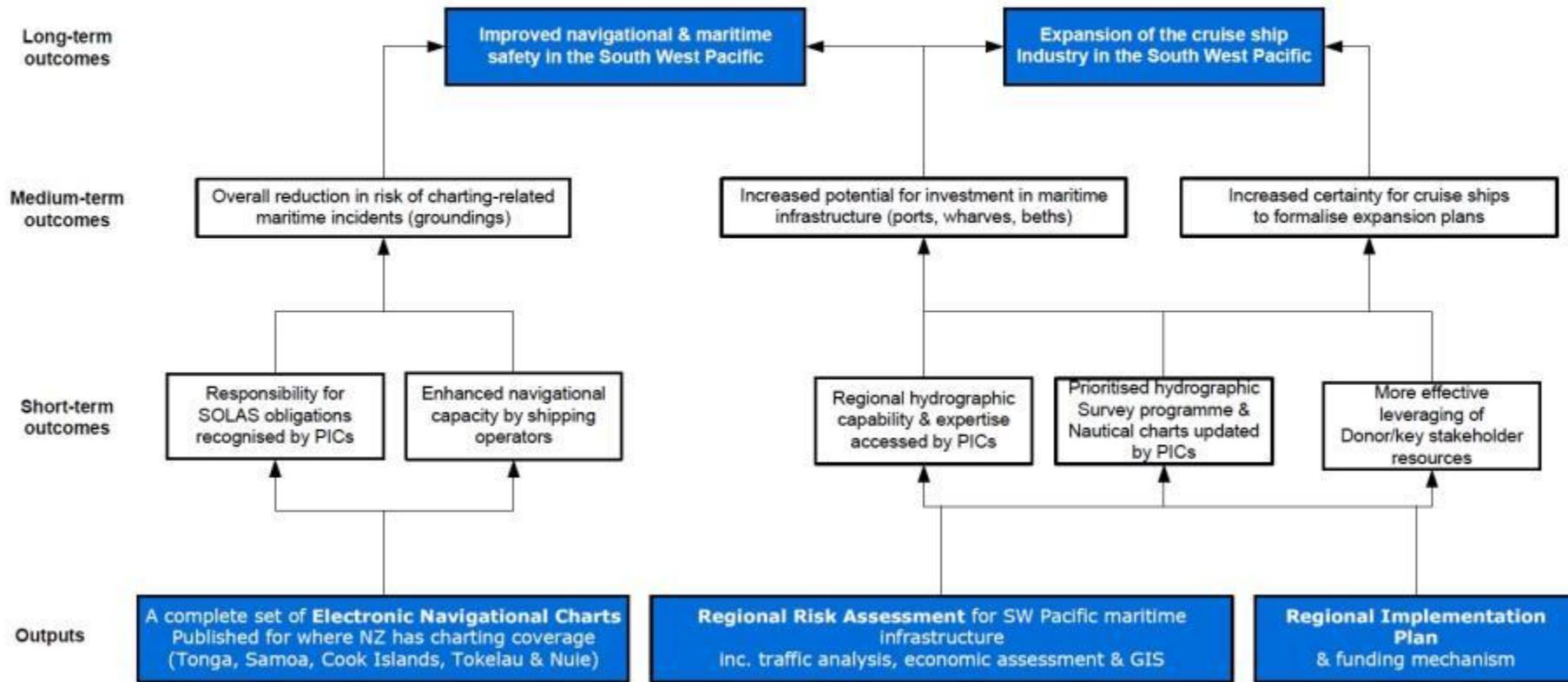
Coming to an uncharted Island near you



Results Framework

The Results Framework - Outputs, Outcomes and Goal

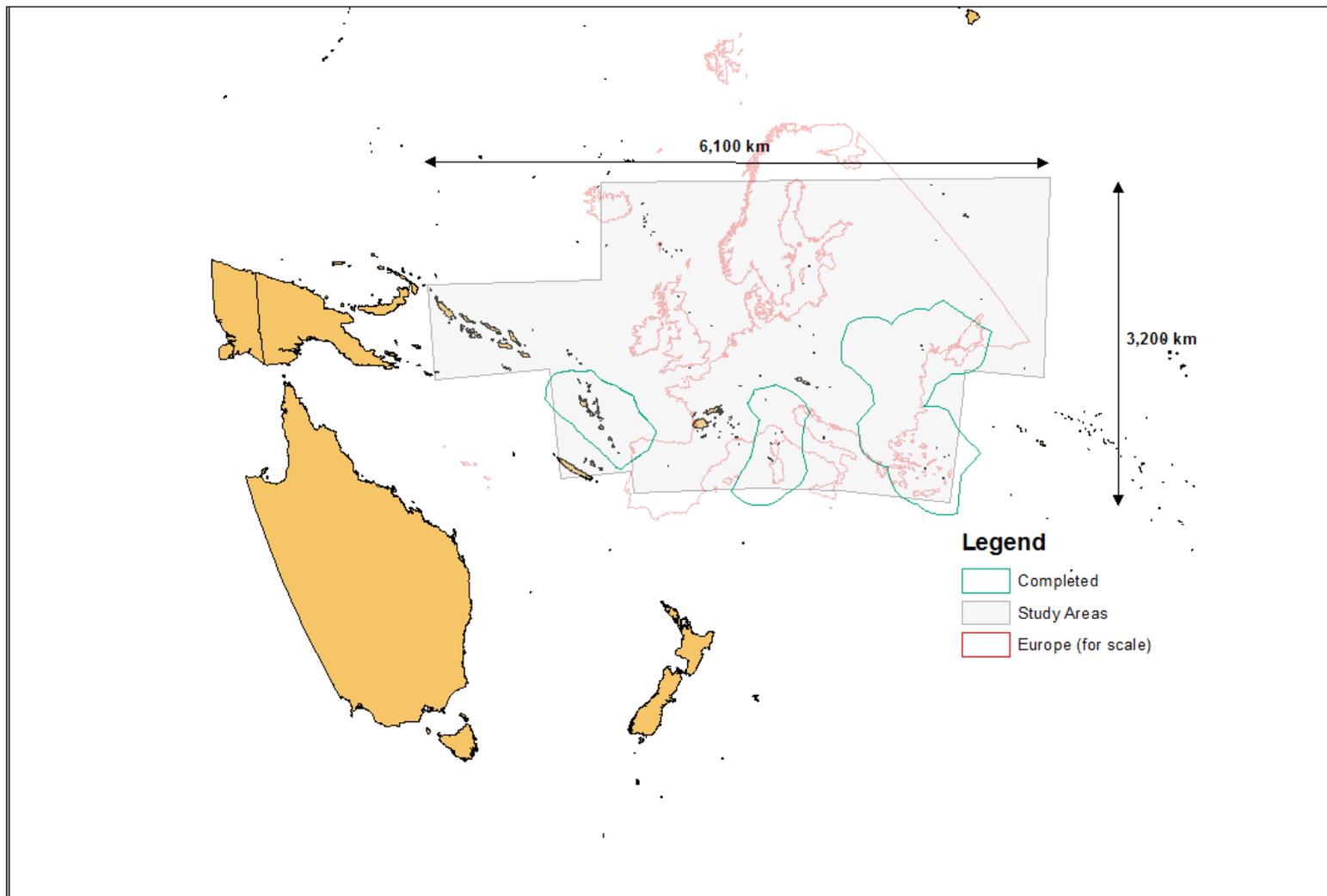
Goal of the Activity: Accurate & adequate charting coverage in the South West Pacific



