Ministry of Defence

National Shipbuilding Strategy:

The Future of Naval Shipbuilding in the UK

Contents

Foreword

by the Secretary of State for Defence

As an island nation, the UK's security and prosperity have long been associated with the seas. For centuries our world-renowned Royal Navy and expert shipwrights and engineers have protected our people and safeguarded our interests. During two World Wars it was the aircraft carriers, frigates, destroyers and other warships built by men and women across the country that kept our fortunes afloat.

Today 95 per cent of our trade[1] still goes by sea and our Royal Navy is busier than ever leading the fight against global terror, protecting shipping lanes from piracy, and tackling illegal migration in the Mediterranean.

In a post-Brexit world, the need for us to project our influence, to keep reaching out to friends and allies alike, will be more important than ever. That's why we are investing billions in the Royal Navy over the coming decade. Our larger future fleet will include: our two mighty flagships, the Queen Elizabeth class aircraft carriers; next generation Dreadnought submarines; Type 45 destroyers; and a phalanx of new frigates - not just Type 26 Global Combat Ships but a flexible and adaptable general purpose light frigate - the Type 31e. These new frigates, the T26 and T31e detailed in this strategy, represent a significant proportion of the billions we are spending on the procurement of surface ships over the coming decade.

To achieve our ambitions we need a strong shipbuilding industry as part of a wider maritime sector. Today some 111,000 people are working in the maritime and marine sectors in the UK, including in the shipyards,[2] supplying the parts, or supporting the equipment that keep this great industry alive, from Appledore to Rosyth and beyond. Sir John Parker's 2016 report shows the Industry has not stood still. Indeed, there has been a renaissance in the sector fuelled by a diversification into support, repair and wider marine engineering work.

To maintain this momentum, we need to act now. Our vision is of an even more modern, efficient, productive and competitive marine sector growing on the Clyde and on the Forth, in Belfast and in Barrow, and in the North-East, North-West and South-West of England. We will continue to build Royal Navy warships only in the UK, while encouraging international collaboration, and harnessing open competition for other naval ships. Our new framework will ensure the impact on UK prosperity will be considered as part of our procurement decisions. This National Shipbuilding Strategy gives UK Industry and UK shipyards certainty on the warships which will be built in the United Kingdom, and clarity on the plans for support shipping, where we expect them to make compelling bids in an international competition.

In future our Industry will focus on creating top class capability. We will redouble our efforts to generate modern export-friendly ships to serve in the fleets of our allies and partners around the globe. And we will go to even greater lengths to inspire a new shipbuilding generation to match the innovative feats of their forebears.

Our aim will be not just to keep our people safer but to open up opportunity for high skilled, high wage jobs, transforming today's traditional shipbuilding regions into tomorrow's engines of economic growth.

1 95% of the volume of the UK's trade is transported by sea. Department for Transport estimate.

2 Department for Transport estimates following the approach set out in the Maritime Growth Study, September 2015 https://www.gov.uk/government/publications/maritime-growth-study-report.

Executive Summary

1. The Royal Navy is key to the national security of the UK and it relies on a healthy industrial base to arm it with the capabilities it needs. As an island nation, with the fifth largest global economy, the Royal Navy provides an essential guarantee of our safety and security. Whether it is through the Deterrent, ensuring the free movement of trade or through operating with allies across the globe, the Royal Navy is essential for our security and our prosperity.

2. We are committed to growing the Royal Navy Fleet; this will give us the operational flexibility required to protect our nation's interests at home and abroad. The delivery of two new aircraft carriers, the replacement of the Nuclear Deterrent, and the commitment to grow the destroyer and frigate force by the 2030s will mark a new exciting era for Royal Navy capability.

3. The commitment to grow the Royal Navy Fleet provided the impetus to take stock of our national shipbuilding capability.[3] In determining what was required to meet the demands of the future we recognised the opportunity to rejuvenate UK shipbuilding. Getting this right will result in a transformation of the way that the Ministry of Defence procures naval ships, and will also re-energise the UK's Shipbuilding Industry, making it efficient and effective in delivering the naval ships our nation needs. Achieving this will increase UK global influence through maritime power and reach and have significant benefits throughout the UK in terms of increased jobs, skills, exports and wider prosperity – all of which are at the heart of this Strategy.

4. The goal of the National Shipbuilding Strategy ("this Strategy") was set out in 2015: to lay the foundations for a modern and efficient sector capable of meeting the country's future defence and security needs.[4] This Strategy sets out our two fold vision for shipbuilding:

> "It is only by building ships, that we will **once again** become good at building ships"

- **A Royal Navy with more ships, which are modern and are capable of being incrementally modernised and improved, are exportable and can work with allies. Defence shows agility, pace and grip in how we plan for, procure, and operate these ships.**
- **A shipbuilding enterprise that, encouraged by a clearer grip by Defence, and with greater certainty about the Royal Navy's procurement plans, has the confidence to invest for the long term in its people and its assets to raise productivity and innovation and improve its competitiveness in the domestic and overseas markets. In this way, the sector can become more resilient to the peaks and troughs of Royal Navy business, bringing more sustained growth and prosperity to the regions in which those businesses are based.**

5. This Strategy details a plan for delivering this vision. It sets out how Government intends to work with Industry to further develop a strong, vibrant and globally competitive UK shipbuilding and maritime engineering industry, capable of winning business in the military and commercial markets, both at home and overseas. This Strategy builds on our strengths, but also identifies where more must be done collectively to address the structural challenges the sector faces in terms of access to innovation, productivity, skills and winning global business. Our ambition is for our shipyards, and the vast network of Industry and innovation that underpins them, to be catalysts for their local economies, driving growth, creating highly-skilled and well-paid jobs and raising living standards in the communities where they are based.

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3 The scope of the UK National Shipbuilding Strategy includes all naval surface ships including design, supply chain (raw materials, equipment and systems), manufacture, assembly integration and trials and acceptance. It does not include: small boats that are commercially available; submarines; maritime aviation; ship procurement undertaken by other Government departments

4 Strategic Defence and Security Review 2015 paragraph 6.55.

6. Delivering this vision requires a step change within Government, Industry and in how we work together. It was for this reason that, in November 2016, Sir John Parker provided independent advice on what needed to change. In developing this Strategy we have paid close attention to Sir John's advice.

7. This Strategy:

   - Sets out new governance structures to ensure grip of the shipbuilding enterprise, driving pace into acquisition;
   - Makes clear the plans for the next generation of frigates: both Type 26 and the new class of Type 31e frigate;
   - Shows how Defence will better understand, and factor in exportability (starting with the Type 31e);
   - Details a new, competitive approach to the delivery of warships and non-warships alike, with a clearer focus on the impact on prosperity when making procurement decisions, and
   - Explains how we will work with Industry to take forward the wider issues that this Strategy affects, around the growth of the sector and the structural challenges it faces in terms of access to innovation, skills and training.

8. Publication of this Strategy marks the start of an intensive phase of transformation. Government and Industry will need to work together in order to ensure success: Government needs to provide the right leadership and resourcing. Industry will need to build, equip and support the Fleet, which includes investing in the appropriate shipbuilding infrastructure. Defence and Government more widely are already changing to meet the challenges of the future, working closely with Industry as they do so. To ensure transparency in how we implement these changes, we have invited Sir John Parker to review our progress and produce a report for the Secretary of State for Defence in around a year's time.

9. This Strategy is a national endeavour which has been developed by the Ministry of Defence working closely across Government including with the Cabinet Office, HM Treasury, the Infrastructure and Projects Authority, the Department for Business Energy and Industrial Strategy and the Department for International Trade. It has benefited from considerable engagement with Industry.


ROYAL NAVY
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Chapter 1

Strategic Context

In this section we explain why we need a step change in shipbuilding, set out how the Royal Navy will meet our future defence and security needs, and explain our vision for a modern and efficient industrial sector that can deliver our needs. In particular we:

- **Outline how we will meet our commitment to grow the fleet.**
- **Acknowledge the importance of the maritime sector and discuss the renaissance in UK shipbuilding.**
- **Set out our vision for shipbuilding.**
- **Accept Sir John Parker's recommendations and commit to making the changes required to transform how we plan for, procure and manage the Fleet.**

A look ahead: our future defence and security needs

10. The Royal Navy undertakes a series of tasks which are fundamental to our national security, and which enable the UK to operate with peers in the most demanding operational circumstances. In particular, the Royal Navy delivers, and provides protection to, the Nuclear Deterrent and from the 2020s will also deliver a fully operational Carrier Strike capability.

11. The Royal Navy must also have the capability to undertake a series of discretionary operations on a global basis. It is the delivery of these latter tasks which allows the United Kingdom to work across the globe with allies and partners.

12. It is the destroyer and frigate force that provides the Royal Navy with the ability to undertake and support the full range of these missions. They provide Anti-Submarine and Air Defence capabilities to protect the Nuclear Deterrent and the new aircraft carriers. They also provide general purpose capabilities for other global maritime security and resilience operations. Destroyers and frigates are the backbone of Royal Navy operations, whether working independently or with the new Queen Elizabeth class aircraft carriers, the submarine fleet, support shipping, Offshore Patrol Vessels, or the Royal Marines.

Growth of the Fleet

13. In order to meet these vital security and defence needs, while also retaining the required operational flexibility, the Royal Navy needs more ships. That is why, for the first time in a generation, we are growing the Royal Navy Fleet. **We are spending at least £63 billion over the next decade on the procurement and support of surface ships and submarines.**[5]

14. There is a **need for greater volume in the destroyer and frigate force** if we are to deliver the required operational flexibility. In 2015 the Government committed to sustaining at least 19 destroyers and frigates and then growing this force by the 2030s. To this end:

    - We have signed a contract with BAE Systems for the first three (of eight) Type 26 frigates and have already cut steel.
    - We have announced our plans to competitively procure the lighter and exportable Type 31e general purpose frigates. Pending a successful outcome to the procurement competition, we intend a 2023 in service date for the first vessel.

15. The Royal Navy will, with the arrival of the Type 31e frigates, have increased flexibility. This will allow us to refocus offshore patrol vessels and other craft on their core patrol and presence roles, while the Type 31e ships will maintain the points of presence we require to deliver security

5 http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/592765/Defence_Equipment_Plan_2016_final_version.pdf

Type 23 Class firing its 4.5 inch naval gun. Crown copyright.

in an uncertain world. This then will allow the high-end capabilities of the Type 26 frigates and Type 45 destroyers to focus on the Maritime Task Group operations (particularly Carrier Strike), as well as the protection of the Nuclear Deterrent. This major programme of investment provides an opportunity to deliver the necessary step-change in UK shipbuilding, and maximise the benefits of this throughout the UK while delivering our defence and security needs.

The renaissance in UK shipbuilding

16. The maritime industries[6] in the UK are an important part of the economy; it has been estimated that the UK maritime and marine sectors employ 111,000 people, in 6800 companies and contribute over £13 billion to the economy, with shipbuilding and repair alone contributing around £2bn of this.[7]

17. Shipbuilding, its supply chain, and the associated support and repair activities provide skilled, relatively high wage employment and apprenticeships across the UK. Significant maritime clusters exist in the South West, the Solent, Northern Ireland, the North West and North East of England, as well as in Scotland on the Clyde and at Rosyth. Some of the shipyards are located in areas of relatively high deprivation and are often key employers in these regions. A thriving enterprise is important to a number of UK regions. Defence makes a contribution to these regional economies through the work that it provides to build and support both at the shipyards and in the wider supply chain. To be successful, both the shipyards and the supply chain need to develop their global competitiveness for military and civil work.

18. The UK's expertise in maritime systems, equipment, design, manufacturing, engineering and naval architecture is recognised throughout the world. This is evidenced by the fact that the UK is a major exporter of maritime equipment and systems.[8] The maritime Industry has continuously innovated to maintain its competitive edge in order to successfully export its goods and services around the globe. The Government has recognised the quality of this technical expertise and invested £24 million in collaborative maritime research projects since 2013.

19. We recognise that the supply chain, which includes material, components, equipment and systems, contribute the majority of the value of a naval ship. While the shipyards are iconic, and enablers of prosperity in their regions, the supply chain provides the propulsion systems, the weapons, the combat systems and the full array of equipment that transforms hulls into fighting ships. It is here that much of the economic value to the UK resides.

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6 Shipping, ports, maritime business services and manufacturing and engineering

7 Department for Transport estimates following the approach set out in the Maritime Growth Study, September 2015 https://www.gov.uk/government/publications/maritime-growth-study-report

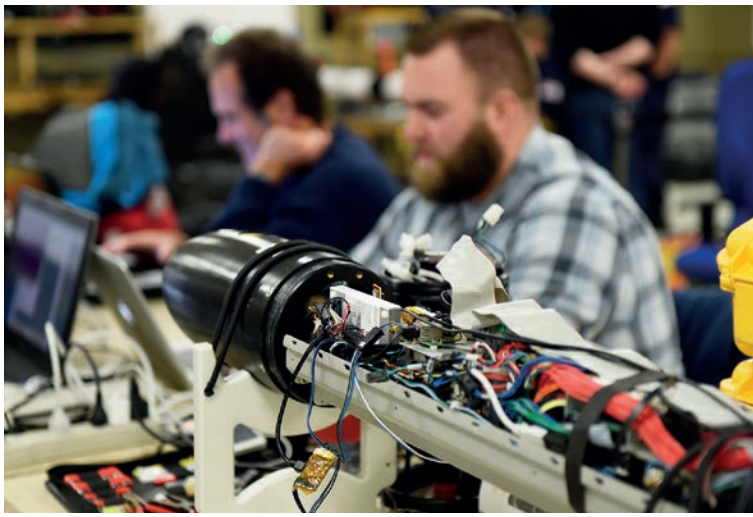
8 Competitive position and future opportunities of the European Marine Supplies Industry, 2014 http://ec.europa.eu/DocsRoom/documents/4233/attachments/1/translations

20. Shipbuilding for the Royal Navy has historically provided a fluctuating source of business for a number of shipyards in the UK. It has been insufficient in volume and too cyclical to sustain globally competitive businesses alone. Some of Industry has therefore built on its core engineering capabilities and diversified into new markets, such as oil and gas, commercial shipping and off-shore renewables as well as ship repair. This has strengthened the resilience and sustainability of those shipyards and their supply chains against economic shocks and fostered an entrepreneurial spirit in our commercial shipyards.

