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Requirements for the UK's Amphibious Forces in the Future Operating Environment

Sidharth Kaushal and Jack Watling

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Contents

Acronyms and Abbreviations

A2AD	anti-access area denial
ASCM	anti-ship cruise missile
ASG	Amphibious Strike Group
ASW	anti-submarine warfare
C2	command and control
CONOPS	concept of operations
CSS	combat service support
DCDC	Development, Concepts and Doctrine Centre
DSTL	Defence Science and Technology Laboratory
EAB	Expeditionary Advanced Base
EABO	Expeditionary Advanced Base Operations
EME	Exocet missile equivalent
EW	electronic warfare
EXWC	Expeditionary Warfare Commander
FCF	Future Commando Force
GMLRS	guided multiple launch rocket system
GPMG	general purpose machine gun
GST6	*Global Strategic Trends 6*
HIMARS	High Mobility Artillery Rocket System
IED	improvised explosive device
IRGC	Islamic Revolutionary Guards Corps
ISR	intelligence, surveillance and reconnaissance
JEF	Joint Expeditionary Force
JSG	Joint Strike Group
LCU	landing craft utility
LCVP	landing craft vehicle personnel
LDUUV	Large-Diameter Unmanned Underwater Vehicle
LOCE	Littoral Operations in a Contested Environment
LOV	littoral operations vessel
LRPFs	long-range precision fires
LSD	landing ship dock
LSF	Littoral Strike Force
LSG	Littoral Strike Group
MEF	Marine Expeditionary Force
MLRS	multiple launch rocket system
OPE	Operational Preparation of the Environment
PGM	precision-guided munition
RORO	roll-on/roll-off
SBS	Special Boat Service

SDB-II	Small-Diameter Bomb II
SDSR	Strategic Defence and Security Review
UAS	unmanned aircraft system
UAV	unmanned aerial vehicle
USMC	United States Marine Corps
UUV	unmanned underwater vehicle
XLUUV	Extra Large Unmanned Underwater Vehicle

List of Figures

Executive Summary

AS THE ROYAL Navy and Royal Marines contemplate their future concepts for operating in littoral environments, they are faced with two seemingly divergent trends. On the one hand, the clustering of states' economic assets and population centres in littoral areas will make the ability for the Joint Force to impact the littoral ever-more critical over the course of the coming decades. This is particularly true as the emphasis of interstate competition shifts from a 20th-century focus on total wars for maximal ends towards persistent competition punctuated by limited positional warfare. Seizing and holding critical areas in a short timeframe will be vital to securing a favourable negotiating position following conflicts that are – at least in terms of their high-intensity kinetic phase – limited in duration and strategic ends. This in turn will impact a state's competitive position when combatants transition back to persistent sub-threshold competition. The clustering of vital economic infrastructure and countries' demographic centres of gravity in littoral areas will make the ability to achieve sufficient control of key points in the contested littoral particularly salient in this form of limited aims warfare. Simultaneously, however, the maturation of precision-strike capabilities and ISR systems that enable them, along with the proliferation of technology associated with the concept of anti-access area denial (A2AD), will make traditional amphibious assaults and ship-to-objective manoeuvres ever-more difficult. As such, the Joint Force needs to affect the littoral to prevail, but will find approaching the littoral increasingly perilous.

To resolve this problem, this paper proposes a new concept of operations to serve as a baseline against which potential force structures supporting the littoral strike concept can be tested. The paper's four central propositions are:

- The emphasis of littoral operations must shift from manoeuvre inland to positional warfare which aims to secure and control key nodes within the littoral zone.
- Operations within the littoral must balance traditional concerns with seizing ground with efforts to constrain an opponent's freedom of action in littoral regions and thus exercise effective control.
- Operating in littoral regions will require the current exclusive emphasis on big deck assault ships to be modified in favour of a scalable force capable of operating within an opponent's anti-access bubble in order to degrade it and thus enable the insertion of heavier follow-on forces.
- The concepts which guide littoral strike must be conceptually focused on enabling access for the Joint Force to exploit, and thereby achieve strategic effect.

Utilising a range of both primary and secondary sources, this paper seeks to outline the role of the littoral in the Future Operating Environment and the strategic requirements that will drive the development of the littoral strike concept and the Future Commando Force. The paper then outlines the broad contours of a baseline force that might support these requirements, and articulates some of the kinds of enablers it might need.

Introduction

AMPHIBIOUS FORCES FIND themselves caught between two divergent trends. On the one hand, littoral operations are expected to become increasingly important,[1] due both to growing population centres in littoral zones and because the return of great power competition has made securing rapid theatre entry a critical capability for power projection. Given that these littoral nodes will likely constitute a state's centre of gravity in future conflicts, the ability to affect or control these areas will determine success or failure in intra-state competition. Amphibious forces, which form what General James Amos, former Commandant of the United States Marine Corps (USMC), dubbed a 'middleweight force' sitting between lighter airborne forces and heavy land formations, are likely to be a critical asset in this context.[2] This is especially true of the early stages of a conflict, where sophisticated air defences and land-attack missiles will make airborne resupply difficult.[3] The proliferation of anti-ship missiles,[4] man-portable air-defence systems (MANPADS),[5] and sophisticated ISR capabilities,[6] however, is rendering amphibious assault increasingly hazardous; and prohibitively so against a hostile shore held by any near-peer adversary.[7] This is not an altogether novel challenge. Soviet maritime doctrine in the 1980s relied on concentric layers of air and surface launchers to hold US task groups at bay. That being said, the density and fidelity of sensors and launchers has increased significantly. The result is that amphibious forces, organised to conduct traditional amphibious assaults, lack an appropriate concept of operations (CONOPS) to tackle the Future Operating Environment. In response, the USMC is working to refine its Expeditionary Advanced Base Operations (EABO) concept. Setting up forward-positioned Expeditionary Advanced Bases (EABs) can serve a defensive role in fleet protection, but also allows offensive operations to

1. David Kilcullen, *Out of the Mountains: The Coming Age of the Urban Guerrilla*, reprint edition (New York, NY: Oxford University Press, 2015).
2. General James Amos, *Commandant of the Marine Corps Report to Congress* (Washington, DC: Department of the Navy, 2012), p. 8.
3. Capabilities grouped under anti-access area-denial systems are presenting states with a strategic challenge. See Justin Bronk, 'Modern Russian and Chinese Integrated Air Defences Systems', *RUSI Occasional Papers* (December 2019).
4. A trend evident since 2005. See Andrew Feikert, 'Cruise Missile Proliferation', CRS Report for Congress, 28 July 2005, <https://fas.org/sgp/crs/nuke/RS21252.pdf>, accessed 18 September 2019.
5. Note the Houthi use of MANPADS against Coalition UAS. See Jeremy Binnie, 'CENTCOM Says Iranian MANPADS Fired at UAV', *Jane's 360*, 17 June 2019.
6. This spans tactical capabilities via domestically manufactured or commercially purchased UAS, to the commercial availability of high-resolution satellite imagery and the expanding number of manufacturers for dual-use sensors.
7. Sidharth Kaushal and Jack Watling, 'Amphibious Assault is Over', *RUSI Defence Systems*, 21 January 2019.

constrain an opponent's ability to use the sea.[8] For the UK, however, such a CONOPS is not feasible as it would scatter much smaller British amphibious forces too widely, stretching capacity for resupply. While access to US enablers in the context of coalition operations may alleviate some of these challenges, a UK sovereign capability could not treat this as a baseline assumption. Moreover, even in coalitions involving, for example, European partners, executing distributed operations would likely stretch the logistical capabilities of most partner states. The UK therefore must pursue a more creative line of conceptual development to meet its evolving needs.

Speaking at RUSI on 11 February 2019, then Secretary of Defence Gavin Williamson announced that the Royal Navy would be investing in the development of, and experimentation with, a littoral strike concept to lay the operational requirements for a Future Commando Force (FCF).[9] The Royal Marines and Royal Navy are still in the early stages of assessing the requirements of such a force, as well as scoping what may be technologically possible within the timeframe of the force's development. In support of this work, the Royal Navy commissioned RUSI to conduct an independent study surveying the Future Operating Environment, the mission requirements that it calls for, and an outline of a realistic and credible force to meet those requirements. As an independent study, this report seeks to outline how amphibious forces are likely to need to operate to retain utility. Its conclusions are entirely those of the authors and are distinct from those produced in the Navy's own internal work on the subject. The paper seeks to stimulate, and challenge, the Royal Navy's preliminary concepts of operation and prospective lines of effort. In order to clarify this distinction, this paper adopts the nomenclature of an expeditionary strike concept, rather than the littoral strike concept.

This paper uses multiple methodologies. For a study of the Future Operating Environment, the authors conducted a detailed survey of strategic and operational literature, including Chinese, Iranian and Russian theorists to ascertain the doctrinal assumptions, concepts of operations and approaches to command and control (C2) of potential adversaries. The authors also conducted an analysis of critical campaigns involving littoral operations, including Yemen, Libya and Ukraine. In examining future capabilities, the authors met engineers from many defence manufacturers, interviewed officers from the US, Israel, Australia and Japan, and conducted analyses of Russian and Chinese littoral operations. The analysis of how an expeditionary strike capability integrates with wider UK policy is premised on long-term engagement between RUSI and both the Royal Navy's Maritime Battle Staff and the British Army's Concepts Branch, as well as discussions with experts from the Development, Concepts and Doctrine Centre (DCDC) and Defence Science and Technology Laboratory (DSTL).

8. US Marine Corps, 'Expeditionary Advanced Base Operations', <https://www.candp.marines.mil/Concepts/Subordinate-Operating-Concepts/Expeditionary-Advanced-Base-Operations/>, accessed 8 September 2019.
9. Gavin Williamson, 'Transforming UK Defence to Meet the Global Threats of Tomorrow', speech given at RUSI, 11 February 2019, <https://www.youtube.com/watch?time_continue=2&v=5GWHl5oc4yk>, accessed 8 September 2019.

The broad conclusions of this study are that the UK is likely to need to conduct amphibious operations in two contexts: to intervene in a complex security environment in which sub-peer adversaries are bolstered by near-peer sponsorship; and the rapid insertion into territory to pre-empt or secure theatre entry to respond to direct fait accompli operations by a near-peer competitor. In either case, the deployment of amphibious assault ships HMS *Albion* or HMS *Bulwark* is deemed to present serious risks, and to offer few options for calibrated escalation. As expensive, high-visibility assets, these vessels would be particularly susceptible to adversary anti-access area denial (A2AD). This does not necessitate dispensing with these assets, but rather nesting their use within a CONOPS and a force structure whereby they would enter a theatre after the operating environment has been shaped by a lower visibility forward-engaged force. While A2AD systems can exploit the depth of a state's territory to disperse certain assets, such as transporter erector launchers, some of their components such as ground-based surface-scanning over-the-horizon radar are by necessity based coastally. Additionally, while anti-ship ballistic missiles can control sea-space from well inland, shorter range anti-ship cruise missiles (ASCMs) such as the Bastion-P often need to be based near the sea to operate at their maximum ranges, making these assets vulnerable to suppression. The expeditionary strike concept should consequently be based on a low-profile surface vessel, able to deploy forces to conduct preparatory reconnaissance and suppress A2AD systems. This would open a window of opportunity for an amphibious strike force based around *Bulwark* and *Albion* to seize and hold key terrain for subsequent reinforcement by a larger force package. This can be bolstered by a joint strike force as operations climb the escalation ladder from engagement, to contestation, to warfighting.

This paper is divided into three chapters. The first describes the Future Operating Environment and the strategic relevance of littoral zones. The second assesses the mission sets generated by these strategic imperatives, relative to the UK's strategic interests, and the critical capabilities to enable such missions, outlining a plausible force based on the authors' assessment to meet the mission set. The third examines the potential use of this force in relation to a series of hypothetical vignettes, and aims to show how such a capability would present a diverse range of options to UK policymakers. While this paper presents a single proposed force based on the authors' deductions about an optimal force design, this represents a point of departure for thinking on the subject against which alternative models can be tested.

I. The Future Operating Environment

IN CONSIDERING THE requirements for a force – if it is to have utility – one must begin by examining the environment within which it must operate, and therefore the missions it must be able to undertake. This chapter considers three critical components of the Future Operating Environment. First, it considers the likely types of conflict that will predominate in the foreseeable future, and the plausible aims of adversaries in such conflicts. Second, it will explore the relevance of littoral zones in these conflicts. Third, it will examine the critical threats based on trends in capability that must shape how a force operates in the littoral zone.

A New Age of Positional Warfare

Understanding the political context in which fighting will take place, and therefore the objectives that are realistically generated for military forces, must to some extent dictate the tactics that adversaries employ, the kinds of operations that are relevant, and their tempo, limits and duration. John Arquilla differentiates military conflicts along what he dubs horizontal and vertical lines.[10] Conflicts can be horizontally differentiated based on the number and variety of actors participating: for example, a conflict involving two coalitions of state and non-state actors such as the ongoing conflict in Syria can be distinguished from a conflict involving two states. Alternatively, conflicts can be divided vertically by the level of escalation that combatants will tolerate and the ambition of the ends they seek: a conflict for regime change, for example, can be vertically differentiated from a limited land grab.