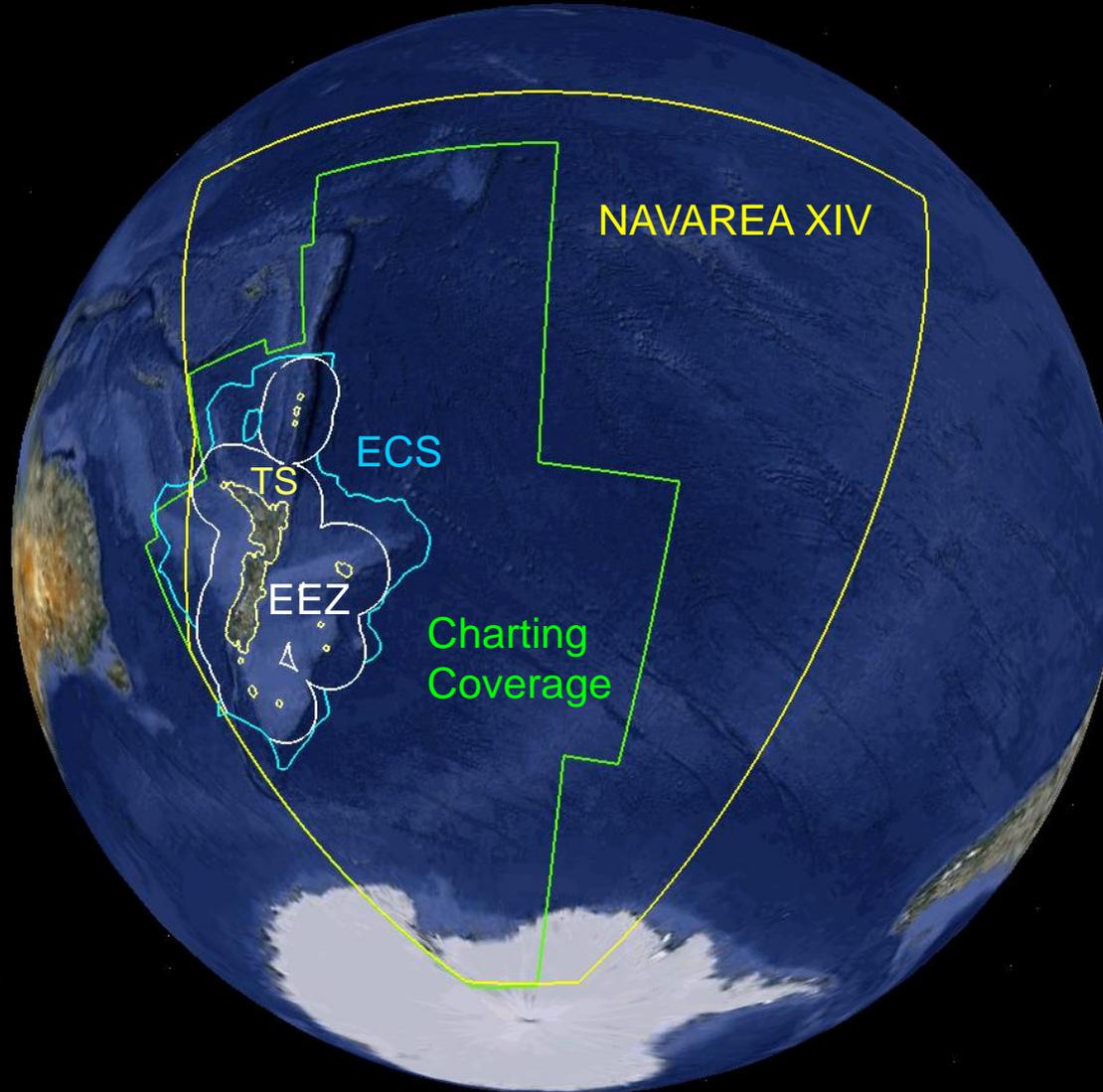
(PICs = Pacific Island Countries)

Enduring South West Pacific Hydrography Risk Assessment Framework

SW Pacific Study Area

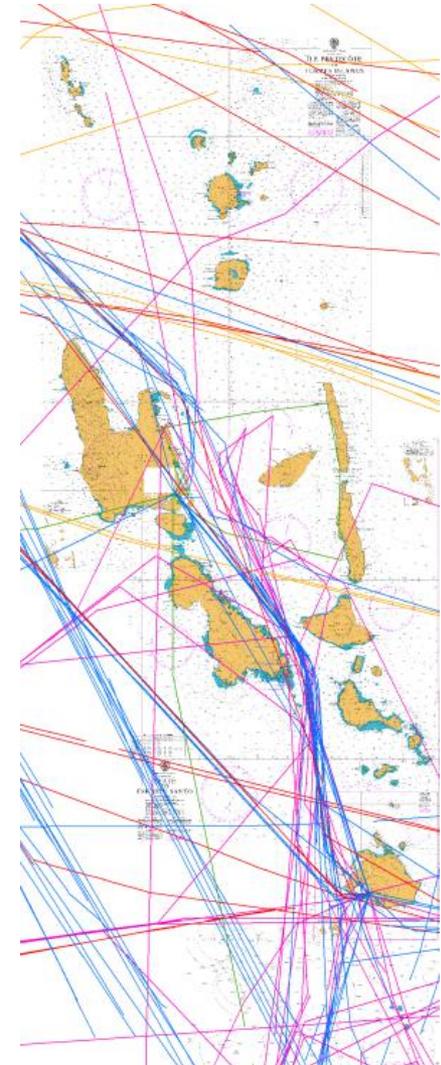


NZ Hydrographic Authority Area of Responsibility



Activities completed

- 60 ENCs published and maintained (60)
- Prototype Hydrography Risk Assessment Methodology developed
- Vanuatu pilot study (proof on concept)
 - S-AIS & domestic traffic analysis
 - In-country data gathering
 - Maritime Economic analysis
 - GIS Risk Assessment
 - Vanuatu Hydrography Risk Assessment results published
- Final Hydrography Risk Assessment Methodology published

