

ArrowheadTM
140



**A Proven, Capable
and Adaptable Frigate**



Babcock's Arrowhead 140 frigate is a proven, capable and adaptable frigate for global navies. While the platform has its origins in an air defence frigate, it is able to change operational role rapidly depending upon capability needs and will meet naval requirements both now and in the future. Arrowhead 140 is a multi-mission surface combatant capable of conducting AAW, ASuW, ASW and EW operations and is operationally proficient in both blue water and littoral areas.

Capitalising upon a mature and proven design, Arrowhead 140 will deliver an assured frigate capability which is best placed to serve multi-operational demands.

Proven

Developed from the proven Danish Navy's Iver Huitfeldt frigate, Arrowhead 140 builds on previous real-world NATO, Coalition and US Task Force group operational experience, providing an efficient and highly-effective design solution.

The innovative design enables improved capability whilst retaining its proven strengths.

Capable

Arrowhead 140 is capable of fulfilling and supporting the global maritime security requirements and representing your strategic and operational interests world-wide.

The design means that the platform can accommodate a range of mission system configurations to meet the Polish Navy's operational and capability needs. Arrowhead 140 is a frigate that can escort carrier strike groups as well as conduct missions on its own.

Designed to facilitate open architecture combat systems, the ship facilitates customer preferred systems for:

- situational awareness
- operation of offboard assets
- conduct offensive and defensive surface, air and anti-submarine warfare
- point and long range area air defence

Designed to provide maximum capability and value for money, Arrowhead 140 uses modular construction and proven and commercially available systems and equipment.

Furthermore, Arrowhead employs Babcock's iFrigate™ technology to reduce through life support costs and maximise platform availability and readiness.

