

## Fugro Report - Hydrographic Services in the Middle East

Hugh Parker, IHO NIOHC Meeting, Muscat, 26-28 March 2019

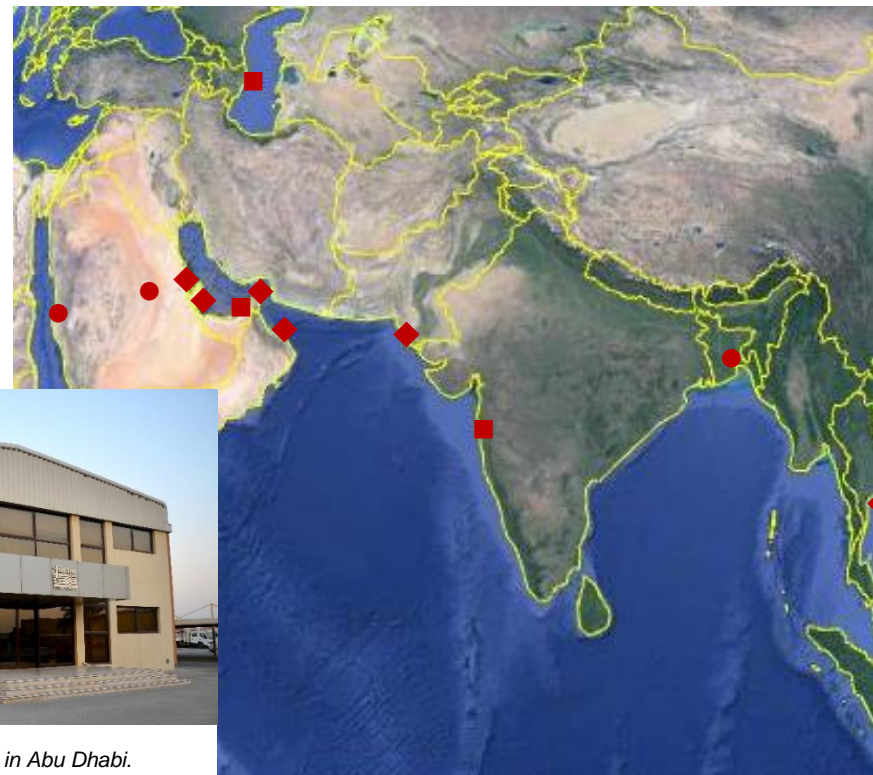


## Marine Site Characterisation



# Regional Survey Capability

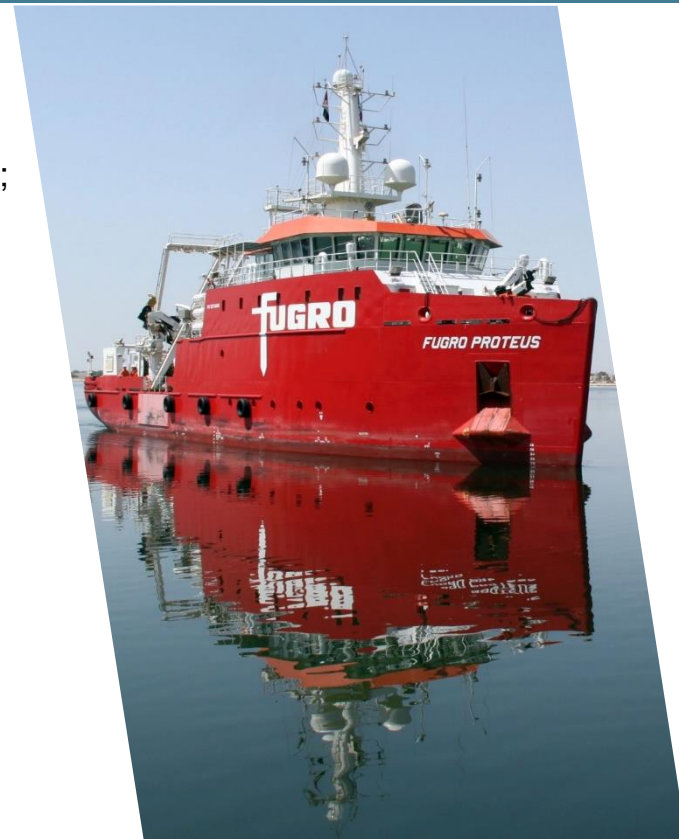
- **Regional Offices:** Abu Dhabi & Mumbai:
  - 415+240 staff supporting marine operations;
  - Vessels: Fugro Proteus, Fugro Adventurer, Fugro Mapper & 6 launches;
  - Hydrography, Site Characterisation, Metocean;
- **Other Offices within “NIOHC”:**
  - Bangkok, Thailand.
  - Cairo, Egypt
  - Dammam, Riyadh, KSA;
  - Dhaka, Bangladesh;
  - Jakarta, Indonesia
  - Karachi, Pakistan;
  - Muscat, Oman;
  - Perth/Adelaide/Bris, Australia