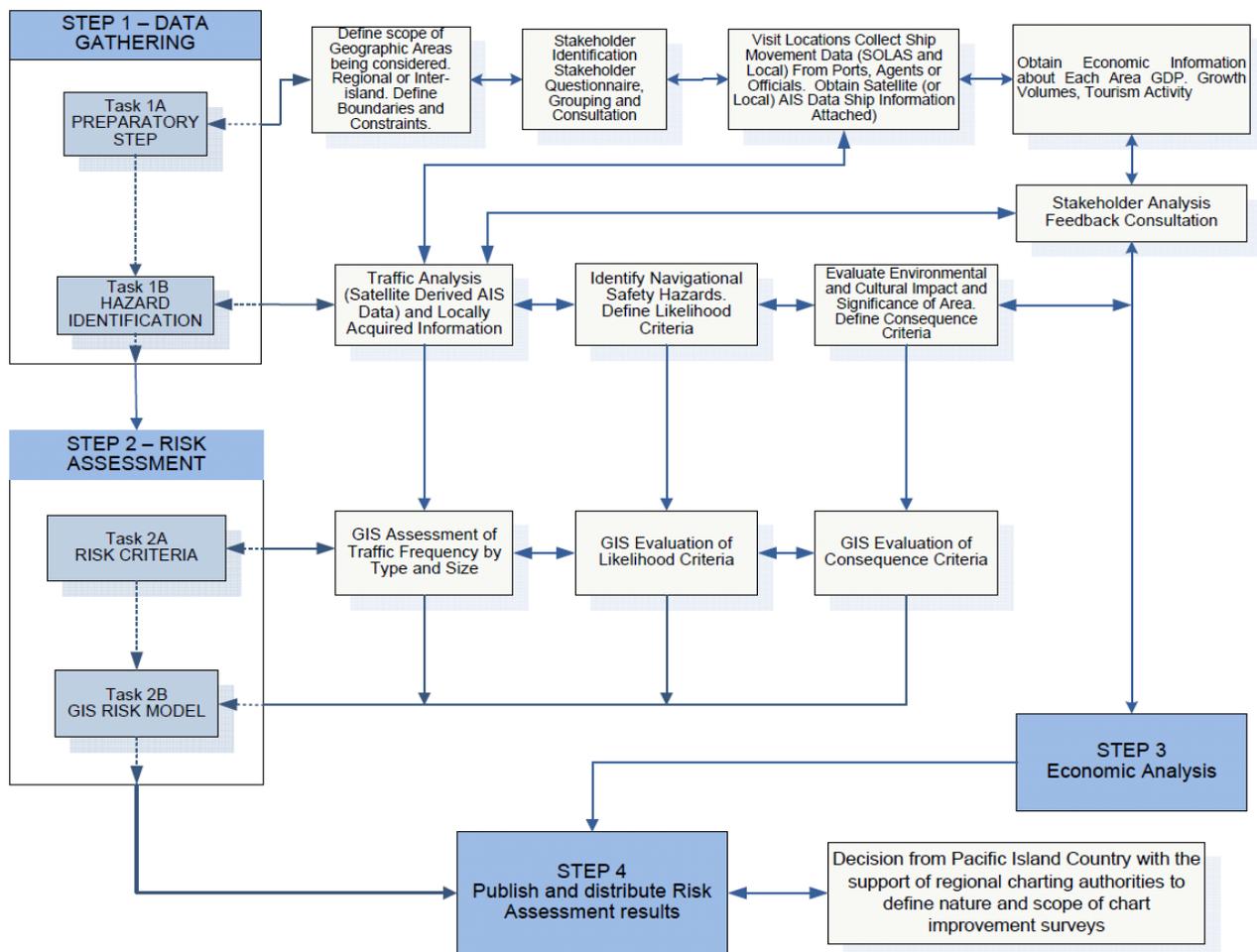


Risk based approach

- IMO Formal Safety Assessment (FSA)
- 5 step proactive process (1995)
- 3 key components
 - Risk
 - Ship types & sizes
 - Economic growth
- 4th Factor
 - Environmental status