The period from the Napoleonic era to the mid-20th century saw conflict become both less complex and more absolute. On the one hand the complexity of conflict was reduced by a decrease in the number of actors involved. The consolidation of powerful nation-states made it possible to levy mass armies and regular forces without needing to rely on networks of proxies, mercenaries and local powerbrokers as pre-modern states did.[11] As such, the number of political actors involved in conflicts reduced drastically.[12] The need for direct societal participation, however, compelled states to seek ever-greater concessions from vanquished opponents in order to justify and galvanise mass social engagement in conflict. In Clausewitzian terms, the

10. John Arquilla, *Dubious Battles: Aggression, Defeat, and the International System* (Abingdon: Routledge, 1992), p. 15.
11. John France, *Perilous Glory: The Rise of Western Military Power* (Padstow: Yale University Press, 2011), pp. 219–305.
12. Sean McFate, *The New Rules of War: Victory in the Age of Durable Disorder* (New York, NY: William Morrow, 2018), pp. 25–43.

period from the Napoleonic era onwards saw the passions of the people engaged in a way that drove war to be total.[13]

The present era has seen something of a regression to pre-19th-century forms of conflict. There are several reasons for this. Both the nuclear revolution and economic interdependence have had a dampening effect on direct inter-state conflict between major powers.[14] This is not to say that inter-state conflict is inconceivable, merely that it will likely have to be limited in terms of duration and the war aims of the involved parties. The return of a multipolar international system means, however, that conflicts of the past two decades, which saw a lone superpower with the geopolitical luxury to commit to long nation-building exercises in the face of a non-state actor challenge, are likely to be anomalies of the post-1990 unipolar era that is, in structural terms, coming to an end.[15] Moreover, in large parts of the world we are witnessing a hollowing out of the classical Weberian state, which lacks the central bureaucratic control of its 20th-century counterparts and thus exercises less direct control over economic and social currents within its own borders. This is not ubiquitous, since states such as China and Russia still retain the capacities of a strong and centralised state. But it does represent a trend in both the developed and the developing worlds.[16] In the developed world, the monetarist revolution, with its overarching interest in controlling inflation and constraining states from engaging in fiscal overreach and crowding out private investment, has created markets in which the state plays a smaller direct role. State-owned corporations have been eliminated or curtailed, which in tandem with globalisation of capital has significantly constrained states' extractive capacity to fund public programmes.[17] In a longitudinal study of 48 countries, Jorge Martinez-Vazquez and Andrey Timofeev found that, since 1990, there was across the developed world consistent devolution of state functions to private actors and the stalling and partial reversal of the growth of taxation as a portion of GDP seen through the 20th century.[18] Increasingly developed states in both Europe and the US have shifted to a model of governance in which the state contracts private agents to execute its existing functions rather than maintaining a full-time apparatus to

13. Rupert Smith, *The Utility of Force: The Art of War in the Modern World* (New York, NY: Alfred A Knopf, 2007), pp. 31–107.
14. Lotta Themnér and Erik Melander, 'Patterns of Armed Conflict', in *SIPRI Yearbook 2016: Armaments, Disarmament and International Security* (Stockholm: Stockholm International Peace Research Institute, 2016); McFate, *The New Rules of War*, pp. 25–40.
15. Patrick Porter, 'Advice for a Dark Age: Managing Great Power Competition', *Washington Quarterly* (Vol. 42, No. 1, Spring 2019), pp. 7–25.
16. On the hollowing out of bureaucratic control in the developed world, see H Brinton Milward, 'The Increasingly Hollow State: Challenges and Dilemmas for Public Administration', *Asia Pacific Journal of Public Administration* (Vol. 36, No 1, March 2014), pp. 70–79.
17. Leonard Seabrooke and Duncan Wigan, 'Global Wealth Chains in the International Political Economy', *Review of International Political Economy* (Vol. 21, No. 1, February 2014), pp. 257–63.
18. Jorge Martinez-Vazquez and Andrey Timofeev, 'A Fiscal Perspective of State Rescaling', *Cambridge Journal of Regions, Economy and Society* (Vol. 2, No. 1, March 2009), pp. 85–105.

directly perform these roles, and generally abstains from assuming new functions.[19] A corollary to this, however, is that publics are significantly less likely to condone the financing of military operations through taxation if the state is seen as retrenching elsewhere.[20] Even the US, which enjoys substantial advantages in this regard, has sought to finance wars over the last decade through deficit financing as opposed to taxation.[21] Despite not necessarily being weaker or presiding over less powerful economies than their predecessors, modern governments find financing wars significantly more difficult.[22] Moreover, even leaders in relatively centralised states, like Russia and China, face barriers to sustained military operations, given their domestic security concerns, the growing welfare demands of their populations, and the risks posed to them by international economic disruption.[23] Across both the developing and the developed world, identity is increasingly derived not from the state but from either transnational movements – for example, humanitarian causes or religious identities – or more parochial local identities, such as local community or tribal loyalty.[24] In the developed world, this has produced a shift in the model of governance from direct government to managing coalitions of actors, many of them private, to perform state functions – a trend illustrated by the phenomenon of contractorisation. For the military, the increasing emphasis on both technology and proxy actors such as private military companies as a means of transferring risk from one's own citizens is indicative of this trend.[25] In the developing world, widespread state failure and breakdown has led to a Balkanisation of the state into fiefdoms controlled by local power brokers.[26] The historical currents driving this, including the end of a bipolar cold war that saw rival superpowers prop up allies with weak state

19. Patrick Dunleavy et al., *Digital Era Governance: IT Corporations, the State, and e-Government* (Oxford: Oxford University Press, 2006), p. 197.
20. Thomas Oatley, *A Political Economy of American Hegemony: Buildups, Booms, and Busts* (Cambridge: Cambridge University Press, 2015), pp. 20–25.
21. *Ibid.*
22. *Ibid.*
23. Michael Beckley, *Unrivaled: Why America Will Remain the World's Sole Superpower* (Ithaca, NY: Cornell University Press, 2018); David C Gompert, Astrid Stuth Cevallos and Cristina L Garafola, *War With China: Thinking Through the Unthinkable* (Santa Monica, CA: RAND, 2016).
24. Christopher Coker, *Future War* (Cambridge: Polity Press, 2015); Colin Gray, *Another Bloody Century: Future Warfare* (London: Phoenix, 2006), pp. 20–50; Pippa Norris, 'Global Governance and Cosmopolitan Citizens', in Joseph S Nye Jr and John D Donahue (eds), *Governance in a Globalizing World* (Washington, DC: Brookings Institution Press, 2000), p. 177; Franco Zappettini and Ruxandra Comanaru, 'Bottom-Up Perspectives on Multilingual Ideologies in the EU: The Case of a Transnational NGO', *Journal of Contemporary European Research* (Vol. 10, No. 4, December 2014), pp. 402–22.
25. P W Singer, *Corporate Warriors: The Rise of the Privatised Military Industry* (Ithaca, NY: Cornell University Press, 2007); Sean McFate, *The Modern Mercenary: Private Armies and What They Mean for World Order* (Oxford: Oxford University Press, 2017).
26. For an overview of the literature on strategic trends, see Sidharth Kaushal, 'Politics and Demographics in the 21st Century: Networks and Neo-Feudalism?', in Peter Roberts (ed.), 'The Future Conflict Operating Environment Out to 2030', *RUSI Occasional Papers* (June 2019), pp. 41–49.

capacity, and the absence of overarching unifying ideological narratives, are likely to persevere suggesting that these trends will likely continue. Great powers attempting to project power into parts of the developing world must often work with or through non-state actors, with multiple powers attempting to court figures, such as Libya's General Khalifa Haftar or Yemen's tribal coalitions.

One key form of competition that has increased in frequency is indirect competition via state and non-state proxies in the developing world.[27] Between 1979 and 2009, years for which available data exists, roughly two-thirds of intra-state wars involved some form of intervention by at least one external power.[28] There are sound strategic reasons for this: early intervention by a major power is likely to sharply reduce the duration of a conflict and result in resolution in the client's favour. By contrast, in cases where more than one external power intervenes, wars tend to become stalemated. Major powers, then, have interests in involving themselves in a civil conflict early, either covertly or overtly, both to resolve the issue quickly in an ally's favour and to head off rival great powers.[29] For example, US President Dwight D Eisenhower's 1953 intervention in Lebanon during the early stages of the challenge to President Camille Chamoun foreclosed any possibility of either Soviet or Nasserite intervention in the country's civil conflict and helped to prevent a challenge to the government. Similarly, Russia's intervention in Syria secured the fate of the regime by seizing Aleppo and Homs in under a year. It is worth mentioning, at this juncture, that the definition of victory used in the Singer Correlates of War dataset, used in much of the literature on conflict, does not necessarily entail the full-scale cessation of hostilities.[30] It is merely a historical consensus that one side had obtained its major combat objectives and that the major political outcomes of a conflict, such as regime survival or demise, had been secured. Thus, continuing sporadic fighting, albeit with significantly reduced forces, even after the outcome has been effectively settled, is consistent with this definition of victory. This relative definition of winning may be useful as a policy construct too. In the context of persistent competition, defining victory in this narrow manner delineates seizing and holding specific limited objectives (key cities, for example) as the operational end-state as opposed to pacifying whole areas. Built into this understanding of victory is the notion that maintaining a light special forces-type presence in a conflict area may be necessary even after victory is secured by limited aims interventions.

This dynamic – which incentivises multiple state actors to intervene in a conflict – leads to congested civil war landscapes where the forces of major powers clash indirectly through proxies, engage in low-end confrontation such as jamming each other's communications, and fight in limited direct kinetic clashes, as illustrated by the 2018 battle between US forces

27. Andrew Mumford, *Proxy Warfare* (Cambridge: Polity Press, 2013).
28. Stina Högbladh, Therése Pettersson and Lotta Themnér, 'External Support in Armed Conflict 1975–2009: Presenting New Data', paper presented at the 52nd Annual International Studies Association Convention, Montreal, Canada, 2011, pp. 16–19.
29. Dylan Balch-Lindsay, Andrew J Enterline and Kyle A Joyce, 'Third-Party Intervention and the Civil War Process', *Journal of Peace Research* (Vol. 45, No. 3, May 2008), pp. 345–63.
30. The Correlates of War Project, <http://www.correlatesofwar.org/>, accessed 6 November 2019.

and members of the Russian Wagner Group in Syria.[31] The threat of great power collisions is increased by the current proliferation of infrastructure development programmes.[32] Projects like China's Belt and Road Initiative mean that the military and civilian assets of two or more great powers may be in close proximity to one another in a third state. An illustration of this is the accusation made by US forces that their communications were being disrupted by China's People's Liberation Army forces based in Djibouti.[33] A good deal of both existing strategic and future-oriented literature views the overseas assets of a great power on the territory of a third state as being a particularly critical vulnerability that rival powers will seek to exploit.[34] Critically, however, given the limited and peripheral nature of such conflicts, actors will likely seek means to ensure they do not cascade beyond their immediate region. Recent scholarship illustrates that states engaged in hostilities under the condition of escalatory risks, particularly nuclear ones, tend to either tacitly collaborate in downplaying the existence of the conflict or work to limit the conflict's scope and duration. For example, both US and Soviet politicians maintained the fiction that Soviet pilots and ground crew did not take part in either the Korean or Vietnam Wars because acknowledging the fact that direct kinetic exchanges were occurring between American and Soviet troops would have caused domestic hawkish pressures to commit both parties to a collision course.[35] A recent example of this phenomenon in action would be the US and Russia collaborating in the fiction that the Wagner Group was a mercenary group acting on its own accord and not a de facto extension of Moscow's military.[36] As such, direct clashes on the global periphery will either be covert or, if this is not possible, will be limited in geographical scope and duration by parties that will not risk massive escalation over relatively limited competitive ends.

The second type of conflict likely to remain a persistent feature of international politics is limited territorial land grabs; often in key regions such as Europe and the Asia Pacific. While events such as the 2014 seizure of Crimea and China's slow militarisation of the South China Sea may seem

31. Thomas Gibbons-Neff, 'How a 4-Hour Battle Between Russian Mercenaries and U.S. Commandos Unfolded in Syria', *New York Times*, 24 May 2018.
32. Thomas P Cavanna, 'Unlocking the Gates of Eurasia: China's Belt and Road Initiative and Its Implications for U.S. Grand Strategy', *Texas National Security Review* (Vol. 2, No. 3, July 2019), pp. 11–33.
33. Aaron Mehta, 'Two US Airmen Injured by Chinese Lasers in Djibouti, DoD Says', *DefenseNews*, 3 May 2018.
34. Robert L Perry, Mark A Lorell and Kevin N Lewis, *Second-Area Operations: A Strategy Option* (Santa Monica, CA: RAND, 1984). On the vulnerability of overseas assets and SLOCs to horizontal escalation in a Chinese context, see Michael Green et al., *Countering Coercion in Maritime East Asia: The Theory and Practice of Gray Zone Deterrence* (Washington, DC: CSIS, 2017); Sean Mirski, 'Stranglehold: The Context, Conduct and Consequences of an American Naval Blockade of China', *Journal of Strategic Studies* (Vol. 36, No. 3, February 2013), pp. 385–421.
35. Austin Carson, *Secret Wars: Covert Conflict in International Politics* (Princeton, NJ: Princeton University Press, 2018).
36. Gibbons-Neff, 'How a 4-Hour Battle Between Russian Mercenaries and U.S. Commandos Unfolded in Syria'.

to be outliers, they illustrate a longer trend towards what Dan Altman dubs strategies of fait accompli. On the basis of a dataset that encompasses every attempt at territorial revision since 1918, Altman concludes that strategies of fait accompli using proxies, plain-clothed soldiers or limited incursions by one's own army – often in combination – have remained a frequent feature of international politics with 35 such attempts between 1975 and 2006.[37] Such attempts are likely to become more frequent, given the difficulty of dislodging a force once it has seized a given territory and the outsized bargaining power that even limited land grabs – or the threat of them – can offer. A number of trends characterising what is often described as the fourth industrial revolution, including the increasing lethality of miniaturised loitering munitions and the diffusion of once-scarce ISR capabilities are likely to further reinforce the tactical defence.[38] This gives states an incentive to pursue operationally offensive campaigns before switching to the tactical defence.[39] For example, Russia's 'frozen conflicts' along its periphery have offered it a veto over the politics of post-Soviet states.[40] Similarly, Krista Weigand has illustrated how China links clashes over the Senkaku/Diaoyu Islands, and the threat of a Chinese land grab, to Japan's wider policies, treating its ability to reignite the dispute as a means of retaining leverage.[41]

Such conflicts can amount to attempts at non-kinetic 'grey zone' coercion, but can rapidly shift to short, sharp, direct confrontations. Existing research on Moscow's military thinking suggests that the object of a Russian campaign would be a limited effort to seize or encircle a target of sufficient value to be traded for concessions in a subsequent negotiation.[42] General Valery Gerasimov, Chief of the General Staff of the Armed Forces of the Russian Federation, has argued that the timeframe for conflict termination should be 30 days from the point at which Russia eschews grey zone actions for direct action by either badged or unbadged Russian forces.[43] Within the context of such 'bite and hold' offensives, cities represent a lucrative target given their economic value. Encircling a city with several battalion tactical groups before offering an opponent the opportunity to negotiate would, for example, leave an adversary with a Hobson's choice between unfavourable negotiations and the potential loss or devastation of an important urban centre.[44] Both Russian and Chinese doctrine envisages being operationally offensive but

37. Dan Altman, 'By Fait Accompli, Not Coercion: How States Wrest Territory from Their Adversaries', *International Studies Quarterly* (Vol. 61, No. 4, December 2017), pp. 881–91.
38. T X Hammes, 'Expeditionary Operations in the Fourth Industrial Revolution', *MCU Journal* (Vol. 8, No. 1, July 2017), pp. 82–103.
39. *Ibid.*
40. Amos C Fox and Andrew J Rossow, 'Making Sense of Russian Hybrid Warfare: A Brief Assessment of the Russo–Ukrainian War', The Institute of Land Warfare, The Land Warfare Papers, 2017, pp. 11–20, <https://www.ausa.org/sites/default/files/publications/LWP-112-Making-Sense-of-Russian-Hybrid-Warfare-A-Brief-Assessment-of-the-Russo-Ukrainian-War.pdf>, accessed 28 October 2019.
41. Krista E Weigand, 'China's Strategy in the Senkaku/Diaoyu Islands Dispute: Issue Linkage and Coercive Diplomacy', *Asian Security* (Vol. 5, No. 2, May 2009), pp. 170–93.
42. *Ibid.*
43. Amos C Fox and Andrew J Rossow, 'Making Sense of Russian Hybrid Warfare: A Brief Assessment of the Russo–Ukrainian War', pp. 11–20.
44. *Ibid.*

tactically defensive. In effect, objectives are to be seized early in short high-intensity conflicts before switching to the defensive, using a combination of tactical defences and theatre-level standoff capabilities to render an attempt to retake lost territory moot.[45] At this juncture, an opponent is faced with a fait accompli, either accepting the loss or negotiating the return of lost territory in exchange for broader concessions in other areas – be they economic or political – something that in effect amounts to a strategy of coercive issue linkage. Critical to these strategies is mobilising and seizing territory quickly before significant opposition has coalesced. This is particularly true for states such as China, which have little pedigree in conducting opposed amphibious operations but could perhaps sustain quick unopposed land grabs in a context where the People's Liberation Army Strategic Rocket Force, People's Liberation Army Air Force and People's Liberation Army Navy have achieved temporary local dominance.[46]

The military strategy underpinning this approach, then, is what John Mearsheimer describes as limited aims or positional warfare.[47] Positional warfare aims not at attrition or annihilation, but at seizing limited but critical slivers of a battlespace in order to secure a favourable negotiating position. Typically, when states' capacity for waging protracted warfare is recognised by all parties as limited, positional warfare is seen as a means of winning the peace. For example, prior to the French Revolution, states that could generate relatively small armies with limited resources often aimed at either limited battlefield victories or the successful siege of a particular town before hostilities ended. Given that both parties recognised that open, high-intensity conflict could not last for long, seizing a particular high-value target as opposed to a total battlefield victory was the object of campaigning. Once this ended, states returned to low-intensity conflict.[48] In many ways, then, our current operating environment represents a return to this state of affairs. As such, militaries will have to prepare for two types of conflict:

- Third-party intervention in an intra-state war against a hostile local actor and a potential great power patron.
- A limited aims conflict over a particular sliver of sovereign territory that may span a full spectrum of activity.

