

# DRY EXHAUST SYSTEM

Case Study and Capability - *HMAS Choules*



## OVERVIEW

**CLIENT** - ROYAL AUSTRALIAN NAVY

**CHALLENGE** - DESIGN, BUILD AND INTEGRATION OF NEW DRY EXHAUST SYSTEM ACROSS GLOBAL SUPPLY CHAIN

**SOLUTION** - NDT'S ENGINEERING GOVERNANCE COMBINED WITH AUSTRALIAN SOVERIEGN MANUFACTURING CAPABILITY

## BACKGROUND

NDT Australia Project Solutions has been tasked as the principal systems integrator for the HMAS Choules Capability Assurance Project (CAP) since 2019.

The project involves the design and installation of over 80 engineering changes across 44 capability enhancement areas to assure the capability and support of HMAS Choules until her planned withdrawal date early next decade.

The CAP has been integrated with sustainment and has been delivered progressively through several maintenance periods. However, this current refit is the major upgrade window and is acting as a mid-life upgrade for the platform.



## THE SOLUTION

Darchem engaged with NDT Australia Project Solutions a specialist engineering governance and project management company to use their 'in-country' project engineers to support the selection from six Australian engineering companies before selecting Sydney based Chess Engineering to produce the new Dry Exhaust system.

Chess Engineering specialise in fabrication, machining and fitting tasks across the rail, mining and defence sectors and has significant expertise in handling sheet metal, mild steel, and stainless steel.

Darchem manufactured the first stage uptake sections of the new exhaust system in the UK, including the Diesel generators, exhaust silencers and exhaust expansion bellows.

Under Darchem's licence agreement and the project management of NDT Australia, Chess Engineering built the remaining 65 per cent of the exhaust system, which included manufacturing the exhaust transition ducts, exhaust protection cages and primary support frames to the exhaust system, using carbon and stainless steel.

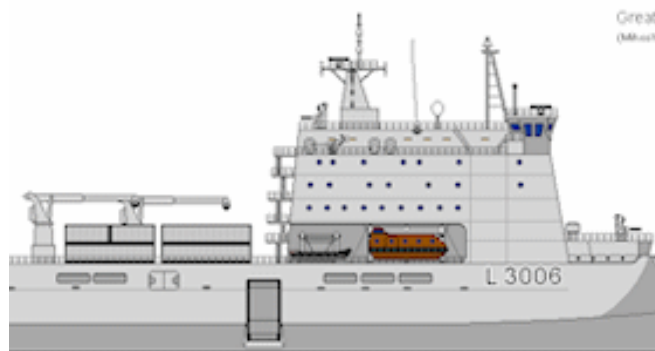
Refit Period 21 is spanning over 300 days at an estimated production cost of \$90m and is being delivered by a 500-strong daily workforce from over 50 suppliers.

As part of the upgrade, HMAS Choules will be fitted with a new Dry Exhaust system. The exhaust was designed and manufactured by UK based engineering company Darchem, a specialist in exhaust systems with vast design build and installation experience.

Working closely with A&P Group in the UK, Darchem has completed the installation of the exhaust systems for RFA Cardigan Bay, RFA Lyme Bay and RFA Mounts Bay on behalf of MoD/RFA in the UK. A&P Australia selected Darchem as the original equipment manufacturer (OEM) of the Bay Class Dry Exhaust.

However, while A&P Australia drew upon Darchem's experience and knowledge to oversee the installation of the new Dry Exhaust system on HMAS Choules, A&P Australia wanted to deploy an Australian based company (NDT Australia Project Solutions) to manufacture the exhausts to maximise Australian content and grow sovereign capability.

This approach would ensure the Royal Australian Navy receives the best level of assurance for the design and installation of the new system, whilst also optimising Australian Sovereign Capability as part of HMAS Choules' refit.



# THE RESULTS

NDT Australia and Chess Engineering completed the project ahead of time, despite the restrictions of the ongoing pandemic.

The arrangement between A&P Group Australia, Darchem, NDT Australia and Chess Engineering reduced the risk of a “new design” exhaust system and allowed a balance of experience and efficiency, using Darchem’s knowledge to undertake design work, sharing the manufacture and local Australian resources.

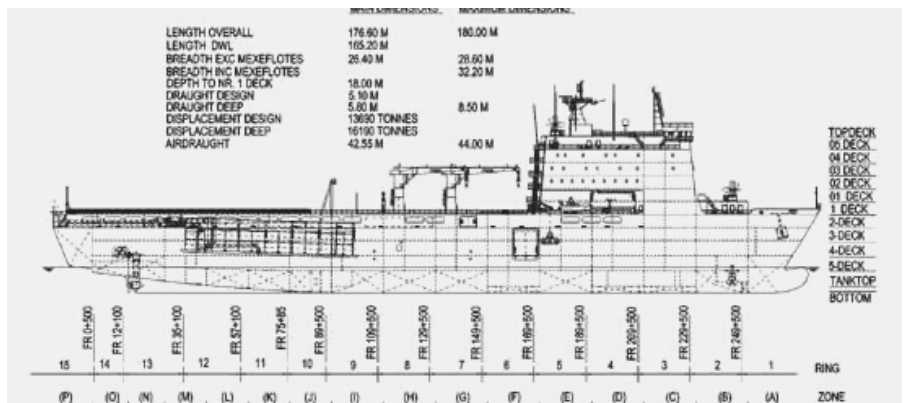
*"Working closely with Chess Engineering while at the same time managing multiple critical stakeholders across the globe was both challenging and rewarding.*

*NDT Australia’s digital project team used technology to allow for agile balanced delivery of HMAS Choules Dry Exhaust Manufacture on time, on budget and most importantly, to the required quality benchmark." - CRAIG MILLER - AUSTRALIA DIRECTOR, NDT*

Steve Facer, Chess Engineering CEO, said: “Chess was delighted to work for A&P Australia, NDT Australia, and Darchem on the HMAS Choules exhaust system.

*“Chess Engineering offers a full array of comprehensive engineering solutions, which are compliant with our customer’s HSEQ and ERP systems. As a technical job with precise traceability, we felt this was very much within our ideal capabilities.*

*“We are committed to developing the skills of our own workforce whilst building Australia’s Sovereign Capability across the defence sector. We have been delighted to have deployed our skills on this prestigious project - one of the largest refits in modern times.” - STEVE FACER - CEO, CHESSE ENGINEERING*



*A&P Australia and A&P Group are extremely proud of their track record in supporting the Bay Class here in Australia, and in the UK.*

*“Our knowledge of the Bay Class is delivering significant savings to the Australian and UK Governments. Our ability to share our knowledge with the Australian defence sector, is delivering real value for money to the Royal Australian Navy whilst also helping to develop Australia’s sovereign capability.*

*“Since our inception in 2012, we have developed a supply chain of more than 300 active suppliers, 80 percent of which is Australian.*

*“Chess Engineering is one of the latest companies to join our supply chain and we look forward to working with them again in the future.” - SCOTT WILLEY - MANAGING DIRECTOR, A&P AUSTRALIA*



Darchem has also engaged with NDT Australia to complete the full installation works, which required qualifying the welders to Darchem’s specification and installing the systems to the quality and standards required.

Utilising a team of eight people from support engineers, skilled trades, and trade assistants, this has now developed the AIC skills not only for the HMAS Choules project but also any future work for A&P Australia where they need this specialist resources.