



APPG SHIPBUILDING AND SHIP REPAIR

INQUIRY INTO THE NATIONAL SHIPBUILDING REPORT

MAY 2019



APPG Foreword

As an island nation, the United Kingdom's security and prosperity has long been associated with the seas. With the UK preparing to leave the European Union, our country's maritime dependence is more apparent than ever and uncertainty about the UK's sovereign capability to produce warships remains.

The National Shipbuilding Strategy outlined the Government's aspirations to reform naval procurement by reintroducing greater competition into UK shipbuilding.

UK shipbuilding is primarily driven by military sources of demand and long-term national security considerations. Following its inquiry, this APPG recognises the political case for retaining the UK's sovereign capability to produce warships.

We further recognise that the UK's position as a producer of world-class warships should be understood more widely. UK Shipbuilding has evolved from the smokestack and panel-beating industry it once was. It is now at the very forefront of innovative technologies and capabilities, as can be observed by the export success of the Type 26 frigate.

However, the current 'feast or famine' nature of military demand threatens our ability to maintain the sovereign capability to produce warships.

The National Shipbuilding Strategy significantly reduces the scope of ships that the UK is qualified to build and threatens the long-term viability of our fragile shipyards. Its approach to naval procurement is not novel. Its concepts have been tried, tested and have failed before. The very shape of today's UK shipbuilding industry is a result of rationalisation, following a period of policies urging shipbuilders to compete with each other and yards going bust.

Furthermore, the Government's inability to provide certainty for industry through a secure timeline of contracts endangers the UK's position as a world leader in shipbuilding.

Certainty around future orders, driving industrial drumbeat, would enable private sector shipbuilders and the wider supply chain to invest in infrastructure, facilities and emerging naval technology, thus renewing the UK's competitive advantage.

Secondary economic impact and tax returns to the Exchequer would provide further benefit to the UK as a whole. It must also be further understood that the benefits of investment in shipbuilding are not confined to historical shipbuilding areas alone.

Shipbuilding and the supply chain will not make required investments unless the business case stacks up. Shipbuilding is a hugely capital-intensive industry with one of the highest barriers to entry of any major industry in the world. Consolidating a position within the market and securing a reputation for excellence requires strong co-operation between Government, industry and the research and development base.

The industry already faces significant redundancies as the aircraft carrier programme runs down, with the subsequent loss of leading-edge skills. Once lost, these skills cannot be quickly regained and the UK's sovereign capability to produce complex warships will suffer accordingly, as will the UK's ability to project naval power.

The Rt Hon. Kevan Jones MP | Labour | North Durham

Anne-Marie Trevelyan MP | Conservative | Berwick upon Tweed

Chris Stephens MP | Scottish National Party | Glasgow South West

Luke Pollard MP | Labour and Co-operative Party | Plymouth Sutton and Devonport

Paul Sweeney MP | Labour and Co-operative Party | Glasgow North East



The Rt Hon. Kevan Jones MP
North Durham

Former Defence Minister and Member of the Intelligence and Security Committee



Anne-Marie Trevelyan MP
Berwick-upon-Tweed

Member of the House of Commons' Public Accounts Committee and former PPS in the Ministry of Defence



Luke Pollard MP
Plymouth, Sutton and Devonport

HMNB Devonport, the largest naval base in Western Europe, lies within constituency



Chris Stephens MP
Glasgow South West

Govan Shipyard, the construction centre for the Type 26 Frigate lies within constituency



Paul Sweeney MP
Glasgow North East

Member of the Institution of Engineers and Shipbuilders and graduate of BAE's Naval Ships Development Programme



CSEU Foreword

Ian Waddell, General Secretary of the CSEU



Shipbuilding and ship repair have been a fundamental part of our manufacturing history and heritage for hundreds of years. Today, the UK industry is nearing the end of building the Royal Navy's largest ever ships in the shape of two new state-of-the-art aircraft carriers - *HMS Queen Elizabeth* and *HMS Prince of Wales*. The building of these ships occupied yards across the country in a superb example of teamwork and collaboration, with blocks built in shipyards all over the UK being assembled in Rosyth in Scotland. The Carrier Alliance brought together companies that routinely compete with each other and pooled their talents and expertise. The result was two ships that are at the cutting edge of technology, delivered at a cost that compares extremely well with the international market. The project showed what this country can do and was a showcase for the tens of thousands of highly skilled men and women who work in this iconic industry and its supply chains.

However, that work is now coming to an end and the CSEU believes that up to 20,000 skilled jobs in shipyards and 20,000 jobs in supply chains are now at risk. There is an urgent need for work to fill these yards. As the National Shipbuilding Strategy highlighted, an end to boom and bust contracts is the best way to ensure that critical skills are retained, and our shipyards can compete in the global marketplace. Unfortunately, rather than build on the success of the Carrier Alliance and put it to work on the next generation of ships, the UK government is seeking to build support ships for the Carrier fleet through the medium of international competition. Meanwhile, UK yards are starved of work and closures and redundancies are already starting to blight the industry.

This report, based on evidence from experts in their fields, demonstrates why this is the wrong decision for the UK, our Navy and the workforce and communities in and around our shipyards. It carries the weight of cross-party support and I am pleased to be able to offer our support as the voice of the workers and their families in this industry.

There is still time for the government to change course and take a different view on both Fleet Solid Support ships and the Type 31e frigate. There are excellent and compelling reasons for the UK to design, build and maintain the ships that our Royal Navy, Royal Fleet Auxiliary and other public bodies operate. I sincerely hope that the thoughtful and well-argued case made in these pages adds to the debate and helps avert an entirely avoidable crisis in such a superb industry.

Sovereign Defence Capability

Procurement decisions made today will have a lasting impact, and policymakers must develop a better awareness of the necessary steps to maintain a sovereign defence capability.

Since 2010, the Government has had no defence industrial strategy. The absence of a defender of UK-based defence programmes in Government, through the continual replacement of the Minister of Defence Procurement, has further stifled the preservation of complex military supply chains. Beyond shipbuilding, there is a pressing need to define what measures must be taken to protect sovereign capability across the full spectrum of defence. Particular focus must be afforded to specialised areas such as the manufacture of gearboxes, gas turbines, combat management systems and weapons systems, as well as many other emerging technologies.

This granularity of detail must be present in the National Shipbuilding Strategy. It is the responsibility of the Government to ensure the Royal Navy receives its equipment from a leading-edge supply chain and support structure which enables it to maintain its operational advantage. The shipyards that support our Royal Navy should also be considered centres of excellence for producing world-class naval capabilities and the people and skills that form them must be supported. Without this support, the loss of leading-edge skills represented within the fields of shipbuilding – marine engineering, project management, mechanical engineering, naval architecture – will weaken the UK's ability to maintain sovereign defence capability and place at risk UK freedom of action and operational advantage.

For the construction of warships, we cannot turn skills and the supply chain on and off like a tap. Long-term planning and a steady workstream allow shipbuilders and the supply chain to plan efficiently, and the experience and skills in specialised defence sectors to be preserved. In the immediate future, the construction of fleet solid support ships domestically would contribute to the industrial drumbeat required to retain skills to build warships.

Shipbuilding should represent a core component of any defence industrial strategy. Policymakers must recognise the diffuse nature of the modern shipbuilding industry, which leverages wide-supply chains spread across the length and breadth of the United Kingdom and has a skills profile comparable to aerospace and other advanced engineering industries.

A cross-government strategy is required to ensure that sovereign defence capability runs like a golden thread through all defence procurement decisions in order to preserve the UK's ability to develop world-class future sovereign capabilities.

Creating a defence industrial strategy would require not just political will but an overarching perspective that looks beyond the short-term costs of the MoD and instead at a holistic industrial defence strategy for the country.

Case study: General Electric, Rugby

In November 2018, the 130-year old General Electric (GE) site at Rugby announced its plans to close its Power Conversion plant and move operations to France by the end of 2019.

The site first supplied technological systems for the Royal Navy in the First World War. The site has also made the very high specification ultra-quiet motors needed for submarine hunting for the first three Type 26 Frigates. Around 90% of the current Naval Service fleet have GE-made electrical equipment on board.

The factory has been built up over decades with considerable investment. It is a large, complex plant which would cost millions to relocate. More valuable even than the plant itself is the existing workforce of dedicated people with decades of accumulated specialist experience in naval electrical component manufacture.

Currently, the naval facility in Rugby has a stand-alone IT network, which must be approved by the MoD as cyber-secure. To procure, install and test new IT infrastructure in France would incur significant delay over several years.



RECOMMENDATIONS

- 1** The Government should choose to build new Royal Fleet Auxiliary Fleet Solid Support Ships in the UK, and thus retain skills needed for the construction of complex warships.
- 2** The Government should factor in the revenue returned to the Treasury when scoring bids between domestic suppliers and foreign competitors.
- 3** In considering its export strategy for the Type 31e frigate, the Government should recognise that many foreign shipyards are either state-owned or receive significant direct or indirect subsidy. This places UK shipbuilders at a competitive disadvantage.
- 4** The Government should recognise the commercial value of exportable warship mission systems and through-life support rather than focus export strategy around the export of lesser-value complete warship hulls.
- 5** The Government should publish a new study on UK sovereign defence capability.
- 6** The Government should set out a plan to leverage economies of scale created by the Aircraft Carrier Alliance.
- 7** The Government should review whether it has ordered enough Type 26 frigates required for high intensity operations and possible future underwater threats.
- 8** The Government should provide greater clarity over how current plans for fleet composition meet the burdens being placed on the Royal Navy and be ready for future threats.
- 9** The Government should recognise the importance of Royal Navy/US Navy interoperability and explain how the planned Type 26/Type 31e ratio of 8 to 5 ships is adequate for envisaged mixed carrier strike groups to be built around US Navy super carriers and the Queen Elizabeth class of aircraft carriers.
- 10** The Government should publish a defence industrial strategy outlining a plan to build synergy between the Government, industry and the research and development base.





