

# AMC Search: Defence Capabilities

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## About AMC Search

- AMCS is a training, engineering and simulations company owned by the University of Tasmania.
- We are a not-for-profit organisation that provides services to the shipping, ports, Defence, offshore, logistics and energy sectors.
- Staffed by specialist maritime trainers, veterans, Naval Architects, offshore structural engineers, autonomous maritime systems specialists, project managers, maritime simulations specialists, digital content developers and hydrodynamicists



## Defence Capabilities

- Training:
  - Large Ship Handling & Azipod Training
  - Small Vessel Masters Courses
  - Autonomous Maritime Systems: AUVs and USVs
  - Surf Zone Training
  - Survival Craft Training
- Engineering and Simulations Capabilities:
  - DSTG Test and Evaluations
  - Autonomous Maritime Systems
  - CFD: ANSYS CFX, FLUENT, OpenFOAM and STAR-CCM+ on a high-performance cluster
  - Cavitation and Turbulent Flows for basic experimental modelling of cavitation with capabilities for modelling cavitation nucleation and inception, fluid-structure interaction and opto-mechanical flow diagnostic techniques
  - Vessel Seakeeping and Stability
  - Vessel Manoeuvring
  - Damage Resistance and Vulnerability
  - Power, Energy, Energy Density and Emissions Management
  - Digital twins, 3D and VR applications
  - Test & Evaluation