*Fugro Regional Office in Abu Dhabi.*

# Regional Survey Capability

- **Proteus** – purpose built:
  - LoA 54m;
  - blister-mounted Reason 7160 MBES & Edgetech HM3300 SBP;
  - Moon-pool mounted Kongsberg EM2040D MBES;
  - Geophysical survey, seabed sampling & ROV inspection;
  - Moving velocity profiling (MVP) sensor.
- **Fugro Adventurer** – multi-role:
  - LoA 70m;
  - Moonpool mounted Kongsberg EM 2040C MBES;
  - Geophysical survey, seabed coring & ROV inspection.
- **Launches** – various dedicated fits:
  - LoA 10m & 8m, catamarans
  - Norbit IWNB / R2Sonic 2024 MBES;
  - Geophysical survey



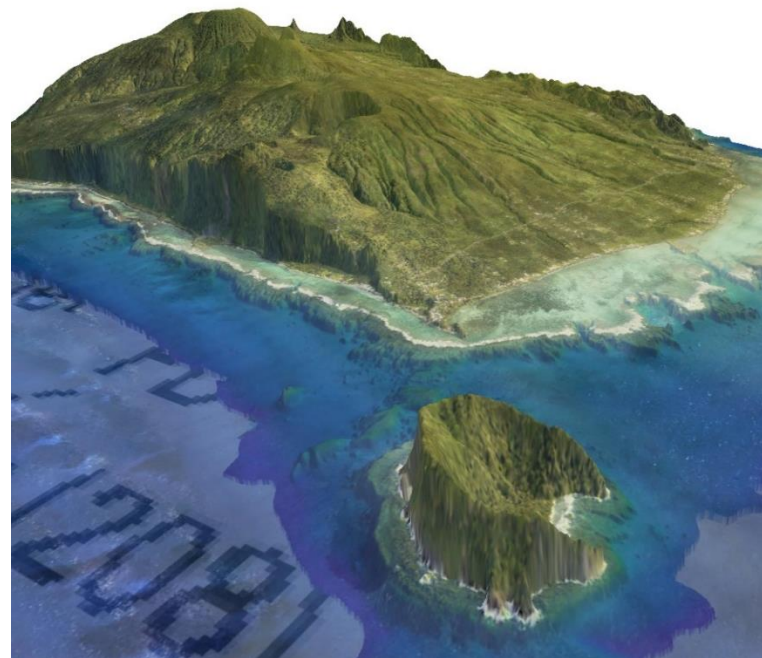
## Good News Story – Finding AE1, December 2017

Fugro's role in the expedition to find HMAS AE1 has helped to solve Australia's oldest naval mystery, 103 years after the First World War Australian submarine vanished off Rabaul, Papua New Guinea.



