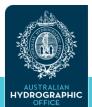# Australian Hydrographic Office

Project Muru – *The Path* to a Digital Transformation Strategy

Mr Michael Clarke
Assistant Director National Hydrographic Strategies
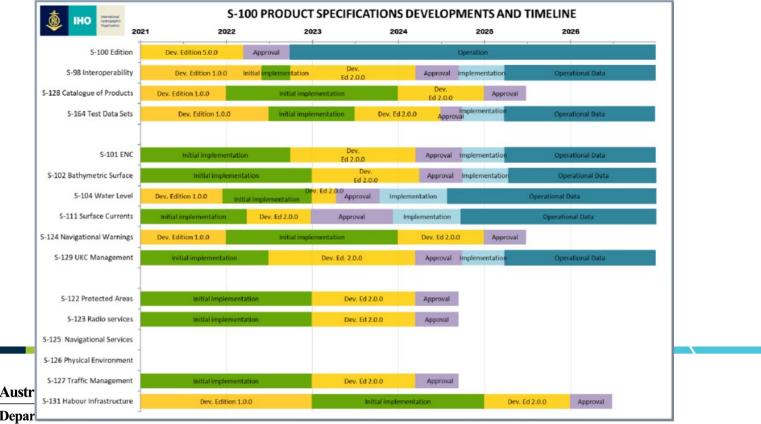
Project Muru

- **Project Muru (*the path*) will plan for and deliver the Australian Hydrographic Office's Digital Transformation Strategy and Implementation Plan**

- **Key Pillars of Project Muru:**

  - Publish next generation Electronic Navigation Charts in 2025

  - Digital delivery of AHO's Australian products and services through www.hydro.gov.au by 2025.
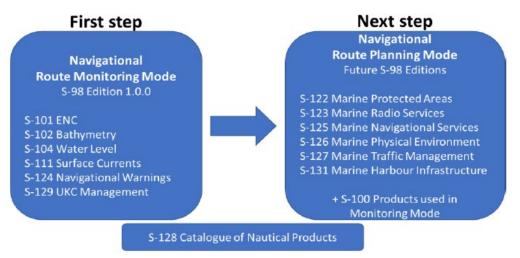
Pillar 1 – S-100

- AHO currently produces 896 electronic navigational charts (ENCs) and 400 paper nautical charts.

- In accordance with the IHO S-100 implementation strategy, we expect the S-101 Edition 2 Product Specification to be published mid 2024.
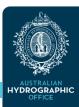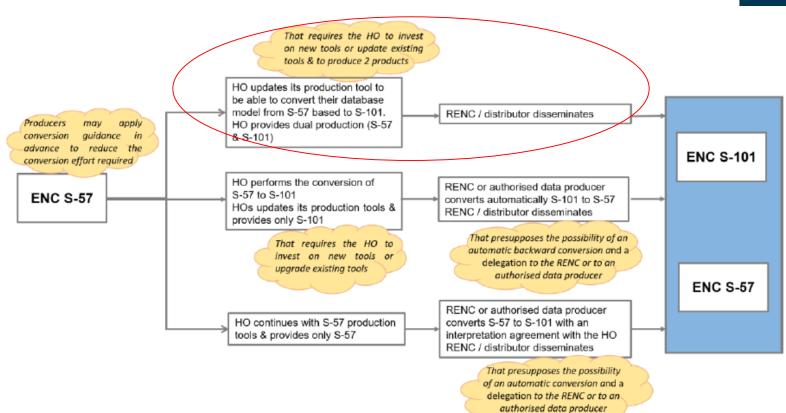
Pillar 1 – S-100

- **Plan for the production of:**

  - S-101 Electronic Navigation Chart

  - S-102 Bathymetric Surface

  - S-104 Water Level Information for Surface Navigation

  - S-111 Surface Currents

  - S-124 Navigational Warnings

  - S-129 Under Keel Clearance Management (UKCM)

- **These represent the 'route monitoring mode' product specifications within ECDIS**

