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

Long-term outcomes

- Improved navigational & maritime safety in the South West Pacific
- Expansion of the cruise ship industry in the South West Pacific

Medium-term outcomes

- Overall reduction in risk of charting-related maritime incidents (groundings)
- Increased potential for investment in maritime infrastructure (ports, wharves, beths)
- Increased certainty for cruise ships to formalise expansion plans

Short-term outcomes

- Responsibility for SOLAS obligations recognised by PICs
- Enhanced navigational capacity by shipping operators
- Regional hydrographic capability & expertise accessed by PICs
- Prioritised hydrographic survey programme & nautical charts updated by PICs
- More effective leveraging of donor/key stakeholder resources

Outputs

- A complete set of Electronic Navigational Charts published for where NZ has charting coverage (Tonga, Samoa, Cook Islands, Tokelau & Niu)
- Regional Risk Assessment for SW Pacific maritime infrastructure inc. traffic analysis, economic assessment & GIS
- Regional Implementation Plan & funding mechanism

(PICs = Pacific Island Countries)
NZ Hydrographic Authority
Area of Responsibility

NAVAREA XIV
Charting Coverage

ECS
EEZ
TS
Activities completed

- 42 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
GIS Risk Terrain Modelling (RTM)

- Risk = Freq (Likelihood) x Consequence
  - Identify Likelihood & Consequence risk factors – 29 in total including shipping traffic (Risk Matrix)
  - Create a risk model
  - Combine the likelihood & consequence to produce a risk score

- GIS RTM
  - Weighted Overlay Analysis is the scientific methodology by which RTM is achieved
  - Likelihood & Consequence factors combined
  - allows visualisation of complex data for presentation to decision makers
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 – Risk Model Variables

Causation Risk Factors
- Bottom type
- Navigationally 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

Hydrography Risk Assessment Results
## Vanuatu - Results

<table>
<thead>
<tr>
<th>Area</th>
<th>IHO¹</th>
<th>ADB²</th>
<th>Carnival³</th>
<th>Vanuatu⁴</th>
<th>Risk⁵</th>
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</table>

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 NOMS Sub-Committee
⁵ Comparative Risk Assessment - areas of significant risk
## Vanuatu Pilot Study

### South West Pacific Hydrographic Programme – Vanuatu Pilot Study

<table>
<thead>
<tr>
<th>Establishing Need</th>
<th>Developing Objectives</th>
<th>Initiation</th>
<th>Fundraising</th>
<th>Recording Hydrographic Data</th>
<th>Securing Funding</th>
<th>Operational Delivery of Outputs</th>
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<td>3-3 months</td>
<td>1-2 years</td>
<td>1-2 years per new chart</td>
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#### Vanuatu Improving Hydrography

- **Risk Assessment**
- **Hydrographic Surveys**
- **New and Updated Charts**
- **Survey Data Validation**

#### Govt Maritime Framework and Infrastructure

- Improved shipping and Port facilities – NZAOM
- Establish National Maritime Safety Administration
- Adequate and functioning fixed and floating aids to navigation

#### Training / Education

- Recording, Assessing and Prioritising Maritime Safety Information for Navigational Warnings, Notices to Mariners and Chart Maintenance
- Establish National Hydrographic Authority
- Request technical assistance and funding for chart improvement surveys

#### Tourism

- Writing and implementing a Tourism Strategy to integrate the Cruise Traffic to new marine activities

### Est. Resources

- **VNIQ**
  - 2 Hydrographic Surveyors
- **IMO**
  - 3 Hydrographic Surveyors
- **MTN**
  - 1 Marine Navigator
  - 1 Marine Surveyor
  - 1 Marine Engineer
- **UNHS**
  - 2 Hydrographic Surveyors
  - 1 Naval Architect
- **NH**
  - 1 Marine Surveyor
  - 1 Marine Engineer
- **ZMB**
  - 1 Marine Surveyor
  - 1 Marine Engineer
- **SOGC**
  - 1 Marine Surveyor
  - 1 Marine Engineer

### Vanuatu Government / MAFIT Post

- Contracted Survey / NZHINZ
  - 1 x NZHINZ Hydrographic Surveyor to manage contract
- Charting Authority: NZHINZ
  - For 4 Cartography, 1 Chart
Publications & Outreach

- Publications
  - 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
Next Steps

- Risk Assessments
  - Cook Islands  7-19 Oct 2013
  - Tonga  25 Nov–7 Dec 2013
- Review CB programmes in SW Pacific:
  SWPHC IHO Meeting Vanuatu 12-14 Nov 2013
- 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
Thank You
Questions?
agreenland@linz.govt.nz