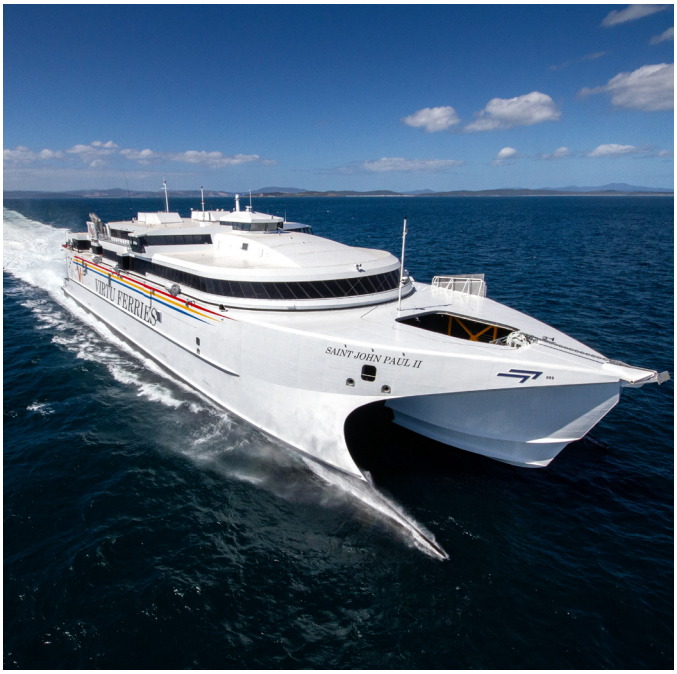
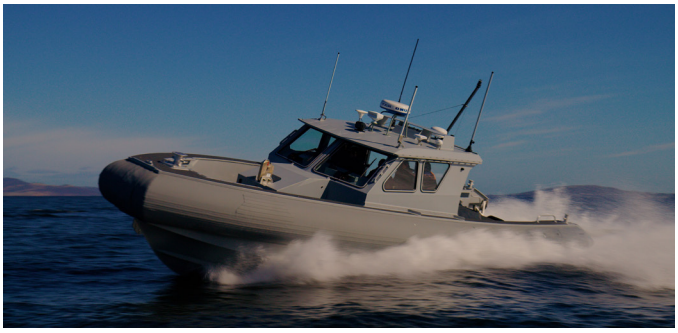
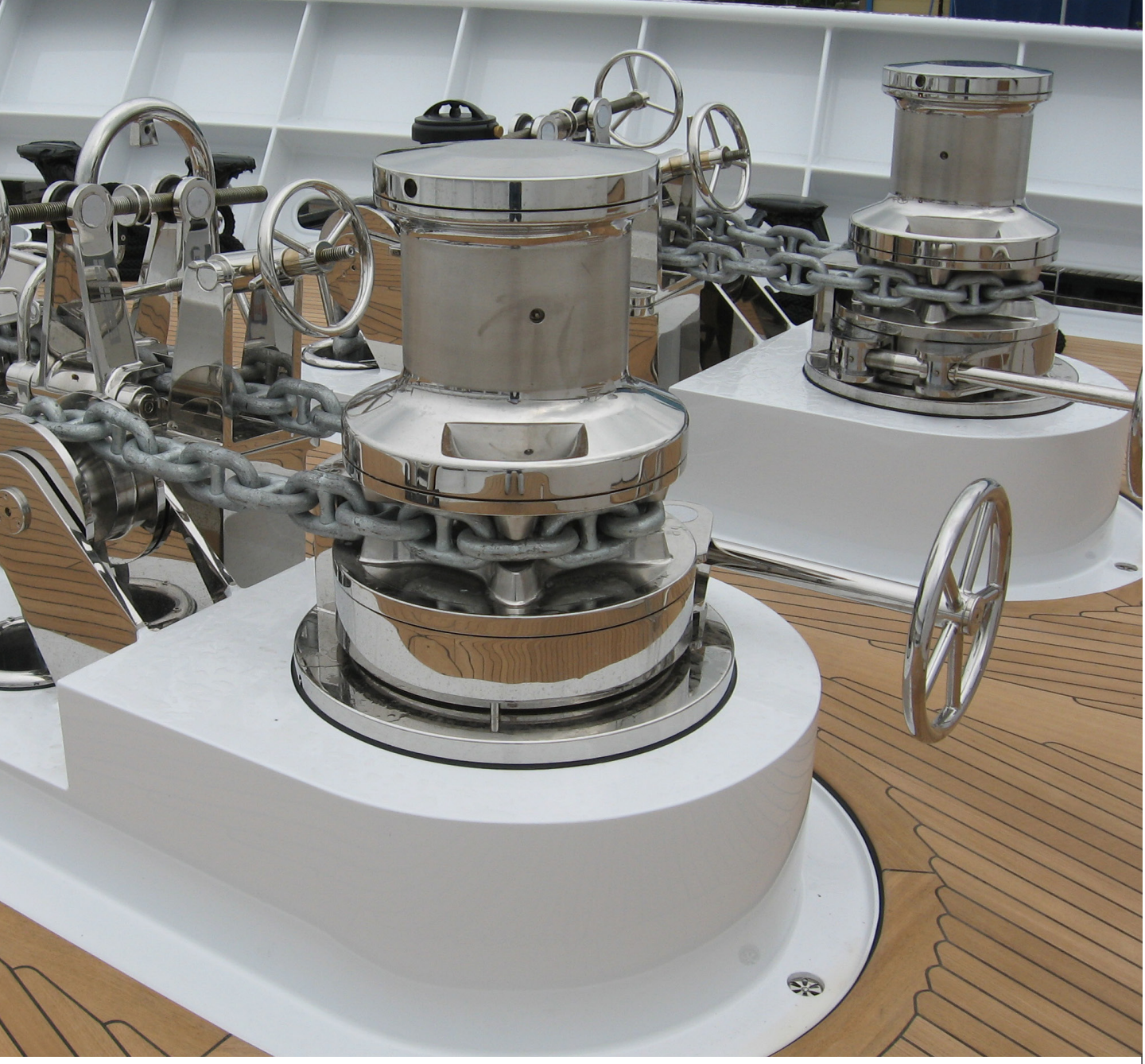
TASMANIAN MARITIME PROSPECTUS





Department of State Growth

Tasmanian Government



MUIR ENGINEERING ANCHORING SYSTEM COMPRISING VRC 20 000 WINDLASS, RETURN ROLLER ASSEMBLY AND CHAIN COMPRESSOR FITTED TO 65 METRE SUPERYACHT BY FEADSHIP ROYAL VAN LENT

Image courtesy of Muir Engineering

COVER

TOP LEFT: INCAT AUSTRALIA BUILT FERRY 'SAINT JOHN PAUL II'

