

Special Report

Optimising Dutch Air and Space Power

Policy Recommendations for Defending the Netherlands and Deterring Aggression as Part of NATO

Justin Bronk



Special Report

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Cover image: F-35 at 322 Squadron, Leeuwarden, 6 August 2020. Dutch Ministry of Defence

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Contents

Executive Summary	1
Introduction	3
I. Strategic Context and Imperatives	4
II. Current Dutch Air and Space Power Strengths and Weaknesses	9
Fighter Force	12
Fighter Force Recommendations	17
Air and Missile Defence	19
Helicopter Fleets	22
Fixed-Wing Mobility and ISR	26
Space Capabilities	28
Noise	29
Conclusion	31
About the Author	35

Executive Summary

- The Royal Netherlands Air Force (RNLAf) currently performs a broad range of mission sets, with well-trained personnel who perform well when part of coalition operations.
- However, resources and personnel are spread very thinly across multiple small fleets with almost no capacity to absorb combat losses. Fleets also lack sufficient spares or ammunition stockpiles for sustained high-intensity operations.
- Since February 2022, collective defence and deterrence through NATO has become a more urgent planning concern than overseas crisis management and support to national civilian authorities.
- This is because the Netherlands faces a dangerous European security environment. Russian military output has increased rapidly, the situation on the ground in Ukraine is deteriorating, and the US is increasingly militarily overstretched and politically fractured. Presidential candidate Donald Trump has also openly questioned US resolve to defend Europe against future Russian aggression.
- For conventional deterrence, NATO depends on winning air superiority quickly. This enables relatively small but well-trained armies with close air support to conduct decisive manoeuvre warfare against Russian forces, while air forces conduct strikes on logistics, bases, command and control facilities, and other critical targets in depth. It is necessary because Russia's ground forces can field far more land-based firepower and politically sustain much higher numbers of casualties for longer than European armies.
- However, Russia's highly capable ground-based air defence system would deny air superiority unless NATO can rapidly locate, suppress and destroy Russian surface-to-air missile systems and radars at scale in the early weeks of any conflict. This task, known as suppression/destruction of enemy air defences (SEAD/DEAD), is the highest priority shortfall identified by NATO Air Command.
- Currently, only the US could carry out effective SEAD/DEAD operations against Russian air defences in Europe. Other NATO air forces lack suitable munitions, aircraft and training in the specialised tactics required. Thus, Europe is dangerously exposed if the US is unable (or unwilling) to come to its defence at scale – a real risk if Russian aggression coincides with a US–China standoff or conflict.
- The RNLAf should prioritise investment in its fighter force to help close this gap. The fighter force is the strongest comparative advantage that the Netherlands currently has. It is closer to being able to field credible SEAD/

DEAD capabilities than any other European NATO air force, apart from potentially the Norwegian Air Force. The F-35A has the sensors and stealth capabilities required to conduct SEAD/DEAD effectively. The RNLAF also has excellent tactical DNA in terms of pilot training culture, aggressive operational mindset, familiarity with US tactics and a large fighter weapons instructor cadre.

- Investment is needed to realise this potential. The RNLAF currently struggles to fly the F-35 enough to maintain the good tactical fundamentals inherited from the F-16 fighter force. It also lacks sufficient stocks of weapons, especially missiles suitable for conducting SEAD/DEAD against Russian forces.
- Therefore, the Netherlands should allocate additional personnel and funding towards improving RNLAF fighter force maintenance capacity, flying hours for training, and weapons acquisition, even if this requires significant cuts elsewhere.
- Weapons acquisitions and training for the F-35 should be prioritised around SEAD/DEAD to enable RNLAF aircrew to become specialists in this critical role. Investment here could provide an outsized contribution to NATO and do more to improve European security through deterrence against Russia than any other comparable uplift across other parts of the Dutch armed forces.
- As a force with a strong culture of interoperability with allies, the RNLAF should be well placed to coordinate with close European allies to identify mission sets where multinational specialisation can be pursued in a complementary way.
- If significant additional funding were made available, the RNLAF could also afford to uplift other areas such as missile defence for both national and NATO tasks. The main long-range threat to the Netherlands from Russia is cruise missiles due to range constraints on Russian ballistic systems. The NASAMS air defence system is highly effective against cruise missiles and significantly cheaper than Patriot, so is likely a more efficient way to protect key national assets than Patriot, which should be allocated to NATO missions where possible.
- Another potentially very useful and efficient investment in the medium term would be to seek to acquire a small number of stealthy uncrewed ISR assets from the US in place of MQ-9 Reaper airframes, which are not suitable for operations in contested airspace. Penetrating ISR is one of the other key NATO bottlenecks where the only existing capability is American, and one where a small number of relatively efficient airframes could have an outsized effect.
- Alternatively, the Netherlands may choose to look to space assets for critical ISR in heavily contested airspace. Here again, however, the US provides the overwhelming bulk of NATO capabilities.

Introduction

This report was produced as the primary output of a study requested and funded by the Ministry of Defence of the Netherlands. The request from the Dutch Ministry of Defence was for an independent assessment by RUSI of the current strengths and weaknesses of Dutch air and space power, and for recommendations for how to optimise its contribution to the Dutch Joint Force and to wider NATO deterrence and warfighting capabilities. As such, there was no consultation with the Royal Netherlands Air Force (RNLAf) on the content of the report itself, and RUSI retained all editorial control and oversight throughout the writing and peer review process.

The primary evidence on which the report is based is several weeks of intensive interviews conducted by the author on multiple visits to the Netherlands. Units and bases visited included: the Air Force Headquarters in Breda; fighter squadrons and Air Combat Command in Volkel and Leeuwarden; helicopter units and the Helicopter Warfare Centre in Gilze-Rijen; a range of planning staffs and subject matter experts from all three services at the Ministry of Defence in The Hague; and the Air Mobility Force in Eindhoven. These interviews involved commanders and senior officers, planners and operators of multiple ranks, as well as civilian subject matter experts from across the RNLAf alongside a smaller number of focused interviews with officers from the Royal Netherlands Army and Navy. For wider contextual awareness, the author also drew on research visits to frontline squadrons and interviews with commanders in the UK, Sweden, Finland, Norway, Italy, Germany, Canada and the US during 2023 and early 2024.

The conclusions are those of the author and do not necessarily reflect those of the Dutch armed forces nor the Ministry of Defence of the Netherlands.

I. Strategic Context and Imperatives

In its 2022 Defence White Paper, the Netherlands committed to significant increases in defence spending, and to reinforcing and regenerating the operational capabilities of the armed forces. These ongoing reorganisation efforts have been prompted by a recognised need to respond to radical changes in the European security environment and the rising threat of a serious conflict directly involving NATO states in the coming years.¹

Russia's brutal invasion of Ukraine has resulted in two years of high-intensity warfare that shows no signs of abating. Ukraine has conducted a highly successful defensive war, but its summer counter-offensive in 2023 failed to achieve its objectives, according to Ukraine's commander-in-chief General Valery Zaluzhny.² In early 2024, Russia's forces were increasingly better supplied with ammunition, new vehicles and weapons as a result of the Kremlin's belated decision to mobilise the Russian economy for full-scale war production in late 2022.³ This trend looks set to increase, as Russia's military budget for 2024 is a 68% increase over the already boosted amount that it spent in 2023, resulting in a projected spend of around 6.5% of GDP on the war effort.⁴ It has also diversified and increased its supply base by acquiring huge quantities of artillery and missile ammunition from Iran, North Korea, Belarus and Syria, including investing in new factories specifically to supply Russian contracts in those countries over the longer term.⁵ In other words, Russia has committed itself to fighting and winning a long war against Ukraine, and to long-term confrontation with the West, not simply at the political level but also increasingly through structural economic posture. At the same time, Western support to Ukraine is no longer being sustained at

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1. Ministry of Defence of the Netherlands, 'A Stronger Netherlands, A Safer Europe: Investing in a Robust NATO and EU', 2022 Defence White Paper, July 2022, p. 11, <<https://english.defensie.nl/binaries/defence/documenten/publications/2022/07/19/defence-white-paper-2022/Defence+White+Paper+2022.pdf>>, accessed 2 February 2024.
 2. *The Economist*, 'Ukraine's Commander-in-Chief on the Breakthrough He Needs to Beat Russia', 1 November 2023; Jack Watling and Nick Reynolds, 'Stormbreak: Fighting Through Russian Defences in Ukraine's 2023 Offensive', RUSI Special Report, 4 September 2023.
 3. Jack Watling, 'Yes, Ukraine Can Still Defeat Russia – But it Will Require Far More Support from Europe', *The Guardian*, 27 December 2023.
 4. *Euro News*, "'Everything for the Front': Russian MPs Back 68% Rise in Military Spending", YouTube, 26 October 2023, <https://youtu.be/gBE1EGU_ruU?si=MUWaGfaePqidqXNY>, accessed 16 January 2024.
 5. Olivia Yanchik, 'Arsenal of Autocracy: North Korea and Iran are Arming Russia in Ukraine', Atlantic Council, 11 January 2024, <<https://www.atlanticcouncil.org/blogs/ukrainealert/arsenal-of-autocracy-north-korea-and-iran-are-arming-russia-in-ukraine/>>, accessed 16 January 2024.

the level required for continued offensive progress. This is because NATO stockpiles have been badly depleted and sufficient European investment has not yet been made in defence industrial production capacity to match Russia's preparations to fight and win a long war.⁶ Political splintering continues in the US, with support deliveries to Ukraine suspended due to a bitter impasse between the Republican and Democratic parties in Congress.⁷ Even more seriously, the re-election of Donald Trump in November 2024 is an entirely plausible prospect and could have dire implications for US support to not only Ukraine but also collective deterrence within NATO.⁸ In February 2024, Trump told a campaign rally in South Carolina that 'if [a NATO country that had not spent 2% of GDP on defence] were attacked by Russia ... no I would not protect you. In fact, I would encourage them to do whatever the hell they want'.⁹

Even if a more pro-NATO and pro-Ukrainian president is elected in November 2024, the US faces a major challenge from China that is leading to an ever-greater proportion of American military capability and logistical support capacity being focused on the Indo-Pacific theatre. The serious and growing degree of US military overstretch means that if there is a conflict or serious armed stand-off between China and the US in the Indo-Pacific in the coming years, there will be very little American capacity to send large-scale reinforcements, ammunition resupply and logistical support to help European NATO members against any concurrent Russian military aggression.¹⁰ With Russian industry now on a war footing, supported by Chinese components and Iranian and North Korean production capacity, it will only be a few years before the Kremlin could credibly embark on a wider conflict in Europe if the US military cannot come to the rescue.¹¹ This threat, which many European countries are belatedly waking up