# Main achievements during the year

- Discovery of AE1 in PNG
- Completion of the Field Work delivery of Lidar Survey supporting shallow water navigation in Abu Dhabi
- Hydrographic surveys of the Ruwais Approaches for Petroleum Port Authority:
  - 2018 program, 100% complete.
  - 2019 program, due to commence Q2.
- Accredited Category B hydrographic surveying training course (S-5B).
- Involvement in IHO HSPT S-44 6<sup>th</sup> Edition (HSSC Working Group)
- Active involvement in GEBCO “Seabed 2030” and “AusSeabed” Initiatives
- Technology Developments into SDB, USV, ALB and Data Processing...



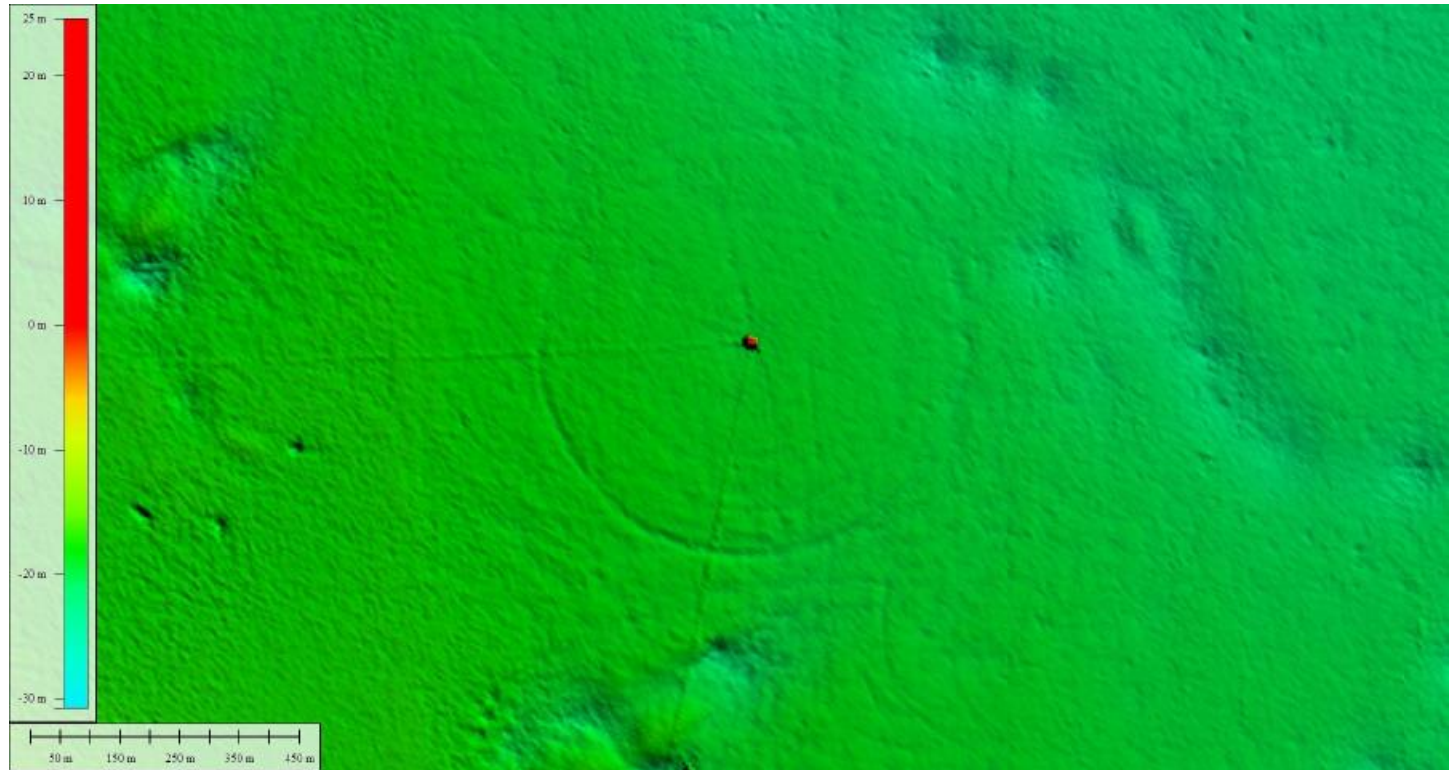


# Progress on Surveys

- **Abu Dhabi** – Ramhan Island Lidar Bathymetry survey:
  - 2018, 100% complete.
- **Abu Dhabi** – Ruwais Approaches hydrographic surveys:
  - 2018 program, 100% complete.
  - 2019 program, due to commence Q2.
- **Abu Dhabi** – Al Sila, MODU passage survey:
  - 2019, ongoing.
- **Abu Dhabi** – Ghasha & Bu Tinah Is, Lidar survey:
  - 2016, 100% complete