21. However, the majority of larger civilian ships are now produced in the Far East on a scale not achievable in the UK. Despite this, Sir John Parker observed in his report that there has been a renaissance in a range of regional shipbuilding companies, which has been driven in part by a steadier supply of Defence work (in particular provided by the Queen Elizabeth class aircraft carrier and the Astute class submarine programmes) and an entrepreneurial attitude towards pursuing opportunities in the commercial market. Cammell Laird's success in the international competition for the polar research ship, Ferguson Marine's construction of two dual-fuel Caledonian MacBrayne ferries and Babcock's contracts with the Irish Navy for four offshore patrol vessels and with the US Coast Guard to provide engineering design work for the construction phases of their new Offshore Patrol Cutter are all evidence of a renaissance in UK shipbuilding.

22. We **must** capitalise and expand upon on this. The combination of a revitalised Industry and more sustained and significant investment in the Royal Navy provides clear opportunities for UK Industry from the shipyards to the smallest companies in the supply chain. Securing additional work will provide greater profit making opportunities, allowing companies to grow and to invest in research and development to further improve their prospective opportunities and their competitiveness. Building exportable ships and continuing to develop systems attractive to a global market will create further economic opportunities and benefits across the UK.

23. It is critical that we continue to nurture and grow indigenous design and engineering skills, like those in the shipbuilding Industry, while recognising the global security and economic context within which we now operate. This principle underpins the Government's commitment to a National Industrial Strategy which aims to deliver an economy that works for everyone. This Strategy is taking an ambitious, collaborative and long-term approach that builds on our strengths to ensure that the UK remains one of the most competitive countries in the world for businesses to grow and flourish.



Autonomous system developed as part of the Royal Navy's Unmanned Warrior Programme. Crown copyright.

Our Vision for shipbuilding

Our vision for future Royal Navy ships

24. **Our vision is that the Royal Navy has more ships, which are modern and capable of being incrementally modernised and improved, are exportable and can work with allies. Defence shows agility, pace and grip in how we plan for, procure, and operate these ships.**

25. This vision is about more than mere numbers of ships; it is also about planning for, procuring, and operating our ships in a different way. Fundamentally it is about modularity, interoperability and innovation.

- **Modularity:** allowing flexibility in the capability choices that we make in the platforms we operate.
- **Interoperability:** ensuring that all ships can work with each other, our allies and their infrastructure.
- **Innovation:** ensuring that novel and innovative thinking and exploitation is at the heart of how we design, build and refresh our capabilities to reflect the evolving threat and the pace of technological change.

26. Our new ships will need to be increasingly automated, with their operations enabled by better use of modern technology – improving readiness, lowering support costs, and reducing the operating costs as we require fewer crew. These new ships need to be interoperable with allies, be protected against obsolescence by being designed and procured more rapidly and use open architectures to enable rapid upgrading of systems. This will enable us, for example, to embrace the opportunities presented by unmanned systems without wholesale replacement of platforms. Equally, we should be prepared to run ships for shorter service lives, and then replace them, where this makes sense, making them available for sale as viable platforms.

27. Defence also needs ships and systems that are exportable. Exporting ships will not only fuel industrial growth and prosperity, it will reduce the costs of procurement over time and increase our interoperability with allies.

Our vision for the shipbuilding enterprise

28. **Our vision is of a shipbuilding enterprise that, encouraged by a clearer grip by Defence, and with greater certainty about the Royal Navy's procurement plans, has the confidence to invest for the long term in its people and its assets to raise productivity and innovation and improve its competitiveness in the domestic and overseas markets. In this way, the sector can become more resilient to the peaks and troughs of Royal Navy business, bringing more sustained growth and prosperity in the regions those businesses are based.**

HMS PROTECTOR at Port Lockroy, Antarctica. Crown copyright.

29. In order to deliver the growth of the Fleet, we need to share a long term plan for naval shipbuilding with Industry and then provide confident and robust direction, support and oversight throughout the procurement process. In response, we need a modern, innovative and efficient shipbuilding, combat systems and marine engineering Industry that is spread across the UK. Industry should be sufficiently responsive to the exports market and have a diverse portfolio so that it is not wholly dependent on Ministry of Defence for its business. It should deliver economic benefits throughout the UK through job creation and skills enhancement.

30. **This should provide greater choice about how Defence and the Royal Navy procure ships.** We will be able to exploit the capacity and the potential that exists across the UK to enable faster and cheaper procurement, and the ability to surge production when required. This will bring opportunities for industrial growth and greater prosperity.

31. Delivering this vision for the industrial sector will require changes within the Ministry of Defence, and will present a challenge to Industry.

Sir John Parker's report

32. We recognise that a step change is required to help us grow the Fleet and support a modern and efficient maritime industrial sector. That is why the Government published Sir John Parker's Independent Review of Shipbuilding in the UK,[9] to inform this National Shipbuilding Strategy.

33. Sir John's report was published in full on 29th November 2016. It provided a balanced critique of the challenges faced by Government and Industry in the naval shipbuilding enterprise in recent years:
    - Government hasn't been able to afford the desired number of naval ships because the cost and time taken to procure naval ships has increased.
    - At the same time Defence has not injected the pace required into the procurement process, provided grip or had a clear grip over its requirements, cost and time.
    - This has caused a reduction in the number of UK naval ships, and a contraction of the industrial base.
    - We have not been as successful in exporting our naval ships and designs as we would have hoped.

34. Sir John's judgement was stark:

    "...fewer (more expensive) ships are ordered too late. Old ships are retained in service well beyond their sell by date with all the attendant high costs of so doing. This 'vicious cycle' is depleting the Royal Navy fleet and unnecessarily costing the Taxpayer".[10]

35. We accept this diagnosis and are committed to making the changes required to transform how Defence plan for, procure and manage their Fleet.

36. Sir John's report contained 34 detailed recommendations. The key themes of these were:
    - **Public sector processes.** Sir John argued that Defence needed to regain its grip on the surface ship programmes to ensure ships were delivered as efficiently and effectively as possible.
    - **Long term strategy.** The report highlighted the importance of a Master Plan for naval shipbuilding that lays out Defence's procurement plans for each series of naval ships over the next 30 years in order to provide a programme of work on which Industry and the workforce can rely.
    - **Exports.** Sir John advocated the creation of a national co-ordinated effort on ship exports, as this would increase the workload and productivity of UK Industry.
    - **Industrial innovation.** By focusing on modern digital engineering, competitiveness, improved apprenticeships and jobs, and exports, Sir John suggested that shipyards and their supply chains across the country could thrive and grow.
    - **Jobs.** Sir John recommended that Industry and the Government should, with the Trade Unions, support the creation and sustainment of high skilled jobs. This would present the opportunity for additional modern apprenticeships and expansion of technician and graduate recruitment, to drive performance, particularly via digital engineering.

37. **All of the above themes are addressed in this Strategy. Chapter 2 details the internal changes in hand in Government to deliver a firmer grip and faster pace in shipbuilding. Chapter 3 sets out our immediate procurement plans and the work on a longer term Master Plan. Chapter 4 defines the new approach to exportability, to better understand and then exploit the opportunities that exist in the international market. Chapter 5 sets out our shipbuilding policy and future plans on how we will consider prosperity in naval ship procurement. Chapter 6 considers the industrial landscape and explains how Government will work with Industry. Chapter 7 sets out how we will report on progress.**

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9 https://www.gov.uk/government/publications/uk-national-shipbuilding-strategy-an-independent-report

10 Sir John Parker's covering letter to his independent review to inform the National Shipbuilding Strategy https://www.gov.uk/government/publications/uk-national-shipbuilding-strategy-an-independent-report

Chapter 2

Public Sector Processes: the Governance of the Naval Shipbuilding Enterprise

We have introduced changes that will transform public sector processes for ship procurements. These changes will inject pace into the procurement process and ensure we have a clear grip over the requirements, cost and time of a project. We have taken the following actions:

- **Created and implemented a simple governance structure to ensure a clear line of sight exists between decision makers and the teams which deliver the ship procurement projects.**
- **Committed to fixing project budgets for each new series of ships once the main investment decision has been made.**
- **For every new ship acquisition project the Client Board will ensure that the naval capability requirement, support strategy, funding envelope and exports strategy are matured and agreed far earlier in the procurement process.**
- **Introduced changes to improve the management of, and resource provision for, risk to ensure ship procurements deliver against the set time, cost, and performance envelope.**
- **We have introduced a Project Delivery Board for Type 26 so that that Government and Industry can work together to drive the delivery of this vital programme.**
- **In order to ensure UK warship building is cost-competitive, Defence Equipment and Support will introduce, where appropriate, a value management approach to drive out cost, which will be trialled with Type 31e.**
- **Further work will be undertaken this year on whether there is a case for any additional financial freedoms.**

Why was a step change needed?

38. Commenting on the recent history of surface ship procurements for the Royal Navy, Sir John noted that there was a lack of empowered governance to grip ship procurements, which resulted in significant growth in specification, scale and end cost of ships, with an associated risk that equipment/systems are technically obsolete before the contract is finalised. Sir John rightly described this as a "vicious cycle" of changes in requirement, cost growth and delay, and challenged us to do better in order to transform how we manage the Royal Navy's ships acquisition procurement. We have risen to the challenge and introduced a suite of changes focused on governance, finance, contracts, risk and working with Industry.

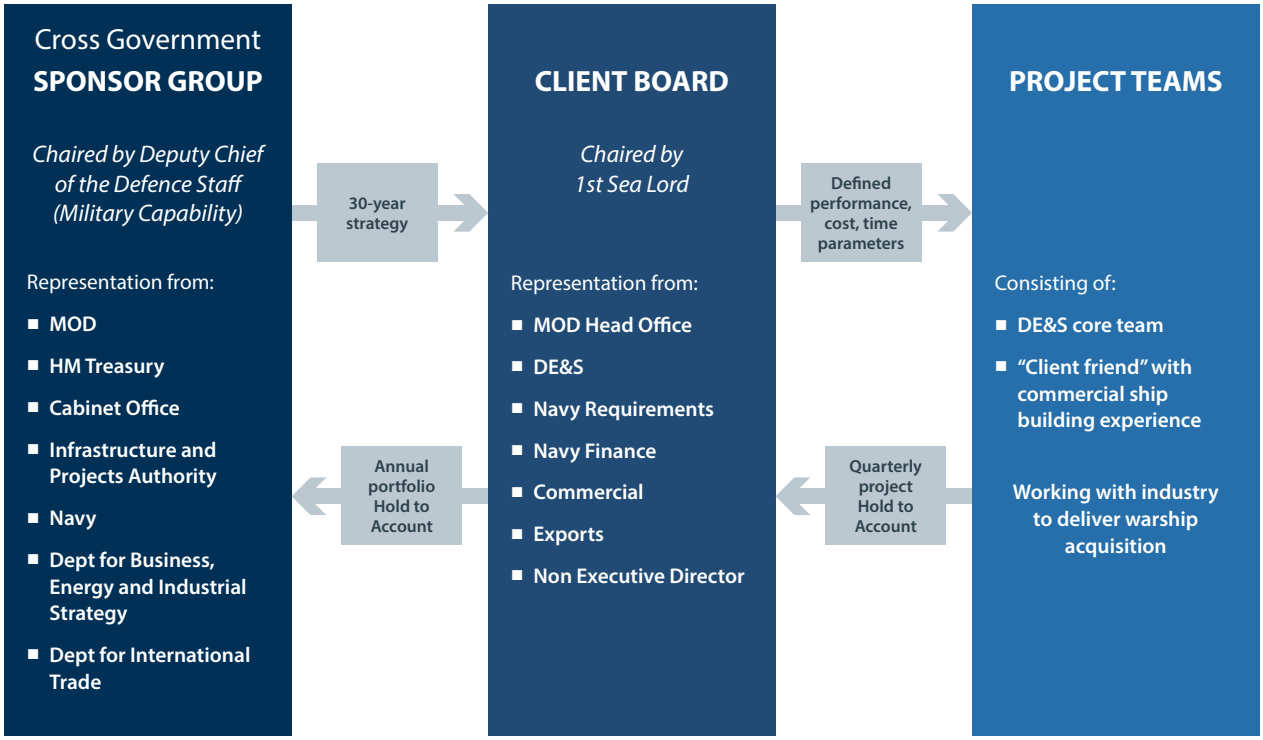
Governance

39. We have introduced a new, clear governance structure to manage the Royal Navy's ships acquisition portfolio. The primary goal of the new governance structure is to inject pace into the procurement process.