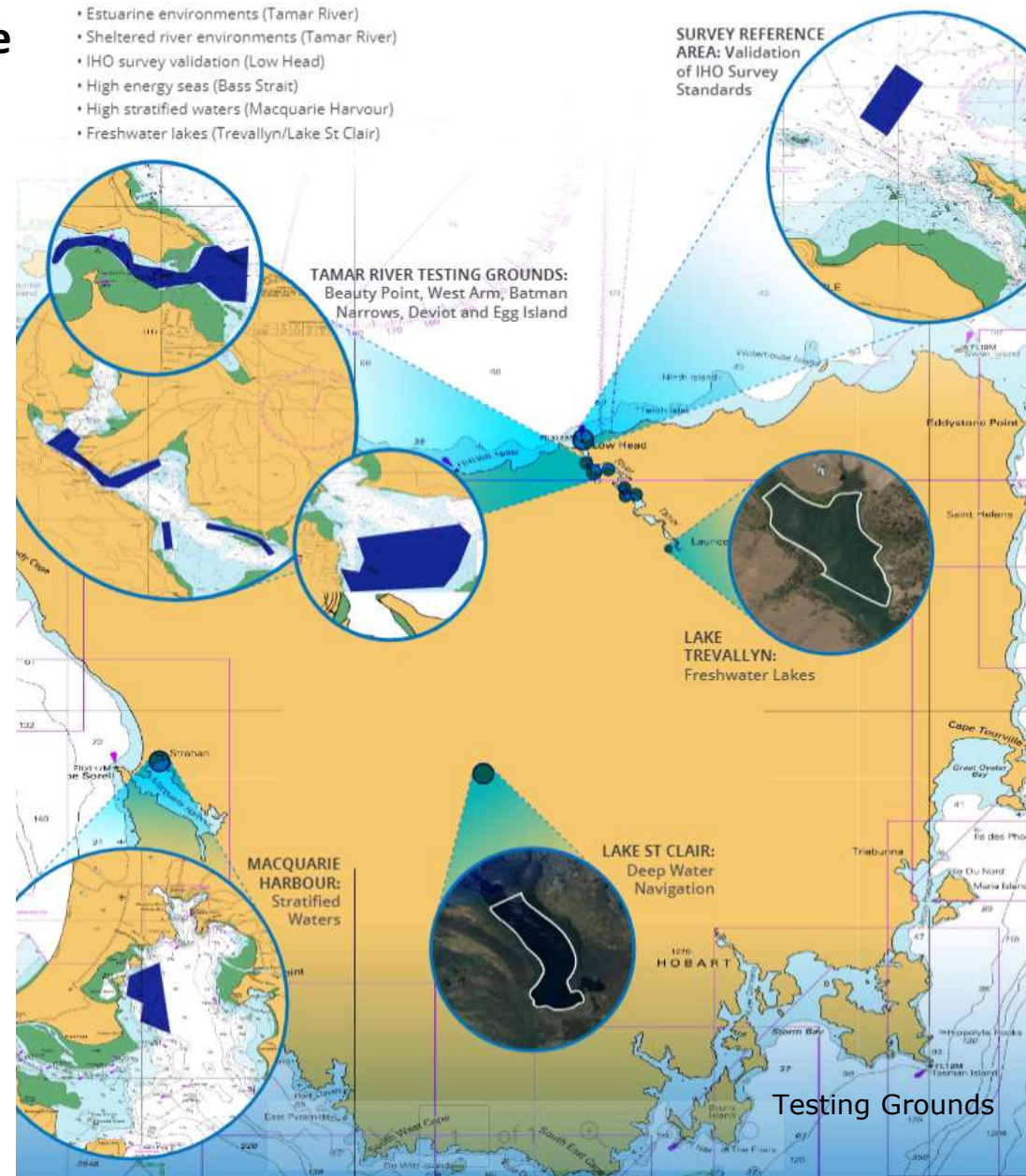
## AMS Specialisations

- AUV/USV training & operations experts
  - Bespoke, Cert III in AMS & MASS Operator
- Fleet of AMS vessels:
  - REMUS100
  - IVER4-580
  - ISE Explorer
  - WAM-V16
  - EduCat
- AMS support assets
  - 6.5m AMS Support Vessel – ‘Tapilti’
  - 7.5t Light Truck with 1t HIAB
  - AMS C2 Van
  - Waterfront Command & Control at Beauty Point
- AMS Capabilities
  - Hydrographic and bathymetric survey
  - Magnetic survey
  - Object search and location
  - T&E
  - Engineering support
  - Sensor integration expertise
  - Regulatory and compliance support services



## Autonomous Maritime Test & Evaluation Centre (AMS-TEC)

Centre of excellence for T&E of AMS technologies including access to multiple environments, Wet/Dry Labs and a purpose built 6.5m catamaran designed to support AMS deployments, trials and testing.

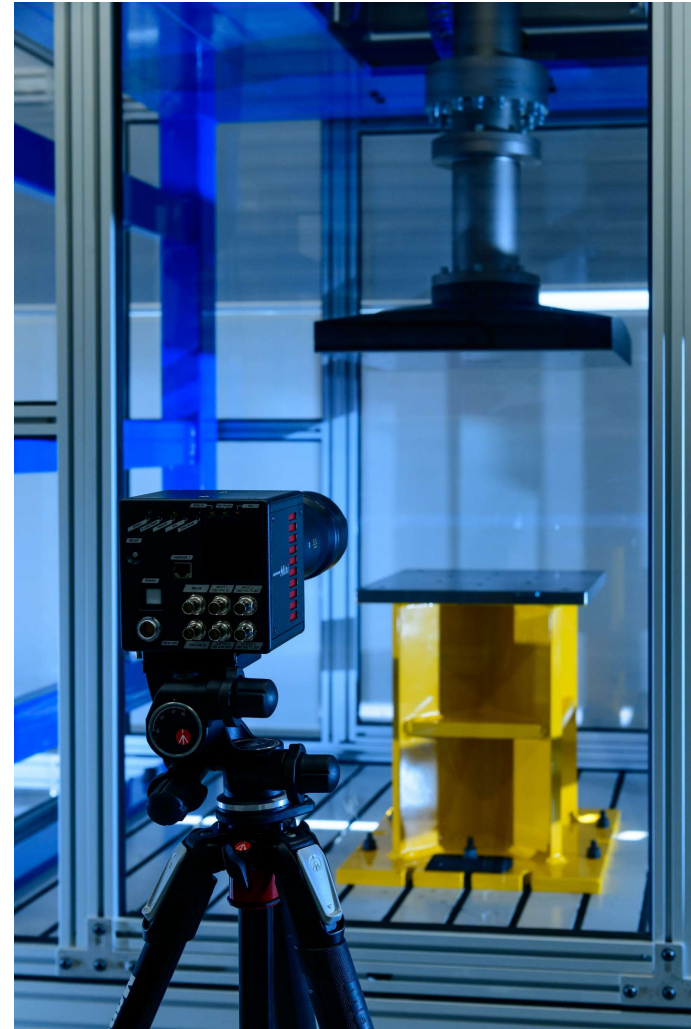


## Other Engineering and Simulations Research/T&E Facilities

Centre for Maritime Simulations



Advanced Materials Testing



Hydrodynamics



# Defence and Maritime Innovation and Design Precinct (DMIDP)



# Defence and Maritime Innovation & Design Precinct

The Precinct is developing critical infrastructure which will enable the enhancement of Australia’s sovereign knowledge and asymmetric maritime capability

Critical Infrastructure	How it will contribute to sovereign capability
1 Autonomous Maritime Systems Laboratory (AMSL)	Develop knowledge of the employment and operation of autonomous systems to support future warfare procedures, sensors and kinetic effects
2 Undersea Collision Research Facility (UCRF)	Enhance design and materials characterisation of submersible platforms to ensure greater survivability from underwater impacts
3 Real Time Power Systems Simulator	Ensure cost effective and 'future proof' design of ship electrical systems
4 Common User Facility	Provide a shared secure environment for defence, industry and academia to collaborate on development of sovereign capability
5 Maritime Hydrodynamics Research Laboratory (MHRL) – Towing Tank	Enhance knowledge of ship design and performance to ensure stability, manoeuvrability, and survivability at sea
6 Propulsor Laboratory	Develop knowledge of submarine propulsor systems, with emphasis on the impact of cavitation on noise levels and the detectability of the submarine; and contribute to AUKUS knowledge levels

