



XOCEAN

Ocean data, **delivered.**



Charting the Great Barrier Reef

**The First USV Only Bathymetric Survey for the AHO's
HydroScheme Industry Partnership Programme (HIPP)**

Martin Tunwell, Head of BD Civil Hydrography

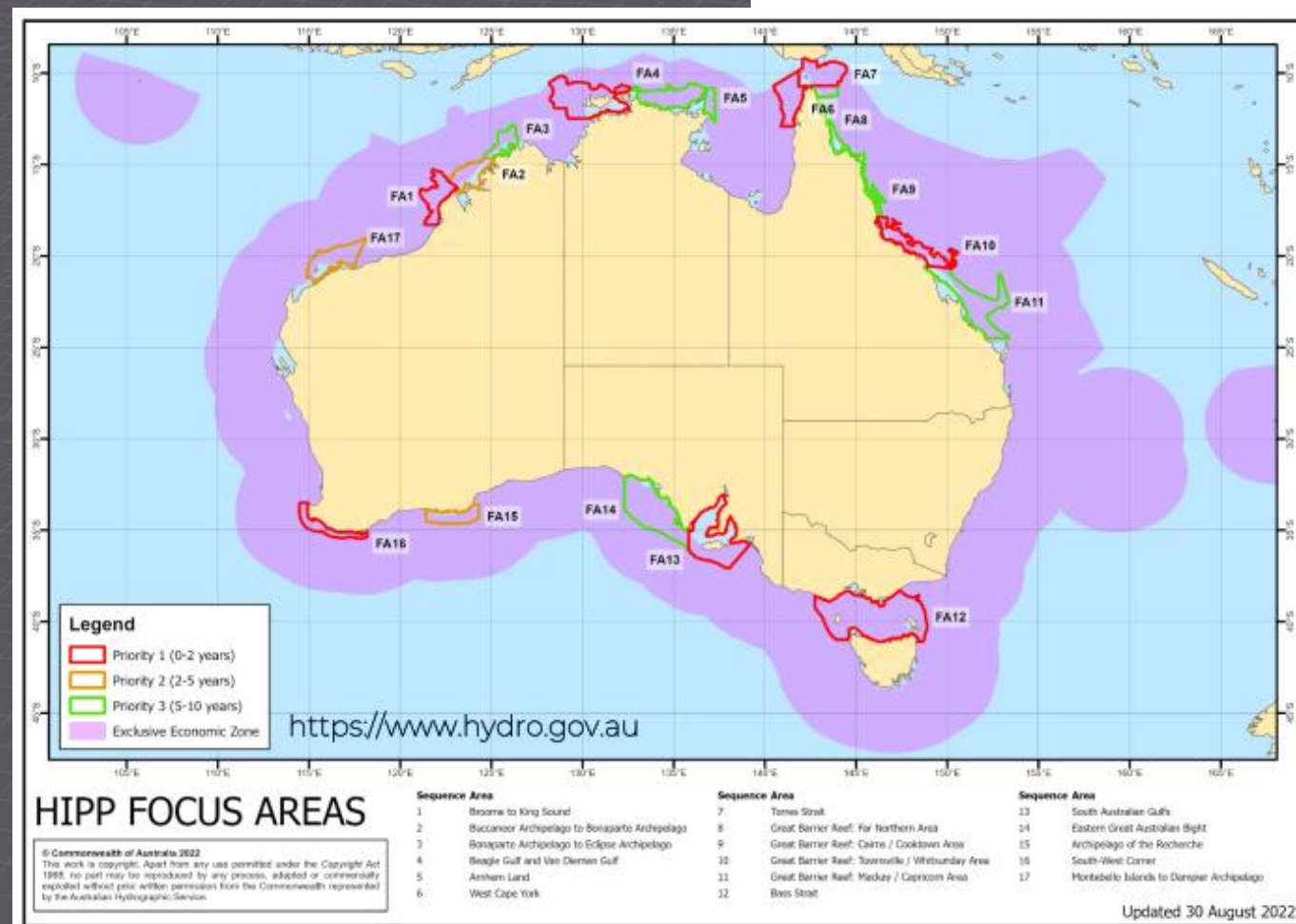
Australian Charting Area

- 32,255nm of mainland coastline
- $ACA = 13,000,000 \text{ nm}^2$
- ACA includes:
 - Australia' EEZ
 - Australian Overseas Territories
 - Australian Antarctic Territories
 - Sub- Antarctic Waters
 - Indian Ocean and Tasman Sea
- Estimated 11,000,000 survey line nm to survey EEZ to modern standards.