The primary operational aim of positional warfare is dislocating an opponent's capacity to respond adroitly and using the windows of opportunity that this creates to secure key objectives

45. For Chinese thinking on the subject, see Robert O Work and Greg Grant, 'Beating the Americans at Their Own Game: An Offset Strategy with Chinese Characteristics', Center for a New American Security, June 2019.
46. Sidharth Kaushal and Magdalena Markiewicz, 'Crossing the River by Feeling the Stones: The Trajectory of China's Maritime Transformation', *RUSI Occasional Papers* (October 2019), pp. 21–27.
47. John Mearsheimer, *Conventional Deterrence* (Ithaca, NY: Cornell University Press, 1983), p. 18.
48. The quintessential example of this would be the decades of competition between Habsburgs and Ottomans, interspersed with limited aims campaigns, usually aimed at single cities. See Andrew Wheatcroft, *The Enemy at the Gate: Habsburgs, Ottomans and the Battle for Europe* (London: Pimlico, 2009).

early, holding them for a limited period of time before both sides are compelled to de-escalate. Democracies can be disadvantaged in these contests by the need to build a broad coalition in support of a war, which tends to require a leader to foster a widespread perception of an imminent threat, but then forces policymakers to seek decisive victories.[49] That said, democratic publics tend to be more receptive to limited war thinking even at a certain cost in casualties, if the duration of large-scale involvement is curtailed or if its cost in deaths and taxes can be mitigated by relying on local proxies for tasks such as garrisoning and holding territory after the democratic patron's forces have led the initial charge. Simply put, as long as the costs in both money and blood can be mitigated, building a broad consensus for engagement is not a political prerequisite.[50] For example, polling during the Vietnam War showed that initially high support for the war took several years to erode and that the use of local forces with supporting US airpower retained consistent public backing throughout the war, even as the consensus around the war itself collapsed. It was the use of ground forces in large numbers, as opposed to committing forces to a limited peripheral war, that eroded support for the campaign.[51] Despite the hurdles that they face, democratic polities will likely adhere to this form of warfare along with autocracies. A CONOPS for this environment, then, needs to achieve targeted dislocation and secure well-delineated objectives while leaving it to partners to exploit the breach. Dislocation can be achieved by a number of means, including the use of economic and political tools to delay an opponent or its allies from arriving at a political consensus on a response, to the use of standoff tools grouped under the rubric of A2AD to hold an opposing force at bay until the war aims have been secured.[52] Achieving this will require a contact layer of forward-engaged forces that can compete below the threshold of direct armed conflict, while retaining the ability to switch postures to meet limited incursions and deter or create the circumstances to fight a successful short war.

The Littoral as the Strategic Centre of Gravity

The positional warfare paradigm and the future of warfare in the littoral are integrally tied to one another. The purpose of positional warfare is to seize geographically limited areas that confer outsized political influence on the side that holds them, and most of these areas are likely to be either clustered in littoral regions or accessible by critical littoral infrastructure. The same can be said of the maritime choke points and offshore islands that directly affect those critical littoral zones.

49. Bruce Bueno de Mesquita et al., 'An Institutional Explanation of the Democratic Peace', *American Political Science Review* (Vol. 93, No. 4, December 1999), pp. 791–807.
50. Jonathan Caverley, *Democratic Militarism: Voting, Wealth, and War* (Cambridge: Cambridge University Press, 2014); Sarah Kreps, *Taxing Wars: The American Way of War Finance and the Decline of Democracy* (Oxford: Oxford University Press, 2018).
51. Caverley, *Democratic Militarism*, pp. 150–55.
52. For a discussion of the symbiotic link between the military, economic and political aspects of A2AD, see Sam Tangredi, *Anti-Access Warfare: Countering A2/AD Strategies* (Annapolis, MD: Naval Institute Press, 2013).

An increasing proportion of the global population lives in urban centres, and these are increasingly clustered in the littoral zone. This also concentrates economic assets in these littoral areas. For example, Istanbul constitutes roughly 30% of Turkey's GDP[53] and Manila accounts for 36% of the Philippines's.[54] As of 2011, 67% of the world's megacities (defined as cities populated by more than 10 million people) were concentrated in littoral areas, which are likely to become even more urbanised as economic development in the Global South causes populations to move from the rural inland to coastal areas. Even cities and towns that are not megacities are likely to be coastal or coastally influenced.[55] Littoral urban centres – including, but by no means limited to, megacities – are likely to be focal points of both fait accompli operations and third-party interventions. In civil conflict, coastal towns are often critical points for warring factions, as they control the flow of economic resources into and out of the country. For an intervening force, controlling these areas not only offers disproportionate leverage over groups in the interior, but also ensures ready access to ports and docking facilities to enable the rapid deployment or withdrawal of personnel and supplies. This dynamic is amply demonstrated in both Libya and Yemen, where the control of Benghazi, Tripoli and Misrata in the first case, and of Mukalla, Aden, Mocha and Hodeidah in the second, have been critical objectives for parties in the conflict. In a limited land grab, meanwhile, these littoral urban centres, if captured, give a clearly delineated geographical area over which to negotiate. It is not coincidental, then, that Altman's dataset demonstrates that the majority of limited aims wars fought over the past 100 years centred on cities, with the side controlling the city securing victory.[56] In recent conflicts, such as the Donbas theatre of the Ukrainian war, cities such as Donetsk and Mariupol represented the determinants of success and failure for both sides. The fall of the former effectively conferred on Russia control over the political future of the Donbas while the retention of Mariupol by Ukraine was critical to ensuring that a land bridge between Crimea and the Donbas was not created.[57] This might be expected if we are seeing a transition towards limited wars. As Clausewitz noted, it was only in the context of the Napoleonic revolution that the annihilation of enemy forces supplanted seizing key cities and fortresses as a campaign end-state. Given that the rationale of a limited aims campaign is to secure leverage and deliver a positional advantage, cities, which in addition to their economic and political value straddle supply routes and lines of communication, fit well within the logic of these campaigns. Indeed, one the key criteria for a limited aims campaign is a discrete objective that confers either outsized political or operational advantages and not cities per se. As such, limited aims campaigns, such as the Egyptian crossing of the Suez, did

53. *Hurriyet Daily News*, 'Istanbul's Share in Total GDP Stood at 31 Per Cent in 2017', 7 January 2019.
54. *ABS CBN News*, 'NCR Makes Up 36 Per Cent of PH Economy Bicol Growing Fastest', 25 April 2019.
55. Marc Harris et al., 'Megacities and the United States Army: Preparing for a Complex and Uncertain Future', Chief of Staff of the Army, Strategic Studies Group, Megacities Concept Team, June 2014; Roland von Glasow et al., 'Megacities and Large Urban Agglomerations in the Coastal Zone: Interactions Between Atmosphere, Land, and Marine Ecosystems', *AMBIO* (Vol. 42, No. 1, February 2013), pp. 13–28.
56. Altman, 'By Fait Accompli, Not Coercion', p. 890.
57. Amos C Fox, 'Battle of Debal'tseve: The Conventional Line of Effort in Russia's Hybrid War in Ukraine', <https://www.benning.army.mil/armor/eARMOR/content/issues/2017/Winter/1Fox17.pdf>, accessed 29 October 2019.

not necessarily focus on cities.[58] That being said, the clustering of both urban centres and offshore resources in littoral areas means that these areas are likely to be the locus of many such campaigns.

A limited land grab may target an unpopulated area, though these have less often resulted in escalation to direct armed conflict. Nevertheless, the ability to occupy atolls and other isolated littoral territory has proved an effective way of testing alliances and shaping the battlespace through the deployment of A2AD systems. Indeed, these outposts may become highly vulnerable to isolation and destruction in long conflicts, but are of greater use if there is an operating environment characterised by sub-threshold competition and limited, short, conventional clashes dictated by the local balance of forces as opposed to the aggregate military capability of actors. Thus, for example, China's artificial islands allow it escalation control in a range of scenarios short of all-out war with the US, including limited direct clashes with US vessels in the South China Sea.[59] The continued existence of outstanding maritime territorial disputes over areas often involving multiple great powers with claims or alliance ties to interested parties has raised the issue of what Michael O'Hanlon dubs the 'Senkaku paradox'.[60] On the one hand, the territory at stake is usually of limited immediate value, but by seizing or holding it with impunity, regional powers can erode the credibility of Western alliance commitments or socialise regional parties into accepting their more expansive claims to regional spheres of influence. A case in point is the South China Sea where a series of bloodless land grabs by China has conveyed to regional countries the image of an ascendant China and thus compelled broader concessions on a raft of issues; a strategy replicated with the Senkaku/Diaoyu Islands. For example, the current administration of the Philippines has made open efforts to appease China, ignoring the international arbitration tribunals ruling over the South China Sea in favour of approaching the issue with China bilaterally, in line with stated Chinese preferences. Moreover, the administration has publicly stated a desire for greater equidistance between China and the US.[61] In a similar vein, Malaysia's former Prime Minister Najib Bin Razak and Chief of Armed Forces General Zulkifeli Mohd Zin both responded to China's growing assertiveness in the region by publicly repeating Beijing's argument that a reordering of the region's security architecture was natural, and that extra-regional powers such as the US should tread carefully with regards to regional disputes.[62] As the Arctic ice melts, we may see a replication of this 'salami slicing' approach to revisionism by states such as Russia. Given the limited domestic appetite for conflict over such limited stakes and the concomitant difficulty of reversing land grabs once they have occurred, the ability to anticipate and pre-emptively deploy to a disputed feature before an opponent will

58. Mearsheimer, *Conventional Deterrence*, pp. 40–50.
59. Admiral Phillip Davidson quoted in Hannah Beech, 'China's Sea Control Is a Done Deal, "Short of War With the U.S."', *New York Times*, 20 September 2018.
60. Michael O'Hanlon, *The Senkaku Paradox: Risking Great Power War Over Small Stakes* (Washington, DC: The Brookings Institution, 2019).
61. Renato Cruz de Castro, 'Explaining the Duterte Administration's Appeasement Policy on China: The Power of Fear', *Asian Affairs: An American Review* (Vol. 45, Nos. 3–4, 2018), pp. 165–91.
62. Peter Kreuzer, 'A Comparison of Malaysian and Philippine Responses to China in the South China Sea', *Chinese Journal of International Politics* (Vol. 9, No. 3, Autumn 2016), pp. 239–76.

be critical to avoid ceding the initiative; something that has spurred the development of Japan's Amphibious Rapid Deployment Force, for example. Similarly, the fear of a temporary occupation of Gotland as part of a coercive strategy has compelled Sweden to develop contingency plans to head off a limited amphibious land grab.[63]

If we assume that conflicts will be necessarily limited as powerful actors are constrained by economic and escalatory concerns, while weaker ones cannot achieve total victories by themselves, then the key to securing a favourable peace will be identifying and projecting power over those limited objectives that confer outsized influence in subsequent negotiations. For example, the Iraqi army's seizure of Kirkuk in 2017 gave the victors a decisive advantage by delivering control of key administrative centres and resource extraction sites. In a different context, a Chinese strategy of coercive issue linkage has allowed China to use limited incursions and provocations around the Senkaku/Diaoyu Islands to compel concessions from Tokyo in a wide variety of policy areas, from intra-Japanese debates over linking trade and foreign policy to the normalisation of Japan's military posture.[64] While the current government has proved less susceptible to pressure on these issues, China has nonetheless gained significantly from this frozen dispute over the past three decades. The centre of gravity in any given positional conflict may differ but, given the clustering of urban communications and administrative nodes, economic resources, human capital and inflammatory unresolved territorial issues in coastal areas, it is likely that many, if not most, of the pivotal geographical points in future warfare will be littoral-focused. Even where decisive operations are to take place further inland, control of littoral nodes can be a critical enabler for theatre entry and operational manoeuvre. For example, in Syria, Russia and forces aligned with Bashar Al-Assad prioritised holding the port of Tartus, which enabled them to conduct subsequent operations against Aleppo and other rebel-held territories.

As such, the strategic context within which future amphibious forces find themselves will be characterised by:

- Periods of continuous competition that occasionally shift to short, sharp conflicts before reverting back to competition.
- The primacy of locally available and immediately ready force, as opposed to aggregated but surged national capabilities with regards to both deterrence and warfighting.
- Campaigns in which the primary aim will be seizing and holding a discrete sliver of territory for a limited period before both sides must de-escalate.