Image courtesy of Incat Australia

TOP RIGHT: SENTINEL BOAT 1250 LITTORAL MANOEUVRE CRAFT BUILT FOR THE ROYAL NEW ZEALAND NAVY

Image courtesy of Sentinel Boats

MIDDLE RIGHT: LIFERAFT SYSTEMS AUSTRALIA MARINE EVACUATION SYSTEM FITTED TO THE ROYAL NETHERLANDS NAVY PATROL VESSEL HNLMS HOLLAND

Image courtesy of Liferaft Systems Australia

BOTTOM LEFT: RICHARDSON DEVINE MARINE BUILT VESSEL 'OUTER LIMIT' OWNED AND OPERATED BY TASMANIAN COMPANY OFFSHORE UNLIMITED

Image courtesy of Offshore Unlimited

BOTTOM RIGHT: PIVOT MARITIME INTERNATIONAL MIXED REALITY SIMULATION TECHNOLOGY

Image courtesy of Pivot Maritime International

Deputy Premier's foreword

As Australia's only island state, Tasmania has a long and proud maritime heritage. Tasmanian companies and research institutions are trusted providers of high-quality vessels, equipment and services to a broad range of customers.

These customers are located worldwide and include vessel operators, shipyards, navies and port authorities.

Our capabilities include the construction of large-scale vessels and specialised watercraft, manufactured safety systems and ship componentry, and complex engineering solutions.

Tasmanian entities provide port design, modelling and testing. We have uncrewed and undersea maritime capabilities and maritime education, training and research expertise and facilities.

Tasmanian vessels, equipment and services are exported to places such as the United States, Canada, the United Kingdom and Europe (including Belgium, Denmark, Finland, France, Germany, Italy, the Netherlands, Norway and Spain).

They are also exported to the Indo-Pacific (including Pacific Island nations, New Zealand, South-East Asia, Japan, South Korea and India), to parts of the African continent, and to parts of the South American continent.

Ferries and watercraft designed and built in Tasmania are operating on waterways in Australia and overseas.

Tasmanian designed and manufactured anchoring systems, antennas, insulation, lightning protection systems and marine evacuation systems are installed on ferries, superyachts, pleasure craft, coast guard vessels and naval vessels all over the world.

Tasmania is proud to provide high quality maritime equipment and exceptional services that meet the needs of capability managers, researchers, trainers and educators.

I take great pride in giving you this brief introduction to Tasmania's globally recognised maritime capabilities.

I trust this prospectus will promote an understanding of why Tasmania is the first place to look for solutions to your maritime challenges and requirements.

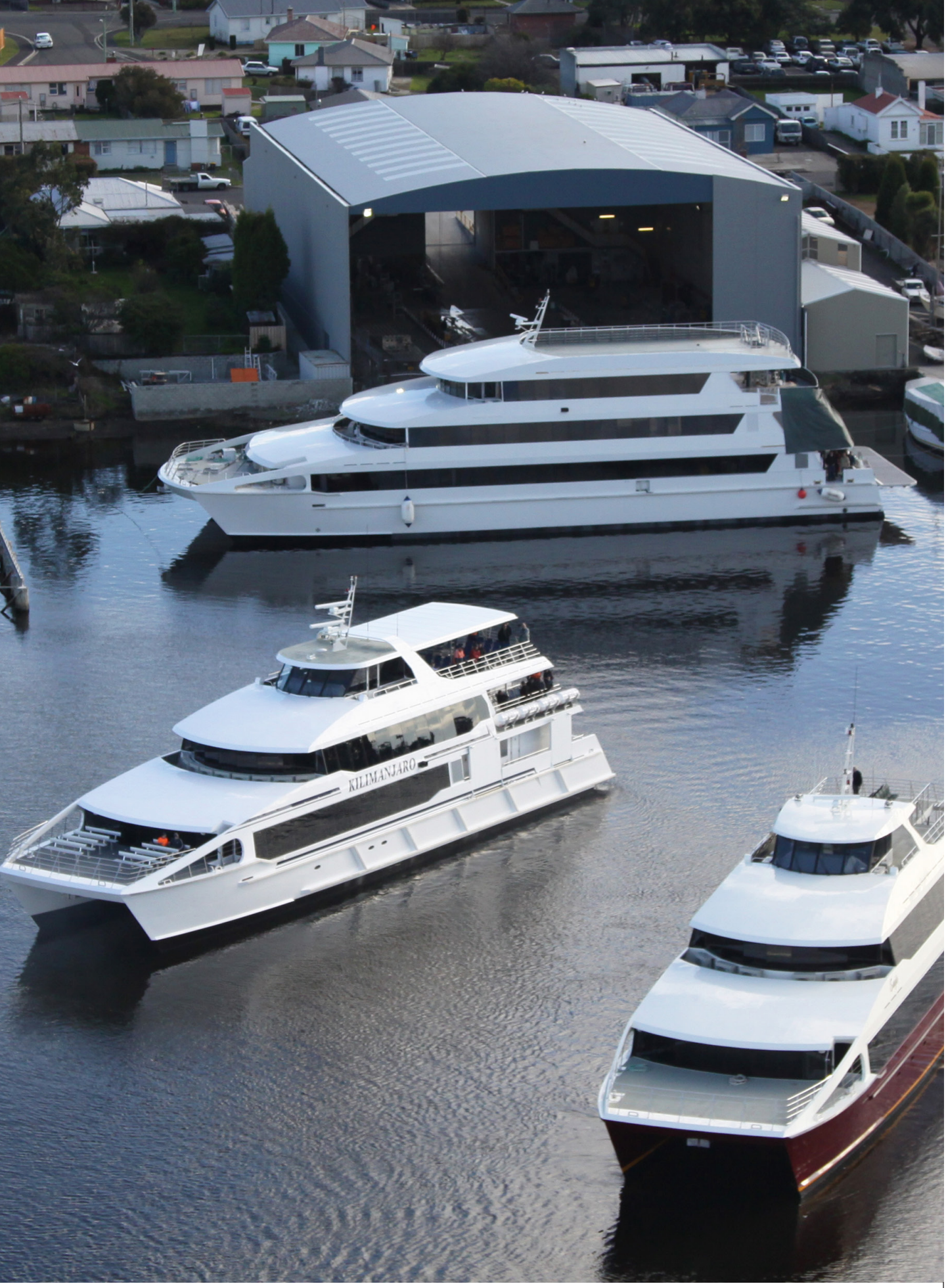
The Hon Guy Barnett MP

Deputy Premier

Attorney-General

Minister for Justice, Corrections and Rehabilitation

Minister for Small Business, Trade and Consumer Affairs



THREE VESSELS BUILT BY RICHARDSON DEVINE MARINE (RDM) IN FOREGROUND WITH RDM'S SHIPYARD IN BACKGROUND

Image courtesy of Richardson Devine Marine

Tasmania's maritime story

The Southern Ocean is a place of risk and adventure, a dangerous place of cold wind, rain, and giant seas. Good enough, in turbulent Tasmanian waters, is never good enough. If we fail in the Southern Ocean or Bass Strait, it isn't a setback. It's deadly.