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6. Raf Casert, 'The European Union is Struggling to Produce and Send the Ammunition it Promised to Ukraine', *AP News*, 15 November 2023, <<https://apnews.com/article/eu-ukraine-ammunition-russia-war-6e0be2d27201bc7ea205ffac7d7a7693>>, accessed 16 January 2024; Jack Watling, 'The War in Ukraine is not a Stalemate', *Foreign Affairs*, 3 January 2024, <<https://www.foreignaffairs.com/ukraine/war-ukraine-not-stalemate>>, accessed 16 January 2024.
 7. Arpan Rai, 'US Assistance to Ukraine has "Ground to a Halt" Amid Political Infighting, White House Says', *The Independent*, 12 January 2024.
 8. Tim Reid, Nathan Layne and Gabriella Borter, 'Iowa Caucus 2024: Trump Cements Frontrunner Status to Face Biden', *Reuters*, 16 January 2024; Anne Applebaum, 'Trump Will Abandon NATO', *The Atlantic*, 4 December 2023, <<https://www.theatlantic.com/magazine/archive/2024/01/trump-2024-reelection-pull-out-of-nato-membership/676120/>>, accessed 16 January 2024; Bernd Debusmann Jr, 'Why are Some Republicans Opposing More Aid for Ukraine?', *BBC News*, 7 December 2023.
 9. James Fitzgerald, 'Trump Says He Would "Encourage" Russia to Attack NATO Allies Who Do Not Pay Their Bills', *BBC News*, 10 February 2024.
 10. For a more detailed explanation, see Justin Bronk, 'Europe Must Urgently Prepare to Deter Russia Without Large-Scale US Support', *RUSI Commentary*, 7 December 2023.
 11. For example, *Dutch News*, "'We Need to be Prepared for War with Russia": Dutch Army Chief', 28 December 2023, <<https://www.dutchnews.nl/2023/12/we-need-to-be-prepared-for-war-with-russia-dutch-army-chief/>>, accessed 10 February 2024; *ERR*, 'Norwegian Army Chief Warns Against Russia Threat', 22 January 2024, <<https://news.err.ee/1609229460/norwegian-army-chief-warns-against-russia-threat>>, accessed 10 February 2024; Nicholas Camut, 'Putin Could Attack NATO in "5 to 8 Years"', *German*

to, is the reason why the Netherlands and many other countries are urgently seeking to rebuild the warfighting capacity of their armed forces. In its 2022 White Paper, the Dutch Ministry of Defence states: 'Europe needs to become more self-reliant. The countries of Europe, including the Netherlands, must therefore become stronger together'.¹² Unfortunately, European armed forces have shrunk to a shadow of their former selves under the weight of decades of successive budget cuts and the specific but limited requirements of small counterinsurgency wars overseas.

Operationally credible and resilient airpower is essential for rapidly renewing European capacity to deter and, if necessary, defeat Russian aggression against NATO. Russia's primary conventional military strengths are its ability to mass artillery firepower, armoured vehicles, electronic warfare systems and air defence systems on land against a given axis of advance. It has shown itself capable of fighting long, grinding wars of attrition, despite early setbacks, if initial aggression is not decisively repulsed. Ukraine has also demonstrated that Russian forces have a far greater tolerance for major casualties than Western forces – allowing them to take risks and accept costs that most Western democracies would find unacceptable, without being deterred from continuing offensive operations.¹³ Consequently, recruiting demographics, political constraints around conscription in many countries and industrial production capacity mean it is unlikely that European countries could develop the capacity to reliably repel future Russian aggression on land without air superiority. The entire Western military system is predicated on achieving air superiority at the start of any war. ISR capabilities and the raw firepower of massed tactical airpower are what has repeatedly enabled highly trained but relatively small land forces to achieve the sort of rapid battlefield victories over state opponents that would be needed to decisively repulse Russian aggression against NATO forces.

Russia responded to the overwhelming battlefield success of this model, especially during the conventional phases of both Gulf Wars, by developing a very potent integrated air defence system (IADS) and electronic warfare capabilities to deny the West air superiority. The failure of the Russian VKS (Aerospace Forces) to achieve air superiority was critical to Russia's failure to defeat Ukraine in 2022; in a future clash, European forces would be even more seriously handicapped by a similar failure against Russian forces due to having far less capacity to rely on massed firepower on land and lower casualty tolerance. Therefore, regenerating

Defense Minister Warns', *Politico*, 19 January 2024, <<https://www.politico.eu/article/vladimir-putin-russia-germany-boris-pistorius-nato/>>, accessed 10 February 2024.

12. See Ministry of Defence of the Netherlands, 'A Stronger Netherlands, A Safer Europe', p. 13.

13. Jonathan Landay, 'U.S. Intelligence Assesses Ukraine War Has Cost Russia 315,000 Casualties – Source', *Reuters*, 12 December 2023.

serious suppression and destruction of enemy air defences (SEAD/DEAD) capabilities among European NATO members is essential if the Alliance is to regain a viable joint warfighting credibility to deter and defeat future Russian aggression.¹⁴ Currently, almost all of NATO's SEAD/DEAD capability is fielded by the US Air Force and US Navy.

The good news is that the VKS has proven distinctly underwhelming in Ukraine, with far less tactical and operational proficiency and inferior technical capabilities in the air-to-air domain compared with the major NATO air forces.¹⁵ Therefore, even without major US force involvement, Europe's air forces could likely deal with Russia's tactical airpower relatively easily if the SEAD/DEAD mission could be accomplished as a prerequisite. Russia can field potent long-range strike capabilities with cruise and ballistic missiles. However, the size of the salvos it can launch is limited in practice by the limited number of strategic bombers, naval assets and ground-based Iskander-M launchers. Once actually used in anger, NATO forces would target these launch platforms as a priority – including on their bases with stand-off weapons – and so Russia's ability to sustain a long-term precision strike campaign against countries outside rocket-artillery range would also probably be more limited than its missile arsenal and production capacity would suggest at face value. In the naval domain, Russia's submarines are a potent force, but the bulk of its surface fleet is ageing and unlikely to be able to project power at any distance against NATO forces.

All this means that the most vital challenge for European NATO members is to regenerate SEAD/DEAD capabilities sufficient to hunt down and destroy a majority of forward-deployed Russian ground-based surface-to-air missile (SAM) systems in the first week or two of any incursions onto Alliance territory. If that can be accomplished, the rest of the Russian conventional military would likely struggle to prevent NATO establishing air superiority over the contested area. Air superiority, once established, would enable the traditional large-scale use of conventional fourth-generation fast jets, attack helicopters and UAVs to deliver an overwhelming air campaign against Russian forces in the contested area in support of NATO land and naval forces. Many Alliance member states maintain sizeable fleets of fourth-generation fast jets such as the Eurofighter Typhoon, Rafale, Gripen, Mirage 2000 and F-16, and attack helicopters such as the AH-64 Apache and Eurocopter Tiger. Many also have stockpiles of short-ranged but affordable direct attack munitions such as laser- and GPS-guided bombs and anti-tank missiles sufficient to destroy hundreds of Russian vehicles if they could

14. Justin Bronk, 'Getting Serious About SEAD: European Air Forces Must Learn from the Failure of the Russian Air Force over Ukraine', RUSI Defence Systems, 6 April 2022.

15. Justin Bronk, 'Russian Combat Air Strengths and Limitations: Lessons from Ukraine', CNA Occasional Papers, April 2023, <<https://www.cna.org/reports/2023/04/Russian-Combat-Air-Strengths-and-Limitations.pdf>>, accessed 16 January 2024.

be delivered effectively. Following decades of counterinsurgency and overseas intervention operations, most are also highly experienced in delivering this sort of direct attack firepower efficiently and accurately in close coordination with friendly ground forces. In other words, massed European tactical airpower in conjunction with NATO ground forces could devastate Russian ground forces in an actual clash, but only if a successful SEAD/DEAD campaign could be undertaken against Russia's SAM systems first to enable non-stealthy fast jets and attack helicopters to sustainably operate in the contested area.

The critical nature of the need for SEAD/DEAD to make conventional deterrence credible against Russia is well understood within NATO. The current head of NATO's Allied Air Command (AIRCOM) General James Hecker has repeatedly stated in public that 'counter-anti-access/area denial mission is [the] number-one priority, throughout NATO on the air side'.¹⁶ The most likely scenario in which Russia might risk direct military action against the territory of a NATO member state to discredit Article V and collective deterrence is one in which the US is perceived as either unwilling or unable to come to Europe's defence at scale. Therefore, to ensure deterrence in such a scenario, European NATO air forces must be able to collectively conduct effective SEAD/DEAD operations against Russian ground-based air defences and follow up with potent battlefield close air support and interdiction strikes at scale without major US help. If they had the capabilities to credibly do so, Russia would be much less likely to risk a ground incursion into NATO territory.

In this context, the key question behind this report is what should the RNLAf do to maximise its relevance and credibility? The report focuses on this primarily through the lens of Dutch contributions to collective European defence because, as a small country, the Netherlands can only satisfactorily offset the growing threat from Russia collectively through NATO. The Dutch government recognised the critical nature of this task in signing the Vilnius Summit Communiqué in July 2023, which pledged to make the new NATO defence plans 'the main driver for the organisation of our [national] forces and the specific military requirements NATO asks of them'.¹⁷ In view of this, this report focuses primarily on how the RNLAf can maximise the value it adds to Alliance deterrence and warfighting capabilities.

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16. James Hecker presentations at NATO Allied Air Command conference, Ramstein Air Base, 9 May 2023, and at the Joint Air Power Competence Centre Conference, Essen, 10 October 2023. See also Laura Heckman, 'Anti-Access, Area Denial Top NATO Priority, Official Says', *National Defense*, 18 August 2023, <<https://www.nationaldefensemagazine.org/articles/2023/8/18/anti-access-area-denial-top-nato-priority-official-says>>, accessed 5 February 2024.
 17. NATO, 'Vilnius Summit Communiqué', 11 July 2023, <https://www.nato.int/cps/en/natohq/official_texts_217320.htm>, accessed 6 March 2024.

II. Current Dutch Air and Space Power Strengths and Weaknesses

For many decades, the RNLAF has operated as a capable and well-respected small to medium-sized air force. It has primarily maintained its technological edge by purchasing aircraft, weapons and other key equipment off-the-shelf from the US, most notably its long-serving F-16 and new F-35 multi-role fighter fleets, along with CH-47 Chinook and AH-64 Apache heavy lift and attack helicopters. There are some exceptions, including medium helicopters, where the RNLAF operates the AS532 Cougar made by Airbus, primarily for missions alongside the army's Air Mobile Brigade, and the NHIndustries NH90 in the maritime helicopter role for the navy. The RNLAF also jointly operates the Airbus A330 MRTT (multi-role tanker transport) as part of the Multinational MRTT Unit (MMU) and has ordered the Brazilian-made C-390 tactical transport aircraft to replace its four ageing C-130H-30 Hercules tactical transport aircraft.¹⁸ For combat aircraft, however, the RNLAF operates US types and has also generally sought to maintain commonality with US-operated versions of its platforms, relying on the US for software, sensor and weapons upgrades. The general policy of remaining in lockstep with US domestic upgrade programmes has allowed the Netherlands to benefit from consistent US investment in iterative capability development, which is on a different scale from other Western countries due to vast disparities in funding. As a result, RNLAF aircraft and weapons have remained relatively up to date throughout their service lives, with comparatively minimal investment required beyond normal foreign military sales acquisition and operating costs.

