

MARITIME PORTFOLIO 19\20

SOLVING THE PROBLEMS THAT REALLY MATTER

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MARITIME



AUSTRALIA & NEW ZEALAND



Dominance of the maritime domain is key to national security for seafaring countries with maritime borders. With 70% of the Earth's surface being covered by water, the security of the maritime trade routes are paramount to the well-being of our societies. The maritime environment is harsh, demanding and punishing and exposes every flaw in naval systems. Whether it is above or under water, naval systems must be designed to combat threats in the three dimensional space and dominate the environment. An intimate understanding of the operational environment is crucial to delivering capabilities that can withstand the relentless pace of naval operations and deployments.

Nova Systems provides the operational and engineering solutions to help our customers meet these challenges. Our people understand the nexus between operations and engineering, and with our presence in Australasia, Asia and Europe, we are in a unique position to use our global experience and expertise to bring a fresh perspective into the problem space when designing creative solutions for our customers.

Our people combine technical skills with an in-depth understanding of what is required to deliver and sustain capability. We provide scalable solutions whether it is specialist advice or a full turn-key service, working with OEMs and the end users to deliver capabilities tailored to their needs.

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MARITIME

KEY CLIENTS - AUSTRALIAN DEFENCE FORCE | NEW ZEALAND NAVY | CAPABILITY ACQUISITION & SUSTAINMENT GROUP | SAAB SYSTEMS | RAYTHEON | ASC



LANDING HELICOPTER DOCK (LHD) SHIP HELICOPTER INTEGRATION



Highlights Nova's genesis was through the combination of Test Pilot experience with Flight Test Engineer expertise. This is a true melding of art and science. Test pilots are not ordinary pilots: they combine exceptional piloting skill with a strong engineering bent. Similarly, Flight Test Engineers are not ordinary engineers: they combine engineering excellence with a strong operational focus. This is the nexus of Nova's success: we combine the technical expertise necessary to solve the problem with the operational experience to know which problems need solving.

The issue of ship/helicopter integration is one area where Nova's combination of T&E art and science is crucial. Helicopters undoubtedly increase a ship's operational capability, however, the manner in which a helicopter is operated from a ship is vital to realising that capability. Ships give up valuable real estate in order to embark a helicopter. Invariably, the helicopter brings increased capability, but that value is lost if operating limits restrict the use of the helicopter. This is critical when the ship becomes dependant on the helicopter to provide essential force protection or offensive capabilities.

PROJECT PROTECTOR VESSELS (PPV) & PROJECT PROTECTOR REMEDIATION (PPR)



Highlights Operational Release of the PPV Fleet has been protracted due to deficiencies revealed during initial Acceptance Testing. The Crown addressed the mediated deficiencies as a series of Project Protector Remediation (PPR) Projects. All of these separate, but interlinked, work packages needed to be finalised before Mission Based OT&E could be conducted. Some First of Class Trials (FOCT) and Trials & Development (T&D) activities were also required on installation and set-to-work of specific work packages.

Over a 3 year period, Nova Systems worked as part of an integrated team with the Maritime Test and Evaluation Agency (MTEA) in Auckland to resolve the deficiencies. Nova developed a capability assessment concept for three separate classes of the PPV fleet. This was followed by detailed and comprehensive OT&E and FOCT Trials Plans. Nova also supported the execution and conducted all of the analysis for each trial.

Nova developed the format, and then populated the RNZN Operational Capability Statements (OCS), articulating the operational performance of the three classes of PPV.



MARITIME

The maritime environment is harsh and unforgiving. In a highly interconnected world, our national and global prosperity depend upon the sea more than ever before. Our oceans provide the transport making global trade possible, and the living, mineral and energy resources which feed the global economy.

The areas of national strategic interest are vast, and defence of territory cannot be separated from the defence of national interests. Maritime nations require naval forces capable of meeting the challenges of strategic geography.

Naval forces and the maritime industry today operate in an environment of ever increasing strategic and technological complexity. Nova Systems provides program and capability assurance for the acquisition, introduction to service, operation and sustainment of complex mission and support systems in the maritime domain. We are a global business with local knowledge and insight. We have worked extensively with end users, operators, prime system integrators and original equipment manufacturers right across the capability life cycle. Our personnel are experienced on operations at sea, in shipbuilding and ship repair programs.

Nova believes in servicing the needs of others and supporting our Clients to 'solve the problems that really matter' so that they can focus on the difference they need to make and get on with the business of securing and working in the Maritime Environment.

We do so by bringing together some of the best Consultants who are experts in their Field. They are proven to deliver and always get the job done to the highest standards. We work with Industry and Defence, so that we can help them make a larger difference in the world.