40. The Governance structure is summarised at Figure 1 and consists of:

- A cross-Government Sponsor Group which owns and refreshes the on-going National Shipbuilding Strategy and which will endorse the Naval Ship Acquisition Master Plan (this "Master Plan") for the next 30 years.
- A Client Board, which owns the Master Plan and ensures it is optimised to be policy-compliant, affordable and deliverable from within the projected and allocated funding. The Master Plan will be reviewed regularly based upon programme and delivery risks to ensure that the portfolio is balanced. The Master Plan will be updated at each Strategic Defence and Security Review.
- Empowered Project Teams that are held accountable for delivery within clear parameters set by the Client Board.

Figure 1: New shipbuilding governance arrangement



41. The benefits to this completely new structure are:

- **Senior level grip.** The First Sea Lord will personally chair the Client Board and will ensure the project teams deliver the ships the Royal Navy requires within the agreed capital envelope. This will ensure high-level authoritative decision making is at the heart of the National Shipbuilding Strategy governance structure.
- **Clear direction.** The Master Plan will sequence and afford priorities to individual naval shipbuilding programmes as part of an overall portfolio which meets the UK's strategic ambitions.
- **External expertise.** The structure includes a series of new posts and teams which will include individuals with experience of commercial shipbuilding.[11]
- **Clear lines of accountability.** Project Teams will be empowered to deliver their projects within a defined time, cost, and performance envelope, reporting progress directly to the Client Board.
- **Consistency of information.** The Client Board will be supported by a shipbuilding Programme Strategy Team which will act as portfolio managers; providing one set of Management Information to senior decision makers.
- **Industrial capacity.** The shipbuilding Programme Strategy Team will also monitor and provide advice on the industrial capacity, in the shipyards and supply chain. This will allow portfolio-level decisions to be made based on a holistic view on how Industry is configured, including their future plans.

11 The Client Board Non-Executive Director, the Programme Strategy Team and the Project Team's "Client Friend"

- **Independent challenge and expertise.** The Royal Navy and Defence Equipment and Support will bring additional independent and expert advice into the portfolio. We are in the process of appointing a Non-Executive Director to the Client Board and appointing Client Friend support with shipbuilding expertise for the Type 31e project. We have appointed an independent chair of the Type 26 Project Delivery Board, with relevant and senior industrial experience. We will appoint project directors from the private sector to bring in further project management, commercial and technical experience where we need to.
- **Trade-offs.** We recognise that it is often the case that not all aspirations - military capability, design criteria including use of naval standards, support solutions, financial, exports and industrial - can be adequately met, and compromises must be found. The Client Board creates the opportunity to debate and agree priorities and then freeze requirements at the appropriate level, in the right time frames, with the requisite information available. This should then enable decision making and ensure actions are implemented at pace required within a set, assured and stable budget.

42. Above all this new structure will allow us to robustly hold Industry to account for project performance, cost and time. The Client Board will review Navy Command and Defence Equipment and Support processes to ensure that they deliver at the appropriate pace for Type 31e. Working together, the Client Board and the Sponsor Group will continue to seek streamlined business processes as we progress the Type 31e project. The governance changes we are putting in place for Type 31e are described in Figure 2.

Figure 2: Governance changes for Type 31e

- The approach to Type 31e has been developed with the principles in this National Shipbuilding Strategy.
- From the outset, it will benefit from the oversight provided by the shipbuilding Client Board and Sponsor Group.
- Type 31e will move through procurement at pace, with a bold philosophy of success and taut delivery.
- In doing this, the Type 31e team will challenge processes that add little or no value.
- A Client friend is being procured to provide advice and challenge to the project team; one such area is in the specification of naval design standards.
- We will appoint team members from Industry where we do not have the necessary skills and experience, to deliver Type 31e in the bold manner we have described.

Finance

43. In his independent report Sir John Parker recommended that the Ministry of Defence should agree to "…a set and assured capital budget for each new series of ships". The rationale behind his proposal is that complex, long-term capital investments require budget stability in order to meet their time, cost, and performance requirements. This logic is consistent with Major Projects Leadership Academy best practice, and other Government Departments have adopted financial frameworks that acknowledge this issue.

Type 45 Destroyer on operations. Crown copyright.

44. The Ministry of Defence is committed to fixing project budgets once the main investment decision has been made - after rigorous scrutiny to firmly set the requirement, and drive down costs, with robust financial and requirement management processes in place thereafter. This means that the funding will be allocated at the main investment decision point (known as "Main Gate"). This funding will be retained by the programme, reviewed through the Government Major Projects Portfolio review process as well as every five years at each Strategic Defence and Security Review, as is the case with other Defence Programmes.

45. With this in mind we have, with the signature of the first batch of three ships of the Type 26 programme, implemented a set and assured budget for that procurement. Similarly Navy Command has a delegated budget with the funds to undertake the pre-procurement and competitive design phases of the Type 31e programme. Assuming that Industry can deliver a design and build programme for an exportable light frigate that meets Royal Navy requirements at the right price, within the allocation set aside in the Ministry of Defence's programme for this, we will allocate the necessary funds at the Main Gate investment decision point, again, as a set and assured capital budget.

46. Navy Command will then be responsible for the successful delivery of the programmes, and they will establish and operate a portfolio of surface ship procurements for Type 26, Type 31e, and the Fleet Solid Support shipping and future programmes with the full flexibility to manage these individual budgets to maintain stability across the portfolio. Further work will be undertaken this year on whether there is a case for any additional financial freedoms, above those already enjoyed by Navy Command. This work will report before the Main Gate decision for Type 31e – so that this project would be able to benefit from these at an early stage.

47. The allocation of funds is not the only factor in achieving financial stability. In developing this Strategy, we have been mindful of how other factors such as specification changes, commercial constructs, external events, and cost forecasting have historically affected Navy acquisition projects. With the new structures in place we will be better placed to grip all these challenges.

Risk

48. The history of naval ship building has highlighted that unforeseen issues do occur and they often cause significant delay to the ship building schedule. As part of the new governance structure the management of, and resource provision for, risk will be critical in ensuring ship procurements deliver against the set time, cost, and performance envelope. The key changes we have adopted include:

    - **Pro-active risk management.** As noted in Sir John Parker's report, by strengthening the link between project delivery teams and senior decision makers, unforeseen problems can be identified, prioritised and mitigated at a far greater pace that is currently the case.
    - **Technical risk.** Each ship acquisition project will be assessed for the level of technical complexity before defining the resource risk provision required. For example, warship procurement is likely to require far greater resource than support shipping which has, historically, contained far less technologically complex systems.
    - **Portfolio management.** Managing the entire ships acquisition procurement programme as a portfolio will allow for quick re-provisioning of resources when unforeseen risks become issues.

Contracts

49. We realise that every procurement project is different, and we need to use the most appropriate contracting methods, from Target Cost, Incentive Fee through to Firm/Fixed priced contracts. Designing and building to cost will enable us to focus on delivering ships to the surface fleet more effectively, whilst encouraging Industry to become more competitive. Chapter 5 lays out our intentions on considering wider factors in future ship procurement decisions.

Working with Industry

50. We have implemented the changes to meet the challenge set by Sir John, and are committed to changing the culture of our delivery teams to drive pace and grip during procurement. These changes will take time to bed in. However none of this will deliver the National Shipbuilding Strategy we want unless Industry too plays its part through effectively managing work schedules, costs and continuing to drive efficiencies into its operations.


Prepared To Work Safely? Then Welcome Aboard
aircraft carrier
alliance
Delivering the Nation's Flagships
PRINCE OF WALES

Chapter 3

Long Term Strategy: the Naval Shipbuilding Master Plan

We will provide greater clarity on our future plans in order to provide a long-term programme of work on which Industry and the workforce can rely. The Ministry of Defence is taking the following actions:

- **We are developing a 30 year Royal Navy shipbuilding Master Plan. This will document the number and type of ships we will invest in over the next 30 years. It will underpin all future naval shipbuilding decisions and will be the mechanism to oversee the delivery of those ships to time and to cost.**
- **We have shared a public, indicative version of the 30 year Master Plan which will provide Industry with the strategic direction for long term planning.**
- **We have set out the key ship procurements in the next five years: Type 26, Type 31e and the Fleet Solid Support ships.**
- **Type 26s will be built on the Clyde. We have signed a contract with BAE Systems for the first batch of three Type 26 Global Combat Ships, and have already cut steel.**
- **We will launch a competition to prove the Type 31e concept with a £250m per vessel price cap, first vessel to be in service by 2023. If Industry proves unable to meet the challenge, we will revise our plans.**
- **For all of our future surface ship procurements, we will consider distributed block building as well as build and assembly in one shipyard.**
- **Starting with the Type 31e, the Royal Navy will determine the optimum economic service life for each future class of ship, which will balance initial purchase costs, through life and capability costs.**
- **The Fleet Solid Support ships will be subject to an international competition which is due to complete by early 2020.**

51. We are creating a 30 year Royal Navy shipbuilding Master Plan. This will document the schedule and capabilities of ships we will invest in over the next 30 years, and will be the mechanism to monitor the delivery of those ships to time, cost and performance requirements. The Plan will detail the Ministry of Defence's long-term programme of work, and will provide Industry with the strategic direction they need from the Ministry of Defence.

52. The Master Plan will be used by the Client Board to manage the future shipbuilding portfolio. The Client Board will use this understanding to balance the portfolio and inform the timing of when decisions need to be taken to replace capabilities and, should we choose to replace the platform, when the procurement process will begin. Managing at the portfolio level will enable meaningful discussion with Industry and will enable all to conduct longer-term planning. The detailed Master Plan for internal use will not be publically released. However, we have developed a public version (see Figure 3), which is an indicative draft and shows our broad thinking for the future fleet.

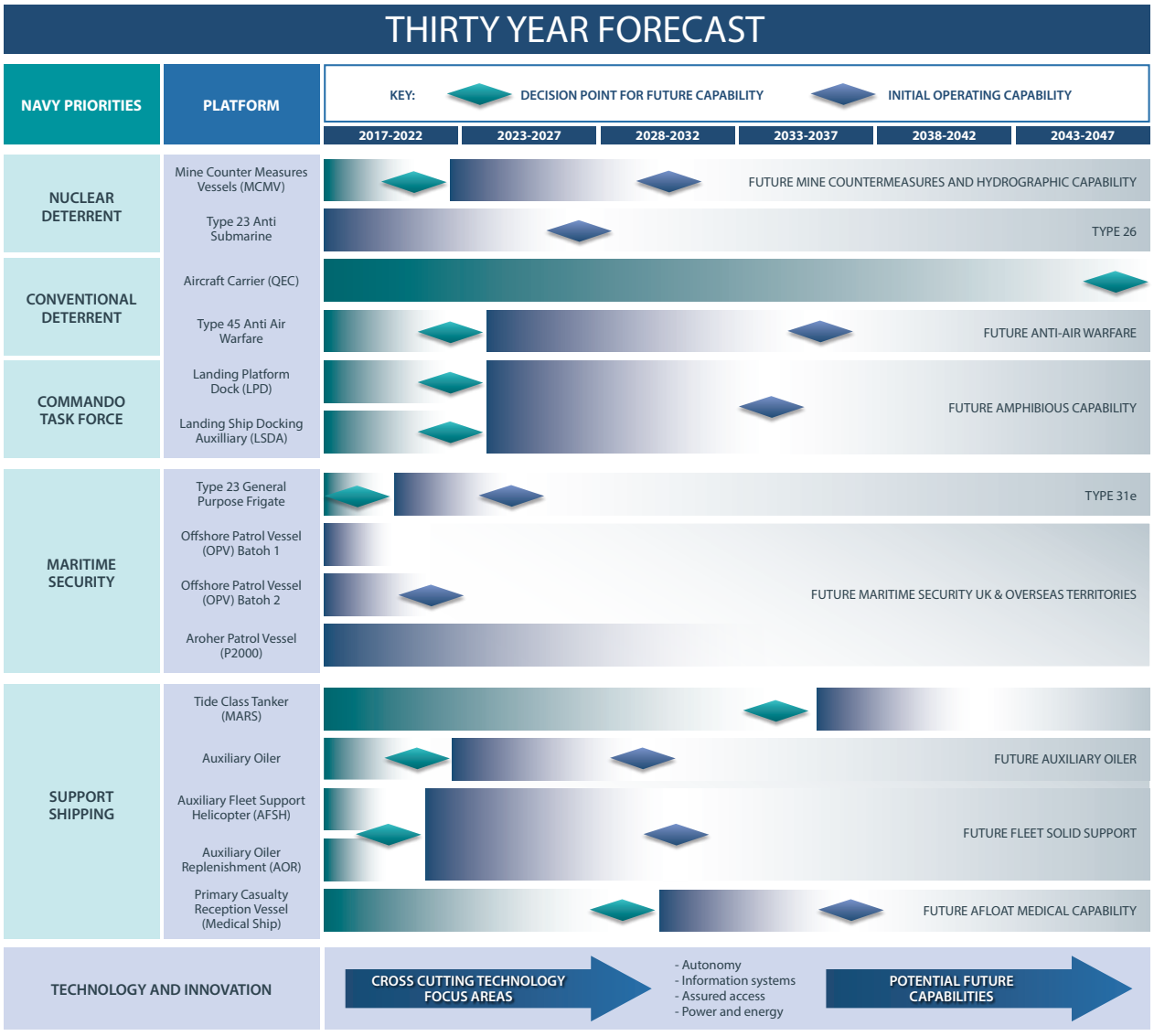
53. We aim to be far clearer about our plans at an earlier stage. With this in mind, the Strategy now sets out the key procurements in the next five years. These are:

    - Type 26
    - Type 31e
    - Fleet Solid Support ships

Type 26 Procurement Strategy

54. We will replace the 8 Type 23 Anti-Submarine Warfare frigates on a one-for-one basis with the 8 Type 26 Global Combat Ships. Type 26 will deliver the Anti-Submarine Warfare capability required to protect the Continuous at Sea Deterrent and Carrier Strike Group. All Type 26s will be built by BAE Systems. Type 26 will be procured in an initial batch of 3, with further ships batched as appropriate. The first batch of 3 ships has been contracted with BAE Systems through a single source Target Cost Incentive Fee contract. The first Type 26 will enter service in the mid 2020s.