Risk Assessment Methodology

FLOW CHART OF RISK ASSESSMENT METHODOLOGY FOR SW PACIFIC



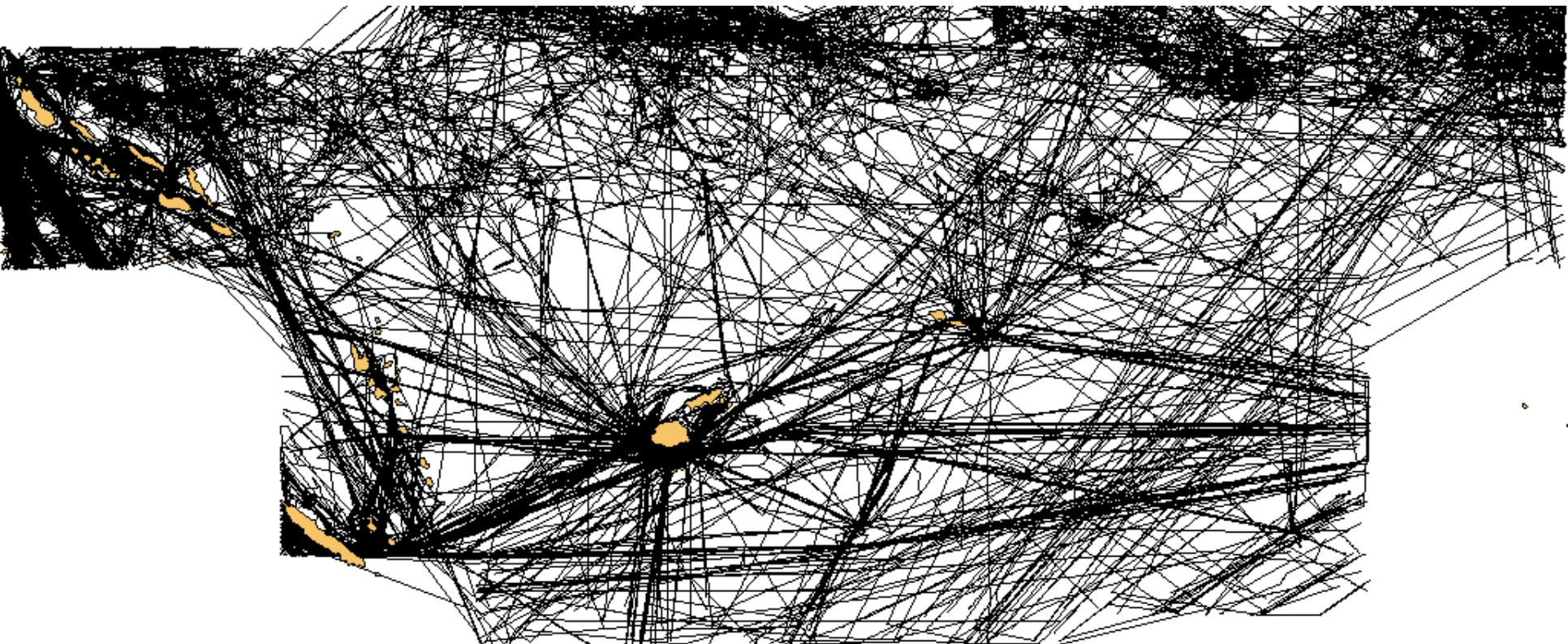
Prioritisation Process for chart improvements

- Risk based
- Transparent against set criteria
- Clearly documented
- Systematic
- Uniformly applied

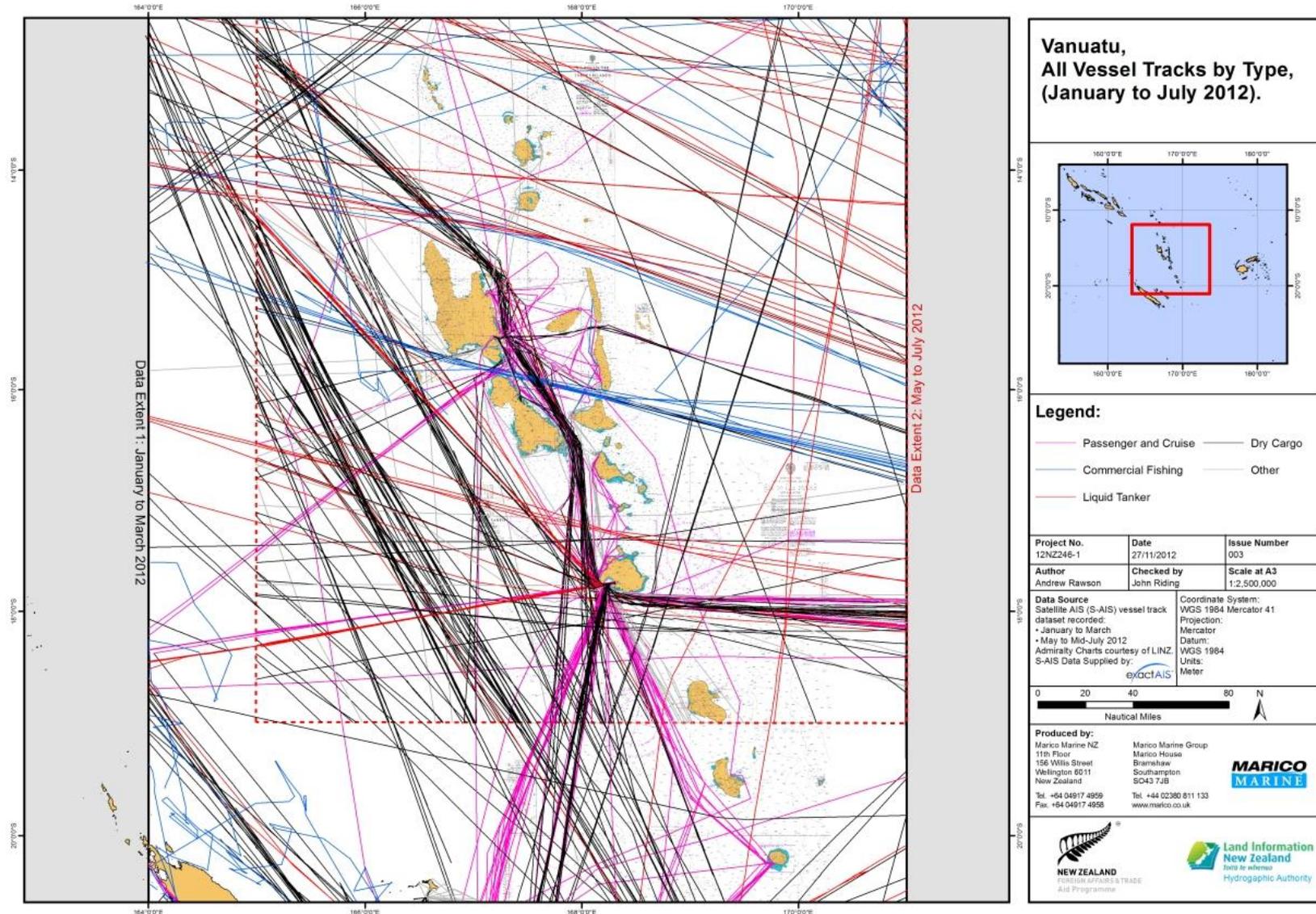
Prototype methodology & required input data must be designed before the project and then uniformly applied

A robust & data driven methodology for the identification of shipping routes at high risk