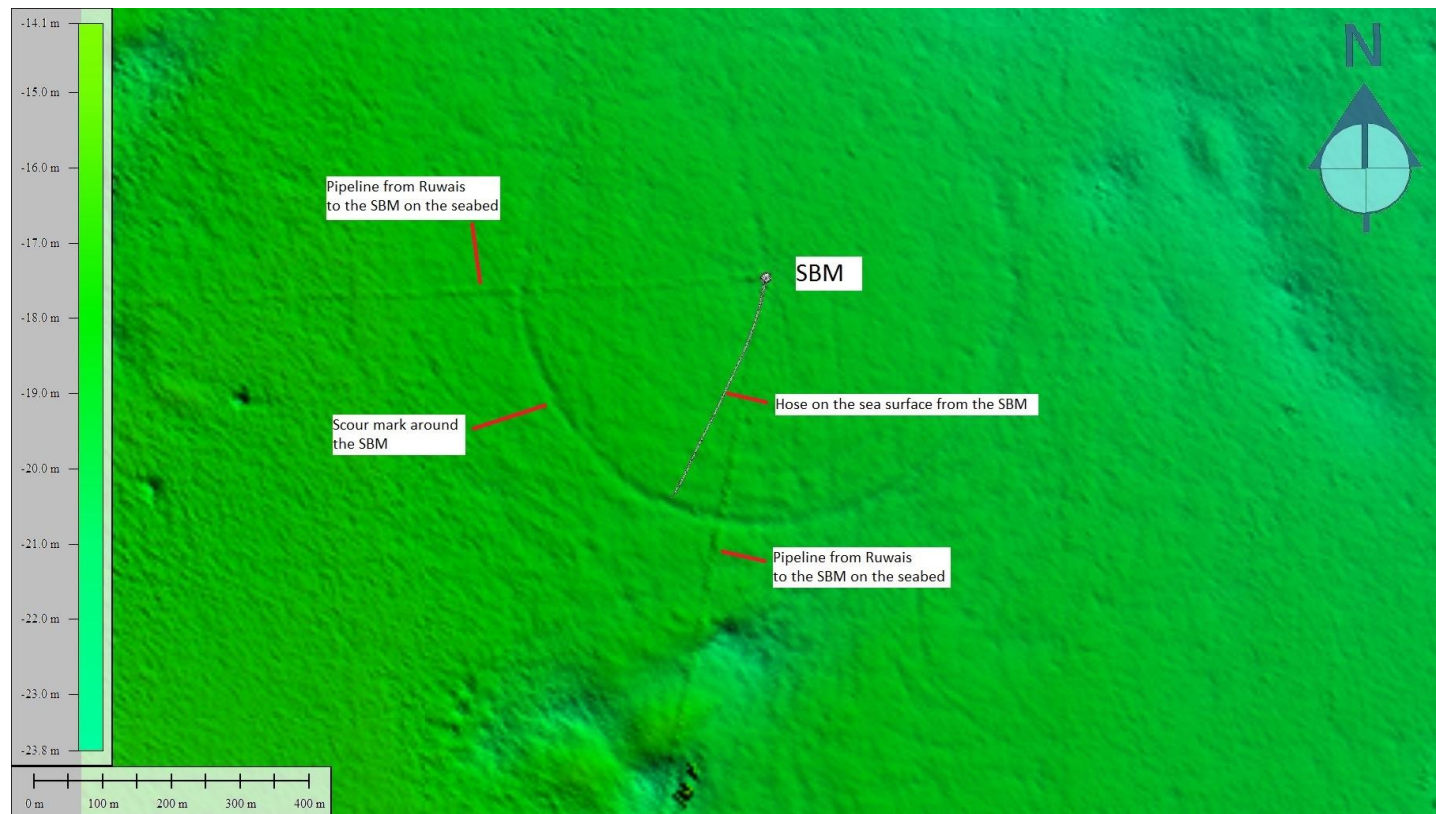


# Pipeline and Scouring Detail





# Pipeline and Scouring Detail



# Contributions to GEBCO

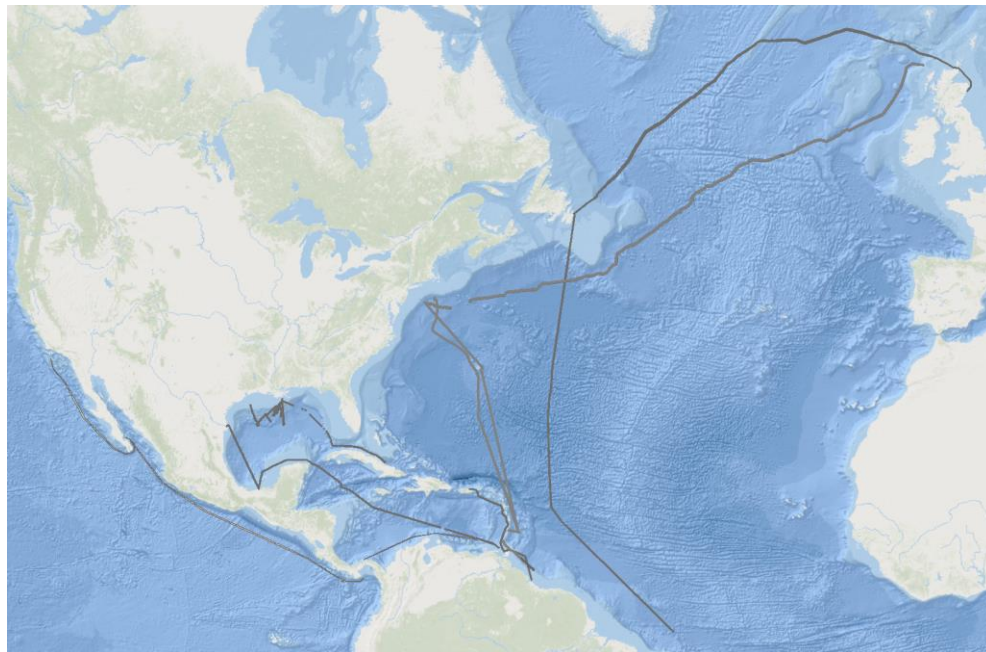
**In-transit data collection.** Data are collected from Fugro survey vessels as they transit between projects

**Remote technology solution.** Fugro OARS® enables safe and efficient data acquisition without survey staff on board

**7 vessels currently involved.** Fugro intends to incorporate the approach across its entire global survey fleet

**~450,000 km<sup>2</sup>** of high resolution bathymetry contributed to date.

Some datasets also include backscatter and water column data



# Capacity Building / Success Stories to Share

## Fugro Academy - Applied Hydrographic Survey Programme

- IBSC accredited Category B hydrographic surveying training course (S-5B).
- Located in Plymouth, UK at permanently based facility
- dedicated computer suites, lecture rooms, workshops, equipment, and vessels
- 24-Week duration
- Open to all who meet course prerequisites





## Fugro Academy - Collaboration With KAUST

- Development of a KAUST-Fugro Centre of Excellence for Marine Technology established at KAUST
- Provision of training of students in Marine Technology



# Lessons Learned to Share - Challenges

- Weather/Seasonal Conditions
  - Shamal
  - Impacting water clarity
  - Timing of surveys;
- Permitting (up to 3 months in some regions)
- Challenging data acquisition and processing timelines
- Staff Training using new technologies
  - Fugro Academy...



