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Ukraine: a wake-up call

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Q in footnotes refers to a question in oral evidence.

SUMMARY

Russia's illegal and unprovoked invasion of Ukraine in 2022 marks the return of conventional warfare to Europe, challenging the strategic assumptions that have shaped Western and UK defence policies for decades.

Our inquiry set out to gather interim lessons from the war in Ukraine and consider the implications for the Government and the UK's Armed Forces. Our first key conclusion is that the invasion represented a failure of NATO's deterrent posture towards Russia. Although the invasion may yet prove to be a strategic miscalculation, Putin's assessment was that NATO's response would not represent a credible threat to his ambition. This collective failure by the West calls for a clear-eyed examination of why our policy of deterrence was unsuccessful and a systematic re-assessment of the assumptions that underpinned it.

Secondly, notwithstanding some notable responses from individual nations including the UK, the invasion has exposed fundamental weaknesses in both UK's and NATO's military strength. Within the UK, it has raised serious questions regarding the preparedness of Government, society and the defence industrial base to support conventional warfighting at scale. We are under-prepared to respond to the heightened global threat environment and, in particular, meet the growing threat from Russia.

More specifically, we found that the UK's Armed Forces lack the mass, resilience, and internal coherence necessary to maintain a deterrent effect and respond effectively to prolonged and high-intensity warfare. In a war with Russia, our Armed Forces would need to be capable of fielding second and subsequent fighting echelons at the same time as providing military support to the protection of critical national infrastructure within the UK. Also, if we are to support our NATO allies in the Baltics and Eastern Europe with a land force, we will have extremely long lines of communication along which ammunition, equipment, manpower and rations need to travel. Protecting such lines of communication needs sufficient troops and "teeth" units, which the UK cannot currently field. This is because our Forces' size and structure has been predicated on the belief that conflicts would be resolved within weeks, rather than years. In particular, the evidence we heard pointed to the size of the Army being inadequate, with a burdensome bureaucracy making recruitment more challenging than it needs to be. Strengthening recruitment and retention for all three services should be a priority for the new Government. Enhancing the role of the Reserves presents an untapped opportunity to build mass, but for this to succeed, the Government must define their role much more clearly, fund them appropriately and put effort into incentivising people to join.

We also heard how Russia has been attacking Ukraine's critical national infrastructure to inflict physical and psychological damage—both through hybrid and conventional means. The UK is not insulated from these threats and, in fact, has been an attractive target for Russian cyber and electronic attacks. The dismantling of mechanisms for mobilisation and for protecting the UK's Civil Defence Infrastructure after the Cold War, however, has left the UK vulnerable. There is an urgent need for a whole-of-Government effort to build resilience and better protect the UK's critical national infrastructure.

The war in Ukraine has also underscored the need for an agile industrial base to meet the demands of a dynamic battlefield and underpin our Armed Forces' credibility. However, the UK's procurement methods remain cumbersome and lack the agility required to keep pace with the rapidly evolving nature of modern warfare, particularly in cases where conflict is between states which are technologically evenly matched. A culture shift around risk across both Government and industry is necessary, and the Government must transform its approach to procurement to keep pace with accelerating development cycles.

Events in Ukraine have demonstrated that defence is not just about physical capabilities, it is also about resilience and the psychological readiness of the nation. Engaging the broader society in defence is crucial. This involves integrating civilian capabilities, fostering community engagement, breaking down barriers between the public and the military, and addressing the emotional aspects of national defence. Currently, the public's awareness of the true state of the UK's defence posture is alarmingly low. The mindset of a nation under genuine threat is absent, and there is an urgent need to invest in shaping how people perceive the value of defence. The Government must develop a compelling value proposition that resonates with citizens, emphasizing the importance of national security in their daily lives and moving beyond the notion that defence is solely the military's responsibility. The Government can learn valuable lessons from other nations, such as the Scandinavian concept of "total defence".

The war in Ukraine has thrown the role of alliances at a time of war into the spotlight. Russia is attempting to offset its decline in relations with the West by developing closer ties with China, Iran, North Korea and key Global South countries. We should be deeply concerned by this development and be more proactive in building relationships with those countries in the Global South where Russia (and others) are seeking to extend their influence. The UK should harness its respected soft power as a diplomatic force and international development actor in support of alliance building.

The UK's security is closely tied in with Europe's security. As the US refocuses its priorities towards the Indo-Pacific, the need for engagement with Europe and the EU becomes even more pressing. We welcome the new Government's commitment to negotiate a security pact with the EU, which has the potential to deliver improved collaboration with our European partners.

Our overarching conclusion is that the war in Ukraine is a wake-up call to the UK's relative decline as a full-spectrum military power. In truth, we are a medium-sized regional power, but our commitment to retaining global influence, particularly through our nuclear and maritime capabilities, makes some of our other military aspirations unaffordable. We now lack a coherent model to augment our relatively small Armed Forces with the capabilities needed to sustain or deter warfighting. Such a comprehensive model should be a key aspiration of the Strategic Defence Review and will undoubtedly rest on an ability to better leverage technology, industry, the Reserves, allies and wider society.

Ukraine has provided a sobering reminder of the dangers posed by complacency and outdated assumptions in defence policy. In our report *UK Defence Policy: From Aspiration to Reality?* we raised concerns about the lack of clarity in Government policy documents regarding priorities and the difficult choices necessary when resources are limited. Governments have, so far, lacked an

honest narrative about Defence's ambition, resources, threats and risk. The new Government must ensure that its response to the Strategic Defence Review clearly outlines its priorities for UK Defence and provides a realistic roadmap for turning aspirations into reality.

The UK must commit to spending more on defence, spending it better, and leveraging its alliances by design. If clearer priorities are set, there is a real opportunity for the UK to build a more resilient and capable Armed Forces and, as a result, better protect the UK and play a more influential role in strengthening NATO, ensuring the collective security of its member states.

We submit this report to the Government and the Strategic Defence Review for consideration.

Ukraine: a wake-up call

CHAPTER 1: INTRODUCTION

1. Russia's illegal and unprovoked invasion of Ukraine in February 2022 marked a turning point for European security. It raised serious concerns about Russian intentions for other parts of Europe and directly led to Sweden and Finland eschewing their historically neutral status in favour of the protective umbrella of NATO membership. Yet we are also starting to see a geopolitical shift, with China, Iran and North Korea providing support to Russia, thus raising the prospect of increased collaboration between countries who are in competition with or outright hostile towards the international order and the West.

2. It is not difficult to see why some analysts are warning that the international security landscape is becoming increasingly volatile and that the world has entered an era of instability.[1] The protracted war in Ukraine and proliferation of other international crises—Hamas' terrorist attack on Israel and the war in Gaza (which could yet spill over into a wider regional conflict); China's assertive behaviour in the South China Sea; or the succession of military coups in the Sahel, to name but a few—mean there is an increased sense of global insecurity.

3. The deteriorating European and global security environment has significant implications for UK Defence. This report will set out how some post-Cold War assumptions about the character of modern warfare are no longer valid, and therefore priorities need to be re-set, while balancing competing pressures and limited resources.

4. The former Prime Minister, the Rt Hon Rishi Sunak MP, had announced earlier this year that the UK would increase its defence spending to 2.5% of GDP by 2030 (up from an estimated 2.3% in 2023).[2] Some have argued that even an increase to 2.5% may not be enough to meet future defence needs.[3] The new Government has—as of yet—not given a timetable for matching the previous Government's commitment on defence spending. It has promised, however, to spend 2.5% "as soon as we can" and commissioned a Strategic Defence Review on 16 July,[4] overseen by the Defence Secretary but run by external reviewers, to "assess the threats we face and the capabilities needed

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1 International Institute for Strategic Studies, Press release: *The Military Balance 2024 spotlights an era of global insecurity* on 29 July 2024 https://www.iiss.org/press/2024/02/the-military-balance-2024-press-release/ [accessed 16 September 2024]

2 Prime Minister's Office, Press release: *PM announces "turning point" in European Security as UK set to increase defence spending to 2.5% by 2030* on 23 April 2024: https://www.gov.uk/government/news/pm-announces-turning-point-in-european-security-as-uk-set-to-increase-defence-spending-to-25-by-2030 [accessed 16 September 2024]. For historic spending figures, see: House of Commons Library, UK defence spending, Research Briefing, CBP-8175, May 2024.

3 '"UK military unprepared for conflict of any scale", warns ex-defence official', *The Financial Times* (1 July 2024): available at https://www.ft.com/content/8251f12b-0296–47f0-a774-3b7c99b9e53d [accessed 16 September 2024]

4 Ministry of Defence and the Rt Hon John Healey MP, Press release: *New era for defence: government launches root and branch review of UK Armed Forces* on 16 July 2024: https://www.gov.uk/government/news/government-launches-root-and-branch-review-of-uk-armed-forces [accessed 16 September 2024]

to address them".[5] The Government has said the Review would publish its findings in the first half of next year.[6]

5. **This report, as usual, provides conclusions and recommendations for the Government to respond to within two months. We are additionally submitting this report to the Strategic Defence Review for consideration by the external reviewers. We welcome that the new Government has moved swiftly to launch its Strategic Defence Review.**

6. ***Given the deteriorating global threat environment, the Government cannot afford to delay setting defence priorities and articulating how much money will be available to UK Defence. The Government should ensure that the Review is completed to schedule, and implement its findings promptly. We call on the Government to keep the Committee updated on the Review's progress and subsequent implementation.***

7. ***As highlighted in our 2023 report, 'UK defence policy: from aspiration to reality?', Government policy documents often fail to clearly articulate the Government's priorities and the hard choices that need to be made in the face of competing pressures on limited resources. We call on the new Government to ensure that its response to the Strategic Defence Review provides a clear sense of the Government's priorities for UK Defence and how it plans to turn aspirations into practice.***

8. **The new Government has yet to set the levels of future defence spending, pending the outcome of the review. It remains to be seen if 2.5% of GDP represents a suitable increase in defence spending, and we note that any increase should be seen in the context of decades-long defence cuts and recent inflationary pressures on the defence budget. Unless significant efficiencies are found, laser-sharp priorities are set and hard trade-offs are made, an increase to 2.5% of GDP may not be enough to meet the UK's growing defence needs.**

9. ***We also acknowledge that some of the recommendations in this report will have cost implications. While there will be other pressing demands on the UK Budget, the new Government should nonetheless give careful and swift consideration to our recommendations.***

This report

10. Our report focuses on the lessons emerging from the war in Ukraine that are relevant to the UK context and which should feed into the Strategic Defence Review commissioned by the new Government. Chapter 2 of this report considers how the war in Ukraine has reminded us of the importance of mass, not just in terms of weapons and equipment, but also people. Chapter 3 discusses the need for improved international collaboration, particularly given the prospect of a less Europe-focused US. Chapters 4 and 5 contain more operational lessons, focusing on air and missile defence, the use of

5 Labour Party, *Labour's manifesto* (13 June 2024): https://labour.org.uk/change/britain-reconnected/ [accessed 16 September 2024]

6 Ministry of Defence and the Rt Hon John Healey MP, Press release: *New era for defence: government launches root and branch review of UK Armed Forces* on 16 July 2024: https://www.gov.uk/government/news/government-launches-root-and-branch-review-of-uk-armed-forces [accessed 16 September 2024]

drones, and the role of space, electronic and cyberwarfare in the Ukraine conflict. They also highlight the impact of Russian attacks on Ukraine's critical national infrastructure, and the lessons the UK should draw for homeland defence.

11. There are a couple of caveats that are worth emphasising up front:

- The lessons identified are only interim ones. The conflict is still ongoing and, indeed, evolving. What is happening in Ukraine now is very different to what was happening at the outset of the war. In particular, our evidence was taken before the recent Ukrainian incursion into Russian territory, so its impact, including on Russian public opinion, is not addressed in this report.

- All wars are unique and not all lessons are transferable. The Russian approach to this war is particular to Ukraine and its geography, and Russia would likely behave very differently in a conflict with NATO. For example, we were told that Russian air and maritime power has not been deployed to the extent that they likely would in a conflict between Russia and NATO.[7]

The underlying importance of deterrence

12. Nevertheless, as we have set out throughout this report, transferable lessons are beginning to emerge for UK Defence. The one lesson to underpin all others is that deterrence is key to managing escalation and avoiding conflict in the first place. As many analysts have noted, Russia's illegal and unprovoked invasion was a failure of conventional deterrence. The West's collective failure to impose serious costs for Russia following Russia's occupation of Crimea in 2014 (preceded by Russia's invasion of Georgia in 2008), the Novichok poisoning incident in the UK in 2018, and the deployment of chemical weapons in Syria with Russia's enabling support emboldened President Putin to launch his illegal and unprovoked invasion of Ukraine.[8]

13. We also heard that in the run-up to the war there was a failure, not of intelligence (which picked up Russian troop movements), but of correctly interpreting Russian intentions. Dr Peter Roberts, Senior Fellow at the Centre of Public Understanding of Defence and Security at the University of Exeter put it succinctly when he told us that "our inability to understand intent is a major flaw, and that leads us into lots of problems and lots of ill-conceived predictions and expectations".[9]

14. Deterrence, to be effective, must be credible and be underpinned by accurate assumptions about what motivates an adversary. This report offers several recommendations about how deterrence could be strengthened in view of developments in Ukraine. In addition to having the latest kit or weapons, the whole defence eco-system is important. War is, in the first instance, about people—their motivations for going to war and willingness to fight. This

7 Q 62 (Nick Childs)
8 Written evidence from Professor Michael Clarke (IUD0014). See also: Wilson Center, 'West Fails to Learn from Crimea's Ten-Year Occupation' (27 February 2024): https://www.wilsoncenter.org/blog-post/west-fails-learn-crimeas-ten-year-occupation [accessed 16 September 2024]; Atlantic Council, 'Putin's unfinished Crimean crime set the stage for Russia's 2022 invasion' (22 February 2024): https://www.atlanticcouncil.org/blogs/ukrainealert/putins-unpunished-crimean-crime-set-the-stage-for-russias-2022-invasion/ [accessed 16 September 2024].
9 Q 56 (Dr Peter Roberts)

Chapter touches on how we failed to accurately interpret Putin's intentions in the run-up to his illegal and unprovoked invasion of Ukraine and how, in order to strengthen deterrence, we need to improve our understanding of the human aspects of war. Chapter 2 focuses on the importance of mass, including personnel, training, and weapons maintenance. Equally important is effective communication. Unless the message to the adversary is strong, leaving them without any doubts about the cost of escalation, deterrence will fail. The importance of building alliances to present a united front with strong signalling is discussed in Chapter 3.

15. President Putin has been given, until recently, free rein to control the escalation narrative by invoking the spectre of nuclear war. As Professor Michael Clarke, Visiting Professor in the Department of War Studies at King's College London, noted:

> "For two years, the Ukraine war gave Russia 'escalation dominance' in relation to Western and NATO reactions—setting the aggressive agenda, posing problems to which the Western powers were continually having to react".[10]

16. During the initial phases of the war, President Putin's approach was particularly successful in deterring some European countries from providing full support for Ukraine. For example, Germany (now Europe's key provider of military aid to Kyiv) initially refused to send Leopard tanks to Ukraine, citing the risk of nuclear war as the reason for its cautious approach.[11] Only a few days after Russia's invasion, the Russian President had announced he was placing his nuclear forces on "high combat alert" and, in response to French President Macron's idea to send NATO troops to Ukraine, noted that this would threaten "a conflict with the use of nuclear weapons"[12]. Throughout the war, Russia's President has continued to rely on the threat of nuclear escalation in an attempt to divide NATO and deter Western support for Ukraine.[13]

17. This is not to say that Putin's statements on the use of nuclear weapons are just empty rhetoric. According to Shashank Joshi, Defence Editor at *The Economist*, Russia will be more reliant on nuclear weapons for its own security in the short term because of its enduring conventional weaknesses.[14] Professor Chalmers, Deputy Director General at RUSI, agreed that there could be situations in which Putin would choose to deploy nuclear weapons and that

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10 Written evidence from Prof Michael Clarke (IUD0014)

11 Politico, 'Olaf Scholz cites risk of nuclear war in refusal to send tanks to Ukraine' (22 April 2022): https://www.politico.eu/article/germany-chancellor-olaf-scholz-nuclear-war-tanks-heavy-weapons-ukraine-russia-invasion/ [accessed 16 September 2024]

12 Reuters, 'Putin warns West of risk of nuclear war, says Moscow can strike Western targets' (29 February 2024): https://www.reuters.com/world/europe/putin-warns-west-risk-nuclear-war-says-moscow-can-strike-western-targets-2024–02-29/ [accessed 16 September 2024]

13 As recently as May of this year, Putin ordered his military to practice the deployment of tactical nuclear weapons and has been vocal about developing Russia's nuclear arsenal and potentially revising the country's nuclear doctrine. See, for example: Reuters, 'Russia is revising its nuclear doctrine, Kremlin says' (24 June 2024): https://www.reuters.com/world/europe/putin-says-west-will-be-fighting-directly-with-russia-if-it-lets-kyiv-use-long-2024–09-12/ [accessed 16 September 2024] and Reuters, 'Why is Russia holding nuclear drills and should the West be worried?' (15 May 2024): https://www.reuters.com/world/europe/why-is-russia-holding-nuclear-exercises-what-watch-2024–05-15/ [accessed 16 September 2024].

14 Q 1 (Shashank Joshi)

we shouldn't view this conflict—or the possibility of war in Europe—as if it were purely conventional.[15]

18. **Deterrence is key to avoiding future conflict. In light of the ongoing threat from Russia, and the deteriorating global security environment, there is a need to re-establish credible deterrence in the UK and across Europe. This includes both nuclear and conventional deterrence.**

19. ***We need to re-learn some of the Cold War lessons around deterrence and escalation management and apply them to a new context.***

20. ***Equally important is understanding the human aspects of war. There was clearly a failed assessment of Putin's will to fight in the run-up to the invasion of Ukraine. The UK and NATO should focus on developing a better understanding of Putin's strategy and intentions—including what influence others (like China) may have on his decision-making—while strengthening de-escalation mechanisms. This would provide for more robust deterrence, helping decision-makers distinguish between posturing and the actual risk of nuclear weapons being used, while mitigating against escalation by accident.***

21. **The 'will-to-fight' applies not only to Putin and other political leaders, but to their armed forces and their civilian populations as well. There are also other human aspects that determine the outcome of wars including, motivation, determination, memory of past victories and defeats, culture, and stamina, and all are essential elements for any consideration of deterrence, defence, and de-escalation.**

This inquiry

22. We launched our inquiry on 28 February 2024 to examine the implications of the war in Ukraine for UK Defence.

23. At the outset, Professor Michael Clarke helped to set our inquiry into context with a private briefing. We subsequently received 17 written evidence submissions and held six oral evidence sessions with a total of 13 witnesses from academia, think tanks, government and the private sector, providing a range of perspectives. As a result of the dissolution of Parliament ahead of the general election we had to place our inquiry on hold for several weeks. In the interests of publishing this report in good time to enable its findings to be submitted to the Strategic Defence Review, we exceptionally decided not to schedule an oral evidence session with a Minister of State for Defence.

24. We are very grateful to all who contributed.

15 Q 1 (Prof Malcolm Chalmers)

CHAPTER 2: BUILDING MASS

25. The war in Ukraine has provided a wealth of insights into the conduct of modern warfare. We heard from various witnesses that one of the most significant lessons from the war in Ukraine so far has been the re-discovery of the importance of mass in military operations—not just in terms of personnel, but also equipment and weapons stocks. The ability to generate and maintain mass is key to being able to field second and third echelon fighting forces, protecting our domestic critical national infrastructure (CNI),[16] and safeguarding our lines of communication to frontline troops.

26. Dr Peter Roberts, Senior Fellow at the Centre for Public Understanding of Defence and Security at the University of Exeter, emphasised that:

> "Mass is important. Mass is not about attrition, industrialised warfare or position; it is as important for manoeuvre as it is for any other military strategy you try to take. The idea that somehow you can get around this requirement for mass and capabilities goes against what we know from history."[17]

27. The importance of mass applies not just to the UK, but also to its European allies. Without the ability to build mass, there cannot be credible European deterrence of Russian expansionism. Interoperability and standardisation are critical to shoring up mass across Europe and, in the context of constraints on public spending, offer an opportunity to scale up through collaboration and efficiencies.

28. In stressing the importance of building mass, it is essential to also consider the protection of the UK's critical national infrastructure (, as homeland defence is crucial. Chapter 5 delves into the lessons learned from the damage to Ukraine's critical national infrastructure and implications for strengthening the UK's homeland defence.