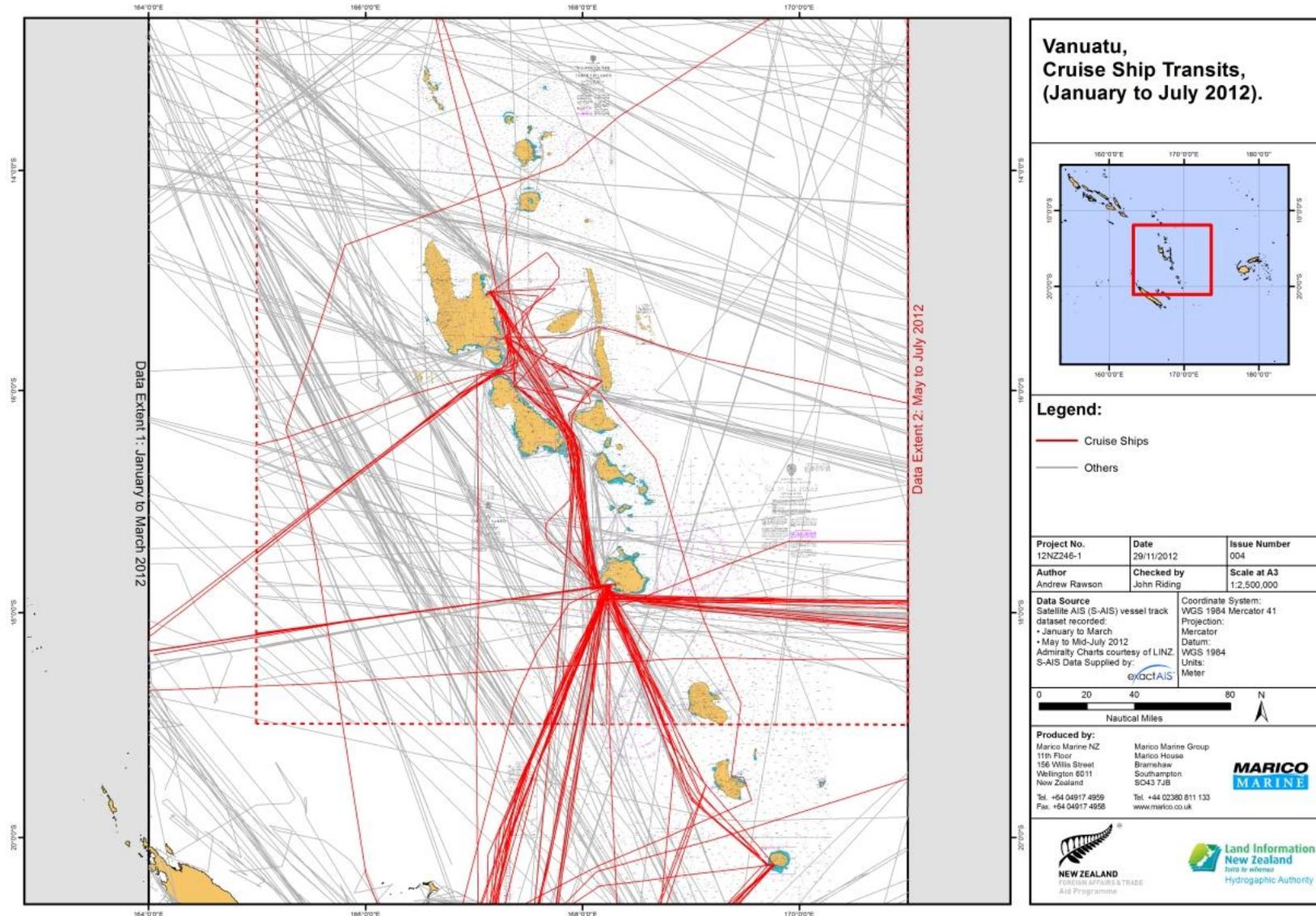
S-AIS data



Vanuatu – by vessel type



Vanuatu – Cruise ships



**Vanuatu,
Cruise Ship Transits,
(January to July 2012).**



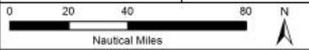
Legend:

- Cruise Ships
- Others

Project No. 12NZ246-1	Date 29/11/2012	Issue Number 004
Author Andrew Rawson	Checked by John Riding	Scale at A3 1:2,500,000

Data Source
Satellite AIS (S-AIS) vessel track dataset recorded:
• January to March
• May to Mid-July 2012
Admiralty Charts courtesy of LINZ
S-AIS Data Supplied by: 

Coordinate System:
WGS 1984 Mercator 41
Projection:
Mercator
Datum:
WGS 1984
Units:
Meter



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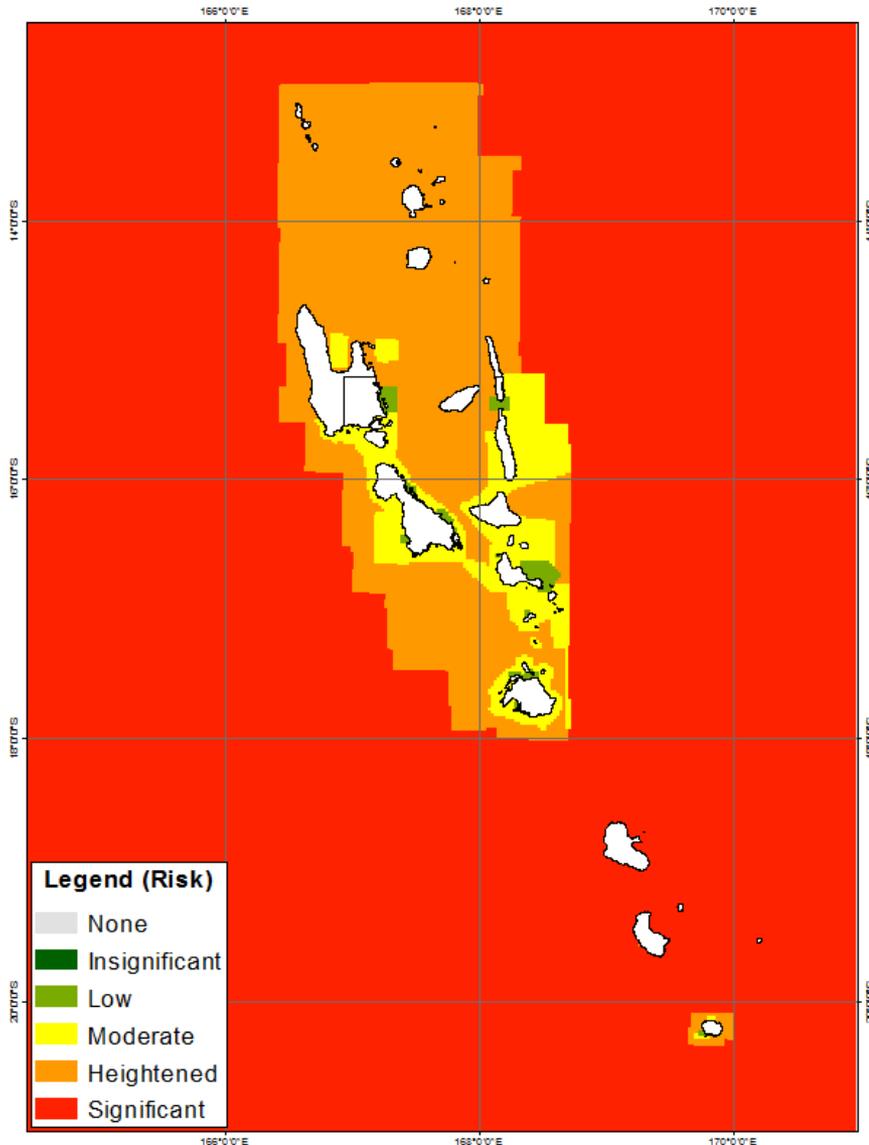


