



Ministry
of Defence

Mobilising, Modernising & Transforming Defence

A report on the Modernising
Defence Programme



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Defence Secretary's Foreword



The first responsibility of government is defending our country and ensuring the security of our people at home and overseas.

This government has invested heavily in strengthening the UK's Armed Forces to enable them to perform that task. We are making excellent progress with delivering the plans set out in the 2015 Strategic Defence and Security Review (SDSR). New policies are taking root and major new capabilities are entering service, underpinned by a growing defence budget. All the while our Armed Forces remain extensively engaged on operations and other vital standing tasks at home and overseas, working closely with our allies and partners, particularly in NATO.

The international security context has become darker and more dangerous since 2015. As the world changes, so must our plans. So, in January, I launched the Modernising Defence Programme (MDP) to examine how we should respond. We will now:

- Mobilise defence to make the most of what we already have, making our current force more lethal and better able to protect our security. We will work still more closely with our allies and partners to stay ahead of our adversaries, and we will integrate defence and broader national security more effectively. We will invest to improve the readiness and availability of a range of key defence platforms, including: major warships, our attack submarines and helicopters. We will be reprioritising within the current defence programme to increase weapon stockpiles and spares and to improve the combat effectiveness of capabilities already in

service. We are accelerating work to ensure the resilience of our defence systems and capabilities. And we will improve our ability to detect covert attacks, and to attribute responsibility when our adversaries try to disguise or deny their actions.

- Modernise defence and the Armed Forces to deliver national and international security more smartly and effectively, adapting how we operate, becoming more innovative and better at exploiting the opportunities offered by modern technology to ensure we retain strategic military advantage. In the immediate term we will be investing to counter growing threats to the security of our nuclear deterrent, improving our ability to protect our critical national infrastructure, and working with other departments and agencies to strengthen our defensive and offensive cyber capabilities. We will be investing in a range of new 'Spearhead' innovation programmes to apply cutting-edge technologies to contemporary challenges. And we will be integrating more fully the newer domains of cyberspace and space. To drive innovation and transformation of military capability I am launching a new Defence Transformation Fund, ring-fencing £160 million of our budget in its first year, and as new ideas are generated I will look to make a further £340 million available as part of the Spending Review.
- Transform the way we do business to maintain momentum on strengthening and modernising defence. We need to create financial headroom for modernisation and to sustain strategic advantage in a fast-

changing world by using modern business practices. We are already implementing a number of important changes to how the MOD is organised and is operating, such as strengthening our Head Office and accelerating transformation of the Defence Equipment and Support organisation. We are reviewing how to strengthen Joint Forces Command, including the better integration of offensive cyber with the rest of Government. Staying ahead of our adversaries and competitors in future will require smarter, better-informed decision making, which will be at the heart of our transformation.

The government announced a further £1 billion for defence at the Budget last month, in addition to some £800 million already agreed this year, so a total of £1.8 billion that Defence will benefit from over this year and next. This enables us to proceed with this ambitious programme of change and improvement.

This report describes in more detail the capability investments and policy approaches behind these headlines. Our achievements under the MDP have made Defence stronger. There will be more work to be done as we move towards next year's Spending Review. I will continue to work with the Prime Minister, the Chancellor and the National Security Council to explore how these aims should be fulfilled alongside our other national security priorities.

The MDP has been an ambitious programme of work, ensuring that the UK remains the strongest defence player in Europe, with a full spectrum of nuclear, conventional and cyber capabilities, and global reach and ambition.

A handwritten signature in black ink, appearing to read 'Gavin Williamson', with a long horizontal line extending to the right.

The Rt Hon Gavin Williamson CBE MP
Secretary of State for Defence



Introduction

The Strategic Defence and Security Review of 2015 (SDSR 15) set a new headmark for Defence: Joint Force 2025, equipped with a range of new capabilities, and better able to take on a broader range of missions to meet national security challenges. It also introduced important new policies on our international approach, on Service personnel, on innovation, and on Defence's contribution to national prosperity.

We have made strong progress with turning our 2015 plans into reality, but at the same time the world has become more uncertain, volatile and dangerous.

