The Human Security Centre - Written evidence (IUD0010)

Background

The Human Security Centre (HSC) is an international, independent, not-for-profit foreign policy think-tank based in London. The HSC adopts and promotes the concept of human security as a central pillar of foreign policy in the twenty-first century.

The author of this evidence, Dr Rowan Allport, is an HSC Deputy Director who leads the organisation's security and defence policy activities.

Questions Addressed

This submission principally addresses the following inquiry 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?*

Executive Summary

- The trends observed in relation to how the Russia-Ukraine War has been conducted have so far been ones of continued evolutionary rather than revolutionary change.
- The potential lessons to be learned need to be caveated with regard to the unique circumstances in which they take place, and it is important for the UK not to take lessons unquestioningly.

- UK air and missile defence capabilities are undergoing some modest enhancements, although resource challenges are likely to limit their effectiveness, and additional investment would be desirable.
- The UK does not appear to be positioned to sustain prolonged high-intensity warfare through either existing stockpiles or new production, but options exist to address these issues should resources be made available.

Implications of the War in Ukraine for UK Defence

1. The Russia-Ukraine War[1] has served to confirm several well-established trends or known risk factors. Many of these are heavily interconnected.

   1.1 *Battlefield transparency*. The increasingly pervasive presence of air, ground, sea, cyber, electromagnetic and space-based surveillance systems together with the ability to rapidly gather, process and distribute the data they generate to improve situational awareness has made the concealment and movement of assets and personnel more difficult and their targeting easier. Civilians with smartphones have augmented this data gathering. The US has guided Ukraine in using data to create a comprehensive picture of the battlefield.[2] Only significant measures in terms of hardening, concealment, camouflage, and signature reduction (including electromagnetic emissions, with the personal mobile phones of military personnel being a point of weakness[3]), air and missile defence, size reduction, decoy deployment, disaggregation, mobility and geographical distance from the area of operations can provide a degree of safety.

   1.2 *Uncrewed aerial vehicle use.*[4] The intensity of the utilisation of uncrewed aerial vehicles (UAVs) in the intelligence, surveillance, target acquisition,

[1] All analysis in this submission refers to the phase of the conflict which commenced on 24 February 2022 unless otherwise stated.
[2] David E. Sanger, 'In Ukraine, New American Technology Won the Day. Until It Got Overwhelmed', *New York Times*, 23 April 2024. Available at: https://www.nytimes.com/2024/04/23/us/politics/ukraine-new-american-technology.html [Accessed 23 April 2024]
[3] Kieren Divine, 'Ukraine war: Mobile networks being weaponised to target troops on both sides of conflict', Sky News, 4 January 2023. Available at https://news.sky.com/story/ukraine-war-mobile-networks-being-weaponised-to-target-troops-on-both-sides-of-conflict-12577595 [Accessed 23 April 2024]
[4] For further discussion, see Stacie Pettyjohn, 'Drones are Transforming the Battlefield in Ukraine but in an Evolutionary Fashion', War on the Rocks, 5 March 2024. Available at: https://warontherocks.com/2024/03/drones-are-transforming-the-battlefield-in-ukraine-but-in-an-evolutionary-

and reconnaissance (ISTAR) and attack role in their numerous guises has been unprecedented. Both military models and modified commercial types have been deployed. Their main contribution has been supplying battlefield awareness and targeting data, although they have also provided a route for direct attack alongside similar but distinct loitering munition types. The net result has made ground manoeuvre and attack highly challenging.

1.3 *The increasing challenge of obtaining air superiority.* Neither side has been able to obtain control of the air, with both Russia and Ukraine failing to critically degrade their opponent's combat aircraft force or ground-based air and missile defences. Russia's losses of attack helicopters and ground attack aircraft lacking standoff munitions have been particularly high. Ukraine has struggled to break through Russian defences in part due to Russian air defences making close air support too dangerous.

1.4 *Long-range conventional precision strike capability proliferation*. The ability to strike targets with accuracy at an extended range is now available to any country (and indeed some non-state actors) with a reasonable industrial base and/or access to the relevant (often commercially available) components. While Kyiv's allies have provided their advanced systems including Storm Shadow and MGM-140 ATACMS, strikes against Russia proper have been carried out using indigenous Ukrainian missiles and one-way UAVs. Russia itself has made extensive use of short-range ground and air-launched ballistic missiles of various types; sea, air and ground-launched cruise missiles; surface-to-air and anti-ship missiles repurposed for the land attack role; as well as UAVs and loitering munitions of various types.