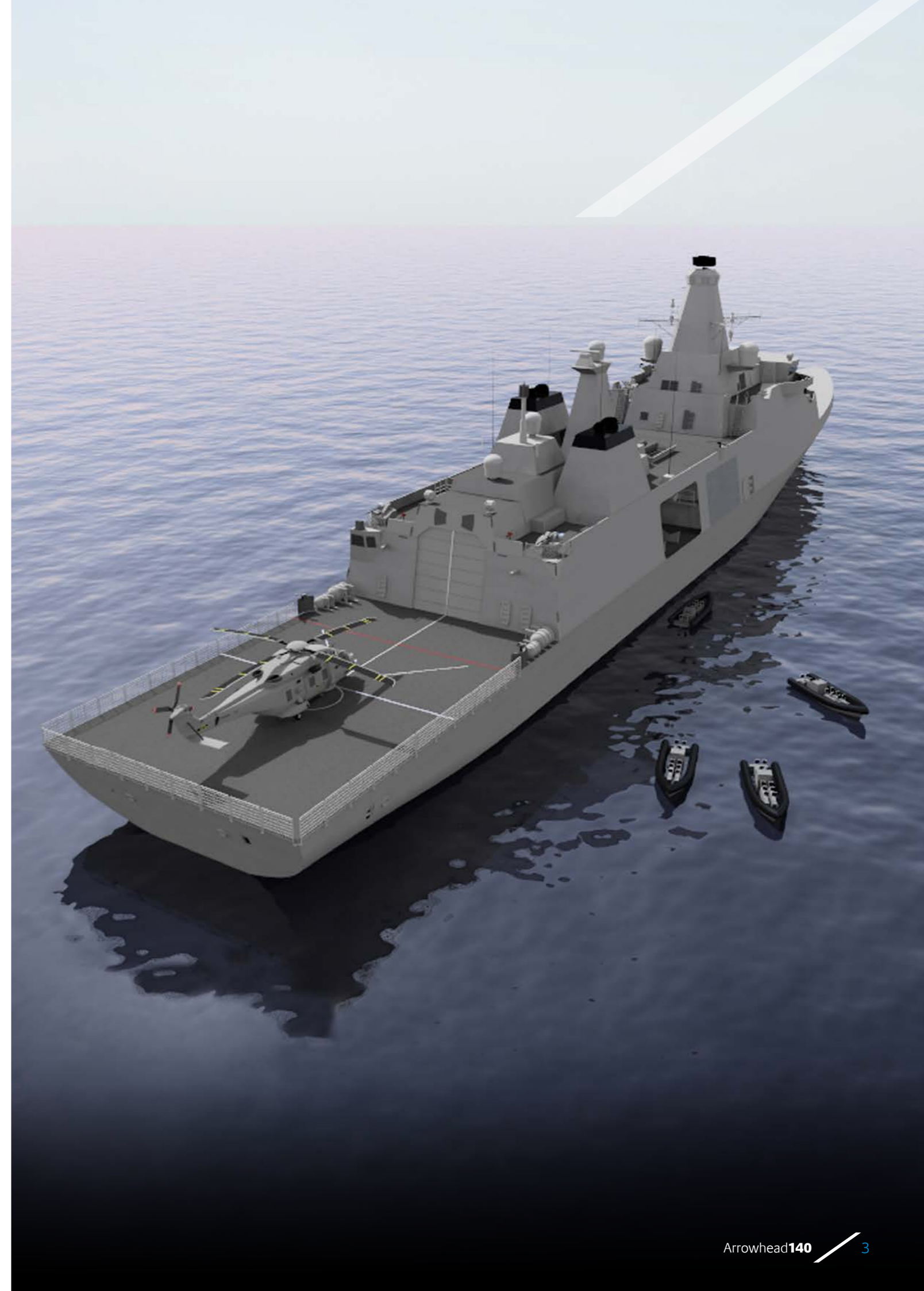
Adaptable

Arrowhead 140's warfighting architecture can be configured to meet specific requirements.

This global frigate has generous design margins to accommodate a variety of capability choices for a broad range of roles, from low-threat security operations to task force escort duties, ensuring it will remain a credible and capable option within an evolving multi-threat maritime environment.

Agility is a core element of the Arrowhead 140 design philosophy.

Large re-configurable mission and payload areas onboard can provide flexibility across a range of operational roles, from point and long range area air defence, to HADRO, unmanned systems deployment and operation; detecting enemy submarines and defending convoy ships.





Babcock offers a holistic breadth and depth of expertise to deliver a proven, capable and adaptable design, for modern, global navies with comprehensive in-service support options.

Our credentials

- › **Babcock** – ship design and complex project management with a wealth of naval engineering and global through-life support experience

The Arrowhead 140 team is a fully integrated project team head-quartered in Bristol, UK, at the heart of a pan-UK based ship design, build and support capability.

Babcock brings together a unique combination of:

- › naval and commercial vessel design, with extensive experience of compliance with both naval and commercial design standards
- › naval and commercial vessel build with modern, robust delivery practices
- › demonstrated ability to partner with Mission Systems providers and integrators
- › extensive naval engineering capability and highly skilled workforces
- › proven and efficient naval customer requirements and acceptance management processes
- › comprehensive safety and environmental management processes and compliance
- › world leading experience in naval platform in-service support with a deep understanding of global operations' support cost drivers
- › credible leading edge shipyard design and optimisation and efficient naval base management

Tried and tested build strategy

Arrowhead 140 is designed for modular build, an approach which Babcock has proved effective through the construction of the UK Royal Navy's Aircraft Carriers. This approach optimises the buildability of the ships from design, assuring the effective transfer of a UK design to Polish shipyards for efficient manufacture and assembly and de-risking the build programme while delivering wider national and regional prosperity.

Providing technical support throughout the build stage has meant that lessons learned during construction have been fed back to improve Babcock's design skills for future platforms and further improving the design to build transition process. Our experience in platform refit and maintenance means that we have extensive knowledge of the supportability and usability of platforms and understand fully the effects of design in action.

Established supply chain

As an established naval engineering design, build and support company, Babcock benefits from existing relationships with a broad range of military supply chains which can be utilised to assist global navies through all aspects of the programme.

With offices around the world, Babcock has strong relationships with international suppliers providing fast, efficient delivery of materials and supplies to platforms deployed globally.

We would seek to capitalise upon the Polish Supply Chain and wider industrial and academic expertise as much as possible in our build solutions for the Miecznik programme.

Effective whatever the task

Arrowhead 140 can be configured to operate independently or integrate with a Task Force to conduct offensive and defensive Surface, Sub-Surface, and Air Warfare.

The baseline Arrowhead 140 design can be configured to meet the broad range of operational requirements and profiles a global frigate may be called upon to undertake and adopt.

Operational roles will change through the life of the ship. Arrowhead 140 provides sufficient flexibility and adaptability for a multi-role capability to meet changing operational needs, ranging from task group and high end warfare operations to constabulary and humanitarian duties.