 **NEW ZEALAND**
FOREIGN AFFAIRS & TRADE
Aid Programme

 **Land Information
New Zealand**
Toitū te whenua
Hydrographic Authority

Figure Reference Number: 12NZ246-1_CruiseTransits_v4

Vanuatu – Risk Model Variables



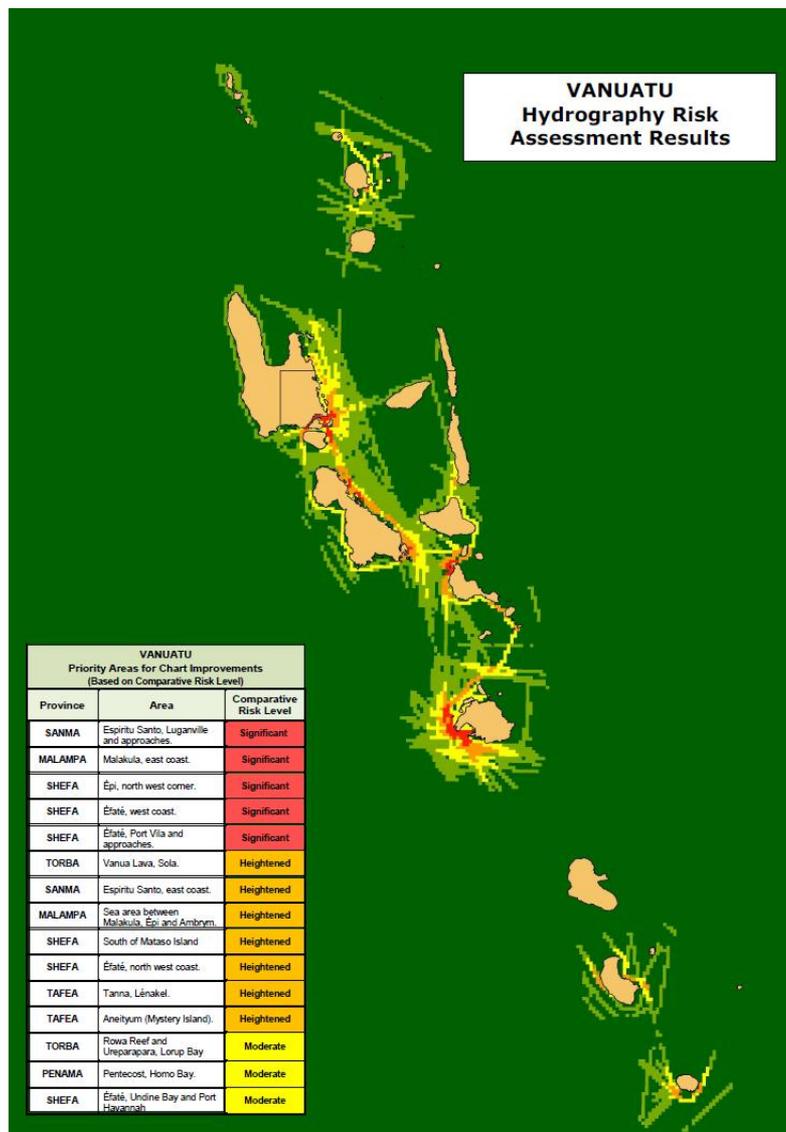
Causation Risk Factors

- Bottom type
- Navigational complexity
- **Chart quality - CATZOC**
- Aids to navigation
- Depth - bathymetry

Consequence Risk Factors

- Coral Reefs
- Mangroves
- Breeding grounds
- Protected sites
- Key infrastructure - ports

Vanuatu - Results



Vanuatu - Results

Area	IHO ¹	ADB ²	Carnival ³	Vanuatu ⁴	Risk ⁵
Unréraparapa – Lorup Bay	✓		✓	✓	
Vanua Lava – Maseunar Channel (Port Patteson)			✓		
Vanua Lava – Ravenga Island			✓		
Espiritu Santo – Big Bay	✓				
Espiritu Santo – Hog Harbour	✓		✓	✓	
Ambae – Lolowai Bay		✓			
Espiritu Santo – Luganville & Approaches	✓	✓	✓	✓	✓
Île Pentecôte – Loltong Bay		✓			
Île Pentecôte – Homo Bay	✓		✓	✓	
Malakula - east coast					✓
Malakula - Wala Island	✓		✓	✓	
Malakula – Litzlitz		✓		✓	
Malakula – Port Sandwich		✓			
Malakula – Méténovor Bay	✓	✓	✓	✓	
Epi – north west corner					✓
Shepherd Islands - Tongoa wall	✓			✓	
Éfaté – west coast					✓
Éfaté - Port Vila & Approaches	✓	✓	✓	✓	✓
Tanna - Waisisi		✓	✓		
Tanna - Lenakel		✓	✓		
Tanna – Port Resolution				✓	
Aneityum (Mystery Island)	✓		✓	✓	