In a similar vein, the RNLAF has maintained a consistent approach of maximising interoperability with the US Air Force through alignment and integration of training, doctrine, and tactics, techniques and procedures (TTPs). Dutch aircrew and maintainers for the F-16 and the F-35 are trained at Luke Air Force Base in Arizona, and RNLAF fighter force doctrine and TTPs are based on the US Air Force's Fighter Integration 3-1 standard.¹⁹ This ensures that they are generally

18. Key Aero, 'Netherlands Selects C-390M to Replace Hercules', 19 June 2022, <<https://www.key.aero/article/netherlands-selects-c-390m-replace-hercules>>, accessed 15 March 2024.

19. Author interview with senior officers from the National Air and Space Operations Centre (NASOC), Breda, 11 December 2023.

able to integrate seamlessly into complex air operations (COMAOs) led by the US, alongside other NATO members. The RNLAf has long prioritised this seamless interoperability as a policy position – aiming to specialise as a ‘plug-in’ air force for any US-led coalition due to common aircraft, TTPs, doctrine, weapons and training. In recent years, reliance on the US aircrew training pipeline and common doctrine has ensured that, despite difficulties with F-35 availability and flying hours in the Netherlands itself, new pilots are arriving from the ‘B-Course’ at Luke Air Force Base sufficiently well trained to be close to combat-ready wingmen, and only requiring a small amount of supplementary training to reach that level.²⁰

The downside to this approach is that the RNLAf is structurally and institutionally limited to being a tactical rather than an operational or strategic force. Training and recent operational experience have been geared around plugging into coalition air campaigns with a multinational air tasking order (ATO) produced and run by combined air operations centres in Uedem in Germany, Torrejón in Spain or Al Udeid in Qatar.²¹ These centres are staffed by thousands of American and NATO staff officers, including Dutch personnel, who have long been active and internationally valued participants. However, the lack of national operational- and strategic-level capacity does mean that the RNLAf, like most European air forces, is currently extremely dependent on the US for operational-level planning, targeting and command and control (C2) in order to perform effective combat operations.

A key component of this dependency is in the vital but often overlooked area of targeting, for which the RNLAf uses standardised NATO doctrine, systems and procedures. Targeting is the process by which higher-level commanders’ aims are fused with intelligence and surveillance data about hostile activity in an area of operations to analyse potential targets in terms of importance and priority, and ultimately allocate weapons and aircraft sorties to attack them. In recent years, the RNLAf has made significant progress in generating a national capability to conduct what is known as advanced target development (ATD), which is a comparatively granular and late-stage part of the overall process. This means that the Netherlands now has a national capability to derive the extremely precise (Category 1) target location and elevation coordinates to enable the accurate delivery of standard precision-guided weapons. ATD also involves calculating the appropriate weapon(s) required to provide the necessary effects

20. Author interviews with RNLAf fighter squadron commanders, Commander of the RNLAf Fighter Weapons School, and Commander of Air Combat Command, Volkel Air Base, 9 January 2024.

21. NATO, ‘Combined Air Operations Centres’, <<https://ac.nato.int/about/caoc>>, accessed 11 January 2024.

on targets and the optimal delivery profiles for a strike (weaponeering²²), and conducting collateral damage estimation and mitigation analysis.²³

However, there is no Dutch national intermediate target development (ITD) capability at present. This is the process prior to ATD through which intelligence and surveillance information on potential target points are combined and analysed. The aim of ITD is to produce target packs containing information such as relevant use by hostile forces, importance to wider campaign objectives, vulnerabilities, defences, and ultimately weighting that helps determine whether the target is a priority or not. This is vital to be able to develop a joint priority target list and then further refine that into an ATO, where targets and weapons are allocated to aircraft sorties and associated enablers like tankers are coordinated to ultimately deliver the strikes.²⁴ This is a dependency shared by the majority of European air forces, exacerbated by widespread personnel shortages in key intelligence and staff officer trades, to which the RNLAF is not immune, having around a 20% deficit compared to its authorised personnel strength among most trades.²⁵ What this means in practice is that the RNLAF would struggle to generate and execute a national air campaign, except one that relied solely on dynamic targeting at the discretion of aircrew against pre-authorised targets of opportunity. However, the RNLAF ATD cell represents a useful contribution to NATO air campaign planning and ATO production during ongoing operations, and one that is currently relatively unusual among comparably sized air forces in Europe.

In overall force structure terms, the RNLAF is essentially a broad but fragile structure that is heavily dependent on US support in terms of planning, C2 enablement, ammunition resupply, logistical support, tanker support and training capacity. The fighter fleet is far smaller than at any period in RNLAF history, and while it has a varied and relatively large rotary wing inventory for its size, the inventory of each individual type within the helicopter force is still very small. The RNLAF participates in shared multinational strategic airlift, airborne early warning and control systems (AWACS) and aerial refuelling forces via NATO, but has no ability to task these assets nationally.²⁶ It has also acquired four MQ-9 Reaper armed unmanned aircraft, has plans to acquire four more primarily for naval support operations, and has a new satellite for

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22. For more details, see Morris Driels, *Weaponeering: An Introduction*, Third Edition, Volume 1 (Reston, VA: American Institute of Aeronautics and Astronautics, 1 February 2020).
 23. Author interview with commanders and demonstrations by operators at the RNLAF Targeting Support Cell, Volkel Air Base, 9 January 2024.
 24. *Ibid.*; author interview with senior officers from NASOC, Breda, 11 December 2023.
 25. Author interview with senior officers from the Plans (Force Development) department, Ministry of Defence Headquarters, The Hague, 12 December 2023.
 26. Author interview with commander of Air Mobility Command and C-130H, A-330 MRTT, E-3A and C-17 pilots, Eindhoven Air Base, 11 January 2024.

initial R&D as part of nascent efforts to field space-based surveillance and monitoring capabilities with other European allies.²⁷ The RNLAf also provides personnel for the Patriot air defence system that is operated by the Dutch army. Across a force of only 6,400 regular forces, 1,100 civilian workers and 750 reservists, and after decades of ever-shrinking budgets, maintaining this broad spread of capabilities has inevitably resulted in a force that is spread exceptionally thinly.²⁸ There is no capacity to absorb significant combat losses, a very limited ability to plan operations or conduct detailed targeting at a national level, and Dutch forces have inadequate ammunition, spare parts, logistical support, missile defence cover, force protection capacity and training in key missions.

If the Dutch Ministry of Defence is to achieve its goals of rejuvenating the capacity of air and space power to play a meaningful role in the defence of the Netherlands and other NATO allies against Russia, it must be allowed to make major changes quickly and with a ruthless focus on the primary threat. In the absence of a transformative increase in defence spending, the RNLAf will need to choose certain key mission sets to invest in at the expense of cuts elsewhere. Such choices must be made in close coordination with other European allies to ensure that NATO's collective defence capabilities are balanced and operationally credible.

Fighter Force

A notable current strength of the RNLAf compared with most other European air forces is that it has so far maintained a very high average experience level among its frontline aircrew. The RNLAf places a disproportionately heavy emphasis on weapons instructor training compared with most NATO air forces, with 5–10 crews going through the RNLAf Weapons School every year.²⁹ The school also trains weapons instructors across a wide range of role specialisation, including intelligence officers, MIM-104 Patriot air defence system operators, helicopter aircrew and air battle managers.³⁰ This means that most RNLAf fighter squadrons currently have 2–3 fighter weapons instructors (FWIs) tasked specifically with optimising and delivering tactical training for other pilots, and many senior squadron, operations group and wing commanders at each base are also FWIs.³¹ For comparison, most RAF squadrons have a single equivalent

27. Author interview with uncrewed and space capability planning officers, Breda, 13 December 2023.

28. Unclassified personnel estimates obtained via author email correspondence with RNLAf staff officers, 6 February 2024. See also Ministry of Defence of the Netherlands, 'Numbers of Staff', <<https://www.defensie.nl/onderwerpen/overdefensie/het-verhaal-van-defensie/aantallen-personeel>>, accessed 6 February 2024.

29. Author interview with senior officers from NASOC, Breda, 11 December 2023.

30. Author interviews with Patriot commanders and operators, Breda, 12 December 2023.

31. Author interview with senior officers from NASOC, Breda, 11 December 2023; author interviews with F-16 and F-35 Squadron Commanders, Volkel Air Base, 9 January 2024.

qualified weapons instructor (QWI) performing the role, and even most US Air Force squadrons have a single dedicated ‘patch’, although in both cases one or two others still often remain part of the squadron or parent wing in other senior roles.³² This means that most Dutch FWIs are significantly less overworked than those in most NATO air forces, where burnout among weapons instructors is a significant retention issue for these key personnel.³³ However, the resources required to maintain such a high output of FWIs in a comparatively small force constitute a significant drain in terms of instructor time, programmatic capacity and flying hours, resulting in a trade-off being consciously made to spend less of these resources on regular squadron personnel training. Nevertheless, the trade-off seems to be a good one, since the tactical DNA of the RNLAF fighter (and attack helicopter) aircrew communities is demonstrably excellent. Core skills and procedures are consistently performed to a high standard and are comparable to those found in the US Air Force.³⁴

Many RNLAF fighter squadrons also have a high average level of overall pilot flying experience well in excess of 1,000 hours, which is also unusual in most NATO air forces.³⁵ This unusually high experience level within the Dutch aircrew cadre is partly due to deliberate RNLAF HR policies which avoid incentivising pilots to take staff jobs for career progression until they have spent at least two three-year flying tours as Majors.³⁶ Pilots, and also to a lesser extent intelligence personnel and air battle managers, also usually spend most of their careers until at least the rank of Major at the same base they were assigned to when they first completed basic training. This ensures a high degree of continuity that enhances on-the-job training and forges strong bonds and working relationships between different trades working at each location. However, it also reduces the flexibility of the RNLAF in terms of its ability to rapidly move people around between postings and bases to compensate for unexpected gaps or demand signals.

