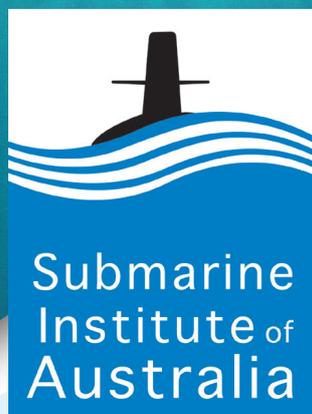




SUBMARINE BUILD & SUSTAINMENT PROGRAMS:

The Strategic Nature of Reliable Sovereign Supply Chains



SIA CONFERENCE
2020
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Welcome to the 10th Biennial Submarine Institute of Australia (SIA) Conference.

2020 has been a year like no other in recent times. Governments, industry and organisations alike have had to look at alternative methods and approaches to conducting business. A very real example of this is the decision by the SIA to move to a hybrid conference combining the traditional in person attendance as well as those connecting on line.

Understandably, the focus of the nation has predominantly been inwards looking in dealing with the Corona Virus pandemic, which continues to challenge us on a daily basis. Despite these challenges, there have been significant strategic developments in our region that reinforce the need for a credible submarine capability. The government has made considerable investments in our current and future submarine force to address these evolving challenges. How Australia will support these platforms has been impacted by an increased focus on self-reliance, especially in the areas of manufacturing in Australia and the development of sovereign supply chains. It is therefore more than appropriate that our theme for this year is: 'Submarine Build and Sustainment Programs: The Strategic Nature of Reliable, Sovereign Supply Chains'. I expect that there will be much debate along the lines of Australian Industry Capability (Content)

I would like to thank all of those who are participating in this conference, especially our key speaker, the Minister for Defence, Senator the Honourable Linda Reynolds CSC. This year, due to travel restrictions, many of our speakers, especially those from overseas will be joining on line. Our international partners are an important factor in our current and future success. I must also thank all of our sponsors, without who we would not be able to conduct this important work. Your support allows us to progress important initiatives such as the Australian National Submarine Museum and the Undersea Outreach Program.

I thank you for your support of the SIA and trust you enjoy the conference

Regards, Mark Sander

SIA Conference 2020



MARK SANDER
PRESIDENT
SUBMARINE
INSTITUTE
OF AUSTRALIA



PETER CLARKE
MASTER OF
CEREMONIES

Mark is a former submarine qualified senior Naval Officer. As a graduate of the Royal Navy's Submarine Command Course, 'Perisher'. Mark completed three tours of duty as a Submarine Commanding Officer, served on the Staff of the Commander Submarines Pacific as the RAN exchange officer and later as the Deputy Submarine Squadron Commander at HMAS Stirling.

Mark also served as the Commandant of the Royal Australian Naval College, he was responsible for all Navy new entry training (sailors and officers). This was followed by a posting as the Commandant of the ADF Warfare Centre responsible for Joint warfare training, doctrine and exercise management.

His defence postings to Canberra included Project Director for the New Submarine [Collins] Project Office and Director General Navy Safety and Certification. His latter service in the RAN included duties as the Director General for the Future Submarine Project and then as the lead for the Submarine Life Evaluation Program, the technical analysis of the Collins Class Submarines to determine the feasibility of a life extension.

His academic qualifications include an Executive Masters in Complex Project Management, an MBA in Technology Management and a Bachelor of Science in mathematics.

Mark is currently the Chief Operating Officer at Safran Electronics & Defense Australasia.

Peter Clarke was born in England and joined Britannia Royal Naval College, at Dartmouth, in 1970, specialising in submarines and navigation. He commanded HMS Oberon as a lieutenant and HMS Tireless as a lieutenant-commander, and worked in London as a defence team leader in the Defence Intelligence Staff, as a career manager and in the naval policy and warfare directorate.

In 1993 he resigned from the Royal Navy, migrated to Australia and joined the Royal Australian Navy (RAN). He served in Navy Office, Canberra, Maritime Headquarters as the Fleet Submarine Operations Officer and later Chief Staff Officer (Operations) and was promoted Captain in 1995. After a year at the Australian College of Defence and Strategic Studies he was appointed to Western Australia as Commander of the Australian Submarine Squadron.