Figure 3: Thirty Year Shipbuilding Forecast



55. We expect around 50% of the total value of steel needed for Type 26 will be British made. This amounts to around 35% of tonnage, or approximately 1,400 tonnes per ship. BAE Systems, the contractor with responsibility for sourcing steel, ran a competition in accordance with the latest government procurement guidelines on steel.

Type 31e Procurement Strategy

56. The 5 Type 23 general purpose frigates will be replaced with a class of Type 31e general purpose frigates. The first will be in service by 2023 and we require each new ship to come in at 12 month intervals. Type 31e will enable us to grow the size of the frigate force. The Government will set no upper limit on the number of Type 31es that will be introduced to the Fleet; this will be a decision for future Governments.

57. We intend to use the Type 31e as the pathfinder for the delivery of the new shipbuilding and capability vision set out in this Strategy. Alongside the traditional measures of performance, cost and time, Type 31e procurement will focus on the enterprise objectives of invigorating and sustaining the industrial base in the UK.

58. The Type 31e Procurement Strategy aims to inject competitive tension into the market by encouraging participation from the wider UK shipbuilding enterprise, from international players where they meet national security requirements and from non-traditional shipbuilders/new entrants where appropriate. It is intended to maximise competition in design, build, assembly and integration, whilst recognising that, in line with national security objectives, including the sustainment of sovereign capabilities, a UK owned design and UK build and integration will be specified. This is discussed in further detail in Chapter 5.

59. Sir John's "virtual shipbuilding model" of distributed block building has advantages in terms of pace of build, but a distributed build model can also bring higher integration costs. We will test the benefits of the virtual shipbuilding model against the single yard build model during the Type 31e procurement competition. We would welcome shipyards to partner with the best companies in the world, and will welcome bids from a consortia of shipyards as well as single yards. For all of our future surface ship procurements, we will consider distributed block building, as well as conventional build and assembly in one shipyard, taking into account the capacity and capability of all of the shipyards and choosing the best value for money approach on a case-by-case basis.

60. The Type 31e Procurement Strategy seeks to draw on private sector expertise in affordability and keeping to schedule, whilst building capacity in the client function to hold the supplier to account. The competitive approach will employ a series of short phases in order to refine the requirement specification early in the procurement cycle and through a streamlined assurance and approvals process. The competition to select a design for Type 31e will begin in the Autumn. We plan to make a Main Gate investment decision in Q4 2018 and commence build in early 2019. We are aiming for the first Type 31e to be in service in 2023 to coincide with the departure from service of the first general purpose Type 23.

61. We have set a maximum £250 million per ship price for the Type 31e, as we judge that the capabilities that the UK requires can be accommodated within this limit and that beyond this price the ships would not be attractive to the sector of the export market we are targeting. Industry will be challenged to propose a design and build strategy that can meet the funding requirements and the timetable for build, whilst ensuring the vessel will be equipped to undertake its critical patrol and presence functions as a key component of the Royal Navy's surface fleet. If Industry proves unable to meet the challenge, we will revise our plans.

62. Exportability will be driven into the ship through a competitive price and a capability that meets already identified potential customer requirements. Work has been undertaken with overseas navies to understand their future requirements and this input will be built into the specification from the outset. It is envisaged that, regardless of customer, the Type 31e will be sufficiently adaptable to fulfil a variety of roles. As such the approach to procuring the ship has been developed to ensure the basic design is conducive to open architecture, future modifications and the choice to add weapons and/or sensors.

63. Figure 4 sets out the planned delivery schedule for Type 26 and Type 31e.

Figure 4: Transition from Type 23 to Type 26 and Type 31e

Defence requirement	Currently met by	Planned replacement	1st of class delivery	Planned delivery intervals thereafter
Continuous At Sea Deterrent (CASD) and Carrier Strike	Type 23	Type 26 (x 8) awarded to BAES	2026	15-18 months
Maritime security		Type 31e competitive procurement between UK yards	2023	12 months

Fleet Solid Support Shipping Procurement Strategy

64. Our intent is to compete non-warships in order to maintain UK competitive edge for shipbuilding. By testing UK yards against foreign competition we will be able to ensure that the UK sector remains competitive. The Fleet Solid Support ships will therefore be subject to an international competition which is due to complete by early 2020, in order to deliver ships from the mid-2020s. The programme is currently finalising requirement setting, with a focus on ensuring that the military features and standards that deviate from the commercial norms are minimised. In following this approach, the programme will expect Industry to be able to consider and offer a number of viable and compliant solutions, which combined with competition, will deliver a cost effective capability. Aside from exploiting commercial opportunities at the platform level, a wide use of commercial equipment is expected and encouraged, with a UK Customisation phase planned if required.

65. Consideration is being given to introducing a market engagement phase prior to the main competition. This will deliver a closer relationship with Industry, which in turn will provide earlier insight to de-risk solutions and obtain costings. This will allow a better and informed understanding of cost drivers.

Economic service life of a ship

66. Recent history clearly identifies that service life extensions have become the norm for a large proportion of UK naval ships, for instance, the Type 23s will be operated for roughly double their original design life. This is inefficient and expensive. The pace of technological change means that to maintain operational advantage over potential adversaries, there is a requirement to upgrade capabilities, and balance whether a faster ship refresh rate (incorporating new capabilities) or upgrading the capabilities on ships with longer service lives would be better value for money.

67. With this in mind, work has started to determine the economic service life of the current Fleet. Starting with the Type 31e, the Royal Navy will determine the optimum economic service life for each future class of ship and this will be fixed at Main Gate. This will balance initial purchase costs and through life costs against the costs of upgrading capability and industrial capacity. Such an approach could enable the Type 31e to be available in due course as a "second hand" option to allies and partners.

Use of commercial shipping where appropriate and cost effective

68. The Ministry of Defence has a good record of using commercial platforms, and conversions of these, to deliver maritime capability. The diverse nature of maritime operations means there are numerous opportunities to take advantage of commercial solutions. Whilst commercially based solutions will not always be appropriate given the nature of the threat, we will always consider commercial solutions to deliver operational capability. We will also continue to explore innovative ways to finance the delivery of these sort of commercial capabilities.

Naval ship support solution

69. The support of Royal Navy ships is a different issue to that of shipbuilding. However, the design and selection of a naval ship's specification, equipment and systems will be key factors in determining the optimal support solution. In this strategy, we are not making any specific changes to naval ship support solutions. We are laying out the direction of travel to make the most of any opportunities that allow us to maintain ship availability while reduce support costs.

70. The current through-life support mechanisms for naval ships fall into two broad categories:

    - Through two key industrial partners in the Naval Dockyards, with some of the equipment provided by the Ministry of Defence.
    - Through a cluster[12] arrangement of UK commercial shipyards for support shipping and those warships whose design tends towards being commercially supported, such as hydrographic ships. Equipment and provision is by the "Cluster".

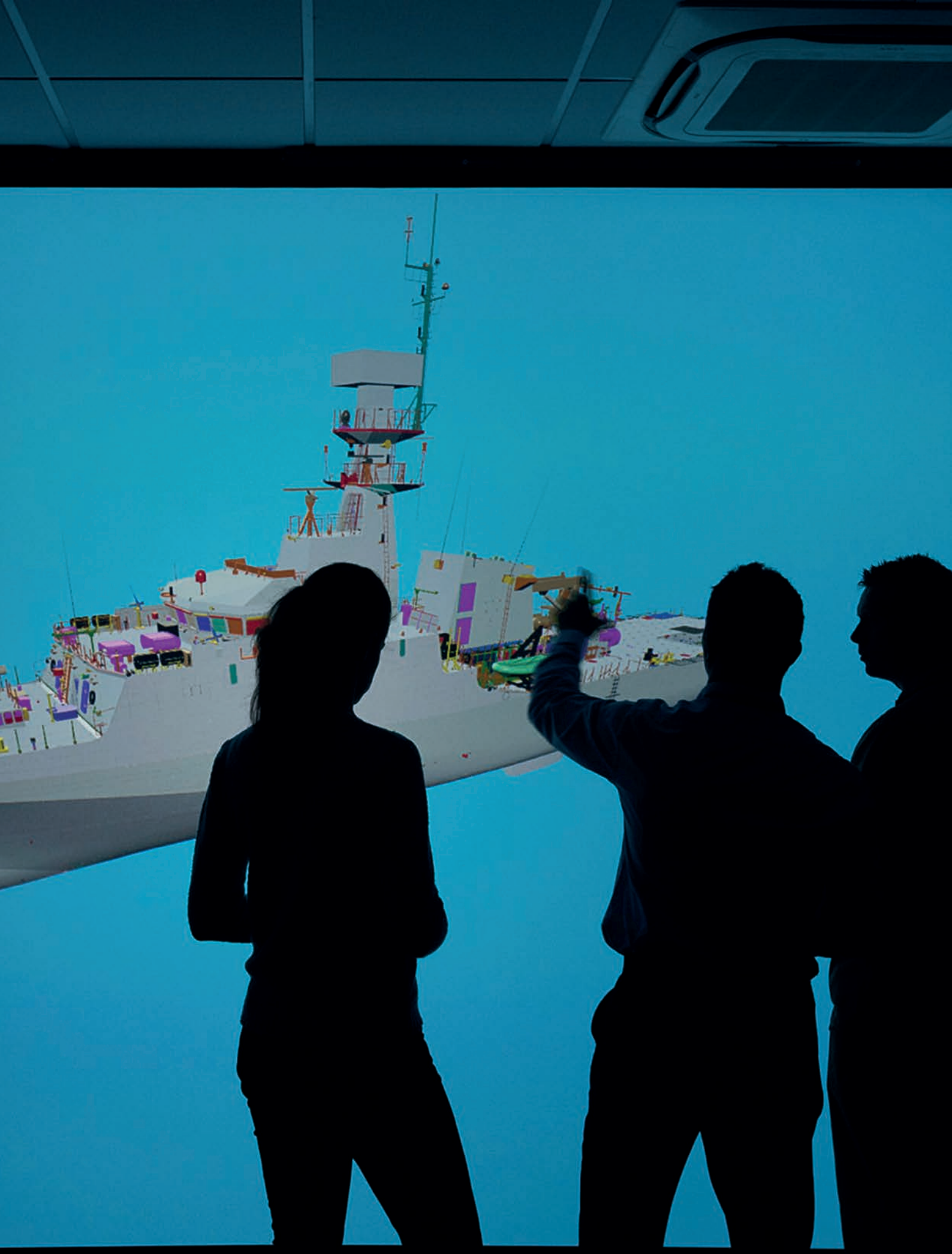
71. In order to deploy naval ships around the world and remain in operational areas, the Royal Navy needs to be able to conduct maintenance wherever ships are based or operating, in peacetime or conflict, in a way which is cost effective and reduces logistical burdens. To facilitate this, support of the surface fleet will be considered at the start of the project.

72. Ship designs and support solutions should recognise current and planned future skills of Royal Navy personnel who, at the heart of the support solution will be empowered, equipped and enabled to deliver maximum availability and resilience. When designing a naval ship, we will work with Industry to ensure that equipment and systems are reliable and proven. We will, where practicable, select commercial solutions with bespoke military capabilities kept to a minimum and carefully targeted to those key systems where resilience and operational advantage is necessary. Convergence and commonality of equipment solutions across naval ships should be considered as a factor in equipment selection, supporting a value for money decision.

73. We will continue to pay close attention to the support and repair aspects of the surface fleet and will use the Type 31e procurement to see what we might do better. We will take advantage of opportunities in support as they emerge.

74. We look forward to showing how we have embedded these changes as we make future procurement decisions, starting with Type 31e.

12 The Cluster refers to supporting shipping through life support contracts with A&P and Cammell Laird



Chapter 4

Exports: Maximising the opportunity

In order to support the delivery of export success, we will deliver a stronger national co-ordinated effort on the exports effort for ship sales, project management, design, equipment and sub-systems.

As part of our new approach to exportability, to better understand and then exploit the opportunities that exist in the international market, Government will take the following actions:

- **The Ministry of Defence will work in partnership with the Department for International Trade's Defence and Security Organisation, other Government Departments and Industry to maximise export success.**
- **Export campaigns for new ships will be coordinated by a cross Whitehall group with support from Industry. The export campaigns for Type 26 and Type 31e are being managed through this group.**
- **A senior official will act as the single Government representative responsible for shipbuilding exports.**
- **We will engage with Industry far earlier, so they can design naval ships from the outset to appeal to a much broader range of potential export customers.**
- **Ships will be designed with exports in mind from the outset. To enable this, we will:**
  - **Continue to share market analysis with Industry to ensure both Government and Industry have a good understanding of the current and future export market needs.**
  - **Keep non-essential requirements to a minimum so Industry can design adaptable ships.**
  - **Introduce exportability into the procurement process; exportability of a ship will be a key requirement that Industry must meet.**
- **The Department for International Trade will review progress on exports at the Ministerial Working Group for Defence Exports.**
- **We will deliver a co-ordinated export campaign for Type 26 and Type 31e in line with the above commitments.**

Exports: a national endeavor

75. In 2015, prosperity was, for the first time, included as a national security objective in its own right. This placed a new obligation on Ministry of Defence to support the UK's defence, resilience and security industries to grow, including through support to exports and through investment in skills.