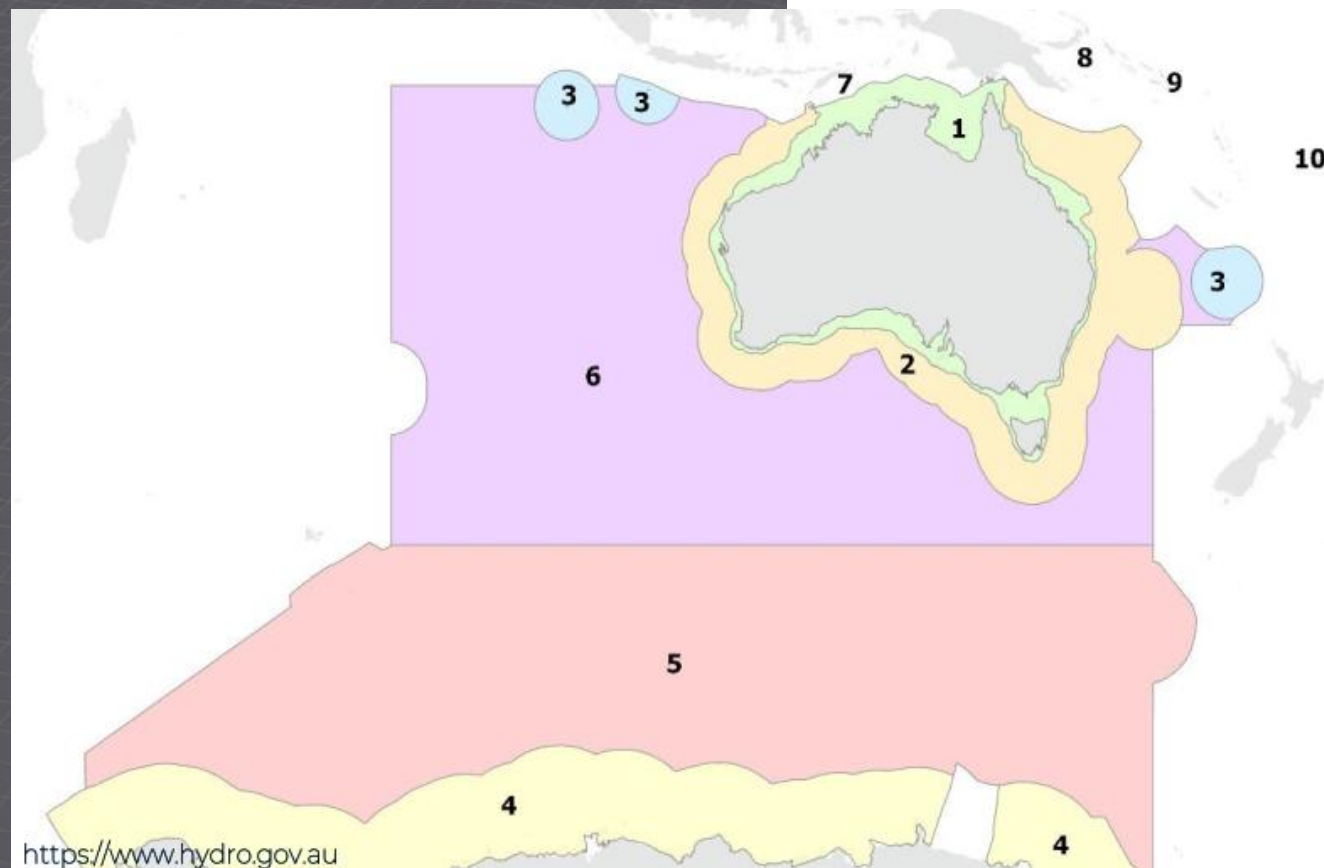
HIPP Stage 1 – Implementation Stage

- 2020-2024
- First Introduced in 2016 White Paper:
Defence will seek to replace the hydrographic capability within efficient combination of military and commercial hydrographic and oceanographic survey capabilities
- Priority for Safety of Navigation tasks
- Scientific collect incidental to main tasks
- Budget of \$150,000,000 AUD
- Projects ≈ 2-4 months



HIPP Stage 2 – Ramp Up

- 2024-2028
- Expanded Geographical Area
- Expanded Rate of Effort – Target 200,000 SLNM per year
- Scientific collect incidental to main tasks
- Funding approved of \$1 Billion AUD through to 2033/34
- Mixture of project 1-, 2- and 3-year scopes
- Panel increased to 9 – this is where XOCEAN's HIPP journey begins