1.5 *Sea denial capability proliferation*. Ukraine has accomplished a degree of sea denial through the use of shore-based anti-ship missiles, 'kamikaze' uncrewed surface vessels (USV) and uncrewed underwater vehicles (UUV) and supporting networked sensors, with the effort aided by strikes on ships in port, including via land attack missiles. Shore-based defences

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fashion/ [Accessed 23 April 2024]

likely contributed to early Russian plans to stage a supporting amphibious assault near Odessa being abandoned.

1.6 *Seabed warfare threats*. The attack against the Nord Stream pipeline – the culprits for which are still undetermined – has been the clearest manifestation of the threat of seabed warfare. The loitering of known Russian ships around critical allied infrastructure has further driven home the nature of this threat.

1.7 *Cyber conflict*.[5] Cyber warfare in the context of disruptive strikes, intelligence collection and information operations has been relatively low profile in this conflict. This belies a major defensive and offensive campaign that has nevertheless resulted in a stalemate with attacks inflicting only limited temporary impacts. Kyiv has been aided in its defensive efforts by both allied state cyber forces and Western commercial providers.[6]

1.8 *Space-based support*. The role of the US-sourced Starlink satellite communications system in supporting Ukrainian forces is well-known, and Russian efforts to launch cyber-attacks against and jam this system and others have only had limited success. The degree to which the US has provided specific targeting data from space-based assets is unclear. Data from commercial providers is being used by Kyiv to support operations.[7]

1.9 *Low-density high-value asset vulnerability*. The Russian Black Sea Fleet possessed only one ship theoretically capable of providing sea-based long-range air defence, the flagship cruiser *Moskva*, which was sunk early in the conflict. Russia has also lost two of what are thought to be only approximately nine A-50 airborne early warning and control aircraft in service pre-war.[8]

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[5] For further discussion, see Jon Bateman, 'Russia's Wartime Cyber Operations in Ukraine: Military Impacts, Influences, and Implications', Carnegie Endowment for International Peace, 16 December 2022. Available at: https://carnegieendowment.org/2022/12/16/russia-s-wartime-cyber-operations-in-ukraine-military-impacts-influences-and-implications-pub-88657 [Accessed 23 April 2024]

[6] Mehul Srivastava, 'Ukraine innovates on cyber defence', *Financial Times*, 18 July 2023. Available at: https://www.ft.com/content/94f3274b-7b9f-458f-bb62-4e061d987281 [accessed 24 April 2024]

[7] Christian Davenport, 'Commercial satellites test the rules of war in Russia-Ukraine Conflict', *Washington Post*, 10 March 2022. Available at: https://www.washingtonpost.com/technology/2022/03/10/commercial-satellites-ukraine-russia-intelligence [Accessed 13 April 2024]

[8] Thomas Newdick, 'Another One of Russia's Prized A-50 Radar Planes Shot Down, Ukraine Claims', The Warzone, 23 February 2024. Available at: https://www.twz.com/air/another-one-of-russias-prized-a-50-radar-planes-shot-down-ukraine-claims [Accessed 24 April 2024]

1.10 *Force mass and regeneration*. Ukraine began the war with a large pool of trained reservists including those who had gained experience fighting in the Donbas since 2014 as well as other volunteers that could be mobilised quickly. This helped to facilitate the significant outnumbering of Moscow's forces, the early stalling of Russia's offensive and prevented the strength of regular forces from falling below critical levels despite high casualties.

1.11 *The battle for the narrative.*[9] Attempts to shape the information environment are nothing new, but social media, in particular, has made crafting and sustaining a narrative far more challenging. Nevertheless, support for Ukraine in the UK has remained broad, with opposition largely confined to the political fringes. This has been aided by President Zelenskyy's ability to adeptly communicate his country's struggle and President Putin's decision to openly voice his intention of dismantling and assimilating Ukraine rather than at least attempt to craft a more palatable narrative.[10]

1.12 *The pivot of the US to the Indo-Pacific.* There has been much discussion in the US regarding the need to focus on the "pacing challenge" of China rather than Europe and the Middle East. By staying out of the conflict, the US has been able to limit its commitment to Europe to the deployment of additional defensive military forces and the supply of military and financial aid and intelligence support to Ukraine.