RFA Fort Austin at the Glen Mallan Munitions Facility on Loch Lon

Fleet Solid Support Ships and Sovereign Capability

The Royal Navy depends on support ships operated by the Royal Fleet Auxiliary (RFA) during deployments. Royal Fleet Auxiliary Solid Support Ships are designed to carry a wide range of stores to support other ships in the fleet including munitions, fuel and supplies. To maintain a sovereign naval capability, consisting of all types of ships, building vessels operated by the RFA is crucial for the retention of skills needed for future warship production.

Despite this, the National Shipbuilding Strategy states that only Royal Navy destroyers, frigates and aircraft carriers will continue to have a UK-owned design and be built and integrated in the UK.¹ As such, the Government has decided to open the procurement process for three new Fleet Solid Support (FSS) ships out to international competition with Navantia, a Spanish state-owned shipbuilding company, considered the frontrunner.

The MoD states that European Union protectionism rules prevent the FSS contract being run as a UK-only competition. The Government also believes that it can obtain lower costs and force higher levels of efficiency from domestic shipbuilders by tendering on the international market. Despite concerns raised in Parliament and by trade unions, the Government has no plans to issue any further definitions for the purposes of the National Shipbuilding Strategy.²

Research conducted by GMB shows that ‘warships of all kinds’ are not subject to compulsory competitive tendering. Article 346 of the Lisbon Treaty states that ‘Any Member State may take such measures as it considers necessary for

¹ Government Paper, [The National Shipbuilding Strategy](#), p.33

² [UK Defence Journal](#), May 2018

Fleet Solid Support Ships

Royal Fleet Auxiliary Solid Support Ships are designed to carry a wide range of stores to support other ships in the fleet including munitions, fuel and supplies.

Weighing around 40,000 tonnes each, the three ships will support the UK's aircraft carrier and surface ship fleet – wherever they go.

The £1bn contract would be a major boost to UK yards and could be a bridging programme between the end of the carrier programme and the first overhaul of the HMS Queen Elizabeth carrier.

Each ship will have extensive aviation facilities and should be armed with two PHALANX radar-controlled Gatling gun which fires 20mm shells, at a rate of 3,000 rounds a minute.

PHALANX is designed to engage incoming enemy aircraft and missiles if they penetrate a task group's outer ring of defences.

Each ship is also armed with two GAM BO 20mm AUTO CANNONS capable of firing 1000 rounds a minute and four 7.62mm General Purpose Machine Guns.

GMB estimating that 1,800 shipyard jobs would be created, supporting thousands more jobs in the supply chain and wider economy.³ Providing evidence to the APPG for Shipbuilding and Ship Repair, GMB estimated that £285m of the supposed £1bn contract for the Fleet Solid Support Ship programme could be returned to taxpayers this way whilst the Confederation of Shipbuilding and Engineering Unions (CSEU) estimated that 20% of the contract cost could be returned to the Treasury.

Losing the Drumbeat

Whilst the awarding of the FSS contract to the international market has the potential to weaken the UK's sovereign capability in the immediacy, it should be noted the National Shipbuilding Strategy outlined there are further vessels which will no longer be categorised as warships in the future. As such, the contracts to refit, upgrade or recommission the following vessels may no longer contribute to the UK's industrial drumbeat.

Vessels	Detail	Delivered	Replacement Dates
Mine Countermeasures Vessels	<i>6x Hunt-class</i>	1981-85	2025 onwards
	<i>6x Sandown-class</i>	1998-2001	2030 onwards
Landing Ships (Dock)	<i>HMS Albion & HMS Bulwark</i>	2003-2004	2034-2036
Landing Ships Dock (Auxiliary)	<i>3x Bay-class</i>	2006-07	2030 onwards
Survey Ships	<i>3-4 vessels, various classes</i>	1997-2003	2030 onwards
Offshore Patrol Vessels (OPVs)	<i>3x Batch 1 River-class</i>	2003-2007	2035 onwards
	<i>5x Batch 2 River-class</i>	2018-2021	2040 onwards
Fleet Solid Support Ships	<i>2 or 3</i>	2024-28	N/A

the protection of essential interests of its security which are connected with the production of or trade in arms, munitions and war material.'

The MoD alone is responsible for its definition of warship and has, in the view of this Group, made a political choice to put out the FSS contract to international tender.

Despite the MoD's approach to applying European protectionism criteria to its own naval procurement policies, within the shipbuilding industry, it is widely believed that several European shipyards continue to benefit from tacit government financial support, which was reflected in research commissioned by the Department for Business, Energy and Industrial Strategy.

This places UK-shipbuilders bidding for the FSS contract at a disadvantage in comparison to EU-based shipyards, as well as international shipyards, benefitting from government subsidies.

A UK-built Fleet Solid Support ship programme would contribute to the industrial drumbeat required to retain skills to build UK warships, with

³ GMB, 'Turning the Tide', April 2018, p.3

Keeping the Drumbeat

Beyond vessels operated by the RFA, the National Shipbuilding Strategy should have further considered the role of the commercial maritime sector in supporting sovereign capability. Whilst military demand plays an important role in the preservation of skills and the supply chain, the construction, repair and refitting of commercial maritime vessels provides a steady workstream which in turn allows shipyards and the supply chain to remain competitive and primed for the tendering Government contracts.

Keeping this drumbeat of commercial orders is increasingly important when considering the current condition of UK shipyards. In March 2019, Appledore shipyard in Devon fell silent after 164 years. In December 2018, the Belfast shipyard, Harland & Wolff, was placed on the market. Cammell Laird in Birkenhead faces job losses, as does Babcock's facility at Rosyth. In the view of this APPG, the following publicly-owned ships, the majority of which are approaching retirement age, could have been considered to provide a demand signal to create better investment conditions for the private sector in the shipbuilding market, and thus kept the industrial drumbeat necessary for the construction of complex warships. This table is by no means exhaustive and may have included the ships other state agencies who operate vessels, most notably the Hydrographic Office, the Maritime and Coastguard Agency, as well as charities such as British Maritime Aid.

Number of Vessels	Company	Vessels
33	Calmac Ferries (subsidiary of holding company David MacBrayne Ltd, which is owned by the Scottish Government.)	Various Commercial Vessels
3	Northlink Ferries	MV Hamnavoe, MV Hjaltland, MV Hrossey
2	Northern Lighthouse Board	Pole Star (IV) and Pharos (X)
1	Commissioners of Irish Lights	Granuaile III
3	Trinity House	Patricia, Galatea and Alert
4	Scottish Fisheries Protection Agency	The Marine Sea Fisheries Inspectorate (SFI) consisted of a fleet of 4 Fishery Protection Vessels (FPVs) in service as of 2009.
2	British Antarctic Survey	RRS James Clark Ross and RRS Ernest Shackleton
1	National Oceanographic Centre	RRS Discovery
9	Border Force	HMC Active, HMC Alert, HMC Eagle, HMC Nimrod, HMC Protector, HMC Searcher, HMC Seeker, HMC Valiant, HMC Vigilant
2	Mersey Ferries	Two commercial vessels
3	Isle of Man Steam Packet Company	Ben-my-Chree and Manannan, and Arrow



Offshore Patrol Vessels



Mine Countermeasures Vessels



Landing Ships (Dock)



Landing Ships Dock (Auxiliary)



Survey Ships



Fleet Solid Support Ships

How Europe Compares

The following tables were provided by Defence Analysis

France				
Vessels	Detail	Delivered	Built	Armed
Land Ship Helicopter	3x Mistral-class	2006-2012	Brest, France	Yes
Mine Countermeasures Vessels	10x Eridan-class	1981-1990	Brest/St. Nazaire, France	Yes
Oilers	5x Durance-class	1986-1990	Brest, France	Yes
	4x Flotlog	2025-2029	St. Lazaire, France	Yes
OPVs/ Survey Ships	25-30 ships in 6 classes	1988-2020	All in French yards	Various

Italy				
Vessels	Detail	Delivered	Built	Armed
Landing Ships (Dock)	3x San Giorgio-class	1988-1994	Italy	Yes
Mine Countermeasures Vessels	12x Lerici-class	1985-1994	Italy	Yes
OPVs	10 ships, 3 classes	1988-1990, 2003-2004	Italy	
Oilers	3 ships, 2 classes	1975-1980, 1998-2000	Italy	Yes
Survey/Support Ships	12-18 ships, varied classes	1980 onwards	Italy	Various

Germany				
Vessels	Detail	Delivered	Built	Armed
Oilers	3, 2 classes	1998, 2001-2019	Germany	Yes
Mine Countermeasures Vessels	12	1992-2002	Germany	Yes
OPVs/Corvettes	5+5	2008-2023	Germany	Yes

Spain				
Vessels	Detail	Delivered	Built	Armed
Landing Ship Helicopter	1	2010	Spain	Yes
Landing Ships (Dock)	2	1998-2000	Spain	Yes
OPV	6x BAM	2012-2018	Spain	Yes
OPV	10 ships, 2 classes	1985-2005	Spain	Yes
Mine Countermeasure Vessels	6x Seguara-class	1988-1994	Spain	Yes
Oilers	2	1995-2005	Spain	Yes

The Political and Economic Case for Investment in Shipbuilding

The UK's shipbuilding and ship repair footprint is truly nationwide in its scope and the sector directly employed around 32,000 people and contributed over £2 billion to the UK's economy in 2017.⁴ An estimate conducted by GMB calculated that the combined shipbuilding and ship repair workforces are paid £1 billion annually, of which £238 million is returned to the Treasury through Income Tax and National Insurance contributions.