For thousands of years, the first Tasmanians were isolated by Bass Strait, so they focused on invention and trade. Tasmanian Aboriginals were the early boat builders, the early researchers, the early problem solvers.

In the 19th century, more ships were being built in Tasmania than in the other Australian colonies combined, with many of the ships large enough to be used on the Australia-England route.In the 20th century, Tasmania joined the national war effort, constructing patrol vessels, cargo vessels and hospital launches for the armed forces during the Second World War.

These ships were different to others being built at the time. Tasmanians used native timbers like Huon and King Billy pine, and Celery-top, to make something uniquely of this place, a craft and tradition that continues today. Out of this tradition, in the second half of the 20th century, a new generation of Tasmanians grew up sailing together. They competed. They cooperated. They developed an obsessive passion for the sea.

These unstoppable maritime entrepreneurs changed everything.

They started small, working together, connecting with experts, and pushing one another to be better. They didn't build the most ships, but they worked hard to create the strongest ships, the safest ships and the fastest ships, the toughest equipment, and the safest, most sophisticated systems.

Adopting the finest materials and technologies, they developed the confidence to test themselves – to take Tasmanian ingenuity across every ocean, to ports around the world.

We also attracted ingenuity. Today, Tasmania has the highest concentration of maritime and marine researchers and scientists in the southern hemisphere. They come from everywhere, inspired by our craft and our traditions, enhancing and enriching our maritime culture.

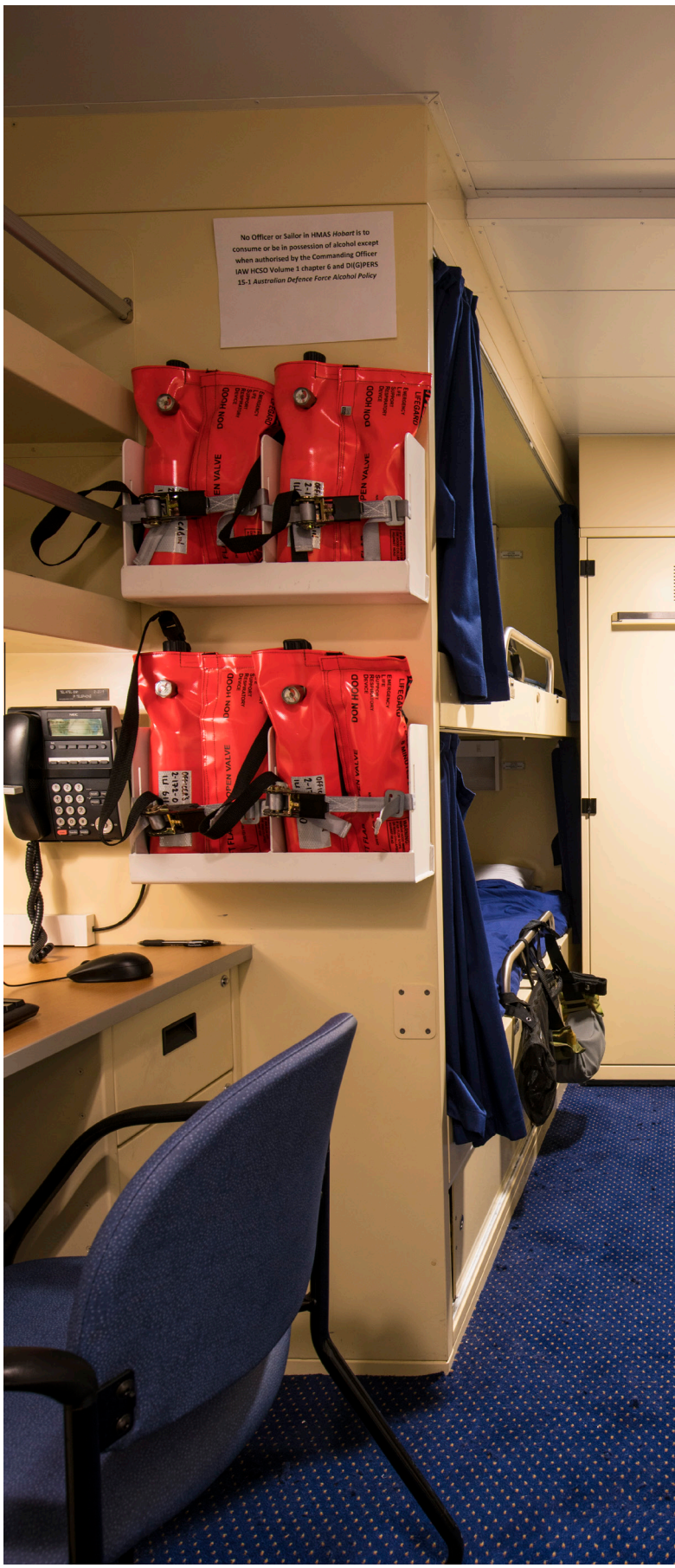
It's tougher in Tasmania. We can't import solutions because they often won't work here. We can't be complacent. Because of where we live, everything we do and make has to be better, more durable, more reliable, more advanced. In Tasmania, we design, we research, we educate, we cooperate, and we build with quiet mastery. It's who we are.