2. However, many of the trends highlighted above are yet to fully mature (if indeed the process has an ending), meaning that how they manifest in the Russia-Ukraine War may not be replicated in future interstate conflicts in which the UK becomes involved.

2.1 In the context of battlefield transparency, Russia lacks the type of persistent air and space-based surveillance system the US (and we must presume China) has access to at present and other combatants will in the

[9] For an analysis of the competing narratives, see Ginevra Bertamini and Éléonore Daxhelet, 'Narrative Warfare in the Russo-Ukrainian War: A Comparison between Ukraine's and Russia's Strategic Communication', FINABEL, 17 August 2023. Available at: https://finabel.org/wp-content/uploads/2023/08/IF-PDFs-17.pdf [Accessed 24 April 2024]

[10] Peter Dickinson, 'Putin admits Ukraine invasion is an imperial war to "return" Russian land', Atlantic Council, 10 June 2022. Available at: https://www.atlanticcouncil.org/blogs/ukrainealert/putin-admits-ukraine-invasion-is-an-imperial-war-to-return-russian-land [Accessed 23 April 2024]

future, meaning that the Ukrainian forces are currently less observable and hence more survivable than might otherwise be the case. The supporting technology in general will only continue to rapidly advance. This may lead to experiences in Ukraine leading to the challenge of avoiding detection being underestimated.

2.2 We have not yet seen the utilization of UAVs at a genuine 'swarm' scale in Ukraine. This has given leeway for defensive systems including surface-to-air missiles and anti-aircraft guns designed for more traditional threats to respond reasonably adequately when they may be overwhelmed in more challenging circumstances. Additionally, most UAVs have been directly controlled by an operator and are vulnerable to the jamming of the control signal. This type of defence would be far less effective were they autonomous.

2.3 Russia's inability to obtain control of the air has been limited by its ability to locate and destroy Ukraine's aircraft and air defence systems, a restricted suppression/destruction of enemy air defence (SEAD/DEAD) capability (together with an apparently limited ability to conduct complex air operations overall[11]) and limited stockpiles of stand-off munitions. All of these issues can be rectified given time and resources.

2.4 The opening blows of Russia's air campaign were likely restricted by factors including limited stockpiles of munitions such as cruise and tactical ballistic missiles and one-way UAVs, as well as an expectation of an easy victory that would facilitate the securing of Ukraine without destroying the nation's infrastructure. This cannot be counted on in future.

2.5 Russia's Navy has been historically its weakest military branch and the Black Sea Fleet one of its less powerful components, a situation exacerbated in the current conflict by Turkey's decision to ban the transit of Russian and Ukrainian warships through the Turkish Straits, preventing the arrival of reinforcements via that route. In a conflict with Russia, the UK would primarily face the Russian Northern Fleet, which is considerably more robust than the Black Sea force.

[11] See Justin Bronk, 'Is the Russian Air Force Actually Incapable of Complex Air Operations?', RUSI, 4 March 2022. Available at: https://www.rusi.org/explore-our-research/publications/rusi-defence-systems/russian-air-force-actually-incapable-complex-air-operations [Accessed 23 April 2024]

2.6 A conflict between NATO and Russia would present Moscow with a broad spectrum of options to interfere with seabed assets. The Russia-Ukraine War has served as a reminder of the threat, but the practical reality has only been able to manifest in a limited way.

2.7 Russia may be unable or unwilling to engage in a cyber offensive of greater intensity, and the relative containment of the offensive it has undertaken against Ukraine has allowed for a concentration of allied defensive resources. As on the conventional battlefield, Kyiv's conflict with Moscow since 2014 has allowed it to build experience in defending against its opponent which has served it well in the wake of the 2022 invasion. A broader offensive effort by Russia may allow it to find a richer and less comprehensively defended target set, including in the UK.