The direction set in 2015 was the right one. But in the light of these growing challenges the National Security Capability Review (NSCR) was commissioned to identify how best we can apply our national security apparatus, including through a new approach to coordinating our unique mix of security, economic and influence capabilities: the Fusion Doctrine.

The Modernising Defence Programme continued the Defence strand of the NSCR, aiming to further strengthen and modernise Defence in response to the more complex challenges that we now face. We have reinforced our Armed Forces, and paved the way for bolder and more substantial progress to be made in the year ahead.

This report describes how our progress in implementing SDSR 15 and our achievements under the Modernising Defence Programme have made Defence stronger. It sets out where we need to build on our plans and policies to maintain our competitive advantage.

It describes how we intend to invest the significant additional sums the Autumn Budget provided to Defence this year and next, in addition to the uplift agreed in 2015.

It sets out a vision for the further adaptation and modernisation that we will explore alongside other national security priorities in next year's Spending Review.

It describes how we intend significantly to transform Defence to deliver these ambitious plans.



Progress since 2015 and under the Modernising Defence Programme

The 2015 SDSR put UK Defence firmly on the right path. It established our vision for Joint Force 2025, to equip us with a range of new and enhanced capabilities that offer us choice, agility and global reach. It established a central 'planning assumption' for Defence, that if called upon by Government the Armed Forces should be able to deploy a highly capable expeditionary force of around 50,000, including:

- A maritime task group centred on a Queen Elizabeth Class aircraft carrier with F35 Lightning aircraft
- A land division with three brigades including a new Strike Force
- An air group of combat, transport and surveillance aircraft
- A Special Forces task group.

This planning assumption remains unchanged, and we have made good progress in turning it into reality.

In the last year, our Armed Forces have demonstrated their growing capability, engaged globally, and supported the prosperity of the UK

The Royal Navy has increased its mass and points of presence around the world. F35 Lightning aircraft are now flying from the deck of the first of our two new aircraft carriers, HMS Queen Elizabeth. Her time on the east coast of the US demonstrated the unparalleled degree of interoperability between our two great nations. The build of her sister ship, HMS Prince of Wales, is nearing completion. Steel has been cut on

HMS Glasgow, the first Type 26 frigate. The recent announcement of the extension of Batch 1 Offshore Patrol Vessels (OPVs) has ensured our Royal Navy can continue to protect our home waters, and fulfil duties from fishery protection to anti-smuggling and counter-terrorism. And HMS Forth, the first of the new River class OPVs, is ready to take up duties. Two of our four Tide class tankers have entered operational service, with the other two being customised ahead of entering operational service next year. The Dreadnought programme, the ultimate guarantee of our security and one of the most complex engineering projects ever undertaken by the Government and industry – remains on track to deliver our new fleet of ballistic missile submarines from the early 2030s.

In April, by opening the UK Naval Support Facility at Mina Salman port in Bahrain, we established an enduring, self-sufficient hub to support UK operations in the Gulf, Red Sea and Indian Ocean. In the Pacific, HMS Sutherland, HMS Argyll and HMS Albion have shown the UK's resolve to work with our regional partners in support of peace and security, promoting our interests across the world.

We have taken steps to forward base the Army, enhancing our global posture. The UK's agreement to retain key facilities in Germany, announced in September, will support critical NATO infrastructure, as well as providing the UK Army with a vital forward base on mainland Europe. And, the first of the Army's new family of Ajax armoured vehicles will enter service in 2020. In the same year, the Army will start to receive a new fleet of 50 Apache attack helicopters.



UK forces take part in NATO's Exercise Trident Juncture, along with 30 other nations

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The Royal Air Force has continued to innovate, and has celebrated a proud past in the year of RAF100. Our new Combat Air Strategy showed we are ready for the future of the RAF, it seeks to maximise economic benefits, while keeping the UK at the leading edge of combat aircraft development. With the arrival of the first tranche of fifth generation jets, the UK has formally stood up its first operational F35 Lightning force – 617 Squadron. We will take delivery of our new P-8 Poseidon Maritime Patrol Aircraft next year, equipped with sensors and weapons to detect and destroy submarines.