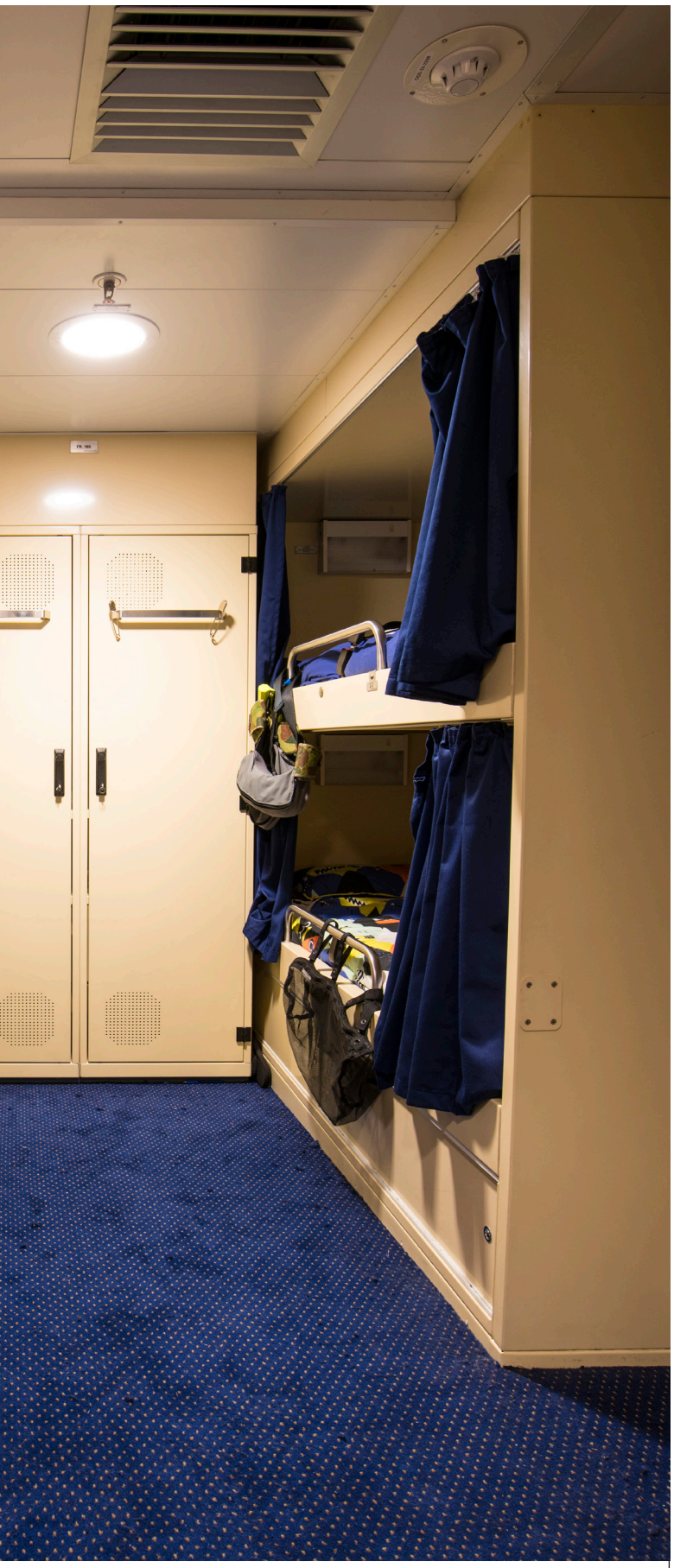
HARBOUR DEFENCE MOTOR LAUNCH BUILT BY PURDON AND FEATHERSTONE, HOBART IN 1943

Image courtesy of Royal Australian Navy

Tasmania's advantages

- *Capability* – as Australia's only island state, we have capabilities across the whole maritime sector. These include shipbuilding and watercraft construction; port development; manufactured products and services; and education, training and research.
- *Collaboration* – our shipbuilders and maritime companies work together and are represented by the Tasmania Maritime Network, which provides strategic direction and support to the maritime industry.
- *Innovation* – our maritime industry partners with research and scientific institutions to solve problems and innovate. As a result, we are a centre for excellence in product development and advanced design.
- *Research excellence* – we lead key maritime and marine research and scientific initiatives through a number of world renowned institutions, organisations and clusters.
- *Infrastructure* – we have extensive and modern maritime infrastructure, including major shipyards, slipways, maritime precincts, and deep water ports.
- *Global supply* – many of our major maritime manufacturers supply to global markets and are connected to international supply chains. Well established local supply chains provide fabrication and manufactured products and services for the maritime industrial base.
- *Education and training* – we provide best-practice vocational and university educational facilities in maritime operations, maritime engineering, ship operations, port operations, as well as fabrication, welding and maintenance.
- *Workforce* – we have a reliable and skilled maritime workforce complemented by a broader advanced manufacturing sector with extensive experience in heavy industry maintenance and operations.
- *Energy sources* – our natural and established advantages place us in the enviable position of having over 90 per cent of our energy produced from renewable sources.





TAYLOR BROS MARINE INTERIOR FITOUT OF HOBART CLASS AIR WARFARE DESTROYERS

Image courtesy of Taylor Bros Marine

Tasmania's capabilities

Shipbuilding and watercraft construction

The design, manufacture and fit-out of a range of vessels – from small, specialised watercraft through to high-speed ferries over 120m long – takes place at several shipyards across the state. Four shipyards are located at a Maritime Defence Industry Precinct 20 minutes north of Hobart and one shipyard is located just south of the city.

In total, our shipyards have over 84,770m^2 of undercover production hall space.

We have extensive experience constructing vessels in aluminium, steel and high-density polyethylene for:

- Commercial markets such as ferries and tourism, aquaculture, oil and gas, and private vessels.
- Government and Defence markets including maritime security operators and Antarctic and Southern Ocean operators.

We are globally renowned for building high-speed and lightweight catamarans. Our smaller catamarans are in use by operators the world over, while our larger wave piercing catamarans are some of the fastest, most efficient and environmentally clean ships in the world. We build tailored boats and specialised watercraft to meet the specific needs of customers and markets. We produce small harbour patrol boats, fast response vessels and transport craft, coastal landing craft, harbour maintenance craft, rigid hull inflatable boats, and other small vessels for use in inshore areas.

Port development and ship operations

Tasmanian companies and institutions have been involved in the design and development of some of the world's largest and most complex port development and ship operations projects.

Our capabilities and services include ship and port modelling, real-time maritime simulations, scientific and environmental data collection and analysis, port construction services, as well as port operations training and software development.

Specialised systems and equipment

Tasmanian entities deliver a range of highly specialised, and advanced maritime and marine systems.

Often world-leading, these innovations support vessel design, construction, operations and safety across both military and commercial markets.

These include:

- accommodation and habitability systems and equipment such as:
  - modular accommodation outfitting
  - marine anti-glare blinds and screens
- autonomous maritime systems
- automation and control including ship information management systems
- communication systems and equipment including antenna systems
- deck and bulkhead equipment
- digital network systems and equipment
- electronic and electrical systems and equipment such as:
  - anchoring and chain management systems and mooring equipment
  - lightning protection systems
- industrial systems design and upgrade
- internet of things, artificial intelligence, smart software and data solutions
- safety and evaluation systems and equipment such as:
  - marine evacuation systems and high capacity life rafts
  - thermal insulation and passive fire protection systems
  - hazardous materials storage solutions
  - underwater retrieval, sensing and marking systems
- simulation systems, services, research and consultancy.

Engineering design and fabrication services

The Australian Maritime College trains most of Australia's maritime engineers (including naval architects) and marine engineers.

Many of these graduates work in engineering design and naval architecture fields across Tasmania.

Several naval architecture firms and entities are based in Tasmania, providing services in vessel design, engineering analysis and survey support.