HIPP Panellists

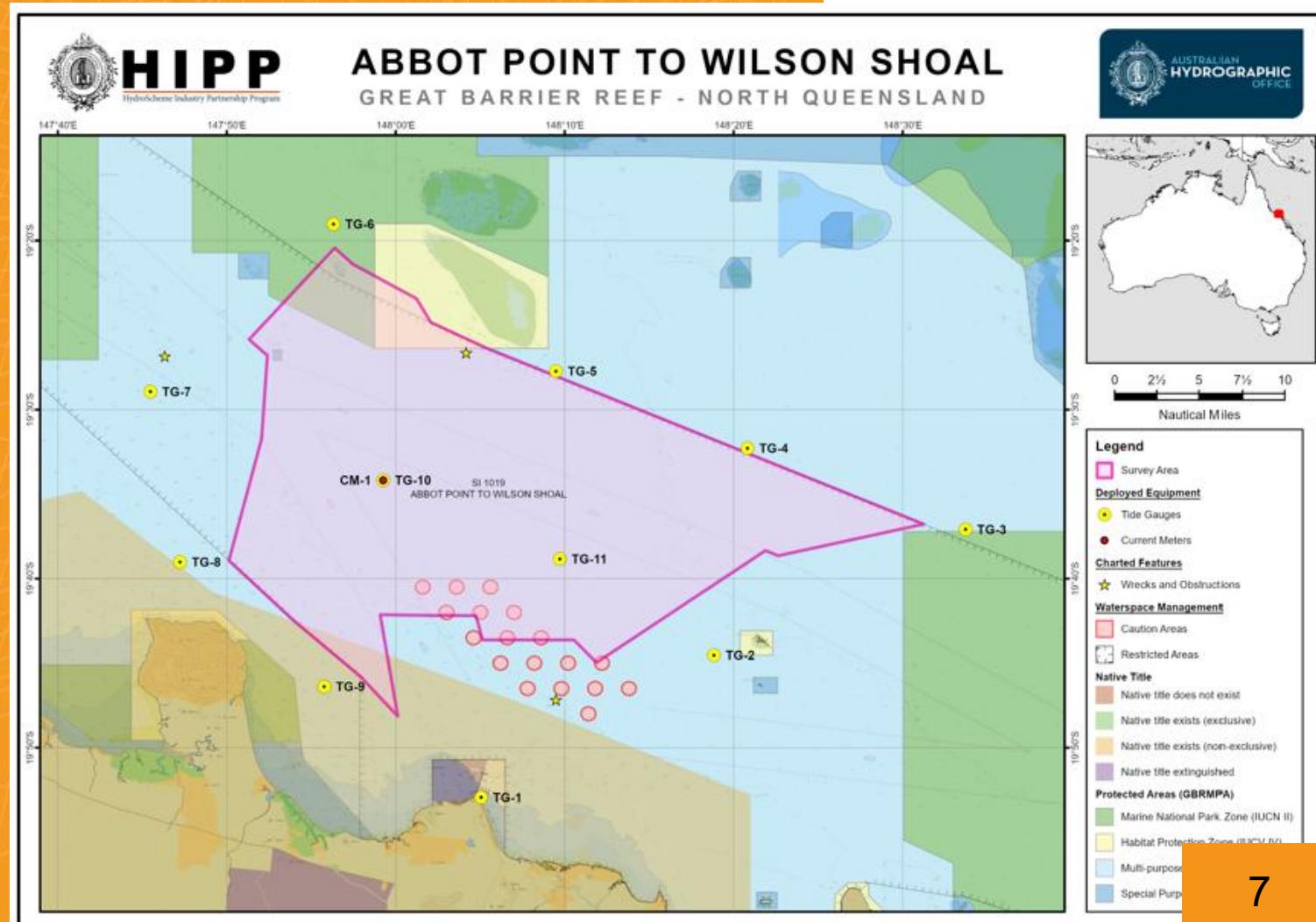
- 2020-2024 - 7
- 2024-2028 – 9



SI1019: Two-Way Route: Abbot Point to Wilson Shoal

Scope

- To facilitate safe navigation of domestic and international shipping using the Inner Great Barrier Two-Way Route.
- 482nm²
- 3 x National Reference Surfaces
- Currently ZOC C. Historical data based on surveys in 1986, 1960 and **1886**.
- 13 Tide Gauge Locations (26 Tide Gauges). 1 ADCP.