Another contributing factor for specifically high average aircrew experience levels is a legacy of decades of relatively high annual flying hour totals on F-16 squadrons. Although this figure has declined significantly over the past 15 years,

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32. Author visits to and interviews with QWI/FWIs in RAF Typhoon and F-35 units at RAF Lossiemouth, 29 November 2022 and RAF Marham, 20 September 2022, US Air Force F-15E squadrons at RAF Lakenheath, 23–24 September 2021, and F-16 Squadron at Spangdahlem Air Force Base, 14–15 August 2023.
33. Author interviews with QWI/FWIs in RAF Typhoon and F-35 units at RAF Lossiemouth, 29 November 2022 and RAF Marham, 20 September 2022, US Air Force F-15E squadrons at RAF Lakenheath, 23–24 September 2021 and F-16 Squadron at Spangdahlem Air Force Base, 14–15 August 2023, and Royal Canadian Air Force CF-18 units at CAF Cold Lake, 12–18 April 2023 and CAF Bagotville, 22–28 May 2023.
34. Author interview with senior officers from NASOC, Breda, 11 December 2023, with F-16 and F-35 squadron commanders, Volkel Air Base, 9 January 2024, with helicopter squadron commanders and helicopter warfare centre commander, Gilze-Rijen Air Base, 10 January 2024.
35. Author interviews with RNLAF fighter squadron commanders and commander of Air Combat Command, Volkel Air Base, 9 January 2024.
36. Author interviews with current and former RNLAF fighter weapons instructors (FWIs), Leeuwarden Air Base, 18 January 2024.

the remaining F-16 operator, 312 Squadron, maintained rates of between 160 and 200 flying hours per year in its final six months of operations before shutting down to convert to the F-35.³⁷ However, the squadrons that have already converted to the F-35 have been flying far fewer hours, and well below NATO targets, at least when operating from their home bases.³⁸ This means that as older, more experienced pilots retire or move to staff jobs, the new generation is not replacing them with nearly as much ‘banked’ experience, and so the force is losing ‘crew-room experience’ increasingly rapidly.³⁹ Synthetic training in the simulator is a critical component of training for all F-35 operators, especially for high-threat missions where realistic tactics and threats cannot be easily or securely practised live in most training airspace. Tactics and emergency procedures can be practised efficiently in the simulator, and the Dutch training syllabus is predicated on a 60/40 live/synthetic flying training mix. However, there are core piloting, ‘G-fitness’, task and risk management skills, especially when operating close to limits in demanding mission sets, that can only be maintained by regular live flying.⁴⁰ The serious decline in flying hours during the transition to the F-35 has had significant negative impacts on pilot morale, retention and mission readiness and skills, and has a number of contributing causes.

Some of the availability issues are caused by difficulties that essentially amount to growing pains. First and foremost is the comparative lack of experience among maintenance personnel with the F-35 compared to the F-16, which the RNLAF has operated for almost 40 years. This not only results in comparable tasks often taking longer with the F-35 due to simple lack of familiarity, but also more seriously a lack of confidence among more senior maintenance personnel to judge potential impact or risk from comparatively minor issues or superficial damage to components. Consequently, there is a tendency to err on the side of caution and mandate corrective or preventative maintenance rather than certify a jet as airworthy/mission ready for minor issues with the F-35, whereas on the F-16 maintenance supervisors would have had sufficient experience and therefore confidence to ‘own the risk’ of signing off on a sortie regardless.⁴¹ These issues are improving over time, but have a particularly heavy impact on squadrons in the initial few years of F-35 conversion and operations.

Another contributing difficulty has been the fact that the RNLAF has had to maintain full F-16 operational capability during the transition, rather than

37. Author interview with the commanding officer of 312 Squadron, Volkel Air Base, 9 January 2024.

38. Author interviews with senior officers from NASOC, Breda, 11 December 2023; author interview with commanding officers of 313 and 322 Squadrons, Volkel Air Base, 9 January 2024.

39. Author interview with commanding officer of Air Combat Command, Volkel Air Base, 9 January 2024.

40. Author interviews with RNLAF fighter squadron commanders and commander of Air Combat Command, Volkel Air Base, 9 January 2024; author interviews with current and former RNLAF FWIs, Leeuwarden Air Base, 18 January 2024.

41. Author interviews with commanding officers of 313 and 322 Squadrons, Volkel Air Base, 9 January 2024.

retiring the F-16 fleet once some of the F-35 order had arrived in country and concentrating all available fighter force resources on the F-35. This decision was made with the full knowledge that it would create significant challenges, due to the F-16's nuclear dual-capable aircraft (DCA) role as part of the NATO Nuclear Sharing Arrangement.⁴² Because this is a NATO mission that the Netherlands performs alongside four other countries, the RNLAF determined that it had to maintain the F-16 DCA force until the nascent F-35 force had been established and trained to a sufficiently mature degree to take over the DCA role. The coming stand down of 312 Squadron as the final Dutch F-16 unit by October 2024, however, will free up significant additional maintenance capacity and funding for the F-35 fleet.⁴³

Frequent delays in receiving the spare parts required for maintenance tasks and overhauls have also contributed to limiting RNLAF F-35 availability and, therefore, flying hours. There is a limit to the degree that the RNLAF can improve this issue itself, since, unlike most aircraft, it is generally not possible for F-35 users to pay more money to purchase larger national stockpiles of spares. Instead, the F-35 is part of a global user supply chain, in which parts are stored in depots around the world and are shipped to units according to when the predictive maintenance system forecasts that they will be needed – at least in theory. In practice, there have been significant shortages and delays throughout the global F-35 logistics network, meaning that aircraft have frequently been grounded for extended periods of time waiting for critical parts to be delivered.⁴⁴ The US and Lockheed Martin have publicly committed to focusing on improving the spare parts supply situation for global users and significant improvement has been seen at the squadron level in the past 18 months.⁴⁵ However, since the start of 2024, progress has been interrupted by a major uptick in the requirements of other F-35 partner nations for spares resupply for ongoing combat operations in the Middle East, which has had a noticeable effect on spares delivery delay rates for non-deployed units elsewhere.⁴⁶

42. Center for Arms Control and Non-Proliferation, 'Fact Sheet: U.S. Nuclear Weapons in Europe', <<https://armscontrolcenter.org/fact-sheet-u-s-nuclear-weapons-in-europe/>>, accessed 12 January 2024.

43. Rudy Ruitenberg, 'Netherlands Halts F-16 Sale to US Firm, Will Send to Ukraine Instead', *Defense News*, 5 February 2024, <<https://www.defensenews.com/global/europe/2024/02/05/netherlands-halts-f-16-sale-to-us-firm-will-send-to-ukraine-instead/>>, accessed 20 February 2024.

44. Author interviews with commanding officers of 313 and 322 Squadrons, Volkel Air Base, 9 January 2024; author interviews with senior officers from the Combat Support and Combat Service Support departments, Breda, 11 January 2024. See also Joseph Trevithick and Tyler Rogoway, 'How the F-35's Lack of Spare Parts Became as Big a Threat as Enemy Missiles', *The Warzone*, 13 April 2023, <<https://www.twz.com/how-the-f-35s-lack-of-spare-parts-became-as-big-a-threat-as-enemy-missiles>>, accessed 1 February 2024.

45. Author interviews with commanding officers of 313 and 322 Squadrons, Volkel Air Base, 9 January 2024.

46. *Ibid.*; author interview with senior officers from the Combat Support and Combat Service Support departments, Breda, 11 January 2024.

On the flip side, when the RNLAf F-35 force has deployed on operations in Eastern Europe or to Norway, aircraft availability and flying output has consistently spiked due to receiving priority for spares resupply as a 'deployed unit', and given greater maintenance crew output when on operations overseas compared to at home. For the foreseeable future, however, a shortage of global spare parts remains one of the constraints for RNLAf F-35 availability when operating from home base, and one over which Dutch decision-makers have limited control. There is also a serious question around the impact on RNLAf spares resupply in the event of a major war – especially a concurrent Europe/Indo-Pacific crisis scenario – in which the US and many other F-35 operators globally will all suddenly need to fly combat operations at a far greater scale than usual.

The RNLAf also currently does not have air-to-ground weapons that are suitable for high-intensity conflict in significant numbers beyond the GBU-39 Small Diameter Bomb (SDB) glide weapon that provides a limited degree of stand-off strike capability against fixed targets from F-16s or F-35s. Even against fixed targets, the accuracy of the GBU-39 risks being significantly degraded in GPS-denied environments, which Russia has proven very capable of creating using electronic warfare effects in Ukraine and Kaliningrad.⁴⁷ Efforts are underway in the Netherlands to acquire stand-off cruise missiles in the form of air-launched Joint Air-to-Surface Standoff Missiles, Extended Range (JASSM-ER) for the F-35 force and Tomahawk Land Attack Missiles (TLAM) for Navy frigates and submarines.⁴⁸ These, however, are expensive weapons that cannot be purchased in large quantities, making them best suited to attacking strategic or high-value fixed targets. The only dedicated weapon so far on order for SEAD/DEAD is the AGM-88G Advanced Anti-Radiation Guided Missile, Extended Range (AARGM-ER) for internal carriage on F-35s.⁴⁹ This will provide a significant capability to suppress and potentially also physically destroy modern ground-based air defence radars, but delivery in quantity is unlikely before the late 2020s due to demand for the weapon from the US and other export customers, such as Australia, Norway and Finland, significantly outstripping available stocks and immediate production capacity in the US.⁵⁰

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47. For example, see Dana Goward, 'From Russia with Love for Christmas: Jamming Baltic GPS', *GPS World*, 11 January 2024, <<https://www.gpsworld.com/from-russia-with-love-for-christmas-jamming-baltic-gps/>>, accessed 15 March 2024.
 48. Emma Helfrich, 'The Netherlands is Going to Bet Big on Long-Range Weapons', *The Warzone*, 3 April 2023, <<https://www.twz.com/the-netherlands-is-going-to-bet-big-on-long-range-weapons>>, accessed 1 February 2024.
 49. Ministry of Defence of the Netherlands, 'New Ammunition to Increase F-35 Combat Power', *Defense-Aerospace.com*, 6 June 2023, <<https://www.defense-aerospace.com/netherlands-to-buy-agm-88g-missiles-for-f-35-fighters/>>, accessed 2 February 2024.
 50. Author interviews with senior officers from NASOC, Breda, 11 December 2023; author interviews with senior officers from the Combat Support and Combat Service Support departments, Breda, 11 January 2024.