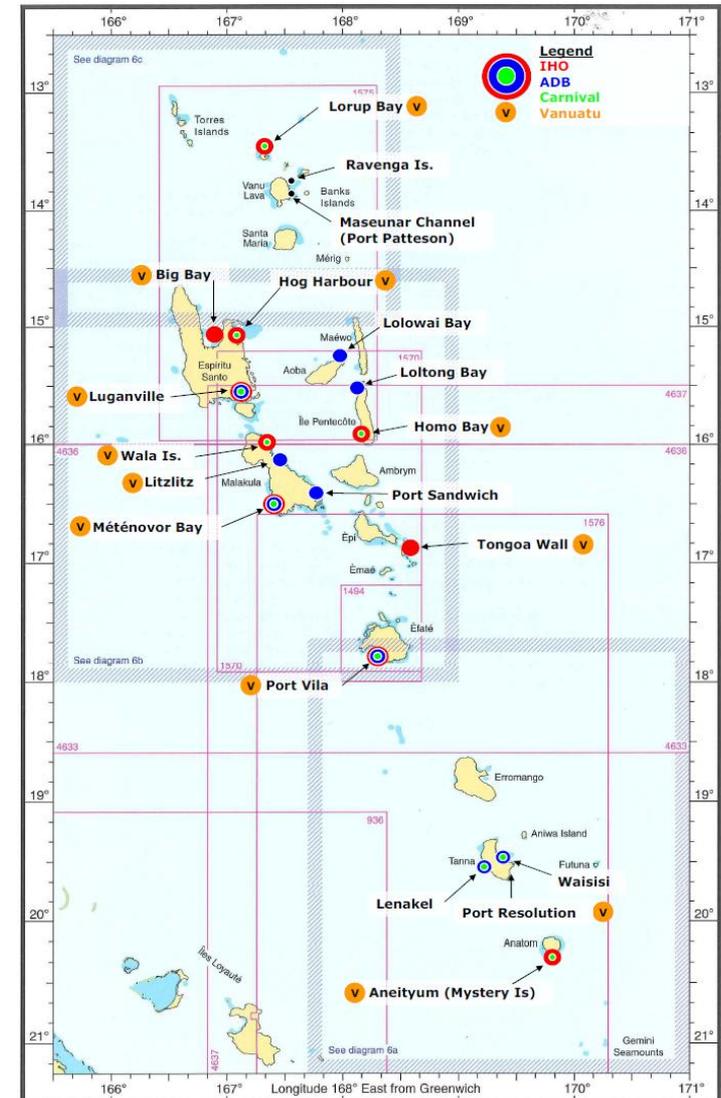
¹ IHO Report on Hydrography and Nautical Charting in The Republic of Vanuatu, December 2011.

² Vanuatu Inter-Island Shipping Support Project (Phase II), Volume 1: Main Report. Asian Development Bank, April 2010.

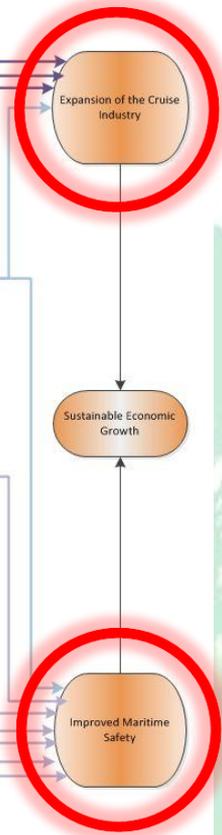
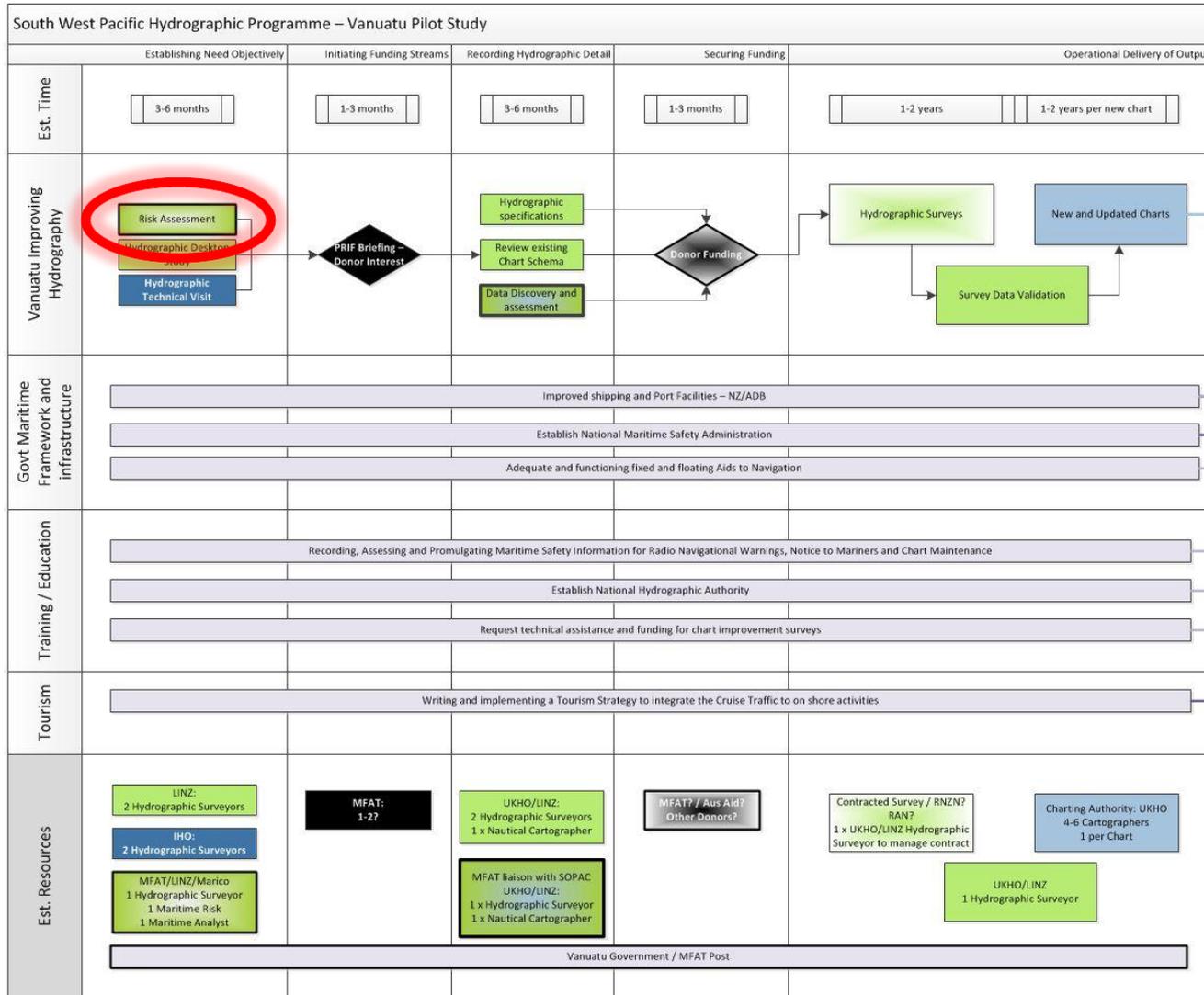
³ LINZ High Level Assessment of Carnival Australia Priorities for Hydrographic Survey in Vanuatu, September 2011 and areas of existing Carnival Australia survey data