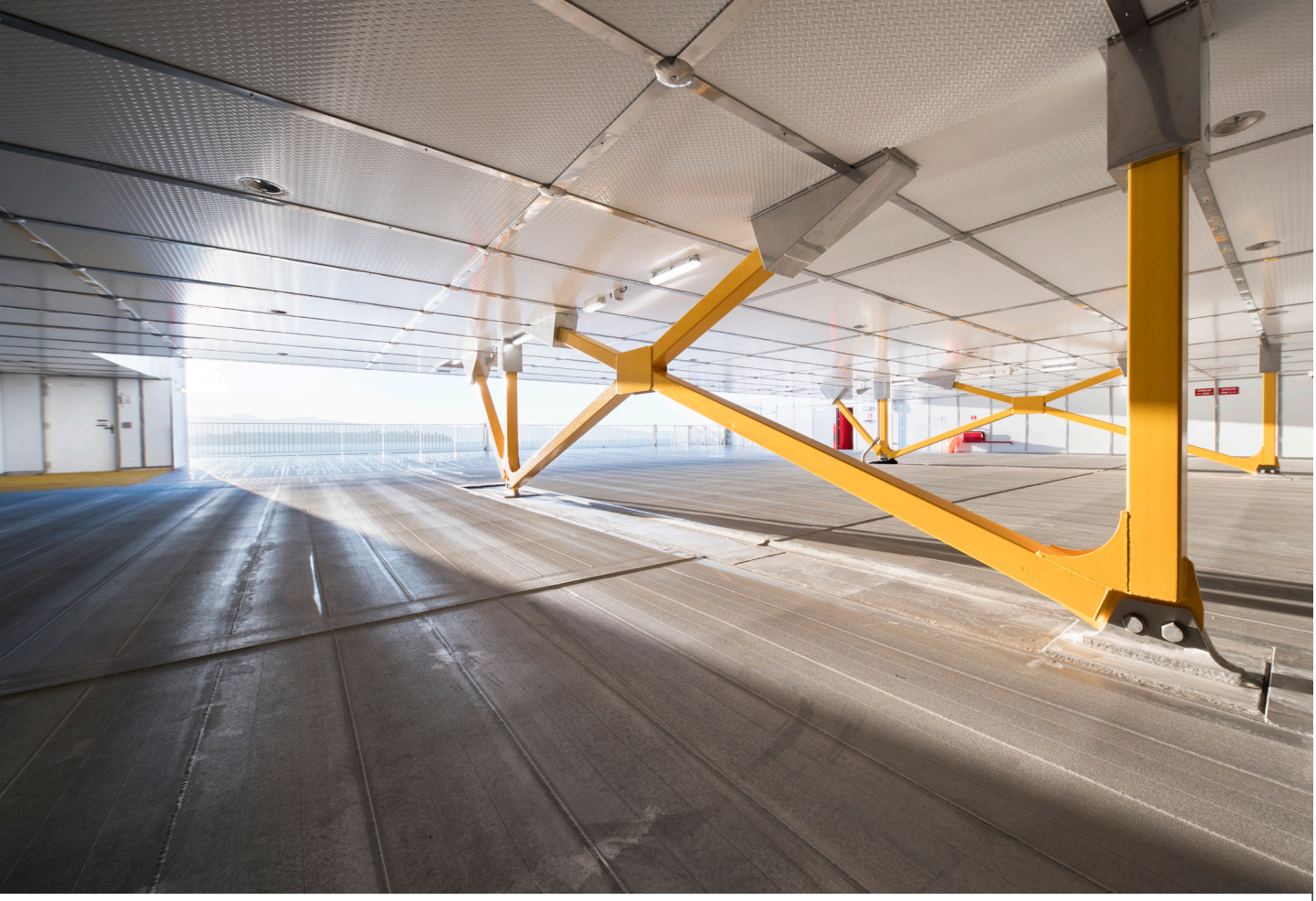
They collaborate with marine engineers and shipbuilders on projects of varied vessel types and sizes.

Tasmanian companies offer advanced marine systems engineering and integration services, including for heating, ventilation, air-conditioning and refrigeration and electrical systems for naval and commercial vessels.

Tasmania provides a range of product engineering design and fabrication services to meet defence maritime requirements.

These include:

- advanced composites fabrication and manufacturing
- castings (small, medium and large scale)
- hydraulic systems design and manufacturing
- engineering, design (including CAD / CAM and 3D modelling) and prototyping
- industrial blasting, painting and coating
- laser cutting
- machinery repair and sustainment
- machining
- metal manufacturing, fabrication and construction
- polymer fabrication.



CBG SYSTEMS RAPID ACCESS COMPOSITE (RAC) STRUCTURAL FIRE PROTECTION FORMING THE DECKHEAD AND BULKHEAD OF A HIGH SPEED FERRY

Image courtesy of CBG Systems

PIVOT MARITIME INTERNATIONAL 20 FT CONTAINERISED FULL MISSION BRIDGE SIMULATOR

Image courtesy of Pivot Maritime International

Professional and consultancy services

Tasmanian companies and institutions provide a range of professional and consultancy services for defence and commercial markets.

These include:

- consultancy services in maritime simulations, offshore and coastal engineering, hydrodynamics testing, cavitation testing, ship and port operations, environmental seabed mapping and marine energy systems
- environmental analysis, assessment and management services
- hydrographic surveying
- lease of high speed and offshore support vessels and marine crew
- marine safety, emergency and sustainment services
- marine surveying and assessment
- out of water vessel repair.

Uncrewed, autonomous and underwater capabilities

Tasmania has developed unique uncrewed, autonomous and underwater capabilities from supplying and servicing physically challenging sectors such as aquaculture, wild fisheries and the Antarctic and Southern Ocean.

Uncrewed maritime capabilities can include systems that can operate on the ocean's surface or sub-surface. These include remotely controlled or autonomously controlled systems. Tasmanian uncrewed maritime capabilities include the design, manufacture and maintenance of sub-sea systems and remotely operated vehicles.

The AMC has established one of the world's best-equipped Autonomous Maritime Systems Test and Evaluation Centres, with test sites certified by the Australian Maritime Safety Authority for the conduct of regulatory permit-free trials and testing. The Centre has a fleet of underwater vehicles and systems for sub-sea and Antarctic exploration.

Tasmanian industry has expertise in undersea engineering, hydrodynamics, hydrography, oceanography and hydro-acoustics and provides services that enhance undersea domain awareness and port development planning.

This includes:

- integration of digital systems with undersea expertise in engineering
- above and below water spatial data capture and analysis including hydrographic survey
- lease of high speed and offshore support vessels and marine crew
- specialist metocean, meteorological and oceanographic data analysis
- consulting services and hydroacoustic science and software expertise.