First step

Navigational
Route Monitoring Mode
S-98 Edition 1.0.0

S-101 ENC
S-102 Bathymetry
S-104 Water Level
S-111 Surface Currents
S-124 Navigational Warnings
S-129 UKC Management

Next step

Navigational
Route Planning Mode
Future S-98 Editions

S-122 Marine Protected Areas
S-123 Marine Radio Services
S-125 Marine Navigational Services
S-126 Marine Physical Environment
S-127 Marine Traffic Management
S-131 Marine Harbour Infrastructure

+ S-100 Products used in
Monitoring Mode

S-128 Catalogue of Nautical Products

Australian Government
Department of Defence

Pillar 1 – S-100

Producers may apply conversion guidance in advance to reduce the conversion effort required

ENC S-57

That requires the HO to invest on new tools or update existing tools & to produce 2 products

HO updates its production tool to be able to convert their database model from S-57 based to S-101. HO provides dual production (S-57 & S-101)

RENC / distributor disseminates

HO performs the conversion of S-57 to S-101
HOs updates its production tools & provides only S-101

RENC or authorised data producer converts automatically S-101 to S-57 RENC / distributor disseminates

That requires the HO to invest on new tools or upgrade existing tools

That presupposes the possibility of an automatic backward conversion and a delegation to the RENC or to an authorised data producer

HO continues with S-57 production tools & provides only S-57

RENC or authorised data producer converts S-57 to S-101 with an interpretation agreement with the HO RENC / distributor disseminates

That presupposes the possibility of an automatic conversion and a delegation to the RENC or to an authorised data producer

ENC S-101

ENC S-57

Potential options for HOs for future production of S-101 ENCs in conjunction with S-57 maintenance/production Rev1 version

Australian Government
Department of Defence

Pillar 1 – S-100

S-101 Benefits for users:

- **Route Planning**

  - Just In Time Arrival (Voyage optimisation)

  - Fuel Economy

  - Optimal Engine Efficiency

  - Emissions Control

  - Regulatory Compliance MARPOL

  - Cargo Loading

- **Monitoring**

  - Improved Navigational Safety (Situational Awareness, Anti-Grounding, Route Checking)

  - Reduced risk of accidents/collisions

  - Enhanced chart query functions

  - Improved metadata for data quality presentation

  - Provides the base layer for interoperability with other S-100 based products, such as bathymetric surfaces and under keel clearance management systems

Australian Government
Department of Defence

Pillar 2 – Digital Delivery

- **Project Muru, Pillar 2 - Digital delivery of all Australian AHO products by 2025 includes:**

  - Electronic Navigation Charts

  - Chart Index

  - Nautical Publications

  - Paper Nautical Charts

Currently these are mainly available through chart resellers. We will update the www.hydro.gov.au website to facilitate online shopping and checkout.
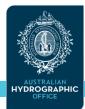
Pillar 2 – Digital Delivery

- **AHO's new digital chart index – available from: www.hydro.gov.au/prodserv/paper/charts.htm**

Pillar 2 – Digital Delivery

- ## Nautical Publications:

  - From 2022 both AHP20 *Mariner's Guide to Australian Waters* 5th Edition and 2022 AHP11 *Australian National Tide Tables* will be available in print and pdf format at no cost.
  - 2023 Editions will be digital only.

Pillar 2 – Digital Delivery

- **Paper Nautical Charts**

    - AHO Produces ~400 paper nautical charts

    - Paper nautical charts may be used for emergency back up for electronic navigation

    - Paper charts are disproportionately resource intensive to produce, distribute, use and maintain