- Arrowhead 140 is able to:
- › detect and engage surface ships, aircraft and missiles over the horizon
 - › detect and engage submarines
 - › defend convoy ships
 - › employ active and passive electronic warfare systems
 - › defend against swarming small boat attacks and UAVs
 - › carry, deploy, operate and recover autonomous vehicles



Adaptable and established systems

With generous provisioning of combat system compartments, SWAP-C and cabling routes throughout the ship, the platform’s flexibility facilitates the integration of the customer’s preferred combat system components, C4I and CMS systems, in build and through life.

Design baseline content which can be adapted to accommodate your specific requirements

Medium Calibre Guns

- › Design provision for MCG up to 5” (127mm) with associated infrastructure.

Missile Options

- › Deck space for up to 8 SSGWs.
- › Flexible space for VLS– up to 32 variable length cells for point, local area and long range air defence and land attack capability

Aviation

- › Flight Deck sized for AW-101 Merlin/MH-60 Seahawk.
- › Hangar capable of accommodating an organic naval helicopter including a AW-101 Merlin, or a lighter helicopter such as the AW-159 Wildcat plus unmanned air vehicles.
- › Design can accommodate a wide range of future customer naval air systems.

Aircraft	Flight Deck	Hangar
AW101 Merlin	Yes	Yes
NH90	Yes	Yes
MH-60 Seahawk	Yes	Yes
AW159 Wildcat	Yes	Together
UAV	Yes	

Small Calibre Guns

- › Design provision made for Force Protection weapons and SCGs up to 40mm with associated EO sensors and magazine arrangements.
- › Weapons can be fitted at a number of upper deck positions.

Boat Bays

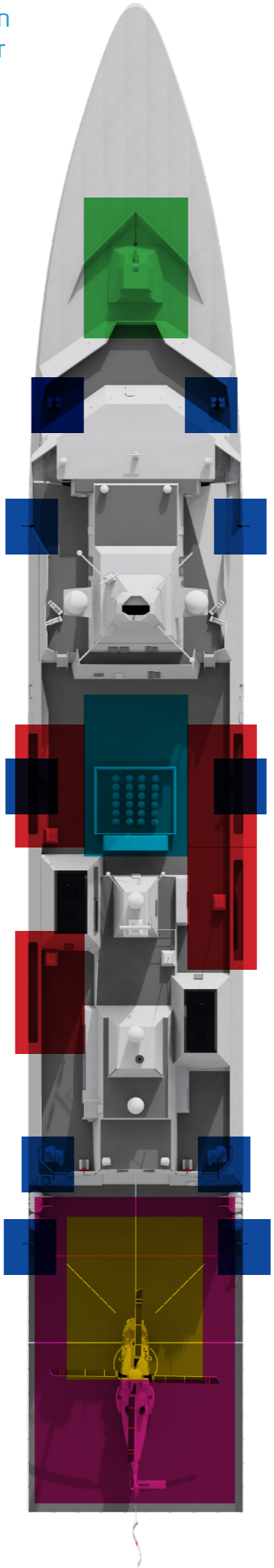
- › Up to 4 large dedicated boat bays with flexible launch & recovery arrangement to cater for varying operational roles, incl. deployment of RHIBs, USVs & UUVs.

Anti-submarine Torpedoes

- › Provision for port and starboard customer preferred decoy launchers and lightweight torpedo launchers.

Mission Space

- › Significant operational flexibility allows for numerous TEU (Twenty Foot Equivalent Unit) containers, extended stores, or personnel accommodation space.



Multi-role capability

The AH140 design incorporates proven multi-mission reconfigurable space able to host a number of TEU containers for capability including anti-piracy detention facilities, disaster relief stores or additional accommodation.

Spaces can be rapidly and simply used for HADRO through to war fighting operations, with volume spaces able to accommodate role-specific equipment in a modular form.

The ability to fit the existing systems and equipment from the parent design is retained to provide flexibility in the capability supplied at build and through the life of the platform.

Mission systems

An integrated communications suite for interoperability with own and coalition forces and civilian agencies.

Medium to Long range AESA radar for air and surface surveillance, situational awareness, helicopter control, weapon support and IFF interrogation.

Fully integrated EW suite with C-ESM, L-ESM, Sm and ECM capabilities Electro Optical trackers for surveillance and gun fire control.

Hull-mounted sonar for submarine detection/mine avoidance with capability options for towed array and torpedo defence.

The Arrowhead 140 design incorporates Thales' TACTICOS™ Combat Management System utilising open architecture networks and computing environments to provide a scalable and upgradeable mission/combat management capability suitable for a wide range of mission profiles and scenarios.

Mission flexibility

Significant operational flexibility is inherent in a platform with the capacity of Arrowhead 140. Based on a proven NATO frigate design, with flexible spaces able to host disaster relief stores or civilians during evacuation operations amongst other roles; a demonstrated capability already employed within the in-service design.