2.8 Russia has a more robust array of anti-satellite capabilities than it has deployed thus far, including kinetic options. It has been reported in the US that Russia is preparing to deploy nuclear weapons into space that would give Moscow the ability to degrade, disable or destroy satellites and 'salt the earth' in vast tracts of orbital space, potentially overcoming the challenge satellite constellations such as Starlink and OneWeb present as targets.[12] However, Russia has denied any plans to do so.

2.9 Low-density asset vulnerability is to an extent more of a risk factor for the UK than Russia. Notably, the RAF is to receive only three E-7A Wedgetail airborne early warning and control aircraft. Even tanks fall into this category for the UK, with the British Army having only 148 Challenger 3 tanks on order when confirmed Russian tank losses in Ukraine are reportedly approaching 3,000 vehicles at the time of this evidence's submission.[13]

2.10 Russia proved unable to act with sufficient speed or aggression to adequately disrupt Ukraine's mobilisation and has made little attempt to disrupt the training of Ukrainian forces abroad. This has given scope for

[12] Juliana Suess, 'The Nuclear Option – Russia's Newest Counter Space Weapon?', RUSI, 27 February 2024. Available at: https://rusi.org/explore-our-research/publications/commentary/nuclear-option-russias-newest-counter-space-weapon [Accessed 23 April 2024]

[13] 'Attack On Europe: Documenting Russian Equipment Losses During The Russian Invasion Of Ukraine', Oryx, 23 April 2024. Available at: https://www.oryxspioenkop.com/2022/02/attack-on-europe-documenting-equipment.html [Accessed 24 April 2024]

the generation of mass that may not be present in future conflicts, and the experience of Ukrainian forces in the Donbas since 2014 gave them a level of capability that they would not otherwise have possessed. Ukraine's ability to mobilise was supported by the sheer scale of the task Russia embarked upon with the invasion of Europe's second largest country (after Russia) and the time it would take even under ideal circumstances. Theoretically, were Moscow to target a smaller country such as Estonia, it would be easier to accomplish its goals before full mobilisation was possible. The UK arrangements for mobilisation must reflect this. It must also be noted that implicit in the call for additional mass for the UK forces is an ability to continue operations despite heavy casualties – a prospect whose tolerance by British society remains untested in the 21st century.

2.11 A major narrative-shaping failure by Moscow was Russia's inability to cut off Kyiv's communications with the outside world, which had a critical impact. Sustaining public support for Ukraine despite disinformation efforts has been immensely aided by the current war being one of the most morally unambiguous conflicts since the Second World War. Most future such situations will be unlikely to be so straightforward, and AI looks set to further muddy the waters between truth and fiction.

2.12 There is a significant likelihood that the Russia-Ukraine War will be the last occasion in the near future in which the US can take the leading role in a major European security crisis even as an equipment and munitions provider. China is approaching the point where it has the resources to pose a greater potential conventional threat to the US than Nazi Germany, Imperial Japan or the Soviet Union ever did.[14] Even if domestic politics in the US allows for it to sustain a global leadership role, there is only so much that can be realistically expected.

3. More broadly, there is a significant risk of overlearning the lessons of Ukraine beyond the ongoing maturation or uniqueness of individual factors. There is a reasonable probability this will turn out to be the last conflict of its type for at least an extended period. This is not to say that preparing for such an

[14] The USSR was and Russia remains a greater nuclear threat than contemporary China.

eventuality, presumably in Eastern Europe against a rejuvenated Russia, would be an error. While the risk of a direct conflict may be low (probability), the consequences (impact) of it occurring would be high. The issue of deterring a conflict is also critical. Additionally, many of the capabilities that are now the preserve of high-level opponents will be 'democratized' down to lesser actors, so preparation to counter them is likely to be beneficial. However, ground forces in particular that are built around capital-intensive capabilities such as long-range fires and electronic warfare may be suboptimal for other tasks.

4. Examining UK air and missile defence requirements specifically, the ability of the UK to defend both deployed forces, lines of communication and the homeland has contracted significantly since the end of the Cold War and was not comprehensive even then.