Within this context, strategic mobility is of particular salience. Existing research illustrates that maritime strategic mobility tends to have a stronger deterrent effect than forward-deployed forces and is, *ceteris paribus*, a key predictor of victory in the event of war.[65] This stems from

63. Alexander Smith and Vladimir Banic, 'Sweden Plans to Build More Bunkers Amid Fears of Russian Aggression', *NBC News*, 6 March 2018.
64. Weigand, 'China's Strategy in the Senkaku/Diaoyu Islands Dispute'.
65. Arquilla, *Dubious Battles*.

two factors. First, the mobility of maritime forces means that they can plausibly arrive in several theatres at the outset of a conflict, introducing a degree of uncertainty into an opponent's decision-making cycle.[66] Second, offshore forces can engage in every level of competition without maintaining expensive installations on foreign soil.[67] There are new challenges to this observed historical trend, most notably the potential for an opponent deploying a layered anti-access system to either shut maritime forces out of a theatre or deny them resupply. However, the increasing reach and accuracy of precision-strike assets is also a threat to the fixed infrastructure on which forward-deployed forces rely, meaning that it does not alter the relative use of the two types of force.[68] More importantly, however, if a given capability such as strategic mobility has had enduring strategic value, then it is likely that militaries will benefit from altering force structures and concepts of operations to account for technological challenges to its effective use, as opposed to abandoning the benefits that it provides. An analogy might be drawn with the re-envisioning of amphibious operations after Gallipoli. These proceeded from the assumption that the strategic requirement to have mobile forces should drive concepts of operations and technology rather than changes to coastal defences, which seemingly invalidated the utility of amphibious forces.[69] Deductions regarding the strategic value of a given capability ought to drive CONOPS and acquisition rather than technological trends, which can almost always be adjusted for or offset. Finally, countries are less likely to misperceive the deterrent intent of offshore amphibious forces given their limited size, whereas they have been historically more likely to see forward-deployed land forces as being part of a build-up for a potential regime change. The risks of one's opponent acting not out of opportunism but fear, then, are reduced.[70]

The A2AD Challenge

The paradox facing maritime powers is that even as the imperative to maintain forward-postured amphibious forces is growing, the effectiveness of land-based threats to them is increasing greatly. The past two decades have seen the maturing of what Soviet Marshal Nikolai Ogarkov called reconnaissance strike complexes: networks of dispersed sensors coupled with long-range precision-strike assets, which can hold ships at risk from a variety of ground-, sea-, and air-based

66. Michael Gerson and Daniel Whiteneck, *Deterrence and Influence: The Navy's Role in Preventing War* (Arlington, VA: CNA, 2009).
67. Edward Luttwak, *The Political Uses of Sea Power* (Baltimore, MD: Johns Hopkins University Press, 1974).
68. For an examination within the context of the Asia-Pacific, see Eric Heginbotham et al., *The U.S.-China Military Scorecard: Forces, Geography, and the Evolving Balance of Power 1996–2017* (Santa Monica, CA: RAND, 2015), pp. 45–93, 153–75.
69. Frank Hoffman and George P Garrett, 'Amphibious Assault Will Remain a "Corps" Competency', USNI Proceedings, April 2019, pp. 19–22.
70. Barry R Posen, 'The Case for Restraint', *American Interest* (Vol. 3, No. 2, November 2007), pp. 7–17.

platforms.[71] For example, the Chinese DF-21D anti-ship ballistic missile can theoretically hold shipping at risk at ranges of up to 1,500 km.[72] Similarly, the Russian P-800 and KH-35U ASCMs, which can be launched from coastal defence vessels such as the *Buyan*-class corvette, shore-based launchers and air-based platforms such as the MIG-25 and SU-29, can hold vessels at risk at ranges of up to 300 km.[73] Finally, increases in manufacturing efficiency are predicted to produce a step-change in the number of missiles states can field, along with increasingly lethal short-range threats such as loitering unmanned aerial vehicles (UAVs).[74] While robust reconnaissance strike complexes are still the preserve of near-peer competitors, their proliferation is likely in the coming decades. The production by Iran of a domestically produced ASCM called the Noor, and an anti-ship variant of its Ghadr medium-range ballistic missile, which relies on an infrared seeker, illustrates the potential for these capabilities to proliferate beyond peer competitors.[75] Even non-state actors can now field some (admittedly less robust) anti-access capabilities, as Houthi forces in Yemen have illustrated by firing Chinese-made C-801 ASCMs against both US ships such as the USS *Mason* and vessels of the Saudi-led coalition opposing them.[76] Hizbullah, too, has utilised unmanned aircraft systems (UASs) to coordinate precision fires to defeat Israeli littoral operations.[77]

This represents an evolution of a process that began with the use of land-based airpower to target vessels at sea. The notion that ships would be increasingly vulnerable to land-based assets was apparent during campaigns such as the Mediterranean and Pacific campaigns in the Second World War. During the Cold War, the USSR's naval strategy was premised on the use of ships and submarines in tandem with ground-based air and missile power as part of a layered defence emanating from the Soviet coastline.[78] Today, the range, speed and precision of modern anti-access assets have improved and have evolved in tandem with increasingly competent ground-based air defences, creating potential exclusion zones for Western forces that have historically relied on strategic mobility.

Peer competitors and moderately powerful states can rapidly increase the capacity of weak states and non-state actors with relatively minimal effort. As illustrated by Russia's placement

71. Mary C FitzGerald, 'Marshal Ogarkov on the Modern Theater Operation', *Conflict Quarterly* (Vol. 6, No. 3, Summer 1986), pp. 1–54.
72. Andrew Erickson, *Chinese Anti-Ship Ballistic Missile (ASBM) Development: Drivers, Trajectories and Strategic Implications* (Washington, DC: Jamestown Foundation, 2013).
73. CSIS Missile Defence Project, <https://www.csis.org/programs/international-security-program/missile-defense-project>, accessed 11 July 2019.
74. Hammes, 'Expeditionary Operations in the Fourth Industrial Revolution'.
75. Anthony Cordesman, 'The Iranian Missile Challenge', CSIS, June 2019, pp. 9–12.
76. Farzin Nadimi and Michael Knights, 'The Hodeida Campaign (Part Three): Deterring Houthi Retaliation', The Washington Institute, 16 May 2018.
77. Amos Harel, 'Nasrallah Reveals New Details About Ambush, Killing of 12 Israeli Commandos', *Haaretz*, 15 May 2019.
78. Andrew Krepinevich, 'War Like No Other: Competition in a Mature Maritime-Precision-Strike Regime', Center for Strategic and Budgetary Assessments, 13 April 2015.

of the Bastion system in Syria, peer competitors can set up and man such systems for less sophisticated allies. Elsewhere, powers such as Iran have provided ISR to the missile batteries of non-state proxies such as the Houthis using ostensibly civilian special operations ships such as the *Saviz*, thereby providing a critical component of their Yemeni allies' kill chain without explicitly entering the conflict.[79] The risks facing amphibious forces, then, present planners with a paradoxical situation: forcing entry to littoral regions is likely to be more critical than ever, but the challenges that planners are faced with in littoral operations are becoming vastly more difficult.

It is important, however, to place the threat of reconnaissance strike complexes into perspective. First, the missile threat to ships is not a new one. The first modern case of a major warship being sunk by a missile was the Israeli destroyer *Eilat*, which was sunk by Egyptian Styx missiles in 1967.[80] Since then, more than 222 cruise missile firings against ships have been recorded.[81] While highly effective against undefended merchant vessels or ships taken by surprise, cruise missiles have proved relatively ineffective against well-defended vessels. The historical likelihood of a salvo of cruise missiles securing a mission kill against a defended vessel alert to the presence of hostile platforms is around 23%, with no recorded instances of vessels with robust soft-kill capabilities being sunk by an ASCM.[82] The vast majority of mission kills and sinkings achieved by ASCMs were against vessels with less than 7,000 tonnes of displacement, meaning that fewer hits were required to achieve a mission kill.

Existing historical data pertains to small attacks as opposed to mass salvos and contains little evidence regarding modern supersonic ASCMs. Nonetheless, one can extrapolate from this data to ascertain the lethality of a larger salvo and more potent missiles. The lethality of small-scale strikes may be relevant, given that during the Compete and Constrain phases of a conflict, an opponent may well choose to launch pinprick attacks to coerce withdrawal.[83] Both Russian and Chinese doctrines highlight the utility of limited precision-strike use at the seams between

79. H I Sutton, 'Iranian Covert Operations Ship Still Monitoring Red Sea', *Covert Shores*, 7 July 2019, <http://www.hisutton.com/Saviz.html>, accessed 12 July 2019.
80. James Holmes and Toshi Yoshihara, *Red Star Over the Pacific: China's Rise and the Challenge to U.S. Maritime Strategy*, revised edition (Annapolis, MD: Naval Institute Press, 2018), p. 221.
81. John Schulte, 'An Analysis of the Historical Effectiveness of Anti-Ship Cruise Missiles in Littoral Warfare', Master's thesis, Naval Postgraduate School, 1994. Although this study was undertaken in 1994, only a handful of additional firings have taken place since, making its empirical findings sound despite the time of publication.
82. Schulte, 'An Analysis of the Historical Effectiveness of Anti-Ship Cruise Missiles in Littoral Warfare', p. 10.
83. On Russia, see Dave Johnson, 'Russia's Conventional Precision Strike Capabilities, Regional Crises, and Nuclear Thresholds', Livermore Papers on Global Security, No. 3, February 2018; On China, see Yu Xijun, *Di'erpaobingzhanyixue* [The Science of Second Artillery Campaigns] (Beijing: PLA Press, 2004), p. 270, cited in Sidharth Kaushal and Magdalena Markiewicz, 'Crossing the River by Feeling the Stones: The Trajectory of China's Maritime Transformation', p. 24.

grey zone competition and high-intensity combat as part of what the former's theorists dub 'doses of pain'.

To model the high-end fight, one can use a modified version of the salvo combat model outlined by Wayne Hughes in tandem with existing data.[84] Despite its age, the Schulte model allows us to measure the lethality of a given missile in terms of its kinetic energy in Exocet missile equivalents (EMEs). By normalising the warhead weight and kinetic energy of missiles to the Exocet, the model generates a framework for conceptualising the lethality of missiles such as the KH-35U and the P-800 Oniks, which have not been used in combat. The KH-35U equals one EME in terms of its kinetic energy and explosive payload: the former being a better predictor of effectiveness.[85] As such, the authors can conclude on the basis of Schulte's regression that around three hits against a 7,600-tonne vessel such as the Type 26 would be needed if an opponent was firing KH-35Us either from coastal batteries like the Bal or air- and sea-based platforms. By contrast, at twice the speed, and five times the mass of the Exocet, the P-800 amounts to 20 EMEs in kinetic energy, meaning it will mission kill or sink any opponent barring a carrier with a single shot.

Using this data, two broad versions of the salvo combat model can be utilised to determine the lethality of a given salvo based on track quality data or area fire based on lower quality information. For aimed fire, let 'A' be the proportion of accurately fired missiles, and 'B' be the number of blue force vessels, with 'zB' the total defensive power of the force (interceptors 'x' Probability of kill (PK)/number of defended points, later 's' for any given interceptor) and 'u' be the staying power of a given vessel. Based on data from Schulte, the staying power of a 7,000-tonne vessel against a salvo is 3 EMEs. Losses for B are modelled as:

$$\Delta B = -(A - zB)u$$

Within this rubric, a fairly large accurate coordinated salvo of 21 KH-35U ASCMs targeting a notional light blue force of four ships, one of which fields eight interceptors that have a PK of 0.5 and a staying power of three hits per ship will sink all four vessels. That said, this exchange ratio changes significantly when we consider that accuracy – particularly in clustered littorals that may not be cleared of civilian and other vessels at the outset of a war, is not something that can be relied on. Assuming a baseline probability of any one missile hitting an acquired target of 0.54 based on Schulte's data (which is likely to be roughly accurate given that technology has not decisively solved the problems of technical failure, target movement, soft-kill and attackers firing from beyond a missile's optimal range for safety) and assuming that the blue force has disrupted the reconnaissance strike network on which track quality data depends, the opponent

84. Wayne Hughes, *Fleet Tactics and Coastal Combat*, 2nd Edition (Annapolis, MD: Naval Institute Press, 1999), pp. 100–30.
85. Schulte, 'An Analysis of the Historical Effectiveness of Anti-Ship Cruise Missiles in Littoral Warfare', p. 26.

will fire in accordance with an area salvo model, attempting to saturate an area as opposed to accurately target ships.[86] The area salvo model is represented by:

$$\Delta B = -(0.54.AmB - z_B)u$$

Where 'A' is the proportion of missiles fired with rough accuracy – that is, at an area where blue ships are – and 'mB' is the proportion of the area occupied by blue ships. Assuming that the accuracy of any given missile taken independently of technical failure and interference by jamming is 0.54, a salvo of 40 ASCMs will generate 21 missiles that will accurately hit any target they can acquire. In a notional scenario involving four blue ships spread over a 400 km² area divided into 25 km² squares over which a notional active seeker can sweep, as well as three civilian vessels and two littoral features or decoys that could be mistaken by a seeker, 'ΔB' would be (21*0.125 -1)*1/3. In effect, then, no ships would be lost. Even assuming an area salvo of 40 supersonic P-800 Oniks, which would render the staying power of each ship effectively zero and eliminate interceptors as a factor, two ships in this small and lightly defended notional blue force would be lost. Moreover, sinking those two ships would cost the adversary a very large salvo of missiles that are difficult to replace. The loss ratio could be further reduced through the suppression of key nodes such as fire control radar or the launchers themselves.[87]

Of course, this presumes that an opponent is denied track quality data, that effective countermeasures are deployed, and that littoral traffic remains a feature; something that is likely true of the early stages of a competition but cannot necessarily be relied on during the later stages of a high-end fight, though civilian vessels rarely completely cease to transit dangerous littoral waters even in wartime, as examples such as the tanker war showed.[88] Moreover, the specific numbers used for the notional model are open to revision in the face of new technical data – existing empirical evidence should be taken with a grain of salt given its age. Nonetheless, the key point is that while individuals might differ regarding degree, there are demonstrable challenges to accurately delivering even large salvos if denied track quality data. These challenges are likely to be exacerbated by the difficulty of delivering timely C2 to firing crews across the land, sea and air domains to generate large multi-sector salvos, and by any suppression that can be effected by forward-deployed forces. It then follows, that the survivability of the blue force increases significantly if it can be forward-engaged early in a conflict when the littoral is cluttered. The blue force also gains survivability if it is structured to deliver both hard- and soft-kill measures against the points of failure in an adversary's kill chain, which would deny an opponent track quality data. A littoral-oriented force capable of playing this role in the teeth of enemy A2AD will be critical to ensuring that an area effect salvo – represented by the second equation – rather than a targeted salvo, characterises future combat at sea.

86. Michael J Armstrong, 'The Salvo Combat Model with Area Fire', *Naval Research Logistics* (Vol. 60, No. 8, October 2013), pp. 620–50.
87. For an Oniks that notionally cannot be intercepted (21*0.125)*1
88. Beckley, *Unrivaled: Why America Will Remain the World's Sole Superpower*, p. 50.

In a similar vein, anti-ship ballistic missiles rely on a complex kill chain that relays data from multiple sources to processing centres, fuses it and passes it on to firing crews. The task of coordinating assets across land, sea, air and space – often owned by different services – is complex and is rendered all the more difficult by a variety of means, including electronic warfare (EW), cyber attacks and strikes against C2 nodes, that can disrupt this kill chain. While anti-access threats enjoy an increase in efficacy as existing means of targeting vessels improve in qualitative terms, and enemy stockpiles of these munitions grow, this has produced an action/reaction dynamic where defenders have sought to leverage emergent technologies to more effectively counter the threat. Maturing technology in areas such as directed energy weapons, for example, may well shift the relative costs of a missile engagement in favour of the defender by replacing expensive hit-to-kill munitions.[89] Projects such as the US Department of Defense's Counter-Electronics High Power Microwave Advanced Missile Project – Joint Capability Technology Demonstration are exploring the potential of high power microwave emitters carried on small expendable platforms such as UAVs. These could exacerbate the vulnerabilities of the electronic systems on which A2AD complexes depend, using relatively cheap means.[90] As such, while the threat of A2AD is a real one, it is by no means a basis for abandoning the close-in fight altogether. Rather, maritime power projection will rely increasingly on low-visibility littoral forces capable of surging into an A2AD bubble to disrupt the kill chains on which a reconnaissance strike complex depends, and thereby enabling access for amphibious forces. In many respects, amphibious operations are liable to depend less on speed and surprise, than on progressive escalation as the A2AD bubble is suppressed, penetrated and disintegrated.