The size of the British Army

29. In 2021, the UK Government decided to reduce the projected size of the British Army by 10,000 to 72,500 (subsequently uplifted to 73,000). This change was introduced in the *Future Soldier Guide*, a document outlining structural changes to the Army which aimed to make the service "more agile, more integrated, and more expeditionary".[18] The decision to reduce the size of the Army was not reversed following Russia's invasion of Ukraine, but the return of conventional land war in Europe has raised questions as to whether it has sufficient personnel. As Dr Stepan Stepanenko and Maj Gen (Rtd) John Holmes vividly noted, current personnel numbers fall well below the capacity of Wembley Stadium.[19]

16 The Government's National Protective Security Authority (NPSA), defines critical national infrastructure as "The elements of national infrastructure the loss or compromise of which could result in major detrimental impact on essential services, significant loss of life or casualties, significant economic or social impacts, or have a significant impact on national security, national defence, or the functioning of the state." See: National Protective Security Authority, 'Glossary': https://www.npsa.gov.uk/glossary [accessed 16 September 2024]

17 Q 54 (Dr Peter Roberts)

18 Ministry of Defence, *Future Soldier: Transforming the British Army* (25 November 2021): https://www.gov.uk/government/publications/future-soldier-transforming-the-british-army [accessed 16 September 2024]

19 Written evidence from Dr Stepan Stepanenko and John Holmes (IUD0004)

30. General Sir Nick Carter, former Chief of the Defence Staff and professional head of the British Army, raised concerns that the British Army had been "hollowed out" and that its size had fallen "below critical mass".[20] In May 2024, it was reported that troop numbers had fallen to a record low of 72,510—a figure below the previous Government's goal of maintaining 73,000 troops.[21]

31. Dr Marc DeVore, Senior Lecturer at the University of St Andrews, emphasised that the UK has a well-trained and well-equipped force, but that it is too small and inadequately set up for large, prolonged conflicts like the one in Ukraine.[22]

32. The argument is often made that, because of the UK's geography, the size of its land forces should be seen in the context of NATO land forces as a whole and that, in a conflict with Russia, ground forces would be provided mainly by Germany, Poland and Finland. However, Shashank Joshi, Defence Editor at *The Economist,* expressed doubts about the British Army's ability to meet existing NATO obligations to be able to field a heavy war-fighting division within a reasonable time.[23] Additionally, there are questions of overstretch should the UK have to respond to the Russian threat on multiple fronts (or be required in other theatres). Others have echoed those concerns. In a speech on 24 January, General Sir Patrick Sanders, then still Chief of the General Staff, said that the Army must be urgently expanded to around 120,000 within three years.[24]

33. Additionally, the use of advanced technology has at times been used to justify smaller troop numbers. The war in Ukraine, however, has shown that in a conflict between two technologically capable states, technology is not a magic bullet that can swiftly end a war. Advantages gained are often temporary as both sides engage in a game of technological one-upmanship, leading to attrition (for details on how this is being played out with drones and technologies supporting electronic warfare, see Chapters 4 and 5 respectively). We therefore agree with Mr Joshi's conclusion that "technology is essential but, if both sides have it and are employing it, it does not mean that you can have small, lean, boutique forces because they will get chewed up over time".[25]

34. **All in all, the evidence we heard points to the current size of the British Army being inadequate. While size is not the only measure**

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20 Q 43 (General (retd) Sir Nick Carter)

21 'Army shrinks below 73,000 troops for first time since Napoleonic era', *The Daily Telegraph* (30 May 2024): available at https://www.telegraph.co.uk/news/2024/05/30/army-falls-below-73000-first-time-since-napoleonic-area/ [accessed 16 September 2024]

22 Q 21 (Dr Marc DeVore)

23 Q 10 (Shashank Joshi). Since 1 January 2024, the UK has been leading NATO's Very High Readiness Joint Task Force (VJTF), which has now transitioned into the new Allied Reaction Force. The UK initially committed to about 6,000 troops from the 7th Light Mechanised Brigade. The British Army's 1st (UK) Division is now leading the land component of the ARF. The UK is also committed to NATO's enhanced Forward Presence (eFP) mission in Estonia, with around 1,000 troops deployed there. See also: NATO, 'UK to lead NATO's 2024 rapid response force': https://www.nato.int/cps/en/natohq/news_221565.htm [accessed 16 September 2024] and 'UK leads NATO's new "Allied Reaction Force"', *UKDJ* (2 July 2024): https://ukdefencejournal.org.uk/uk-leads-natos-new-allied-reaction-force-to-deter-russia/ [accessed 16 September 2024].

24 'British citizens should be "trained and equipped" to fight in a potential war with Russia, military chief says', *Sky News* (24 January 2024): https://news.sky.com/story/britain-must-train-citizen-army-to-prepare-for-potential-land-war-says-military-chief-13055161 [accessed 16 September 2024]

25 Q 3 (Shashank Joshi)

of capability, we are concerned that the Army cannot, as currently constituted, make the expected troop contribution to NATO. We therefore question whether the British Army is prepared to meet the growing threat posed by Russia to European security.

Strengthening recruitment and retention

35. Earlier this year, the Commons' Defence Committee highlighted problems with recruitment and retention, noting that the Armed Forces are "losing personnel faster than they can recruit them".[26] This continues to be borne out by the latest published personnel statistics. According to these, at 1 July 2024, 11,940 people had joined the Regular Armed Forces over the last 12 months, while 15,710 had left.[27]

36. There are a variety of reasons for this. The Haythornthwaite Review was commissioned in 2021 to offer recommendations on how to enhance retention rates and draw the next generation into the Armed Forces. The report was released in June 2023 and, among its recommendations, it suggested the creation of a total reward system that would provide leaders with the ability to better tailor rewards packages; and recommended a 'spectrum of service' that would provide a range of service options, increasing flexibility between military, industry and the civil service.[28] The previous Government did not provide a detailed response to explain how it would implement the recommendations, despite the Defence Command Paper of 2023 accepting them in full.[29]

37. A particular issue that emerged from our evidence is the cumbersome bureaucracy of the Defence Recruitment System (DRS) and, specifically, the handling of medical evaluations. General Sir Nick Carter reflected on how, when he first joined the Army, recruits would visit a recruiting office and typically undergo a medical examination conducted by a military doctor. Unlike civilian doctors, military doctors were not as concerned with litigation and were therefore more inclined to take risks. For instance, if a recruit mentioned having had childhood asthma, it would likely be disregarded. However, during his tenure as head of the Army, he observed that one of the most significant obstacles in the recruitment process was the medical evaluation, which had become overly cautious and unwilling to take risks, even with the most eager recruits.[30] Similarly, Lord Stirrup, former Chief of the Defence Staff and member of this committee, has raised this issue in the House of Lords Chamber. For instance, he recalled an athletic young woman being rejected inexplicably due to a past leg injury.[31]

38. Capita, the company that works with the Armed Forces to recruit personnel, has also shared with us some of the challenges relating to the post-medical

26 Defence Committee, *Ready for War?* (First Report, Session 2023–4, HC26)
27 Ministry of Defence, *Quarterly service personnel statistics 1 July 2024* (29 August 2024): https://www.gov.uk/government/statistics/quarterly-service-personnel-statistics-2024/quarterly-service-personnel-statistics-1-july-2024 [accessed 16 September 2024]
28 Ministry of Defence, *Agency and agility: Incentivising people in a new era—A review of UK armed forces incentivisation* (19 June 2023): https://www.gov.uk/government/publications/agency-and-agility-incentivising-people-in-a-new-era-a-review-of-uk-armed-forces-incentivisation [accessed 16 September 2024]
29 Ministry of Defence, *Defence's response to a more contested and volatile world*, CP 901 (18 July 2023): https://www.gov.uk/government/publications/defence-command-paper-2023-defences-response-to-a-more-contested-and-volatile-world [accessed 16 September 2024]
30 Q 43 (General (retd) Sir Nick Carter)
31 HL Deb, 20 May 2024, col 852

screening process. This process is complex and time-consuming, involving an online medical questionnaire, GP consent for sharing Primary Healthcare Records (PHCR), and a face-to-face assessment. Challenges include the lengthy and voluminous nature of PHCRs, delays due to the requirement for physical signatures, and potential gaps in medical history that necessitate further evidence, all of which can significantly slow down the recruitment process.[32]

39. ***The Armed Forces continue to face recruitment and retention challenges, which must be addressed urgently. We call on the new Government to set out what plans it has to address these, whether it will implement the recommendations of the Haythornthwaite Review and, if so, what the timetable would be.***

40. **The Defence Recruitment System (DRS) is burdened by excessive bureaucracy, particularly in its medical evaluation process, which has become overly cautious and risk averse. This has led to unnecessary rejections and delays, discouraging many potential recruits.**

41. ***To increase recruitment numbers and enhance the efficiency of the process, the DRS should take a more balanced and risk-tolerant approach to its medical examinations and accelerate the process of resolving marginal cases.***

Enhancing the Reserves

42. If we accept that current force levels are insufficient and should be increased, this raises the question of how this can be achieved in a cost-effective way. Increasing the size of the British Army would come at significant cost—overall, service and civilian personnel represented about 26% of the defence budget in 2023.[33] Expanding the Reserve Forces could provide additional mass and resilience without prohibitive expense.[34]

43. The Human Security Centre noted that Ukraine was able to draw on a large pool of reservists at the start of the war, using them effectively to line-hold and stall the Russian advance.[35] Professor Vince Connelly, an academic psychologist and serving reservist, highlighted the important role the Reserves could play in building mass. Volunteer reserves could raise collective capability at 20% of the peacetime costs of regular forces.[36] General Sir Nick Carter emphasised the importance of a strategic reserve, noting that there are about 200,000 ex-regulars across all services who could be mobilised at short notice. This strategic reserve could provide a core of experienced personnel that could be rapidly deployed in times of need.[37] Reservists could also be appointed to perform technical military tasks, as evidenced by the

32 Letter from Capita to the International Relations and Defence Committee, 10 September 2024: committees.parliament.uk/publications/45326/documents/224449/default/

33 Ministry of Defence, *MoD Departmental resources: 2023* (30 November 2023): https://www.gov.uk/government/statistics/defence-departmental-resources-2023/mod-departmental-resources-2023 [accessed 16 September 2024]

34 For further information on the cost-effectiveness of reservists compared to regulars for performing the same tasks, please see: Cabinet Office, *Public Summary of Sector Security and Resilience Plans* (February 2019): https://assets.publishing.service.gov.uk/media/5c8a7845ed915d5c1456006a/20190215_PublicSummaryOfSectorSecurityAndResiliencePlans2018.pdf [accessed 16 September 2024].

35 Written evidence from the Human Security Centre (IUD0010)

36 Written evidence from Prof Vincent Connelly (IUD0012)

37 Q 48 (General (retd) Sir Nick Carter)

use of reservists in the US and Israeli integrated air defence systems.[38] Lord Peach, former Chief of the Defence Staff, briefly alluded to the possibility of expanding the Reserves and having "sponsored reserves from industry", who could presumably perform advanced technical tasks.[39]

44. Despite their potential, we heard that UK volunteer Reserves are "smaller than they have ever been", and that the Cold War dual model of relying on ex-regular personnel, plus volunteer Reserves, has effectively been abandoned.[40] Professor Connelly also noted that history shows reservist units had been deployed in past crises, irrespective of their readiness level, making it essential to put systems in place to enable them to be as ready as possible in peacetime.

45. While the evidence we gathered emphasised the important role of the Reserves in building mass, we note that this also presents some challenges. Members of the proposed Strategic Reserve, despite prior service experience, lack ongoing training, potentially resulting in a drop in physical fitness and skill fade. Ukraine's struggles underscore the importance of having experienced personnel and robust leadership at all levels to effectively train and lead forces. To avoid similar pitfalls, it is essential to maintain a well-trained, current volunteer Reserve force and to develop the capacity to train and lead recruits without weakening front-line units.

46. A Reserve Forces Review 2030 was commissioned by General Sir Nick Carter—who was the Chief of the Defence Staff at the time—and published in May 2021.[41] One of its key conclusions was that Reserve forces should be better integrated into overall military strategy. A Government response to the recommendations is still outstanding.

47. **The Reserves provide a cost-effective model for building mass. By investing in the Reserves—both ex-regular and volunteer—the UK can enhance its capability and war readiness, contributing to deterrence and sustaining its armed forces in warfighting scenarios.**

48. ***The new Government should prioritise reinvigorating the Reserves. It should respond to General Sir Nick Carter's review, clearly articulating what role(s) it expects the Reserves to undertake and how they should be organised to effectively supplement and support our Armed Forces.***

49. ***A reduction in Reserve workforce numbers confirms that the capability of the Reserves has declined over the last few years. To reverse this, a co-ordinated response is needed that includes incentives for joining and provides clarity of purpose for all units. The new Government should also re-assess its funding for the Reserves to ensure it delivers on demanding training, appropriate scales of equipment, and sufficient logistical and administrative support.***

38 Written evidence from Prof Vince Connelly (IUD0012)
39 Q 66 (Air Chief Marshal the Lord Peach)
40 Written evidence from Prof Vince Connelly (IUD0012)
41 Ministry of Defence, *Reserve forces review 2030* (12 May 2021): https://www.gov.uk/government/publications/reserve-forces-review-2030 [accessed 16 September 2024]

Strengthening the defence-industrial complex

50. The war in Ukraine has exposed the importance of the defence-industrial complex—that is, the network of relationships between a country's military, government and defence industry.

51. The evidence we gathered revealed that the defence industry was not prepared for a high-intensity, long-term war. It was simply not the planning assumption that industry had made. Tim Lawrenson, Associate Fellow at the IISS, explained that "we have had 30 years since the end of the Cold War in which defence budgets have declined drastically across Europe. Quite naturally, the industry followed suit".[42] As the peace dividend was taken, the defence industry declined to a much smaller capacity than it had maintained throughout the Cold War.

52. This led to the industrial base becoming atrophied. Our witnesses strongly emphasised the role the Government should play in reversing this process. Nick Childs, Senior Fellow for Naval Forces and Maritime Security at the International Institute for Strategic Studies (IISS), highlighted the urgency of having to recalibrate and reinvigorate the way defence industry operates and explained that "part of it will absolutely have to be a reframing of the way government approaches this, looking at regulations and where those regulation barriers and impediments to fast turnaround can be broken down".[43]

53. In its written evidence, the MoD recognised that "industry is, and must feel, part of the Defence Enterprise". It acknowledged there have been challenges around transparency and early engagement with industry, but efforts are being made to move beyond the traditional customer-supplier relationship. These involve developing long-term strategic alignment that not only delivers the capabilities that are required now, but binds the MoD and industry into a joint endeavour that can sustain the nation in times of conflict. This "will require a collective effort that combines the expertise of the whole Defence enterprise: military, civilian, and industrial".[44]

54. The Committee welcomes the recognition that the MoD needs to build stronger relationships with industry. Thales, a company operating across the aerospace, defence, digital identity, and security and space sectors, shared their view on the benefits of working hand-in-glove with the Government on supplying Ukraine. For them, it involved regular and consistent dialogue with the MoD, which had a positive impact on their workforce too: "The connection from front line to back office and that we all need to come together to deliver for the nation's security is one that is really felt by our employees, so we really welcome the MoD's focus on an enterprise approach to defence that includes industry as a key pillar."[45]

55. However, other submissions from industry raised difficulties in engaging with the MoD, particularly the absence of clear commitment signals, including the focus on annual contracts, as an obstacle to ramping up production.[46]

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42 Q 11 (Tim Lawrenson)
43 Q 67 (Nick Childs)
44 Written evidence from the Ministry of Defence (IUD0015)
45 Written evidence from Thales (IUD0016)
46 See, for example, Written evidence from KBR (IUD0011); written evidence from ADS Group (IUD0005).

56. ADS, the trade association for the UK's aerospace, defence, security, and space industries, noted that there was an urgent need to transform the relationship between the Government, industry and armed forces to coherently and effectively address the lessons from Ukraine. It welcomed the publication of the new Integrated Procurement Model under the previous Government but suggested that a national strategy was needed. This strategy should bring together regular, reserves, civil servant, and industry resources to ensure deterrence, mobilisation, and endurance in conflict:

> "A comprehensive strategy, sitting beneath any upcoming Defence Review of a new Government is required to achieve this, including a method to ramp up production capacity in a way that is tested against the demands and attrition of a warfighting scenario".[47]

57. KBR, a science, technology, and engineering solutions provider, suggested that "to avoid confusion and delays to meeting requirements, UK Defence should seek to clarify its own 'demand signal' and promote operational requirements to industry in the most coordinated way possible".[48]

58. Our evidence consistently showed that there has been an erosion of trust between industry and MoD. Dr Peter Roberts explained:

> "they [industry] do not trust the promises of politicians, quite simply. You constantly have those promises and constant announcements, but they are never delivered… if you look at British announcements on spending over the past 30 years and then follow through on what has been delivered, if you look at the aspirations over defence reviews consistently in the UK, it is just not there".[49]

59. According to Tim Lawrenson, we are unable to do things as rapidly as we might want to, even if the capacity was there to do it. This is because "the many announcements that you hear across Europe and in the UK about intentions to do things, or speeches about buying new items of equipment, tend not to be followed very quickly by contracts".[50]

60. There is also the question of appetite for risk in procurement processes. James Black, assistant director of the defence and security research group at RAND Europe, warned that "we cannot approach things like procurement with the emphasis on compliance with bureaucracy in the way you can in peacetime to maximise value for money for the taxpayer. You need to approach it with a much more risk-taking attitude".[51]

61. Our witnesses consistently pointed out the need for the UK Government to rethink both the ways it procures defence equipment and the way it supports that procurement cycle. The way it is done now is not fit for purpose.

62. In a war situation, actions and decisions are different from those in peacetime. War demands rapid innovation cycles where new systems or capabilities are deployed, tested in real combat, and quickly sent back to the manufacturer with feedback from soldiers. This allows for immediate improvements. The Ukrainians are currently able to do this because they face an existential

47 Written evidence from ADS Group (IUD0005)
48 Written evidence from KBR (IUD0011)
49 Q 54 (Dr Peter Roberts)
50 Q 11 (Tim Lawrenson)
51 Q 19 (James Black)

threat. According to Mr Black, we could also innovate quickly under such circumstances, but he would prefer that we develop this capability before facing a war, rather than during one. He then explained that "changing the culture around risk and backing that up by slaying whatever sacred cows you need to slay in investment programmes, structures, processes, or cultural things is the crucial thing".[52] We note in this context that it is not just incumbent on the MoD to change its culture around risk to drive innovation. Industry, too, has a civic obligation to ensure its approach to risk allows it to be agile, innovate responsibly and contribute to the nation's response to changes in the UK threat environment.

Partnerships with non-traditional defence suppliers

63. The rapid proliferation of new battlefield technologies is shaking up the established hierarchy of the world's defence industry, where large contractors have previously dominated.

64. Ukraine has relied on commercial companies to great effect (see, in particular, Chapter 4 for details on the role of commercial actors in cyber and electromagnetic warfare). Dr Franke noted "I have had many conversations on this with Ukrainian decision-makers, and what really struck me is how much they very quickly embraced the private sector into the war, and how much the private sector went to … [Ukraine's] MoD and said, 'We want to work with you'".[53]

65. UK Defence needs to facilitate a broad church of industry engagement, beyond the defence sector and into relatively new sectors of the economy, including emerging tech and digital infrastructure. The challenge for all governments is that they will have to transform how they buy weapons to keep up with the much faster development cycles of increasingly software-defined weapons and autonomous systems driven by artificial intelligence.

66. For a start, officials will have to look outside their usual pool of suppliers to involve smaller companies, many of which come from a technology background. Lord Peach explained that "there is a need as a national enterprise to require medium and large companies to work with start-ups and small companies, and experiment and fail fast in order to bring innovation through quickly".[54]

67. Start-ups and small companies are key for accelerating the pace of delivery. As General Sir James Hockenhull, head of Britain's Strategic Command, told a London audience of military officials and industry executives earlier this year, "if Ukraine has taught us anything, it is that we need to go faster".[55] This view resonated with stakeholders in the private sector. Micael Johansson, chief executive of Sweden's defence champion Saab, told the *Financial Times* that Ukraine shows that "time to market and a more agile development are important". He added that "instead of developing a perfect product that may

52 Q 19 (James Black)
53 Q 18 (Dr Ulrike Franke)
54 Q 66 (Air Chief Marshal the Lord Peach)
55 'The age of drone warfare is disrupting the defence industry', *The Financial Times* (8 July 2024): available at https://www.ft.com/content/cf6ded0f-f595-4359-b8f7-273799f1149c?desktop=true&segmentId=7c8f09b9-9b61-4fbb-9430-9208a9e233c8#myft:notification:daily-email:content [accessed 16 September 2024]

take many years, building products fast that can be tested, modified and tested again is important. Speed is crucial".[56]

68. In February 2024, the MoD introduced the new procurement model which allows it to work more closely with industry to use 'spiral development', through which new technologies will be deployed before they are fully ready and then adapted and modernised in the field. This is a sign of progress towards becoming more embracing of iterative processes. However, many of the companies that can deliver spiral development find it difficult to access the defence sector.