76. Export success fuels prosperity and is important to Industry. Export success is also important to the Ministry of Defence; competitive companies, winning export work, enable overheads to be spread, reducing the unit cost to the Department.

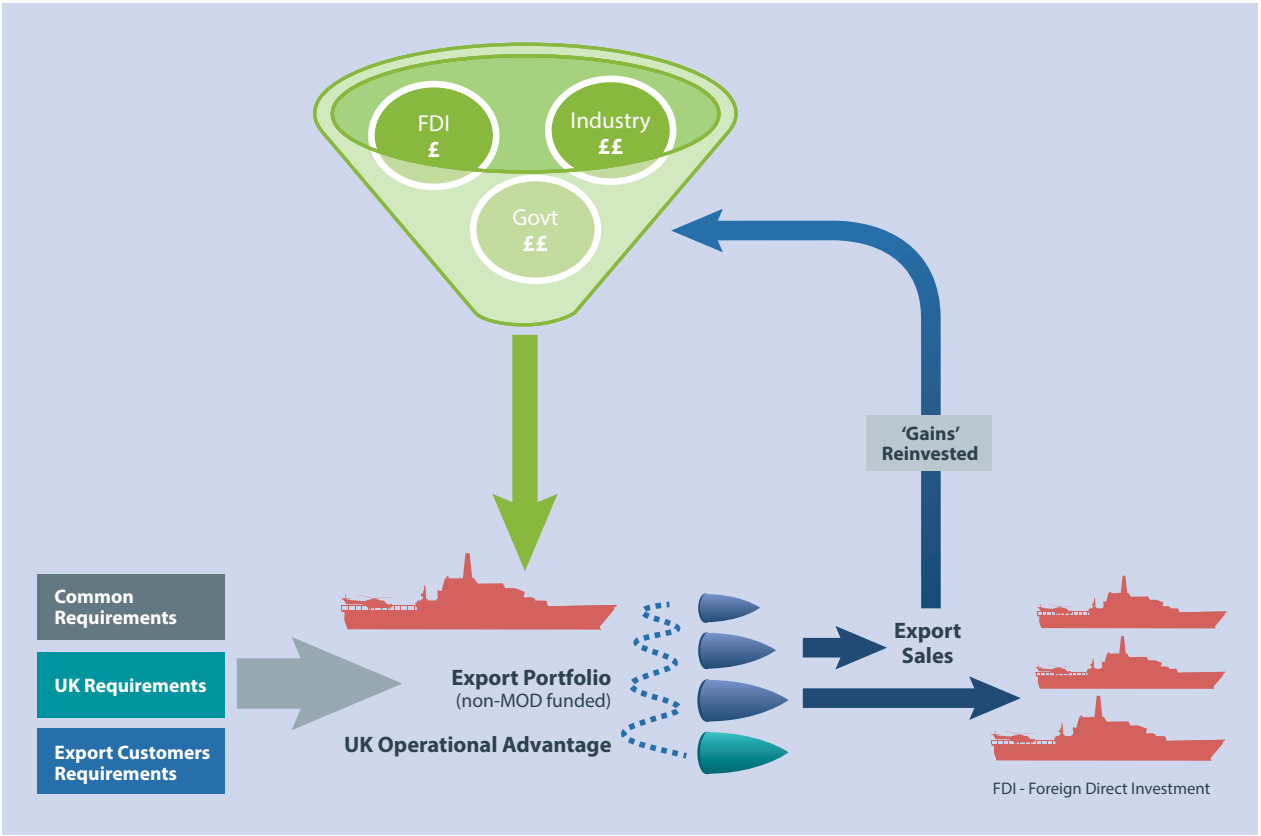
77. We recognise that increasing UK naval ship exports is a national endeavour which will require **Government to work in partnership with the UK Defence Industry**. An example of the benefits to this approach is shown in figures 5 and 6:

- Increased investment in more commercially viable projects, such as those supported by exports, are likely to attract increased domestic (private-venture, the Department for Business, Energy and Industrial Strategy etc.) and foreign investment, potentially reducing the through-life cost to Ministry of Defence to deliver the capability.
- The UK Defence Industry is encouraged to reduce its dependence on the Ministry of Defence as a sole customer and concentrate effort in securing a wider potential share of the international market.

Figure 5: The case for Industry involvement and investment in exports

- Increased investment in more commercially viable projects, such as those supported by exports, are likely to attract increased domestic and foreign investment, potentially reducing the through-life cost to Ministry of Defence to deliver the capability.
- The UK Defence Industry is encouraged to reduce its dependence on the Ministry of Defence as a sole customer and concentrate effort in securing a wider potential share of the international market.
- A potential reduction in programme costs through a re-investment of "gain-shares".
- Maintenance and supply lines can be sustained for capabilities that are in-service with UK forces and are approved for export. The increased number of units in service worldwide makes it economical for the company to retain a repair and refurbishment facility, which is therefore available to support the UK capability when required.

Figure 6: How we would like maritime exports to work



- A potential reduction in programme costs through a re-investment of "gain-shares".
- Maintenance and supply lines can be sustained for capabilities that are in-service with UK forces and are approved for export. The increased number of units in service worldwide makes it economical for the company to retain a repair and refurbishment facility, which is therefore available to support the UK capability when required.

78. Government has two main tasks in supporting maritime exports: campaigning and delivery assurance. These tasks need to be undertaken in parallel rather than sequentially.[13]

79. Supporting the UK's defence, resilience and security industries to deliver export success will also require the government to work collaboratively in the UK and abroad. Export campaigns for new ships will be coordinated by a cross Whitehall group comprising the Defence Security Organisation in the Department for International Trade, Ministry of Defence Export Policy, Navy Command and Defence Equipment and Support. The group will be supported by integrated campaign teams from Industry. This will ensure the export potential of the designs are regularly reviewed as the project matures, and both Industry and Government can work together to exploit export opportunities. The export campaigns for Type 26 and Type 31e are being managed through this group.

80. The Head of the Defence Security Organisation in the Department for International Trade has been appointed to coordinate the national shipbuilding export effort and to act as a single, accountable Government lead to drive and guide this important work. He has started to act as the single senior Government representative responsible for:

- Providing advice and support to the Royal Navy on ship exports.
- Focussing and maximising the national maritime export effort.
- Being the authorative Government contact to advise Industry on prospective sales strategies.
- Being the final authority on market advice given to the Disposals Services Authority on the sale of second hand ships.

HMS OCEAN with a Merlin Mk 3 helicopter landing during Joint Expeditionary Force (Maritime) in the Mediterranean. Crown copyright.

Designing ships to be exportable

81. Traditionally the Government supported the UK Defence Industry by promoting the export of ships that were designed for the Royal Navy, and were already in service with them. To win increased exports sales, ships must instead be designed with exports in mind from the outset. To help this, we will continue to conduct and share market analysis that reflects the UK Government's political perspective of the international defence market place, provides an assessment of probability of success in securing customers, and also gains the

13 Campaigning describes the necessary activity which Government undertakes, with Industry support, to determine market potential. Government can assist Industry in gaining commitments to export sales by providing the advice and expertise necessary to finalise customer requirements. Delivery Assurance describes parallel work carried by government to gain endorsement of exports campaign plans; it includes the incorporation of an assessment of export potential into the design selected for the Royal Navy.

confidence of our industrial partners. This will ensure that Government and Industry have a good understanding of the current and future export market needs. Government can then set the requirements for Royal Navy ships, keeping export demands in mind.

82. We will eliminate non-essential requirements. This will allow Industry to design ships that are simple to build and adaptable, meaning that the ships can be modified without costly design work, making them more attractive to buyers. We will also engage with Industry far earlier so that from the word go, ships are designed to appeal to a much broader range of potential export customers.

83. Our resolve to match the fundamental requirement of UK Armed Forces for leading edge "battle winning" capabilities that will defeat our adversaries will be balanced with a greater emphasis on the need to factor in the requirements of potential export customers. Starting with the Type 31e, we will introduce exportability into the procurement process; exportability of a ship will be a key requirement that Industry must meet. The planned forward deployment of the Type 31e will also have a simplified and streamlined support solution, to maintain high-tempo operating patterns, which should further increase the attractiveness of the export offer by reducing the reliance on deployed contractor support.

Type 31e as a pathfinder

84. **We assess that there is a potential light frigate export market of around 40 ships over the next 10 years.** The majority of this market is for the purchase of a light frigate design for construction "in country" overseas, with potential support from UK Companies and the UK supply chain. Competition from other countries in this potential market is stiff with at least 14 other ship manufacturers and designers providing a light frigate option in the 2000-4000 tonnes market place.

85. Type 31e will be marketed to export customers at the same time as the UK will be seeking to export from the wider naval ships portfolio; this will include variants of new build Type 26. Type 26 will not impact on the export potential of Type 31e as they offer different capabilities at different costs.

86. We have tried to get a better feel of the addressable export market to understand in detail potential export countries' needs, in order to determine the "Type 31e exports demand signal" which is shown in figure 7. This has enabled us to start to fuse the optimum mix of exports and Royal Navy requirements into the statement of requirements, which in turn will feed the ship's specification.

Figure 7: Export "demand signal" for Type 31e

- Government is keen to understand the "export demand signal" to establish a reference point for the potential international market for Type 31e design.
- In line with the "team exports" approach, assessments of the frigate market for the next 20 years have been carried out by Government and Industry.
- These studies have indicated that large platform sales are invariably tied to wider political and economic factors; these in turn inform procurement decisions as much as product specification does.
- We will be judged by our ability to balance Royal Navy and market requirements to enable market success.
- We cannot detail any further the "export demand signal" at this stage owing to commercial and security sensitivities.

87. Regardless of customer, Type 31e will be sufficiently adaptable to fulfil a variety of roles (for example through the incorporation of different modular capabilities). To enable this, we will ensure that the basic design of the ship is adaptable: meaning that the ship can be modified to accept different weapons or sensors (either in the design stages or once it enters service) minimising any changes needed to the rest of the ship. The aim will be to align the Type 31e design with the requirements set by the export market or otherwise incorporate the open architecture necessary to allow the modularity which will enable export requirements to be incorporated without costly redesign work.

88. We expect Industry to make a compelling case for Type 31e export sales. This includes the design, systems, equipment, support and training, as well as "whole" ship sales.

89. Noting the primary objective of growing the Royal Navy by the 2030s, we will aim to manage the production line of Type 31e to ensure the needs of the Royal Navy and our export market are carefully balanced. The expected economic service life of a new ship, yard capacity to enable concurrent build and timing of overseas orders will determine when the export demand signal may require the UK delivery schedule to be adjusted or where the Type 31e second hand market may play a more prominent part in managing the supply of ships. Additionally, opportunities for UK companies to export ship designs and systems to overseas markets may generate additional build capacity and supply chain advantages.

Government support: an enduring task

90. Government support to the UK Defence Industry to maximise export opportunities will be an enduring task which will have both immediate and long term implications for both UK prosperity and security. It will also ensure that key allies and potential future international partners are able to select UK capabilities that meet their requirements. The Department for International Trade will measure the success of export campaigns and review progress at the Ministerial Working Group for Defence Exports.

91. This new approach does not negate the need for Industry to invest in credible capabilities and commercially viable solutions, with its own resources to secure exports.

Chapter 5

Industrial Policy and Prosperity

We have updated our policy on warship building in the UK, and have begun work to understand how UK shipbuilding can maximise prosperity for both the UK as a whole and its constituent regions. A summary of the changes we are making is below:

- **Future warship procurement will be restricted to UK-wide competition for reasons of national security.**
- **The current and future policy for procuring other naval ships such as support shipping is by international competition, unless there is a demonstrable national security reason why procurement needs to be restricted.**
- **We have commissioned independent work that has confirmed Sir John's view that the UK shipbuilding enterprise contributes to the nations' prosperity.**
- **We will consider how best to develop a framework to factor prosperity factors into future procurement decisions. We will do this by using the Type 31e as a pathfinder to develop that policy further.**

Shipbuilding policy

92. It is important to be clear about our policy on shipbuilding. There are three tenets:
    1) **For reasons of national security, all Royal Navy warships (destroyers, frigates and aircraft carriers) will continue to have a UK-owned design, and, will be built and integrated in the UK. Warship build will be via competition between UK shipyards. But international partners will be encouraged to work with UK shipyards and other providers to produce the best possible commercial solution.**
    2) **All other naval ships[14] should be subject to open competition (provided that there are no compelling national security reasons to constrain a particular procurement to national providers). Integration of sensitive UK-specific systems will be done in the UK, where possible after competition between UK providers.**
    3) **Defence will take account of wider factors (including the impact on UK prosperity) when making these procurement decisions.**

93. For reasons of national security, the UK will need to retain the ability to design, build and integrate warships. This industrial capability enables the UK to sustain the Royal Navy without interference from a foreign power.

Policy on UK competitive build

94. We have already invested heavily, and continue to invest in the Type 26 Global Combat Ship, and have signed contracts with BAE Systems for the first three (of eight) Type 26s. With this further commitment, and plans for the commercial negotiation with BAE Systems for the remaining five ships, there will be high-skilled work in their Clyde shipyards well into the 2030s. BAE Systems will remain a key shipbuilder for the Royal Navy. Embedded within the Type 26 contract are performance incentives to encourage the shipyard to become globally competitive, and for BAE Systems to get themselves into a position to bid for future programmes.