In April 2019, the federal government approved the initial business case for the DMIDP by announcing **\$30 million** of funding towards a staged redevelopment of critical defence-related research and education facilities that will be **the only of their kind in Australia**



# Masterplan



## Proposed Hydrodynamics Hub: Medium Towing Tank and Shallow Water Wave Basin

### Seakeeping & Stability

- Behavioural prediction of dynamic motions and characteristics
  - Variable states of sea, wind, & stability
- Evaluation of operational impacts & key design factors
  - manoeuvring, habitability, helicopter ops, sensor performance
  - principal dimensions, general compartment arrangements, weight distribution

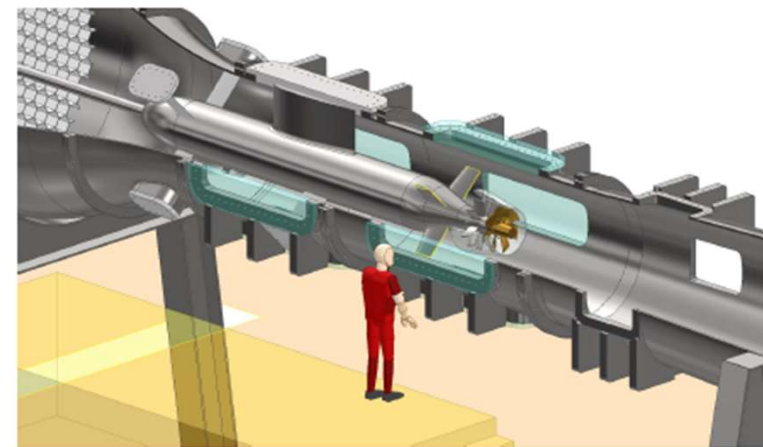
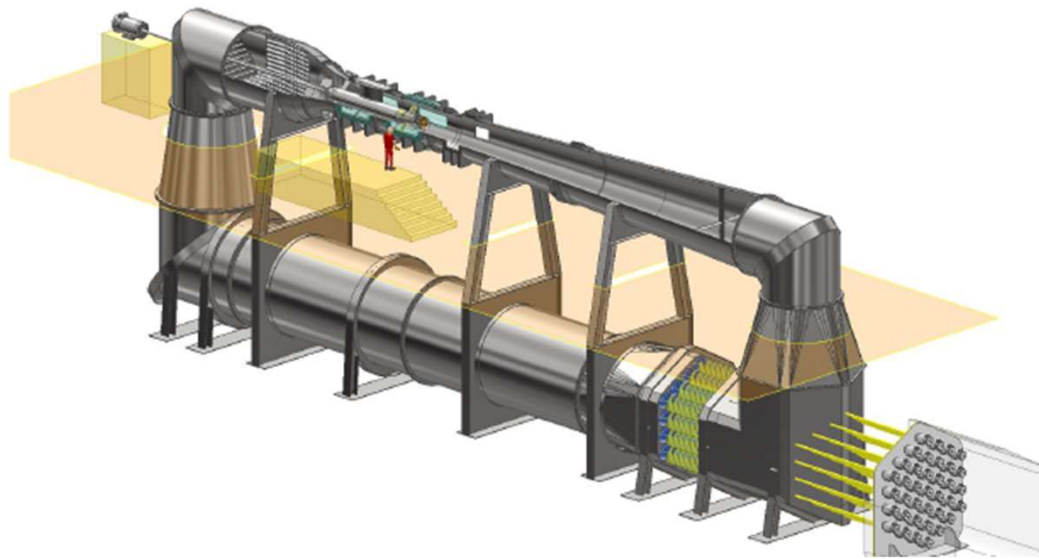
### Key Features

- Combined Test Facilities – *Sub-Surface & Surface* Vessel Manoeuvrability & Stability Assessments
- Larger Scale Models in 200m L x 8m W x 5m D Towing Tank
- Acoustically Quietened Model Carriage (Unique Capability) – U/W Acoustic & Non-Acoustic (Wake) Measurement
- Complex Waves
- Complementary with upgraded Small Towing Tank (100m L x 3.5m W x 1.5m D) and CFD/Enhanced HPC
- Complementary with International Large Scale TTs & Manoeuvring Basins