69. A 2021 study by RAND Europe uncovered several difficulties faced by SMEs and non-traditional defence suppliers in navigating Defence. SMEs report a lack of access to corporate support functions essential for achieving approved supplier status, bidding for defence contracts and appealing to prime contractors. Unlike the latter, which have dedicated procurement departments, SMEs struggle to decipher defence contracting terms and processes. Similarly, non- traditional defence suppliers such as tech or civilian engineering companies, face significant costs in adapting to defence requirements, upgrading security standards, investing in secure infrastructure, often without a guaranteed return on investment. Non-traditional suppliers also have concerns about entering defence and losing rights to their intellectual property (IP) and the ability to generate IP for further exploitation. These challenges can, if unaddressed, undermine resilience and economic contribution of defence supply chains, and create a significant risk for the UK.[57]

70. These findings resonate with the evidence we collected. ADS, for instance, told us that "at present, there are companies in the civil sector (for instance in areas such as quantum computing and AI) who could play a key role in our national security needs, but either do not currently find the defence sector a particularly attractive or easy commercial prospect or are unaware that their products have potential transferrable benefits in a defence context".[58]

71. Nick Childs, Senior Fellow for Naval Forces and Maritime Security at the International Institute for Strategic Studies explained that there are some long-term trust issues at play which need to be overcome: "There is a general refrain from industry and the SME world, which will be the deliverers of much of this change, that Governments do not engage early enough". According to Mr Childs, "there is a sense that multiple initiatives to try to reinvigorate procurements have foundered in large part because, apart from anything else, the resources implied in the strategy are never delivered in the end. Overcoming that reticence, that suspicion, will be key".[59]

72. Some of the evidence we gathered further questioned the effectiveness of the MoD's current approach towards non-traditional defence companies. For instance, Make UK, a trade association, expressed frustration that "member

56 'The age of drone warfare is disrupting the defence industry', *The Financial Times* (8 July 2024): available at https://www.ft.com/content/cf6ded0f-f595-4359-b8f7-273799f1149c?desktop=true&segmentId=7c8f09b9-9b61-4fbb-9430-9208a9e233c8#myft:notification:daily-email:content [accessed 16 September 2024]

57 RAND, *Challenges and barriers that limit the productivity and competitiveness of UK defence supply chains* (6 July 2021), pp 2–7: https://www.rand.org/pubs/perspectives/PEA117-1.html [accessed 16 September 2024]

58 Written evidence from ADS Group (IUD0005)

59 Q 67 (Nick Childs)

companies wishing to help Ukraine were being directed to the Department for Business and Trade (DBT), with MoD themselves seemingly unable to engage". Make UK also expressed disappointment that they were not represented on an MoD/DBT defence trade mission to Ukraine in early April 2024.[60]

73. Nevertheless, it is important to bear in mind that non-traditional defence suppliers serve a complementary role. Michael Schoellhorn, chief executive of Airbus Defence and Space, told the *Financial Times* that, while start-ups develop new technologies very fast, the industry still needs traditional contractors that bring "experience and resiliency". Collaboration between the two sides is important, but he cautions against "condemning everything that is old school".[61]

74. Indeed, increasing collaboration with commercial partners, who traditionally have not been involved in defence, carries certain risks. For instance, their technologies are typically not designed specifically for military use, making them more susceptible to attack. The involvement of commercial partners also raises questions over the extent to which commercial companies can be relied on for continuous service and held accountable, and whether there are areas that are deemed too sensitive. A further concern is that commercial actors could be selling their products to both sides in a conflict or impose contractual obligations at odds with Government policy (for specific details on lessons learnt from Ukraine's experience, including from its early reliance on Starlink satellites, see Chapter 5).

75. **A resilient industrial base underpins Defence's credibility as a fighting force. Our evidence consistently showed that the UK's defence industry is unprepared for high-intensity, prolonged conflict due to decades of budget cuts and reduced industrial capacity since the end of the Cold War. Our witnesses strongly emphasised the role that the Government should play in reversing this process.**

76. ***There is a significant trust deficit between the defence industry and the Government. The defence industry has expressed the need for clear, long-term commitments to effectively increase production and meet wartime demands. The MoD needs to transition from a traditional customer-supplier relationship to one that ensures sustained collaboration, consistent follow-through on commitments, and which fosters early and transparent engagement.***

77. ***The procurement process needs to be more agile and willing to take risks, as successfully demonstrated by the Ukrainian forces' rapid innovation and collaboration with the private sector during the war. There needs to be a culture change around risk. The Government will have to transform how it buys weapons to keep up with the need for much faster development cycles.***

78. ***Non-traditional defence suppliers, such as start-ups, SMEs and tech companies, are key for accelerating the pace of delivery, but they***

60 Written evidence from Make UK Defence (IUD0006)

61 'The age of drone warfare is disrupting the defence industry', *The Financial Times* (8 July 2024): available at https://www.ft.com/content/cf6ded0f-f595-4359-b8f7-273799f1149c?desktop=true&segmentId=7c8f09b9-9b61-4fbb-9430–9208a9e233c8#myft:notification:daily-email:content [accessed 16 September 2024]

face a unique set of barriers in accessing the defence market. The new UK Government needs to facilitate a 'broad church' of industry engagement, beyond the defence sector and into relatively new sectors of the economy.

79. ***There are risks attached to increasing collaboration with commercial partners who, traditionally, have not been involved in defence. The new Government will need to be alert to these risks and work to mitigate them. In particular, the Government should conduct careful risk assessments when deciding whether to allow private companies access to certain systems, such as sensitive communication and targeting systems. However, a proportionate approach should be taken in less sensitive areas, fostering collaboration with non-traditional partners by ensuring that bureaucratic burdens are kept as low as possible.***

Involving the whole of society in defence

80. The work on Reserves and drawing in the private sector should be part of a wider conversation about involving the whole of society in the UK's security and defence, given the heightened threat environment. Involving the whole of society is crucial if we are to build a resilient and prepared nation.

81. This would entail making the public much more aware of the dangers the UK is facing and, crucially, how they themselves can contribute to greater resilience. We heard that this connecting step is missing. As Dr Roberts put it:

> "I do not see the follow-on from that, as in, "And, therefore, this is what it means to you". What action do people take because of that? … At the moment, they just sit back and say, "Well, the police and the military will handle it, and the intelligence will come out, because we're told GCHQ is amazing". We just need to move on from some of that in terms of resilience and part of that conversation."[62]

82. Countries like Finland and Sweden can provide valuable insights. Both countries have adopted the concept of 'total defence', which involves all sectors of the government, the economy and civilian population in defence planning. In both countries, the concept of total defence is well embedded in the national psyche. Finland, for example, has a small regular armed force, but can mobilise a large number of troops quickly due to its comprehensive national defence strategy, which includes significant civilian involvement, including from a large pool of reserves.[63] Sweden's approach is also one of total defence and includes a range of activities to prepare Sweden for national emergencies and war.[64] Sweden has a wide range of voluntary defence organisations linked to this effort.

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62 Q 51 (Dr Peter Roberts)

63 See for example: Finnish Defence Forces, *National Defence is Everybody's Business: Facts about the Finnish Defence Forces* (2012), p 2: https://puolustusvoimat.fi/documents/1948673/2267766/SST_PV_Maanpuolustus_taskuesite_0122_EN.pdf/66aed18d-871e-3f99-d347-ec16e37e94e2/SST_PV_Maanpuolustus_taskuesite_0122_EN.pdf?t=1648036441945 [accessed 16 September 2024]; RAJA, Finnish Border Guard, 'Frontpage': https://raja.fi/en/frontpage [accessed 16 September 2024].

64 Swedish Civil Contingencies Agency, *Total defence—all of us together* (June 2024): https://www.msb.se/siteassets/dokument/amnesomraden/krisberedskap-och-civilt-forsvar/stod-till-kommuner/krisberedskapsveckan/kampanjmaterial/material-2021/faktablad-totalforsvar/faktablad_totalforsvar_engelska.pdf [accessed 16 September 2024]

83. How any discourse around non-military public contributions is articulated is challenging but important.[65] There is always a risk that conversations could end up veering into discussions around conscription, which happened to the former head of the British Army, General Sir Patrick Sanders, when he introduced the idea of a "citizen army" in January 2024.[66]

84. In April, the previous UK Government announced the launch of a new National Defence and Resilience Plan (NDRP).[67] The then Government had intended to work with NATO and others to develop the plan and set out an outline in early 2025. The new Government has an opportunity to broaden this out and consider how it could incorporate the whole of society in building resilience by learning some of the lessons from the Scandinavian concept of total defence.

85. **Engaging the whole of society in defence is crucial for building a resilient and prepared nation. This involves the integration of civilian capabilities, community engagement, and the emotional aspects of national defence.**

86. ***As a first step, the UK Government should build public understanding around the role the general population can play in building national resilience and contributing to national security and defence, moving beyond the notion that defence is the sole responsibility of the military. Plans must be developed in consultation with the general public, so that communities have ownership over plans and are motivated to participate in them. The UK Government should learn from the experiences of other nations, such as the Scandinavian concept of 'total defence'.***

Securing efficiencies in weapons stocks

87. The war in Ukraine has underscored the importance of both high-end and conventional weapons. While newer technologies such as AI-driven capabilities and drone systems are being used in Ukraine, Professor Chalmers reminded us that these technologies are not replacing older, more conventional systems and, instead, "the orchestra of military systems is widening".[68] This raises questions over the balance of weapons UK Defence should be prioritising to maximise lethality and deterrence.

Prioritising the right weapons and platforms

88. Developments in Ukraine have shown that even with advanced technologies, conventional weapons play a critical role in achieving military objectives. Both sides in the conflict have relied heavily on artillery—a conventional weapon—to inflict significant damage, despite the availability of high-tech alternatives. Prof. Chalmers noted that "the most important weapons in this war have been artillery pieces".[69]

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65 Written evidence from Dr Timothy Noël Peacock (IUD0009)

66 See, for example: AP, 'Britain says it has no plans for conscription after top general says UK may need citizen army', (14 January 2024): https://apnews.com/article/britain-conscription-general-citizen-army-70182fe7ac029319bd35bf39cc0fe6cc [accessed 16 September 2024].

67 Cabinet Office, *Defending Britain: leading in a more dangerous world* (23 April 2024): https://assets.publishing.service.gov.uk/media/6628c835b0ace32985a7e51c/2024–04-23_Defending_Britain_-_FINAL.pdf [accessed 16 September 2024]

68 Q 4 (Prof Malcolm Chalmers)

69 Q 3 (Prof Malcolm Chalmers)

89. Our 2023 report *UK Defence Policy: From Aspiration to Reality?* had already concluded that the UK needed to build greater resilience into the UK's own conventional stocks, supply chains and industrial capacity.[70] Witnesses to this inquiry reinforced the view that the UK requires artillery at a larger scale than it is currently producing.[71]

90. While there have been increases in production—including an eight-fold increase in artillery ammunition by BAE Systems—Air Marshal Edward Stringer noted that this increase was from a low base and there needs to be a re-think and greater investment in production processes: "In the UK and across our European partners, we have tried to sweat the current machinery. We have looked at business as usual and tried to shift every dial as far as we can to the right, but what we are looking at is a complete change in the strategic backdrop".[72] As noted in paragraph 55, witnesses raised the absence of clear Government commitment signals and the focus on annual contracts as barriers to raising production.[73] Additionally, commitments made to industry in the past were not always honoured and have led industry to be cautious about introducing change.[74]

91. For all the discussion around the use of artillery in Ukraine, high-end weapons also play an important role. This is most clearly illustrated by repeated Ukrainian requests for air defence systems. Weapons such as precision-guided munitions and advanced drones offer significant advantages in terms of accuracy and effectiveness. They can target enemy positions with minimal collateral damage, making them invaluable in modern warfare. Mr Joshi explained that the weapons that had made a real difference in Crimea were high-end weapons, such as "British Storm Shadow and French SCALP cruise missiles".[75]

92. Production of high-end weapons, however, is often limited by high costs and complex manufacturing processes.[76] Therefore, a balance between high-end complex platforms and weapons, and conventional ones, is needed. We heard that the Government should focus on a "high-low procurement mix".[77] The need for a suitable balance applies to both the UK and across NATO's European partners as a whole, yet a comprehensive strategy for assessing and setting the most appropriate "high-low procurement mix" appears to be lacking.

93. ***The Government should continue to invest in high-end technologies while ensuring that it rebuilds and maintains adequate stockpiles of conventional munitions. This dual investment strategy will provide UK Defence with the flexibility to respond to various types of threats.***

94. ***We call on the Government to conduct an assessment of the balance the UK should strike between high-end and conventional weapons to enhance effectiveness and sustain operations. This assessment***

70 International Relations and Defence Committee, *Defence concepts and capabilities: from aspiration to reality* (1st Report, Session 2022–23, HL Paper 124)
71 See, for example, Q 50 (General (retd) Sir Nick Carter); Q 3 (Prof Malcolm Chalmers); Written evidence from Dr Stepan Stepanenko and John Holmes (IUD0004).
72 Q 21 (Air Marshal (retd) Edward Stringer, Dr Marc DeVore and Tim Lawrenson)
73 Q 10 (Shashank Joshi)
74 Q 54 (Dr Peter Roberts)
75 Q 8 (Shashank Joshi)
76 Q 5 (Prof Malcolm Chalmers) and Q 8 (Shashank Joshi)
77 Written evidence from the Human Security Centre (IUD0010)

should also consider the mix of capabilities among NATO's European members and take account of the potential for burden-sharing across the Alliance.

Maintaining old weapons stocks

95. Maintaining old weapons stocks could, in some cases, create a strategic reserve and be a cost-effective option for scaling up mass. In Ukraine, weapons and platforms from the Soviet area and well past their 'use-by date' have been relied on extensively by both sides.[78]

96. We heard that there are maintenance costs attached to holding on to old stock, but that retaining retired capabilities rather than selling them—often at knock-down prices—can create a reserve to draw on in a crisis.[79] This point was also made by the House of Commons Defence Committee in their report *Ready for War?*, published in February 2024.[80]

97. An added advantage is that 'mothballed' platforms and weapons will also be very familiar to those who have recently retired from military service and retain a Reserve liability, thus reducing their potential future training requirements.[81]

98. However, there are questions over whether the MoD is holding on to old weapons stocks and platforms in the most efficient way. To effectively maintain old stocks, inventory needs to be properly accounted for. A Public Accounts Committee report published in January 2024 concluded that "the MoD's inventory management systems remain outdated, and the quality of its data limits its ability to understand its inventory".[82] The report describes the system as fragmented and facing legacy IT issues.

99. In addition, Dr Roberts hinted that resource accounting and budgeting rules were penalising the retention of old platforms. He noted that the Royal Navy has sold ships "for razor blades because, under resource accounting and budgeting, the Navy was penalised for holding those old stocks".[83]

100. ***The Government should urgently reconsider its policy for disposing of old weapons stocks and consider 'mothballing' them instead, ensuring that the accounting and IT infrastructure is updated to support this move. While there may be costs attached to this, as well as to maintenance, the war in Ukraine has demonstrated the ongoing effectiveness of retired capabilities.***

Securing greater efficiencies: joint procurement, interoperability and innovation

101. European militaries and NATO members rely on military equipment that is often sourced from different manufacturers across multiple countries and produced to different standards. For Ukraine, this issue has practical implications. Whilst Ukraine has benefitted from allied contributions in

78 Q 21 (Marc DeVore)
79 Written evidence from Prof Vincent Connelly (IUD0012)
80 Defence Committee, *Ready for War?* (First Report, Session 2023–4, HC26)
81 Q 53 (Dr Peter Roberts)
82 Committee of Public Accounts, *Improving Defence Inventory Management* (Eighth Report, Session 2023–4, HC66)
83 Q 53 (Dr Peter Roberts)

the short term, the multitude of standards also created significant logistical problems as capabilities needed to be sustained through bespoke means.

102. Interoperability, defined by NATO as the "ability for allies to act together coherently, effectively and efficiently",[84] is critical for maintaining a cohesive and unified defensive posture. NATO has historically set out clear common standards. The difficulty in achieving this harmonisation has been that nations have then deviated from these standards, usually to protect their own sovereign or defence manufacturing capability. As a result, within NATO there is significant fragmentation of industrial strategies and procurement regulations, which disrupts integrated military supply chains and procurement.

103. Amid the war in Ukraine, the question of interoperability has acquired renewed attention. The individual challenges of maintaining a stockpile sufficiently large for such a conflict means UK Defence should favour interoperable solutions in future procurement. Northrop Grumman, an American aerospace and defence company, told us that this would "facilitate the sharing of stocks with allies and provide an alternative supply base, in event of war", with positive spillover on exportability. "Interoperable weapons are also exportable, unlike bespoke exquisite solutions", the company explained.[85]

104. The NATO Defence Procurement Action Plan (DPAP), agreed at the Vilnius Summit, formalises and supports allied nations in that effort. Some progress is being made, with working groups being formed to identify which nations are interested in particular categories, with the aim of establishing smaller groups of nations with similar requirements to shape procurement proposals.[86]

105. Some of our witnesses noted that NATO could do more and argued that greater use could be made of existing mechanisms. Marc DeVore, Senior Lecturer at the University of St Andrews, identified NATO's national armaments directors' forum as an avenue for more structured discussions on cooperation or standardisation. Mr DeVore believes that the NATO Support and Procurement Agency could likewise put pressure on states when they are producing pieces of equipment that are not compatible with one another. He also emphasised that these changes would not entail reinventing the wheel: "there is a lot that we can achieve by reinvigorating some of the existing NATO institutional architecture, parts of which have become sclerotic and underused over time".[87]

106. Tim Lawrenson pointed out some of the limitations faced by NATO. He observed that since NATO has the capacity, the knowhow, the people and the systems, "it probably would be the logical place to do all this, but it does not have this big budget of its own".[88] Mr Lawrenson identified the EU as a promising actor in this regard: "the EU is not as yet putting in place big enough budgets to completely change the ecosystem and the way it works, but it is going down a path towards that".[89] Indeed, there have been

84 NATO, 'Interoperability: Connecting forces' (11 April 2023): https://www.nato.int/cps/en/natohq/topics_84112.htm [accessed 16 September 2024]
85 Written evidence from Northrop Grumman (IUD0007)
86 Written evidence from Thales (IUD0016)
87 Q 26 (Dr Marc DeVore)
88 Q 16 (Tim Lawrenson)
89 Q 11 (Tim Lawrenson)

growing EU efforts to coordinate defence activity and procurement across their members including the European Defence Industrial Strategy (EDIS) and European Defence Investment Programme (EDIP). Thales told us that "understanding how this aligns to NATO's activities and, critically, does not duplicate them, will be very important".[90]

107. Joint procurement is a way for increasing both cost effectiveness and scalability. Mr Joshi explained that "it is that purchasing at scale that will enable us to restock these arsenals sustainably, rather than on a boutique national basis".[91] Joint procurement also has positive spillovers on interoperability and integration between allies.

108. We have received persuasive evidence suggesting that UK Defence should strengthen its industrial collaboration with key allies. Building on current collaborative initiatives and strengthening industrial collaboration with our European partners would allow the UK to improve its own industrial capabilities, whilst also drawing on the expertise of its allies, to build the industrial capacity that is needed at a more affordable cost.[92] Following the invasion of Ukraine, the EU has stepped up its effort to promote a stronger and more integrated European industrial base. While there are some challenges to co-operating with the EU (as set out in Chapter 3), the new UK Government has an opportunity to discuss options for overcoming these through potential future negotiations on a new UK-EU security pact.

109. Witnesses from the defence industry sector encouraged more co-development activities to enable more rapid and effective progress in critical capability areas. AUKUS was identified as having considerable potential for enabling a truly collaborative approach. "The alliance is an opportunity to secure global supply chains. However, it should also be part of a more ambitious strategic vision to build an allied industrial base", Northrop Grumman told us.[93] Air Marshal Stringer identified the Joint Expeditionary Force (JEF) as a potential avenue for closer cooperation on procurement.[94] There are also options for collaborating with non-European states. For example, Northeast Asia's defence industries are exporting heavily into Europe and involved in co-development. South Korea last year signed $28 billion in arms export contracts, meaning that it signed more contracts last year than Russia was signing pre-war. Most of that is to Europe, to countries such as Poland. Japan has also amended its constitution to be able to collaborate more with European states on defence industrial co-operation. Dr DeVore suggested that "We may want to co-operate more and figure out ways of institutionalising cooperation with the advanced, industrial, democratic, non-European states that also want to join this integrated defence market".[95]

110. While interoperability and standardisation are desirable, we note that a delicate balance needs to be struck that allows for the ability to innovate at pace and promotion of a diverse set of capabilities across NATO. A degree of flexibility therefore remains desirable. In particular, the ability to rapidly adapt, iterate and deliver agile solutions without too much bureaucracy can

90 Written evidence from Thales (IUD0016)
91 Q 5 (Shashank Joshi)
92 See, for example, written evidence from ADS Group (IUD0005) and Northrop Grumman (IUD0007); Q 26 (Dr Marc DeVore).
93 Written evidence from Northrop Grumman (IUD0007)
94 Q 21 (Air Marshal (retd) Edward Stringer)
95 Q 26 (Dr Marc DeVore)

significantly impact operational readiness and effectiveness. As Lord Peach told us, "Ukrainians have shown us the way, which is to test, deploy and employ.[96] Dr DeVore, however, noted that this would require systemic change as "our defence industries are not used to those types of rapid feedback loops".[97]

111. **Our evidence showed that while there has been some progress in increasing joint procurement and harmonising defence systems among NATO allies, more needs to be done. Fragmentation hinders interoperability and cohesive defence efforts, as evidenced by Ukraine's current logistical struggles with maintaining capabilities.**

112. ***The UK should reinvigorate existing NATO mechanisms, such as the national armaments directors' forum and the NATO Support and Procurement Agency, to enhance cooperation and standardisation efforts among member states.***

113. **Joint procurement initiatives and strengthened industrial collaboration with key allies, including non-European states, are essential for enhancing the cost-effectiveness, scalability, and interoperability of defence capabilities.**

114. ***Interoperability is not an end in itself. While pursuing interoperable solutions, the Government should be mindful of maintaining a diversity of capabilities and promote innovation. For example, the Government should review with industry how faster feedback loops could be developed that would support agile innovation.***

96 Q 67 (Air Chief Marshal the Lord Peach)
97 Q 20 (Dr Marc DeVore)

CHAPTER 3: NURTURING PARTNERSHIPS

115. International engagement is integral to deterrence and escalation management. Diplomacy can convey unambiguous messages and present a united front to an opponent, making clear the cost of escalation. Alliances and security partnerships can amplify defence capabilities, and deliver assurance and deterrence. The contrast between the experiences of Ukraine and Georgia, compared with those of NATO members Estonia, Lithuania and Latvia, is a case in point.