Progress has also been made in cyber and space, as the changing character of warfare makes both domains increasingly important. Through the National Offensive Cyber Programme, Defence has worked closely with GCHQ to build a dedicated capability to counter-attack in cyberspace. In March, the RAF launched its first ever satellite – Carbonite-II – to

deliver high-quality imagery and full-motion colour video from space. It is also helping the MOD and the RAF to understand the potential operational and cost benefits that could be offered in the future by a constellation of small satellites.

We have reinforced the UK's position as a leading voice in NATO and European security. NATO is growing in strength. As we leave the European Union, the UK will continue to protect the Euro-Atlantic region through our leading role in the Alliance. Non-US allies have increased spending by tens of billions of dollars since agreeing the Defence Investment Pledge at the 2014 Wales Summit. Burden-sharing is improving, though there is further progress to be made. More allies are meeting NATO's 2 per cent spending guideline. A growing number have developed plans to meet this commitment in the coming years. We will continue to encourage others to meet the guideline.

In Eastern Europe, the Enhanced Forward Presence makes visible NATO's unity and resolve. The US has re-established its Second Fleet in Norfolk, Virginia, in response to rising tensions in the Atlantic Ocean. NATO's new Readiness Initiative will further enable the alliance to respond quickly to threats, arriving at flash points fit to fight. In October, Exercise Trident Juncture replicated an Article V scenario with over 40,000 personnel from 31 nations: the largest collective exercise NATO has conducted in over a decade.

The Joint Expeditionary Force has reached full operating capability. It demonstrated its readiness in May 2018 as its nine member nations took part in Exercise Joint Warrior on Salisbury Plain. It can now deploy over 10,000 personnel in rapid response to challenges anywhere in the globe, from humanitarian assistance to high intensity combat operations.

In the last year, our Armed Forces have led the line for Global Britain, tackling our adversaries abroad to protect our security at home and nurturing enduring relationships with our allies and partners. As one of the principal members of the Global Coalition against Daesh, the UK has made a major contribution to degrading Daesh and their so-called caliphate in Syria and Iraq. In October, in the Gulf, over 5,500 UK troops joined their Omani counterparts in Exercise Saif Sareea 3. The largest combined exercise of its kind for 17 years, it demonstrated our ability to work seamlessly alongside a key regional partner and to project power at distance. In Africa we continue to assist Nigeria in the fight against Boko Haram, and to support counter-terror operations in Mali. We continue to contribute to UN and African Union peacekeeping missions, and to build strategic partnerships across the continent, including in support of the Women, Peace and Security agenda.

Finally, security and prosperity go hand-in-hand – Defence delivers both. Alongside British industry, we have continued to make a major contribution to UK prosperity and the objectives of the Government's Industrial Strategy. The UK's defence sector sustains 140,000 direct jobs throughout the UK. Our National Shipbuilding Strategy has secured 4,000 jobs.

We have made landmark international deals. In December 2017, Qatar agreed a £5 billion deal for Typhoon. In June, BAE Systems won a £20 billion contract with the Australian Government to build nine frigates based on the Type 26 design. This is the biggest Naval defence deal of the decade anywhere in the world. Canada has also selected the Type 26 as the preferred design for their future frigate programme. And the designation of the UK as a global repair hub for F35 will generate hundreds of millions of pounds of revenue for the UK defence industry.

This reinforces the role that Defence plays in the UK economy. Our refreshed Defence Industrial Policy set out our desire to create an environment that encourages a thriving and globally competitive UK defence sector as part of our wider industrial base. Philip Dunne's prosperity report offered recommendations on how we can grow this contribution even further. We will respond to his recommendations in due course.

The threat

We have good reasons to be proud of the achievements of UK Defence since 2015. But we also have cause to be vigilant.

The 2015 National Security Strategy and SDSR identified four challenges likely to drive UK security priorities:

- increased terrorism, extremism and instability
- resurgence of state-based threats and competition
- the impact of technology (especially cyber threats)
- the erosion of the rules-based international order.

This year's National Security Capability Review (NSCR) found that these challenges have become more complex, intertwined and dangerous since 2015, and had developed at a faster pace than we anticipated. The MDP has put us on the best footing to be able to meet these threats.