## Proposed Large Scale Propulsor Circuit

### Key Features:

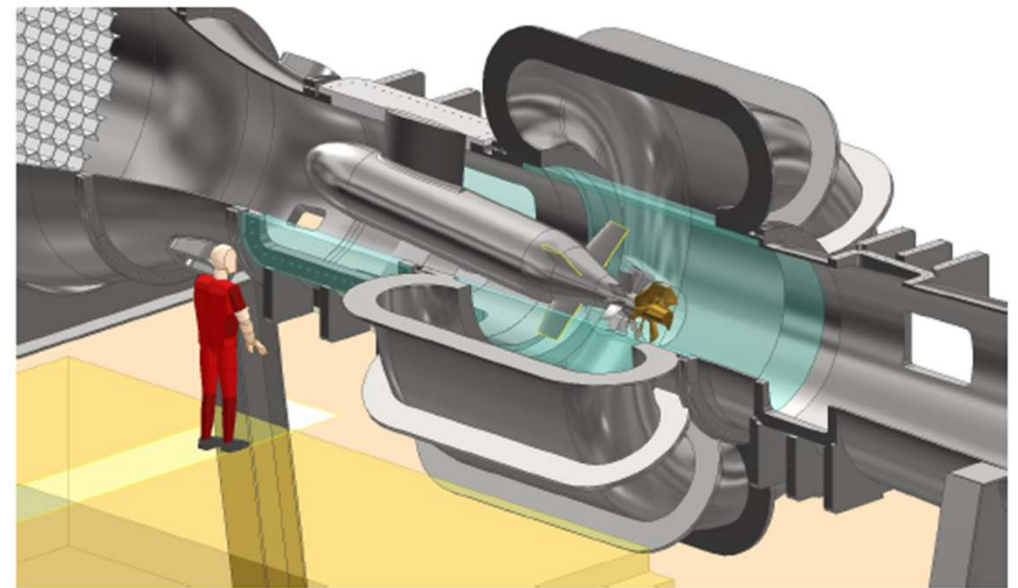
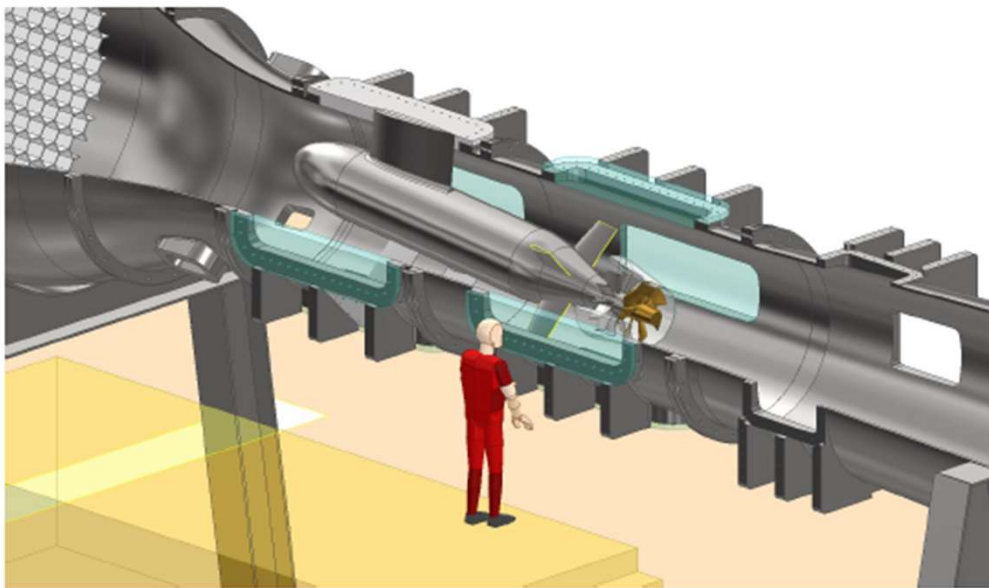
- DSTG led for applied R&D into propulsors
- Large enough physical scale for blade based instrumentation
- Hydro/vibro-acoustics, Fluid Structure Interactions, turbulence, cavitation



## Proposed Large Scale Propulsor Circuit

### Test Section

- Multiple test sections with quick change capability via slip flange in main diffuser
- Axial and oblique flow test
- Suitable for full scale testing of small AUVs and 50% for extra large AUVs



## AMC Search Accreditations

- AS/NZS ISO 9001:2015 Quality Management Certification with Lloyd's Register Quality Assurance
- Australian Defence Recognised Supplier
- Defence Industrial Security Program member and key staff with Baseline - PV security clearances
- Australian Maritime Safety Authority (AMSA) accreditation to conduct seafarer training in accordance with the requirements of the United Nation's International Maritime Organisation (IMO), as set out in the STCW 78 Convention as amended
- Accredited RTO: RTO Code 60131