Education, training and research

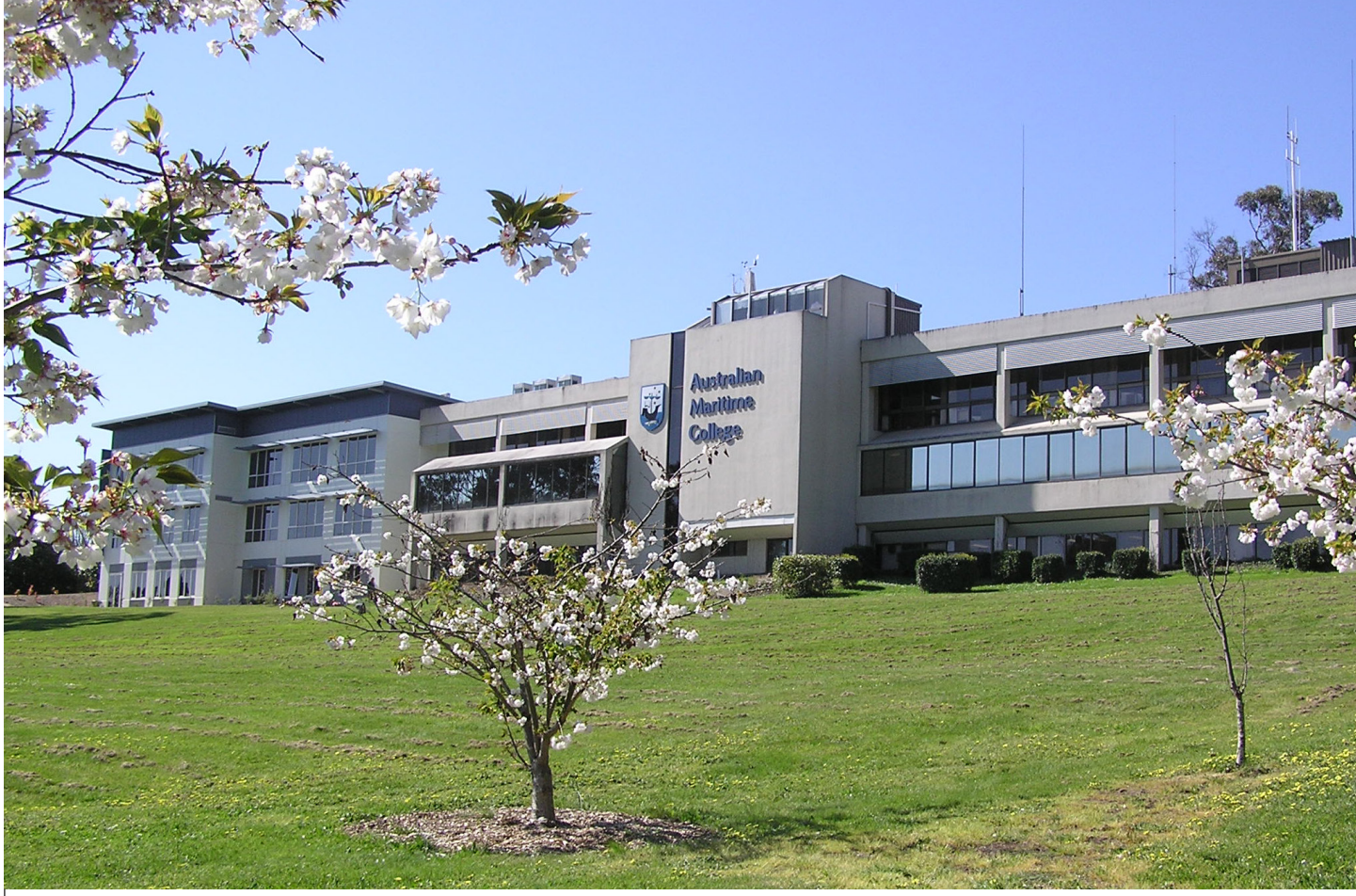
Tasmania is home to several world leading maritime and marine research and scientific institutions and organisations, each with unique capabilities, expertise and facilities.

The Australian Maritime College (AMC) is part of the University of Tasmania and is one of the seven founding members of the International Association of Maritime Universities, which represents five continents.

AMC's specialist research and training facilities include the Maritime Simulation Centre, the Model Test Basin and Towing Tank, the Cavitation Research Laboratory, the Underwater Collision Research Facility, the Real-Time Power Systems Simulator, the Autonomous Maritime Systems Laboratory Test and Evaluation Centre and the Emergency Response Centre.

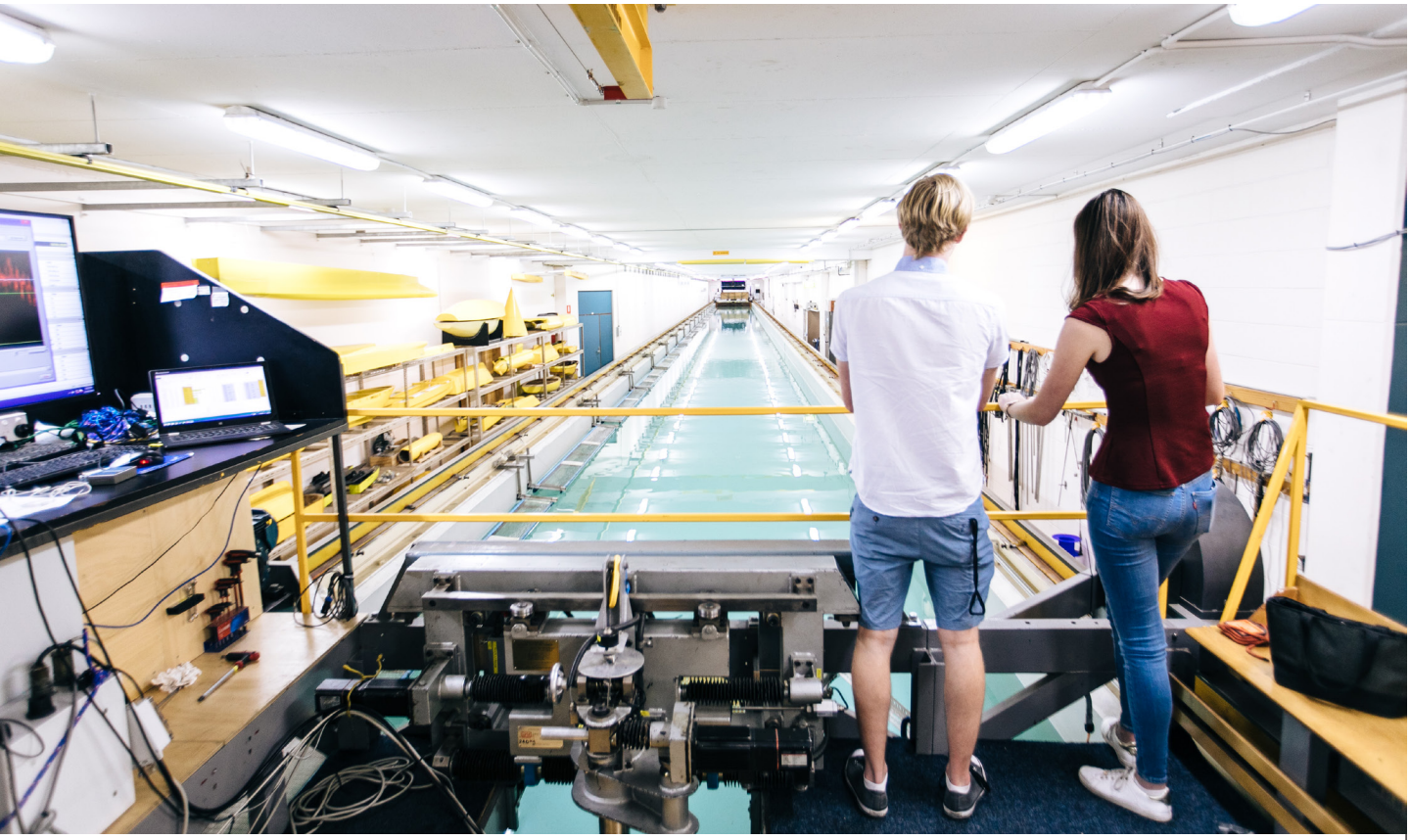
AMC's research capabilities include:

- renewable energy and power management
- naval architecture (stability, structural integrity and manoeuvring)
- fluid dynamics and fluid structure interactions of ship and submarine structures
- cavitation physics and hydro-acoustics
- ship, submarine and autonomous systems engineering and training, operation and sustainment
- offshore engineering
- human-centred vessel design and operation
- port development
- maritime safety
- logistics and supply chains.



AUSTRALIAN MARITIME COLLEGE

Image courtesy of Australian Maritime College



AUSTRALIAN MARITIME COLLEGE TOWING TANK

Image courtesy of Australian Maritime College

The AMC also hosts a commercial division, AMC Search, delivering training and consultancy services.

The University of Tasmania's Defence and Maritime Innovation and Design Precinct (DMIDP) connects academia with industry to collaborate on research and development, test and evaluation and consultancies.

The Precinct has a secure common user facility and options for co-located workspaces.

The DMIDP has been codeveloped with key partner, the Defence Science and Technology Group (DSTG) with the aim of improved design, operation and performance, materiel availability, survivability (susceptibility, vulnerability, and recoverability), and sustainment of surface and sub-surface vessels (including autonomous systems), and coastal, offshore, and subsea maritime structures.

The University of Tasmania's Institute for Marine and Antarctic Studies (IMAS) is a centre of excellence for marine and Antarctic research.

IMAS has three core research programs - Fisheries and Aquaculture, Ecology and Biodiversity, and Oceans and Cryosphere.

These programs are linked by the cross disciplinary themes of climate change, ocean-earth systems, and oceans and Antarctic governance.

IMAS is the only institute in the world in the top 10 for all three of these research focus areas.

Australia's Integrated Marine Observing System (IMOS), hosted by the University of Tasmania, is a national research infrastructure capability which operates a wide range of observing equipment throughout Australia's coastal and open oceans.

The Blue Economy Cooperative Research Centre (Blue Economy CRC) undertakes world class, collaborative, industry focused research to support the growth of Australia's Blue Economy.

Headquartered in Tasmania, the Blue Economy CRC has 40 participants from around the world, representing industry, universities and governments, with international expertise in sustainable offshore aquaculture, offshore renewable energy and engineering, and offshore policy development.

The Blue Economy CRC's education and training program is developing a skilled workforce designed to support Australia's blue economy.

The Marine National Facility is Australia's blue water research capability, funded by the Australian Government and owned and operated by the CSIRO.

The facility operates *RV Investigator*, a 94 m state of the art marine research vessel based in Hobart, which supports Australia's atmospheric, oceanographic, biological and geosciences research. CSIRO's Oceans and Atmosphere Business Unit is also headquartered in Hobart.

The Australian Antarctic Division (AAD) is part of the Australian Government's Department of Climate Change, Energy, the Environment and Water and is based in Kingston, just south of Hobart.

The AAD is responsible for Australia's presence and activities in the Australian Antarctic Territory and the Southern Ocean. Australia's icebreaker, *RSV Nuyina*, is based in Hobart since 2021 and is the main lifeline to Australia's Antarctic and sub- Antarctic research stations and the central platform of Australia's Antarctic and Southern Ocean scientific research.

The Centre for Antarctic Remote and Maritime Medicine (CARMM) delivers operational medical services, training and research for polar, maritime, space and other remote and extreme environments.

CARMM is based at the AAD and is a collaborative partnership between the Australian Government, the Tasmanian Government and the University of Tasmania.

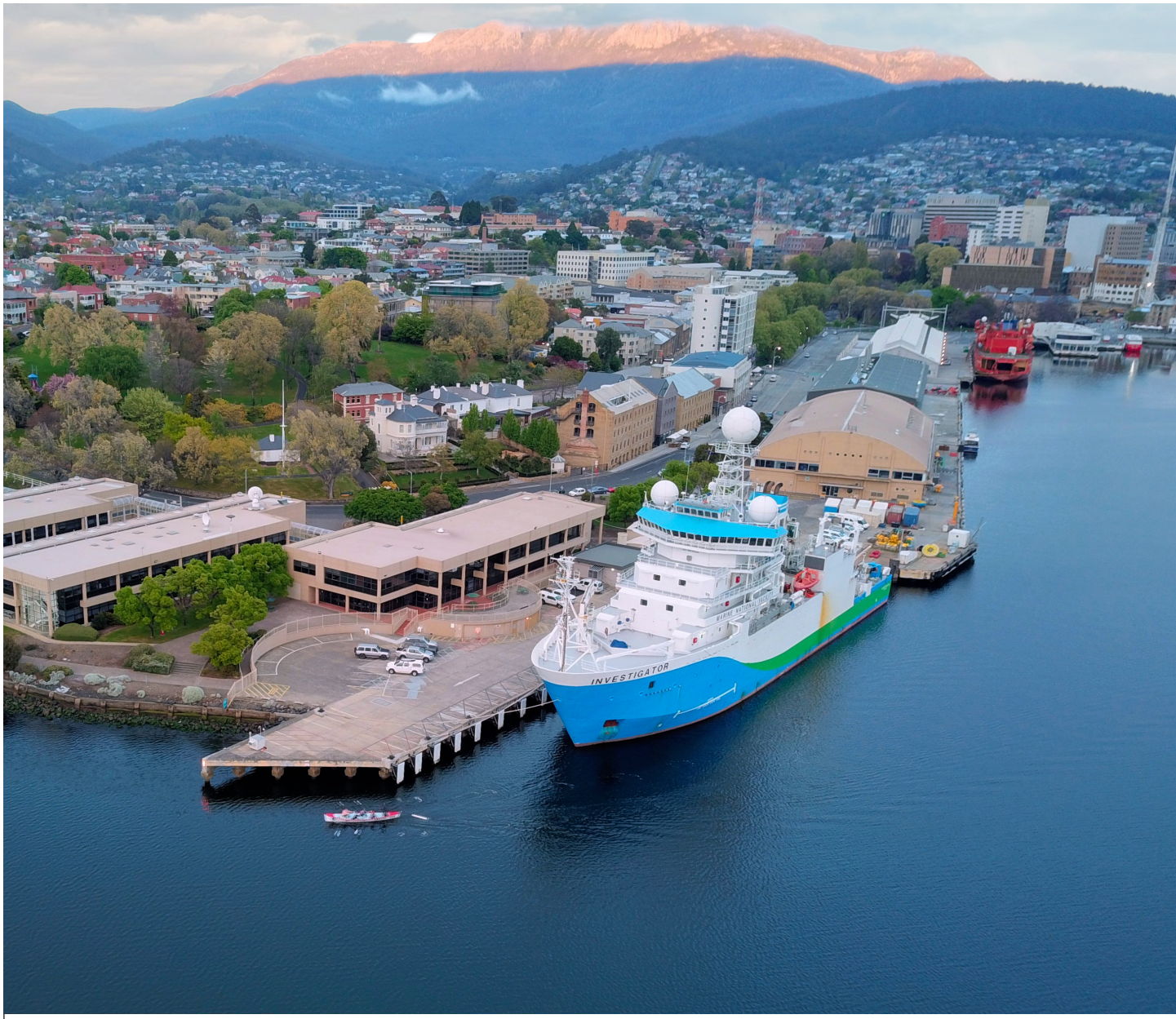
The Tasmanian Health Service's Department of Hyperbaric and Aerospace Medicine is part of CARMM and houses the southern hemisphere's only human-rated, dual-function hyperbaric / hypobaric chamber and speciality expertise.