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Equipment

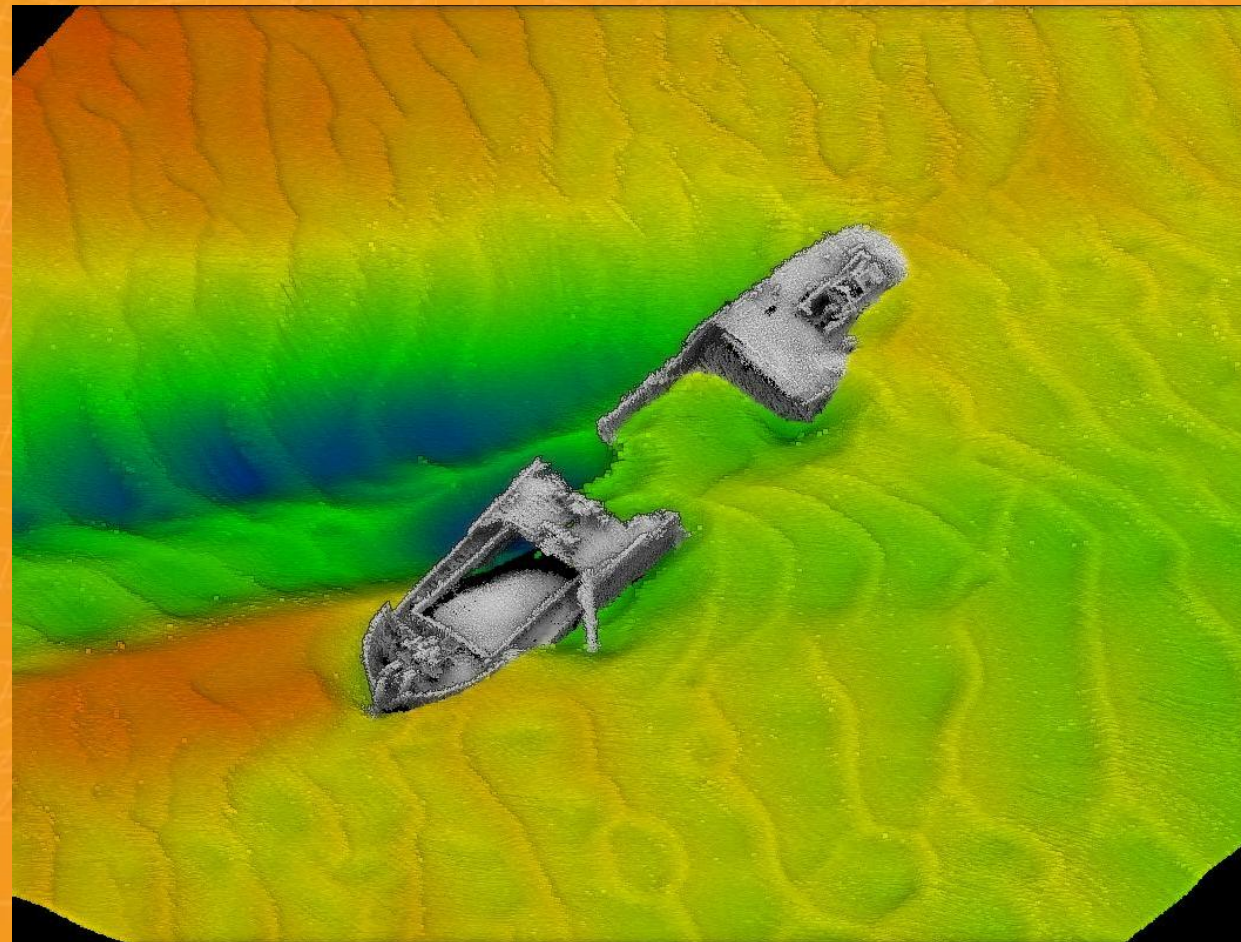
- XOCEAN XO-450 USV x 4
- Each with identical setup being:
 - Norbit B51s MBES ($0.5^{\circ} \times 0.9^{\circ}$)
@400kHz
 - Applanix POSMV Wavemaster MkII
 - Valeport SWiFT SVP
 - AML X2change
- InSitu LevelTROLL and BaroTROLL
- Nortek Signature 500 ADCP



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HIPP Deliverables / Reporting Requirements