95. As Sir John Parker identifies, there are many commercial shipyards in the UK which should also look to bid for Royal Navy work – both shipbuilding and ship repairs. But international partners will be invited to participate, even in those competitions reserved to UK yards, to work with our shipbuilders to ensure that the very best ideas and the very best commercial approaches can be adopted. By being open to competition UK shipyards will become as efficient as possible – vital to ensure value for money for the taxpayer and to position UK shipyards to win export orders.

14 This includes Royal Fleet Auxiliary as well as other Royal Navy-manned ships such as patrol, mine countermeasures, hydrographic and amphibious ships.

Dockyard welder working on HMS Queen Elizabeth. Crown copyright.

96. While steel procurement responsibility for major shipbuilding programmes remains with our prime contractors, who take into account cost, time and quality, we are working hard to ensure that where we can, we source British steel. As part of our support for British steel we introduced new public procurement guidelines which help British suppliers compete more effectively with international suppliers by taking into account wider social and environmental factors.

97. We will carry out early market engagement and continue to forecast steel requirements for shipbuilding through the UK Government Steel Pipeline. This allows UK steel manufacturers to better plan for the capacity they need to bid more effectively for government contracts. The Government has also commissioned independent research into future market opportunities for British steel and we are actively working with the sector to identify the capabilities it will need to pursue these opportunities.

98. This builds on other recent government activity to support UK steel companies, including through the Government's Industrial Strategy, where we have invited the UK steel sector to take the opportunity of a sector deal and set out ambitious plans to capture future opportunities and deliver long term growth.

Socio-economic factors in procurement

99. The Ministry of Defence has a duty to ensure that public funds achieve the best value for money for the taxpayer. When making procurement decisions, we take account of wider factors, including the impact on UK prosperity, where these are national, measurable, and material. This approach is consistent with Treasury guidance (as laid out in the Green Book[15]). This does not mean a "buy British at any cost" approach – but in choosing between UK-based and overseas suppliers, all relevant, measurable national and local economic factors will be taken into consideration.

100. Our research suggests 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 supports up to 25,000 UK jobs. These estimates helped to inform Sir John's report.

101. Since the publication of Sir John's report, we have worked to understand better the regional economic impact of procurement on the areas where major shipbuilding firms are located, as well as the contribution to UK prosperity. Ipsos MORI was commissioned to help us achieve the following:

- Gain a better understanding of the prosperity impacts of building naval ships in the UK both at a national and local level.
- Support the development of a practical set of metrics to guide decision-making.

102. To address these issues, Ipsos MORI consulted widely, reviewed relevant literature, produced in-depth statistical and econometric research, and included three case studies examining the potential response of shipyards to procurement scenarios. Their report describes how we can judge "prosperity" impacts,[16] including by assessing indicators such as economic output, incomes, employment, research and development spending, investment, long-term unemployment, and income distribution.

15 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/220541/green_book_complete.pdf

16 https://www.gov.uk/government/publications/value-of-military-shipbuilding-to-the-uk

103. At the local level, Ipsos MORI's econometric work suggests that an increase in shipbuilding work helps to create demand for additional high-skilled manufacturing jobs in the surrounding area, albeit potentially at the expense of lower paid and lower skilled service sector employment. **Taking into account the number of shipbuilding jobs created, the local area is likely to benefit from a net increase in jobs. In addition, the jobs created are on average better paid, leading to gains in income, productivity and output.** Ipsos Mori also suggested some factors that could be used to develop a future prosperity framework, at figure 8.

104. The indicative impact of shipbuilding to local areas in the UK is in Figure 9.

Figure 8: Potential factors identified by Ipsos Mori that could be used to inform a future prosperity framework

Dimension of prosperity	Potential Prosperity Metrics
Income	Economic output Total factor productivity Average labour productivity Additional output created by productivity gains Additional wage income
Employment	Net jobs
Unemployment	Net reductions in: ■ JSA claimants ■ Long term JSA claimants ■ Other out of work benefit claimants
Economic security	Net impacts on: ■ Full-time jobs ■ Part-time and temporary jobs ■ Jobs with contractors ■ Benefit claimant on-flows
Income inequality	Income distribution
Education and training	Wage premium from training
Subjective well-being	Monetary value of improvements in life satisfaction

Figure 9: Summary of key findings from IPSOS MORI commission: how to measure the prosperity impacts of shipbuilding

Ipsos MORI was asked to

- Help us better understand the prosperity impacts of naval shipbuilding.
- Support the development of a practical set of metrics for measuring these impacts.

Ipsos MORI findings

- Assuming doubling of investment in shipbuilding, the effect after 3 years, within 60km of the shipyard, for each 100 shipbuilding jobs created:
  - 32 extra manufacturing jobs created.
  - 25-33 apprenticeships created (across the 132 jobs above).
  - 16 fewer claimants of jobseekers' allowance.

It is likely that there would be an overall a decline in low paid service jobs in the area. However the study suggested there would be a growth in high paid, high skilled work in the local area.

So what?

- The net effect on local economic output is an increase of £42,800 per worker per annum, a circa 60-95% increase
- The net effect on annual incomes is an increase of £17,500 per worker per annum, a circa 50-80% increase
- 83% of the net additional jobs are taken by people in that area.

Case study – Using the virtual shipbuilding model to construct a light frigate

Ipsos MORI conducted hypothetical procurement scenarios using information and data from UK yards. This work suggested:

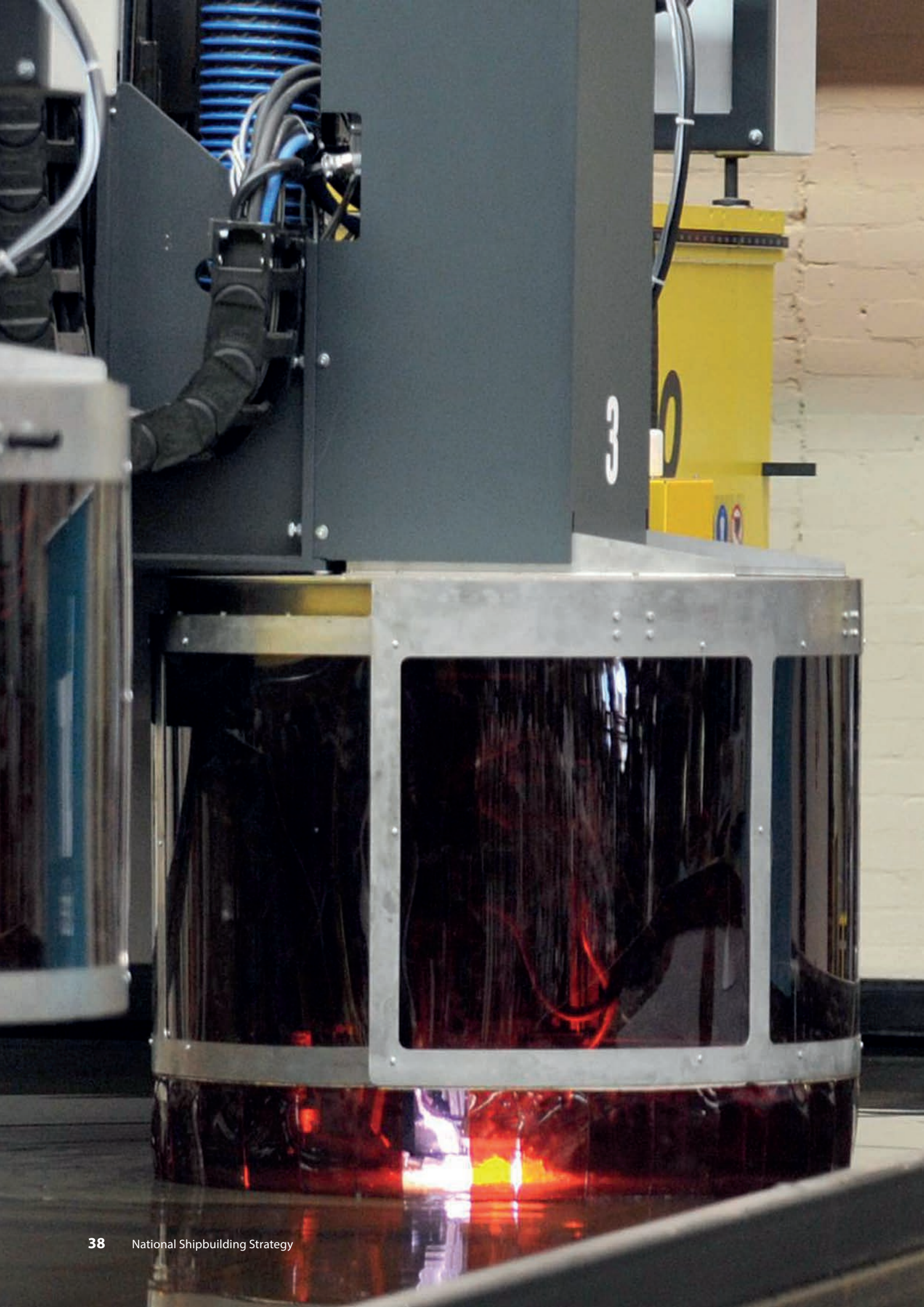
- Acting as the lead shipyard would create or sustain several hundreds of direct jobs on site over the peak construction period.
- There is potential for further on-site subcontractor jobs in the low hundreds.
- There is little risk that other types of work would be displaced by the construction programmes under most scenarios, with shipyards suggesting that they would still be looking for further work.
- The employment opportunities would be expected to largely benefit residents living within a 5 mile radius of the shipyard, bringing jobs and opportunities to these areas.
- Shipyards could generate over £10m of additional procurement spend in the local economy on a per ship basis.
- Opportunities to create additional training opportunities through increasing the scale of existing apprenticeship programmes.

What will we do with this?

105. IPSOS Mori's work has helped us to better understand the regional economic impact of shipbuilding procurements and the contribution to UK prosperity. We are going to build on their work and produce a framework to define what we mean by "prosperity" in pratice. This framework will also be used to consider how to deliver value for money through procurement decisions while maximising benefits for the UK and its constituent regions.

106. This framework and methodology will be developed during the competition for Type 31e, which will invite Industry to detail the prosperity benefit of their proposals. It will inform the approach we will adopt in our procurement decisions, to be set out in the refreshed Defence Industrial Policy, consistent with the Government's forthcoming Industrial Strategy.

Offshore Patrol Vessel HMS MERSEY returning home to Her Majesty's Naval Base Portsmouth. Crown copyright.



Chapter 6

Delivering with Industry

Our vision is of a shipbuilding enterprise that, encouraged by a firmer grip by the Ministry of Defence, and with greater certainty about the Royal Navy's procurement plans, has the confidence to invest for the long term in its people and its assets to raise productivity and innovation and improve its competitiveness in the domestic and overseas markets. In this way, the sector can become more resilient to the peaks and troughs of Royal Navy business, bringing more sustained growth and prosperity in the regions those businesses are based.

We will work in partnership with Industry and provide the support they need to deliver this vision:

- **We will continue to work together to improve public procurement, increase trade and drive innovation in the maritime sector, while paying close attention to the demands that this places on skills and the workforce.**
- **A Maritime Enterprise Working Group will be established to undertake a long term programme of improvement. It will be led by an Industry Champion with the support of the Society of Maritime Industries. The Group's membership will include industry, government and academia. It will report to the Ministerial Working Group for Maritime Growth.**
- **Our priorities for this on-going engagement will be:**
  - **Developing a collective in-depth understanding of the opportunity for the sector, both in the domestic and international market (commercial and defence):**
    - **Market analysis.**
    - **Addressing barriers to and identifying opportunities for exports.**
    - **Continuing to work with shipyards and the wider supply chain to develop and implement Global Competiveness Plans.**
    - **Identifying markets for diversification.**
  - **Improving Productivity:**
    - **Opportunities for Innovation and future technology development.**
    - **Addressing barriers to investment and working with the supply chain to ensure they have adequate access to finance. Where needs be, we will engage with the Local Enterprise Partnerships to maximise funding opportunities.**
    - **Consider the need for a virtual innovation centre.**
    - **Working with the entire maritime sector to ensure they have access to sufficient resources to maintain and grow their workforce.**
- **The Government is moving from apprenticeship frameworks to new employer-designed apprenticeship standards so employers can see the value in the money they are investing through the levy.**

107. We recognise that there is much more to do to successfully implement this Strategy and to foster growth across the shipbuilding and maritime engineering industries. Based on our engagement with Industry, we have identified several key themes which are critical to these efforts. Both Government and Industry have a role in delivering these, but we are also keen to build stronger Government-Industry partnerships, to tackle these issues together as a shared endeavour. This is why we support the introduction of a new Industry-led Maritime Enterprise Working Group which will bring greater focus to areas that current government-Industry forums do not address and will also bring coherence to the overall marine enterprise.

Removing Barriers

108. We recognise that some of our behaviours as a customer have acted as a barrier for Industry in terms of encouraging investment and driving efficiency and productivity. In particular, stability and decision discipline from the Ministry of Defence as a customer, and a sharper focus on ship design standards, are issues that Industry would like us to take greater control of.

- **Stability and decision discipline.** Industry has told us that they want Defence to be a more stable and predictable customer. They are looking for greater certainty about future work, and greater discipline in setting and sticking to a plan. We hope that the changes to governance, and the stress on decision discipline and pace (laid out in Chapter 2) and the Master Plan (see Chapter 3) represent a good start here.
- **Naval ship design standards.** We understand that bespoke and unique standards (for instance, Defence Standards) can drive cost into shipbuilding. We need to be aware of the cost of standards as we make trade-off decisions, against where and how the Royal Navy intends to operate specific classes of ships. We will use commercial standards as a starting point and will only specify enhanced standards where there is a clear requirement and material benefit to do so. There will be times when equipment, systems and materiel needs to be specified to a higher standard; our intent is to keep these occasions to a minimum. The establishment of the new Sponsor Group, and the Client Board, means that there is a renewed, clear focus to make informed trade-off decisions which are based on a stated benefit for a known cost.