   4.1 Today, domestic air defence (including against cruise missiles) is largely reliant on a relatively small number of RAF Typhoon combat aircraft, with support potentially available from the F-35B fleet. These could be augmented by other assets including those controlled by the Royal Navy and British Army. However, the taskings they would have to cover to protect the homeland, lines of communication and deployed forces would be beyond their capability in certain circumstances.

   4.2 Some modest efforts at improving air defence mass and creating an anti-ballistic missile capability are underway. These include the fitting of Sea Ceptor surface-to-air missile launch cells to the Type 45 destroyers and the equipping of the same vessels with upgraded Aster 30 Block 1 missiles that can intercept short-range ballistic missiles. The RAF Regiment has begun to field anti-UAV defence systems in the form of jamming equipment and Lightweight Multirole Missiles.[15] The British Army is reportedly increasing its number of Sky Sabre launchers and has embarked upon a 'Land GBAD' programme to enhance short and medium-range air defences as well as the capability to defend these systems from small UAV attacks and provide wider protection from small UAVs for

[15] '34 Squadron: Win First, Fight After', *Excalibur*, Winter 2022, page 9. Available at: https://issuu.com/voicebedford/docs/excalibur_winter_22_low_res [Accessed 23 April 2024]

ground forces.[16] The first element of Land GBAD appears to be the procurement of SmartShooter SMASH sights to be fitted to personal weapons (initially SA-80 A3 rifles) to allow soldiers to target small UAVs.[17] However, resource constraints will likely limit overall air defence improvements.

4.3 An increase in investment in integrated air and missile defence beyond that which is likely planned would be highly desirable, particularly as it could reduce the dilemma of how to utilise thin assets and improve deterrence against attacks even being attempted.

5. Given the admission of the inadequacy of stockpiles by the Government, transfers to Ukraine and the historic trend of wartime munitions expenditure being higher than anticipated, the UK does not appear to be in a position to sustain high-intensity operations for a prolonged period. Even if the Cold War NATO standard of 30 days of munitions was available, it could still easily be inadequate given the circumstances of that era which pointed towards rapid escalation to a nuclear exchange no longer exist.

5.1 Most of the assets transferred to Ukraine early in the conflict, including complex and non-complex munitions, were taken from already limited military stockpiles that were not purchased with large-scale transfers to allies and partners in mind. Expansion of production faces bottlenecks including financial constraints, workforce limitations, procurement regulations, and the limited willingness of the private sector to invest in capacity in the face of uncertain demand.

5.2 The expenditure of artillery munitions, surface-to-air missiles, anti-tank missiles and stand-off land attack munitions (both ground and air-launched) has been particularly high in the Ukraine conflict. The UK would likely have similar experiences in a conflict between NATO and Russia.

[16] Nicholas Fiorenza, 'UK prepares for Land GBAD procurement', Janes, 12 August 2022. Available at: https://www.janes.com/defence-news/news-detail/uk-prepares-for-land-gbad-procurement; For an overview of the programme requitements, see 'Land Ground Based Air Defence (Land GBAD) Programme Prior Information', Sell2Wales, 22 November 2023. Available at: https://www.sell2wales.gov.wales/search/show/search_view.aspx?ID=NOV458144 [Accessed 23 April 2024]

[17] Nicholas Fiorenza, 'FAVS 2023: UK to field Land GBAD C-sUAS capability by end of year', Janes, 15 November 2023. Available at: https://www.janes.com/defence-news/news-detail/favs-2023-uk-to-field-land-gbad-c-suas-capability-by-end-of-year [Accessed 23 April 2024]

5.3 A pivot to build up a stockpile of critical munitions and other assets is desirable and viable with adequate commitment, and there is no reason such a stockpile could not be maintained. The most sensible option would be to focus on assets with long lead times – likely measured in years – including complex weapons such as guided missiles that could not be manufactured in the timescale of a conflict of critical national interest. In parallel, contingencies could be put in place to rapidly augment the production of items with comparatively short lead times such as artillery shells and basic UAVs (although also building up stocks in peacetime would be a priority).