⁴ Vanuatu NCMSI Sub-Committee

⁵ Comparative Risk Assessment - areas of **significant** risk



Vanuatu Pilot Study



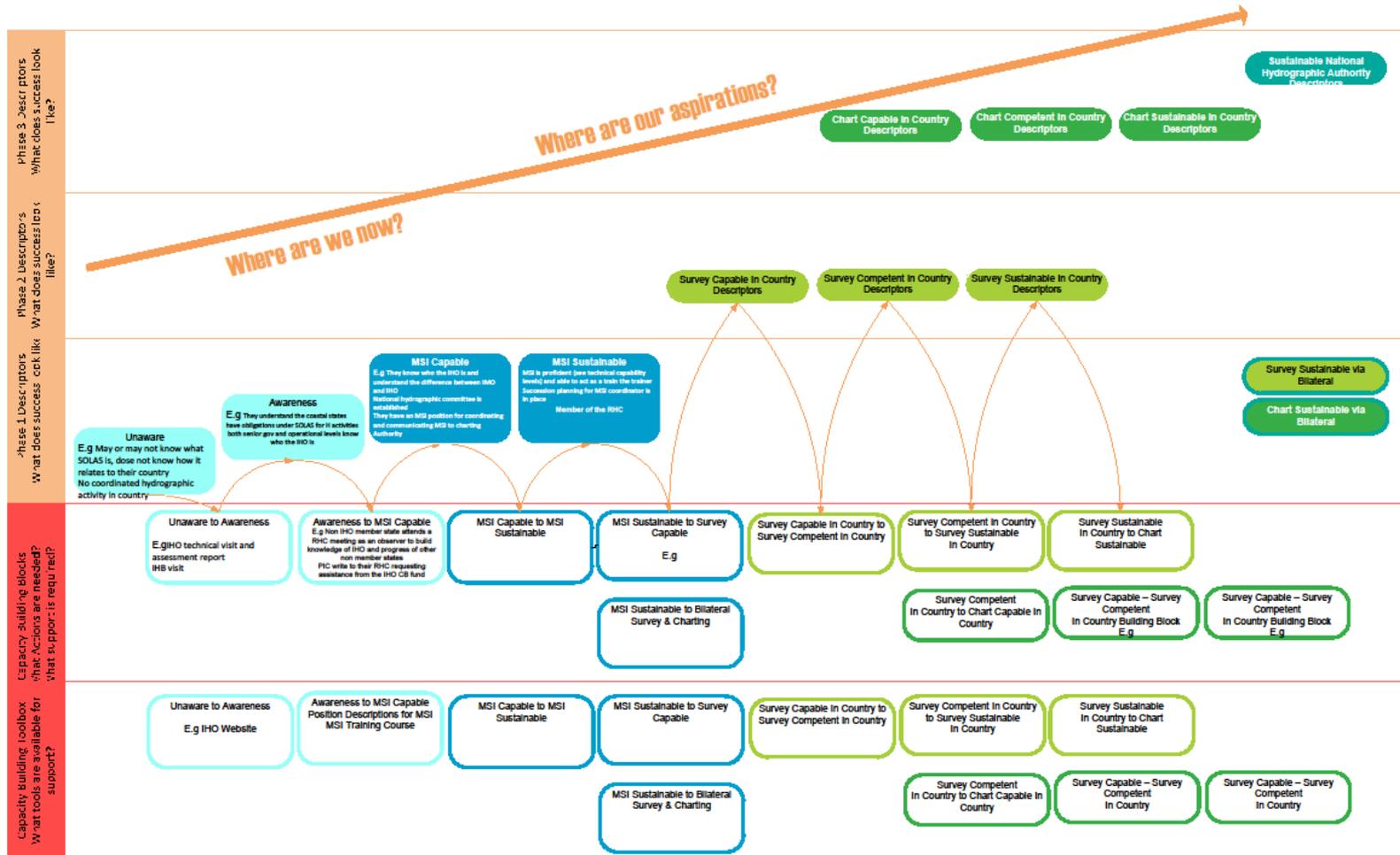
Next Steps

- Risk Assessments
 - Cook Islands & Tonga in progress
 - Samoa?
- Review CB programmes in SW Pacific:
SWPHC IHO Meeting Vanuatu 12-14 Nov 2013
 - CB Workgroup
- Proposal to donors for funding
 - hydrographic surveys: (PRIF) MFAT NZ Aid, ADB, WB, JICA, EU
 - Risk assessments
- Establish LINZ/MFAT strategic partnership with shared long term outcomes

CB Maturity Model Concept

26 Sep 2013 Ver 1.0

Hydrographic Capability Maturity Model for Capacity Building



Publications & Outreach

- Publications http://www.iho.int/mtg_docs/CB/CBA/SWPHC-Risk_Assessment.htm
 - Hydrography Risk Assessment Methodology 280213
 - Vanuatu Risk Assessment Exec Summary 240113
 - Vanuatu Risk Assessment Final Report 260113
 - Vanuatu Risk Assessment Annexes 240113
- GIS linz.wivolo.com
- CB programmes: IMO, IALA
- Donors: (PRIF) MFAT NZ Aid, ADB, WB, JICA, EU

Thank You
Questions?

agreenland@linz.govt.nz