He returned to Canberra in early 1999 as the Collins project manager and was promoted Commodore as the inaugural Commander of the Submarine Force Element Group in WA. He was also Senior Defence Officer - Western Australia and Aide-de-camp to the Governor-General during this period. He was promoted to Rear Admiral in September 2001 and returned to Canberra as Head of Defence Knowledge Systems.

Rear Admiral Clarke retired from RAN in late 2003 and has since made a second career as a leadership specialist and advisor/mentor to chief executive officers. He has taken part in reviews of Fire & Rescue, NSW, Sydney Ferries, the NSW State Emergency Service and the NSW Police Force in recent years. Most recently, he has been an advisor to the commissioners on the Bushfires Royal Commission.

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Proudly supporting the 2020 SIA Conference



**THE HON. LINDA REYNOLDS CSC
MINISTER FOR DEFENCE**

Thank you for the opportunity to address the 10th Biennial Submarine Institute of Australia Conference.

The Submarine Institute of Australia is a specialist community of experts who know the business of warfare, the business of submarines, and the importance of maintaining the ability to deliver strategic power where and when it is needed.

Thank you for the opportunity to address the 10th Biennial Submarine Institute of Australia Conference.

The rapidly-changing strategic environment in our region has introduced a greater level of uncertainty. Major power competition, especially between the United States and China, along with the expansion and modernisation of other militaries throughout the Indo-Pacific, is raising the risk of the oceans surrounding Australia becoming contested zones. Australia must prepare itself to face this more challenging strategic environment.

Submarines are a major component of the strategic changes underway in the Indo-Pacific. Every significant power in the region is investing in submarines, and it is anticipated that around 300 will be operating in the region in the 2030's. To address this challenge, we need to build a resilient undersea warfighting system made up by many platforms and systems to prosecute Anti-Submarine Warfare operations. In this environment, Australia must strive to maintain the cutting-edge defence capabilities that underpin our ability to deter and respond to potential threats. Submarines are indispensable assets for the defence of Australia and its interests.

Australia has long relied upon a regional superiority in submarines, which is currently provided by our Collins class fleet. The Collins class remains the world's most capable conventionally powered submarine, has achieved operational results of which all Australians can be proud, and will remain so well into the 2040's.

Accordingly, the Collins class will remain the mainstay of Australia's submarine force for years to come, the changes underway in our region make it necessary to invest in a larger, stronger and more formidable future submarine force. It is only through developing cutting-edge capabilities that Australia will be able to maintain its regional superiority in submarines.

This Government's Future Submarine Program represents the future of Australia's submarine force. It will provide a regionally-superior submarine that is tailored to Australia's unique requirements, including through interoperability with American forces, and will form the basis of Australia's strategic deterrence for decades to come.

The Attack class submarine is an ambitious project that will extend until the 2050's and beyond with several objectives. Foremost, it is delivering essential capabilities for the Australian Defence Force and ensuring the nation's security. It also promises substantial benefits to the Australian economy and is strengthening the ties between Defence and Australian industry. It offers opportunities to bolster Australia's sovereign industrial base, source materials from Australian suppliers, develop Australian expertise, and provide thousands of jobs for Australian workers.

Submarines are among the most complex of engineering challenges, requiring the finest minds available. Designing, building and sustaining submarines is also a long-term commitment that requires focus and resolve in the face of challenges. Yet there is no substitute for the capabilities that submarines offer. It is incumbent upon all of us to maintain the focus required to bring this project to a successful conclusion, and realise the many benefits submarines offer for Australia's national security.

As Minister for Defence, I am committed to ensuring the successful delivery of our submarine programs. We are on track and progressing well.

I commend the Submarine Institute of Australia for its continued work in support of Australia's submarine capability and welcome informed public discussion at this year's conference on the tremendous value of our submarines and the sovereign benefits for Australia.

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SIA 10TH BIENNIAL CONFERENCE PROGRAM

TUESDAY 17th NOVEMBER 2020: SIA CONFERENCE DAY 1

07:30 - 08:15 Registration & Refreshments:

SESSION 1 - PLENARY SESSION (1)

08:15 - 08:30 **Opening Comments & Conference Administration:** Mark Sander, Peter Clarke

08:30 - 09:00 **Sovereignty as a Capability:** VADM Michael Noonan AO RAN - Chief of Navy

09:00 - 09:30 **Submarine Ship Building Supply Chains:** Professor Don Winter - Chair, Australian Shipbuilding Review Board

09:30 - 10:00 **USN Submarine Supply Chain Experiences:**
RADM David Goggins USN - Program Executive Officer Submarines, Naval Sea Systems Command