89. Mark Gunzinger and Christopher Dougherty, *Changing the Game: The Promise of Directed-Energy Weapons* (Washington, DC: CSBA, 2012), pp. 50–55.
90. Gunzinger and Dougherty, *Changing the Game*.

II. The Strategic Contours of a UK Expeditionary Strike Capability

IF THE FUTURE Operating Environment is likely to see a combination of great power competition in third-party states and limited aims territorial seizures, then we must consider how the UK's interests are affected. This chapter seeks to identify how the UK's National Security Strategy interacts with the Future Operating Environment, the operations that this is likely to generate and the potential structure of a force suitable for carrying out these operations.

Littoral Operations within UK National Defence Strategy

The 2015 UK Strategic Defence and Security Review (SDSR) set out an ambitious course for the UK as a power capable of meeting its commitments to existing allies in NATO and maintaining a globally deployable forward-postured military. In particular, the SDSR highlighted the threat of great power revanchism from Russia, an observation that presaged a wider shift in Western views regarding the character of the international environment.[91] The US National Security Strategy for 2018, released in December 2017, explicitly identified great power competition as the defining characteristic of the future strategic environment, with Russia and China being identified as the peer competitors with which the US will be engaging in a long-term strategic contest.[92] The 2018 National Defense Strategy also emphasised competition below the threshold of armed conflict.[93] While there has been no explicit government-level policy statement by the UK to mirror this shift, statements by senior policymakers such as former Secretary of State for Defence Gavin Williamson indicate a general consensus in thinking.[94] This is reinforced by official documents such as *Global Strategic Trends 6* (GST6), which anticipates expanding competition and limited conflict with rival great powers within a multipolar global environment. Notably, the two competitive strategic contexts highlighted in GST6 – fragmentation and multipolarity – can reinforce one another in key ways. Peer competitors, regional middle powers such as Iran,

91. HM Government, *National Security Strategy and Strategic Defence and Security Review 2015: A Secure and Prosperous United Kingdom*, Cm 9161 (London: The Stationery Office, 2015), p. 18.
92. White House, *National Security Strategy of the United States of America* (Washington, DC: Office of the President of the United States, 2017).
93. US Department of Defense, *Summary of the 2018 National Defense Strategy of the United States of America: Sharpening the American Military's Competitive Edge* (Washington, DC: Office of the Secretary of Defense, 2018).
94. Gavin Williamson, speech at RUSI, 11 February 2019, <https://www.gov.uk/government/news/gavin-williamson-sets-out-vision-for-defence-in-global-britain>, accessed 26 October 2019.

and non-state proxies can, for example, form hostile competing coalitions.[95] In many ways, this mirrors a pattern already seen during the Cold War when, for example, the Soviets attempted to use regional powers such as Egypt and non-state allies that constituted part of the wider Pan-Arab movement to harness them to make inroads into the Middle East. Although there is a difference between now and the Cold War, the symbiotic link between peer competitors and regional non-peer rivals is a constant. As such, given the low appetite for large-scale direct clashes with peers, a viable strategy for confronting near-peer competitors is likely to depend on a capacity for expeditionary operations in third-party states, or operations below the threshold of armed conflict. The UK has consequently made it clear that this is its strategy.[96]

The second feature of the UK's national security strategy worth highlighting is its commercial component. The 2015 SDSR explicitly highlighted the expansion of the UK's trading networks as a core aim of Britain's national security strategy, as both an objective and a means to provide the financial basis for sustained forward engagement.[97] This produces two ancillary security objectives. First, as scholars such as John Ikenberry and William Wohlforth have illustrated in a US-specific context, there exists a strong correlation between security partnerships and the ability of America to secure favourable trade agreements, favourable borrowing arrangements and higher levels of foreign direct investment.[98] Simply put, countries that believe that they need a partner to meet their security needs will link this to other issues. A case in point is the negotiation by West Germany and Japan of the Plaza Accords on American terms, a decision driven partially by a belief in the need to maintain US support for forward deterrence by shoring up Washington's economic position.[99] A UK that wishes to expand its trading network will benefit from being an invaluable security partner to as many states as possible. Second, the UK retains an abiding interest in the stability of littoral choke points through which trade flows.

95. Ministry of Defence, 'Global Strategic Trends: The Future Starts Today', 6th edition, December 2018, pp. 21–28.
96. John Lewis Gaddis, *Strategies of Containment: A Critical Appraisal of American National Security Policy During the Cold War*, updated edition (Oxford: Oxford University Press, 2005), pp. 151–96.
97. HM Government, *National Security Strategy and Strategic Defence and Security Review 2015*, pp. 70–75.
98. William Wohlforth, John Ikenberry and Steven Brooks, 'Don't Come Home, America: The Case Against Retrenchment', *International Security* (Vol. 37, No. 3, Winter 2012/13), pp. 7–51, 42–45; see also Carla Norrlof, *America's Global Advantage: US Hegemony and International Cooperation* (Cambridge: Cambridge University Press, 2010).
99. Joseph Grieco, *Cooperation Among Nations: Europe, America and Non-Tariff Barriers to Trade* (Ithaca, NY: Cornell University Press, 1990). Additional examples include the US-ROK Free Trade Agreement, which both US and South Korean negotiators concluded was explicitly linked to the US role as a security provider. See Wohlforth, Ikenberry and Brook, 'Don't Come Home, America', p. 43.

The policy imperatives that flow from the UK's national security strategy as currently articulated, as well as the political consensus surrounding great power competition, are:

- Reinforcing deterrence on NATO's Eastern Flank.
- Positioning the UK as a 'networked power' that is key to as many relationships as possible.
- Competing with rival great powers for economic and political influence.
- Maintaining the freedom of trade through key maritime choke points.

It must be noted that the UK is approaching its global strategy while in a position of protracted and acute relative – though not absolute – decline. However, as Paul MacDonald and Joseph Parent have illustrated, powers can maintain or even enhance their global position if they pursue some form of retrenchment.[100] This can be in the form of trimming commitments, but it can also take the form of using power more economically, by acting as an enabler for local allies or what Steven Lobell dubbed 'target balancing'.[101] This means focusing the military on exploiting asymmetrical vulnerabilities as opposed to the full spectrum of conflict.[102] An illustration of target balancing would be Liddell Hart's theory of a British way in warfare: burden shifting to allies (in one domain) in the main theatre to focus on domination in key competition at sea, coupled with amphibious operations against an opponent's more vulnerable and exposed far-flung assets.[103] The strategic mission set for a future UK expeditionary strike force, then, will be to provide policymakers with the sort of asymmetric advantages needed for Britain to remain militarily competitive even in the face of relative decline.

Another method for a medium power to maintain relative influence disproportionate to its capabilities is to become a critical enabler – whether militarily or politically – for allies. The maintenance of a position as a partner of choice to both Europe and the US has been a cornerstone of British national security policy for much of the post-war era and has, by extension, helped the UK to punch above its weight in alliance decision-making. For example, during the Cold War, the UK was a major contributor to NATO, but also played a role as the primary ally with which the US shared burdens in regions such as the Persian Gulf. It is likely that the US trend towards 'minilateralism' – working with partners of choice in coalitions of the willing as opposed to formal multilateral institutions – will continue with regards to out-of-area deployments beyond Europe given that this has been a bipartisan strategic preference in Washington since the turn of the century. This is critical inasmuch as coalitions confer political legitimacy on US action without tying decisions to intervene to a cumbersome consensus-driven process inherent to formal alliances. To the extent that partners can provide critical niche assets

100. Paul MacDonald and Joseph Parent, *Twilight of the Titans: Great Power Decline and Retrenchment* (Ithaca, NY: Cornell University Press, 2018).
101. Gunzinger and Dougherty, *Changing the Game*.
102. Steven Lobell, 'Britain's Grand Strategy During the 1930s: From Balance of Power to Components of Power', in Jeffry Taliaferro, Norrin Ripsman and Steven Lobell (eds), *The Challenge of Grand Strategy: The Great Powers and the Broken Balance Between the World Wars* (Cambridge: Cambridge University Press: 2012), pp. 147–60.
103. B H Liddell Hart, *The British Way in Warfare* (London: Penguin, 1942).

to a mission, they make it viable for US policymakers to argue that the burdens of a given conflict will not outweigh its benefits.[104] The centrality of coalition partners playing a visibly important role in a campaign confers both domestic and international legitimacy, and makes credible allies a key political and military enabler for US power projection.[105] The US capacity to generate forces is also constrained by the political permissions surrounding their employment. Therefore, allies can perform tasks that support US interests but to which Washington may be reluctant to commit forces. Within this context, and despite the clash over the Suez Crisis, the US eventually backed UK efforts to structure the post-war Middle East in the late 1950s and early 1960s. In doing so, it bankrolled a level of influence that Britain could not have unilaterally sustained. Indeed, the outraged response of Walt Rostow and Dean Rusk to Britain's withdrawal from East of Suez highlights how substantially US policy had come to depend on allied contributions to burden sharing despite the US's material capacity to sustain multiple commitments.[106] If the UK intends to retain its position as a central partner to both Europe and the US, then, forces capable of operating with the US in a bilateral context are critical.

Missions and Requirements

Within this strategic context, an expeditionary strike force would need to be flexible enough to interface with multiple partners, both traditional and non-traditional. It would also need to operate across a spectrum of conflicts, and to both reinforce and leverage the cross-government synergies envisioned by the Fusion Doctrine.[107] The UK's Integrated Operating Concept describes British operations in four phases: Protect; Engage; Constrain; and Fight. [108]

- **Protect** is to secure the UK Homeland and British Overseas Territories.
- In **Engage**, British forces deploy to work by, with and through regular and irregular partnered forces to support them in tackling adversaries.
- In **Constrain**, UK forces deploy to either deter hostile escalation, or to deny critical ground.

104. Steffano Recchia, *Reassuring the Reluctant Warriors: U.S Civil-Military Relations and Multilateral Intervention* (Ithaca, NY: Cornell University Press, 2015).
105. Sarah Kreps, *Coalitions of Convenience: United States Military Interventions After the Cold War* (Oxford: Oxford University Press, 2011).
106. Rusk and Rostow allegedly waylaid the British ambassador to Washington upon the news, with Rusk exclaiming that he wanted the UK to 'act like Britain dammit'. See Simon Smith, 'Anglo-American Relations and the End of Empire', in Tore Petersen (ed.), *Challenging Retrenchment: The United States, Great Britain and the Middle East, 1950–1980* (Trondheim: Tapir Academic Press, 2010), p. 35.
107. The Fusion Doctrine is an initiative to ensure the coordination of economic, military and diplomatic tools within a strategy-led planning framework. The doctrine envisions using three-star Senior Responsible Owners to preside over cross-government coordination in regions of interest. For a succinct description of the doctrine, see William McKeran, 'Fusion Doctrine: One Year On', *RUSI Commentary*, 8 March 2019. For the original articulation of the doctrine in the 2018 NSCR, see HM Government, National Security Capability Review (London: Cabinet Office, 2018), pp. 1–12.
108. DCDC, Integrated Operating Concept.

- If deterrence fails, then UK forces will be deployed to **Fight.**

The outbreak of war is understood as a policy failure, but a phase for which the military must remain prepared and capable of tackling. Although fighting may take place in the Constrain phase this is distinguished from deliberate warfighting. Within this continuum of competition, the British Army has established a Specialised Infantry Group to maintain persistent engagement with partner forces. There has also been a concerted effort to strengthen the network of liaison officers and defence attachés. One of the challenges in deploying these long-term forces is how to either reinforce or extract them, should the security situation in their area of operations change suddenly. The limited capacity to surge forces to protect a partner or constrain an adversary entering a theatre not only limits the UK's policy options but also reduces the credibility of assistance offered to partners. It also limits the leverage gained through engagement operations. Given that many areas of active competition are in littoral zones, it is reasonable to argue that there is a need for a force that can act as a connector between long-term engagement forces and the Joint Force. This requires a force that can liaise with partners and support the Specialised Infantry Group, and act as an enabler for theatre entry to larger formations.

The capacity for the expeditionary force to remain persistently engaged as a critical connector between long-term training teams and the UK Joint Force would also facilitate dialogue with coast guards, partnered naval forces and troops to enable local support in the event of escalation. They could, in some cases, allow for coordination with local forces to impose denial on adversaries seeking to enter the theatre. As scholars such as Michael Beckley have noted, an often-unappreciated aspect of the development of burgeoning A2AD capabilities is their capacity to substantially improve the defensive capabilities of front line states within the anti-access bubble of a peer competitor. Beckley's net assessment of the capabilities of entities such as Taiwan and Vietnam argues how the very capabilities that hold Western navies at risk also complicate efforts by peer competitors to translate their ability to hold them at arm's length into local overmatch vis-à-vis smaller Western-aligned states.[109] Forward-deployed security cooperation teams could meaningfully contribute to the anti-access capabilities of friendly states by enabling them to develop the C2 structures needed to coordinate their fires with tools such as submarines and mine-laying vessels, for example. As the case of the *Saviz* illustrates, forward-deployed forces can enhance the command, control, communications, computers, intelligence, surveillance and reconnaissance capabilities of a friendly group without directly entering a conflict. There is historical precedent for the utility of such missions. For example, in the early 20th century, Admiral Arthur Limpus's mission to the Ottoman Empire focused on developing a sea-denial force as opposed to a surface fleet. It substantially improved the empire's capacity to defend the Dardanelles against Russia at a minimal cost to Britain. Indeed, the mission actually bore financial fruit as it precipitated Ottoman interest in arms purchases from Britain.[110] While political circumstances leading up to the First World War rendered the

109. Michael Beckley, 'The Emerging Military Balance in East Asia: How China's Neighbors Can Check Chinese Naval Expansion', *International Security* (Vol. 42, No. 2, Autumn 2017), pp. 78–119.