After almost three decades of relative international stability, the world has now re-entered a period of persistent and intense state competition. Across Asia, Eastern Europe and the Middle East, the level of overt and covert state aggression has grown in recent years. Our adversaries and competitors have become adept at exploiting the seams between peace and war, engaging in what we call 'hostile state activity'. Cyber-attacks, assassination, disinformation, theft of intellectual property, espionage and military intimidation are all being used more regularly and more ruthlessly. The result is an increased risk of miscalculation, potentially

leading to escalation and the chance of state-on-state confrontation. Significant pressure is being placed on the rules-based international system that underpins our prosperity and security, threatening to distort or undermine it.

Russia in particular is making extensive use of these methods. The use of the 'Novichok' nerve agent on the streets of Salisbury was appalling and unacceptable. Kremlin information operations pollute the public conversation in democratic nations across the world. The GRU – Russia's military intelligence service – has been caught in a campaign of reckless and indiscriminate cyber-attacks. It targets business, media and people going about their daily lives, as well as international institutions like the Organisation for the Prohibition of Chemical Weapons. Russia provides separatists in Ukraine with advanced technology, while it attempts to intimidate and coerce the government with military manoeuvres.

Meanwhile, technology, especially digital technology, is developing at a breath-taking pace. Russia's major military modernisation programme aims to blunt our strategic and operational edge, including the development and fielding of new missiles with which to threaten or intimidate our NATO allies, violating treaty obligations. Other sophisticated military powers – particularly China – are investing heavily in new capabilities, as well as more conventional ones.

Proliferation to other actors has also increased, meaning that capabilities once only accessible to the world's most advanced militaries are now pervasive. State-sponsored proxy-forces have demonstrated the capability to use anti-ship missiles, armoured vehicles or armed drones against western and other forces.



The Army deploy in support of civil authorities in Salisbury

© Cpl Pete Brown RLC

And the character of warfare is fundamentally changing. Advances in information and communications technology have drastically increased the speed at which attacks can unfold. The newer domains of warfare – cyberspace and space – continue to grow in significance, and provide our competitors greater scope for hostile action. Areas such as artificial intelligence, autonomy, directed energy weapons (such as lasers) and warheads that can manoeuvre at hypersonic speeds provide new challenges and opportunities.

We expect this troubled period to endure. States will continue to engage in aggressive competition unless deterred from doing so. Technologies – established and novel – will continue to evolve at great speed. We must act to maintain our competitive advantage in the immediate term and for the decades to come.



Mobilise, Modernise, Transform

Throughout the modern era, the UK has upheld the principle of deterrence, delivered through a joint force with a full range of nuclear and conventional capabilities, acting in concert with our allies, partners, and the rest of government. This remains the right strategy. But we must be ready to adapt how we pursue it, as changes in the global security situation demand. We will now prioritise three broad aims, supported in the immediate-term by the additional £1.8 billion investment in Defence announced at the 2018 Autumn Budget.

We will mobilise, making more of what we already have to ensure our Armed Forces are best placed to protect our security

Defence already has a world-leading array of capabilities. We must make the most effective use of them to meet the increased intensity and span of threats.

In the first instance, we will invest to improve the readiness and availability of a range of key Defence platforms: major warships, our attack submarines, helicopters and a range of Intelligence, Surveillance, Target Acquisition and Reconnaissance platforms. In addition, we will harness routine training and deployments to demonstrate our strength and intent, supporting allies and influencing or deterring potential adversaries. This will complement our commitment to the NATO Readiness Initiative.

We will also ensure that, should deterrence fail, we are well prepared for conflict. In part, we will do so by re-prioritising the current Defence programme to increase weapon stockpiles and

spares, improving the combat effectiveness of capabilities currently in service. We will harden our systems and capabilities against the newer threats we face, ensuring their resilience.

We will become better at deterring our adversaries from hostile state activity by improving our ability to detect covert attacks and attribute responsibility when our adversaries attempt to deny it. This requires an integrated approach across government. Defence will focus in particular on Chemical, Biological, Radiological and Nuclear (CBRN) threats, and improving how we protect our information networks from cyber-attack.