5.4 It should be noted that the US' ability to rapidly increase artillery shell production has in part come from the flexibility provided by the manufacturing facilities being government-owned and contractor-operated rather than being fully in private hands. This has allowed for expedited investment in production capacity by taking much of the investment risk out of the private sector.[18]

5.5 Consideration should be given to establishing a high-low procurement mix that would see the 'gold plated' systems acquired for the military largely in peacetime, while 'good enough' easier-to-produce counterparts are identified that could be put into variable rates of production in peacetime and war. An example of this type of effort is the current US Rapid Acquisition Procurable Torpedo (RAPTOR) programme to develop a 'good enough' torpedo to augment its highly capable but complex and expensive Mark 48.[19]

5.6 Civilian industry should also be studied for its wartime potential in the same way that a list of militarily useful British-registered vessels is maintained by the Government.[20] It is unrealistic to repeat an effort on the scale of the pre-World War Two 'Shadow Factory' initiative, but the UK

[18] Sam Skove, 'In race to make artillery shells, US, EU see different results', Defense One, 27 November 2023. Available at: https://www.defenseone.com/business/2023/11/race-make-artillery-shells-us-eu-see-different-results/392288/ [Accessed 23 April 2024]

[19] Hope Hodge Seck, 'Navy Wants A Cheap Heavy Torpedo That Can Be Stockpiled Fast', The Warzone, 10 April 2024. Available at: https://www.twz.com/sea/navy-wants-a-cheap-heavy-torpedo-that-can-be-stockpiled-fast [Accessed 24 April 2024]

[20] 'UK armed forces equipment and formations 2023', Ministry of Defense, 8 March 2024. Available at: https://www.gov.uk/government/statistics/uk-armed-forces-equipment-and-formations-2023/uk-armed-forces-equipment-and-formations-2023 [Accessed 23 April 2024]

remains a significant manufacturing power. The 2020 experience of the 'Ventilator Challenge' programme to identify non-traditional manufacturers of medical ventilators during the COVID-19 pandemic may have lessons to offer, although it would be vastly preferable to have the plans established and core experience in place pre-crisis.[21] A notable example of preparing manufacturers for war work was seen in the US before World War Two, when the War Department gave select non-defence manufacturers 'educational orders' to give them experience in producing defence-related items.

5.7 It should be noted that Russia has made little attempt to contest the allied supply of munitions and other equipment to Ukraine either immediately before or during the current conflict. However, there have been reports of limited Russian sabotage efforts targeted at munitions facilities supporting Ukraine over the last decade. Current limitations are likely the result of an unwillingness by Moscow to widen the war and a crackdown on Russian security service assets in Europe.[22] It is likely direct interdiction efforts and more intense sabotage efforts by Russia would be a feature of a war with NATO.

6. The recent announcement that the UK will increase defence spending to 2.5% of GDP by 2030 appears to be funded by cuts to spending in other areas that may turn out to be unrealistic. This is in addition to the broader spending forecast for the post-election period being questionable, and the likelihood of a change in the governing party. Nevertheless, an infusion of resources would be welcome in helping remedy some of the issues outlined, and initiatives noted in the literature accompanying the announcement, including the plan to near-double munitions spending and support industry in developing an 'always on' production capability for munitions, are to be welcomed.[23]

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[21] 'Ventilator Challenge hailed a success as UK production finishes', UK Government News, 4 July 2020, available at https://www.gov.uk/government/news/ventilator-challenge-hailed-a-success-as-uk-production-finishes [accessed 23 April 2024]; Rob Davies, 'The inside story of the UK's NHS coronavirus ventilator challenge' *The Guardian*, 4 May 2020. Available at: https://www.theguardian.com/business/2020/may/04/the-inside-story-of-the-uks-nhs-coronavirus-ventilator-challenge [Accessed 23 April 2024]

[22] Jack Watling, Oleksandr V Danylyuk and Nick Reynolds, 'The Threat from Russia's Unconventional Warfare Beyond Ukraine, 2022–24', RUSI, 20 February 2024, page 13. Available at: https://static.rusi.org/SR-Russian-Unconventional-Weapons-final-web.pdf [Accessed 23 April 2024]

[23] HM Government, *Defending Britain: leading in a more dangerous world*
Our pledge: committing to 2.5% of GDP in 2030, pages 8-9. Available at:

https://assets.publishing.service.gov.uk/media/6628c835b0ace32985a7e51c/2024-04-23_Defending_Britain_-_FINAL.pdf [Accessed 24 April 2024]