A RUSI study conducted in 2012 indicated that if the MoD chose to award a defence contract within UK industry, a proportion of the value – which they calculated at 36 per cent – would likely be returned to government.⁵ For shipbuilding alone, GMB has cautiously estimated that around £285 million out of £800 million shipbuilding spend in the UK would be returned to the Exchequer.⁶

These studies indicate that constructing naval vessels domestically offers a substantial discount to the public purse. Despite this, the MoD has outlined that it made no assessment of the potential for taxation returned in the procurement of the Type 45 destroyer, the QEII-class Aircraft Carrier and the Astute-class submarine programme.

The Supply Chain

The supply chain is a critical part of the shipbuilding industry. Approximately 70 percent of a shipbuilding contract's value is spent in the supply chain, and the sector procured £2.8 billion worth of goods and services in 2015.⁷

The MoD's own research to inform the Parker Report suggested that the direct and indirect quantifiable value added of the Royal Navy's shipbuilding programme is at least £1.5 billion annually to the UK economy, and it supported up to 25,000 UK jobs.⁸

Socio-economic impacts

In developing the National Shipbuilding Strategy, the MoD commissioned IPSOS Mori to evaluate the prosperity impacts of shipbuilding. Assuming a doubling of investment in shipbuilding, the research outlined that for every 100 shipbuilding jobs created, shipbuilding supported 32 extra manufacturing jobs, 25-33 apprenticeships and ensured 16 fewer claimants of jobseekers' allowance, all within 60km of the shipyard. The research further outlined that 83% of the net additional jobs are taken by people from the area.

Although it was assessed that it is likely that there would be an overall a decline in low paid service jobs in the area, the study suggested there would be a growth in highly paid, high-skilled work in the local area.⁹

Type 26 Frigate Supply Chain

As you can be observed by the table overleaf, whilst shipbuilding still maintains strong links with traditional areas of association, diversity within the supply chain brings in suppliers from all across the UK. It should be noted that the table on page 10 records only a limited selection of the supply chain, which is likely to be more substantial.

⁴ GMB, 'Turning the Tide', April 2018, p.13

⁵ RUSI, Briefing Paper, '[The Destinations of the Defence Pound](#)', p.6

⁶ GMB, '[Turning the Tide](#)', April 2018, p.16

⁷ Dr Paul Stott of Newcastle University, 'Whatever happened to our shipbuilding industry?', 7/11/17

⁸ Government Paper, [The National Shipbuilding Strategy](#), p.34

⁹ Government Paper, [The National Shipbuilding Strategy](#), p.36



**TYPE 26 FRIGATE
SUPPLY CHAIN**

TYPE 26 SUPPLY CHAIN BY PARLIAMENTARY CONSTITUENCY

North Durham | Cables
Poole | Helicopter visual landing aids
Yeovil | Bow sonar dome
Glasgow East | Junction boxes, Fluid Sight Glass
Warrington North | Fasteners
Bracknell | Fasteners
Cumbernauld, Kilsyth and Kirkintilloch East | Cast Elbows & Tees
Leicester West | Air Weapons Handling System and Super mounts
Dunfermline and West Fife | Ship lifts
Bristol South | Helicopter landing grid
Inverclyde | Ship design, manufacture, integration
Portsmouth North and Portsmouth South | Ship design
Filton and Bradley Stoke | Ship design & project office and Gas turbine
West Dorset | METOC - sensors
Isle of Wight | Medium range radar
Kingston and Surbiton | Combat systems
Stockton North | Commissariat equipment
Bolton North East | Roller shutters
East Kilbride, Strathaven and Lesmahagow | Flange & valve isolating kits
Glenrothes | Cables
Plymouth Moor View | Carbon filters and Pipe GRE
Chesterfield | Hull preservation and HP air receivers
Spelthorne | Centre feed hose reels
Blythe Valley | Electrical equipment, auxiliary deck & bulkhead penetration
Colne Valley | Gearbox
Bradford South | Steel
Tonbridge Wells | Cold & cool rooms
Rugby | Propulsion motor and Electrical integrated test facility
Warrington North | Fuel filtration
Stoke on Trent Central | Shaft brackets
Caerphilly | METOC
Gordon | Pipe & pipe fitting
Harwich and North Essex | Compressors
North Wiltshire | Lifebuoy release unit
Slough | Fixed firefighting system and Wholeship mounts
Mid Sussex | Controls & instrumentation
West Bromwich West | XM Mounts and cable containment
Havant | Mk 41 Vertical Launch Silo
Midlothian | Helicopter handling & mission bay side doors
Eddisbury | Doors hatches scuttles, XY crane, blast doors
Barrow in Furness | Light fittings
Hyndburn | Electrical transit frames & deck glands
Jarrow | Bulkhead glands
Knowsley | Suppressor boxes & tempest filters
East Renfrewshire | Sanitary – sinks & fittings
Norwich North | Small calibre gun
Leicester East | Ship general eductors
Walsall South | First fix support system and metallic pipe fitting
Pontypridd | AVCAT filter
Southampton Itchen | Electrical complex, boxes & switches
Cardiff South and Penarth | Flexible coupling
Kirkcaldy and Cowdenbeath | Stabilisers, Steering gear
Rochdale | Reverse osmosis plant
Banff and Buchan | Wholeship valves
Newbury | Wholeship strainers
Wolverhampton South East | Treadplates
Shrewsbury and Atcham | Workshop equipment
Stretford and Urmston | Sleeve coupling cover
Cheadle | Towed sonar tower
Manchester Central | Firefighting & flood detection systems
Cannock Chase | Converter/ inverter
Watford | Helicopter starter & servicing system
South Dorset | Sonar Domes
Derby South | Steering Gear System
North East Hampshire | Communications



PART ONE: The National Shipbuilding Strategy and The Parker Report

Published in September 2017, the National Shipbuilding Strategy fulfilled a commitment made in the 2015 Strategic Defence and Security Review to create a modern and efficient shipbuilding sector to meet the UK's security needs.

The industrialist and former chief executive of Babcock International, Sir John Parker, was appointed as the independent chair of the Strategy and was expected to report to the Government by the Autumn Statement in November 2016.

Sir John Parker delivered his report to the Government ahead of the Autumn Statement but his report was not published until 29 November, six days after the Autumn Statement. Upon publication, it transpired this was not the National Shipbuilding Strategy, as might have been inferred from Government comments, but an 'independent report to inform the National Shipbuilding Strategy'.¹⁰

Parker made a total of 34 recommendations which amounted to a 'sea change' in how the MoD acquires surface ships. This included a new approach to procurement, making exportability inbuilt in the design process and harnessing the 'renaissance in shipbuilding' in UK regional shipyards to build the Type 31 class.¹¹ The National Shipbuilding Strategy accepted Sir John Parker's recommendations.

Sir John Parker's report was deeply critical of the current naval procurement process, describing it as a 'vicious cycle' in which fewer and more expensive ships than planned are ordered too late, while old ships are retained beyond their retirement date at higher costs to the public purse.¹²

Parker also addressed the exclusive position held by BAE Systems and suggested that such single customer dependency can add to the overall cost of a programme. His report questioned whether the MoD has sufficiently expert project contract managers to manage future contracts with BAE.

The Parker Report further recommended a new Governance model and for the MoD to formulate a 30-year preparation plan outlining procurement decisions for each series of ships over that time period. Impressed by the 'renaissance' found in regional shipyards, Parker recommended a Regional Industrial Strategy to harness the energy of regional shipyards and suggested the Type 31 frigate could be built using a modular block build system – a system whereby components of the vessel would be constructed in shipyards across the UK before being assembled in a single facility. The report further called on regional shipyards to develop 'Global Competitiveness Plans.'

¹⁰ House of Commons Library, '[The Royal Navy's new frigates and the National Shipbuilding Strategy](#)', 02.17, p.4

¹¹ House of Commons Library, '[The Royal Navy's new frigates and the National Shipbuilding Strategy](#)', 02.17, p.4

¹² House of Commons Library, '[The Royal Navy's new frigates and the National Shipbuilding Strategy](#)', 02.17, p.26

A Brief Recent History of UK Shipbuilding

In the late 1940s, the UK still built half of all new ships worldwide. By 2016, its global market share for commercial orders had fallen to 0.4 per cent.¹³ This historic decline caused the UK's production of global net tonnage to be considered negligible and ensured the diminishment of shipbuilding's place within the wider UK economy.¹⁴

As early as the 1960s, the problems associated with demand and shipyard output had compelled increased state intervention as early as the 1960s. The Government's 1966 Shipbuilding Inquiry Committee recommended a regrouping of firms, forming larger regional consortia and achieving greater yard specialisation in response to the acceleration of technical change within the sector.¹⁵

The shipbuilding industry continued to decline during the mid-1970s until nationalisation was subsequently carried out under the Aircraft and Shipbuilding Industries Act of 1977.¹⁶ The corporation founded as the result of the Act, British Shipbuilders, owned and managed the shipbuilding industry in Britain from 1977 through the 1980s. However, by the end of 1982, British Shipbuilders had closed half of its shipyards in an effort to reduce over-capacity.