Fighter Force Recommendations

A core recommendation of this report is that the Netherlands significantly increases the priority given to its fighter force as an overall component of its military air and space power, if necessary at the expense of uncomfortable force reductions elsewhere. The RNLAF is closer than almost any other non-US NATO air force to being able to field the kind of operationally credible SEAD/DEAD capabilities that are currently the most critical bottleneck in Alliance deterrence and warfighting capacity. The pilot training and squadron culture within the RNLAF fighter force, with a heavy emphasis on producing and maintaining a solid core of FWIs, means the competency and cultural building blocks are in place to produce world-class SEAD/DEAD F-35 crews capable of operating against the highest end threats that Russia fields. However, this will only be possible if the force is able to direct a much greater proportion of its available live flying and simulated flying time specifically to this mission set and if appropriate specialised weapons are purchased in significant quantities.⁵¹ The Netherlands now has the second-largest operational F-35 fleet in Europe; one that continues to grow thanks to the funded ambitions for a third operational squadron.⁵² Since the RNLAF did not defer F-35 acquisitions, as many NATO air forces did in past years due to in-year budgetary pressures, its planned fleet of 52 should be fully delivered by 2026, with options for six additional aircraft being explored.⁵³ With two squadrons already operational, there is a lot of latent capability already in place which could be rapidly unlocked, as opposed to the outlook for many NATO F-35 customers who will be waiting several years for most of their aircraft deliveries and who will take years after that learning to maintain, operate and exploit its capabilities effectively. There are three key policy changes that could dramatically increase the RNLAF's F-35 force capability and value for NATO in the short term:

1. RNLAF operational training should be more focused, with prioritisation of the crucial SEAD/DEAD and offensive counter air (OCA) mission sets at the expense of close air support (CAS) in permissive environments, and tactical intercept (TI) missions. The RNLAF has a limited ability to increase live flying hours beyond a certain point within the constraints of the global F-35 spare

51. Assessment confirmed in multiple author discussions with RNLAF weapons instructors and squadron commanders, Leeuwarden Air Base, 18 January 2024.

52. In Europe, only the Royal Norwegian Air Force has more F-35s in service than the RNLAF, with one more airframe than the Dutch fleet having been delivered at the time of writing. Author email correspondence with Lockheed Martin representatives, 5 February 2024. The UK fleet was smaller, at only 33 as of September 2023, with a further 15 aircraft due to be delivered by late 2025. See Defence Equipment and Support Agency, 'F-35 Lightning', September 2023, <<https://des.mod.uk/what-we-do/raf-procurement-support/f-35b-lightning/>>, accessed 15 March 2024.

53. Author interview with senior planning officers, Breda, 12 December 2023.

parts supply chain and maintenance personnel numbers. Therefore, it is vital that RNLAf F-35 crews are allowed to focus the training time they do have on becoming highly capable at the most critical mission sets that most other NATO air forces cannot do, rather than trying to be at best adequate across the wide range of missions that the aircraft is technically capable of. The risk in terms of loss of CAS and TI capacity in the RNLAf F-35 force could be offset by greater strategic and operational integration with and reliance on nearby allies with much larger fourth-generation fast jet fleets such as Germany, France and Sweden.⁵⁴ These air forces in turn could benefit from the RNLAf being much more capable in the key SEAD/DEAD mission since they and European NATO more widely lack the capacity to perform this key mission effectively. In other words, the RNLAf should pursue mission specialisation for the fighter force as part of a multinational European task-sharing approach to meeting NATO defence plan requirements.

2. Additional funding should be urgently allocated to increase maintenance capacity for F-35 squadrons in terms of both uniformed maintainers and civilian contracted support. As already discussed, there are limitations in the Netherlands' ability to purchase additional stockpiles of spare parts due to the way the global supply chain construct works for the F-35. However, additional maintenance personnel capacity on squadron would still significantly increase aircraft availability in many situations, and thus improve pilot flying hours, mission readiness, morale and retention.⁵⁵ The more that the force can fly, the more combat power it represents and the greater return that the Netherlands and NATO as a whole get from the acquisition of these expensive aircraft. Operating them on a lean support budget is a false economy in this case.
3. The RNLAf should increase the money allocated to urgently increasing weapon stockpile levels for key munitions in the OCA/DEAD mission sets for the F-35 force. Weapons deliveries and integration take years, so rapid orders are essential if the force is to be enabled in time to meet even a medium-term threat. Large orders are also publicly visible signals of intent to adversaries and allies alike due to foreign military scales and governmental oversight requirements, so they may positively affect deterrence calculations even before delivery. One option that might be worth exploring to help get around

54. For comparison, Germany has 143 Eurofighters, with new aircraft in production to replace older variants, and 35 F-35s on order; France has around 100 Rafale B/C and 42 naval Rafale M fighters, with more on order, alongside 26 older Mirage 2000-5 fighters and 66 Mirage 2000D strike fighters; Sweden has approximately 95 Gripen C/D fighters, with 60 of the newer Gripen E on order. Author's own estimates and Peter Felstead, 'Analysis: Europe's Fighter Fleets', Key Aero, 1 April 2022, <<https://www.key.aero/article/analysis-europes-fighter-fleets>>, accessed 15 March 2024.

55. Author interview with commanding officers of 313 and 322 Squadrons, Volkel Air Base, 9 January 2024; author interviews with senior officers from the Combat Support and Combat Service Support departments, Breda, 11 January 2024.

production bottlenecks in US-made weapons like AARGM-ER would be a rapid joint order of MBDA's SPEAR 3 miniature DEAD cruise missile with the UK.⁵⁶ A joint order would enable a reduction in per-weapon unit costs for both countries and potentially increase the priority allocated to the integration of SPEAR 3 into F-35 software update tranches by the US Joint Programme Office, allowing the weapon to be used on the frontline more quickly.⁵⁷ Perhaps more importantly, a SPEAR 3 order would provide some potential redundancy against the risk that deliveries of AARGM-ER are delayed beyond the currently envisaged timelines due to US production being allocated to other customers as a result of unforeseen crises in the interim – something that has previously happened with US deliveries of spare parts and weapons.⁵⁸

Air and Missile Defence

Currently, the two Dutch NASAMS batteries and three Patriot batteries are generally allocated to defending Dutch army formations on notional forward deployments, with the latter more conceptually focused on static defence in forward or domestic positions.⁵⁹ There are ongoing policy debates between the armed services as to what assets should receive priority for limited defensive coverage capacity and also how often Dutch Patriot batteries should be temporarily allocated to NATO for use at SACEUR's discretion to provide wider Alliance integrated air and missile defence capacity.⁶⁰ Some favour static defence of key civilian infrastructure such as port facilities, cities and power stations, while others favour defence of key military bases and many with the army place greater conceptual priority on providing defensive cover to forward-deployed ground formations. There is certainly nowhere near enough capacity to meet all the competing demands, and allocation of missile defence capability in most countries historically tends to be driven by political demands rather than military advice.

Current plans include an ongoing one-for-one replacement of the two remaining legacy NASAMS batteries with NASAMS II – an improved version with greater range using the AMRAAM-ER missile,⁶¹ the option to use cheaper AIM-9X missiles for short-range engagements, and improved datalink connectivity to allow it to

56. MBDA, 'SPEAR', <<https://www.mbd-systems.com/product/spear/>>, accessed 10 February 2024.

57. The US Joint Programme Office generally allocates greater programme priority to partner nation weapons integration requests if they have been ordered in significant numbers and by multiple partner nations. Conversely, so far, the lack of bulk UK orders for SPEAR 3 and sole operator status of the weapon have led to integration timeframes slipping in favour of other weapons such as the Norwegian Joint Strike Missile.

58. Author interviews with senior officers from NASOC, Breda, 11 December 2023; author interviews with senior officers from the Combat Support and Combat Service Support departments, Breda, 11 January 2024.

59. Author interviews with Patriot and NASAMS squadron/battery commanders, Breda, 12 December 2023.

60. *Ibid.*

61. The AIM-120 Advanced Medium-Range Air-to-Air Missile.

share situational awareness across other parts of the force.⁶² There is also discussion of purchasing two additional NASAMS II batteries as part of increased national defence spending plans, which in theory would allow greater flexibility to both provide protection to key RNLAf bases while still providing cover to army formations when forward deployed.⁶³

To increase the credibility of Dutch air power, especially the F-35 force as a potentially critical component of European NATO warfighting and deterrence capabilities, provision of at least limited air and missile defence coverage at the main fighter bases could have an outsized effect. The author's recommendation is that the Netherlands integrated air and missile defence (IAMD) capacity should be prioritised towards maximising the deterrent effect that the joint force can have against Russian aggression rather than trying to reduce the damage to civilian targets in a war should deterrence fail.

A war between Russia and NATO is unlikely to start with massed missile strikes on European cities or other critical civilian infrastructure because such attacks would be directly counterproductive to Russia's interest in preventing a unified, rapid and unambiguous political and military response by the whole Alliance to an Article V invocation. Instead, Russia would more likely try to use the threat of missile strikes on key military bases and command facilities lacking adequate IAMD coverage in order to deter key NATO countries from using military forces in the defence of an Eastern ally. Thus, the requirement for IAMD does not need to be to defend the whole of the Netherlands from the entire Russian missile arsenal – a plainly impossible task. Rather, it only needs to be sufficient to make key Dutch military bases and command facilities difficult enough targets to ensure that the Netherlands could not be easily deterred from using its military forces by the threat of a limited number of Russian missile strikes. Such strikes would necessarily be limited because in such a scenario Russia would have to threaten multiple European countries simultaneously to try to deter the Alliance as a whole from coming to the defence of a member state – thus reducing the number of missiles from its finite salvo capacity that it could use against any one country.

Russian ballistic missile launch options are also limited for targets in the Netherlands itself due to the range from Russian territory being too great for Russian ground-based Iskander-M or older Tochka-U systems.⁶⁴ Furthermore,

62. Author interviews with senior Royal Netherlands Army and Air Force IAMD planning officers, The Hague, 10 January 2024.

63. Author interviews with Patriot and NASAMS squadron/battery commanders, Breda, 12 December 2023.

64. Even the Kaliningrad enclave, as the closest credible Russian launch site, is around 950 km from the closest RNLAf base – Leeuwarden. The publicly acknowledged range of the most modern 9M723 ballistic missile fired by the Iskander-M is 500 km, whilst the older 9M720 is limited to 280 km. See CSIS Missile Threat Project, '9K720 Iskander (SS-26)', 2 August 2021, <<https://missilethreat.csis.org/missile/ss-26-2/>>, accessed 9 February 2024.

once active hostilities broke out the airspace over the Baltic Sea would rapidly become prohibitively dangerous for crewed Russian Mig-31K, Su-34 or Tu-22M3 aircraft attempting to reach suitable launch altitudes and speeds to fire Kh-47M2 'Kinzhal' aero-ballistic missiles due to numerous NATO defensive combat air patrols by multiple Baltic-adjacent countries. The primary missile threat to the Netherlands, therefore, would come from air-launched Kh-101 and Kh-555 and naval 3M14 cruise missiles fired from the Arctic, where the bombers and submarines launching them would be relatively safe from interception. This would give significant warning time from other allies such as the UK and Norway as the missiles would need to travel several thousand kilometres at subsonic speeds before reaching the Netherlands.