Large Boat Bays with flexible launch and recovery capability to operate a variety of different offboard assets, such as RHIBs, Unmanned Underwater Vehicles (UUVs) and Unmanned Surface Vehicles (USVs); able to deliver a range of roles from interdiction missions to Special Forces operations and littoral manoeuvre exploitation. There is the ability to hold Artic 28 boats measuring 8.7m in length.

Arrowhead 140 delivers a proven flexibility and rapid ability to rerole/reconfigure to a changing operational environment.

Aviation facilities

The Flight Deck is designed for a wide range of naval aircraft and air systems, with a hangar that can accommodate an organic medium naval helicopter such as a MH-60 Seahawk combined with unmanned air systems. Dedicated aviation magazine facilities to store and prepare air-launched weapons including ASW torpedoes and Anti-Surface missiles are provided. In addition a fuelling system to provide HIFR capability from a proven NATO flight deck is incorporated.

The large flight deck provides the flexibility to launch and recover non-organic aircraft up to 15t in weight.

Accommodation

Arrowhead 140 can operate with a Ship's Company of less than 100 personnel. With dedicated accommodation for 180+ personnel and additional temporary accommodation, the platform can carry a significant number of Embarked Military Force, including Special Forces, littoral manoeuvre troops or additional command and control personnel.

Armament

Medium Calibre Gun options from the Mk 110 57mm up to 5" (127mm). Capable of housing related systems for enhanced air defence, maritime interdiction, self-protection and engagement of surface and land targets.

Small Calibre Guns up to 40mm calibre can be located in pre-designated upper-deck weapon positions.

Capability options:

- › Provision for up to 8 canister-launched SSGW
- › VL missiles (SAM/SSGW/Land Strike/ASW) up to 32 cells
- › Close-In Weapons Systems
- › Light weight torpedo launchers
- › Decoy launchers

Intelligent layout

The layout of the design benefits from the experience of several years of real-world NATO and Coalition operations, including integration within US Navy Carrier Strike Groups as an escort platform. Lessons learnt lead to optimizing key operational and mission areas within the Arrowhead 140 design that are situated to provide an optimal layout for operations in both peacetime and high threat operations.

The key mission areas benefit from proximity to each other and protection through the relative location within the ship. Supportability of major equipment through shipping routes and space envelopes.

Efficient propulsion plant

The propulsion arrangement is a proven and efficient CODAD architecture, already in service, providing a flexible speed range with 28+ knot maximum and 18 knot efficient cruising speeds, in a package with a low maintenance burden. The size of the platform allows sufficient fuel for long-range independent global operations.

Space and systems configured for compliance with IMO Tier III regulations for ECAs.

Maritime surveillance and interdiction
Air, surface and subsurface capabilities
Counter piracy
Military presence and deterrence
Humanitarian Aid and Disaster Relief
Task Group support
Convoy protection

Arrowyard™

– sovereign ship build and support

Forged from Babcock's rich engineering know-how and ship build experience, Arrowyard™ is a comprehensive programme of technology transfer and focused support options, for global customers to construct the Arrowhead 140 in their facilities by optimising their shipyard capability.

Our value-adding packages span the whole product lifecycle from; readying and modernising your infrastructure, design licensing, initiating your shipbuilding strategy & delivery, workforce training & upskilling and post-delivery support.

Depending on the transformation required and budget available you can customise a scalable design and build solution based on your requirements which will ultimately deliver; technically proficient naval build infrastructure, an industry 4.0 ready workforce, world-class frigates and an enduring support capability.

Arrowyard™ offers a highly – capable cost effective and tailored approach that drives quality and performance and will bring you a competitive edge in international shipbuilding.

Together, we can realise your future naval vision and deliver the capability that will see Arrowhead 140 frigates built in your shipyards, by your workforce and contributing directly to the social and economic value, well-being and prosperity of your shipbuilding community and country as a whole.

Arrowyard™ Benefits



Industry and Govt to Govt partnerships can bring many potential benefits for including:

Sovereign design and build

through in-country fleet development, equipping industry for future programmes

Reinvigorating domestic supply chain

with contracts for small to medium sized businesses



Upskilling and growing local workforces

through in-country build programme



Investing in Infrastructure

to modernise and equip domestic facilities



Transferring technology and knowledge

through close working relationship with Babcock and the UK Government





To view our Arrowhead™ video scan the QR code below



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