Rather than proving to be the saviour of the industry, nationalisation, combined with growing international competition and the withdrawal of subsidies, was the means for its further run-down during the 1980s. British Shipbuilders finally ceased active shipbuilding operations in 1989, with the privatisation or closure of its final yards.

The end of the Cold War heralded large-scale reductions in the size of the UK's surface and submarine fleets. Fleet reduction further decreased the number of platforms required by the Royal Navy and the need to maintain them. When combined with commercial operators looking increasingly to lower-cost foreign competitors to fulfil orders, the decline of military demand hastened the decline of the UK shipyards throughout the 1990s. As a result, almost every significant UK shipyard periodically saw its capacity exceed demand.¹⁷

Post-privatised shipbuilding

Soon after the privatisation period of UK shipyards ended, the bottom fell out of the market and yards struggled to survive, including those which had received significant investment. There were too many shipyards chasing too few programmes.¹⁸

In its 2005 analysis of the shipbuilding industry, RAND concluded that intense competition throughout the period - driven by the MoD policy for yards to compete for work - led to very low bids from firms that were simply looking to fill their yards with work. Whilst the RAND study cited the case of Swan Hunter in particular, it also put forward further evidence that other bids were, on occasion, below cost.¹⁹ The study also determined that whilst this situation may have led to better prices for the MoD, it left shipyards unable to modernise and upgrade during this period.

Despite occasional Government intervention in the competitive process, various shipyards including Birkenhead-based Cammell Laird, North Devon's Appledore, and Swan Hunter all went into receivership between 1990 and 2004.²⁰ Other shipyards were consolidated under single ownership. GEC/Marconi consolidated the Barrow and Scotstoun shipyards, which were later sold to BAE Systems. The Govan shipyard was initially acquired by Kvaerner, then sold to GEC/Marconi, and later sold to BAE Systems.²¹

More recently, BAE has been awarded the contract to build the Royal Navy's new Type 26 *City* class of frigates and Batch-2 *River* Class Offshore Patrol Vessels. The company also describes itself as the lead member of the Aircraft Carrier Alliance, an industrial consortium between BAE Systems, Babcock, Thales, and the MoD. The consortium is responsible for the construction of the Queen Elizabeth class of aircraft carriers.²²

¹³ GMB, 'Turning the Tide', April 2018, p.4

¹⁴ GMB, 'Turning the Tide', April 2018, p.4.

¹⁵ E.H Lorenz, 'The employment strategies of British and French shipbuilders, 1890-1970', Academic Press Ltd (1992), p.110

¹⁶ The National Archives, 'The Geddes Committee and nationalisation'

¹⁷ Rand Europe, 'Type 45 Destroyer: Acquisition Options and Implications', p.3

¹⁸ Rand Europe, 'The United Kingdom's Naval Shipbuilding Industrial: Base The Next Fifteen Years', p.15

¹⁹ Rand Europe, 'The United Kingdom's Naval Shipbuilding Industrial: Base The Next Fifteen Years', p.15

²⁰ Rand Europe, 'The United Kingdom's Naval Shipbuilding Industrial: Base The Next Fifteen Years', p.15

²¹ Rand Europe, 'The United Kingdom's Naval Shipbuilding Industrial: Base The Next Fifteen Years', p.15

²² BAE Systems, 'Apprenticeships'

Compared to the period of privatisation and open competition, the economies of scale created by BAE have reduced the risk evidenced by the historical case of Swan Hunter shipyard. The past decade has seen the consolidation of complex warship construction at the BAE facility on the Clyde.

More specifically, it was the competitive tendering process itself that brought the UK to the position of having a single complex warship yard: winning contracts led to a virtuous production circle, and survival; but losing led to the opposite.²³

Giving evidence to the APPG for Shipbuilding and Ship Repair, the Defence Analyst Francis Tusa stated that previous attempts to introduce shipyard competition had increased the costs of naval construction as no one yard gets the skills and economies of scale to drive down costs.²⁴

Tusa also concluded that cut-throat competition for the relatively small volume of ships the UK requires contributed to the collapse of shipbuilders, such as Swan Hunter. He further outlined that ‘whilst industrial diversity is nice to have it is the enemy of efficiency.’²⁵

Responding to legacy issues faced by shipyards in the 1990s, the 2005 Defence Industrial Strategy (DIS), produced by Lord Drayson, directed the consolidation of the shipbuilding and submarine industries ‘as a matter of urgency’.²⁶ Drayson further outlined his determination to enforce a maritime strategic partnering arrangement, writing in 2006 that the Government ‘will reward companies who respond positively to DIS’.²⁷

The 2005 Defence Industrial Strategy also outlined the importance of a minimum level of activity, or ‘Core Work Load’, necessary to sustain key capabilities. The strategy recognised the importance of project frequency or ‘industrial drumbeat’ for sustaining a critical mass of onshore expertise, both for the purposes of maintaining sovereignty and delivering value for money. Crucially, the concept of the ‘industrial drumbeat’ was not restricted to major platform delivery but included discrete capabilities, such as combat system development.²⁸ Overall, this strategy aimed to retain the highly skilled workforce necessary for the construction of complex warships. In return, this workforce could be confident in an enduring and stable career path.

Writing thirteen years later, Jon Louth and Trevor Taylor in the RUSI Occasional Paper, *A Defence Industrial Strategy for the UK*, state that, whilst the 2017 National Shipbuilding Strategy has recognised the role of the Type 31 in sustaining the UK’s ability to design and build surface combat vessels, its expectation that the UK’s overall orders would be marked by ‘peaks and troughs’ rather than the ‘drumbeat’ endorsed for British shipbuilding by the RAND Corporation in the 1990s, as well and the 2005 Defence Industrial Strategy, shows the current Government is reluctant to embrace sustained supply chain management responsibilities.²⁹

The Government must learn from the mistakes made during the period of privatisation and competition in shipbuilding. If it fails to do so, overall costs will continue to rise, negating the Government’s aim of increasing value in its procurement programmes.

The partnering of bidders for the Type 31e programme may go some way to achieving this. However, it remains to be seen whether the Government’s insistence that firms compete for and win work will ensure the industrial drumbeat critical to maintaining the UK’s leading edge in complex warships. It could be that, once again, under-capitalised shipbuilders simply under-bid to secure contracts.

²³ Francis Tusa, APPG Shipbuilding: Evidence Session One

²⁴ Francis Tusa, APPG Shipbuilding: Evidence Session One

²⁵ Francis Tusa, APPG Shipbuilding: Evidence Session One

²⁶ Defence Industrial Strategy, Defence White Paper, 12.15, p.74

²⁷ RUSI, ‘Changing the Dinosaurs Spots’, 10.18, p.315

²⁸ Defence Industrial Strategy, Defence White Paper, 12.15, p.75

²⁹ RUSI, Occasional Paper, ‘A Defence Industrial Strategy for the UK’, 04.18, p.30



1973: Construction of World Unicorn on the Tyne



1964: Launch of the Tanker Ottawa on the Tyne



1985: Swan Hunter's Neptune Yard

Failure of Competition in UK Shipbuilding: The Case of Swan Hunter

Following the closure of North East Shipbuilders in Sunderland, the sole remaining element of British Shipbuilders, Swan Hunter became the only remaining active shipyard in the North East region. Having been privatised again in 1987, the company was now primarily producing warships for the Royal Navy. The shipyards tenure under its new private owners, however, lasted for just six years and by 1993 the firm had gone into receivership.

The demise of the Swan Hunter shipyard represents a moment in the restructuring of the shipbuilding industry that requires careful examination. In particular, the collapse of the yard must be understood in the context of two broader trends: the protracted ‘under-performance’ of the UK shipbuilding industry, especially within the civilian commercial sector, and the impact of Government policy toward the sector, particularly through the 1980s and 1990s.

The 1980s saw the Government consider state-owned shipyards as potentially viable in the private sector and believed that efficiencies for the MoD could be found through the creation of a group of competing shipyards. However, as noted in a study of the shipbuilding industry completed by RAND in 2005, this period also corresponded with a decline for orders of naval vessels, and that at the start of privatisation UK naval shipbuilders were, for the most part, profitable.

A management buy-out of Swan Hunter was completed in 1985. Despite this, it is argued that the company’s prospects were gravely affected by the Government’s own procurement policies. For example, it has been implied that the Government, rather than following its own principles of open competition, decided to place an order for an Auxiliary Oil Replenishment (AOR) vessel with the Belfast Yard of Harland and Wolff. Responding to a question in the House of Commons the then Defence Procurement Minister, stated that the bid was “politically directed” although he later retracted this remark.