10:00 - 10:30 **The Future Submarine Program - An Update:** RADM Greg Sammut AO CSC RAN (Rtd) - General Manager, Submarines, CASG

10:30 - 11:00 **1-A Morning Session Break:** - in partnership with PGM Environment

SESSION 2 - PLENARY SESSION (2)

11:00 - 11:30 **Keynote Address:** The Hon Linda Reynolds CSC MP - Minister for Defence

11:30 - 12:00 **Supply Chains and Defence Science:** Professor Tanya Monro - Chief Defence Scientist

12:00 - 12:30 **State of the Union:** CDRE Tom Phillips RAN - Director General Submarines, Navy Capability Division

12:30 - 13:30 **1-L Lunch Session Break:** - in partnership with DMTC

SESSION 3

13:30 - 14:30 **Panel Discussion: The Importance of Sovereign Supply Chains:** Peter Jennings - Executive Director, Australian Strategic Policy Institute; Graeme Bent, Program Director, Naval Group Australia Pty Ltd
Tanya Pimblett - Head of Commercial & Supply Chain, Maritime Services Goup, ASC Pty Ltd

14:30 - 15:30 **Panel Discussion: AIC: Is it the Panacea for the Supply Chain?:** Glenn Thompson - Assistant National Secretary, Australian Manufacturing Workers' Union; Innes Willcox - Chief Executive Officer, Australian Industry Group; Brent Clark - Chief Executive Officer, Australian Industry Defence Network

15:30 - 16:00 **1-P Afternoon Session Break:** - in partnership with BlueZone Group

SESSION 4

16:00 - 16:30 **The View from the Opposition:** Hon Richard Marles, MP - Shadow Minister for Defence

16:30 - 17:00 **The View from France:** Vice Admiral Jean-Philippe Chaineau - Submarine Force Commander, Marine Nationale (French Navy)

17:00 - 17:15 **Presentation of Partnership Certificates:** Mark Sander - President, SIA

18:30 - 19:00 **Pre-Dinner Drinks:** - in partnership with Defence SA

19:00 - 22:30 **Conference Dinner:** - in partnership with Defence NSW

Dinner Wines: - in partnership with Safran.
Dinner Speaker: Ian McPhedran

WEDNESDAY 18th NOVEMBER 2020

08:00 - 08:45 **21st Annual General Meeting of the Submarine Institute of Australia:** SIA Members only.

08:30 - 08:45 **Single Day Registration & Refreshments:**

SESSION 5

08:45 - 09:00 **Opening Comments & Conference Administration:** Mark Sander, Peter Clarke

09:00 - 09:30 **Defining Sovereign Submarine Capability; a Global Review:** Associate Professor Eric Fusil - Director of Shipbuilding Hub for Integrated Engineering and Local Design, Adelaide University

09:30 - 10:00 **SIA Undersea Outreach Program:** Errika Meades - SIA Committee Member and Lead, SIA Undersea Outreach Program

10:00 - 10:30 **Developing the Naval Shipbuilding and Sustainment Workforce:** Ian Irving - Chief Executive, Naval Shipbuilding College

10:30 - 11:00 **Morning Session Break:** - in partnership with Jenkins Defence Engineering Systems

SESSIONS 6-8 - GENERAL PRESENTATIONS

STREAM 6A - SOVEREIGNTY FOR THE SUBMARINE ENTERPRISE

11:00 - 11:30 **6A-1**
Defence Sector Workforce Insights - Risk & Opportunity for the Submarine Enterprise: Robert Kremer - Director & Defence Sector Leader, Kinexus

11:30 - 12:00 **6A-2**
Network-centric modelling to enhance supply chain resilience: Dr Larissa Statsenko - Associate Professor, University of South Australia

12:00 - 12:30 **6A-3**
FSP Sovereign Systems Integration Capability: Dr Quoc Do - Group Leader - Submarine Systems Engineering and Advisory, Frazer-Nash Consultancy

12:30 - 13:30 **2-L Lunch Session Break:** - in partnership with JFD Australia

STREAM 7A - SUBMARINE AVAILABILITY AND CAPABILITY

13:30 - 14:00 **7A-1**
Improving COLLINS SM availability- ASC Perspectives: Jim Burnside - Head of Business Planning, ASC Pty Ltd

14:00 - 14:30 **7A-2**
3D Printers in the Submarine domain: Johnathon Borella - Mechanical Engineer, Department of Defence