116. The war in Ukraine galvanised much of the world in condemnation of Russia, but also exposed the limits of and constraints on support. Additionally, the war has revealed the role of China as a key decisive enabler of Russia.

117. Since Russia's illegal and unprovoked invasion, the UN's 193 member states have voted on six emergency special session resolutions addressing various concerns with regard to Ukraine.[98] Most countries supported the first resolution in March 2022 condemning Russia's invasion, with only a quarter of voting states not in favour. However, all those either abstaining or voting against the resolution were countries in Africa, Latin America, the Middle East, South and Southeast Asia—i.e. within what is often referred to as the 'Global South'. This pattern held in subsequent votes and few countries in those regions have imposed sanctions on Russia or given material support to Ukraine.[99]

118. Russia's approach to the Global South has been to exploit grievances against the West and rely on the Soviet Union's historical support for decolonisation to forge closer partnerships. This narrative resonates particularly in Africa and Asia, where the central story explaining the past couple of centuries is the struggle of national liberation against colonial power and exploitation. As former Portuguese Europe minister Bruno Maçães wrote for the New Statesman, during travels through Asia and Africa "it quickly became obvious to me that Ukraine's plight would receive a lot more sympathy in the Global South if it were presented as a war of national liberation. It particularly helped if you described Russia as the last European empire". Nevertheless, most Western democracies, Maçães explained, are reluctant to embrace this narrative, with implications on their efforts in building a global coalition.[100]

119. Since the invasion, Foreign Minister Lavrov has paid multiple visits to key countries, while Putin courted leaders from Africa at a Russia-Africa summit and hosted a parliamentary conference in 2023. Russia's new Foreign Policy Concept, adopted in March 2023, devotes a distinct section to Africa for the first time and talks about a polycentric world in opposition to Western 'neo-

98 The United Nations Dag Hammarskjöld Library, 'UN General Assembly Resolutions Tables': https://research.un.org/en/docs/ga/quick/emergency [accessed 16 September 2024]

99 The United Nations Dag Hammarskjöld Library, 'UN General Assembly Resolutions Tables': https://research.un.org/en/docs/ga/quick/emergency [accessed 16 September 2024]

100 'What the West gets wrong about the Ukraine', *The New Statesman* (5 June 2024): available at https://www.newstatesman.com/world/europe/ukraine/2024/06/what-the-west-gets-wrong-about-the-war-in-ukraine [accessed 16 September 2024]

colonialism'.[101] Moscow also hosted its first Russia-Latin America conference last year.[102]

120. The significance of these diplomatic initiatives should not be overstated—the Global South is not a homogenous 'bloc' and countries will have their own interests and individual pragmatic responses to Russian approaches. Nevertheless, they demonstrate that Russia is willing to flex its diplomatic muscle to exploit grievances in the Global South against the West. Many developing countries view Russia's war in Ukraine and the West's competition with China as diversions from pressing issues for the Global South like debt, climate change, and the lingering impacts of the COVID-19 pandemic. When urged to denounce Russia's aggression, they have highlighted the US-led wars in Afghanistan and Iraq as examples of Western hypocrisy and double standards. Additionally, there is dismay over the disparity between the West's empathy for the war victims in Ukraine and their apparent indifference to the suffering of people in other regions. [103]

121. *Realpolitik* has certainly played its part in determining the positions of certain countries on Russia's war against Ukraine. India, for instance, has traditionally been dependent on Moscow for military supplies. In early July 2024, India and Russia agreed to boost trade between their two countries, defying Western efforts to squeeze the Russian economy over its invasion of Ukraine. During his trip to Moscow on 8 July 2024, India's Prime Minister Modi and President Putin pledged to increase annual bilateral trade to $100bn by 2030, up from $65bn at present, with India importing more Russian oil. Prime Minister Modi praised Russia as India's "all-weather friend" during his visit. The Kremlin hailed the trip as a sign Ukraine's Western supporters have failed to isolate Russia or generate support for Kyiv in developing countries. [104]

122. Some countries have not just refused to impose sanctions, but actively supported the Kremlin by enabling or allowing the procurement of sensitive Western military goods and dual-use technologies for onward export to Russia. Kyrgyzstan and Kazakhstan have been identified as the main, but by no means the only, countries engaged in this practice.[105] Imports of high priority dual-use goods from the West to Kyrgyzstan have reportedly jumped by over 1,682%, and to Kazakhstan by more than 333%.

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101 Chatham House, 'Russia is using the Soviet playbook in the Global South to challenge the West—and it is working', (16 May 2024): https://www.chathamhouse.org/2024/05/russia-using-soviet-playbook-global-south-challenge-west-and-it-working [accessed 16 September 2024]; European Parliamentary Research Service, *Russia in Africa: An Atlas* (February 2024): https://www.europarl.europa.eu/RegData/etudes/BRIE/2024/757654/EPRS_BRI(2024)757654_EN.pdf [accessed 16 September 2024]

102 President of Russia, 'Opening of the Russia-Latin America Parliamentary Congress' (29 September 2023): http://en.kremlin.ru/events/president/news/72401 [accessed 16 September 2024]

103 Internationale Politik Quarterly, 'The Global South is a Geopolitical Reality' (29 June 2023): https://ip-quarterly.com/en/global-south-geopolitical-reality [accessed 16 September 2024]

104 'Narenda Modi and Vladimir Putin to boost trade despite Ukraine war', *The Financial Times* (9 July 2024): available at https://www.ft.com/content/d70e7367–0113-49c4-81be-0c5c3edcbffe?emailId=aeb0edfd-57f3-404e-b47e-953d6b7c9df0&segmentId=22011ee7-896a-8c4c-22a0-7603348b7f22 [accessed 16 September 2024]

105 Euractiv, 'EU sanctions on Russia "massively circumvented" via third countries, study finds': https://www.euractiv.com/section/economy-jobs/news/eu-sanctions-on-russia-massively-circumvented-via-third-countries-study-finds/ [accessed 16 September 2024]. On Turkey, see: Carnegie Russia-Eurasia Centre, 'Closer ties to the West don't mean Turkey will give up on Russia' (26 February 2024): https://carnegieendowment.org/russia-eurasia/politika/2024/02/closer-ties-to-the-west-dont-mean-turkey-will-give-up-on-russia?lang=en [accessed 16 September 2024].

123. It is evident that Russia is increasing its own outreach in these countries to counter Western attempts at international isolation and mitigate the impact of sanctions. This, however, should not prompt defeatism in the West. The UK is well placed to make its own proposition to key countries in the Global South. As explained by experts Olivia O'Sullivan and Bronwen Maddox in a Chatham House research paper, in the Global South the UK can "build relationships by seeking a consistent role where it has credibility and expertise - poverty reduction, climate policy, technology governance, arms control, scientific research".[106] This resonated with evidence submitted to us by the Henry Jackson Society, a London-based transatlantic, foreign policy and national security think tank. They told us that "the UK has a prominent role on the world stage, evident by its position in the UNSC and the G7", and that it "therefore needs to shift from a subordinate position of reliance on the US to other, more local, partnerships as well as accept greater personal responsibility". The Society also stressed the importance of "maintaining a physical presence in regions of potential conflict".[107]

124. In parallel, Russia is cultivating an "Axis of the Sanctioned"[108], forging deeper connections with Iran and North Korea, both of which, in exchange for Russian oil and gas as well as diplomatic and military know-how, are supporting Russia's war effort: North Korea has become Russia's largest external supplier of shells, while Iran is supplying Russia with Shahed drones.[109] In early June 2024, President Putin visited Pyongyang where he promised to build a new security "architecture" to counter the West. It is not clear exactly what the new agreement will involve but, for the time being, it is unlikely to be a full mutual defence treaty.[110] It remains to be seen how these relationships will evolve, but an alignment of countries that are opposed to the post-World War II international order could be deeply destabilising and pose a serious threat to the West on multiple fronts.[111]

125. Another significant development is the deepening Sino-Russian relationship. Shortly before the start of Russia's invasion of Ukraine, Presidents Putin and Xi Jinping declared that their countries' friendship had "no limits" and there were "no 'forbidden' areas of co-operation".[112] The war has only brought these two countries closer together, particularly in the economic sphere. Trade between Russia and China has increased sharply since the imposition

106 Chatham House, 'Three foreign policy priorities for the next UK government' (14 May 2024), p 34: https://www.chathamhouse.org/2024/05/three-foreign-policy-priorities-next-uk-government [accessed 16 September 2024]

107 Written evidence from the Henry Jackson Society (IUD0008)

108 Foreign Affairs, 'Russia's Axis of the Sanctioned' (6 October 2023): https://www.foreignaffairs.com/russian-federation/russias-axis-sanctioned [accessed 16 September 2024]

109 Center for Strategic and International Studies, 'Collaboration for a Price: Russian Military-Technical Cooperation with China, Iran, and North Korea' (22 May 2024): https://www.csis.org/analysis/collaboration-price-russian-military-technical-cooperation-china-iran-and-north-korea [accessed 16 September 2024]

110 'Putin lands in North Korea to sign security deal and meet Kim Jong-un' *The Times* (18 June 2024): available at https://www.thetimes.com/world/asia/article/putin-to-sign-north-korean-security-deal-on-first-visit-since-2000-b5hk7rvhq?utm_source=Sailthru&utm_medium=email&utm_campaign=Best%20of%20Times%20-%20Wednesday%2019th%20June%202024&utm_term=audience_BEST_OF_TIMES [accessed 16 September 2024]

111 Foreign Affairs, 'Russia's Axis of the Sanctioned' (6 October 2023): https://www.foreignaffairs.com/russian-federation/russias-axis-sanctioned [accessed 16 September 2024]. See also: Fox News, '"We haven't seen a threat like this since WWII, Gen. Kean warns"', (20 June 2024): https://www.foxnews.com/media/we-havent-seen-threat-like-since-wwii-jack-keane-warns [accessed 16 September 2024].

112 President of Russia, 'Joint Statement of the Russian Federation and the People's Republic of China' (4 February 2022): http://www.en.kremlin.ru/supplement/5770 [accessed 16 September 2024]

of Western sanctions, hitting record levels in each year since the invasion of Ukraine. While China has been adamant that it is not allowing weapons sales to Russia, it has provided machine tools and microelectronics which are bolstering Russia's defence industrial base.[113]

126. Sino-Russian cooperation is deepening beyond the context of Ukraine, extending into areas of particular interest to UK security, such as the Arctic. As outlined in the Committee's report, *Our friends in the North: UK Strategy towards the Arctic*, there is growing collaboration between Moscow and Beijing in the region. The report highlights that while China's current footprint in the Arctic, outside of Russia, is limited, concerns about China's long-term strategic intentions are valid, warranting close monitoring.[114]

127. The threat of an increasingly prominent Sino-Russian strategic alignment has been recognised by NATO members. In a NATO communiqué published at the Washington Summit in early July 2024, member countries labelled China a "decisive enabler" of Russia's war against Ukraine through its "no-limits partnership" with Russia and its large-scale support for Russia's defence industrial base.[115]

Effective cooperation with European partners

128. Since February 2022, the UK has been a staunch supporter of Ukraine and has often been among the first Western allies to provide some key capabilities. To date, the UK has pledged £12.7 billion in support to Ukraine, of which £7.6 billion is in military assistance. This includes £3 billion for military assistance in 2024/25. The UK is providing both lethal and non-lethal weaponry, including tanks, air defence systems and long-range precision strike missiles.[116] By early 2024, the UK had trained 30,000 Ukrainian troops through its Operation Interflex and was due to train another 10,000 by the middle of the year.[117]

129. In providing support to Ukraine, the UK has also demonstrated a good level of cooperation and coordination with European partners. British-designed curricula were used to inform the EU's own training mission for the Ukrainian Armed Forces and by the end of 2022 it was announced that the UK would join the EU's Military Mobility PESCO project. Meanwhile, Denmark, Finland, Sweden, Lithuania, The Netherlands and Romania have contributed on a bilateral basis to Operation Interflex. Sweden, the Netherlands, Denmark and Lithuania have also contributed financial resources to the UK-led International Fund for Ukraine, used to procure lethal and non-lethal military equipment. The UK is also part of a group of

113 CNN Business, 'How the Ukraine war brought China and Russia closer together' (15 May 2024): https://edition.cnn.com/2024/05/15/business/china-russia-ties-ukraine-war-intl-hnk-dg/index.html [accessed 16 September 2024]

114 International Relations and Defence Committee, *Our friends in the North: UK strategy towards the Arctic* (1st Report, Session 2023-4, HL Paper 8)

115 NATO, 'Washington Summit Declaration' (10 July 2024): https://www.nato.int/cps/en/natohq/official_texts_227678.htm [accessed 16 September 2024]

116 Prime Minister's Office, Press release: *UK shows enduring commitment to Ukraine at G7 summit* on 12 June 2024: https://www.gov.uk/government/news/uk-shows-enduring-commitment-to-ukraine-at-g7-summit [accessed 16 September 2024]

117 Ministry of Defence, The Rt Hon Grant Shapps and The Rt Hon Rishi Sunak, Press release: *30,000 Ukrainian recruits trained in largest UK military training effort since the Second World War* on 10 November 2023: https://www.gov.uk/government/news/30000-ukrainian-recruits-trained-in-largest-uk-military-training-effort-since-second-world-war [accessed 16 September 2024]

23 nations, led by France, working to improve Ukraine's artillery arsenal.[118] The extent to which the UK collaborated with European partners was highly praised by the EU High Representative Josep Borell: "for the last two years, our co-operation with the UK in helping Kyiv resist Russia's aggression has been nothing short of exemplary".[119]

130. It is clear, also, that the US remains the key actor for European security. Some analysts have argued that it was US support that solidified European countries in their willingness to provide support to Ukraine.[120] The US, however, is increasingly pivoting to the Indo-Pacific to counter its main competitor, China. This has raised concerns that the US could become less engaged in Europe at a time when war has returned to the continent. There are also uncertainties over what a potential Trump or Trumpian administration would mean for European security, with fears it could result in disengagement and embolden Russia.

131. Questions on US support extend beyond the situation in Ukraine, with broader implications for the future of the Alliance. Retired Air Marshal Edward Stringer told us, "if there is going to be a sense of a slight US retreat from the defence of Europe, it is not just the American spend and muscle that is going to be missed; it is the American brain, which in many ways has led the NATO effort".[121] According to Stringer, it is the US that has been leading standardisation efforts in NATO, with European partners following suit. Most importantly, the Air Marshal told us, if the European pillar of NATO is going to have to stand up, it will have to think through how to revamp that sense of military leadership within NATO that so far mostly came from the US.[122]

132. The war in Ukraine had already re-focused the UK's security priorities towards Europe, but forging security partnerships with European allies has acquired a new urgency to mitigate against the risk of a less Europe-focused US. Labour's manifesto set out the new Government's ambition to "seek an ambitious new UK-EU security pact to strengthen cooperation on the threats we face. We will rebuild relationships with key European allies, including France and Germany, through increased defence and security co-operation". This commitment has so far been backed with actions. In the very early days of this Government, the new Foreign Secretary, the Rt Hon David Lammy MP, met with key European counterparts in Germany, Poland and Sweden.[123] Prime Minister Keir Starmer made rapprochement with Europe a priority at both the European Political Community Meeting in Oxfordshire and at the NATO Summit in Washington. At the NATO

118 Centre for European Reform, *Working Hand in Hand? EU-UK Co-operation in Supporting Ukraine* (May 2024): cer.eu/publications/archive/policy-brief/2024/working-hand-hand-eu-uk-co-operation-supporting-ukraine#FN-5 [accessed 16 September 2024]

119 Josep Borrell Fontelles, 'In a dangerous world, Europe and Britain need each other', *EEAS* (21 July 2024): available at https://www.eeas.europa.eu/eeas/dangerous-world-europe-and-britain-need-each-other_en [accessed 16 September 2024]

120 The Royal United Services Institute (RUSI), *Challenges and barriers that limit the productivity and competitiveness of UK defence supply chains* (July 2021): https://www.rusi.org/explore-our-research/publications/commentary/uk-and-european-security-five-key-lessons-ukraine-war [accessed 16 September 2024]

121 Q 27 (Air Marshal (retd) Edward Stringer)

122 Q 27 (Air Marshal (retd) Edward Stringer)

123 BBC News, 'New foreign secretary wants to reset EU-UK ties' (7 July 2024): https://www.bbc.co.uk/news/articles/cne4wypn23wo [accessed 16 September 2024]

Summit, President Joe Biden welcomed Starmer's intention to establish closer relationships with Europe.[124]

133. Russia's war on Ukraine has driven a closer UK–EU working relationship on security matters.[125] However, despite the demonstrated willingness to re-engage with Europe and closer collaboration on certain projects in support of Ukraine, the new Government might find its broader goals difficult to achieve. The EU's approach towards third-country partners remains unchanged. As Tim Lawrenson, Associate Fellow at the IISS, told us, "it is one of those areas where you would think a war in Ukraine on Europe's borders would have changed the mindset enough to start trying to address that, but it has not happened yet, and it needs to".[126]

134. There is a specific set of restrictions for non-EU countries wishing to join EU-led defence initiatives. Notably, the level of integration with the EU Single Market decides the viability of defence cooperation with EU initiatives such as the European Defence Fund (EDF), the Act in Support of Ammunition Production (ASAP), and the European Defence Industry Reinforcement Through Common Procurement Act (EDIRPA). The current rules for participating in EU initiatives make it virtually impossible for third countries to join. Tim Lawrenson explained that "the rules that you see in almost every one of those instruments say, in essence, that third countries are welcome to participate, but only if they accept rules that, frankly, no third country would be able to accept. It just does not work". According to Lawrenson this explains why, for instance, there is no third-country participation in the EDF, which is the largest current programme with €8bn funding (about 15% of all EU research and development).[127]

135. An inquiry by the House of Lords' European Affairs Committee gathered extensive evidence on the limits of the EU's current rules to third country participation. Their final report, published on 31 January 2024, expressed regret that, despite the close alignment of their strategic objectives, third party rules pose a significant barrier to cooperation between the UK and the EU. The Committee urged the Government to press the case with the EU for changes to third-party rules that would facilitate greater UK engagement.[128]

136. These findings resonated with evidence gathered by our committee. Mr Lawrenson noted that the EU's eagerness to effectively explore and legally spell out advanced forms of security cooperation with the UK will much depend on the latter's willingness to commit itself to cooperation in the first place: "Those barriers are not insurmountable. There is an appetite in the EU, particularly on defence, to change some of those rules or to allow a closer relationship with the UK, not least because of the current situation, but we are not really pushing it."[129] There is now a unique opportunity to do so through a UK-EU security pact and we encourage the new Government to work creatively with the EU to overcome technical barriers.

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124 Politico, 'The Tories are gone—and Britain is moving closer to Europe again' (12 July 2024): https://www.politico.eu/article/keir-starmer-britain-europe-closer-ties-joe-biden-alliance-backing/ [accessed 16 September 2024]

125 European Affairs Committee, *The Ukraine Effect: The impact of Russia's invasion of Ukraine on the UK–EU relationship* (First Report, Session 2023–4, HL Paper 48)

126 Q 23 (Tim Lawrenson)

127 Q 25 (Tim Lawrenson)

128 European Affairs Committee, *The Ukraine Effect: The impact of Russia's invasion of Ukraine on the UK–EU relationship* (First Report, Session 2023–4, HL Paper 48)

129 Q 30 (Tim Lawrenson)

137. Some analysts have argued that the focus on improved UK-EU cooperation should be to deliver added value for European security as it faces its biggest crisis since the Second World War, rather than on formal agreements.[130]

138. Besides EU rules, there are some inherent characteristics to European defence governance that make collaboration difficult, particularly on joint procurement. Mr Lawrenson explained that European states "see having an industry as important for their autonomous ability to act, but it is also about employment and economics in some cases".[131] Therefore, wars like the one in Ukraine, in the end, produce competitions between states in production and between their national defence industrial champions. Air Marshal Stringer elaborated on how these inherent dynamics can affect warfighting: "if you look across Europe, part of the problem is that each country has its own champion, and it sponsors that champion. Everybody is procuring one or two of some quite expensive stuff. That is very unwieldy, and it is very difficult to pull all that together and fight a conflict with it".[132]

139. In the process of revamping a UK-EU security partnership it is therefore important to think about European defence cooperation in terms of structures that can best accommodate multinational endeavours in the inherently competitive European defence industrial base. The Defence and Security Industrial Strategy (DSIS) published by the Johnson Government in March 2021 introduced partnering principles for defence and security capability collaboration. The UK's starting position for international programme negotiations is based on 'best athlete' partnering principles and full decision-making rights. The approach includes aligning objectives based on military capability, budget, international influence and industrial policy, and establishing a delivery-focused government and industry framework with clear accountability and minimal bureaucracy. Partnerships should be based on national strengths with proportionate returns on investment, collaboratively developed and owned technology and a common long-term support strategy.[133]

140. The partnering approach introduced by the DSIS has so far underpinned the Global Combat Air Programme (GCAP) between the UK, Italy and Japan. It could extend beyond it and inform a framework for pragmatic cooperation with EU partners.