Raising Productivity

109. The objective of the Government's Industrial Strategy is to improve living standards and economic growth by increasing productivity and making sure that growth is spread across the whole country. The Government has published a Green Paper that marks the beginning of a dialogue to develop this strategy, and make sure the UK remains one of the best places in the world to innovate, do business and create jobs. The 10 key pillars of the Industrial Strategy Green Paper 2017 are at figure 10.

Figure 10: The 10 key pillars of the Industrial Strategy Green Paper 2017[17]

1. Investing in science, research and innovation
2. Developing skills
3. Upgrading infrastructure
4. Supporting businesses to start and grow
5. Improving procurement
6. Encouraging trade and inward investment policy
7. Delivering affordable energy and clean growth
8. Cultivating world leading sectors
9. Driving growth across the whole country
10. Creating the right institutions to bring together sectors and places

110. As stated in the Industrial Strategy Green Paper, the UK as a nation has a challenge to raise our productivity, supporting all sectors across the economy to grow, invest and reach their potential. Policies can only succeed with strong business leadership. Our new approach challenges sectors to upgrade through "Sector Deals" - we are inviting Industry to approach us with proposals to transform and upgrade their sector, as outlined in Figure 11.

17 https://beisgovuk.citizenspace.com/strategy/industrial-strategy/supporting_documents/buildingourindustrialstrategygreenpaper.pdf

Figure 11: "Sector Deals" - an "open door" challenge

This "open door" challenge to Industry is a call to business to self-organise behind strong leadership to address shared challenges and opportunities.

We are looking for businesses to collaborate with Universities, Local Enterprise and Local leaders to produce a clear proposal for upgrading the productivity of their sector. They should set out detailed plans to address challenges such as delivering upgrades in productivity, promoting competition and innovation, driving growth across the value chain, increasing exports, commercialising research, boosting skills and the number of high value, high productivity jobs.

111. In November 2016, the Government announced £13 million of funding support for the business-led Productivity Council. This initiative will provide strong and sustained leadership to raise productivity across the business community, offering management training and business-to-business coaching through its specialised productivity academies across the country. Digital technologies are a key enabler of this, and the UK needs to embrace and exploit the digital revolution to reduce overheads. We have commissioned a review of industrial digitisation to consider how UK Industry can benefit from the accelerated adoption of digital technology across advanced manufacturing.

112. In his report, Sir John Parker highlighted productivity as a key issue for Industry and challenged the enterprise to invest in and deliver higher productivity. Our engagement with Industry showed that they are aware of the need to address productivity within the shipyards and supply chains and have developed plans to drive productivity and improve competitiveness: what Sir John referred to as "Global Competitiveness Plans". The nature and detail of the plans vary. They depend on the size of the company, the diversity of its portfolio, the size of its order book and the scale of their shipbuilding ambition. We appreciate that Global Competiveness Plans are unique to individual companies, but there are common themes such as the supply of skilled labour, and investment in innovation. We also expect Global Competiveness Plans to include supply chain action plans to demonstrate competitiveness, as expansions in shipbuilding activity have significant local economic impacts through increased spending with local suppliers. We have outlined below existing work on these areas and have focused on where we will support companies in the development of their own Global Competiveness Plans.

Mine Countermeasures HMS HURWORTH. Copyright Royal Navy Photographic Unit.

Figure 12: Manufacturing Technology Centre case study

- The Manufacturing Technology Centre supported a client to improve elements of their fabrication shop: The main goal was to reduce production costs by 25% by delivering right first time, reducing work in progress and increasing accuracy and quality.
- The Manufacturing Technology Centre established a review team with a mixed membership of Manufacturing Technology Centre technical experts, incumbent Manufacturing Engineers, Quality Engineers and shop floor representatives from the company. Together, they conducted a thorough 6-week review to gather data and ascertain problems and resolution activities.
- The majority of problems were resolved through "quick fixes" owned and delivered by the company. Three work packages were taken away for delivery at the Manufacturing Technology Centre: automated welding; tooling and fixturing; and large volume metrology. All three projects are currently in the delivery phase, and initial estimates show a 10x return on investment to the client.

Industrial productivity and innovation

113. The shipyards have adopted some advanced manufacturing process techniques to improve productivity and reduce costs. This has been achieved by deploying internal knowledge and expertise as well as bringing in private and public sector know-how. But there is the scope to do more.

Development of autonomous vehicles as part of the Royal Navy's Unmanned Warrior Programme. Crown copyright.

114. We have considered several approaches in partnership with Industry. This included a bespoke Catapult,[18] a Defence Naval Catapult, supported by "business improvement" teams within shipyards to diagnose current operational, digital and manufacturing capability. Industry engagement has showed that to an extent this is already happening and there are existing UK organisations, such as the High Value Manufacturing Catapults, that Industry can draw upon to build their manufacturing capability and deliver their Global Competitiveness Plans.

115. There is also a need to incorporate emerging technologies that have a dual use application within the defence and commercial sectors. Dstl, InnovateUK and Industry have successfully invested in collaborative research and technology for the naval sector. It is for Industry to continue this tradition and put forward strong proposals in future collaborative research competitions (figure 13). This includes an opportunity for the naval sector to put forward proposals to the Ministry of Defence's Innovation Fund.

18 The Catapult centres are a network of world leading centres designed to transform the UK's capability for innovation in specific areas and help drive future economic growth

Figure 13: Access to Innovation

The Government has established several routes to innovation and funding besides academic institutions. These include:

- High Value Manufacturing Catapults:
  - Advanced Forming Research Centre.
  - Advanced Manufacturing Research Centre.
  - Centre for Process Innovation.
  - Manufacturing Technology Centre.
  - National Composites Centre.
  - Nuclear Advanced Manufacturing Research Centre.
- Productivity Council Funding.
- Industrial Strategy Challenge Fund.

Industrial Strategy Challenge Fund:

Through the Industrial Strategy Challenge Fund we will provide a boost to our world class research and development sector, to help turn brilliant UK innovations into new businesses and good jobs. The government has worked with businesses and academics to identify core industrial challenges, where research and innovation can help unlock markets and industries of the future in which the UK can become world-leading. The first of the challenges have been announced with more to follow.

We have committed to increasing investment in research and development by £4.7 billion over the next 4 years. The extra £2 billion per year by 2020 to 2021 is the biggest increase in total Government research and development investment since records began in 1979.

116. Government will continue to work with Industry to improve the whole process of designing, building and maintaining the fleet. The new Industry-led Maritime Enterprise Working Group with the support of the Department for Business, Energy and Industrial Strategy, MOD and the Society of Maritime Industries will undertake a long term programme of improvement to improve the industry's productivity and competitiveness. The Group will work with the Ministerial Working Group for Maritime Growth to deliver growth. The Department for Business, Energy and Industrial Strategy and Society of Maritime Industries will now begin to engage with stakeholders to take the implementation of this Working Group forward and its future membership.

Autonomous system developed as part of the Royal Navy's Unmanned Warrior Programme. Crown copyright.

Access to Skills

117. Modern industrial practices require a modern workforce. Having the sovereign skills to design, build, repair, and supply certain equipment and systems[19] and integrate naval ships (and security sensitive equipment in all naval ships) is a key factor in the successful delivery of naval capability.

118. We acknowledge that ensuring that there are sufficient numbers of properly skilled workers across the sector will require continued investment and support from Industry. There are a variety of initiatives in place across the UK designed to support the development of skills. Some are the responsibility of the Devolved Administrations.

119. The focus on a market-led skills model also presents an opportunity. We published our post-16 skills plan,[20] which aims to build a dynamic, high-quality technical option, which is grounded in engagement with employers, fits soundly with the rest of the system and is responsive to the changing needs of the economy. The number of apprenticeships and graduates in the shipbuilding Industry and supply chain is primarily a matter for the companies concerned. To remain competitive and minimise their cost-base, Industry will determine what skills are needed to deliver programmes, and tune their workforce accordingly.

120. This approach optimises the future workforce to have available the right amount and type of skills required while minimising cost. We recognise the importance of apprentice and graduate recruitment, remain supportive of Industry's approach and have been impressed by the effort that Industry has made to grow their apprenticeship schemes.[21]

19 For national security reasons owing to freedom of action and operational advantage

20 https://www.gov.uk/government/publications/post-16-skills-plan-and-independent-report-on-technical-education

21 As an example, The Ministry of Defence is the largest provider of apprentices in the UK, enrolling 14,200 in 2014/15 http://researchbriefings.files.parliament.uk/documents/LLN-2016-0066/LLN-2016-0066.pdf

Figure 14: Through life learning opportunities

Advanced learner loans England only, but different funding is available if you want to study in Scotland, Northern Ireland or Wales.

- Advanced learner loans are available to people who are 19 and over, for certain courses at levels 3-6. More details on eligibility can be found at https://www.gov.uk/advanced-learner-loan/eligibility.

Further education maintenance loans These will initially be for students at Institutes of Technology and National Colleges only. See above for links to funding available in Scotland, Northern Ireland and Wales.

- We are introducing maintenance loans for adults undertaking higher-level technical education at level 4+ starting with learners attending National Colleges and Institutes of Technology.

Institutes of Technology - England only.

- The Government will be launching a call for proposals to establish Institutes of Technology later this year. Applicants will be able to bid into a £170m fund to establish institutions which specialise in delivering the higher level technical skills that employers need, in areas with evidence of a higher level skills gap and clear learner demand. Institutes of Technology should meet local economic needs for higher technical STEM skills by strengthening and growing provision to fill gaps in the market.

T Levels - England only.

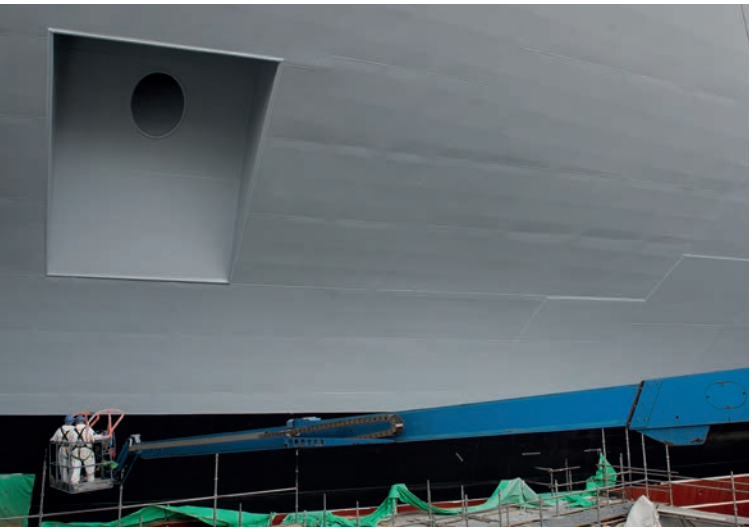
- Lord Sainsbury recommended 15 new technical education routes to skilled employment. There is significant investment rising to over half a billion pounds a year in technical education for 16-19 year-olds to deliver the most ambitious post-16 reforms since the introduction of A levels 70 years ago.
- This investment will increase hours of learning by over 50% for young people on the technical education routes, from 600 hours per year to over 900 hours per year, including a high-quality technical work placement which will ensure young people can secure the workplace behaviours and the practical skills.

For details on the devolved administrations' specific provision:

Northern Ireland: https://www.northernireland.gov.uk

Scotland: http://www.gov.scot/Topics/Education

Wales: http://gov.wales/topics/educationandskills



Painting the hull of HMS QUEEN ELIZABETH at Rosyth. Crown copyright.

121. There are a number of initiatives and schemes in place to support Industry in developing their workforces' skills base. We are moving from apprenticeship frameworks to new employer-designed apprenticeship standards so employers can see the value in the money they are investing through the levy.[22] There are many relevant apprenticeships for the shipbuilding Industry and the supply chain, such as "maritime fabricator" and "marine engineer", among others. The new apprenticeship standards are not just for young people entering their careers. They are applicable for all career points; i.e. they can be used for existing employees looking to re-skill or up-skill. The development of apprenticeship standards is an employer-led process and we therefore welcome proposals from employers to develop standards in maritime occupations not yet covered. As well as apprenticeships, Industry has access to a range of other initiatives (figure 14).

122. There is also a recognised need for cross-sector fertilisation. We will continue to offer work placements to Industry schemes, and encourage our apprentice and graduate schemes to work within Industry. Not only is this fundamental to our ability to act as an intelligent customer, but will ensure a healthy stream of talent is maintained across the sector.

123. The Ministry of Defence, the Department for Business, Energy and Industrial Strategy, Department for International Trade, Department for Transport, and Industry stakeholders will continue to work together to improve public procurement, increase trade and drive innovation in the maritime and adjacent sectors, while paying close attention to the demands that this places on skills and the workforce. We are committed to a long term programme of improvement and we will engage with the Devolved Administrations and the Ministerial Working Group for Maritime Growth in delivering it.

Taking this forward

124. The Industry-led Maritime Enterprise Working Group with the support of: the Department for Business, Energy and Industrial Strategy; the Ministry of Defence; and, the Society of Maritime Industries will take forward this challenging programme of work. Our priorities for this work will be:

- **Developing a collective in-depth understanding of the opportunity for the sector, both in the domestic and international market (commercial and defence).**
  - Market Analysis.
  - Addressing barriers to and identifying opportunities for exports.
  - Continuing to work with shipyards and the wider supply chain to develop and implement Global Competiveness Plans.
  - Identifying markets for diversification.