14:30 - 15:00 **7A-3**
Lessons from 10 years of developing submarine engineering capability by ASC and the University of Adelaide: Peter Davie - Engineering Capability Manager, ASC Pty Ltd

15:00 - 15:30 **2-P Afternoon Session Break:** - in partnership with APC Technology

STREAM 8A - UNDERGRADUATE PRESENTATIONS

15:30 - 16:00 **8A-1**
Subs-in-Schools: Enhancing the Parent Kit: SBLT Ben Ukmar RAN - Fourth Year Student, ADFA

16:00 - 16:30 **8A-2**
Geometry Effects of Surface Piercing Cylinders on the Severity of the Generated Surface Waves: Ahmed Shama - Engineering Undergraduate, UNSW, Canberra

16:30 - 16:45 **Closing Remarks - SIA President**

STREAM 6B - SUBMARINE RESEARCH

6B-1
'Cancelled'

6B-2
ARES - Australian Research and Experimental Submarine: Associate Professor Eric Fusil - Director of Shipbuilding Hub for Integrated Engineering and Local Design, Adelaide University

6B-3
The Sovereign Development of Submarine Battery Capability: Claude Messina - General Manager, Lead-Acid Batteries, PMB Defence

STREAM 7B - SUBMARINE SENSORS AND THE ENVIRONMENT

7B-1
Multi Sensor Pre-Track Data Fusion – A Combat System Performance Differentiator: Horden Wiltshire - Chief Executive, Acacia Systems Pty Ltd

7B-2
Measurement and Re-processing of Data to Obtain a Seafloor Sonar Description for Shallow Oceans: Dr Adrian Jones - Honorary Fellow, Defence Science and Technology Group

7B-3
Seeing from the Submarine: Darren Burrows - Chief Technology Officer, BlueZone Group

STREAM 8B - SOVEREIGN SUPPLY CHAIN ISSUES

8B-1
Turning critical issues into sovereign industrial capability opportunities. Carly Bakes - Logistics & Supply Chain Manager, Safran Electronics & Defense Australasia

8B-2
Stream B. Session 8B-2: Critical Partnerships in The Collins Class Submarine Sovereign Supply Chain: Tanya Pimblett - Head of Commercial & Supply Chain, ASC Pty Ltd, Natalie Mackintosh - Senior Commercial Advisor, ASC Pty Ltd

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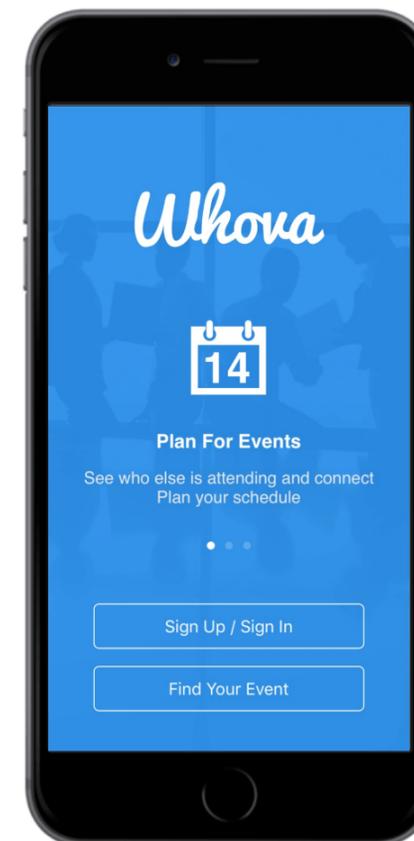
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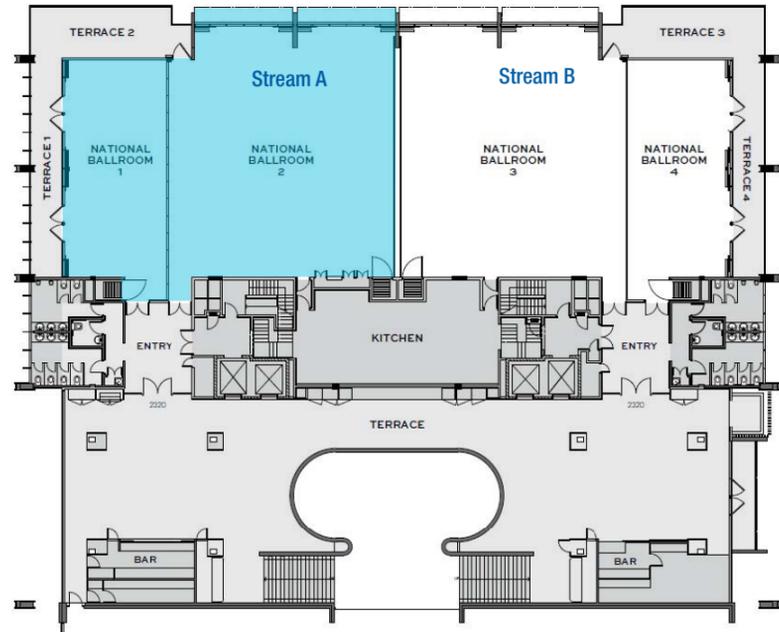