141. The Joint Expeditionary Force (JEF, see Box 1) represents another success story of international defence cooperation and it could have conductive power towards promoting similar formats in Europe. Lord Peach told us that the JEF could become a forum for closer cooperation: "We have quite a lot we can learn from our Scandinavian friends and their industries. Perhaps in future reviews we should be looking to work with like-minded, friendly industry groups and groupings, rather than having to do everything individually".[134]

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130 The Royal United Services Institute (RUSI), *What can the new government's proposed EU-UK security pact achieve?* (8 July 2024): https://rusi.org/explore-our-research/publications/commentary/what-can-new-governments-proposed-uk-eu-security-pact-achieve [accessed 16 September 2024]

131 Q 24 (Tim Lawrenson)

132 Q 11 (Air Marshal (retd) Edward Stringer)

133 HM Government, *Defence and Security Industrial Strategy: A strategic approach to the UK's defence and industrial security centres* (March 2021), p 74: https://assets.publishing.service.gov.uk/media/60590e988fa8f545d879f0aa/Defence_and_Security_Industrial_Strategy_-_FINAL.pdf [accessed 16 September 2024]

134 Q 65 (Air Chief Marshal the Lord Peach)

Box 1: The Joint Expeditionary Force (JEF)

The Joint Expeditionary Force (JEF) is a UK-led coalition of ten northern European countries. It provides a collective military capability, deterrent, and expeditionary force focused on security in the High North, North Atlantic, and Baltic Sea region. The Foundation Memorandum of Understanding was signed in 2015, and full operational capability was declared in 2018.

The JEF is designed to complement NATO and other existing alliances. The UK acts as the principal decision-maker, with other member states deciding whether to contribute forces or otherwise participate in the activity or operation.

The JEF member states are the UK, Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, the Netherlands, Norway and Sweden.

Source: Joint Expeditionary Force, 'About the JEF': https://jefnations.org/about-the-jef/ [accessed 16 September 2024]

142. Similarly, Air Marshal Stringer suggested that the UK could use the JEF as a testbed for building a shared and integrated defence industrial base: "If we get that right and we burden-share across those 10 nations, this will be a great example for NATO and EU nations that are going to have to do the same thing".[135]

Conclusions and recommendations

143. **The war in Ukraine has thrown the role of alliances at a time of war into the spotlight. Following the invasion, Russia is attempting to offset its decline in relations with the West by developing closer ties with China, Iran, North Korea and key Global South countries, including India. This has allowed Russia to undermine the effectiveness of Western sanctions and avoid international isolation, while also increasing its strategic depth.**

144. **Russia's collaboration with China, Iran and North Korea, in particular, is of concern. It could lead to a substantial deterioration of the threat environment we face and pose a significant strategic challenge to the West.**

145. ***We recognise that there are limited options for the UK Government to respond to this challenge, but it should aim to maintain the broadest possible coalition of countries to counter Russian narratives and send clear signals about unacceptable behaviour.***

146. ***As the UK Government is facing a world where the Global South is becoming more assertive, with some countries leaning towards China or Russia, it is vital for the UK to be more proactive and have a strategy on how to engage with the Global South. Specifically, the UK should build relationships by seeking a consistent role where it has credibility and expertise. In particular, the UK Government should leverage diplomacy and reinvigorate its role as an international development actor to offer an alternative value proposition to those countries in the Global South particularly exposed to Russian and Chinese influence.***

135 Q 21 (Air Marshal (retd) Edward Stringer)

147. ***To counter the neo-colonial narrative deployed by Moscow in the Global South, diplomatic efforts of the UK and its Western allies should keep the focus on Putin's violation of Ukraine's territorial integrity and portray Russian actions in Ukraine as imperialistic.***

148. **We welcome the communiqué agreed by NATO members at the Washington Summit labelling China a "decisive enabler" of Russia's war against Ukraine. This reinforces the evidence we heard that the Russian invasion of Ukraine has created a window of opportunity for the deepening of the Sino-Russian relationship.**

149. ***It is imperative that the UK Government continues to pay close attention to the development of the Sino-Russian relationship, both in the context of the Ukraine war and beyond. In addition to developing distinct strategies for Russia and China, the Government should develop a comprehensive strategy that takes account of the potential for a deepening Sino-Russian relationship, particularly in critical areas for UK security, such as the Arctic.***

150. **The UK has shown leadership in providing military support for Ukraine and has developed a good level of cooperation and co-ordination with European partners. We welcome the new Government's commitment to negotiate an ambitious security pact with the EU. This could represent an important step towards rebuilding credible conventional deterrence.**

151. ***There are, however, challenges within EU rules and practice to third-country participation. We therefore recommend that the new Government starts to discuss third-country involvement rules early on in any negotiations to understand the EU's willingness to adjust them, which would provide clarity on the parameters for the negotiations.***

152. ***The Government should ensure that pragmatism underpins a security deal with the EU. The purpose of any UK–EU cooperation should first and foremost be to deliver additional value for European security as it faces its biggest crisis since the Second World War. Negotiations should prioritise pragmatic areas for cooperation, rather than institutional landmarks.***

153. **We have received persuasive evidence about the value of the JEF and its potential as a testbed for other formats of defence cooperation with European partners.**

154. ***The Government should maintain the UK's leadership role within the JEF and set ambitious objectives for the initiative, such as closer industrial integration among the member countries. There are lessons learnt from the JEF that can be applied to the broader European context. We urge the Government to explore how a similar format could be applied with a different set of countries to tackle a different mission.***

155. **The United States has long been a cornerstone of European security, but it is also reasonable to expect a gradual shifting of US priorities, regardless of the outcome of the forthcoming US election. The trajectory of a re-focus towards the Indo-Pacific region is clear.**

156. ***As we continue to rely on the vital yet evolving partnership with the US, the Government and its European allies must visibly increase their preparedness by committing more resources—both human and financial—towards our collective security.***

CHAPTER 4: COUNTERING AERIAL THREATS

157. Missile and drone warfare remained a prominent feature of the war in Ukraine throughout the lifetime of this inquiry. Ukraine has repeatedly called for Western support for their air defences as Russia intensified its missile and drone attacks on Ukrainian critical infrastructure and on Ukraine's energy grid, causing widespread electricity blackouts and injuring and killing civilians.[136]

158. The proliferation of drone systems has inserted a new operational layer below the traditional air domain, while maritime drones have also played a key role in offensive strikes in the Black Sea.[137]

Absence of air superiority

159. Witnesses to this inquiry repeatedly underscored the importance of air superiority, without which a conflict can fast turn into an attritional land war, as has been the case in Ukraine.

160. James Black, Assistant Director at RAND Europe, noted that both sides in the war have failed to exert air superiority, which has been a "particularly galling" situation for Russia as the side with more substantial capabilities at the start of the conflict.[138]

161. Ukraine has surprised analysts by its ability to deny Russia air superiority, despite Russia's larger initial weapon stocks and more sophisticated platforms.[139] At the beginning of the invasion, the Russian air force had a greater than 10 to 1 advantage over Ukraine in total combat aircraft and deployed around 350 aircraft for this war.[140] However, a patchwork of Ukrainian air defence measures has been successful at stopping incoming missile threats and limiting the damage of Russian air assaults. Missiles have also played a critical role in the maritime domain, with Ukrainian missiles sinking the flagship of Russia's Black Sea Fleet, the *Moskva*, on 14 April 2022.[141]

162. Over the course of our inquiry, Russia stepped up its air campaign just as Ukraine's air defence systems were being depleted while waiting for the US Congress to approve its military aid package. In that time, Russia was able to damage parts of Ukraine's critical infrastructure[142] and exert localised air superiority in pursuit of specific tactical gains. This has been observed in eastern Ukraine, where the use of glide bombs was instrumental in Russia gaining control of the town of Avdiivka—often described as the gateway

136 'Ukraine endures widespread blackouts as Russia attacks critical infrastructure', *The Guardian* (23 June 2024): https://www.theguardian.com/world/article/2024/jun/23/ukraine-endures-widespread-blackouts-as-russia-attacks-critical-infrastructure [accessed 16 September 2024]
137 Q 13 (James Black) and Q 59 (Nick Childs)
138 Q 12 (James Black)
139 Q 12 (James Black)
140 Istituto Affari Internazionali (IAI), *Russia-Ukraine War's Strategic Implications* (20 February 2024): https://www.iai.it/sites/default/files/9788893683159.pdf [accessed 16 September 2024]
141 BBC News, 'Russian warship: Moskva sinks in Black Sea' (15 April 2022): https://www.bbc.co.uk/news/world-europe-61114843 [accessed 16 September 2024]
142 'Ukraine's air defence struggle highlights risks to Israel', *The Financial Times* (17 April 2024): available at https://www.ft.com/content/3599e470-c5aa-4e7e-b34c-4f157be956b6 [accessed 16 September 2024]

to Donetsk—in February of this year. Russia has learned lessons from this approach, which it is now also applying in Kharkiv.[143]

163. Despite recent localised gains, Russia has not managed to exert overall air superiority. This has been put down to a number of factors, including the Russian forces' inability to locate and destroy Ukraine's aircraft and air defence systems, their restricted capabilities in the suppression and/or destruction of enemy air defences (S/DEAD), deficiencies in pilot training and knowledge of doctrine, and limited stockpiles of standoff munitions, i.e. those that can be launched from a distance to evade defensive countermeasures.[144]

Box 2: Suppression/ Destruction of Enemy Air Defences (S/DEAD)

Suppression of Enemy Air Defences (SEAD) focuses on temporarily suppressing enemy air defence systems, reducing their effectiveness, and allowing friendly forces to operate with less risk of being targeted. **Destruction of Enemy Air Defences (DEAD)** aims at permanently destroying enemy air defence assets involving the use of precision-guided munitions.

Source: Northrop Grumman, 'The Need for SEAD/DEAD': https://www.northropgrumman.com/what-we-do/advanced-weapons/the-need-for-sead-dead *[accessed 16 September 2024]*

164. Enhancing air defences to deny Russia the ability to shape the ground war remains one of Ukraine's top priorities. Without it, its ability to limit attacks on critical national infrastructure and slow or push back Russian territorial advances will be seriously comprised.

Insights for UK Defence

165. We fully endorse Lord Peach's assessment that the "enduring lesson" emerging from this war is that "it is a folly to fight without air superiority".[145] We heard throughout our inquiry that the UK's air defence systems have been hollowed out. This is deeply concerning. The UK's air defences were described to us as "negligible" due to years of under-investment and an over-reliance on NATO partner capabilities.[146] Witnesses were virtually unanimous in their assessment that there is a need for the UK to increase its investment in integrated air and missile defence (IAMD).[147]

166. To deliver air superiority, enemy threats from the air must be weakened. This can be done via Suppression of Enemy Air Defences (SEAD) and Destruction of Enemy Air Defences (DEAD) missions.

143 Unguided demolition bombs have been turned into standoff precision weapons by retrofitting them with GLONASS guidance systems. See also: Institute for the Study of War, *Russian offensive campaign assessment* (3 March 2024): https://www.understandingwar.org/sites/default/files/Russian%20Offensive%20Campaign%20Assessment%2C%20March%204%2C%202024%20%28PDF%29.pdf [accessed 16 September 2024] and The Royal United Services Institute (RUSI), *In Ukraine, Russia is beginning to compound advantages* (8 July 2024): https://rusi.org/explore-our-research/publications/commentary/ukraine-russia-beginning-compound-advantages [accessed 16 September 2024].

144 Q 12 (James Black) and written evidence from The Human Security Centre (IUD0010).

145 Q 57 (Air Chief Marshal the Lord Peach)

146 Written evidence from Northrop Grumman (IUD0007)

147 Q 16 (James Black); written evidence from Dr Stepan Stepanenko and John Holmes (IUD0004), the Human Security Centre (IUD0010), Prof Vince Connelly (IUD0012), and Thales (IUD0016)

Box 3: Integrated air and missile defence (IAMD)

Integrated air and missile defence (IAMD) is a comprehensive approach to defending against an array of airborne threats, including aircraft, ballistic missiles, cruise missiles and unmanned aerial vehicles. It uses a complex network of detection, command and control and engagement systems to detect, track and neutralise threats. Within NATO, IAMD is a continuous NATO mission, meaning it is a set of activities—underpinned by capabilities—that Allies undertake during peacetime, wartime, and crisis. In the UK, the RAF is designated as the lead service for IAMD and is responsible for promoting the use of advanced ground-based, airborne, at sea and space-based sensors, and an extensive range of air and missile capabilities, including countering uncrewed aerial systems.

Source: Ministry of Defence, Defence's response to a more contested and volatile world (July 2023), pp 89–90: https://assets.publishing.service.gov.uk/media/64b55dd30ea2cb000d15e3fe/Defence_Command_Paper_2023_Defence_s_response_to_a_more_contested_and_volatile_world.pdf [accessed 1'6 September 2024]

167. We heard that the UK lacks suppression and destruction of enemy air defence capabilities, having retired the Air-Launched Anti-Radiation Missile (ALARM) in 2013.[148] The ability to conduct long-range strikes from sea, in addition to land and air, is also crucial to DEAD. Nick Childs, Senior Fellow for Naval Forces and Maritime Security at The International Institute for Strategic Studies (IISS), suggested that Royal Navy ships have become "well-defended porcupines", in that they can protect themselves but have an "insufficient capability" to conduct long-range strikes.[149]

168. Unlike Ukraine, the UK is comparatively protected by geographical distance from attacks by ground-based short-range missiles (and drones). However, there is no cause for complacency. In case of conflict between NATO and Russia, the UK would become an attractive target as it serves as the primary base for US forces entering Europe. Despite protections afforded by geography, the UK is still vulnerable to attacks from long-range missiles, submarine-launched missiles, and standoff munitions fired by combat aircraft and stealth fighters. Additionally, it cannot rely on European NATO allies to provide IAMD. The US is the only NATO member with substantial S/DEAD capabilities—no European NATO air forces have sufficient expertise or munitions stocks to conduct suppression and destruction of enemy air defences (SEAD/DEAD) at scale.[150] This reliance on the US for Europe's air defences is unsustainable. Should a future confrontation with Russia coincide with a crisis in the Indo-Pacific, there would likely be fewer US military assets available to reinforce Europe.

169. The Defence Command Paper published in 2023 noted that the UK would be stepping up efforts to deliver an integrated air and missile defence to protect itself "against attack from the skies, both overseas and at home". The paper described the threat from the air as "at its most acute for over 30 years–as evidenced in the war in Ukraine".[151]

148 Written evidence from Northrop Grumman (IUD0007)
149 Q 65 (Nick Childs)
150 Professor Justin Bronk, The Royal United Services Institute (RUSI), *In Ukraine, Russia is beginning to compound advantages* (February 2023): https://static.rusi.org/whr_regenerating-warfighting-credibility-nato_0.pdf [accessed 16 September 2024]
151 Ministry of Defence, *Defence's response to a more contested and volatile world*, CP 901 (July 2023), p 89: https://assets.publishing.service.gov.uk/media/64b55dd30ea2cb000d15e3fe/Defence_Command_Paper_2023_Defence_s_response_to_a_more_contested_and_volatile_world.pdf [accessed 16 September 2024]

170. In written evidence, the Ministry of Defence recognised the importance of IAMD and committed to enhancing "extant" IAMD capability.[152] It referred to the planned upgrades to the UK's maritime-based Sea Viper air defence system, which has Initial Operating Capability scheduled for February 2028,[153] and the UK's commitment to contribute a Ballistic Missile Defence Radar to NATO. The MoD's response also highlighted the DIAMOND initiative (Delivering Integrated Air and Missile Operational Networked Defences) launched by the UK, which aims to promote air and missile defence interoperability within Europe in support of NATO, and the immediate focus of which is to increase the use of Ground-Based Air Defence.[154]

171. NATO leaders acknowledged the importance of IAMD at the 2023 Vilnius summit, with the Vilnius declaration making some commitments towards improving the readiness, preparedness, and interoperability of NATO's IAMD, through regular training and rotational presence of air defence systems and capabilities across SACEUR's Area of Responsibility, with an initial focus on the eastern flank.[155]

172. While these developments are welcome, we note that they are still very much in their infancy and will require greater prioritisation, as well as significant time and investment to mature. IAMD and S/DEAD capabilities come at significant financial cost, both in terms of equipment and training.[156] According to NATO's own internal calculations, Europe currently only has a fraction of the air defence capabilities needed to protect its eastern flank.[157]

173. We have gathered persuasive evidence in favour of sustaining a collaborative approach to IAMD. Working with our European NATO partners on interoperability and joint procurement to fill capability gaps makes great sense and can manage some of the high costs involved by helping to deliver economies of scale.

174. Thales noted that whilst they have strong air defence experience and capability across Europe, it is important to recognise that no one industrial partner has the complete, 'box ready' solution to IAMD. As a result, a collaborative approach is key, and lessons on how this might come about can be drawn from other collaborative defence endeavours. Thales suggested that "it is worth considering whether a partnership style approach similar to

152 Written evidence from the Ministry of Defence (IUD0015)
153 UK Defence Journal, 'UK outlines when Destroyers will get missile upgrades': https://ukdefencejournal.org.uk/uk-outlines-when-destroyers-will-get-missile-upgrades/ [accessed: 16 September 2024]
154 Written evidence from the Ministry of Defence (IUD0015)
155 NATO, 'Vilnius Summit Communiqué': https://www.nato.int/cps/en/natohq/official_texts_217320.htm [accessed 16 September 2024]
156 See, for example: King's College London, *European Integrated Air and Missile Defence in NATO: Progress and Persistent Challenges* (October 2023), p 10: https://www.kcl.ac.uk/warstudies/assets/paper-16-julia-muravska-european-integrated-air-and-missile-defence.pdf [accessed 16 September 2024] and The Royal United Services Institute (RUSI), *In Ukraine, Russia is beginning to compound advantages* (8 July 2024): https://rusi.org/explore-our-research/publications/commentary/ukraine-russia-beginning-compound-advantages [accessed 16 September 2024].
157 'Nato has just 5% of air defences needed to protect eastern flank', *The Financial Times* (29 May 2024): available at https://www.nato.int/cps/en/natohq/official_texts_217320.htm [accessed 16 September 2024]

the Aircraft Carrier Alliance or Team Tempest[158] would [be] an appropriate construct to deliver IAMD for the UK".[159]

175. As Stepan Stepanenko, Research Director of the Forum for Foreign Relations, pointed out, "the effectiveness of the UK's air defence system hinges significantly on interoperability with systems operated by NATO allies".[160] This would ensure that in times of crisis, UK defence assets can seamlessly integrate with multinational defence mechanisms, enhancing the collective response efficacy and strategic adaptability of allied forces. He added that interoperability is "critical for maintaining a cohesive and unified defensive posture along NATO's borders, particularly in scenarios that mirror the threats observed in Ukraine".[161]

176. European partners are already cooperating on air defences via the European Sky Shield Initiative (ESSI) aimed at improving European air defences and making them more interoperable through joint procurement, maintenance, logistics, and training, as well as through the exchange of air surveillance data.

Box 4: The European Sky Shield Initiative

The German MoD had identified gaps in its Air and Missile Defence (AMD) architecture prior to 2022. Specifically, it recognised the need to obtain Counter Unmanned Aerial Systems (C-UAS), undergo Patriot modernisation, and enhance territorial ballistic missile defence. The €100 billion special fund announced on 27 February 2022 allowed the Bundeswehr to move its AMD objectives from the planning to the procurement phase. On 29 August 2022, Chancellor Scholz announced that Germany's European partners would be invited to join, formally setting up the European Sky Shield Initiative (ESSI). On 14 September, the Bundeswehr State Secretary briefed representatives of various European countries on Germany's plans. Namely, that Germany would procure German IRIS-T3, American Patriot, and Israeli Arrow-3 systems and that these capabilities could be procured together with European allies. The ESSI seeks to establish a ground-based integrated European air defence system with anti-ballistic missile capability.

Sources: 'Germany to set up €100bn fund to boost its military strength', The Guardian (27 February 2022): https://www.theguardian.com/world/2022/feb/27/germany-set-up-fund-boost-military-strength-ukraine-putin [accessed 16 September 2024]; 'Scholz revives vision for German-led air defense network in Europe', Defense News (29 August 2022): https://www.defensenews.com/global/europe/2022/08/29/scholz-revives-vision-for-german-led-air-defense-network-in-europe/ [accessed 16 September 2024]

177. The UK is in talks to join the ESSI.[162] However, some experts have expressed concern that extending an effective missile shield over the entirety of NATO's European territory would be practically unfeasible and prohibitively

158 The Aircraft Carrier Alliance is a partnership between BAE Systems, Babcock, Thales UK, and the UK Ministry of Defence, formed to design and build the Queen Elizabeth-class aircraft carriers for the Royal Navy. Team Tempest encompasses four industry partners, BAE Systems, Rolls Royce, Leonardo and MBDA working together with the RAF's Rapid Capabilities Office and the UK Ministry of Defence to deliver the RAF's next generation combat aircraft, coming into service from 2035 to replace the Typhoon.

159 Written evidence from Thales (IUD0016)

160 Written evidence from Dr Stepan Stepanenko and John Holmes (IUD0004)

161 Written evidence from Dr Stepan Stepanenko and John Holmes (IUD0004)

162 'Britain in talks to join Europe's new "Sky Shield"', *The Sun* (30 April 2024): available at https://www.thesun.co.uk/news/27644129/britain-europe-air-defence-system-grant-shapps/ [accessed 16 September 2024]

expensive.[163] Moving forward, it is important to assess the opportunities and challenges of delivering UK air defence collectively, and to engage with the ESSI accordingly.