22 https://www.gov.uk/government/collections/apprenticeship-standards

- **Improving Productivity:**
  - Opportunities for innovation and future technology development.
  - Addressing barriers to investment (e.g. shipbuilding standards, longer term view of opportunity) and working with the supply chain to ensure they have adequate access to finance.
  - Considering the need for a virtual innovation centre.
  - Working with the entire maritime sector to ensure they have access to sufficient resources to maintain and grow their workforce.

125. The UK shipyards and the wider UK supply chain will play an important part in delivering new ships, and their systems, and in supporting and maintaining the Fleet. There is a clear opportunity for mutual benefit for the Royal Navy and for UK Industry. Royal Navy business will provide the opportunity for UK Industry to secure work, bringing employment and prosperity benefits across the county, and provide a springboard for exports.

Chapter 7

Implementation and reporting

The Ministry of Defence is committed to meeting the commitments outlined in this Strategy in order to lay the foundations for a modern and efficient shipbuilding enterprise capable of meeting the country's future defence and security needs.

- **Development of this Strategy is dependent on Government and Industry working together.**
- **We have accepted, and are beginning implementation of Sir John's recommendations relating to Government.**
- **We have appointed a Director who will be based in the Ministry of Defence Head Office to monitor and drive through the implementation of the commitments outlined in this strategy.**
- **Sir John Parker will review our progress and produce a report for the Secretary of State for Defence in around a year's time.**
- **We will refresh the Master Plan at each Strategic Defence and Security Review.**
- **In turn, we expect Industry to raise productivity and innovation and improve its competitiveness in the domestic and overseas markets, which will insulate shipyards from the peaks and troughs of Royal Navy business, bringing more sustained growth and prosperity in the regions where those businesses are based.**

124. We are immensely grateful to Sir John Parker for his thorough and detailed independent report to inform the UK National Shipbuilding Strategy. As set out in this Strategy, we have accepted Sir John's recommendations as they impact on Government. Annex A has more detailed comments against each of Sir John's recommendations. The Ministry of Defence, working with other Departments, will now begin implementation. We will refresh the public version of the Master Plan at each Strategic Defence and Security Review.

125. In order to drive this work forward and ensure that the Government is held to account, we have appointed a Director who will be based in the Ministry of Defence Head Office. This individual will provide support to the Sponsor organisation, chaired by the Deputy Chief of Defence Staff (Military Capability) and will routinely monitor and drive through the implementation of the commitments outlined in this strategy. They will, with the Department for Business, Energy and Industrial Strategy, work closely with Industry on the issues outlined in Chapter 6.

126. To ensure transparency in how we implement these changes, we have invited Sir John Parker to review our progress and produce a report for the Secretary of State for Defence in around a year's time. Sir John's independence will bring rigour and challenge to the process.

Annex A

Update against Sir John Parker's Recommendations

Number	Recommendation	Update
Governance		
1	The Government must drive cultural and governance changes in Defence that inject genuine pace into the procurement process with a clear grip over requirements, cost and time.	Accepted
2	There should be a new governance model of Sponsor and Client for all ship procurement linked to Industrial capacity (i.e. the Total Enterprise).	Accepted
3	The Ministry of Defence Sponsor should establish a transparent Master Plan for naval shipbuilding that lays out Defence's procurement plans for each series of naval ships over the next 30 years. This should be backed by "set and assured" capital budgets for each new series of ships. The Master Plan should be reviewed at each Strategic Defence and Security Review.	Accepted
4	The Ministry of Defence Sponsor should empower a Royal Navy-led Client Project Contracting Board to finalise design, cost and time for each class of ship procurement compatible with the Master Plan.	Accepted
5	Current Ministry of Defence governance processes and procedures should be simplified and aligned with the new governance recommendations 1 – 4 above, with a degree of financial freedom granted to ensure project pace is not hindered.	Accepted. Further work will be taken forward on this.
6	The Royal Navy-led Client Project Contracting Board should appoint a Project Director with extensive modern project management, commercial and technical experience. An integrated project office should be established with a multi-disciplined team drawn from Defence Equipment & Support, Navy Command and the lead shipyard etc. for each new class of ship procurement.	Accepted
7	The Ministry of Defence should take steps to ensure it is an intelligent client for warship design and build, to better understand the cost implications of naval standards, preferential engineering and bespoke equipment. This should enable proper trade-offs during development of the specification.	Accepted
8	In addition, an external technical consultant should provide constructive challenge during trade-offs on the inclusion of specification standards, innovation, the minimising of through life and operating costs, ensuring design has flexibility for export and facilitates modern methods of construction.	Accepted
9	Once these trade-offs have been agreed, the design specification should be frozen to allow the project to progress rapidly to contract signature. No further requirement changes should be allowed.	Accepted

Number	Recommendation	Update
Governance		
10	Contracts should be tautly drawn to properly incentivise Industry to invest in support of their "global competitiveness plan" and deliver to time, within the agreed cost envelope. This should provide a firm cost base and delivery to the milestones laid down in the Master Plan.	Accepted
11	Post contract management should be driven by a joint project management team (Defence Equipment & Support, Navy Command and the lead shipyard etc.) and a governing Project Delivery Board with an Independent Chairman that will foster discipline and overall effective control. A shipyard Trade Union (TU) representative could be appointed to attend the regular progress meetings of the Project Director and his team in order to enhance transparent communications. The post-contract Project Delivery Board is the final authority on any change contemplated post contract. None should be accepted that could impact the programme.	Accepted
12	The risk assessment process, led by the Client Project Contracting Board, should result in the allocation of risk provision partially to the Project Director and partially to the Client Project Contracting Board as the final authority on change.	Accepted
Type 31e		
13	The new Type 31e should not set out to be a complex and sophisticated warship based on traditional design approaches. It should be a modern and innovative design on a standard platform which should provide a menu of choice to support exports and beat the competition. It should be termed Type 31e. The "e" means that export flexibility is inbuilt, not a variant.	Accepted
14	The Type 31e should be prioritised, and act as a pathfinder project to pilot this new governance and virtual Shipbuilding Industry approach (see recommendation 19). It should be rapidly procured and placed into service as early as possible in the 2020s. If necessary, wider Government financial support should be provided to allow early build of the vessel. This will enable the new governance approach to be embedded in order to deliver medium to long-term savings in ship procurement.	Accepted. We have announced our plans to competitively procure the lighter and exportable Type 31e general purpose frigates. Pending a successful outcome to the procurement competition, we intend a 2023 in service date for the first vessel. Assuming that Industry can deliver a design and build programme for an exportable light frigate that meets Royal Navy requirements at the right price, within the allocation set aside in the Ministry of Defence's programme for this, we will firmly allocate the necessary funds at the Main Gate investment decision point, again, as a set and assured capital budget.

Number	Recommendation	Update
Type 31e		
15	Type 31e should be designed so that the price/capability point is an attractive export proposition and then it should be delivered to a hard target cost.	Accepted
16	The Ministry of Defence should determine the economic service life for a naval ship and then replace ships with new ships at that point, rather than operate longer and thus avoid expensive major refits. As a pathfinder, Type 31e should also be procured as a Royal Navy asset that stimulates exports including via sales from the Fleet.	Accepted
Export-led growth		
17	There should be a stronger national co-ordinated effort, including Government to Government trade deals, placed on the exports effort for ship sales, project management, design, equipment and sub-systems. This should be driven by the Department for International Trade, with support from the Foreign Office, Department for Business, Energy and Industrial Strategy, and Defence. A dedicated professional should be appointed to concentrate on the national effort.	Accepted
Vibrant UK maritime and defence supply chain sector		
18	Warships should be built in the UK for reasons of national security and the sustainment of National Sovereign capabilities.	Accepted
19	Industry and the Government, as part of their Industrial Strategy, should establish a virtual shipbuilding Industry model that harnesses the UK regional shipyards that have demonstrated their cost competitiveness and the capability to build fully outfitted "blocks". The intention should be to build these in series and in parallel to capture the learning curve productivity benefits.	Accepted, and will be tested during the Type 31e procurement.
20	The virtual shipbuilding construct should be used to build and integrate the Type 31e via a lead shipyard or alliance with sufficient financial and industrial capacity and capability to construct and to enter into the key sub contracts. Contracts should be taut, eliminate cost growth, and incentivise delivery while allowing reasonable profit.	Accepted. As for recommendation 19, the virtual shipbuilding model will be tested by the procurement competition for Type 31e. The recommendation about contracts is accepted without reservation.
21	UK Industry, utilising the virtual shipbuilding approach, should be able to compete effectively, against international competitors for RFA procurement (starting with the Fleet Solid Support programme), and should be strongly encouraged to put forward strong bids for this work.	Accepted
22	"Global competitiveness plans" should be developed by each shipyard, and the supply chain, with a focus on tight scrutiny of overheads and targeted investment in skills, modern working practices, digital systems, and modern tooling.	This is a matter for Industry. But Government strongly supports Industry in this endeavour.

Number	Recommendation	Update
Vibrant UK maritime and defence supply chain sector		
23	Industry and the Government should invest in a small, specialised virtual Innovation Centre to challenge existing naval standards and introduce new ones, and to force through advances in design, new materials including composites and manufacturing/ assembly methods that contribute to productivity improvements and cost of build. The leader of the Innovation Centre should oversee the "global competitiveness plans".	To be tested in the on-going work with Industry.
24	Companies will need to invest and embrace the full potential design and production benefits of digital engineering technology in the same way as world leading manufacturers, for example Jaguar Land-Rover in the car Industry and Meyer Werft (Germany) in the cruise ship Industry. These targeted investments should attract Government support. Local Enterprise Partnerships, Scottish Government and Invest Northern Ireland should be encouraged to support the transformation of the Industry.	This is a matter for Industry. Government will support wherever it can.
25	BAES has the breadth of technical and engineering talent and the most recent experience of building sophisticated warships. They should build the Type 26 series with adherence to schedules supported, if required, by the virtual shipbuilding yards via block build. BAES' immediate operational priority should be to use the build of Type 26 to maximise productivity in order to be competitive in future and win sophisticated warship, and other naval ship, design, build and systems engineering work for the Royal Navy and exports customers. Their "global competiveness plan" should focus on capturing the industrialisation benefits of digital engineering and ensuring, with the TUs, flexible skills in the workforce that are compatible with what can be achieved in a digitally engineered driven production world.	Contract for Type 26 placed with BAE Systems. The other issues are for the company to consider.
26	There is no precedent for building two "first of class" Royal Navy frigates in one location in the UK. Type 26 is a critical project for the Royal Navy and the Nation. Type 31e is urgently required to maintain Royal Navy frigate fleet numbers and to establish a UK exportable light frigate. Against this background risks need to be assessed and evaluated in a responsible way by all stakeholders. A separate lead shipyard or alliance appears to be the best way forward for Type 31e to minimise overall risk. Regardless of choice, BAES would remain in a position to compete for Type 31e work on combat systems, design support and in block build if capacity is available.	This will be tested in the procurement of Type 31e.
27	Given the export potential of design, technical engineering and consultancy services, Industry should consider combining their Maritime Design and Combat Systems Engineering resources into separate subsidiary Companies to make these more visible to the world.	This is an industrial and commercial decision for the shipyards to take.

Number	Recommendation	Update
Vibrant UK maritime and defence supply chain sector		
28	Industry and the Government should recognise the importance of the UK maritime supply chain as a provider of specialist equipment and services, through the opportunities offered by a series of Type 31es which further enhances export opportunities given Royal Navy selection and endorsement of UK (or UK-based) equipment manufacturers (thereby stimulating new product and manufacturing investment).	Accepted
29	To address future affordability challenges, the Ministry of Defence should consider conversion of commercial shipping to meet certain support shipping needs (as was the case with RFA Argus), hire commercial ships to meet low threat tasking and for other duties, such as minesweeping through using frigate or offshore patrol vessel platforms to host capabilities, including unmanned vehicles, rather than procuring bespoke ships.	Accepted
Socio-economic benefit		
30	Industry and the Government should, with the Trades Unions, support the creation and sustainment of high skilled jobs along with modern apprenticeships, and expansion of Technician and Graduate recruitment, to drive performance, particularly via digital engineering, and to address the age profile of the current workforce at the shipyards.	Accepted. This will be a key issue in on-going engagement with Industry.
31	The Ministry of Defence should seek to better understand the socio-economic benefit of awarding work to UK shipyards, or UK suppliers, and should give this more weight in non-warship building and all ship outfitting procurement decisions.	Accepted
32	The Defence Growth Partnership, as part of the Government's sectorial Defence Industrial Strategy should, bearing in mind the demands on busy Executives' time, take the lead and work with the extensive network of Industry and Industry/Government discussion and lobbying forums in order to galvanise the maximum national effort on the implementation of this strategy.	Accepted. A Maritime Enterprise Working Group will be established to undertake a long term programme of improvement. It will be led by an Industry Champion with the support of the Society of Maritime Industries. The Group's membership will include Industry, government and academia. It will report to the Ministerial Working Group for Maritime Growth.
Implementation		
33	Work will need to be commissioned to assess the detailed effects, if any, that these recommendations may have on naval ship support solutions.	Accepted
34	The Government should appoint a senior civil servant to ensure that the accepted recommendations are embedded within "the Total Enterprise" and to place the Secretary of State for Defence in a position to report on delivery against these recommendations annually.	Accepted. We have also asked Sir John Parker to review our progress and produce a report for the Secretary of State for Defence in around a year's time.