We will modernise, embracing new technologies and assuring our competitive edge over our adversaries

Our adversaries and competitors are accelerating the development of new capabilities, and developing strategies that incorporate new technology and equipment. To maintain freedom of action and sustain deterrence, we must keep pace, rapidly incorporating the newer domains of space and cyberspace. We must conceive of our joint force as consisting of five domains, space, cyberspace, land, sea and air - rather than the traditional three.

New technologies can become obsolescent rapidly, so we must modernise intelligently. We will pursue a strategy of targeted modernisation that prioritises a number of key areas. In the immediate term, we will invest to counter growing threats to the security of our nuclear deterrent, ensuring it maintains continuous at-sea



Zephyr-S: The high altitude pseudo-satellite is an example of innovative British engineering

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deterrence in the years ahead, and supports close collaboration with the US. We will improve our ability to protect our critical national infrastructure, and work with other departments and the security agencies – particularly GCHQ – to strengthen further our offensive cyber capabilities.

The MDP has highlighted the importance of driving innovation through Defence. So, a new Transformation Fund will be launched next year. It will ring-fence £160 million of our budget to create a fund available for innovative new military capability, with the potential for a further £340 million to be made available as part of the 2019 Spending Review. This fund will make sure our Armed Forces are investing in the latest cutting edge capability so we remain one step ahead of our adversaries.

More generally, we will focus on gaining 'Information Advantage' as the character of warfare changes. The effective collection, analysis and dissemination of vast quantities of data will enable us to understand how our adversaries are thinking, how they may choose

to act against us, and how we can act quickly to deter or defeat them. We are pursuing modernisation in areas like artificial intelligence, machine-learning, man-machine teaming and automation to deliver the disruptive effects we need in this regard.

We will transform, radically changing the way we do business and staying ahead of emerging threats

To achieve these goals, we will need to improve markedly the way we run Defence. We must become a more agile organisation, capable of continuous and timely adaptation, unencumbered by unwieldy process and structures. We are already implementing important changes to how MOD is organised and operates. We have strengthened MOD's Head Office so that it exercises a stronger grip over the wider Department, and we are accelerating transformation of the Defence Equipment and Support organisation.

Six years ago, we created Joint Forces Command (JFC) to work alongside the single services. We are now reviewing JFC to improve how we operate in an era of constant competition. A stronger JFC will help us out-think our adversaries and to innovate and operate faster. It will integrate and orchestrate our strategic capabilities within the Armed Forces, across Government and with our allies. The stronger JFC will better position Defence for future conflict, galvanising our ability to think, train and operate. And it will improve the integration of offensive cyber across our Armed Forces and the rest of Government, providing advantage in the new information-rich environment. We will provide further details next year.

We need both to create some financial headroom for modernisation, and to reinforce our ability to sustain strategic advantage in a fast-changing world. To do so, we will need to embrace modern business practices and establish a culture that can nurture innovation in Defence. This also applies to our relationship with industry, which we need to become leaner, fitter, and willing to share risk more fully with MOD. Based on our work to date, we believe that we can achieve over the next decade the very demanding efficiency targets we were set in 2015, including through investment in a programme of digitally enabled transformation. We have already saved almost £5 billion in efficiencies over the last five years – nearly 70% of our target.

Looking ahead, conflict and competition will increasingly hinge on smarter, better informed decision making. We are building a Strategic Net Assessment capability for this purpose, run by a permanent Net Assessment Unit. Strategic Net Assessment looks across all dimensions of military competition to assess how the capability choices of both friends and foes may play out over the short, medium and long-term. Its conclusions can be used to develop more nuanced and better-informed defence strategy, so we can better anticipate our adversaries' actions and counter them more effectively. To test the potential of the capability, we undertook a pilot study into the military strategic balance in the High North, and are developing an Arctic Strategy for Defence as a consequence.

In parallel, we will create a Defence Policy Board of external experts, to bring fresh perspectives and challenge as the department makes policy and strategy. Combined with a reorganisation that has strengthened the department's Security Policy and Operations area and sharpened the strategy area, these steps will help us to improve our performance in this crucial area of our business.