178. **The war in Ukraine has reaffirmed the importance of air superiority, with air defences critical to avoiding an attritional ground conflict.**

179. ***Under-investment has led to substantial vulnerabilities in the UK's (and Europe's) ability to defend itself from airborne threats. In the context of a worsening security environment, this is deeply concerning, and the new Government should pay greater attention to homeland defence.***

180. ***Increasing investment in integrated air and missile defence and a credible plan to deliver operational S/DEAD capabilities in close collaboration with our European NATO allies should therefore be high on the list of defence priorities for the new Government.***

181. ***European countries are coming together to deliver air defences collectively via the European Sky Shield Initiative, in which the previous Government had expressed an interest. We call on the new Government to provide an assessment of the merits of joining the initiative and update us on progress.***

182. ***Vulnerabilities extend to the maritime domain. While the UK does have a maritime missile capability in the Tomahawk land attack cruise missile, further investment is required to enable the Royal Navy to be deployed offensively and better project lethality.***

The use of drones in Ukraine

183. Drones have become ubiquitous in the war in Ukraine and are being used for intelligence, surveillance, target acquisition, and reconnaissance (ISTAR) purposes, as well as for direct attacks. This is true both for cheaper, mass-produced commercial models and for higher-end types purposefully designed for warfare.

184. Alongside the more expensive missile systems, both sides have utilised cheaper, mass-produced Chinese and Iranian-made drones. It is worth noting that the drones used in the Iranian missile and drone attack on Israel in April 2024 were of a similar design to those being used in the war in Ukraine and were employed using the same strategy of overwhelming air defences with a layered assault.[164]

185. We heard from Dr Ulrike Franke, Senior Policy Fellow at the European Council on Foreign Relations, that drones "are omnipresent on the battlefield" in numbers which are "truly staggering".[165] She stressed that "we are talking about hundreds of thousands of small drone systems being used, and lost, every month".[166] The high attrition rate of drones is partly due to

163 iNews, 'Would a missile shield like Israel's Iron Dome stop a Russian attack on Britain?' (6 May 2024): https://www.pressreader.com/uk/inews/20240506/281994677572729 [accessed 16 September 2024]
164 The Hill, 'Iran's attack on Israel built on lessons from Russia's war in Ukraine' (7 July 2024): https://thehill.com/policy/international/4595937-irans-attack-on-israel-built-on-lessons-from-russias-war-in-ukraine/ [accessed 16 September 2024]
165 Q 11 (Dr Ulrike Franke)
166 Q 11 (Dr Ulrike Franke)

the regular occurrence of "fratricide" as it can be "impossible to distinguish between friendly and hostile systems".[167]

186. Russia is producing around 300,000 drone units per month and Ukraine is ramping up drone production to 150,000 per month, increasing from 50,000 in November 2023, with a view to producing two million First Person View[168] drones by the end of the current year.[169]

187. The ubiquity of aerial drones has inserted an extra layer of weaponry between the land and air domains and has "augment[ed] the existing capabilities that both sides have, particularly offering new defensive options in the absence of air superiority".[170] First-person view drones have contributed to the increasing transparency of the battlefield due to their intelligence, surveillance, reconnaissance (ISR) capabilities, and those which have a kamikaze, or exploding, function have been used to conduct direct attacks. Despite their limited payload, they have been effective as anti-tank weapons and in swarm attacks.[171]

188. In May 2024, six NATO countries (Finland, Norway, Poland, Estonia, Latvia, and Lithuania) announced that they are planning to develop a "wall" of co-ordinated drone systems to protect their borders from Russia.[172]

189. The use of drones in Ukraine has led to a continuous battle of technological one-upmanship, with each side improvising and innovating in the field to secure a temporary strategic advantage. Both sides in the war have invested heavily in electronic warfare to counter the threat of drones by jamming or spoofing GPS signals. It has been reported that, to date, 75% of drones on the battlefield in Ukraine have been lost to electronic warfare.[173] Increasingly, when latest jamming technologies have become obsolete, both sides have also improvised by employing conventional shotguns for anti-drone operations.[174]

190. Advantages gained in drone warfare are often temporary as both sides are constantly competing for strategic advantage. Rapid learning and adaptation have been critical in an environment where adversaries are evenly matched. Both Russia and Ukraine are developing drones guided by artificial intelligence to circumvent jamming caused by electronic warfare systems.[175]

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167 Written evidence from Northrop Grumman (IUD0007)

168 First Person View drones have a camera that wirelessly transmits a video feed to the operator, who has a first-person view of the environment where the drone flies.

169 Written evidence from Dr Stepan Stepanenko and John Holmes (IUD0004)

170 Q 11 (James Black)

171 Q 12 (James Black)

172 'Six Nato Countries plan "drone wall" to defend borders with Russia', *The Financial Times* (26 May 2024): available at https://www.ft.com/content/949db465-cd27-4c66-9908-c2faa80b602b [accessed 16 September 2024]

173 Defense News, 'Small drones will soon lose combat advantage, French army chief says' (19 June 2024): https://www.defensenews.com/global/europe/2024/06/19/small-drones-will-soon-lose-combat-advantage-french-army-chief-says/ [accessed 16 September 2024]

174 Forbes, 'Shotguns are Russia's last line of Defense against Drones' (6 May 2024): https://www.forbes.com/sites/davidhambling/2024/05/09/shotguns-are-russias-last-defense-against-drones/ [accessed 16 September 2024]

175 Reuters, 'How drone combat in Ukraine is changing warfare' (26 March 2024): https://www.reuters.com/graphics/UKRAINE-CRISIS/DRONES/dwpkeyjwkpm/ [accessed 16 September 2024]. For further information on the use of artificial intelligence in weapons systems and associated risks, particularly in relation to targeting, see: AI in Weapon Systems Committee, *Proceed with Caution: Artificial Intelligence in Weapon Systems* (Report of *Session* 2023–2024, HL Paper 16).

191. There is also the challenge of "cost asymmetry", as taking down cheaper drones with expensive missiles is "unpalatable to the defender".[176] The UK's high-power laser weapon, DragonFire, which is due to be in-service by 2027, could act as a cost-effective drone counter measure, contingent on new procurement reforms being implemented and technical challenges being overcome. It is worth bearing in mind that the US, which has been testing laser weapons for decades, has only recently been able to deploy a laser weapon which targets drones.[177]

192. The adaptability of drone systems can be enhanced by increasing their "modularity" so that there is more opportunity to introduce improvements incrementally. This approach is often referred to as spiral development and would ensure that offensive drone systems remained lethal in the face of new developments in electronic warfare. Dr Franke advocated for investment in a mixture of both high and low-cost solutions, supported by modularity:

> "Sophistication and higher price are not something that we need to abandon. We need to think much more about modularity in these sophisticated systems—the ability to exchange, modernise, or even just change certain parts of your system as a response to a change in context or a change in enemy capability, and things like that".[178]

Implications of drone warfare for the naval domain

193. In the naval domain, amphibious drones (both uncrewed surface vessels and uncrewed underwater vessels) have been "strategically decisive" in degrading Russia's Black Sea fleet, exposing the vulnerability of shore-based maritime assets to uncrewed systems.[179]

194. These attacks have denied Russia the ability to blockade grain and other exports from leaving Ukrainian ports, a situation which would have had "a wider impact on inflation and food security or insecurity in parts of the world, particularly in the Middle East and north Africa".[180] However, it is worth noting that the Black Sea Fleet is one of the "less powerful components" of the Russian Navy and that, in a conflict with Russia, the UK would face Russia's Northern Fleet which is "considerably more robust".[181]

195. Nonetheless, there are some lessons that can be drawn. Nick Childs, Senior Fellow for Naval Forces and Maritime Security at the International Institute for Strategic Studies, highlighted the challenges of establishing a naval presence and projecting power in the littoral space off coasts amid the proliferation of weapons such as anti-ship missiles, uncrewed surface vessels, and drones at sea, "for all navies, it highlights that operating close to land, trying to impose naval presence and power in the littoral space off coasts, is becoming more challenging".[182]

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176 Q 11 (James Black)
177 Forbes, 'U.S. Military is using laser weapons in battle' (6 May 2024): https://www.forbes.com/sites/jeremybogaisky/2024/05/06/army-laser-weapons-drones/?sh=7297a911dd70 [accessed 16 September 2024]
178 Q 16 (Dr Ulrike Franke)
179 Q 13 (James Black)
180 Q 13 (James Black)
181 Written evidence from The Human Security Centre (IUD0010)
182 Q 59 (Nick Childs)

196. **The war in Ukraine has exposed the sheer variety of possible drone threats in a conflict scenario, ranging from disposable and commercially available drones to high-end, sophisticated ones.**

197. ***The UK should invest in research and development to maintain a strategic edge in drone technology (including amphibious drones), and support the rapid development of new technologies that can compete in contested environments. Given the pace of technological adaptations on and off the battlefield, UK Defence should place greater emphasis on spiral development and modularity to support continuous adaptation.***

198. ***Military training should be revised to incorporate learning on the use of drones in Ukraine across all domains.***

CHAPTER 5: SPACE, CYBER AND THE ELECTROMAGNETIC ENVIRONMENT

199. Advanced economies rely heavily on Global Navigation Satellite Systems (GNSS), which provide positioning, navigation and timing (PNT) services. They are essential to the operation of critical national infrastructure and are used, for example, to synchronise mobile phone call time-stamp financial transactions, and support safe travel by aircraft, ships, trains, and road vehicles. A 2023 report published by London Economics on the economic impact of a disruption to GNSS in the UK found that a seven-day outage could cause an economic loss of £7.64 billion.[183]

200. Aside from having critical civilian applications, satellites are essential to defence, feeding into systems that deliver secure communications; intelligence, surveillance and reconnaissance capabilities (ISR); and PNT services. They also support the functioning of networked artillery systems and long-range precision ammunition.

201. Satellites are so integral to the conduct of modern warfare that it is unsurprising that attacks and interference have featured heavily in the war in Ukraine, mostly in the form of cyber and electromagnetic attacks.

Box 5: Defining electromagnetic and cyber warfare

NATO defines electromagnetic warfare (EW) as a "military action that exploits electromagnetic energy to provide situational awareness and create offensive and defensive effects". Jamming of electromagnetic signals to disrupt communications and navigation systems is a typical feature of EW, as is electronic masking to reduce one's electromagnetic footprint, or the use of electromagnetic energy to confuse or deceive an enemy system. In this report we use the term electromagnetic and electronic warfare interchangeably.

Electromagnetic warfare is distinct from cyber warfare. NATO policy documents explain that: "Broadly speaking, cyber operations use various hacking techniques to infiltrate and disrupt a target's computer systems, in order to obtain intelligence or degrade the target's capabilities. EW uses directed energy to cut off access to the electromagnetic spectrum, blocking signals between technologies and rendering them inoperable."

Source: NATO, 'Electromagnetic warfare': https://www.nato.int/cps/en/natohq/topics_80906.htm [accessed 16 September 2024]

202. Anti-satellite weapons (ASATs), which are designed to incapacitate or destroy satellites through a kinetic attack in space, have not yet been used in warfare. However, China, India, Russia, and the United States have successfully shot down their own satellites to demonstrate their ASAT capabilities.[184] ASAT tests are rare, as space powers recognise that the debris generated from these physical attacks can impact the orbits of their own satellites.[185] Nonetheless,

183 London Economics, *The economic impact on the UK of a disruption to GNSS* (August 2023): https://assets.publishing.service.gov.uk/media/652eb0446b6fbf000db7584e/20231018_London_Economics_Report_GNSS.pdf [accessed 16 September 2024]

184 Arms Control Association, 'Seven countries join ASAT test ban' (November 2022): https://www.armscontrol.org/act/2022–11/news-briefs/seven-countries-join-asat-test-ban [accessed 16 September 2024]

185 Centre for Strategic and International Studies (CSIS), *Space Threat Assessment 2023* (April 2023): https://csis-website-prod.s3.amazonaws.com/s3fs-public/2023–04/230414_Bingen_Space_Assessment.pdf?VersionId=oMsUS8MupLbZi3BISPrqPCKd5jDejZnJ [accessed 16 September 2024]

months before the start of the war, in November 2021, Russia conducted an ASAT test, destroying one of their defunct Soviet-era satellites. In hindsight, this could be interpreted as a show of force prior to the invasion of Ukraine. In May 2024, the US announced that it believed Russia had likely launched an anti-satellite weapon into low-earth orbit.[186] This raised concerns that as Russia's space capabilities are currently lagging behind those of other space powers (last year, Russia only launched 60 satellites while the US launched 2,221) there may be a scenario where Russia would be willing to forfeit its own use of an orbit in order to degrade and destroy it for others.[187]

203. Yet despite this, for now it is in the cyber and electromagnetic arenas that Ukraine's war in space is being played out.

Cyber warfare in Ukraine

204. Space capabilities encompass "ground control, uplink, downlink, industry and supply chains", which "can all be vulnerable to cyber attack, IP theft or kinetic attacks during crisis or times of war".[188]

205. On the morning of the invasion of Ukraine in February 2022, Russia launched a cyber attack on the Viasat satellite network which was at the time providing internet to Ukraine. Within a matter of days, Starlink, a subsidiary of SpaceX, was able to deploy 5,000 terminal kits to Ukraine, enabling communications to be re-established via its constellation of small satellites in low-earth orbit.[189]

206. Aside from the Viasat satellite network attack, Russia has used cyber warfare for both disinformation purposes and to target critical national infrastructure, for example by attacking Ukraine's biggest mobile network operator, Kyivstar, in December 2023.[190]

207. Although cyber operations on the Russian side have been intense and frequent, they have not had a decisive effect on the course of the war. This is predominantly the result of successful Ukrainian countermeasures, supported by state-sponsored and commercial Western capabilities. We heard that the UK provided support via GCHQ and the National Cyber Security Centre, while the US lent support via Cyber Command and the National Security Agency. In addition, Ukraine has received significant support from "cyber-threat companies such as Microsoft, the Slovakian company ESET, and Google and its cyber-threat arm, Mandiant".[191]

208. The deployment of cyber capabilities is likely to be a supportive feature of modern warfare where adversaries are technologically matched, and would likely be deployed by Russia in any future conflict with NATO.

209. Both Russia and China have already demonstrated a willingness to deploy cyber attacks against the UK and its allies. The Henry Jackson Society told us that "leading up to 24th February 2022, there was a significant surge

186 BBC News, 'US says Russia likely launched space weapon' (24 June 2024): https://www.bbc.co.uk/news/articles/cq55ww5j7e2o [accessed 16 September 2024]
187 Centre for Strategic and International Studies (CSIS), 'Is there a path to counter Russia's space weapons?' (28 June 2024): https://www.csis.org/analysis/there-path-counter-russias-space-weapons [accessed 16 September 2024]
188 Q 33 (Theodora Ogden)
189 Q 32 (Theodora Ogden)
190 Written evidence from The Henry Jackson Society (IUD0008)
191 Written evidence from The Human Security Centre (IUD0010)

of 450% in cyber attacks originating from Russia, which continued after the invasion with a dramatic rise in distributed denial-of-service attacks against US national security targets".[192] Russian state-sponsored hackers have targeted UK parliamentarians, think tanks, and academics in recent years.[193] Similarly, Chinese actors have targeted parliamentarians and the UK Electoral Commission.[194] Most recently, Russian ransomware group Qilin was responsible for the theft of 300 million NHS patient records in June of this year, which led to serious disruptions in several NHS hospitals in England.[195]

210. These attacks serve as a reminder that the UK is vulnerable to cyber attacks and that there is a pressing need to build resilience. We heard that weak and outdated cyber security systems in the public sector and parts of critical national infrastructure (CNI) are a particular area of vulnerability (which could be exacerbated were Russia to 'win' in Ukraine).[196] ADS emphasised that "national security is not just about traditional defence capabilities, and therefore there is a need for the UK to draw together capabilities from the security and civilian industrial base as well, to ensure a blended, total defence of the UK".[197] In short, there is a need to involve the whole of society in strengthening the UK's resilience (see also Chapter 2).

211. Ukraine's difficulties with damage to its CNI—which requires organised manpower to repair—underscore the significance of this issue. The war in Ukraine has also demonstrated that cyber attacks and attacks on CNI will likely be a feature of future conflicts.[198] Professor Michael Clarke warned that the UK has some vulnerabilities in this regard, including "weak and outdated cyber security systems in the public sector and in areas of critical national infrastructure. Russia is already the greatest single source of ongoing cyberattack against the UK and the number and severity of attacks might increase exponentially".[199] The dismantling of the UK's Civil Defence infrastructure following the end of the Cold War has created a gap, as there is no equivalent to the USA's Federal Emergency Management Agency (FEMA) or similar agencies found in other EU states. Instead, although the UK has a National Protective Security Authority, the responsibility for protecting critical national infrastructure is fragmented across police forces, local authorities, and government departments.

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192 Written evidence from The Henry Jackson Society (IUD0008)

193 Foreign, Commonwealth & Development Office, National Cyber Security Centre, National Crime Agency, The Rt Hon Lord Cameron, The Rt Hon James Cleverly MP, Leo Docherty and The Rt Hon Oliver Dowden CBE MP, Press release: *UK exposes attempted Russian cyber interference in politics and democratic processes* on 7 December 2023: https://www.gov.uk/government/news/uk-exposes-attempted-russian-cyber-interference-in-politics-and-democratic-processes [accessed 16 September 2024]

194 Foreign, Commonwealth & Development Office, National Cyber Security Centre, Cabinet Office, Home Office, The Rt Hon Lord Cameron, The Rt Hon James Cleverly MP and The Rt Hon Oliver Dowden CBE MP, Press release: *UK holds China state-affiliated organisations and individuals responsible for malicious cyber activity* on 25 March 2024: https://www.gov.uk/government/news/uk-holds-china-state-affiliated-organisations-and-individuals-responsible-for-malicious-cyber-activity [accessed 16 September 2024]

195 'UK government weighs action against Russian hackers over NHS records theft', *The Guardian* (21 June 2024): https://www.theguardian.com/society/article/2024/jun/21/uk-national-crime-agency-russian-ransomware-hackers-qilin-nhs-patient-records [accessed 16 September 2024]; BBC News, 'NHS England confirm patient data stolen in cyber attack' (24 June 2024): https://www.bbc.co.uk/news/articles/c9777v4m8zdo [accessed 16 September 2024]

196 Written evidence from Professor Michael Clarke (IUD0014)

197 Written evidence from ADS (IUD0005)

198 Written evidence from Thales (IUD0016)

199 Written evidence from Professor Michael Clarke (IUD0014)

Electromagnetic (EW) warfare in Ukraine

212. The war in Ukraine offers a unique case study for understanding the role of electromagnetic warfare in modern conflict. Air Chief Marshal the Lord Peach, former Chief of the Defence Staff and Chair of the NATO Military Committee, told us that the war in Ukraine "is the densest, most complex and dangerous electronic operating environment we have ever seen", especially in comparison to past conflicts of an expeditionary nature.[200]

213. Electronic or electromagnetic warfare exploits the electromagnetic spectrum for strategic gain. For example, threats can be detected by scanning for electronic signatures emitted from enemy platforms, such as unmanned aerial vehicles (UAVs). Once identified, energy can then be directed towards disrupting or neutralising enemy operations, often through jamming GPS signals, but also through the deployment of electronic decoys to mislead sensors. Electromagnetic warfare is also used for defensive purposes to shield personnel, platforms, communications and equipment.[201]

214. Since the onset of the war, both sides have employed a variety of EW tactics and technologies to gain an upper hand. On the battlefield, Ukrainian forces have successfully employed EW to disrupt Russian unmanned aerial systems (UAS), which are critical for reconnaissance and targeting. This has not only hindered Russian operational capabilities but also provided Ukrainian forces with critical intelligence and situational awareness. Conversely, Russian forces have utilised EW to jam Ukrainian communications and navigation systems, attempting to create confusion and disrupt coordination among Ukrainian units.[202]

215. However, Ukrainian forces have faced several challenges as a result of EW. Dr Franke, Senior Policy Fellow at the European Council on Foreign Relations, and Mr Black, Assistant Director of the Defence and Security research group at RAND Europe, highlighted that EW has made it harder for Ukrainian counteroffensive activities to go undetected and avoid Russian interference. The increase of sensors has been a feature of this war, which has made it more difficult to move around undetected on the battlefield, meaning forces are having to be very alert to how they are managing their electronic signature.[203] This has had a direct impact on command-and-control structures, as (to keep their electronic signature to a minimum) troops are often having to operate on their own, without being able to communicate with high-level commanders. Mr Black explained that EW is requiring Ukraine's forces to be more mobile and dispersed, and to alternate between connected and disconnected states, "being seen and unseen, which forces the Ukrainian troops to operate in very different ways and demands quite different skills and aptitudes from them at different times".[204]

216. The high density of electronic emissions in the conflict zone has also made it difficult to distinguish between friendly and enemy signals, which, as set out in Chapter 4 in relation to drones, has led to fratricide and operational inefficiencies.

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200 Q 57 (Air Chief Marshal the Lord Peach)
201 See, for example: BAE Systems, 'Electronic Warfare': https://www.baesystems.com/en-uk/productfamily/electronic-warfare [accessed 16 September 2024]
202 Q 33 (Juliana Suess)
203 Q 15 (James Black) and Q 11 (Dr Ulrike Franke)
204 Q 15 (James Black)

217. Additionally, the rapid pace of technological advancements in EW has necessitated continuous adaptation and innovation, straining the resources and capabilities of Ukrainian forces.Technological one-upmanship has been a feature of this conflict, as both sides are needing to adapt and innovate to ensure platforms and capabilities, such as drones, are protected and remain lethal.