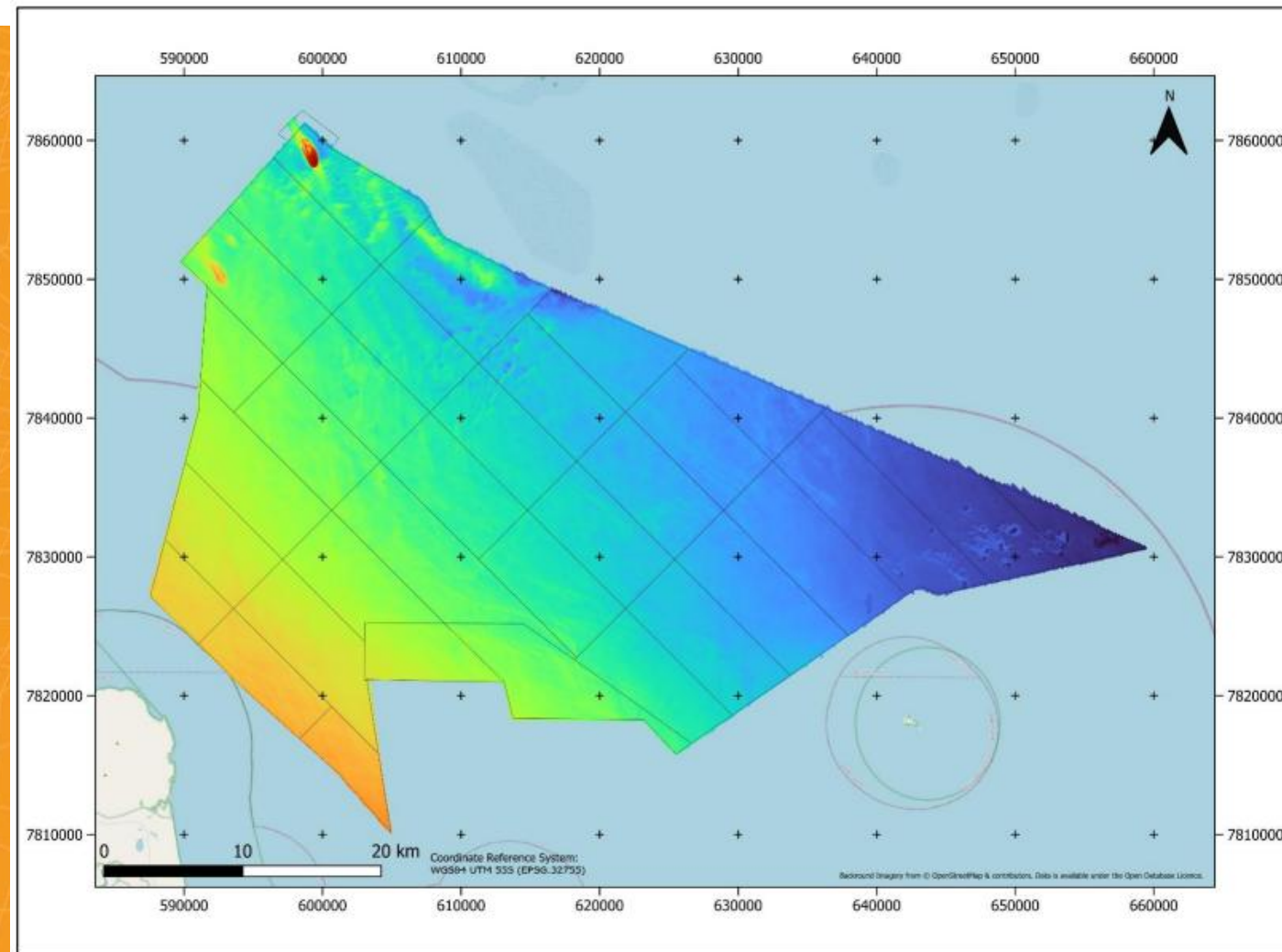
- CSAR Surfaces (CUBE and STDP)
- Backscatter Surface
- Water column over wrecks and shoals
- Seabed Texture Layer
- Seabed Samples and Secchi disk observations
- Conspicuous Objects, Aids to Navigations, Sailing Directions
- Sound Velocity and Sea Surface Temperature
- Tides and Geodetics Datapack to generate AUSHYROID model
- Bioluminescence observations