The loss of the AOR contract created a funding gap in Swan Hunter that led to 800 job losses, but its forward order book was still considerable, and a means of keeping its skilled workforce was required to complete those orders. To retain its workforce, the firm successfully bid to construct a new Antarctic Survey vessel, but this project incurred large losses. By the time the firm won the order for three of the new Type 23 frigates in 1989, its financial position was bleak and further gaps in its order book were looming. After going into receivership in 1993, the company was sold to a Dutch firm which adapted the yard for ship conversion and off-shore work.

Several years later, Swan Hunter again bid for a naval contract, this time for two Bay-Class Landing Ship Docks (LSDs). Again, the company struggled to manage the project and contain costs. Only 7% of the design drawings were provided on time and more than 52% were over a year late. Although Swan Hunter’s owner, Jaap Kroese, blamed the MoD for continually changing the specifications, the extent of the problems only came to light in September 2003, when Swan Hunter announced that would not be able to fulfil the contract at the agreed price.

The protracted difficulties faced by Swan Hunter in the 1980s-1990s period of shipyard competition is an example of how government failure to provide certainty and industrial drumbeat can drive up procurement costs in the long-term.

Approaches to creating a viable British shipbuilding industry: What works for the UK

Whilst the National Shipbuilding Strategy did not make any specific changes to naval ship support solutions, the report did state that not enough national, coordinated effort is placed on the export market for sub-systems, project management and through life support.³⁰

This was recognised in the 2005 Defence Industrial Strategy which contended that the future for UK shipbuilding lay in high-value design, systems and sub-system assembly and integration; plus specialist and novel hull construction capability.³¹

The strategy further concluded that simply maintaining a minimum sovereign industrial base was unlikely to be attractive to industry or represent good value for money. Instead, a through-life capability approach was required to make the industry viable. More importantly, the Defence Industrial Strategy recognised that this high value-added aspect of shipbuilding must be retained within the UK maritime industrial base if through-life development was to be pursued for complex or strategically important platforms.³² Crucially, the areas of critical expertise such as design and systems integration skills existed throughout the industrial base, not simply within the manufacturing sector.³³

Today, as new forms of technology emerge with military applications that were inconceivable 13 years ago, the importance of establishing and maintaining links between the UK shipbuilding industry and the technology sector become ever more apparent.

As modularity in naval platforms increases along with further adoption of open architecture, a greater premium could be placed on the importance of through life support. This could be particularly relevant for surface ships as advances in cyber, primarily geared towards anti-submarine capability, promise to further improve submarine detection and the utility of autonomous underwater vehicles increases.

The commercial value of mission systems and through-life support is aptly demonstrated by the success of Thales TACTICOS combat management system (CMS). As of June 2018, the company counted 23 navies as customers for TACTICOS, with more than 180 ship sets fitted or ordered across almost 50 different surface ship classes. The partially state-owned French multinational, through its Dutch subsidiary Thales Nederland, continues to evolve TACTICOS and expand its user community amongst nations keen to build up naval fleets.

BAE Systems is the sole supplier and integrator of CMS for the UK Royal Navy's surface and sub-surface fleet, but the Type 26 being developed for Royal Australian Navy will be fitted with the Lockheed Martin AEGIS system instead of BAE System's. The Babcock industry group's design proposal for the Type 31e frigate includes TACTICOS CMS.

Given the success TACTICOS, the development of exportable CMS and through-life support should be prioritised within the National Shipbuilding Strategy. The procurement strategy for the Type 31e remains overly focused on UK-based hull fabrication, increasingly the element of least value within a warship, rather than the systems which ultimately drive capability.

A vision that only sees a renaissance in British shipbuilding through the nostalgic lens of workers in busy yards metal bashing hulls fails to recognise the export value of UK expertise and skills that have developed some of the world's most complex and capable warships. In designing a National Shipbuilding Strategy centred on seeking prosperity through the export of the Type 31e, the Government has misjudged both commercial opportunities and global trends by

The procurement strategy for the Type 31e seems to overly focus on UK-based hull fabrication, increasingly the element of least value within a warship, rather than the systems which ultimately drive capability.

³⁰ Sir John Parker, '[An Independent Report to inform the UK National Shipbuilding Strategy](#)', 29/11/16, p.4

³¹ [Defence Industrial Strategy](#), Defence White Paper, 12.15, p.74

³² [Defence Industrial Strategy](#), Defence White Paper, 12.15, p.75

³³ [Defence Industrial Strategy](#), Defence White Paper, 12.15, p.73

failing to recognise that successful naval exports of UK-origin are associated with high-end capabilities, such as the Type 26.³⁴

The Government should seek to place the capabilities of UK-developed CMS along with sonar, radar and other combat systems and armaments at the heart of Type 31e export strategy. The Government should regard it as a success if a foreign navy orders a Type 31e with the intention of building the ship in its own yards, while still integrating UK-made CMS. Furthermore, whilst ship navigation and engineering functions have traditionally been separate from its combat systems, interest in merging these functions with CMS has been growing in recent years.³⁵

The Government should seek to place the capabilities of UK-developed CMS along with sonar, radar and other combat systems and armaments at the heart of Type 31e export strategy.

Leveraging economies of scale created by the Aircraft Carrier Alliance

The Royal Navy's two aircraft carriers, HMS *Queen Elizabeth* and HMS *Prince of Wales* are the largest warships ever built in the UK. The two vessels will allow the UK to deploy military capabilities across the globe and offer future Government's greater flexibility in responding to global events, whilst supporting the UK's political influence and enabling greater cooperation with allies.³⁶

Early in the programme, it was decided that the scale and complexity of the project required a tailored approach. In recognition of this, the Aircraft Carrier Alliance, which included the MoD, BAE Systems, Thales and Babcock, was formed in 2005 to construct the ship. This alliance would see blocks for each of the two ships built in yards around the country, with final assembly in Rosyth, Fife.

The National Shipbuilding Strategy has failed to recognise the huge potential benefits of a distributed block build approach in the next tranche of Royal Fleet Auxiliary ships to be procured.

above the target price would be shared equally between the MoD and industry, although industry's liability is capped at £600 million.³⁹

Despite the pressures placed on the Carrier Programme, most notably the 2007 Global Economic Crisis, the alliance approach harnessed the UK's industrial strength in successfully constructing the two aircraft carriers. HMS *Queen Elizabeth* was commissioned in December 2017 and HMS *Prince of Wales* is structurally complete and will commence sea trials later this year.⁴⁰

Whilst a distributed block build strategy, as defined by the National Shipbuilding Strategy, may not be suitable for smaller ships such as the Type 31e frigate and could in fact drive up unit and overall programme costs, the Government should recognise potential benefits of a distributed block build approach in the next tranche of Royal Fleet Auxiliary ships to be procured.

The formal presence of the customer – the MoD – in the alliance was significant in comparison to previous UK naval shipbuilding programmes. This approach was employed due to the high risk associated with the programme, and because no single industry partner had the resources to fully execute the programme.³⁷ In a 2017 lecture, Dr Archie Bethel, Chief Executive of Babcock International, outlined that the alliance approach had proved to be an effective way to bring companies and workforces together.³⁸

The contract negotiated between members of the Aircraft Carrier Alliance set a target price for both carriers and it was agreed that costs incurred

³⁴ RUSI, 'The Modernising Defence Programme', 10/7/19

³⁵ Jane's, 'Blurring the lines: New naval management systems bridge the gap between engineering and combat functions'

³⁶ Public Accounts Committee, 'Delivering Carrier Strike', Fourteenth Report of Session 2017–19 10/1/18, p.5

³⁷ Rand Corporation, 'Keeping Major Naval Ship Acquisitions on Course: Key Considerations for Managing Australia's SEA 5000 Future Frigate Programme', 01.14, p.66

³⁸ The Royal Society of Edinburgh, Joint Lecture with the Royal Academy of Engineering, 6/3/17, p.2

³⁹ National Audit Office, 'Delivering Carrier Strike', 16/3/17, p.5

⁴⁰ Stewart Andrew MP, Minister for Procurement, response to WPQ 242054, 15/4/19

The planned Fleet Solid Support Ships (FSS), each with a displacement of 40,000 tonnes, are at a scale suitable for a distributed block build strategy. No single site in the UK would be capable of building such a vessel alone. As such, this programme represents an opportunity to sustain shipbuilding capacity across the UK and maintain the resilience of the defence supply chain.

We must learn from the 1990s experience of privatisation and competition. By maintaining a steady order stream of less complex auxiliary ships, the Government could reduce the risk to complex warship programmes associated with below-cost bids from under-worked yards desperate to secure orders.

The National Shipbuilding Strategy should have defined the minimum sovereign capabilities that we need to sustain as a nation in the shipbuilding industry and prescribed how we achieve and sustain those capabilities, considering how different warship class productions interrelate.

By maintaining a steady stream of orders of less complex auxiliary ships, the Government could to reduce the risk to complex warship programmes associated with below cost bids from under-worked yards desperate to secure orders.

PART TWO: The Type 31e Frigate

How will the Type 31e meet the Royal Navy's requirements?

The outline specification issued for the Type 31e frigate states it should be:

“capable of global operations, in between the marginal ice zones and including the Gulf/Red Sea, with self-sustaining food and water for 28 days and a fuel range of 6,500 nm at economical speeds.”