If the RNLAF develops the F-35 force to be a core component of European SEAD/DEAD capability, then the bases from which it operates would likely become a higher priority target for any threatened or actual Russian missile attack. Fortunately, NASAMS has already proven highly effective at intercepting even the most capable Russian cruise missiles in Ukraine, with a very high probability of kill per interceptor launched, allowing a single launcher and radar to destroy multiple incoming missiles from large salvos arriving near-simultaneously at low altitudes.⁶⁵ Thus, even a small NASAMS II battery with a single radar and a few launchers at both Volkel and Leeuwarden air bases would greatly increase the number of missiles that Russian targeteers would have to allocate from their limited salvo capacity to guarantee successful hits on any given target point on each base. RNLAF bases already feature significant numbers of Cold War-vintage hardened aircraft shelters, and there are more in a disused state that could be reactivated with limited investment, meaning that even successful precision hits would only destroy a single aircraft at most. Dispersal and hardening of spare parts storage and mission planning facilities on the bases could also significantly reduce vulnerability to Russian strikes. Consequently, if deployed as part of a coherent plan to harden the bases themselves, even minimally sized NASAMS defences could make RNLAF air bases very unattractive targets for the limited salvo weight Russia would be able to count on launching at the outset of a conflict.

If the RNLAF enables its F-35 force to perform the critical SEAD/DEAD mission effectively, it should be allocated high priority for NASAMS cover against Russian cruise missile strikes that might otherwise deter its use in a crisis or, worse, destroy it on the ground. The small size of the Royal Netherlands Army compared to Polish, Finnish or German counterparts also means that providing Patriot cover to national forces in a forward-deployed posture in Eastern Europe would

65. Author interviews with Ukrainian air force air defence commander and military scientists, Ukraine, October 2022 and July 2023.

likely have a limited effect on Russia's calculations of European ability and willingness to fight a successful defensive war. The traditional Cold War task of defending major ports to allow large-scale US forces to arrive is also potentially less relevant in a context where the most likely scenario in which Russia might risk war with NATO is if the US is unable or unwilling to reinforce Europe at scale. In comparison, Dutch Patriot batteries could have a significantly greater deterrence-enhancing effect if assigned to SACEUR's control in any conflict, where they would almost certainly be used to increase the defensive cover around NATO command centres and logistics hubs that are vital for all Alliance member states' ability to coordinate and control operations.⁶⁶

Helicopter Fleets

The Netherlands has a significantly larger helicopter capacity than most comparably sized European air forces.⁶⁷ This is for two primary reasons. First, because the army is currently organised around an air manoeuvre brigade alongside its armoured brigade. The air manoeuvre brigade conceptually and doctrinally depends on being inserted, resupplied, supported and, if necessary, extracted by composite squadrons of CH-47 Chinook heavy lift helicopters and AH-64 Apache helicopter gunships.⁶⁸ Second, because the Netherlands – like many other NATO member states – has largely deployed its armed forces for counterinsurgency and overseas counterterrorism operations since the end of the Cold War. In these discretionary wars, where domestic political tolerance for friendly casualties was extremely low, and special forces operations played an outsized role, the most critical need for air capabilities was for specialised helicopter fleets to conduct rapid battlefield casualty evacuation, move small forces around large areas of security responsibility, and perform discreet insertion operations. The consequence was a major rebalancing of the RNLAF over time away from the Cold War focus on maintaining a large fighter fleet

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66. General James Hecker, commander of NATO AIRCOM, repeatedly stressed the need for IAMD capabilities to be allocated to NATO by member states as a key priority in presentations at the NATO Allied Air Command conference, Ramstein Air Base, 9 May 2023 and at the Joint Air Power Competence Centre Conference, Essen, 10 October 2023. It was also confirmed in an author interview with a Dutch officer assigned to NATO AIRCOM in a senior planning role, Breda, 13 December 2023.
67. The fleet includes 20 AH-64 Apache gunships in the Netherlands, with a further eight permanently in the US for training purposes, 19 NH90 naval medium helicopters, 15 CH-47 Chinook heavy lift helicopters plus a further five permanently in the US for training, and 12 AS532 Cougar medium lift helicopters, which are being replaced by 14 similar but more modern H225M Caracal helicopters for army and special operations forces support operations. Author interviews with commander Helicopter Command and helicopter squadron commanding officers, Helicopter Warfare Centre, Gilze-Rijen Air Base, 10 January 2024.
68. Author interviews with commander Helicopter Command and helicopter squadron commanders, Gilze-Rijen Air Base, 10 January 2024.

ready for high-intensity peer warfighting to building up helicopter and fixed-wing mobility fleets that were in heavy demand for those conflicts.⁶⁹

The ongoing war in Ukraine has illustrated that helicopters and fixed-wing mobility fleets can still be useful in high-intensity wars. The most important role they have played for the Ukrainian armed forces is rapidly transporting scarce anti-tank teams, man-portable air defence systems (MANPADS) teams, commanders and electronic warfare equipment to where they are needed most while staying behind the frontlines.⁷⁰ However, when flown in frontline fire support, insertion or evacuation roles, both sides' mobility and attack helicopters have suffered heavy losses.⁷¹ When helicopters have been used for penetrating operations beyond the frontlines, loss rates have been unsustainable, especially among assault forces on landing zones due to artillery fire, and among helicopters when ambushed by air defence assets during the return leg of penetrating sorties.⁷² This has led both sides to rapidly become more cautious with transport helicopters and to largely use attack helicopters for safer but inaccurate suppressive rocket barrage attacks from behind the lines. The exception is Russia's successful employment of Ka-52 and Mi-28 attack helicopters with anti-tank guided missiles in a reactive, defensive role to contain Ukrainian penetrations of Russian frontlines with armoured vehicles during the unsuccessful 2023 summer offensive.⁷³

One thing that is clear from Ukraine is that helicopter operations will be seriously constrained close to the frontlines in any conflict against Russian forces by the layered threat of long-, medium- and short-ranged ground-based SAM systems, fighter patrols with long-range air-to-air missiles like the R-37M, and ground forces with large quantities of MANPADS and short-ranged anti-aircraft and counter-UAV systems. Consequently, traditional helicopter assault operations by air manoeuvre forces to seize objectives beyond enemy frontlines at scale appear highly unlikely to succeed or even be attempted in a NATO/Russia context. Even if assault forces could be successfully inserted onto an objective without prohibitive losses on route, they would likely suffer major casualties from Russian

69. Author interviews with senior officers from NASOC, Breda, 11 December 2023; author interview with RNLAf plans directorate, The Hague, 12 December 2023.

70. Author interviews with Ukrainian air force commanders, Ukrainian army officers and military scientists, Ukraine, October 2022 and July 2023.

71. Visually confirmed losses at the time of writing include 131 Russian helicopters and 37 Ukrainian helicopters, despite generally cautious use of rotary wing assets by both sides for most of the war. See Jakub Janovsky et al., 'List of Aircraft Losses During the Russian Invasion of Ukraine', *Oryx*, 20 March 2022, <<https://www.oryxspioenkop.com/2022/03/list-of-aircraft-losses-during-2022.html>>, accessed 10 February 2024.

72. Author interviews with Ukrainian air force commanders, Ukrainian army officers and military scientists, Ukraine, October 2022 and July 2023.

73. Author interviews with Ukrainian army senior officers and military scientists, Ukraine, July 2023; Watling and Reynolds, 'Stormbreak', p. 17.

artillery on their drop zone and be impossible to resupply or extract once the element of surprise was lost. In any case, RNLAf helicopter lift capacity is not sufficient to insert the air manoeuvre brigade in a single lift, resulting in the need for repeated insertion waves to make the air assault concept work as traditionally envisaged.⁷⁴

Conceptually, there is a debate within the army and the RNLAf helicopter force about the continued relevance of the air manoeuvre brigade concept for a NATO/Russia-centric primary defence task. Even advocates largely accept that the concept has to evolve away from air assault towards air mobility, with a much greater emphasis on moving light infantry into advantageous positions quickly either before active hostilities break out or behind/in the flanks of the main frontline areas.⁷⁵ A policy recognition that air mobility and other warfighting tasks are not likely to involve crossing the frontlines en masse would, at least, reduce the mission-specific training and penetration aid requirements for the RNLAf's Chinook force. It would also help free up capacity in the new AH-64E Apache fleet whose training focus is currently dominated by integrated operations with small formations, providing company- – or at most battalion level – CAS for the air manoeuvre brigade.⁷⁶ The viability or lack thereof for traditional air assault operations in a NATO context matters as it is a very expensive capability to maintain and prevents personnel and resources being allocated to other priorities. Unpredictable deployment locations and high-readiness requirements mean that the Tier 1 composite helicopter squadron supporting the air manoeuvre brigade imposes more burdens on the RNLAf's combat service support and combat support functions than F-35 deployments, which are generally to Allied air bases where partners also operate the aircraft.⁷⁷

Many within the army are advocating for the purchase of several dozen Leopard 2 main battle tanks and a refocusing of the army's warfighting output towards a heavy armoured brigade to fight as part of a German-led division in Eastern Europe.⁷⁸ The Apache force has not traditionally been seen as a core part of the Dutch armoured brigade concept, and so the Army focusing on regenerating an armoured capability in this fashion at the expense of the post-Cold War emphasis on the air manoeuvre brigade should reduce systemic demand for integral Apache fire support at the tactical level. Instead, for example, the Apache force

74. Author interview with RNLAf senior officer in plans department, The Hague, 12 December 2023.

75. Author online interview with army officers from the Directorate of Plans, Land Environment and the Army Staff, Office of Strategy and Plans, 16 January 2024.

76. *Ibid.*; author interview with RNLAf senior officer in plans department, The Hague, 12 December 2023.

77. Author interview with RNLAf combat support and combat service support commanders and planning officers, Breda, 11 January 2024.

78. Author online interviews with army officers from the Directorate of Plans, Land Environment and the Army Staff, Office of Strategy and Plans, 16 January 2024; author interviews with senior officers from NASOC, Breda, 11 December 2023.

could train and practise deployments as a self-contained manoeuvre formation to rapidly deploy as a defensive anti-tank capability to bolster multinational NATO ground forces if a Russian attack was feared imminent. Russia's success with significantly less capable Ka-52 and Mi-28 gunships against Ukrainian breakthrough attempts in summer 2023 suggests that if used defensively, forward-deployed RNLAf Apaches could play a valuable role containing breakthroughs by Russian armoured thrusts against NATO defence lines.

The Netherlands also operates 19 relatively modern NH90 multirole medium helicopters from naval vessels. The NH90 has matured significantly following a difficult introduction into service around 10 years ago, but now provides good anti-submarine warfare capabilities, forward sensor options and ship-to-shore connector capacity from an expensive but relatively reliable airframe.⁷⁹ Since these helicopters are central to the function of multiple weapons systems and mission capabilities of the navy's frigates and support ships – especially anti-submarine warfare – they will need to continue to operate as they currently do regardless of other prioritisation decisions in the air and space power domain.