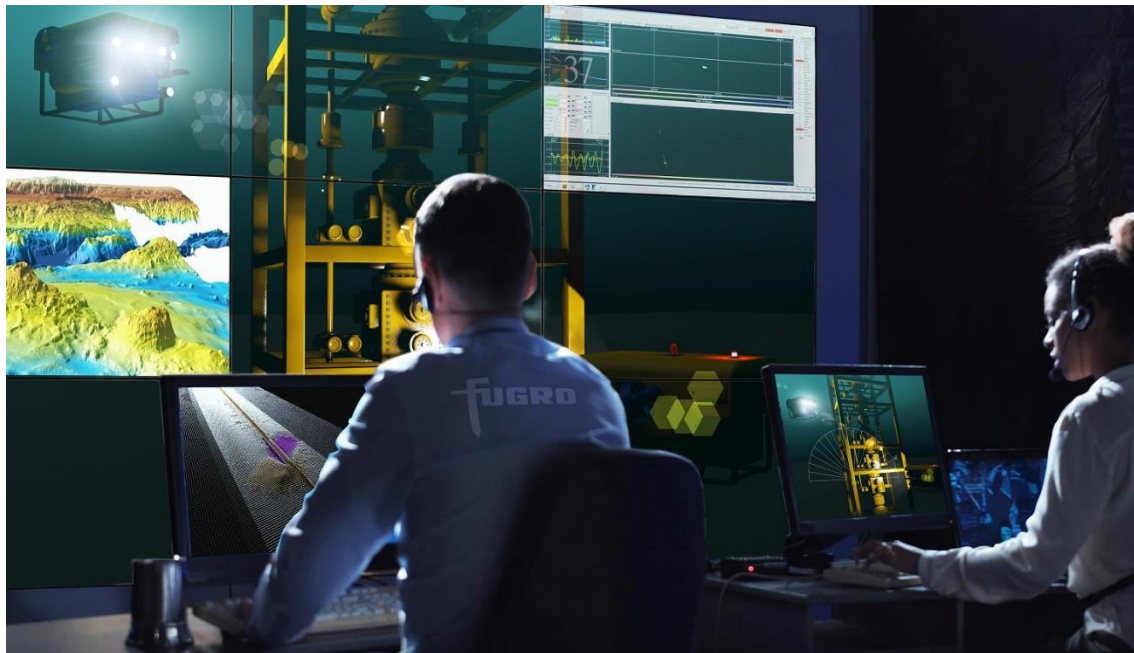
# Recent Developments / Innovations

## Fugro OARS (Office Assisted Remote Services)

- centralised command centres throughout the world
- direct access to offshore survey projects
- allows for optimisation of survey crew size
- client engagement
- access to Fugro's subject matter experts around the world

## Back2Base

- survey data compression enabling transmission of mega-data sets for onshore processing and evaluation





# Recent Developments / Innovations

## Internal **Satellite Derived Bathymetry** capability for:

- Desktop study support
- Reconnaissance and background data for line planning and identifying where high resolution surveys should be focused

## **Autonomous Surface Vessel** (with L3 Technologies - UK)

- designed for medium to large-scale hydrographic survey applications,

## **ALB Sensor Developments**

- LADS HD upgrade to 7 KHz
- New RAMMS Sensor (with Arete Associates - US)





Thankyou

Any Questions?

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