While the combat capability of Type 31 may be more limited than the typical frigate, the RN is clear that the vessel must be able to serve around the globe. Whilst the Type 23 frigate has a range of 7,500 nm and can stay at sea without replenishment for around 40 days, the Type 31e is not expected to match this. It will, however, have greater endurance than most corvettes.⁴¹

Current operational planning within the RN frigate force indicates that, in the main, the high-end Type 26 will escort the carrier while the lower-end, general purpose Type 31e will conduct maritime security duties, although whether this role could be done by cheaper OPVs remains open to discussion. Theoretically, these duties may include deployments to the Caribbean, Indian Ocean or South Atlantic where endurance and sea-keeping are important factors.⁴² However, as outlined in this report, the potential maritime security challenges in the Indian Ocean may call for a greater warfighting capability than the Type 31e can offer.

In addition, the £250 Million-per-ship price cap that has been set for the project is observed to be unachievable. If the project can deliver a credible vessel at this price, it would represent the most affordable western frigate design on the international market.⁴³

Anti-Submarine Warfare

Over the coming years, the Royal Navy will increasingly engage in blue-water deployment. Whilst the Type 26 design ASW variant will be a world leader in open-ocean anti-submarine warfare missions, it remains unclear as to whether the Type 31e will be able to perform this role.

In the quarter-century since the Cold War ended, technological innovation has advanced the state of the art far beyond Cold War-era sonar systems. These improvements have expanded the numbers of platforms that can mount and operate ASW sonar to include smaller vessels (corvettes and patrol craft) and even unmanned surface vehicles. Further improvements in information-processing and related technologies have further advanced surface ship sonars significantly over the same period.⁴⁴

Although new ASW technology is emerging, the best in class for anti-submarine detection remains the Type 26 and 2087 towed array sonar. In planning the future fleet, it is imperative emerging ASW technologies are examined and a balance found.

Whilst some argue that developing specialist ASW platforms is prohibitively costly, one developing school of thought asserts that future anti-submarine strategy will centre upon the use of networked UXV's. These ‘mothership’ vessels would be designed to launch, operate and recover large numbers of small unmanned vehicles for ancillary missions, which may include ASW.⁴⁵

Today, the expansion of ‘big data’, large data sets that may be analysed computationally to reveal patterns and trends, provides the capability to run sophisticated oceanographic models in real time to support submarine detection. As processors continue to shrink, some processors will increasingly be employed on ships, aircraft, UUVs, as well as deployable systems placed on the seabed.

Whilst some of these technologies are in their infancy, for the Royal Navy, the Type 26 promises to be a capable submarine hunter and, if adequate investment is made in equipping them with the correct weapon fit, it has the potential

⁴¹ Save the Royal Navy, ‘[Should the Type 31e frigate be reclassified as a corvette?](#)’, 18/1/19

⁴² Save the Royal Navy, ‘[Should the Type 31e frigate be reclassified as a corvette?](#)’, 18/1/19

⁴³ Save the Royal Navy, ‘[Bargain basement Type 31e – the Lidl frigate or an industrial miracle?](#)’, 25/10/17

⁴⁴ Armament and Technology, ‘[Naval ASW Sonar Review](#)’, 08.17

⁴⁵ UK Defence Journal, ‘[A Guide to the Type 26 ‘City class’ Frigate](#)’, 1/3/18

to be a global leader in the field of ASW. The vessel is sophisticated in design and represents relatively low risk. Significant de-risking work on the design and major components has already been conducted using virtual reality and land-based test rigs. There will be some challenging systems integration work and a bespoke propulsion system but the majority of its key weapons, sensors, decoys, combat system and engines are already proven, and in many cases, already in service on other platforms.⁴⁶

What is not yet clear is the capability gaps that could be generated by the reduction of the Type 26 fleet from 13 to 8 ships.

For the Type 31, it is likely that the principal ASW capability gaps will centre around acoustic control issues, as well as the weapon systems available to the platform.

In terms of weapons systems availability, some doubt whether the Type 31 can perform the multirole functions necessary for the Royal Navy and fulfil escort duties. Its ASW performance across a range of sea climates, from cold water arctic to warm zones, is also untested.

The Bids

It is possible to usefully compare the general design, size, propulsion and performance of the three platforms, but the sensor and weapons fit are speculative at this stage. All three designs have considerable flexibility in how they are outfitted and can be tailored to suit the budget and preferences of both the RN and potential export customers.

According to *Save the Royal Navy*, while ‘Team Leander’ and ‘Team 31’ have been more forthcoming about their concepts, AEUK has not published any specific information about how the A-200 will be adapted for the Royal Navy requirements. Details of the A-200 in this comparison are based on the specification of the six existing ships in service with the South African and Algerian navies.⁴⁷

⁴⁶ Save the Royal Navy, ‘Why will the Royal Navy not have its first Type 26 frigate operational until 2027?’, 26/4/18

⁴⁷ Save the Royal Navy, ‘The Type 31e frigate candidates compared’, 23/3/19

	MEKO A-200	Leander	Arrowhead-140
Industrial Consortium	Atlas Elektronik UK / TKMS	BAE Systems / Cammel Laird 'Team Leander'	Babcock / Thales 'Team 31'
Baseline platform	MEKO A-200 class frigate	Khareef class covette (enlarged by approx 38%)	Iver Huitfeldt class frigate
Displacement (tonnes)	3,700 (+200t future growth margin)	2,660 - 3,700 (+ some growth margin)	5,700 (large future growth margin)
Length OA (m)	121.0	Available in 4 sizes: 99m (Khareef), 102m, 117m & 120m	138.7
Beam (m)	16.34	14.6	19.8
Draft (m)	5.95	4.5	4.8
Speed (Kn)	27+	25	29+
Range (nm)	c 7,500 nm @ 16kn	c 8,100nm @12kn	c 9,300nm @18Kn
Propulsion	CODAG-WARP 2 x diesels - 11.8MW 1 x GT driven pumpjet - 20MW	CODELOD 2 x diesels - Total 9.1MW + 700Kw per shaft electric drive	CODAD 4 x diesels - Total 32.8MW + Bow thruster
Compliment	c150 (Accommodation for 200)	<120	117 (Accommodation for 165)
Construction Standards	Full warship design standards (+ Kevlar Low Weight Splinter Protection on inner shell plating)	ANEP 77 basic naval ship standard + enhanced in some areas	Full warship design standard endorsed by RN FOST organisation. Shock-tested
Hangar	2 x Wildcat or 1 x Merlin	1x Wildcat	2 x Wildcat or 1 x Merlin
Flight Deck	Up to Merlin size (27m x 16m)	Up to Merlin size	Up to Merlin size
Mission / Boat Bays	2 x ISO containers amidships 2 x Boat bays	Mix of up to 8 x ISO containers / 4 x 9.5m boats + direct access to hangar. 4t crane for self-loading.	4 x boat bays + Additional mission space below flight deck for 4 x ISO container.s
Main Radar	Can be specified by client	Artisan 3D or 4D AESA	Artisan 3D or Thales NS100 AESA
Hull mounted Sonar	Thales UMS4132 Kingklip HMS (or other)	Provision for HMS	Atlas AS90 medium range HMS (or other)
Towed Array Sonar	With modifications to the stern	Space allocated in stern	With modifications to the stern
Combat Mangmt System	To be specified by client?	BAES INTeACT with shared Infrastructure	Thales TACTICOS
VLS	16 or 32 cell VLS (modular)	12 x Sea Ceptor / 8 cell Mk 41	24 Sea Ceptor but has space for 32 cell strike-length Mk 41
Anti-Surface	Space for up to 16 x SSGWs	Space for 8 x SSGWs	Space for 8 x SSGWs
Anti-submarine	Space for 2 x TLS	None	Space for 2 x TLS
Main gun	Medium calibre gun - up to 127mm	Bofors 57 mm Mk3 but space for up to 127mm	Medium calibre gun - up to 127mm
CIWS	2 module spaces available	1 x Phalanx	2 module spaces available
Electronic Warfare	To be specified by client?	R-ESM – MEWSS Blk1 or Vigile400/D	EW equipment from Thales UK, including Vigile400/D
Decoys	To be specified by client?	RF & IR seduction/distraction round launchers	8 x 6-barrelled Terma 137 Launchers /Seagnat Mk 36 SRBOC
Naval Architects	TKMS (Germany)	BAE Systems	OMT (Denmark) / BMT
Lead Shipyard	Harland & Wolff (with on-site TKMS technical support)	Cammel Laird, Birkenhead	Babcock, Rosyth
Other Shipyards	Ferguson Marine, Glasgow	A&P Tyne, Newcastle	Harland & Wolff, Belfast Ferguson Marine, Glasgow

Table courtesy of *Save the Royal Navy*

Export: Competing in a Crowded Market

The T31e enters a well-established warship export market that the UK has failed to penetrate in the past 40 years.⁴⁸

Since 2015, the global market has shifted demand in favour of vessels with sheer fighting capabilities, as opposed to vessels designed for constabulary missions (anti-piracy, counternarcotics and migration missions), as has arguably been the dominant requirement of seafaring nations in the previous decade.⁴⁹

A price cap of £250 million has been placed on each ship. Building to a target cost may produce mixed results.

Other European nations have produced frigates at a comparable cost, but this would represent a very aggressive reversal of UK warship cost trends. The timescale is also exceptionally demanding with calls for the first ship to be at sea by 2023.

