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, bays)
- 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 and stakeholder resources

Outputs

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

Enduring South West Pacific Hydrography Risk Assessment Framework

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

NAVAREA XIV

Charting Coverage
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
Risk Assessment Methodology

FLOW CHART OF RISK ASSESSMENT METHODOLOGY FOR SW PACIFIC

STEP 1 - DATA GATHERING
- Task 1A PREPARATORY STEP
  - Define scope of Geographic Areas being considered.
  - Regional or Island.
  - Define Boundaries and Constraints.
- Task 1B HAZARD IDENTIFICATION
  - Traffic Analysis (Satellite Derived AIS Data) and Locally Acquired Information
  - Identify Navigational Safety Hazards
  - Define Likelihood Criteria
  - Visit Locations Collected Ship Movement Data (SOLAS and Local) From Ports, Agents or Officials. Obtain Satellite (or Local) AIS Data Ship Information Attached

STEP 2 - RISK ASSESSMENT
- Task 2A RISK CRITERIA
- Task 2B GIS RISK MODEL
  - GIS Assessment of Traffic Frequency by Type and Size
  - GIS Evaluation of Likelihood Criteria
  - GIS Evaluation of Consequence Criteria

STEP 3 - Economic Analysis
- Stakeholder Analysis Feedback Consultation
- Evaluate Environmental and Cultural Impact and Significance of Area
- Define Consequence Criteria

STEP 4 - Publish and distribute Risk Assessment results
- Decision from Pacific Island Country with the support of regional charting authorities to define nature and scope of chart improvement surveys

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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, All Vessel Tracks by Type, (January to July 2012).

Legend:
- Passenger and Cruise
- Dry Cargo
- Commercial Fishing
- Other
- Liquid Tanker

Figure Reference Number: 12NZ246-1_TransShipType_v3
Vanuatu – Cruise ships

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

Legend:
- Cruise Ships
- Others

Figure Reference Number: 12NZ244-1_CruiseTransits_v4
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 Pilot Study

South West Pacific Hydrographic Programme – Vanuatu Pilot Study

- Establishing Need Objectively
- Initiating Funding Streams
- Recording Hydrographic Detail
- Securing Funding
- Operational Delivery of Outputs

Est. Time:
- 3-6 months
- 1-3 months
- 3-6 months
- 1-3 months
- 1-2 years
- 1-2 years per new chart

Vanuatu Improving Hydrography
- Risk Assessment
- Hydrographic Surveys
- New Aircraft Acquisition
- Data Discovery and Assessment
- Hydrographic Surveys
- Now and Updated Charts

Cost-Minded and Performant Infrastructure
- Improved Shipping and Port Facilities – NZ$62M
- Establish National Maritime Safety Administration
- Adequate and functioning need and fleeting aids to navigation

Training, Education
- Recording, Assessing, and Promoting Maritime Safety information for Radio Navigational Warnings, Notice 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 use shore activities

Est. Resources:
- UNH: 2 Hydrographic Surveys
- MFA: 3 Hydrographic Surveys
- MAF: 3 Hydrographic Surveys
- 3 Maritime Analysts

Vanuatu Government / MFAI Trust

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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  7-20 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
Vinaka
Questions?
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