We are a world-class Capability Assurance Company

[CONTACT](#)



CAPABILITIES

- Operational Test and Evaluation
- First of Class Trials
- Systems Engineering
- Systems Integration
- Design Engineering
- Modelling and Simulation
- Naval Combat Systems
- Electronic Warfare
- Communications and Datalinks
- Unmanned Naval Systems
- Undersea Warfare
- Ship Aviation Operations
- Integrated Logistics Support
- Project Management
- Technical Translation
- Explosive Ordnance Services

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SAFETY AND T&E EXPERTISE DELIVERED TO ANZAC TRIALS



Highlights Defence Project SEA1448 Phase 4B will replace the AN/SPS-49(V)8 Long Range Air Search Radar and its associated Integrated Friend and Foe (IFF) System with a CEA Technologies CEAFAR-2L active Phased Array Radar (L-Band) on all eight Anzac class ships for the Royal Australian Navy. In June 2019, Saab, as part of the Warship Asset Management Agreement (WAMA) Alliance comprised of the Commonwealth, Saab Australia, BAE Systems Australia and Naval Ship Management conducted CAT4 (Category 4) Combat System along-side testing at Garden Island in Western Australia to HMAS Arunta, the First-of-Class ship. In August 2019, Saab commenced further support for CAT5 (Category 5) on-board, at sea systems level test and evaluation at Fleet Base West.

Nova Systems was engaged to provide system-level Safety and Test & Evaluation (T&E) support to the WAMA (Saab) component of the SEA1448 Phase 4B program (Combat System Integration of the CEAFAR-2L). Nova provided systems and verification expertise to the First-of-Class ship T&E program, to enable the Combat System to be exercised to its fullest extent, both alongside and at-sea, under full operational conditions. The Nova team also produced ten technical Post-Test Reports detailing system performance against the specification for use in engineering sell-off of the SEA1448-4B program, and in between test events, was instrumental in raising and releasing Test Reports covering the activities.

The T&E assistance Nova provided was an important aspect in the completion of the CAT4 program on schedule and the timely start of CAT5. Nova's T&E services have played an important part in the first-of-class verification of the CEAFAR2-L radar system in the ANZAC Class. Nova Systems is proud to continue to provide engineering support services to the WAMA (Saab) in support of these sovereign capabilities.

FUTURE SUBMARINES

SUPPORT TO THE ATTACK CLASS SUBMARINE INTEGRATED PROJECT TEAM



Highlights The SEA 1000 Future Submarine Program (FSP) continues planning to provide the Australian Defence Force with its next generation of submarine capability beyond the planned withdrawal of the Collins Class submarine. FSP had a requirement for the development of Test and Evaluation infrastructure and costs for SEA 1000 Future Submarine, which will be used to assist Naval Undersea Warfare Centre (NUWC) to provide a study on US Submarine T&E costs and infrastructure ensuring that the output of that study factors adequately support the Australian context and is sufficient in breadth and detail to develop a costed Test Concept Document (TCD) as recommended by the SEA1000 Strategic TCD.

Nova Systems was engaged to provide the FSP with Australian submarine T&E subject matter expertise to:

- Ensure that the study covers the breadth of test capabilities intended by the TCD;
- Engage with the appropriate authorities and experts in Australia to produce the required level of cost detail for a First Pass TCD; and
- Plan and conduct a Workshop 4 in accordance with DCDM Pt 2 Ch 7. The output from this workshop will be used to update the SEA1000 TCD to First Pass maturity in readiness for submission to Government.

Nova also currently contributes to the Future Submarine Program across a broad range of other areas including:

- Seaworthiness Assurance
- Test and Evaluation
- System Engineering
- Procurement
- Capability Architecture
- Logistics Engineering, Including RAM specialisation
- Project Management
- Configuration Management
- Industry Liason

AIR WARFARE DESTROYER

ALLIANCE SUPPORT



Highlights The Australian Air Warfare Destroyer (AWD) Program is in the process of delivering three world-class ships and their support systems to the Royal Australian Navy. In April 2005 the Australian Government selected Raytheon Australia Pty Ltd as the Combat System Integrator, and in May 2005 selected ASC AWD Shipbuilder Pty Ltd as the Shipbuilder. ASC and Raytheon Australia join CASG in forming the AWD Alliance which is now working hard to deliver this cutting edge capability to the Navy. On 20 June 2007, the Australian Government announced that the Navantia designed F100 had been selected as the basis for Australia's Hobart Class AWDs.