Information for Delegates to the 10th Biennial Submarine Institute of Australia Conference 2020

Your Main Venue - Hotel Realm

The floorplan below shows Ballrooms 1, 2, 3 & 4 in which the Conference will be held. If an emergency occurs, please follow the instructions of the Realm hotel staff

On Wednesday, the conference will break into two streams:
 Stream A in Ballrooms 1 & 2 while Stream B will be in the Ballrooms 3 & 4. Presentations will be timed to run to schedule so you can move between streams as you desire.



COVID-19 Safety Precautions

The SIA and Hotel Realm have a Covid Safety Plan which requires that all delegates are scanned in and out. It is a requirement that you remain seated and all tables will have a sheet on which you should enter your name. If you move to another table, please add your name to the list on the new table.

Mobile Phones

Please switch mobile telephones to silent to avoid disturbing speakers or other delegates. We do, however, suggest, you use them (or tablets) to view the program and to ask questions using Whova.

Chatham House Rule

While all content in the conference has been approved by the relevant organisations responsible for the speakers, the SIA applies the 'Chatham House Rule' to Questions and Answers: *When a meeting, or part thereof, is held under the Chatham House Rule, participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed.* In order to encourage the free exchange of ideas (within the bounds of security), please respect this rule.

SIA Membership

Membership of the SIA is open to all and is assigned to a named individual. For a Joining Fee of \$55 which includes membership until the end of that Membership Year (July-June), members whose subscriptions are in date are entitled to special discounts at SIA Conferences and a regular newsletter with selections of relevant media articles and updates from the Institute. Partners of the SIA are able to assign complimentary memberships to varying numbers of their employees, dependent upon the level of support.

Delegates with full or discounted tickets are entitled to apply for membership of the SIA without a Joining Fee. All membership applications should be made on the online form on the SIA website and applications for complimentary membership under this Conference offer must be made by 31 December 2020.

Partnerships

Partners are the lifeblood of the SIA and the money generated through corporate and conference partnership allows the SIA to carry out a range of activities to meet its objectives. Through their commitment to ongoing support, corporate partners fill a special place and, while the Institute remains completely independent of the commercial aims of its partners, their position is very highly regarded. Partnership of SIA Conferences is also very important and the recognition of those companies that are partners for this conference is evidence of their value to the SIA. To become a partner, visit the SIA website under 'Partners'.

Australian Submarines - A History

The second edition of the most authoritative history of Australian submarines was recently published with funding from the SIA. Produced under the editorship of the original XO of HMAS OTWAY, Professor Michael White, QC, this high quality two volume set is available for sale to delegates of this conference at a special price of \$80 (compared with the bookshop price of \$140). Orders can also be placed for delivery (although this will incur charges for postage and handling).

Hold the Date

SubSTEC6. The 6th Submarine Science, Technology and Engineering Conference 2021 (titled SubSTEC6) will be held in South Australia during the period 15-18 November 2021 at a venue to be announced.



SubSTEC6 will feature peer-reviewed technical papers from the cream of Australia's engineers, scientists and students and the Opening Reception will be preceded by industry tours on Monday 15 November. Look out for messages about registrations and Call for Papers in around April 2021.

Discounts for SIA membership are at a maximum for those whose subscriptions are paid until 30/6/2022 by 1 May. The discount will then reduce to 50% until 31 July. Members whose subscriptions are brought up to date after 31 July 2021 will not receive any SIA membership discount.



The Submarine Institute of Australia supports or promotes informed discussion and research in the fields of submarine operations, engineering, history and commercial sub-sea engineering - otherwise known as submarine matters.