SI1019: Two-Way Route: Abbot Point to Wilson Shoal

Challenges and Solutions

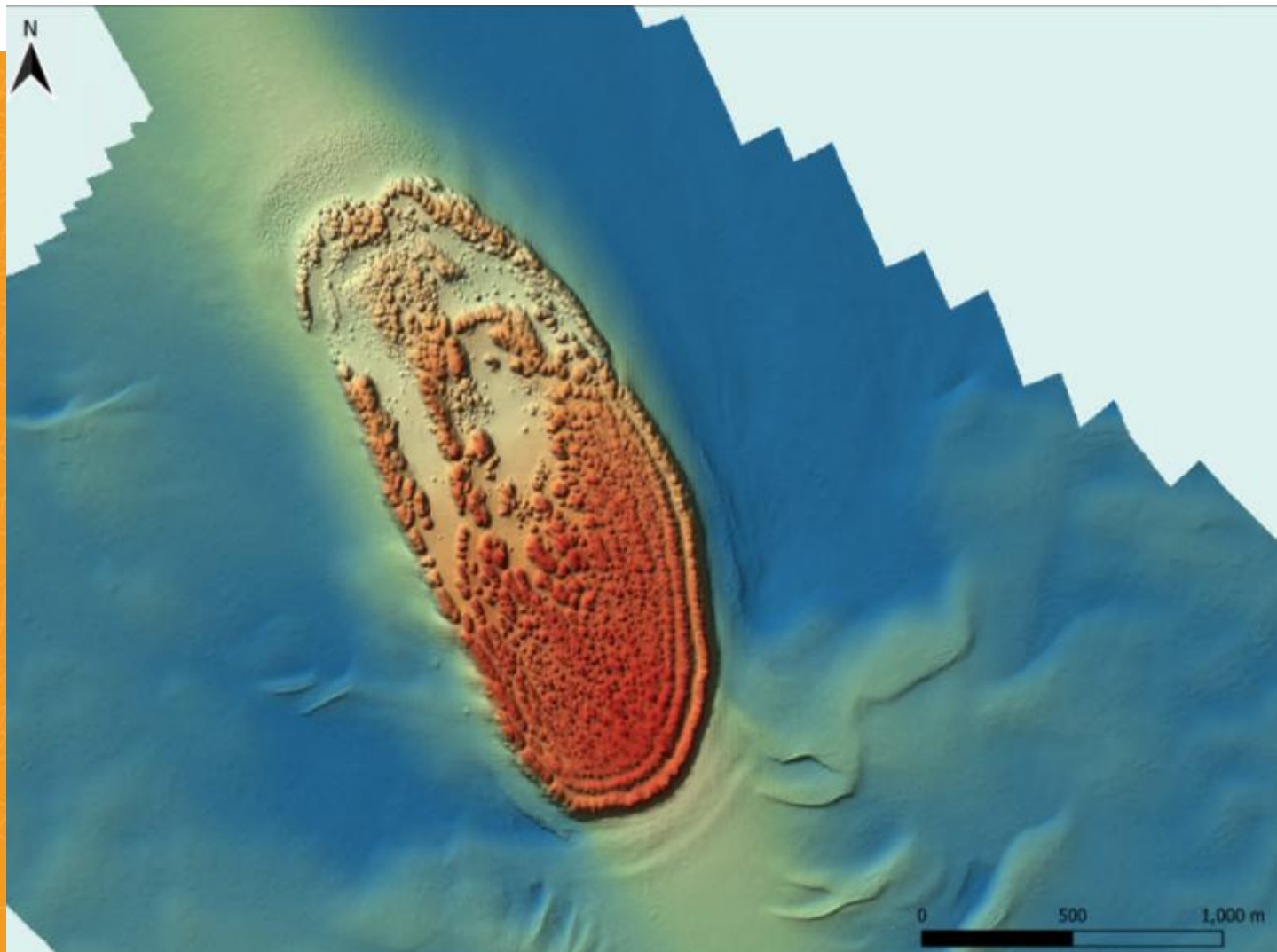
- Reef Navigation
- Weather – short sharp chop in Inner Great Barrier Reef
- Communication – Starlink Outages
- International Shipping to Abbot Point and Anchorages
- Remote (international) project team
- Ancillary task supported by a chartered vessel



SI1019: Two-Way Route: Abbot Point to Wilson Shoal

Achievements

- First USV only bathy collect for HIPP
- **9,979.45** survey line miles
- 482.62 nm²
- 240 days (~60 days/USV)
- AUSHYDROID model developed
- 170,400 kg CO₂ avoided compared to traditional operations
- ~5,500 seafarer hours avoided
- Proof of concept for scaling USV use in future HIPP projects



Thank You – Questions?