The Commonwealth, Raytheon and ASC each engaged Nova to provide provided a wide range of services and support to the Air Warfare Destroyer project. More than 60 engineering, project management and operational consultants have contributed across the following areas:

- Test and activation including Harbour and Sea Trials
- Communications
- Combat Systems Engineering
- Program/Project Management
- Risk Management
- Electronic warfare
- Sonar Engineering & Operational support
- System Safety and hazardous materials
- Operational Support

The support provided by Nova over many years has contributed to the successful launch of all three AWD ships HMAS Hobart, HMAS Brisbane and HMAS Sydney. With Hobart now in operational service with the Australian Navy, and Brisbane conducting crew work ups, work has continued apace on HMAS Sydney, now alongside at the Techport Shipyard in Adelaide, and Nova is continuing to provide high-end services in support of the harbour and sea trials, engineering and acceptance services, system safety and sea release activities.

AUTONOMOUS WARRIOR 2018



Highlights Autonomous Warrior (AW) 18 was a world class event delivering the largest autonomous systems demonstration to date by western allies. Held at HMAS Creswell in the surrounding bay and airfield during 5-23rd November 2018, the event was a joint initiative led by DST Group and supported by the Royal Australian Navy.

The event sought to enhance, demonstrate and evaluate the military utility of autonomous systems for future littoral operations. AW18 featured a military component and a series of scientific trials involving robotic and autonomous systems, as well as industry exhibitions and a VIP and Media program. The culminating event was the Autonomy Strategic Challenge.

Nova Systems was engaged to provide AW18 with Project Management and Engineering support to the Industry Dynamic Exhibition (IDE) portion of the event. Due to the challenging nature of the event, Nova was further engaged to expand their scope of work to include support to priority AW18 tasking and full management of the IDE. Nova provided engineering, data processing, project management, trials support, risk and safety assessments and industry and VIP liaison duties over the course of the event. Additional support was also provided by Nova subject matter experts to develop a UAS Safety Case for the Navy Regulatory Working Group.

Nova supported and guided DST and Navy through the planning, preparation and conduct phases to ensure AW18 was delivered to schedule and achieved objectives. AW18 was safely executed on time and within budget and led to the successful conclusion of the Autonomous Strategic Challenge. AW18 was highly successful in all respects for both the scientific trials and meeting the Industry objectives.

AUSTRALIAN BORDER FORCE SATCOM USAGE



Highlights Off shore vessels owned and operated by Border Force were using low bandwidth SATCOM services for their communication needs where the costs were driven on a per usage basis. As the volume of data required to be transferred between each vessel and headquarters increased, the SATCOM usage costs per vessel became prohibitively expensive.

Nova Systems was engaged by Border Force to evaluate their SATCOM communication requirements and support Border Force in procurement of SATCOM capability for installation onto the vessels that would provide a long term lower operating cost to Border Force while at the same time supporting increased data rates to support reliable transmission of high data rate real time and non-real time services.

As part of the evaluation process for supporting the introduction of new SATCOM capability within Border Force, Nova Systems was responsible for modelling different SATCOM procurement and cost models as well as evaluate different alternate SATCOM capability options including both commercial and military services.

NEW ZEALAND ANZAC PLATFORM SYSTEM UPGRADE (PSU)



Highlights Two NZ ANZAC Class Frigates have undergone an extensive Propulsion System Upgrade including new refrigeration plants, new engines, new electronic DC Stateboards and new Bridge electronic displays. The most critical part of PSU was the installation of new main and auxiliary system control software called Integrated Platform Management System (IPMS). This software also integrates Damage Control (DC) functionality. For this project Nova Systems:

- Produced an Operational Test Plan for the first vessel HMNZS TE KAHA (TEK);
- Provided an OTD plus an additional three Test Team members for a period of fifteen weeks (including seven weeks at sea) to conduct testing onboard TEK;
- Produced the OT&E Report, listing engineering operational capabilities for FFH post PSU; and
- Produced amendments to Class Standing Orders establishing processes for the Command and Bridge Team to change control modes for Integrated Platform Management System (IPMS).





ABOUT NOVA SYSTEMS

Nova Systems was formed in 2000, rapidly becoming one of the pre-eminent providers of specialist engineering services to the defence sector.

Today, Nova Systems employs more than 600 specialist consultants across Australia, New Zealand, the UK and Singapore, collaborating with its blue chip clients across industry sectors including utilities, government, aerospace, mining, oil, gas and rail.

We provide industry and government with world class, independent expertise. We work not just as consultants, but as trusted partners, as committed to your success as you are.

Our size and extensive network allows us to resource project teams tailored to specifically meet client needs and objectives, yet we remain nimble and flexible. We apply innovation and ingenuity, drawing on the talents and expertise of our people, applying cross-sector thinking, national as well as global perspectives and emerging best practice initiatives.

Specialist services

- Commissioning and test
- Capability development and delivery
- Project development and delivery
- Specialist engineering design
- Certification and design approvals
- Operational and systems safety
- Asset management and logistics
- Training (registered RTO)

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