Updating our key policies through the MDP

A number of key policies will sit at the heart of our efforts to mobilise, modernise and transform

Contribution to the Fusion Doctrine

Our adversaries are using a wide range of non-military methods to target UK interests. Defence is working ever more closely with our intelligence agencies and the National Crime Agency to deter and disrupt hostile state activity, and to deal with threats posed by organised crime. At home and overseas, we support the Home Office in delivering the Government's counter-terrorism strategy, CONTEST. We provide specialist manpower to help deal with domestic contingencies, from flooding and severe weather to chemical weapons attacks.

Overseas, we support the efforts of the Foreign Office, Department for International Development and Department for International Trade in delivering our national security and prosperity objectives.

The UK is one of very few countries able to mobilise a full spectrum of security, economic and influence capabilities. Defence will extend our contribution to a collective approach to national security, pursuing tighter, routine integration with other departments. This will require a cultural change that we aim to catalyse by refining our processes for crisis response and whole-of-Government campaigns. We are currently working with other departments to identify and exploit where Defence can use its assets, resources and technology to further support the delivery of wider Government objectives.

The three National Security Objectives and the eight Armed Forces missions set out in SDSR15 have proven a good framework to describe what Defence needs to achieve at the strategic level.

To translate those strategic goals into effective Defence planning, and to help integrate the work of the Armed Forces more effectively across Government, we have worked closely with other departments to catalogue the full range of tasks that Defence fulfils. This framework, shown on the next page, represents the totality of our contribution to the Fusion Doctrine, and will allow Defence to prioritise activity and capability with cross-Government needs in mind now and in the future. This will allow Defence to get more return for our efforts, and to help others get more return for theirs.

International by Design

Our global alliances and partnerships are one of our greatest strategic assets. They make the UK uniquely well-placed to protect and promote freedom, democracy and the rule of law across the globe. Defence plays a fundamental role in that global network, extending our influence and supporting UK prosperity. In SDSR15 we said that we intended to make Defence more 'international by design', and the work of the MDP has delivered on this.

We have made significant progress, and will now develop this approach further. We will align our strategic plans more closely with those of our allies and partners. We will exploit opportunities to train and act as part of combined formations, and develop combined capabilities. We will make more use of burden sharing with allies, where doing so allows us to maximise our collective efforts without a loss of sovereign choice. We are adjusting overseas training and deployments, increasing our global points of presence and ensuring that the Joint Force is better prepared to operate in potential flash points across the world.

The 25 tasks that Defence fulfils to help deliver the National Security Objectives

NSO 1 - PROTECT our people

Provide the Nuclear Deterrent
(continuous at sea deterrent & Nuclear Enterprise)

Deter and defend against threats to the UK
(inc. landmass, airspace, territorial waters,
exclusive economic zone, space)

Deter and defend against threats to UK bases
and territories overseas

Contribute to the resilience of the UK by supporting
civil contingency operations and the protection of
Defence's critical national infrastructure and cyber space

Hold forces at readiness to support and
conduct counter terrorism operations in the UK

Conduct overseas Hostage Rescue missions

Contribute to the resilience of the UK by supporting
the protection of non-Defence critical national
infrastructure and cyber space

Conduct overseas strike operations, unilaterally
or as part of a coalition/alliance

Conduct major combat operations under
NATO Article V

Conduct operations to restore peace and stability,
unilaterally or as part of a coalition/alliance

Conduct non-Article V combat operations unilaterally
or as framework nation or part of a coalition/alliance

Support non-combatant evacuation operations,
Humanitarian Assistance and Disaster Relief operations

Direct the Defence Enterprise and generate,
sustain and enable the Force

NSO 2 - PROJECT our global influence

Contribute to understanding the global security
environment through forward presence and
intelligence gathering

Resource NATO staff posts and the highest priority NATO
force contributions (including Command and Control)

Resource core staff posts within the Global Defence
Network, including Defence Attaches, Advisors,
Loan Service personnel, key Exchange posts
and British Defence Staffs

Contribute to the wider Global Defence Network and
non-NATO international posts, including other
Exchange posts, Liaison Officers, embeds
and other cross-Government partners

Provide force elements for NATO and other
reassurance measures and exercises

Conduct capacity building with partners, allies and
multinational organisations in support of UK strategy