TasTAFE provides vocational education and training to support the training requirements of our major shipbuilders and the broader maritime industry.

TasTAFE's facilities include the Metal Engineering Training Facility, located in the maritime defence industry precinct at Prince of Wales Bay.

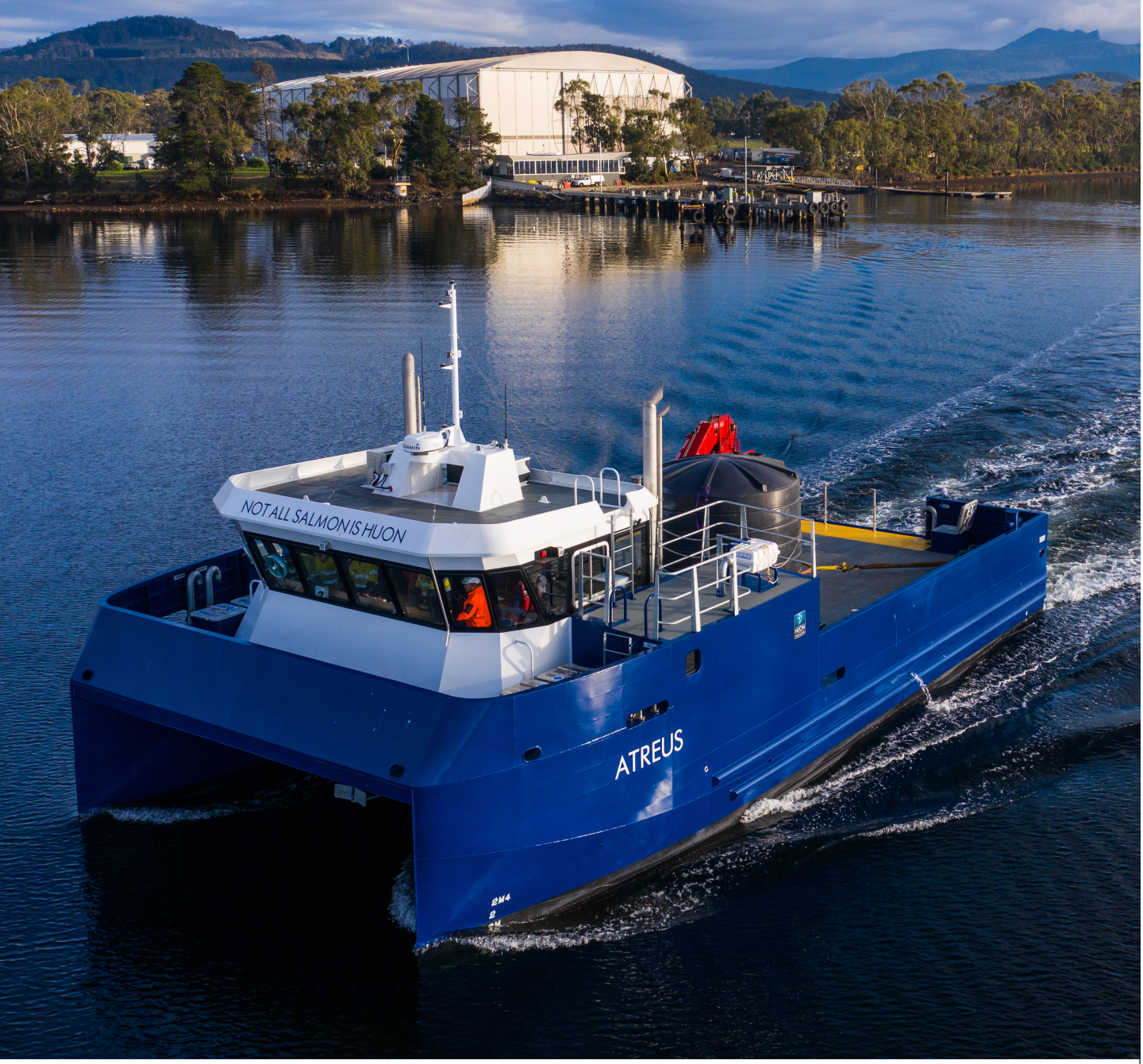
The Tasmanian Minerals, Manufacturing and Energy Council (TMEC) Manufacturing Centre of Excellence provides facilities, training spaces and equipment to develop skills in advanced manufacturing.

TMEC provides facilities that are utilised by the shipbuilding industry, includeing a Simulated Work Environment that provides lean manufacturing and continuous improvement training. It also features an Advanced Training Welding Centre with portable virtual reality simulators that are compatible with live welding equipment.



'RV INVESTIGATOR' AT THE CSIRO MARINE LABORATORIES IN HOBART

Image courtesy of CSIRO



CRISP BROS AND HAYWARDS BUILT VESSEL 'ARTREUS' IN FOREGROUND WITH CRISP BROS AND HAYWARDS MARGATE SHIPYARD IN BACKGROUND

Image courtesy of Crisp Bros and Haywards

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