218. Electronic tactics have not been restricted to Ukraine and are part of Russia's toolkit of hybrid attacks on the West. Russian jamming of civilian airlines is pervasive in the Baltic and Kaliningrad area, around the Black Sea, Caspian Sea, and the eastern Mediterranean.[205] Most notably, in March 2024, it was reported that an RAF plane carrying the then Defence Secretary Grant Shapps had its GPS signal jammed while flying near Kaliningrad.[206]

219. Given the prominent role that electronic warfare has played in Ukraine and the UK's vulnerability to hybrid attacks, General Sir Nick Carter's assessment that we do not have "the electronic warfare capability that we need" should be of concern to the Government.[207]

The role of commercial actors

220. While the 1990–91 Gulf War was given the moniker "the first space war", the Ukraine war has been referred to as "the first commercial space war".[208] Services provided by commercial partners have proven to be a great advantage to Ukraine, helping to counter Russian cyber and jamming activities. As set out above, SpaceX, extended free access to its Starlink satellite internet service to Ukraine shortly after Russia's invasion in 2022. Ukraine now relies extensively on Starlink, with around 42,000 terminals used by the military, hospitals, businesses, and aid organisations.[209] Companies like Microsoft, Google and ESET have been involved in counter cyber operations, while Maxar has been providing high-quality imagery of Russian activity through their satellites.[210] Maxar has also played a role in documenting war crimes in Ukraine, for example by providing time-stamped satellite imagery which proved that Russian troops killed civilians in Bucha in 2022, contradicting Russian denials.[211]

221. Dr Franke, Senior Policy Fellow at the European Council on Foreign Relations, also commented that cutting-edge technological development is shifting away from the state and mainly taking place in private companies, "which is something both sides need to grapple with".[212]

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205 Politico, 'Airlines report GPS signal jamming: Russia gets the blame' (28 March 2024): https://www.politico.eu/article/airlines-flying-baltic-region-report-gps-signal-russia-gets-blame/ [accessed 16 September 2024]

206 BBC News, 'Grant Shapps plane's GPS signal "jammed" near Russia's Kaliningrad' (24 June 2024): https://www.bbc.co.uk/news/uk-68569676 [accessed 16 September 2024]

207 Q 50 (General (retd) Sir Nick Carter)

208 RUSI, 'The First Commercial Space War' (19 January 2023): https://www.rusi.org/explore-our-research/publications/external-publications/first-commercial-space-war [accessed 16 September 2024]

209 Reuters, 'Russia using thousands of SpaceX Starlink terminals in Ukraine, WSJ says' (15 February 2024): https://www.reuters.com/world/europe/russia-using-thousands-spacex-starlink-terminals-ukraine-wsj-says-2024-02-15/ [accessed 16 September 2024]

210 Space, 'Satellite photos show 40-mile-long military convoy nearing Ukraine's capital Kyiv' (16 March 2022): https://www.space.com/satellites-russian-military-convoy-ukraine [accessed 16 September 2024]

211 BBC News, 'Bucha killings: Satellite images of bodies site contradicts Russian claims' (11 April 2022): https://www.bbc.co.uk/news/60981238 [accessed 16 September 2024]

212 Q 19 (Dr Ulrike Franke)

222. As discussed in Chapter 2, engaging with non-traditional defence suppliers has become a pressing policy priority. However, this is a relatively recent shift, and it is crucial to monitor emerging lessons from the ongoing conflict in Ukraine. The extensive participation of commercial entities in the Ukrainian war effort is already providing valuable insights that could inform future strategies.

223. Speaking on the benefits that commercial partnerships can offer, Theodora Ogden, Space Policy Analyst at RAND, noted that "private companies are arguably more agile than government and able to launch new systems quite rapidly".[213] This was demonstrated by the fast deployment of Starlink after Russia's invasion. Juliana Suess, Research Fellow at RUSI, also noted that "resilience" of the full space ecosystem can be achieved through commercial partnerships, enabling "space powers to have capabilities and assets in different orbits, that work through different frequency bands, for example".[214]

224. Furthermore, partnering with the commercial sector could be used to leverage emerging technologies, such as AI and Quantum, for defence purposes with an urgency that the Government would be otherwise unable to achieve on its own.[215]

225. We agree with the MoD's assessment that "the ability to operate in cyberspace depends on partnerships between military, civilian and industry".[216] This applies equally to the electromagnetic environment. In an era of increasing attacks on space, the electromagnetic spectrum, and cyber, it is crucial that a 'whole-of-society' approach to defence, as mentioned in Chapter 2, is adopted.

226. However, the significant involvement of private companies in defence also carries risks. Ms Suess told us that "the partnership with SpaceX … has also highlighted the dangers of such an arrangement".[217] For instance, there are questions regarding the extent to which commercial companies can be relied upon for continuous service and held accountable during conflict. Ms Ogden commented that, on several occasions, Elon Musk "has reportedly risked Ukrainian access to the communications network and limited the use of Starlink, particularly in controlling Ukrainian unmanned systems in the Black Sea".[218]

227. In written evidence, Dr Stepan Stepanenko, Research Director at the Forum of for Foreign Relations, and Maj Gen (Rtd) John Holmes DSO OBE MC cautioned that there are systems that are simply too sensitive and should be protected from corporate influence:

> "The UK must ensure that its communication and targeting systems operate outside of external, including private and corporate, influence, ensuring continuous operation in battlefield environments. A prerequisite for this is the use of proprietary and government controlled and owned technologies, both in terms of hardware and software. Considering the cost of production and operation of such systems, and the potential

213 Q 32 (Theodora Ogden)
214 Q 32 (Juliana Suess)
215 Q 36 (Theodora Ogden)
216 Written evidence from the Ministry of Defence (IUD0015)
217 Q 32 (Juliana Suess)
218 Q 32 (Theodora Ogden)

> danger to personnel life in case of cyberattacks, the risk of private or corporate operation is too high."[219]

228. Ms Suess advised us that the distinction between the public and private sector in the space domain is not always clear cut, given that "the majority of funding for commercial ventures still comes from states and the majority of clients are still states".[220]

The importance of integrating space, electromagnetic and cyber capabilities

229. We heard how, at a tactical level, the integration of space, the electromagnetic environment and cyber generates significant strategic advantages. Ms Suess pointed out that Russian operations have been hindered by a lack of integration: " We have seen that Russia has not really been able to use its space capabilities to the full extent that one might expect of a space power … At times they are not integrated at the tactical level that would enable troops to act in a tactically relevant manner. The command-and-control structures are simply not integrated or set up to make use of space."[221] While Russia has not yet fully leveraged its space capabilities to the level one might expect of a space power, it is important to note that they are quick learners and could still leverage their capabilities in the future.

230. Defence company Northrop Grumman noted that Ukraine has managed to retain an information advantage over Russia by integrating electronic warfare capabilities with civilian sources:

> "Using multiple sensors and sources on the battlefield, their military has successfully integrated data from crewed and uncrewed systems, and military and consumer sources, including mobile phones, to create actionable intelligence on the enemies' locations and movements. In this way, Ukraine has generated a meaningful Information Advantage over Russia".[222]

231. Lord Peach emphasised that one of the key lessons from Ukraine is that "the way we fight needs to be integrated. More than land, sea and air, and therefore joint, this now requires a full integration of intelligence information, space and cyber".[223]

232. A pre-condition of integration is having access to a pool of people with the right technical skills across the Armed Forces. We heard different views about the existing expertise across UK Defence.

233. Lord Peach was positive about the skills available, noting that "the UK has a respectable electronic warfare industry… I reassure you that we have the skills in all three services where we need them".[224] However, General Sir Jim Hockenhull KBE ADC Gen, Commander of Strategic Command, highlighted the shortage of people and skills as a key concern in a speech delivered in February: "The area where I've got the greatest concern around the cyber and electromagnetic domain is in people and skills. There is a

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219 Written evidence from Dr Stepan Stepanenko and John Holmes (IUD0004)
220 Q 32 (Juliana Suess)
221 Q 31 (Juliana Suess)
222 Written evidence from Northrop Grumman (IUD0007)
223 Q 57 (Air Chief Marshal the Lord Peach)
224 Q 61 (Air Chief Marshal the Lord Peach)

national, if not a global, shortage of the types of skills that we need for people to have in the cyber and electromagnetic domain."[225]

234. Discussions about increasing mass should, therefore, not be limited to size, but also focus on recruiting and developing the right skills. General Sir Nick Carter emphasised the importance of integrating technology into training programmes: "The sorts of technologies that we deduce from what we have seen in Ukraine, such as air defence, drones, electronic warfare and robots more broadly, need to be integrated into the training."[226] This could include updating simulators and other training tools to reflect the latest advancements in military technology.

235. We also heard that there is a lack of IT expertise within the MoD and the Armed Forces. A senior IT professional working for Defence, who wished to remain anonymous, warned that although "well-motivated, experienced and trained IT professionals… exist… they are the exception and not the rule". They also noted that "the UK is seriously in danger of being outclassed by the likes of China".[227]

236. The MoD's written submission noted that a unified career management has been introduced "to improve the armed forces' ability to retain and develop personnel in specialist roles", including cyber, but it is unclear what impact this has had so far. The MoD also acknowledged that there was a need to set out "a new alliance" with industry and that further investment in cyber and electronic capabilities was required.[228]

Responding to the rapid change of innovation

237. The war in Ukraine has demonstrated the critical role innovation and rapid adaptation play in staying ahead in the cyber and EW domains. Both Ukrainian and Russian forces have continuously evolved their strategies and capabilities in response to the dynamic battlefield environment. This has necessitated continuous adaptation and innovation in the field.

238. Adaptability on the battlefield is not a new phenomenon, but new technologies are accelerating the pace at which this is happening. It is clear that future conflicts between enemies with comparable technological capabilities will require a high degree of agility and flexibility, and UK Defence needs to be ready to respond to this. Lord Peach noted the importance here of "learning the lessons from Ukrainians on manufacturing and adapting in the field". While he was making a wider point, it also applies to cyber and electronic warfare. He added: "If you can adapt in the field, you can adapt and survive or tackle the threat. If you have to go way back across the globe to modify something over weeks and months, maybe you cannot. It is about being able to operate forward with civilians and contractors, as well as deployed forces, and understanding what works from the Ukrainians".[229] This will require a shift in how industry operates, which, at present, is not geared up for "those types of rapid feedback loops".[230]

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225 General Jim Hockenhull, Speech on Strategic Command and the cyber domain, 15 February 2024: https://www.gov.uk/government/speeches/leading-the-cyber-and-electromagnetic-domain
226 Q 64 (General (retd) Sir Nick Carter)
227 Written evidence from Anonymous (IUD0001)
228 Written evidence from the Ministry of Defence (IUD0015)
229 Q 61 (Air Chief Marshal the Lord Peach)
230 Q 20 (Dr Marc DeVore)

239. In addition to developing the capacity to react in real time, we learned about the significance of putting in place a more comprehensive system for compiling lessons learned on cyber and electronic warfare. The MoD's written submission singled out the absence of a warfare centre for the Cyber and Electromagnetic domain as a "significant gap which denudes our ability to draw together a coherent analysis of domain lessons. Investment in this capability is required to ensure that we are able to draw together independent observations and insights from across Defence, understand their significance and respond accordingly".[231] At this stage it is unclear what plans, if any, the new Government has to set up such a centre.

Monitoring and protecting UK space assets

240. The creation of UK Space Command in 2021 was welcomed by witnesses, as "a single point of focus for emerging threats in the space domain".[232]

241. Although there have not been any kinetic attacks on satellites in conflict, Ms Suess stressed the importance of Space Situational Awareness (SSA) and Space Domain Awareness (SDA). These enable UK Space Command to know "exactly where our satellites are, who is approaching them and what is around them".[233] While the UK currently collaborates with the US, sharing data collected at its RAF Fylingdales base, Ms Suess noted that the UK and Europe are still "very reliant" on the US for their SSA and SDA data.[234]

Conclusions and recommendations

242. **Space, cyber, and electromagnetic warfare (EW) are closely interlinked and have featured heavily in the Ukraine war. They will likely form an integral part of future warfare between technologically capable states.**

243. ***It is therefore imperative that the UK enhances its space, cyber and EW capabilities, focusing on developing resilient and adaptive systems that can operate in highly contested environments, like the one we are witnessing in Ukraine.***

244. ***The ability to conduct cyber and electronic warfare, and deploy electronic countermeasures to avoid detection, should be seen as a core capability for the UK's Armed Forces. The Government should learn lessons from how the Ukrainians have deployed and responded to electronic warfare attacks, including through dispersal techniques, and innovative command and control structures.***

245. ***Ukraine has shown that rapid technological innovation and adaptation are essential to stay ahead of adversaries. The Government should focus on building UK Defence's capacity to adapt and innovate quickly in or near the battlefield.***

246. **Maximum strategic advantage can only be obtained if space, cyber and EW are integrated across domains. We note that under the previous Government, the MoD announced the creation of an Integration Design Authority to support integration. While this is a**

231 Written evidence from the Ministry of Defence (IUD0015)
232 Written evidence from Dr Stepan Stepanenko and John Holmes (IUD0004)
233 Q 34 (Juliana Suess)
234 Q 34 (Juliana Suess)

welcome development, it is people and skills and industry—including the leveraging of commercial partnerships—that will determine the success of such integration.

247. ***The new Government should work together with the private sector to formulate options for attracting high-tech talent to the defence sector and design flexible career paths that build skills and grow Defence's expertise in cyber and electromagnetic warfare.***

248. ***This will require training and learning lessons directly from colleagues in the Ukrainian forces and working closely with industry. The Government should adopt a more flexible approach to bringing in commercial actors, while acknowledging some of the unique challenges these partnerships can entail around, for example, accountability or reliability.***

249. ***The Government should ensure that cyber, EW and emerging technologies are fully integrated into the next edition of the Defence and Security Industrial Strategy. In addition, it should give serious consideration to the creation of a warfare centre for the cyber and electromagnetic domain.***

250. **Developments in Ukraine are relevant to UK national security and, in particular, the protection of its critical national infrastructure (CNI).**

251. ***The reliance of modern economies on space-based technologies makes them a prime target for hybrid attacks. Cyber and electronic tactics deployed in Ukraine by Russia have been used elsewhere, including against the UK and its allies. It is therefore essential that the new Government focuses on building greater resilience into the UK's CNI.***

252. ***The UK's fragmented police forces and limited military resources may struggle to handle the increased civil defence burden in the event of hostile actions, such as sabotage of CNI. The Government should thus consider the merits of establishing a centralised civil defence agency, akin to the US' Federal Emergency Management Agency.***

253. ***The new Government should also invest in Space Situational Awareness and Space Domain Awareness capabilities, for which it heavily relies on the US.***

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Introduction

1. This report, as usual, provides conclusions and recommendations for the Government to respond to within two months. We are additionally submitting this report to the Strategic Defence Review for consideration by the external reviewers. We welcome that the new Government has moved swiftly to launch its Strategic Defence Review. (Paragraph 5)

2. *Given the deteriorating global threat environment, the Government cannot afford to delay setting defence priorities and articulating how much money will be available to UK Defence. The Government should ensure that the Review is completed to schedule, and implement its findings promptly. We call on the Government to keep the Committee updated on the Review's progress and subsequent implementation.* (Paragraph 6)

3. *As highlighted in our 2023 report, 'UK defence policy: from aspiration to reality?', Government policy documents often fail to clearly articulate the Government's priorities and the hard choices that need to be made in the face of competing pressures on limited resources. We call on the new Government to ensure that its response to the Strategic Defence Review provides a clear sense of the Government's priorities for UK Defence and how it plans to turn aspirations into practice.* (Paragraph 7)

4. The new Government has yet to set the levels of future defence spending, pending the outcome of the review. It remains to be seen if 2.5% of GDP represents a suitable increase in defence spending, and we note that any increase should be seen in the context of decades-long defence cuts and recent inflationary pressures on the defence budget. Unless significant efficiencies are found, laser-sharp priorities are set and hard trade-offs are made, an increase to 2.5% of GDP may not be enough to meet the UK's growing defence needs. (Paragraph 8)

5. *We also acknowledge that some of the recommendations in this report will have cost implications. While there will be other pressing demands on the UK Budget, the new Government should nonetheless give careful and swift consideration to our recommendations.* (Paragraph 9)

The underlying importance of deterrence

6. Deterrence is key to avoiding future conflict. In light of the ongoing threat from Russia, and the deteriorating global security environment, there is a need to re-establish credible deterrence in the UK and across Europe. This includes both nuclear and conventional deterrence. (Paragraph 18)

7. *We need to re-learn some of the Cold War lessons around deterrence and escalation management and apply them to a new context.* (Paragraph 19)

8. *Equally important is understanding the human aspects of war. There was clearly a failed assessment of Putin's will to fight in the run-up to the invasion of Ukraine. The UK and NATO should focus on developing a better understanding of Putin's strategy and intentions—including what influence others (like China) may have on his decision-making—while strengthening de-escalation mechanisms. This would provide for more robust deterrence, helping decision-makers distinguish between posturing and the actual risk of nuclear weapons being used, while mitigating against escalation by accident.* (Paragraph 20)

9. The 'will-to-fight' applies not only to Putin and other political leaders, but to their armed forces and their civilian populations as well. There are also other human aspects that determine the outcome of wars including, motivation, determination, memory of past victories and defeats, culture, and stamina, and all are essential elements for any consideration of deterrence, defence, and de-escalation. (Paragraph 21)

Building mass

10. All in all, the evidence we heard points to the current size of the British Army being inadequate. While size is not the only measure of capability, we are concerned that the Army cannot, as currently constituted, make the expected troop contribution to NATO. We therefore question whether the British Army is prepared to meet the growing threat posed by Russia to European security. (Paragraph 34)

11. *The Armed Forces continue to face recruitment and retention challenges, which must be addressed urgently. We call on the new Government to set out what plans it has to address these, whether it will implement the recommendations of the Haythornthwaite Review and, if so, what the timetable would be.* (Paragraph 39)

12. The Defence Recruitment System (DRS) is burdened by excessive bureaucracy, particularly in its medical evaluation process, which has become overly cautious and risk averse. This has led to unnecessary rejections and delays, discouraging many potential recruits. (Paragraph 40)

13. *To increase recruitment numbers and enhance the efficiency of the process, the DRS should take a more balanced and risk-tolerant approach to its medical examinations and accelerate the process of resolving marginal cases.* (Paragraph 41)

14. The Reserves provide a cost-effective model for building mass. By investing in the Reserves—both ex-regular and volunteer—the UK can enhance its capability and war readiness, contributing to deterrence and sustaining its armed forces in warfighting scenarios. (Paragraph 47)

15. *The new Government should prioritise reinvigorating the Reserves. It should respond to General Sir Nick Carter's review, clearly articulating what role(s) it expects the Reserves to undertake and how they should be organised to effectively supplement and support our Armed Forces.* (Paragraph 48)

16. *A reduction in Reserve workforce numbers confirms that the capability of the Reserves has declined over the last few years. To reverse this, a co-ordinated response is needed that includes incentives for joining and provides clarity of purpose for all units. The new Government should also re-assess its funding for the Reserves to ensure it delivers on demanding training, appropriate scales of equipment, and sufficient logistical and administrative support.* (Paragraph 49)

17. A resilient industrial base underpins Defence's credibility as a fighting force. Our evidence consistently showed that the UK's defence industry is unprepared for high-intensity, prolonged conflict due to decades of budget cuts and reduced industrial capacity since the end of the Cold War. Our witnesses strongly emphasised the role that the Government should play in reversing this process. (Paragraph 75)

18. *There is a significant trust deficit between the defence industry and the Government. The defence industry has expressed the need for clear, long-term commitments to effectively increase production and meet wartime demands. The MoD needs to*

transition from a traditional customer-supplier relationship to one that ensures sustained collaboration, consistent follow-through on commitments, and which fosters early and transparent engagement. (Paragraph 76)

19. *The procurement process needs to be more agile and willing to take risks, as successfully demonstrated by the Ukrainian forces' rapid innovation and collaboration with the private sector during the war. There needs to be a culture change around risk. The Government will have to transform how it buys weapons to keep up with the need for much faster development cycles.* (Paragraph 77)

20. *Non-traditional defence suppliers, such as start-ups, SMEs and tech companies, are key for accelerating the pace of delivery, but they face a unique set of barriers in accessing the defence market. The new UK Government needs to facilitate a 'broad church' of industry engagement, beyond the defence sector and into relatively new sectors of the economy.* (Paragraph 78)

21. *There are risks attached to increasing collaboration with commercial partners who, traditionally, have not been involved in defence. The new Government will need to be alert to these risks and work to mitigate them. In particular, the Government should conduct careful risk assessments when deciding whether to allow private companies access to certain systems, such as sensitive communication and targeting systems. However, a proportionate approach should be taken in less sensitive areas, fostering collaboration with non-traditional partners by ensuring that bureaucratic burdens are kept as low as possible.* (Paragraph 79)

22. Engaging the whole of society in defence is crucial for building a resilient and prepared nation. This involves the integration of civilian capabilities, community engagement, and the emotional aspects of national defence. (Paragraph 85)

23. *As a first step, the UK Government should build public understanding around the role the general population can play in building national resilience and contributing to national security and defence, moving beyond the notion that defence is the sole responsibility of the military. Plans must be developed in consultation with the general public, so that communities have ownership over plans and are motivated to participate in them. The UK Government should learn from the experiences of other nations, such as the Scandinavian concept of 'total defence'.* (Paragraph 86)

24. *The Government should continue to invest in high-end technologies while ensuring that it rebuilds and maintains adequate stockpiles of conventional munitions. This dual investment strategy will provide UK Defence with the flexibility to respond to various types of threats.* (Paragraph 93)