NSO 3 - PROMOTE our prosperity

Conduct and encourage innovative research and
development (R&D) to enable the UK to gain operational
advantage and access to allies' R&D

Maximise Defence contribution to the wider economy
including employment and skills

Maximise Defence contribution to inward investment

Promote Defence and security exports, lead strategic
campaigns, and increase global opportunities for UK
Defence and security industry

Shape and strengthen the competitiveness of UK
Defence Industry and successfully collaborate overseas

Contribute to the fabric of the nation including the Union



UK and Estonian troops exercise alongside each other as part of the Joint Expeditionary Force © Crown copyright

This starts with NATO, the strongest military alliance in the world, and the cornerstone of UK Defence policy and Euro-Atlantic security. The UK is a leader in NATO and continues to commit our nuclear deterrent to the defence of NATO. At the July Summit, we made a set of steadfast new pledges. We will sustain our commitment to the Enhanced Forward Presence in Eastern Europe for as long as it is needed. We will continue to contribute to NATO's Air Policing missions in Romania, the Baltics and Iceland, and to contribute to the NATO Response Force every year. We will lend Army expertise to NATO capacity building activities in the South. This year we announced that we are committing more than 100 additional personnel to strengthen NATO's command structure against future challenges. And, we have also committed 400 additional troops to Afghanistan as part of NATO. We will play our full part in delivering the new Readiness Initiative, which commits the Alliance to having 30 battalions, 30 air squadrons, and 30 naval combat vessels ready to use within 30 days by 2020.

We will deepen our relationships with the US and France, our closest allies. Both nations conducted defence reviews in 2017, and reached conclusions closely aligned with those contained in this document. US-UK cooperation on our aircraft carrier and the F35 Lightning and P-8 programmes will extend our ability to operate together seamlessly. We will look for further such opportunities to maximise the value of our mutual investments. With France, we have agreed to develop our Combined Joint Expeditionary Force so that by 2020 its crisis management capability is strengthened even further. We have increased our support to French counter-terrorism operations in the Sahel. After we have exited the European Union, we will continue to bring peace, stability and security to Europe by pursuing similar measures with other priority partners, such as Germany, as part of the Joint Expeditionary Force, and through our future security partnership with the EU.

The Pacific region is becoming ever more important to the UK, with growing trade links and regional security issues that have global implications. We will increase our presence in the region, through our bilateral relationships and the Five Eyes and Five Power Defence Arrangements groups. Together, we will stand up for the global rules, including freedom of navigation, that underpin our security and prosperity as an island trading nation.

In the Middle East and North Africa we have well-established partnerships and alliances, deep cultural ties and significant trading relationships that we should enhance. Through our teams of attachés and military advisers we will provide military education, advice and training to our partners – particularly the Gulf Cooperation Council states – to develop their capacity to counter threats. In Sub-Saharan Africa our presence in 40 African countries gives us a platform to help develop the institutions that will deliver peace and security in the region. We will continue to extend our offer of training and mentoring through the British Peace Support Team.

To make all of this possible, we will continue to invest in, and grow, our global network of Defence personnel, and the world-beating military education and training we can offer in the UK and overseas. The presence of our network in countries across the world enables us to develop strategic insight, project our influence and shape events. This network has grown significantly since SDSR15, and we are continuing to grow it in NATO nations, in the Western Balkans, and across the regions discussed above. We are establishing an international civilian defence cadre to build on and complement our military capacity-building capability.

Innovation and technology-led modernisation

We are investing more effort in identifying and pursuing opportunities for innovation and the rapid and effective exploitation of novel ideas and technologies. Doing so is crucial to maintaining our military edge, ensuring future relevance and the ability to operate alongside allies and partners. It can also deliver more affordable capabilities and extend the global reach of UK industry.

We need to position technology as a core element of our thinking, so that a shared appreciation of the current and likely future state of technology can guide our strategy, investment and plans across Defence. By adopting a more coordinated approach to work on ‘families’ of technology (for example: artificial intelligence and machine learning; nanotechnology; man-machine teaming), we will be able to exploit opportunities for modernisation aggressively and accept higher risk in pursuing novel ideas, driving operational advantage and overall affordability.