    - AHO follows a digital first production methodology – all paper charts are produced from the same hydrographic production data as ENCs
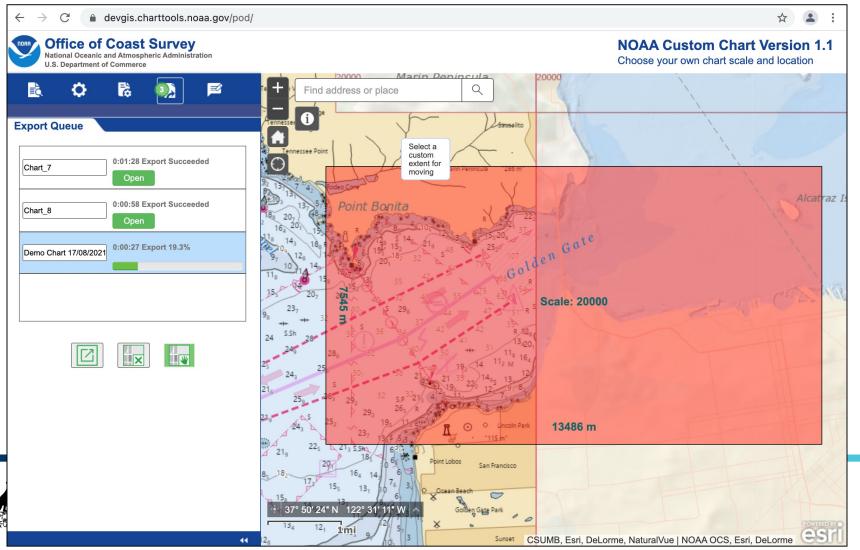
- **Transitioning to full digital delivery is not the end of paper charts**

    - Advances in geospatial mapping/charting technology can be used to generate paper charts 'on demand' by users from quality controlled and up to date ENC data
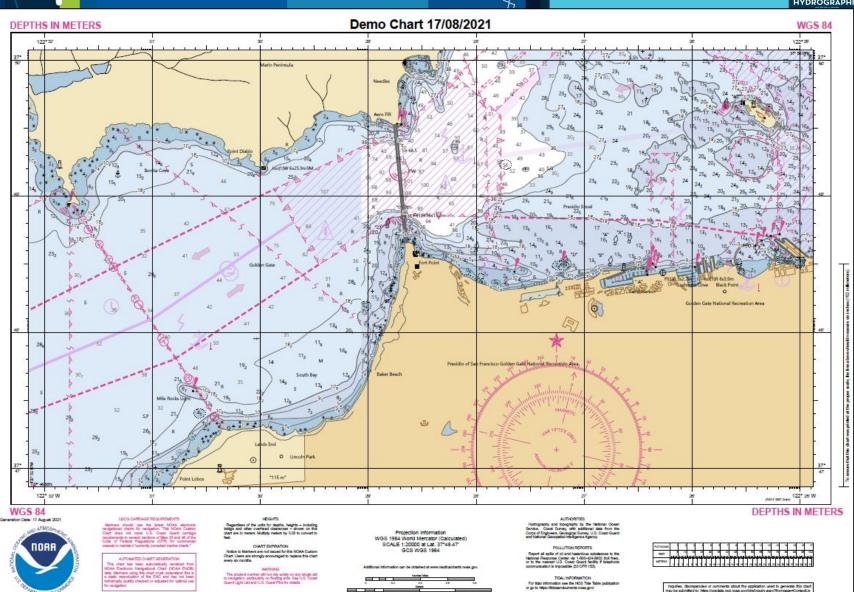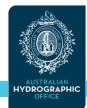
Pillar 2 – Digital Delivery

- ## NOAA Custom Chart Tool

Pillar 2 – Digital Delivery
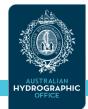
Pillar 2 – Digital Delivery

- **'on demand' paper charts**

  - There will be challenges to overcome to ensure these charts remain safe for navigation

  - We hope to have an AHO development system available for testing and customer feedback soon

Australian Government

Department of Defence

Project Muru - Summary

- **The visible aspects of the AHO digital transformation will include:**

  - Rolling out S-101 ENCs and associated S-100 products from 2025

  - Ensuring all Australian products and services are available digitally via www.hydro.gov.au by 2025

  - Transition to wholly digital nautical publications and 'paper' charts by 2025

- **The Australian Hydrographic Office and the Project Muru team invite all stakeholders on this path. Comments and suggestions can be sent to DigitalStrategy@hydro.gov.au**