As assessed by RUSI in September 2017, the following competitors are generally acknowledged as comparable competitors for the Type 31e:

France

In France, the Naval Group will provide a basic frigate (the FREMM class) for around \$450 million, as it has done for the Royal Moroccan Navy. This high-spec warship includes land-attack missiles as well as anti-shipping missiles, plus medium range air defence capability linked to its modern phased array radar, passive electronics suite, electronic attack, towed and hull-mounted sonars and submarine attack weapons. The FREMM has space for one or two helicopters in the hangar.

South Korea

Korea's FFX/F2000/Incheon class is valued at \$230 million per vessel. It is a 3,000-ton, 30-knot ship designed for modern combat against near-peer adversaries. The Incheon has a modern suite of radar and sonar (hull mounted and towed array), weapons for land attack, surface strike, air defence, and submarine attack as well as countermeasures against weapons fired from above and below the surface. A 5-inch gun and a helicopter complement the capability. The vessel is primarily designed for warfighting and not constabulary roles.⁵⁰

Russia

The lead ship of the Russian Navy's new Project 22350 (Admiral Gorshkov) frigate was launched this year. The phased-array radar towed and hull mounted sonars are matched to proven and capable, long-range attack weapons. The naval version of the S350 air defence missile, alongside a 130 mm main gun, torpedoes and anti-submarine missiles, are complemented with the supersonic land/naval strike capability provided by either the BraMos or Yakhont cruise missiles.

China

China's Type 054A frigate of the People's Liberation Army Navy entered service in 2008, with 25 vessels operational. It is exported for around the same price as the Gorshkov and the proposed T31e. At an estimated \$300 million per unit, the Type 045A failed to win an order in 2013 in Thailand, but three were sold, delivered and are in commission with the Royal Malaysian Navy.

⁴⁸ RUSI, ['What Rivals Will Britain's New T31e Corvette be Facing?'](#), 8/9/17

⁴⁹ RUSI, ['What Rivals Will Britain's New T31e Corvette be Facing?'](#), 8/9/17

⁵⁰ RUSI, ['What Rivals Will Britain's New T31e Corvette be Facing?'](#), 8/9/17

UK Shipbuilding in the context of Foreign Exports

The Government's intention has always been that Type 31e should be designed with export in mind. If the UK was able to re-enter the frigate export market, after a 30-year absence, this would drive down unit costs, benefiting the RN and the wider UK economy.

However, fulfilling Sir John's vision of economies of scale requires building far more than five ships and it remains unclear as to whether foreign countries, capable of operating frigates, would be interested in an overseas build. Almost all fleets are planned with in-country build, including countries such as Saudi Arabia which has recently begun a national strategy of developing its own defence industry, rather than depending solely on imports.

Type 31e: The Wider Royal Navy Fleet and Alliances

According to the First Sea Lord Admiral Sir Philip Jones, the Royal Navy's requirement for a general-purpose frigate is driven by the Government's commitment to maintaining the UK's current force of 19 frigates and destroyers.⁵¹ However, the decision to maintain that number of escorts is a political decision and no Royal Navy publication exists which outlines the number of escorts the service believes is required.

But with overall number of escorts down from 35 in 1997, the view of the Defence Committee is that the Royal Navy's frigate and destroyer fleet is significantly below the critical mass required for the many tasks which could confront it. Within this context, the First Sea Lord emphasised that the Navy's 13 Type 23 frigates are already serving beyond their original design life and extending their lives any further is neither economically nor operationally viable.⁵²

Of the 13 Type 23's in service, eight are specifically equipped for ASW and will be replaced on a one-for-one basis by the new Type 26. The remaining 5 general purpose variants are to be replaced by the Type-31e. Therefore, to continue meeting current commitments, the First Sea Lord states that the Type 31e's primary role will be fulfilling routine tasks in order to allow the Type 45 destroyers and Type 26 frigates to engage in their specialist combat roles, supporting the strategic nuclear deterrent and the carrier strike group.⁵³

As such, the Type 31e will be designed for maritime security and defence engagement. This role is likely to include domestic escort roles, fixed tasks in the South Atlantic, the Caribbean and the Gulf, and our NATO commitments.⁵⁴

Rebalancing the Fleet

According to the First Sea Lord, the decision to develop a general-purpose frigate is a deliberate action to put balance back in the fleet. Citing the operational record of the Type 21 frigate, still in service at the beginning of the First Sea Lord's Royal Navy career, Admiral Jones suggested that the Type 31e will pick up many of the Royal Navy's routine patrol tasks and allow specialist ASW frigates to focus on their core roles.

Countering the argument that the Type 31e represents a race to the bottom, the First Sea Lord contends that it was only defence reductions at the end of the Cold War that led the Royal Navy to develop the high-end force which characterises the fleet today.

Offshore Patrol Vessels

It is possible that the strategic deployment of the Type 31e could centre around permanently stationing the ships overseas and rotating crews from the UK.

For the first time since 1967, this would allow the Royal Navy to re-establish a Home Fleet by infilling roles currently performed by River Class of Offshore Patrol Vessels (OPVs). This could allow the UK to establish a surveillance capability extending into the UK's Exclusive Economic Zone.

This withdrawn role would suit the capabilities of OPVs as the hull is optimised for littoral operations rather than blue-water operations. This factor, along with reduced watertight integrity, basic firefighting facilities, and the lack of

⁵¹ [Speech by Admiral Sir Philip Jones, First Sea Lord, 7/9/19](#)

⁵² [Speech by Admiral Sir Philip Jones, First Sea Lord, 7/9/19](#)

⁵³ [Speech by Admiral Sir Philip Jones, First Sea Lord, 7/9/19](#)

⁵⁴ [Speech by Admiral Sir Philip Jones, First Sea Lord, 7/9/19](#)

protection for the magazines, restricts the OPV's ability to navigate effectively in rough sea conditions.⁵⁵ These factors also inhibit the potential for upgrading, despite recent advancements made in containerisation of specialist missions systems.

However, two of the three Off-Shore Patrol Vessels commissioned in 2003 – HMS Tyne and HMS Severn – have already been decommissioned, albeit with recent reports indicating that issues with the new Batch 2 OPV HMS Forth have meant that HMS Tyne has in fact been reactivated.⁵⁶ HMS Mersey is due to leave service in 2019.⁵⁷

The MoD has confirmed the allocation of £12.7 million of funds to preserve these Batch 1 OPVs should they be needed to enforce UK waters and fisheries.⁵⁸ However, considering current manpower issues facing the Royal Navy, reactivating the Batch 1 OPVs would further require alternative manning arrangements.⁵⁹

Conversely, the Type 31e should, by specification, have hull forms designed to endure mid-ocean sea state extremes which would allow it to be deployed rapidly and globally, thus presenting strategists with greater operational scope.

Royal Navy/US Navy Interoperability and NATO Maritime Strategy: Developments in the Cold War

The U.S. Navy has been uniquely successful in its recent history as a hegemonic power in maintaining peace upon the world's oceans. With the exception of Great Britain, no previous power has managed a system that spanned the entire globe, or against such a wide array of actors. Yet the United States has done so, with a steadily decreasing fleet and a rapidly expanding commercial sector that has placed more assets at sea than any other time in history. This has been accomplished through what has been consistently referred to as 'naval presence'.⁶⁰

From a UK security and threat perception perspective, the ability of the United States to project maritime power since the Second World War has directly correlated with the shape, composition and taskings the Royal Navy was required to undertake. In addition, the United States' capacity to provide direct decisive military support to Europe was a key factor that influenced European threat perceptions in western Europe during the Cold War with maritime strategy – primarily focused on the North Atlantic – an important element in the overall security architecture which bound western NATO powers.

After the rise of the Soviet Navy in the 1970s, securing the Greenland-Iceland-UK (GIUK) gap, rather than positioning fleets forward became the dominant maritime strategy. This region was the primary focus of US and NATO maritime strategy during the Cold War and the Royal Navy was in large part dedicated to sea control around maritime chokepoints and the surrounding seas.⁶¹

This would change at the end of the 1970s and into the 1980s.⁶² During this period, NATO introduced a new concept for maritime operations, which stressed the containment of Soviet assets as far forward as possible. This involved protecting sea lines of communication in the Atlantic in order to address the threats in the north and to maintain initiative in the region.⁶³

Admiral Leon A. Edney, who served as NATO Supreme Allied Commander Atlantic from 1990 to 1992, notes that the Soviet Navy responded to this strategy by reverting from a "blue water forward-deployed Navy to a defence of "the deep bastions of Soviet nuclear capability." In a broader sense, NATO's doctrine demonstrated to the world that the United States was an Atlantic nation committed to the security of Europe.⁶⁵

⁵⁵ Think Defence, ['Some Thoughts On The Batch 2 River Class'](#), 17/6/16

⁵⁶ UK Defence Journal, ['HMS Tyne reactivated due to issues with replacement ship'](#), 29/7/19

⁵⁷ Save the Royal Navy, ['One step forward, two steps back – delivering the Royal Navy's new OPVs'](#), 21/6/18

⁵⁸ Guto Bebb MP, then Minister for Defence Procurement, [response to written parliamentary question 132371](#), 16/3/18

⁵⁹ Save the Royal Navy, ['One step forward, two steps back – delivering the Royal Navy's new OPVs'](#), 21/6/18

⁶⁰ Center for New American Security, ['The Presence Problem: Naval Presence and National Strategy'](#), 01.16, p.6