25. *We call on the Government to conduct an assessment of the balance the UK should strike between high-end and conventional weapons to enhance effectiveness and sustain operations. This assessment should also consider the mix of capabilities among NATO's European members and take account of the potential for burden-sharing across the Alliance.* (Paragraph 94)

26. *The Government should urgently reconsider its policy for disposing of old weapons stocks and consider 'mothballing' them instead, ensuring that the accounting and IT infrastructure is updated to support this move. While there may be costs attached to this, as well as to maintenance, the war in Ukraine has demonstrated the ongoing effectiveness of retired capabilities.* (Paragraph 100)

27. Our evidence showed that while there has been some progress in increasing joint procurement and harmonising defence systems among NATO allies,

more needs to be done. Fragmentation hinders interoperability and cohesive defence efforts, as evidenced by Ukraine's current logistical struggles with maintaining capabilities. (Paragraph 111)

28. *The UK should reinvigorate existing NATO mechanisms, such as the national armaments directors' forum and the NATO Support and Procurement Agency, to enhance cooperation and standardisation efforts among member states.* (Paragraph 112)

29. Joint procurement initiatives and strengthened industrial collaboration with key allies, including non-European states, are essential for enhancing the cost-effectiveness, scalability, and interoperability of defence capabilities. (Paragraph 113)

30. *Interoperability is not an end in itself. While pursuing interoperable solutions, the Government should be mindful of maintaining a diversity of capabilities and promote innovation. For example, the Government should review with industry how faster feedback loops could be developed that would support agile innovation.* (Paragraph 114)

Nurturing partnerships

31. The war in Ukraine has thrown the role of alliances at a time of war into the spotlight. Following the invasion, Russia is attempting to offset its decline in relations with the West by developing closer ties with China, Iran, North Korea and key Global South countries, including India. This has allowed Russia to undermine the effectiveness of Western sanctions and avoid international isolation, while also increasing its strategic depth. (Paragraph 143)

32. Russia's collaboration with China, Iran and North Korea, in particular, is of concern. It could lead to a substantial deterioration of the threat environment we face and pose a significant strategic challenge to the West. (Paragraph 144)

33. *We recognise that there are limited options for the UK Government to respond to this challenge, but it should aim to maintain the broadest possible coalition of countries to counter Russian narratives and send clear signals about unacceptable behaviour.* (Paragraph 145)

34. *As the UK Government is facing a world where the Global South is becoming more assertive, with some countries leaning towards China or Russia, it is vital for the UK to be more proactive and have a strategy on how to engage with the Global South. Specifically, the UK should build relationships by seeking a consistent role where it has credibility and expertise. In particular, the UK Government should leverage diplomacy and reinvigorate its role as an international development actor to offer an alternative value proposition to those countries in the Global South particularly exposed to Russian and Chinese influence.* (Paragraph 146)

35. *To counter the neo-colonial narrative deployed by Moscow in the Global South, diplomatic efforts of the UK and its Western allies should keep the focus on Putin's violation of Ukraine's territorial integrity and portray Russian actions in Ukraine as imperialistic.* (Paragraph 147)

36. We welcome the communiqué agreed by NATO members at the Washington Summit labelling China a "decisive enabler" of Russia's war against Ukraine. This reinforces the evidence we heard that the Russian invasion of Ukraine

has created a window of opportunity for the deepening of the Sino-Russian relationship. (Paragraph 148)

37. *It is imperative that the UK Government continues to pay close attention to the development of the Sino-Russian relationship, both in the context of the Ukraine war and beyond. In addition to developing distinct strategies for Russia and China, the Government should develop a comprehensive strategy that takes account of the potential for a deepening Sino-Russian relationship, particularly in critical areas for UK security, such as the Arctic.* (Paragraph 149)

38. The UK has shown leadership in providing military support for Ukraine and has developed a good level of cooperation and co-ordination with European partners. We welcome the new Government's commitment to negotiate an ambitious security pact with the EU. This could represent an important step towards rebuilding credible conventional deterrence. (Paragraph 150)

39. *There are, however, challenges within EU rules and practice to third-country participation. We therefore recommend that the new Government starts to discuss third-country involvement rules early on in any negotiations to understand the EU's willingness to adjust them, which would provide clarity on the parameters for the negotiations.* (Paragraph 151)

40. *The Government should ensure that pragmatism underpins a security deal with the EU. The purpose of any UK–EU cooperation should first and foremost be to deliver additional value for European security as it faces its biggest crisis since the Second World War. Negotiations should prioritise pragmatic areas for cooperation, rather than institutional landmarks.* (Paragraph 152)

41. We have received persuasive evidence about the value of the JEF and its potential as a testbed for other formats of defence cooperation with European partners. (Paragraph 153)

42. *The Government should maintain the UK's leadership role within the JEF and set ambitious objectives for the initiative, such as closer industrial integration among the member countries. There are lessons learnt from the JEF that can be applied to the broader European context. We urge the Government to explore how a similar format could be applied with a different set of countries to tackle a different mission.* (Paragraph 154)

43. The United States has long been a cornerstone of European security, but it is also reasonable to expect a gradual shifting of US priorities, regardless of the outcome of the forthcoming US election. The trajectory of a re-focus towards the Indo-Pacific region is clear. (Paragraph 155)

44. *As we continue to rely on the vital yet evolving partnership with the US, the Government and its European allies must visibly increase their preparedness by committing more resources—both human and financial—towards our collective security.* (Paragraph 156)

Countering aerial threats

45. The war in Ukraine has reaffirmed the importance of air superiority, with air defences critical to avoiding an attritional ground conflict. (Paragraph 178)

46. *Under-investment has led to substantial vulnerabilities in the UK's (and Europe's) ability to defend itself from airborne threats. In the context of a worsening security*

environment, this is deeply concerning, and the new Government should pay greater attention to homeland defence. (Paragraph 179)

47. *Increasing investment in integrated air and missile defence and a credible plan to deliver operational S/DEAD capabilities in close collaboration with our European NATO allies should therefore be high on the list of defence priorities for the new Government.* (Paragraph 180)

48. *European countries are coming together to deliver air defences collectively via the European Sky Shield Initiative, in which the previous Government had expressed an interest. We call on the new Government to provide an assessment of the merits of joining the initiative and update us on progress.* (Paragraph 181)

49. *Vulnerabilities extend to the maritime domain. While the UK does have a maritime missile capability in the Tomahawk land attack cruise missile, further investment is required to enable the Royal Navy to be deployed offensively and better project lethality.* (Paragraph 182)

50. The war in Ukraine has exposed the sheer variety of possible drone threats in a conflict scenario, ranging from disposable and commercially available drones to high-end, sophisticated ones. (Paragraph 196)

51. *The UK should invest in research and development to maintain a strategic edge in drone technology (including amphibious drones), and support the rapid development of new technologies that can compete in contested environments. Given the pace of technological adaptations on and off the battlefield, UK Defence should place greater emphasis on spiral development and modularity to support continuous adaptation.* (Paragraph 197)

52. *Military training should be revised to incorporate learning on the use of drones in Ukraine across all domains.* (Paragraph 198)

Space, cyber and the electromagnetic environment

53. Space, cyber, and electromagnetic warfare (EW) are closely interlinked and have featured heavily in the Ukraine war. They will likely form an integral part of future warfare between technologically capable states. (Paragraph 242)

54. *It is therefore imperative that the UK enhances its space, cyber and EW capabilities, focusing on developing resilient and adaptive systems that can operate in highly contested environments, like the one we are witnessing in Ukraine.* (Paragraph 243)

55. *The ability to conduct cyber and electronic warfare, and deploy electronic countermeasures to avoid detection, should be seen as a core capability for the UK's Armed Forces. The Government should learn lessons from how the Ukrainians have deployed and responded to electronic warfare attacks, including through dispersal techniques, and innovative command and control structures.* (Paragraph 244)

56. *Ukraine has shown that rapid technological innovation and adaptation are essential to stay ahead of adversaries. The Government should focus on building UK Defence's capacity to adapt and innovate quickly in or near the battlefield.* (Paragraph 245)

57. Maximum strategic advantage can only be obtained if space, cyber and EW are integrated across domains. We note that under the previous Government, the MoD announced the creation of an Integration Design Authority to

support integration. While this is a welcome development, it is people and skills and industry—including the leveraging of commercial partnerships—that will determine the success of such integration. (Paragraph 246)

58. *The new Government should work together with the private sector to formulate options for attracting high-tech talent to the defence sector and design flexible career paths that build skills and grow Defence's expertise in cyber and electromagnetic warfare.* (Paragraph 247)

59. *This will require training and learning lessons directly from colleagues in the Ukrainian forces and working closely with industry. The Government should adopt a more flexible approach to bringing in commercial actors, while acknowledging some of the unique challenges these partnerships can entail around, for example, accountability or reliability.* (Paragraph 248)

60. *The Government should ensure that cyber, EW and emerging technologies are fully integrated into the next edition of the Defence and Security Industrial Strategy. In addition, it should give serious consideration to the creation of a warfare centre for the cyber and electromagnetic domain.* (Paragraph 249)

61. Developments in Ukraine are relevant to UK national security and, in particular, the protection of its critical national infrastructure (CNI). (Paragraph 250)

62. *The reliance of modern economies on space-based technologies makes them a prime target for hybrid attacks. Cyber and electronic tactics deployed in Ukraine by Russia have been used elsewhere, including against the UK and its allies. It is therefore essential that the new Government focuses on building greater resilience into the UK's CNI.* (Paragraph 251)

63. *The UK's fragmented police forces and limited military resources may struggle to handle the increased civil defence burden in the event of hostile actions, such as sabotage of CNI. The Government should thus consider the merits of establishing a centralised civil defence agency, akin to the US' Federal Emergency Management Agency.* (Paragraph 252)

64. *The new Government should also invest in Space Situational Awareness and Space Domain Awareness capabilities, for which it heavily relies on the US.* (Paragraph 253)

APPENDIX 1: LIST OF MEMBERS AND DECLARATIONS OF INTEREST

Members

Lord Alderdice
Lord Ashton of Hyde (Chair) (until 30 May 2024)
Lord Bruce of Bennachie
Baroness Coussins
Baroness Crawley
Lord De Mauley (Chair) (from 29 July 2024)
Baroness Fraser of Craigmaddie
Lord Grocott
Lord Houghton of Richmond
Baroness Morris of Bolton
Lord Robertson of Port Ellen (until 30 May 2024)
Lord Soames of Fletching
Lord Wood of Anfield

Declaration of interests

Lord Ashton of Hyde (Chair) (until 30 May 2024)
Wife is a shareholder in BAE Systems

Lord Alderdice
Executive Chairman and Director of the Changing Character of War Centre at Pembroke College, Oxford

Lord Bruce of Bennachie
Adviser, DAI Global

Baroness Coussins
No relevant interests declared

Baroness Crawley
No relevant interests declared

Lord De Mauley (Chair) (from 29 July 2024)
Chairman, Council of the Reserve Forces and Cadets Associations
Regimental Colonel, The Royal Gloucestershire Hussars
Joint President, March Foundation
Director, RGH Events (formerly RGH Events Limited and The Yeomanry Ride)
Chairman of Trustees, The Yeomanry Trust and Director of the associated company
Trustee, War Memorials Trust
Trustee, The Royal Gloucestershire Hussars Charitable Trust

Baroness Fraser of Craigmaddie
Daughter is a commissioned officer in the Army Reserve

Lord Grocott
No relevant interests declared

Lord Houghton of Richmond
Director, Draken (Europe)
Chairman of Secure Cloud +
Senior Defence and Security Advisor THALES
Advisor, Whitespace

Baroness Morris of Bolton
No relevant interests declared

Lord Robertson of Port Ellen (until 30 May 2024)
Senior Counsellor, The Cohen Group
Lord Soames of Fletching
Chairman of GW Consulting UK Limited
Lord Wood of Anfield
No relevant interests declared

A full list of members' interests can be found in the register of Lord's interests: https://members.parliament.uk/members/lords/interests/register-of-lords-interests/

APPENDIX 2: LIST OF WITNESSES

Evidence is published online at https://committees.parliament.uk/work/8251/implications-of-the-war-in-ukraine-for-uk-defence/publications/ and available for inspection at the Parliamentary Archives (0207 219 3074).

Evidence received by the Committee is listed below in the chronological order of oral evidence session and in alphabetical order. Those witnesses marked with ** gave both oral and written evidence. Those marked with * gave oral evidence and did not submit any written evidence. All other witnesses submitted written evidence only.

Oral evidence in chronological order

*	Professor Malcolm Chalmers, Deputy Director-General, RUSI and Shashank Joshi, Defence Editor, The Economist	QQ 1–10
*	Dr Ulrike Franke, Senior Policy Fellow, European Council on Foreign Relations and James Black, Assistant Director, Defence and Security, RAND Europe	QQ 11–19
*	Dr Marc DeVore, Senior Lecturer, University of St Andrews, Tim Lawrenson, Associate Fellow, International Institute for Strategic Studies and Air Marshal (retd) Edward Stringer, Senior Fellow, Policy Exchange	QQ 20–30
*	Juliana Suess, Research Fellow, Royal United Services Institute (RUSI) and Theodora Ogden, Space Policy Analyst, RAND	QQ 31–42
*	General (retd) Sir Nick Carter GCB CBE DSO ADC Gen, former Chief of the Defence Staff and Dr Peter Roberts, Senior Fellow, Centre for Public Understanding of Defence and Security, University of Exeter	QQ 43–56
*	Air Chief Marshal the Lord Peach KG GBE KCB DL, former Chief of the Defence Staff and Chair of the NATO Military Committee and Nick Childs, Senior Fellow for Naval Forces and Maritime Security, The International Institute for Strategic Studies (IISS)	QQ 57–71

Alphabetical list of all witnesses

	ADS Group	IUD0005
	Anonymous	IUD0001
*	James Black, Assistant Director, Defence and Security, RAND Europe (QQ 11–19)	
*	General (retd) Sir Nick Carter GCB CBE DSO ADC Gen, former Chief of the Defence Staff (QQ 43–56)	
*	Professor Malcolm Chalmers, Deputy Director-General, RUSI (QQ 1–10)	
	Nick Childs, Senior Fellow for Naval Forces and Maritime Security, The International Institute for Strategic Studies (IISS) (QQ 20–30)	

	Professor Michael Clarke, Visiting Professor in the Department of War Studies, King's College London)	IUD0014
	Professor Vincent Connelly, Professor of Psychology, Oxford Brookes University	IUD0012
*	Dr Marc DeVore, Senior Lecturer, University of St Andrews and Tim Lawrenson, Associate Fellow, International Institute for Strategic Studies (QQ 20–30)	
*	Dr Ulrike Franke, Senior Policy Fellow, European Council on Foreign Relations (QQ 11–19)	
	Henry Jackson Society	IUD0008
	Human Security Centre	IUD0010
*	Shashank Joshi, Defence Editor, the Economist (QQ 43–56)	
	KBR	IUD0011
*	Tim Lawrenson, Associate Fellow, International Institute for Strategic Studies (QQ 20–30)	
	Make UK Defence	IUD0006
	Ministry of Defence	IUD0015
	Northrop Grumman UK	IUD0007
	Theodora Ogden, Space Policy Analyst, RAND (QQ 31–42)	
	Jag Patel	IUD0013
	Dr Timothy Peacock, Lecturer in History and War Studies, Director of UofGGamesLab at University of Glasgow	IUD0009
*	Air Chief Marshal the Lord Peach KG GBE KCB DL, former Chief of the Defence Staff and Chair of the NATO Military Committee (QQ 57–71)	
*	Dr Peter Roberts, Senior Fellow, Centre for Public Understanding of Defence and Security, University of Exeter (QQ 43–56)	
	Dr Stepan Stepanenko (Director of Research at Forum for Foreign Relations) and Mr John Holmes (Trustee at Forum for Foreign Relations)	IUD0004
*	Air Marshal (retd) Edward Stringer, Senior Fellow, Policy Exchange (QQ 20–30)	
*	Juliana Suess, Research Fellow, Royal United Services Institute (RUSI) (QQ 31–42)	
	Thales	IUD0016
	Whitespace Global	IUD0003

APPENDIX 3: CALL FOR EVIDENCE

Background

Russia's illegal and unprovoked full-scale invasion of Ukraine marks the return of large-scale conventional warfare to Europe. The war in Ukraine has provided an opportunity to assess Russia's military capabilities and has delivered preliminary lessons regarding the evolving character of modern warfare.

Russia's invasion has challenged some of the strategic assumptions set out in the 2021 Integrated Review and the Defence Command Paper. In 2023, the Government responded to the new security environment by publishing the Integrated Review Refresh and a revised Defence Command Paper.

This short inquiry will gather interim lessons from the war in Ukraine and consider the implications for the UK's Armed Forces. It will consider whether the UK and its allies are investing in the appropriate capabilities—both to provide ongoing support to Ukraine and to provide credible deterrence against Russian aggression.

Areas of interest

1. What does the war in Ukraine tell us about the changing character of warfare? To what extent are the lessons from the war in Ukraine applicable to UK Defence?

2. Is there a need for the UK to increase investment in integrated air defence and missile defence in light of the war in Ukraine?

3. To what extent should the UK seek to increase its weapon stocks as a result of the war in Ukraine? What kind of weapons should it focus on procuring in greater quantities?

4. What steps should the UK take to strengthen its military-industrial base and upskill the relevant workforce in light of the war in Ukraine? What are the main challenges, and how can these be overcome? How does the UK's approach compare to that of its European allies?

    (a) How feasible is it for the UK and its European allies to maintain large stockpiles of weapons and munitions, and what are the trade-offs in doing so?

5. How can the UK Armed Forces update their training and exercises to incorporate the lessons from the war in Ukraine?

6. What progress has been made in increasing joint procurement and harmonising defence systems among NATO allies, especially among our European partners?

7. How have drones been used by both sides in the war in Ukraine and what has been their impact for the way the war has been fought? What lessons should the UK Armed Forces draw from the use of drones in Ukraine?

8. What role has the space domain, including satellite communications, played in the war in Ukraine, and how has this differed from previous conflicts? What are the implications for the UK Armed Forces?

9. What lessons have the UK and NATO learned from the war in Ukraine about the management of escalation of force?

10. Is the hybrid threat to the UK posed by Russia evolving as a result of the war in Ukraine, and if so, how?

11. What other lessons can we draw from the war in Ukraine for UK Defence? What are the implications for the UK's defence priorities, including manpower?

Annex: Guidance for submissions

Submissions should be made online by clicking the "Start" button below.

This is a public call for evidence. Please bring this document to the attention of groups and individuals who may not have received a copy direct, including those who have not previously engaged with Parliament.

The deadline for making a written submission is 23:59 on Wednesday, 24 April.

There is no requirement to answer all questions in your submission and concise submissions are preferred. Responses should not be longer than five sides of A4 in size 12 font. Paragraphs should be numbered.

All submissions made through the online form will be acknowledged automatically by email.

A submission accepted by the committee as written evidence may be published online at any stage. When published, it becomes subject to parliamentary copyright and is protected by parliamentary privilege. The Committee cannot accept any submissions that have not been prepared specifically in response to this call for evidence, or that have been published elsewhere.

Once your submission has been accepted as evidence and published you may publicise or publish it yourself. In doing so you must indicate that it was prepared for the Committee, and you should be aware that your publication or re-publication of your evidence may not be protected by parliamentary privilege.

Personal contact details will be removed from evidence before publication but will be retained by the Committee Office and may be used for specific purposes relating to the committee's work—for instance to seek additional information.

Substantive communications to the committee about the inquiry should be addressed to the clerk of the committee, whether or not they are intended to constitute a formal written submission. You can email hlintlrelations@parliament.uk with any questions.

Diversity comes in many forms and hearing a range of different perspectives means that committees are better informed and can more effectively scrutinise public policy and legislation. Committees can undertake their role most effectively when they hear from a wide range of individuals, sectors or groups in society affected by a particular policy or piece of legislation. We encourage anyone with experience or expertise of an issue under investigation by a select committee to share their views with the committee, with the full knowledge that their views have value and are welcome.

You can follow the progress of the inquiry at: https://committees.parliament.uk/work/8251/implications-of-the-war-in-ukraine-for-uk-defence/.

APPENDIX 4: LIST OF ABBREVIATIONS

ASAP	Act in Support of Ammunition Production (EU)
ASAT	Anti-Satellite Weapon
AUKUS	Australia-UK-US security partnership
CNI	Critical National Infrastructure
DEAD	Destruction of Enemy Air Defences
DPAP	Defence Procurement Action Plan (NATO)
DRS	Defence Recruitment System
DSIS	Defence and Security Industrial Strategy
EDF	European Defence Fund
EDIP	European Defence Investment Programme
EDIRPA	European Defence Industry Reinforcement through Common Procurement Act
EDIS	European Defence Industrial Strategy
EW	Electromagnetic Warfare
ESSI	European Sky Shield Initiative
GCAP	Global Combat Air Programme
GNSS	Global Navigation Satellite Systems
GPS	Global Positioning System
IAMD	Integrated Air and Missile Defence
IP	Intellectual Property
ISTAR	Intelligence, Surveillance, Target, Acquisition, and Reconnaissance
ISR	Intelligence, Surveillance, and Reconnaissance
JEF	Joint Expeditionary Force
JFC	Joint Force Command
NDRP	National Defence and Resilience Plan
PESCO	Permanent Structured Co-operation (EU)
PNT	Positioning, Navigation, and Timing
SDA	Space Domain Awareness
SEAD	Suppression of Enemy Air Defences
SSA	Space Situational Awareness
UAS	Unmanned Aerial System
UNSC	UN Security Council