Since the launch of the Advantage through Innovation initiative in 2016, we have made good progress towards our goal of making Defence more ‘innovative by instinct’. We will now strengthen our network of innovation hubs across Defence, and use the Defence and Security Accelerator unit to work with the private sector, improving our ability to take new technology from concept to deployment. Across Defence we will provide incentives to reward innovative behaviours to build a culture that pursues novel ideas.

This year, Defence’s Innovation Fund has put £20 million towards a large number of promising projects in areas as diverse as unmanned air systems, virtual reality training, and an enhanced digital communications network for the Future Commando Force. Next financial year, the fund will grow to £50 million, allowing us to increase the scope, ambition and value of the projects that it supports.

We will also launch a range of new ‘Spearhead’ innovation programmes. To exploit cutting-edge technologies at speed, the programmes will emphasise user-led experimentation and allow greater scope for risk-taking. Examples of such programmes include: exploring how better to combat sub-surface threats to our submarines, using autonomous systems, networked sensors, artificial intelligence and machine learning; improving command and control in the Land Environment; using a new ‘Defence Information Range’ to test how artificial intelligence and machine learning can enhance decision-making, understanding and situational awareness; and combining novel software and hardware to improve the UK’s ability to analyse data, distribute information, and task our intelligence, surveillance and reconnaissance assets.

People

People are fundamental to Defence's continued success. We will now develop a comprehensive strategy to improve how we recruit and retain talent, while meeting the expectations of the first truly digital generation.

Given the accelerating changes in technology, the character of warfare and the world of work, we now plan to strengthen the performance of the Whole Force: accessing the talents of our Regulars, Reserves, Civil Service and industry partners more effectively. This will have implications for the size and shape of our future workforce, which will be worked through in detail. The outcomes of that work will therefore supersede the civilian workforce assumptions made in SDSR15.

We will build on work since 2015, notably the Armed Forces (Flexible Working) Act. The Flexible Working Act comes into effect in 2019, and gives personnel the option to serve part-time for agreed periods. It provides more choice over the way they serve, making it easier to raise children, care for elderly relatives or look after an ill family member. These measures will help us to retain personnel who have been trained and have gained important experience, particularly on operations, rather than having them leave for civilian life.

Our new strategy will continue to adapt our offer so that it reflects the expectations of a modern workforce. We will communicate more effectively about our work, improving the nation's awareness of the role, opportunities, value, respect and relevance of a career in Defence. We will continue to work towards a workforce more reflective of UK society. This will build on recent advances, including the opening of close combat infantry roles to women, and an upward trend in the recruitment of Black, Asian and Minority Ethnic personnel.

We need to maintain specialist skills that are not usually found in the Regular Forces. Therefore, our Reserve Forces remain a key part of our national flexibility and resilience. We need to attract more high-end skills into Defence by providing unique opportunities and a competitive employment offer. We need to work with industry to ensure key skills are more available, especially in artificial intelligence, data analytics, cyberspace, space and other new technology areas.

Conclusion

Our achievements under the MDP have made Defence stronger. Supported by the additional £1.8 billion funding announced in the Autumn Budget, we have established a set of policy approaches and capability investments that will help to keep us on track to deliver the right UK Defence for the coming decade. We have laid the groundwork to become an even more Global Britain. We have earmarked funding to drive the development of innovative new capabilities. We have established a plan to make our business fit to face the challenges ahead, including integrating offensive cyber better into Defence and the rest of Government. We have taken the opportunity to forward base the Army, increase the points of presence of the Royal Navy around the world, the Royal Air Force has celebrated its past whilst investing in its future capabilities, and we have innovated in space and cyber.

But there is more work to be done. We need to explore the opportunities to increase the lethality, mass and reach of our Armed Forces, so that we have the right capabilities, in the right numbers and forward based in the right locations to protect the rules-based international order and the security and prosperity it provides. As we move towards next year's Spending Review, we must sustain this momentum if we are to realise our long-term goals. The pace of change in the strategic context and the rate at which technology is developing means that we will need to keep our policy and capability plans under more regular review. The Defence Secretary will continue to work with the Prime Minister, the Chancellor and the National Security Council to explore how these aims should be fulfilled alongside our other national security priorities.