⁶¹ Magnus Nordenman, ['Back to the Gap'](#), The RUSI Journal, 162:1, p.24-30

⁶² House of Commons Defence Subcommittee, [Oral evidence: Defence in the Arctic](#), 24/1/18

⁶³ House of Commons Defence Subcommittee, [Oral evidence: Defence in the Arctic](#), 24/1/18

⁶⁴ Dean C. Allard, ['Strategic Views of the US Navy and NATO on the Northern Flank, 1917-1991'](#), p.21

⁶⁵ Dean C. Allard, ['Strategic Views of the US Navy and NATO on the Northern Flank, 1917-1991'](#), p.21

Royal Navy/US Navy Interoperability and NATO Maritime Strategy: Today

In late November 2017, the British First Sea Lord warned that western naval superiority is under threat from resurgent powers, like Russia, who are testing the Royal Navy in home waters.⁶⁶

In May 2018, in line with the First Sea Lord's assessment, the US Navy elected to re-establish the U.S. 2nd Fleet. In a memo, signed by Secretary of the Navy Richard V. Spencer, the re-establishment was directed to better respond to the changing security environment. This followed on from the comments of US CNO Admiral John Richardson which outlined that the US is "back in an era of great power competition as the security environment continues to grow more challenging and complex."⁶⁷

The Pacific also remains a top priority for the United States and a continuous Royal Navy presence in the Pacific region this year indicates that the UK continues to place great emphasis on its shared security interest with the United States. The deployment of HMS Sutherland, Albion and Argyll will ensure the RN will have an almost unbroken presence there this year, representing something of a new strategic direction for the UK.⁶⁸

These two theatres indicate the scale of the maritime security issues facing the US and UK's shared interests.

Further to this, gaps are beginning to emerge in the availability of US carrier groups in the Gulf.⁶⁹ According to one study, there are 19 separate and distinct maritime regions that, due to diplomatic, commercial, or military characteristics, have been identified by regional combatant commanders as representing important national security interests for the United States.⁷⁰

Given the unique presence requirements of these regions and the standard five ships to keep one forward deployed ratio, these regions represent a requirement for a 330-355-ship US Navy, depending upon forward basing decisions.⁷¹

Royal Navy capabilities and commitment to the NATO alliance and the United States

Magnus Nordenman, Director of the Transatlantic Security Initiative with the Brent Scowcroft Center on International Security at the Atlantic Council, contends that the US can no longer afford to pour the bulk of its naval resources into the monitoring and defence of the North Atlantic and the GIUK gap to counter the re-emerging Russian navy.⁷² He further warns that China is also a growing naval power, especially in the undersea domain, and the US will have to carefully balance future force requirements between an increasingly dynamic Pacific region, an increasingly contested Atlantic and a restive Middle East that may still periodically require crisis intervention.⁷³

Whilst the Trump Administration has signalled that a 355-ship Navy is now national policy, plans to develop this fleet remain uncertain at this stage. As a result, the US is likely to continue to demand European allies invest more in defence in exchange for continued US engagement in European security.⁷⁴

This leads to questions about what role the Royal Navy's fleet, comprising of 8 ASW and 5 general-purpose frigates, should play in US/UK naval planning.

Published in May 2017, the Chief of US Naval Operations (CNO) emphasised in his White Paper that a 355-ship Navy using current technology is insufficient for maintaining maritime superiority and that platforms must contain more effective, modernised payloads and make better use of sensor and communications apertures.

The CNO further outlined that the US Navy will need 12 aircraft carriers to enable deployment of 5-6 carrier strike groups within relatively short timeframes.

The US is likely to continue with demands that European allies invest more in defence in exchange for continued US engagement in European security.

⁶⁶ Foreign Policy, 'In Return to Cold War Posture, U.S. Sending Sub-Hunting Planes to Iceland', 4/12/17

⁶⁷ Save the Royal Navy, 'A continuous Royal Navy presence in the Pacific region this year', 11/4/18

⁶⁸ Defence News, 'What if the US stopped sending aircraft carriers to the Arabian Gulf?', 2/5/18

⁶⁹ Center for New American Security, 'The Presence Problem: Naval Presence and National Strategy', 01.16, p.12

⁷⁰ Center for New American Security, 'The Presence Problem: Naval Presence and National Strategy', 01.16, p.12

⁷¹ Magnus Nordenman, 'Back to the Gap', The RUSI Journal, 162:1, p.24-30

⁷² Magnus Nordenman, 'Back to the Gap', The RUSI Journal, 162:1, p.24-30

⁷³ Magnus Nordenman, 'Back to the Gap', The RUSI Journal, 162:1, p.24-30

For US strategists, the Queen Elizabeth Carriers, despite not harbouring capabilities of quite the same scale or range as those of the US Navy's nuclear-powered super carriers, will represent a notable new contribution to the US–UK strategic relationship with a critical capability that has great resonance in Washington. The carriers will also enhance the UK's ability to offer a leadership role in other coalition scenarios – even, for example, in a future European context.⁷⁴

According to the IISS, delivering a fully-credible sovereign carrier capability will require the deployment of the bulk of the Royal Navy's assets. The Institute further states that there must be continued high-level commitment if this aim is to be realised. Reflecting the Defence Committee's assessment that the Royal Navy faces considerable challenges in terms of numbers of platforms and personnel, the challenges faced are likely to get worse before they get better.^{75 76}

With the Defence Committee judging the Royal Navy's total fleet of 19 ships to be woefully inadequate, it remains to be seen how the Government's plan to maintain its commitment to the US and the shared vision of interoperability. The Government must examine whether the planned fleet is substantial enough to contribute to envisaged mixed carrier strike groups. In particular, the Government must reevaluate whether the freeing up of 8 ASW frigates by 5 Type 31s is enough to allow the Royal Navy to perform carrier group taskings along with nuclear deterrent taskings.

In the context of the Modernising Defence Programme, the MoD is rumoured to be evaluating the size and composition of the frigate fleet, hinting that there may be the order of more than 5 Type 31e frigates, with some even having ASW capabilities.⁷⁷

However, this raises further questions as to what the ASW capabilities of a £250 million platform, deliberately designed not optimised for ASW operations, would look like and indeed whether this vessel would be suitable for joint carrier group operations. Type 26 platforms, evolving many of the capabilities proven on the Type 23 and in export demand, would be a better platform for strategists on both sides of the Atlantic to work around. Whilst the Type 31e only exists on paper, the vessel represents an entirely separate approach to naval operations.

Conclusion: Connecting Royal Navy capability to successful export strategy

Australia's decision to select the Type 26 to replace its Anzac-class from the mid-2020s contravenes the assumption within the Parker Report that the Type 26 was unexportable due to its high cost. Canada's decision to follow Australia selecting the Type 26 to replace the Iroquois and Halifax class warships further questions this assumption.

Now, emboldened by the SEA 5000 competition success, the UK has an exportable warship in the form of the Type 26. Even if these ships do not get built in UK yards (some future ones might well be), the economies of scale that the UK may develop in conjunction with the Royal Australian Navy and Royal Canadian Navy, put future per-ship cost of the Type 26 on a more affordable trajectory.

The Type 26's performance on the export market further strengthened the case for this vessel and weakens the case for the Type 31e, particularly as Type 26 would have a five-year advantage over any Type 31e design.

Further, if commonality is developed between navies purchasing the Type 26, further economies of scale could be achieved. Moreover, if the National Shipbuilding Strategy is to be successful, it must maintain support for the supply chain and skills which underpin the Type 26's success. In the immediacy, this must include domestic construction of Fleet Solid Support Ships, which would maintain the momentum of the Carrier Alliance and provide a firm base for future refits of the carriers. Building all Royal Fleet Auxiliary ships domestically, would act to preserve on-shore, high-skilled jobs and build capacity and capabilities the UK will need for production of the next generation of Royal Navy warships.

⁷⁴ IISS, Military Balance Blog, '[US and UK aircraft carrier perspectives](#)', 9/8/17

⁷⁵ IISS, Military Balance Blog, '[US and UK aircraft carrier perspectives](#)', 9/8/17

⁷⁶ House of Commons Defence Select Committee, '[Restoring the Fleet: Naval Procurement and the National Shipbuilding Strategy](#)', 17/11/16

⁷⁷ UK Defence Journal, '[Royal Navy frigate fleet may be expanded hints Defence Secretary](#)', 23/10/19



Image Accreditation:

Cover Photo - printed with the permission of BAE Systems

P.3 - The image of HMS Grafton has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights.

P.8 - The copyright on this image is owned by Colin Smith and is licensed for reuse under the Creative Commons Attribution-ShareAlike 2.0 license.

P.10 - Image of HMS Protector is licenced under the Royal Navy Media Archive and gives permission for use of the image under Attribution-NonCommercial 2.0 Generic (CC BY-NC 2.0). Remaining images on the page are licenced under the Open Government Licence v3.0.

P.14 - printed with the permission of the licence holder BAE Systems

P.15 - This image has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights.

P.19 - Construction of World Unicorn on the Tyne and image of Tanker Ottawa on the Tyne image courtesy of Tyne & Wear Archives & Museums. Image on Neptune Yard is of the public domain.

Additional References:

For more on p.14 please see: BAE Systems, Type 26 Global Combat Ship, UK Industry Contribution

For more information on p.18 please see: <http://web.b.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=3&sid=50bd9d6c-4a7d-4f9b-938b-b84a38572d89%40sessionmgr102>