Assuming a relatively continuous demand signal from the Dutch special operations forces (SOF), the 14 new H225M Caracal medium helicopters that have been purchased to replace the 12 AS532 Cougars are also likely to remain a requirement. However, the requirement for helicopter support capacity might be reduced if Dutch SOF capacity and training were to be refocused towards more covert collection and sabotage operations against Russian forces in Eastern Europe as opposed to counterinsurgency, stabilisation and partner force capacity-building deployments in the Middle East and Africa.⁸⁰ Equally, however, the Ministry of Defence might choose to counterbalance an increasing focus on conventional deterrence in Europe by the regular Dutch armed forces by increasing SOF focus on out-of-area operations.

Fixed-Wing Mobility and ISR

In terms of fixed-wing mobility fleets, the RNLAf's room to manoeuvre is limited as most of the major capability decisions have already been made. An ambition to replace the KC-10 tankers with two A-330 MRTTs morphed into Dutch participation in the multinational MRTT fleet, with the Netherlands contributing the crews, funding and support equivalence of two of the 10 that it operates. This model is significantly more cost efficient compared to multiple small national

79. Author interview with commanding officer of 860 Squadron (NH90), Gilze-Rijen Air Base, 10 January 2024; author online interview with senior officers from the navy plans department, 29 January 2024.

80. Classification concerns prevented detailed research into SOF requirements, mission focus or helicopter support metrics for this report.

tanker fleets, but also limits the RNLAF's ability to task them for national requirements, since the entire fleet comes under European Air Transport Command.⁸¹ The same goes for the Netherlands' longstanding participation and deputy leadership of the NATO E-3A AWACS force, which is tasked by AIRCOM. Equally, the Netherlands can nominally draw on 500 hours of C-17 heavy lift capacity per year in return for the funding and personnel that it contributes to the multinational Heavy Airlift Wing based in Hungary, but does not have sole control of any one of the three aircraft.⁸² Thus, the RNLAF currently contributes slightly more to European collective fixed-wing aerial refuelling, AWACS and heavy lift capacity than it could afford to if it deployed national capabilities in these areas, but cannot easily or reliably task these assets in a crisis to support an RNLAF air operation without the agreement of other partner nations. This complicates operational defence planning since partner nations might have different political responses to the initial phases of Russian aggression and/or might also be competing for limited enabler capacity from these multinational fleets to support their own combat air contributions. It is particularly concerning for aerial refuelling tankers, where the Alliance faces a major deficit against requirements, such that pooled fleet capacity is constantly being requested well beyond its ability to support.

The RNLAF is directly replacing its C-130H Hercules tactical transport fleet with four new Embraer C-390s, which should provide a similar lift capacity with higher transit speed and lower operating costs. However, the mobility force as a whole is currently both overtasked and struggling with a lack of policy direction on what the primary requirements are from the rest of the joint force in a NATO/defence of the Netherlands context.⁸³ This makes it hard for its leadership to plan for an optimal configuration of fixed-wing mobility force capacity in a Russia-dominated threat environment. One option might be to order some of the C-390s fitted with the new L3Harris/Embraer 'Agile Tanker' boom refuelling kit that is being developed to provide additional tanker capacity for the RNLAF fighter force.⁸⁴ While a KC-390 would lack the capacity and range of the much larger A-330 MRTT, it could operate from smaller, more austere bases and provide additional refuelling capacity for national RNLAF fighter operations in Europe. Furthermore, it would provide a tanker option for any possible F-35 deployments required to reinforce the Dutch overseas territories of Aruba, Curaçao and Sint Maarten, which are not covered by NATO's collective defence agreements.

81. Author interview with commander of Air Mobility Command and A-330 MRTT, E-3A and C-17 pilots, Eindhoven Air Base, 11 January 2024.

82. *Ibid.*

83. *Ibid.*

84. Emma Helfrich and Tyler Rogoway, 'KC-390 with a Boom Could be the Agile Tanker the Air Force Needs', *The Warzone*, 20 September 2022, <<https://www.twz.com/the-boom-equipped-kc-390-could-be-agile-tanker-the-air-force-needs>>, accessed 10 February 2024.

However, unlike a podded probe-and-drogue refuelling kit for cargo aircraft like the C-390 and C-130, the boom refuelling conversion required to make a KC-390 able to refuel the RNLAf's F-35As would likely entail major structural changes and the deletion of the rear ramp, which would prevent such modified aircraft from being used in the regular tactical transport role.⁸⁵

The RNLAf has also purchased four MQ-9 Reaper remotely piloted aircraft that are capable of conducting persistent ISTAR missions in permissive airspace, and can be armed with laser-guided bombs and Hellfire missiles. It has successfully trialled Reapers in the maritime support role in the Dutch Caribbean alongside the navy. The trials suggest that their potential surface search and surveillance capabilities would make them very useful in counter-smuggling and counter-piracy patrols in combination with surface vessels. Therefore, the navy has strongly supported a planned acquisition of an additional four MQ-9 airframes equipped with specialised communications relay pods and maritime radar pods for this role.⁸⁶

However, the MQ-9 is a relatively expensive capability to run, despite its efficient airframe, due to the very large volume of ISR data that it produces and its long endurance. It requires a three-person crew to fly it remotely, with new crew shifts for every eight hours of flight, alongside remote physical launch, recovery, maintenance and servicing teams, and a large staff of intelligence personnel to conduct processing, exploitation and distribution of the data that it collects while in flight. This ironically makes the uncrewed MQ-9 more personnel intensive to operate than most crewed platforms, especially in overstretched intelligence analysis and communications specialisms.⁸⁷ It is also not suitable for operations within range of modern air defence systems, due to a relatively large radar cross section, slow cruise speed, and its lack of agility and self-defence capabilities. This makes it unsuitable as a supporting ISTAR or CAS asset against Russian forces in a NATO context. Even in the period leading up to a conflict, it cannot be flown in regular civilian-controlled airspace, meaning that temporary corridors and military training airspace must be used to operate over European territory – limiting operational flexibility and responsiveness.⁸⁸ Furthermore, the Netherlands' strict interpretation of EU privacy laws imposes significant constraints on using the MQ-9 for training with ISR sensors over the Netherlands.⁸⁹

85. Helfrich and Rogoway, 'KC-390 with a Boom Could be the Agile Tanker the Air Force Needs'.

86. Author interview with senior ISTAR and unmanned systems branch officers, Breda, 8 January 2024; author online interview with senior officers from the navy plans department, 29 January 2024.

87. Author interview with senior officers from NASOC, Breda, 11 December 2023; author interviews with senior ISTAR and unmanned systems branch officers, Breda, 8 January 2024.

88. *Ibid.*

89. *Ibid.*

In view of the many competing demands for funding and scarce intelligence and support personnel across the RNLAf, the author recommends that the MQ-9 fleet be curtailed at four aircraft, but that the planned maritime search radar and communications relay pods be purchased and fitted to the existing four instead. This would provide the capacity for an MQ-9 orbit to support either maritime security operations in the Caribbean or provide efficient ISR and CAS capacity at a small scale to overseas operations in permissive airspace. While it would represent a loss in capacity in both mission sets, it would free up funding and more importantly personnel capacity for higher-priority warfighting tasks.

Hypothetically, however, if a penetrating ISTAR capability were made available to purchase from the US – currently the only NATO operator of such capabilities – this would make an ideal replacement for the entire currently planned MQ-9s. A stealthy, uncrewed ISTAR platform would help fill a major European capability gap against Russian forces and would be extremely useful for SEAD/DEAD operations and deep strike targeting.

Space Capabilities

The RNLAf currently lacks national operational space assets, and as such is entirely dependent on NATO allies to provide vital space-based enablers such as satellite communications, precision navigation and timing information through GPS and orbital imagery and signals/electronic intelligence services. Most of these capabilities are provided by the US. The RNLAf space department is currently trying to use NATO regional plans and AIRCOM priorities to assess what the space capability requirements are across the joint force.⁹⁰ In other words, the priority for the RNLAf space team is currently gap analysis of national and NATO space capabilities other than US ones. This is an essential first step before coherent requirements can be written.

The cost and scope of most military space capabilities means that it goes without saying that the Netherlands cannot develop or field them alone. However, questions remain over which capabilities should be developed with NATO allies in multinational programmes, whether national development in some areas is required to gain access to suitable partner programmes, and what capabilities could be safely relied on as a service from commercial space providers.⁹¹ As part of this effort, the Netherlands has developed and launched an R&D electronic support measures payload into orbit, with plans underway to continue collaborative testing with a second and third payload with Norway in the coming years.⁹²

90. Author interview with RNLAf space capability planning officers, Breda, 13 December 2023.

91. *Ibid.*

92. *Ibid.*

It is clear that Dutch air power, as well as most of the rest of the joint force, especially the navy for communications support, has a very deep degree of operational dependency on the US and to some extent other NATO allies for critical space capabilities.⁹³ However, it is difficult to see how even significant increases in investment in space capabilities within the RNLAf's potential budget could meaningfully change that situation in any relevant timeframe. Therefore, continued reliance on NATO allies and small-scale participation where appropriate in collaborative European capability development programmes seems like the most pragmatic course of action. Understanding and mapping the areas of dependency is nevertheless critical for planning and risk management, so the current efforts to do so in the RNLAf should continue.

Noise

High noise restrictions at all main operating bases in the Netherlands are worth mentioning as they directly impose major restrictions on flexible flying schedules and training for all RNLAf flying units. The political culture of the Netherlands places emphasis on public dialogue and consensus building. This means that noise complaints from residents in the vicinity of air bases – a common friction for almost all European air forces – has led to multiple rounds of noise restrictions being imposed on the RNLAf in the name of compromise. Over time, this has driven a steady ratcheting up of noise-restriction-related operational limitations, to the point that pilot and unit training requirements frequently cannot be met as flying is curtailed due to insufficient quotas of allowable take-offs and landings from their base.⁹⁴ It is an indictment of the Dutch political system that when RNLAf fighters deploy to partner bases elsewhere in Europe, such as to Norway or Eastern Europe, their ability to fly and train rises significantly despite the added logistical pressures of temporary basing overseas.

The noise restrictions have also almost totally negated a potentially major strong point of the Netherlands as a contributor to NATO air power credibility and resilience. Due to major force structure cuts since the end of the Cold War, the RNLAf has multiple air bases with significant excess capacity to temporarily host Allied units, including a large number of active and mothballed hardened aircraft shelters that provide good protection from missile and drone attacks. Key partners such as the US Air Force and the RAF are actively looking for suitable European bases to conduct regular short-term deployments as part of the Agile Combat Employment (ACE) concept, which aims to complicate Russian

93. *Ibid.*; author interview with senior officers from NASOC, Breda, 11 December 2023; author online interview with senior officers from the navy plans department, 29 January 2024.