110. Sidharth Kaushal, 'Adoption Capacity Theory and Naval Doctrine', in Donald Stoker and Michael McMaster (eds.), *Naval Advising and Assistance: History, Challenges and Analysis* (Solihull: Helion, 2017), pp. 54–62.

success of this particular mission something of an irony, it did illustrate a key point: that advisory missions are often at their most useful when attempting to develop a weaker state's capacity for sea-denial rather than attempting to build sea-control forces for which local allies often lack the institutional capacity.[111] The advantages of building partnered A2AD capabilities while maintaining a sustained presence in theatre are summed up neatly by Tacticus in the observation that 'when one army occupies a well-fortified fortress on superior ground and the other does not … endeavour to be the one inside'.[112] Missions to build sea-denial forces tend to be easier given that they do not require larger partners to undertake the uphill task of generating the institutional capacity, organisational culture and officer-level initiative needed to effectively man a fleet. Rather, such missions often revolve around the development of routinised C2 processes and campaign-level coordination between sea-denial assets; a comparatively easy task that falls within the adoption capacity of states that lack a maritime tradition.[113] Given that it is sea-denial forces on which potential allies in the developing world will focus, forward-deployed teams from an expeditionary strike force that have expertise in littoral areas could meaningfully contribute to a cross-government effort to develop strategic partnerships. This could proceed in tandem with complementary policies, such as an effort to develop information sharing and coordination mechanisms with regional great powers along the lines of the recent Indo-French maritime surveillance partnership.[114]

A combination of regional framework agreements regarding information sharing and persistently engaged teams capable of training sea-denial forces for smaller partners could see the UK meaningfully contribute to, and benefit from, its strategic partners' situational awareness. This would entail a whole-of-government approach informed by the Fusion Doctrine in which engagement teams from the expeditionary strike force coordinated action with both the Foreign and Commonwealth Office and with complementary military units such as the British Army's 6 Division. Given the specific niche that such forces can fill, they would complement the work of comparable units in other areas of security cooperation as opposed to generating redundancies. Indeed, complementary organisations engaging their counterparts in a partner state might well mitigate one of the operational challenges faced by powers attempting engagement. The tendency is for each branch of a partner state's military to build links with its counterpart from a different country, which results in different services becoming partisans for different partner states. A case in point is the interwar divisions between the Imperial Japanese Navy, which had benefited from multiple British advisory missions, and the Imperial Japanese Army, which had growing ties with Germany, over whether to cultivate London or Berlin as a geopolitical partner.[115] Successfully building influence requires a policy that advances on a broad front, engaging a full spectrum of organisational actors as opposed to a specific group

111. *Ibid.*, pp. 54–62.
112. Terry Pratchett, *Carpe Jugulum* (London: Random House, 2008), p. 356.
113. Kaushal, 'Adoption Capacity Theory and Naval Doctrine', pp. 41–67.
114. *Business Standard*, 'France, India Agree to Establish Maritime Surveillance Centres in India', 7 March 2019.
115. Tsuyoshi Kawasaki, 'The Rising Sun Was No Jackal: Japanese Grand Strategy, the Tripartite Pact and Alliance Formation Theory', in Steven Lobell, Jeffry Taliaferro and Norrin Ripsman (eds), *The*

or body within the partner state. This is particularly true of non-democratic partners, in which individual military services function as distinct and often competing political stakeholders as opposed to subordinates of civilian politicians.

Having an expeditionary strike capability to act as an enabler between partners and the Joint Force – and therefore necessarily specialised in meshing different approaches to command – would also contribute valuable expertise to NATO forces. A series of NATO exercises, conducted as part of the Amphibious Leaders Expeditionary Symposium, highlighted the absence of a shared C2 framework and the inability of NATO forces to operate outside existing bilateral Amphibious Task Groups such as the UK-Netherlands task force.[116] Moreover, a series of exercises illustrated a key weakness of the current NATO framework for amphibious operations in its distinction between strike operations carried out by blue water assets and amphibious forces. Simply put, air and missile defences were insufficient to protect the force from threats such as the Bastion-P and, worse yet, exhausted their interceptor arsenals when trying to defend both forces at sea and amphibious forces.[117] Having an expeditionary amphibious capability used to acting as an enabler and connector between ground forces and naval forces would be valuable in this context, as it would provide experienced personnel, able to mesh together organisations with different cultures and procedures, to complement one another's strengths, rather than have the priorities of blue water and littoral assets compete. This is particularly relevant in the Joint Expeditionary Force (JEF) where Britain has extensive engagement channels as a framework country, but there is a risk that these channels will not be complementary in the event of escalation. Early engagement to generate contingency plans, map out the prospective commitments to which a given partner might wish a Commando unit allotted, and clarity regarding partners' concepts of operations, could help a wider NATO push for a more flexible centralised model of joint amphibious operations to replace the current federated structure.

In a bilateral context, a scalable expeditionary strike force could meaningfully dovetail with the USMC's emerging CONOPS for Littoral Operations in a Contested Environment (LOCE). Key features of this concept are the creation of integrated Naval and Marine Corps Staffs and the delegation of warfighting functions to a composite warfare commander.[118] An expeditionary strike force which integrated forward-deployed Littoral Strike Groups (LSGs), amphibious strike units and carrier-enabled power projection under a joint expeditionary command structure would dovetail neatly with LOCE.[119] Each subcomponent of a scalable expeditionary strike force could contribute meaningfully to a particular component of the LOCE framework. For example, small teams from forward-deployed littoral operations vessels (LOVs) could help the Expeditionary Warfare Commander (EXWC) with both screening operations and the seizure of EABs if they are

Challenge of Grand Strategy: The Great Powers and the Broken Balance Between the World Wars (Cambridge: Cambridge University Press, 2012), pp. 228–30.

116. Gene Germanovich et al., *NATO's Amphibious Forces: Command and Control of a Multibrigade Alliance Task Force* (Santa Monica, CA: RAND, 2019), pp. 53–56.
117. *Ibid.*, pp. 31–38.
118. US Department of the Navy, 'Littoral Operations in a Contested Environment', 2017, pp. 10–15.
119. *Ibid.*

capable of missions related to infiltrating and degrading the anti-access capabilities that control the approaches to a prospective base. Commando units from HMS *Albion* and HMS *Bulwark*, while not comparable in size to their USMC counterparts, could, if equipped with long-range fires, seize individual EABs to enable a wider II Marine Expeditionary Force (MEF) campaign. Finally, carrier strike forces and a fieldable UK strike brigade could augment the firepower of the strike commander and the EXWC respectively.[120] By virtue of being embedded in a fleet strike concept, the expeditionary strike force could be harmonised with potential MEF operations in a way that few allies can currently match, thereby providing a valuable contribution to allied operations, and thus strengthening UK influence.

The UK's existing amphibious capabilities are not optimally suited to these operational requirements. Besides 3 Commando Brigade's specialist functions – including fleet protection and protecting Britain's nuclear deterrent – the Royal Marines are organised to generate a single warfighting force package, that operates from a single assault platform in HMS *Albion* backed by the *Bay*-class landing ship dock (LSD).[121] It is difficult to be persistently engaged with multiple partners when based on a single platform. To conduct disaggregated operations, the Royal Marines must currently deploy separately from their ships, to the detriment of the readiness of the amphibious force. Furthermore, the decision to deploy HMS *Albion* and the Brigade, may initially be intended to conduct operations below the threshold of armed conflict. However, in the event of an outbreak of hostilities, these assets would also be integral to, and therefore need to be capable of, high-intensity operations. Thus, Britain's first move in any amphibious operation today is also the commitment of its entire capability, which ensures that such a move is escalatory, and exposes UK forces to a significant risk if adversaries take advantage of the limited capability of the British force to decide to escalate, and thereby damage or destroy capabilities critical to Britain's amphibious operations while HMS *Albion* and 3 Commando Brigade are postured for sub-threshold operations. We must therefore consider the requirements for a force suitable for the Future Operating Environment.

The first clear requirement is that given the proliferating A2AD threat – albeit at varying levels of sophistication – the force must disperse risk by breaking down some responsibilities to a greater number of platforms. A second element of the A2AD threat is that the force must be able to operate below the threshold of armed conflict to engage local actors and conduct vital ISR, without significantly increasing the threat to UK operational and strategic capabilities. Deniability of early operations seems to be critical in enabling the force to develop an understanding of the A2AD threat, and the operating environment, without politically committing the UK to carrying out decisive operations.

Mapping the A2AD threat is useful only if – when operations turn kinetic – the force is able to counter, suppress and destroy enemy systems. The force must therefore be able to either infiltrate the A2AD bubble with low-signature strike capabilities, or have sufficient long-range standoff to destroy such systems. While Tomahawk Land Attack Missiles or Storm Shadow

120. *Ibid.*, p. 13.

121. Germanovich et al., *NATO's Amphibious Forces*, pp. 10–15.

cruise missiles provide options, it is worth noting that the time to target can make striking movable systems a challenge. They are also far more costly, and therefore fewer in number, than shorter-ranged systems.

If the force is to leverage access it must therefore exploit the disruption enabled by strikes. This demands a continued ability to move mass from ship to shore quickly. The maintenance of a clear amphibious capability is the core of the concept, and if anything there is a need to move combat troops ashore faster, with tempo and firepower compensating for what must realistically be a reduction from current levels of mass. It also seems highly likely that objectives will be in or adjacent to urban areas, and consequently the force must be able to deploy into, and conduct operations within, urban terrain. The limited mass of the force will make the terrain it can hold limited in geographical scope. Defending a limited area must depend upon the ability to break up enemy force concentrations, and this is best achieved by firepower. There is consequently a need to increase the lethality of the ground force ashore and its deployable fires systems, both in terms of the number of assets available to support the force, and the range and precision of strikes. There is a wide range of systems available to achieve this, from small strike-capable UAVs to highly mobile heavy mortars and wheeled multiple launch rocket systems (MLRS).

Seizing critical, but limited, terrain is not usually an end in and of itself. Exploiting the access created by the amphibious force may be carried out in several ways. The deployment of MLRS could allow a small force to flip the A2AD dynamic on the adversary, seizing terrain, and then setting up long-range fires able to deny sea-space, or threaten enemy lines of communication. Unless enemy A2AD systems are attrited, landed MLRS could impose a mutual denial scenario, in which enemy transit through the surrounding waters would be under threat, but friendly resupply would prove difficult. If, on the other hand, the contact layer managed to unhinge an opponent's theory of victory in the early stages of a conflict by pressuring key points of vulnerability, then the A2AD challenge could be not only countered but reversed. A second requirement is for the amphibious force to enable theatre entry by the Joint Force, which can deliver sufficient mass to seize politically relevant objectives. Thus, there is the need for engineering capabilities to enable access for military roll-on/roll-off (RORO), port management expertise to allow disembarkation as a tactical manoeuvre, and the capacity to create a window of opportunity to protect the approach and offloading area for disembarkation and marshalling of the Joint Force. In this way the UK's amphibious capability can be the critical enabler for the UK to bring to bear much greater military capabilities across a range of missions, including:

- Providing an asset capable of making a limited but critical contribution to local allies against some combination of a hostile power and local proxies.
- Horizontal escalation against a peer competitor.
- Seizing or holding disputed territory valued by an ally in the face of an adversarial attempt to create facts on the ground.
- Direct – albeit with limited aims – conflict with a regional power on the global periphery.

To achieve this, the specific mission requirements of the amphibious force might be:

- Engagement with partners.
- Linking long-term engagement teams with the Joint Force.
- Disruption and raiding missions conducted from the littoral.
- Striking inland targets from positions in littoral zones.
- Seizing vital ground and key terrain for limited periods of time.
- Disintegrating A2AD bubbles from within.
- Limited aims amphibious assault.
- Holding disputed features with enough firepower to drive off a limited force.
- Sea-denial.

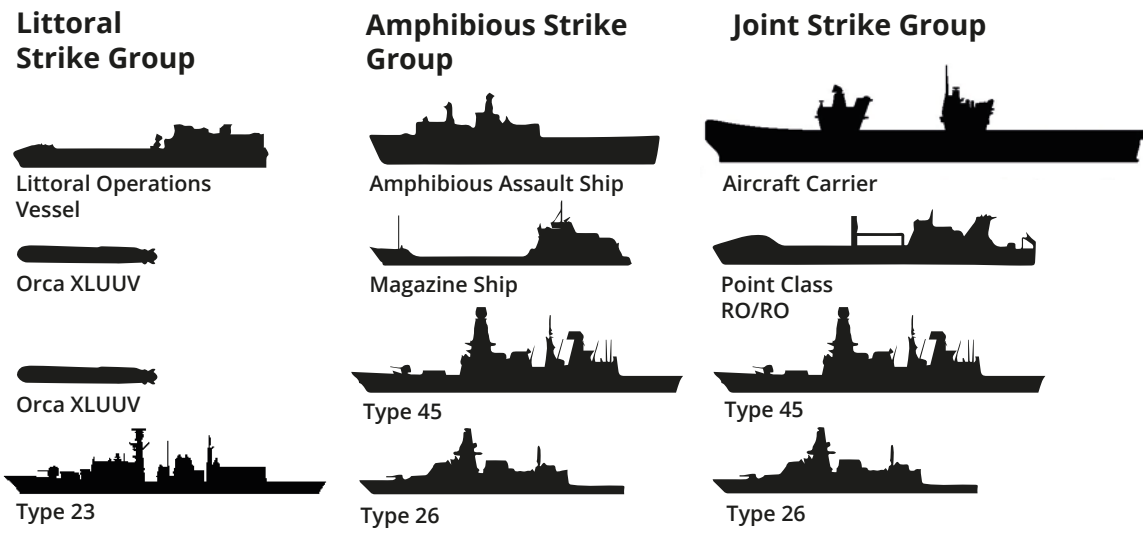
Force Structure

The force structure outlined below is designed to be able to meet the requirements derived above from the UK's National Security Strategy, and the nature of the Future Operating Environment. It should not be taken as a blueprint of the FCF, but rather as an example of the critical capabilities that any proposed expeditionary strike force should be able to cover. Some of the points are specific, such as section groupings. This is to provide a base level of granular detail to enable calculations regarding firepower and mass to test the particularities explored in the following chapter. It is not intended to be a prescription.

The proposed expeditionary strike capability would be divided into three operating groups, which could act in sequence to penetrate and suppress A2AD systems, to seize critical ground to enable access for larger forces and to thereby deliver a force package to exploit. These operating groups would comprise a:

- Littoral Strike Group (LSG).
- Amphibious Strike Group (ASG).
- Joint Strike Group (JSG).

Figure 1: The Expeditionary Strike Force



Source: Author Generated.

At the core of the LSG would sit an LOV. The LOV would need to have a low signature, both in terms of its radar cross-section and political visibility. The vessel would need to operate routinely, with no particular political significance attached to its deployments. This would make it less likely to cause escalation by appearing to be a costly public signal that ties both the UK and the target government to a potentially escalatory path for fear of losing credibility. The LOV would ideally be able to operate inside an adversary A2AD bubble, prior to the opening of hostilities, to conduct ISR and to carry out Operational Preparation of the Environment (OPE). In order to do this, the ship would need to be able to maintain aboard a reconnaissance company of Commandos and have the capacity to launch fast boats for these troops to move from ship to shore. These operators would conduct a range of missions, from liaising with local proxies, to reconnaissance of landing points or the identification, and later raiding, of adversary A2AD architecture. The requirement for these operations would be for a rapid surface connector able to carry 12 Commandos from ship to shore – or six Commandos and an ultra-light vehicle – at between 40–50 knots. The LOV would ideally be able to deploy six such fast boats. It would also need to search for and defuse or lay naval mines via unmanned underwater vehicles (UUVs) such as the Echo Ranger Large-Diameter Unmanned Underwater Vehicle (LDUUV)[122] or the Knifefish.[123] It would need a hanger able to accommodate UAVs such as the Fire Scout,[124] and

122. Boeing, 'Echo Ranger Large-Diameter UUV', <https://nmssanctuaries.blob.core.windows.net/sanctuaries-prod/media/archive/shipwrecks/independence/252220_echo_ranger_pc_final.pdf>, accessed 19 September 2019.
123. General Dynamics, 'Knifefish Unmanned Undersea Vehicle', <https://gdmissionsystems.com/en/underwater-vehicles/knifefish-unmanned-undersea-vehicle>, accessed 19 September 2019.
124. Northrop Grumman, 'Fire Scout: Unprecedented Persistent Situational Awareness', <https://www.northropgrumman.com/Capabilities/firescout/Pages/default.aspx>, accessed 19 September 2019.

would ideally have a flight deck large enough to land a CH-47 Chinook, though it would not be kept aboard the vessel. The ship's company would also include attached Special Boat Service (SBS) frogmen, members of 30 Commando Information Exploitation Group and a military intelligence unit to support operations, and feed intelligence to the ASG and JSG.

An example of a suitable base vessel for the LOV concept would be the USS *Ocean Trader*, which can field four UUVs and fast attack craft from its boat bays, as well as storing and launching rigid-hulled inflatable boats via its stern ramp. Additionally, the *Ocean Trader* can launch UAVs and has the hangar capacity and flight deck to launch a range of vertical lift assets.[125] Given the vulnerability of vertical lift in most high-end scenarios, however, this capacity might best be dedicated to additional UAVs and fast attack craft.

The LOV, while an effective hub for operations, would lack survivability, and could not carry a significant volume of munitions without increasing in size and cost, and in the political ramifications of its deployment. Nevertheless, fundamental to the LSG concept is that the group would operate to suppress or destroy A2AD systems to enable further amphibious operations. The LOV therefore must act as a hub to coordinate wider strike assets. This need could be met by the attachment of two equivalents to the Orca Extra Large Unmanned Underwater Vehicle (XLUUV) to the LSG.[126] These could each be loaded with 30 rocket-assisted Small-Diameter Bomb IIs (SDB-IIs) and 20 UAVs capable of jamming and EW, comparable to the Blackwing.[127] The XLUUVs could navigate by pre-programmed instruction or via remote control, and could be piloted from the LOV to move close to the hostile shore. Upon commencement of kinetic operations, they could jam and strike the A2AD architecture on the hostile coast. The aim would not be to destroy complete systems but rather to conduct pinpoint attacks on radar, C2 nodes and identified launchers to unravel adversary anti-ship and anti-air kill chains. It is also important to note that such a force, while far too small to affect the A2AD systems deployed on the Chinese coast, or in Kaliningrad, is sufficient to inflict significant damage to defensive systems on peripheral islands relevant to reversing sea-denial. It is also sufficient to penetrate the A2AD systems of sub-peer adversaries with a lower density of high-threat systems, relevant to operations in the competition space.

Given that the LSG would likely deploy to regions where the Royal Navy retains a sustained presence, it may be assumed that a Type 23 or Type 31E frigate would already be on station and would therefore not excite much comment by appearing near the area of operations. However, by attaching the frigate to the LSG it would become possible to provide the force with some protection against attack by surface combatants or air attack. It also provides options for

125. Salvatore Mercogliano, 'Navy's Stealthiest Warship May Be a Merchant Vessel', *Maritime Executive*, 13 October 2017.
126. Lockheed Martin, 'Orca XLUUV', <https://www.lockheedmartin.com/en-us/products/orca-extra-large-unmanned-underwater-vehicle-xluuv.html>, accessed 19 September 2019.
127. AeroVironment, 'Blackwing', <https://www.avinc.com/uas/view/blackwing>, accessed 19 September 2019.

helicopter extraction or for emergency naval gunfire support in the event that reconnaissance teams run into unanticipated enemies.

Once adversary A2AD bubbles have been penetrated and suppressed or degraded, this would enable access for the ASG, tasked with securing critical terrain to enable entry to follow-on forces. At the heart of the ASG would be HMS *Albion* or HMS *Bulwark*. The assault ship would host three Commando assault companies. As they would be operating outside of the brigade structure, however, its reduced mass necessitates an ability to concentrate quickly on land. The landing craft vehicle personnel (LCVP) and landing craft utility (LCU) would therefore need to be replaced by rapid landing craft able to deliver up to four lightweight vehicles, or groups of up to 60 personnel, to the beach at 25 knots. Ideally, each amphibious assault ship could carry six such vessels.

In order to avoid being fixed, it will be necessary for these troops to be supported by significant indirect fires. At present indirect fire support is delivered by the L118 105mm howitzer. An L118 battery comprises six guns, six gun tractors, six ammunition carriers, two command and two reconnaissance vehicles, moving as a force package, occupying a grid square and manoeuvring to positions determined by the battery's recce vehicles. The battery operates as a single unit, able to deliver effect from the move within five minutes, provide two minutes of fire at eight rounds per gun from four guns, before packing up within two minutes to manoeuvre to avoid enemy counter-battery fire.

This is an impressive capability, but with several limitations. Providing fire support to ground manoeuvre falls into two broad categories of mission. The first is a fire mission to engage and kill targets. As the most significant effect is achieved within the first 15 seconds, the aim is to deliver as many rounds as possible within that period. The second form of strike is to deliver a rolling fire across an area to suppress an enemy. This requires fire to be sustained, presenting protection and logistics challenges. The current CONOPS for the light gun is effective at delivering the first mission, but not the second. The gun line must move to avoid counter-battery fire, but this forces the artillery support to be unavailable for up to 20 minutes after each fire mission. Furthermore, because the CONOPS places the entire force's artillery complement within a single grid square, the reward for delivering a saturation mission against that area is high.

In reaction to this, there is a desire among light gunners to break up the battery into gun pairs, moving with the companies they are supporting. The breaking up of the battery into three independent firing points would allow two guns to be in action at any time, as another pair manoeuvres, and a third sets up, or prepares to move. However, within this CONOPS the use of a single pair of recce vehicles to coordinate the next firing point becomes a challenge. The use of UAS and 3D terrain mapping could speed up the recce process, but without a self-propelled gun there are a limited number of surfaces suitable for firing.

It has already been recognised by officers of the 29th Regiment, Royal Artillery that to achieve this they will need a more mobile vehicle than their old and increasingly overladen Pinzgauers. Although the Pinzgauer has impressive all-terrain mobility, it is no longer produced, and there is

a recognition that if the artillery is to move closer to troops in contact, greater tactical mobility, protection, and commonality of platforms for ease of combat service support (CSS) is necessary. There is discussion within the Royal Artillery about adopting a Coyote variant as a gun tractor.[128] This would provide greater mobility, crew protection and force protection capability for the gun pair. Given the cold temperatures of Northern Europe, a crew enclosure is likely a necessary modification to the normal Supacat design.

Although the proposals outlined above would improve capability, it is arguable that the suggested tempo could not be sustained. Ultimately, such a solution requires a very high level of manual exertion by crews for a sustained period. Timings would invariably lag and, given an uneven delay between the dispersed gun pairs, this would quickly bring the system out of coordination. It is also worth highlighting that the system requires all guns to be used, leaving no redundancy in the event of casualties. At the same time, the likelihood of casualties is increased by being close to the enemy. The proposal to use Supacats will increase the size and weight of the battery. Finally, the limited ammunition transportable by the existing battery renders its endurance a challenge. The conclusion must be that a self-propelled solution, a reduction in the complexity of resupply and an increase in barrels would drastically increase the capabilities of the battery.

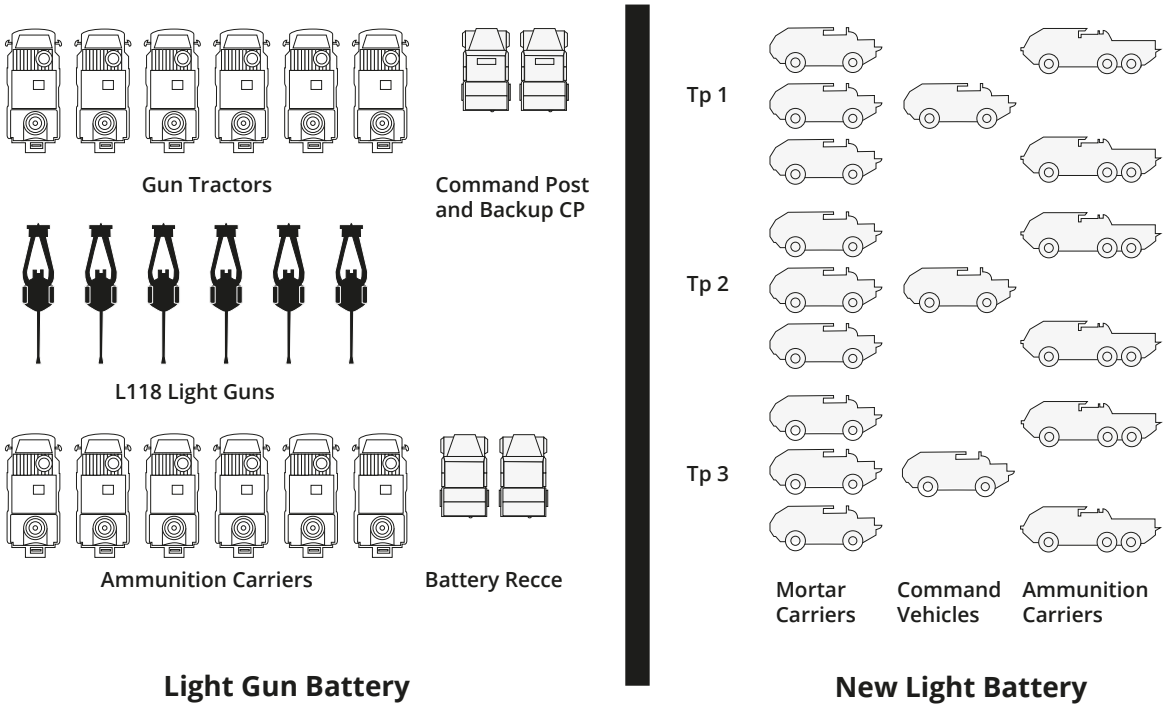
Self-propelled solutions for a 105mm gun are difficult to keep below the weight and vehicle-count limitations imposed by the need for the battery to be air deployable, and movable within one wave of landing craft. There are other options, with the most obvious being the 120mm mortar. Whereas a L118 weighs approximately 2 tonnes, a 120mm mortar can weigh less than 200 kg. Recoil dampeners can reduce the impact of fire to less than 7 tonnes,[129] which can be transferred to the ground by a retractable foot. The result is a weapons system delivering a heavier bomb that can be mounted on a 4x4 all-terrain vehicle with minor modifications. If mounted on a Supacat variant, one could have a self-propelled artillery piece carrying 40–60 rounds of ammunition while remaining below the 8-tonne weight limit to enable airlift. This would create a battery of nine barrels, comprising three troops of four vehicles containing three barrels and a command vehicle, while reducing the space taken up on landing craft. Assuming a pair of ammunition carriers per troop, this would create a battery with greater firepower, mobility and protection, with a simpler CSS burden and with fewer components to deploy, reducing the number of helicopter flights to emplace each troop.

There are objections to the adoption of the 120mm mortar due to concerns about its effective range. However, while the 105mm light gun has a maximum range of 17.2 km, most fire missions are between 6 and 15 km. Beyond 15 km, the accuracy of the gun suffers. As the battery intends to move with the manoeuvre elements, the range of engagement can be expected to reduce in the envisaged CONOPS. Furthermore, while 120mm mortars have a standard range of up to 10 km, there is significant investment in developing new bombs, which have already reached ranges

128. See image posted by Supacat of HMT Gun Tractor, <https://twitter.com/SupacatLtd/status/1162059117311213568>, accessed 19 August 2019.
129. Author interview, Elbit Systems engineers, Yokneam, Israel, 30 July 2019.

of 16 km using glide munitions, without a loss of accuracy.[130] There are also advantages to the larger 120mm munition, which has greater lethality, a better splash, and can pack sensor-fused munitions effective out to 7 km. With smaller and lighter ammunition, the 120mm mortar also allows for a more rapid delivery of munitions (up to 12 rounds per minute per barrel). This would also provide ammunition commonality with a large number of NATO allies, including the US.

Figure 2: From the Light Gun to the Heavy Mortar



Source: Author generated.

The CONOPS outlined above would allow three independent troops to each deliver up to 36 rounds within a minute to achieve a high-intensity strike, or a rolling fire of up to 12 rounds per minute from three separate firing locations, moving every two minutes. The total battery would adjust from having 16 vehicles and six towed guns, to 18 vehicles, with three additional barrels and the elimination of two chassis types from the Royal Electrical and Mechanical Engineers' burden. The battery would also be able to set up concealment quicker, with multispectral camouflage screens, which could be affixed to, and unfurled from, the vehicle roll-cages. There is nothing fundamentally wrong with the light gun. However, with such a small artillery complement it is essential that British forces can bring as much fire to bear as possible, and that there is a significant scope for increasing the output, sustainment and protection of existing batteries.

130. Author interview, Elbit Systems engineers, Yokneam, Israel, 30 July 2019.

This increase in fire support to the manoeuvring companies, however, would still require a system to flip the A2AD equation and conduct long-range fires to hold enemy indirect fires assets at risk. In the positional warfare that will dominate the Future Operating Environment, and the emphasis on standoff, it is desirable to enable the ASG to impose denial of the sea on adversaries once ashore. This would be best achieved by attaching MLRS such as the High Mobility Artillery Rocket System (HIMARS) to the force. Two artillery batteries, however, would begin to stretch the space available on HMS *Albion*, and there would consequently be demand for a magazine ship to accompany the ASG.

The requirements for the magazine ship would be a cheap civilian freighter with some specialised modifications. It would need to hold six HIMARS trucks on a deck from which they could be moved by crane into landing craft or lifted by CH-47. Most importantly, the deck would be modified to support the firing of the HIMARS while afloat, needing channels to vent the back blast. The HIMARS battery would require several kinds of ammunition. First, it would need a guided multiple launch rocket system (GMLRS) munition to deliver precision strikes in support of amphibious forces from afloat. Second, it would require sensor-fused or equivalent anti-armour area-effect munitions for breaking up concentrations of adversary armour moving towards the beach.[131] This would be a critical requirement to protect the Commando ashore. There would be two other types of ammunition critical to the value of the system: a long-range precision fires (LRPFs) capability; and an anti-ship munition. Today, these could both comprise modified Army Tactical Missile Systems, however, with the trend towards greater range, this may become something equivalent to Raytheon's DeepStrike, extending the reach of LRPF to 300 km.[132] It is worth noting that the USMC has demonstrated MLRS launches from a ship's deck,[133] and has demonstrated passing the baton between an MLRS munition and an F-35 to enable LRPF attacks on dynamic targets.[134] There is also extensive experimentation underway to allow HIMARS to fire anti-ship munitions once ashore.[135] Additional space on the magazine ship could comprise stores and ammunition to support the LSG and ASG, and other equipment that may be valuable ashore once the Commando had secured its initial objectives.

One of the advantages of the ASG is that HMS *Albion* routinely conducts exercises around the world, and so the ASG moving towards the LSG would not automatically signal a major combat operation. The threat of high-end warfighting, however, would demand protection for the group, likely against coastal missile batteries, submarines and aircraft, and so the planning assumption should be that the ASG would deploy with an assigned Type 45 and Type 26. This would also provide expanded naval gunfire support to the Commando, and more available vertical lift.