94. Author interview with senior officers from NASOC, Breda, 11 December 2023; author interview with F-16 and F-35 squadron commanders, Volkel Air Base, 9 January 2024.

targeting by moving combat power more frequently than Russian targeting can match.⁹⁵ In many ways, RNLAF bases such as Leeuwarden, Gilze-Rijen and Volkel are ideal ACE locations, since they are within range of the same North Sea training airspace used by squadrons based in the UK and have excellent facilities. However, the Netherlands' NATO partners cannot use them as temporary deployment or training locations, as was done constantly during the Cold War, because this would use up noise quotas for take-offs and landings that are already insufficient for the Dutch units based there.⁹⁶

These noise restrictions have been steadily imposed despite the fact that the RNLAF has fewer than half the aircraft and squadrons that it had in the 1990s and flies fewer hours per aircraft, so at each stage the actual levels of local noise were already lower than they had ever been. Such measures might have been understandable in an era when major military threats to European peace and security were considered a thing of the past but are manifestly inappropriate given the threats that the RNLAF now has to prepare to defend against.

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95. RAF, 'RAF and U.S. Air Force Sign Combined Vision Statement on Agile Combat Employment', 13 September 2023, <<https://www.raf.mod.uk/news/articles/raf-and-u-s-air-force-sign-combined-vision-statement-on-agile-combat-employment/>>, accessed 16 January 2024.
96. Author interview with staff officer involved in multinational exercise planning, Gilze-Rijen Air Base, 10 January 2024.

Conclusion

The defence of the Netherlands, including its overseas territories in the Caribbean, and contributing to collective defence as part of NATO are the RNLAf's first tasks.⁹⁷ Compared with its traditional post-Cold War role of contributing technically capable but small and tactically focused force packages in US-led out-of-area operations, the task of ensuring deterrence against Russian aggression in Europe without major US support is far more challenging but also far more important. Support to out-of-area operations and to civil resilience and disaster relief in the Netherlands in peacetime are also important, but do not carry nearly the same stakes as a potential failure of collective defence in Europe against Russia.

In its current form, the RNLAf is not well prepared for serious warfighting. Its mix of aircraft types, ground-based air defence assets and space capabilities are so broad that each capability is too small and lacks adequate stockpiles of ammunition, spare parts or reserves to replace losses in serious combat. Even with significantly increased funding announced in 2022, the Netherlands faces serious limitations in terms of demographics and programmatic capacity that limit the extent to which it can grow its overall force structure. Therefore, the only way to significantly increase the capability and operational credibility of Dutch forces in a relevant timeframe is to take hard choices to cut significant areas of capability to free up personnel, programmatic capacity and money to rebuild stockpiles, resilience and operational expertise in high-end missions in other areas. This is not a new idea. The 2022 Defence White Paper specifically stated that the Ministry of Defence of the Netherlands is committed to a path of driving an increase in specialisation among European countries:

The Defence organisation has decided to make additional investments in those capabilities and qualities that our armed forces excel at and that add the most value to collective operations with our allies and partners.⁹⁸

However, simply adding to existing capabilities while trying to preserve all air and space force elements cannot generate the required uplifts to rebuild serious combat capabilities. Therefore, the key question is what components of air and space power do the Netherlands armed forces excel at, and which would add the most value to collective NATO defence capabilities?

97. Ministry of Defence of the Netherlands, 'A Stronger Netherlands, a Safer Europe', p. 16.

98. *Ibid.*, p. 27.

The primary aim of NATO policy in Europe must be to rapidly field sufficiently capable conventional forces to convince Russia's leaders that they could not achieve a rapid seizure of NATO territory even if the US is unable or politically unwilling to provide rapid reinforcements. The invasion of Ukraine in 2022 was based on the Kremlin's assumptions that regime change in Kyiv would be achieved quickly and with only a short period of active high-intensity fighting.⁹⁹ History offers few examples of countries embarking on aggression where they think the resulting conflict will be long and painful, but plenty of examples of wars that have continued for years and caused vast damage before either an armistice is reached or one side is victorious.

Russia is well aware of the devastating capabilities of Western tactical airpower and consequently has prioritised the development of a highly capable IADS and electronic warfare capabilities to deny traditional Western aircraft and enablers access to the skies over any contested territory.¹⁰⁰ Thus, if European NATO members can regenerate the credible capability to rapidly locate, suppress and destroy the few hundred SAM systems and key radar sites that Russia relies on for its military effectiveness against Western forces, it is highly unlikely that Moscow would risk territorial aggression against a member state. The risk would simply be too high that European NATO members would respond with a SEAD/DEAD campaign that would rapidly expose Russian forces to devastating conventional air attacks in support of the land and maritime battles. Conversely, without such credible SEAD/DEAD capabilities, it is difficult to see how European armies could field and sustain sufficiently large land forces quickly enough to beat the Russians at their own game without air superiority. European political will to suffer the kind of casualties that such fighting would entail is also open to question and a strategy that relied on doing so might invite Russia to believe it could attack an Eastern ally without facing a unified defensive reaction.

In this context, the RNLAf has a potentially key role to play in European defence and deterrence. While there are many small to medium air forces in NATO, none can currently field credible SEAD/DEAD capabilities – leaving the Alliance totally dependent on the US for this key mission.¹⁰¹ SEAD/DEAD requires not only aircraft that can get close enough to hostile SAMs within a layered Russian IADS and perform effective weapon deliveries but also ones that can do so with a specialised sensor suite that allows them to rapidly and precisely locate and classify SAMs when they turn on their engagement radars. The F-35 was purpose

99. Jack Watling and Nick Reynolds, 'Operation Z: The Death Throes of an Imperial Delusion', *RUSI Special Report*, 22 April 2022.

100. For more detailed information, see Justin Bronk, 'Modern Russian and Chinese Integrated Air Defence Systems: The Nature of the Threat, Growth Trajectory and Western Options', *RUSI Occasional Papers* (January 2020).

101. Justin Bronk, 'Regenerating Warfighting Credibility for European NATO Air Forces', *Whitehall Report* 1-23 (February 2023), pp. 29–35.

designed for this role and the Netherlands already operates one of the largest fleets in Europe. Simply having a capable multirole aircraft does not translate to effective SEAD/DEAD capabilities without the appropriate weapons and regular focused training for aircrew, planners and C2 structures. On the aircrew front, the Netherlands is also closer than most countries in Europe to being able to meet the requirement. The RNLAf has one of the most tactically proficient and culturally aggressive aircrew cadres in Europe, who have maintained near-parity and total interoperability with US warfighting tactics and standards.

However, because of limited F-35 flying hours, aircrew are currently unable to maintain the required high levels of tactical proficiency in SEAD/DEAD alongside the host of other multirole missions that they are trained and deployed to perform. If tasked with prioritising training for SEAD/DEAD, they could rapidly become highly tactically proficient at the mission set, despite available flying hours falling well below their planned levels. Given its comparative advantages in F-35 numbers, pilot culture and training mindset, the RNLAf should prioritise SEAD/DEAD as the primary mission for its fighter force. It should accept risk against other mission sets in terms of training time, weapons procurement and operational deployments, relying on close European allies to undertake a greater share of less demanding defensive counter-air, tactical intercept and CAS missions with their larger fleets of fourth-generation fast jets.

To ensure maximum benefit from such mission specialisation, the RNLAf should also prioritise increasing the maintenance support provision, targeting cell capacity and force protection assets for the F-35 squadrons, even though that would mean reducing support to other force elements. In terms of planning and targeting procedures, a greater reliance on developing lists of pre-authorised air defence targets of opportunity and training to dynamically find and attack them could also reduce reliance on the relatively slow targeting process within the NATO 72-hour ATO cycle. It would also reduce the seriousness of current reliance on the US for ISTAR and targeting capacity to some extent.

A political decision to relax some of the noise-related flying restrictions at RNLAf bases, which are far more restrictive than in other NATO countries, would also significantly improve the RNLAf aircrew's ability to train effectively and to cooperate more closely with key Allied air forces. It would cost nothing in financial terms, and beyond having significant operational benefits would also be a useful demonstrative measure to show the Dutch public, NATO allies and Russia that the Netherlands is responding in concrete terms to the rapidly degrading security environment.

In terms of weapons, additional redundancy and capacity in SEAD/DEAD – relevant capabilities should be prioritised. Options including the GBU-53/B Stormbreaker glide bomb and MBDA SPEAR 3 miniature cruise missile. Significant

orders of these weapons would add depth to Dutch warfighting stocks and help mitigate the risk of delivery delays for the AGM-88G AARGM-ER that has already been ordered. There is also a strong argument for prioritising the allocation of limited NASAMS II batteries to protect the main F-35 bases from Russian cruise missile strikes.

An additional priority would be the acquisition of a penetrating, survivable ISTAR capability to provide NATO forces with a non-US ability to detect, classify and designate high-value mobile targets inside Russian air defence system coverage. If such a capability could be acquired, it should be prioritised over the acquisition of MQ-9 Reaper, which is an efficient and useful ISTAR and strike platform, but only in permissive airspace.

Given the uncertainty over the future utility and role of the air manoeuvre brigade, and the army's desire to refocus on armoured warfare as part of a German-led division, reductions in helicopter capability could be justified if they enabled serious increases in fighter force SEAD/DEAD munitions stocks, aircraft maintenance and training quality. Assuming the Apache force is retained, it might be of most value to the Alliance and the Netherlands as a self-contained defensive anti-tank blunting force to defend forward-deployed Allied forces against Russian armour breakthroughs in the early phases of a conflict before Russian air defences can be attrited to a point where fixed-wing CAS can be employed.

Prioritisation means cuts to a broad force structure to enable specialisation, in addition to increased overall investment. Only then can warfighting stocks, readiness and deterrence be rebuilt. A loss of capacity in secondary out-of-area counter-smuggling and counterterrorism missions is unlikely to have any potentially existential implications for deterrence or defence capabilities for the Netherlands and NATO. The inability to conduct SEAD/DEAD without the US does have such existential implications, and the RNLAf is closer than any other European air force to being able to do so effectively, if it can be properly resourced and focused. Therefore, it should prioritise this mission, enabling and defending the fighter force, and the enabling functions that allow it to be delivered. In so doing, the Netherlands could rapidly field a critical capability to address the most serious bottleneck in European defensive options against Russian aggression. This would represent perhaps the most efficient possible allocation of limited national resources from a self-defence and NATO deterrence perspective. It would also make the Netherlands an indispensable framework nation in any European military response to Russian aggression. Consequently, investing in credible SEAD/DEAD capability through the F-35 force could provide the Netherlands with outsized political influence in a way that no other potentially affordable conventional capability could achieve.

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