131. Jack Watling, 'Future of Fires', *RUSI Occasional Papers*, forthcoming.
132. Brian Duplessis, 'Fixing Fires Afloat', *Marine Corps Gazette* (Vol. 99, No. 3, 2015), pp. 33–38.
133. Joe Russo, 'Long-Range Precision Fires', *Marine Corps Gazette* (Vol. 103, No. 5, 2018), pp. 39–43.
134. Raytheon, 'DeepStrike Missile', <https://www.raytheon.com/capabilities/products/deepstrike_long_range_precision_fires>, accessed 19 September 2019.
135. James Holmes, 'The U.S. Marine Corps Wants Anti-Ship Weapons for "Island-Warfare." Here's Why That's A Big Deal.', *National Interest*, 9 March 2019.

The deployment of the JSG, by contrast, would immediately raise the political stakes and communicate serious intent. Breaking up the JSG and ASG in deploying would allow this escalation to be staggered, so that the LSG had time to conduct sufficient preparatory reconnaissance. However, on station, the ASG and JSG would likely sail as one naval package, giving the aircraft carrier its required escort of two Type 45s and two Type 26s. The doctrine, however, should be that the breaking down of adversary A2AD systems would enable the JSG to not only bring the carrier closer to the shore, but also enable the Army to exploit the access created by the ASG by sending a *Point*-class RORO vessel, noting that this would require the capture of a port. Alternatively, additional units could be brought to theatre by a *Bay*-class LSD, or in the context of a coalition mission – for example, involving the Combined Joint Expeditionary Force – the heavy amphibious lift assets of partners such as the French *Mistral* class. Ideally, the force would deploy a mechanised infantry battlegroup to the theatre, bringing both mobility and firepower to operations on land, while the carrier could bring a light infantry battlegroup to conduct urban assault and to reinforce the Commando already ashore. The *Bay*-class could – for certain operations – bring a second Commando to the fight.

Just as the force package described above would require the restructuring and re-equipping of 29 Regiment Royal Artillery, so too would it necessitate the reorganisation of Royal Marine Commandos. The specific structure of sections and their equipment must be confirmed through detailed experimentation. The level of detail below is undoubtedly too specific and prescriptive. However, in order to test the CONOPS explored in the subsequent chapter the detail is necessary. In any case these details should be taken as indicative rather than prescriptive.

The Future Commando would comprise 500 personnel. These would be divided into three assault companies, a recon company and headquarters. Each assault company would comprise two assault troops and a fire-support troop. The assault troop would be organised into three 12-man sections. The section would be armed with two general purpose machine guns (GPMGs), two designated marksmen rifles and eight rifles. The section would also carry two loitering munitions such as the Switchblade or HERO70.[136] Each troop would have a four-man command team made up of a lieutenant, signaller, sergeant and medic. The fire support troops would comprise a 12-man anti-tank section, with three four-man anti-tank guided weapon teams, a 12-man machine-gun section, with three four-man GPMG teams, and a 12-man pioneer section. Thus, the three assault companies, based on HMS *Albion* or HMS *Bulwark*, could deploy on six of the fast assault craft outlined above.

The Commando recce company would comprise seven 12-man recce sections, each working in two six-man teams, and two specialist sections comprising a 12-man UAV section and a 12-man information warfare section. Each recce section would specialise in a language and cultural area within the LSG's area of responsibility, and once the group were given a mission, the recce section with the relevant expertise would be designated as a liaison section, tasked

136. UVision, 'Hero 70 Loitering Weapons System', <https://uvisionuav.com/portfolio-view/hero-70/>, accessed 6 November 2019; AeroVironment, 'Switchblade', <https://www.avinc.com/uas/view/switchblade>, accessed 6 November 2019.

with leading liaison with local forces. Unlike the assault companies, the recce company would be based on the LSG.

The force structure outlined above would enable a progressive escalation of both capability and risk, which can be tailored to each contingency. It would provide UK policymakers with more options and allow preparation of the environment without immediately exposing amphibious assault ships to threats that might encourage adversaries to take advantage of the opportunity. One of the challenges in terms of the utility of UK arms at present is a shortage of rungs on the escalation ladder. The deployment of an amphibious task force in the engage phase – given that the same force would need to be able to transition to warfighting – would be a significant escalation and a major risk. In contrast, the LSG would allow UK forces to enter the theatre to conduct engagement tasks, or OPE while the ASG may be some distance off, with its destination and mission still ambiguous, giving the government room for manoeuvre in the information domain. The ability to adjust posture depending upon the mission objectives, threat and level of escalation would provide the UK with a flexible and strategically relevant capability for operating at reach, and projecting power from the sea on to the land.

The force structure proposed poses some interesting questions for C2. Operations in the Falklands demonstrate that the UK has historically struggled to maintain unity of command during amphibious operations. Conflicting priorities arguably created significant logistical challenges for 3 Commando Brigade, with poor coordination ultimately resulting in the debacle at Fitzroy.[137] The principle ought to be that command rests foremost with the portion of the force most at risk. During the LSG's penetration of the enemy, all movements ought to fall under the maritime battle staff. This would persist until the ASG put its Commando ashore at which point command of the LSG and ASG would shift to the amphibious battle staff, recognising that the force most at risk would be the infantry with limited viable means of withdrawal. The JSG would remain under the command of the maritime battle staff, with the foremost requirement to protect the carrier and RORO or LSD. Once the Army were deployed from the RORO/LSD, however, their forces would be most at risk. The Commando, at that point, would be facilitating theatre entry and protecting lines of communication and supply. Command would therefore pass to the land component commander. This is fine in principle, but for it to function in practice, commanders need to understand the risks for each of the components and know when to defer judgement, even though they may be in command. This requires clearly defined conditions of transfer within doctrine, and for general officers of each service to train together and ensure the effective passing of the baton.

The strength of the LSG is that it enables expeditionary activity to be undertaken persistently. To achieve this, however, it is necessary to maintain a sufficiently large force to be able to maintain a proportion of it afloat. Implementing the above concept would therefore require the Royal Navy to maintain two to three LOVs, keeping one at sea, and two ASGs and JSGs, to be deployed periodically on exercise or when required. The LOVs would be deployed rotationally.

137. Robert Bolia, 'The Falklands War: The Bluff Cove Disaster', *Military Review* (Vol. 84, No. 6, November/December 2004), pp. 66–72.

The XLUUVs would be dispatched and attached when the need to bring significant firepower to bear was necessary, while the attached frigate would maintain its usual operational rotation until the LSG assembled on station. The concept would require HMS *Bulwark* to be brought back from extended readiness, so that an ASG could be assembled within a relevant timeframe.

III. Concepts of Operation for a Scalable Expeditionary Strike Capability

CAPABILITIES ARE NOT simply a matter of equipment. The tendency to treat force design as the conjuring up of a shopping list of gadgetry too often obscures genuinely innovative or useful proposals. This chapter therefore seeks to take the force packages outlined above and describe concepts of operation for how they might undertake three missions, ranging from third-party interventions, to constraining adversaries and denying ground in competition, to high-intensity warfighting. The operations described use real places and are contextualised by reference to real people and events. This should not be read as advocating for any particular UK policy, or a suggestion that these missions ought to be undertaken. Instead, the use of real-world examples is aimed at demonstrating what can be achieved with – and the limitations of – the proposed force. The three examples to be explored are:

- A sub-threshold deployment to deny sea-space to Russia in the High North.
- The seizure of Abu Musa in support of US offensive operations against Iran.
- An operation to wrest control of the Yemeni port of Hodeidah from the Houthis.

These scenarios will be considered separately.

Constraining Operations in the High North

The Svalbard archipelago, situated between Greenland and mainland Norway, has been strategically significant since the Second World War, when German forces occupied the islands and established a meteorological station.[138] Upon their surrender, the Soviet Union proposed joint control of the islands with Norway. This was refused, but the Soviet Union maintained a careful watch on the island to ensure that NATO did not establish facilities there. The islands are inhabited by approximately 2,500 people, with a significant Russian minority. In many respects, Svalbard is insignificant, isolated and inhospitable. Yet such territory is ripe for the kind of fait accompli operation that would deliver significant strategic gains, without exciting much enthusiasm for a robust response among citizens of NATO states. A Russian move on to the archipelago, followed by the placement of SA-21 and Bastion missiles,[139] would create a major band of denied sea-space in the centre of the North Atlantic. Competition over such strategic territory is likely to increase as the Arctic melts, with an expanding flow of shipping through

138. Wilhelm Dege, *War North of 80: The Last German Arctic Weather Station of World War II* (Calgary: University of Calgary Press, 2004).
139. Carlo Kopp, 'Technical Report, APA-TR-2009-0503', Air Power Australia, May 2009.

the region, rendering natural resources more accessible. Russian officials have stated that they anticipate resource competition in the Arctic as a key component of the Future Operating Environment.[140] These resources have contributed to the prosperity of Arctic states but have simultaneously rendered them reliant on a vulnerable coastal infrastructure and in due time may jeopardise assets such as the SSBNs (Ballistic Missile Submarines) of the Northern bastion. It is therefore not inconceivable that Russia might wish to push the boundaries of its A2AD bubble further outwards by seizing the Svalbard archipelago.

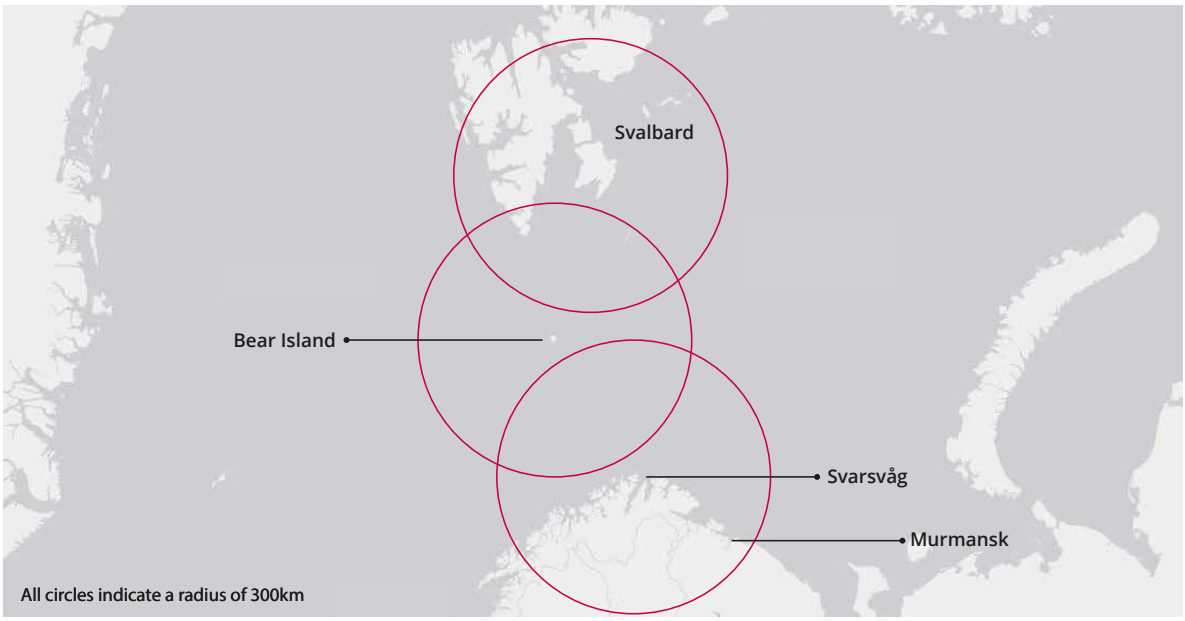
Were a Russian force to land on Svalbard, comprising armed, but undeclared units, it would be difficult to envisage a NATO reaction being quick enough to prevent the erection of standoff systems that would cause the capabilities required to safely retake the island being a clear escalation. At the same time, during the heightened tensions that would precede any such action, the deployment of HMS *Albion* or HMS *Bulwark* would simultaneously be a very public escalation by the UK, commit a valuable asset to secure a relatively insignificant objective and fix that asset in resupplying forces, leaving that asset highly vulnerable to Russian attack submarines cruising in the area.

If, on the other hand, during the rise in tensions – prior to a Russian attempt at fait accompli – the LOV departed to scout Svalbard for appropriate landing sites and assess the attitudes of the local Russian population, a magazine ship carrying HIMARS and Sky Sabre systems could move north without exciting significant attention. Flying a CH-47 from the LOV's flight deck, the HIMARS and Sky Sabre systems could be deployed with a Commando company to occupy the critical terrain. NATO need not announce such a move, as it would simply constitute 45 Commando conducting exercises in Norway, within NATO's borders. Nor can Russia present the presence of such a small force as a threat. However, the deployment of HIMARS with anti-ship missiles on the island would allow NATO to contest a large area of sea-space, making any Russian attempt at fait accompli against the island difficult.

Follow-up deployments, of a similar size, to Bear Island and the peninsula near Skarsvåg on the Norwegian North Cape could effectively leave Russian vessels at threat across the Western Barents Sea. Due to the terrain, and the reach of the defensive systems deployed, Russia would need to conduct a large-scale operation to counteract these moves, and this would quickly reveal the centre of gravity of Russia's efforts. However, because the initial operations would not have required the deployment of HMS *Albion* or HMS *Bulwark*, the ASG could be held in reserve to reinforce in strength as necessary, utilising more traditional Norwegian contingencies from the Cold War. Resupply to Svalbard would likely need to be via airdrop or vertical lift, but for the North Cape, the LOV could carry out resupply missions, using the fjords and its low radar cross-section to avoid threats.

140. Stacy Closson, 'Russian Foreign Policy in the Arctic: Balancing Cooperation and Competition', *Kennan Cable* (No. 24, June 2017).

Figure 3: Sea-Denial in the High North



Source: Adapted from US Geological Survey, 'EarthExplorer', <https://earthexplorer.usgs.gov/>, accessed 14 November 2019.

These moves would take place in the Constrain phase of operations, aimed at deterring and denying the adversary. Preparations could, however, be made to enter the Fight phase by setting the stage for a significant horizontal escalation were Russia to launch operations in the Baltic or against NATO vessels in the Barents Sea. Moving a HIMARS battery into the region around Torhop, Bonakas and Austertana would place Murmansk itself, and the pens of the Russian northern fleet, in range of DeepStrike missiles. Given the poor visibility and complex terrain, striking these assets would be exceedingly difficult, and any Russian incursion to remove them could be effectively opposed by deployment of the ASG supported by Norwegian Jaeger troops. The threat at sea and to its port in Murmansk would place Russian operations in confrontation with the US Second Fleet at risk, creating multiple dilemmas for Russian commanders.

Although normally each LSG would deploy in separate theatres or on rotational cycles, in the event of a major escalation with Russia it is conceivable that both groups would be mobilised. Beyond operations in Svalbard, this would enable constraining operations in the Baltic Sea. While the primary focus of any Baltic scenario would be land-based, the archipelagic nature of the closed Baltic Sea opens avenues for a variety of peripheral operations by both parties. For example, it has been suggested that the seizure of Gotland, Åland or Bornholm by Russia in advance of a campaign in the Baltics would both expand the reach of its anti-access network and offer it a bargaining chip in the face of a conflict.[141] Given that two of these islands are held

141. Robert Dalsjö, Christofer Berglund and Michael Jonsson, *Bursting the Bubble: Russian A2/AD in the Baltic Sea Region: Capabilities, Countermeasures, and Implications* (Stockholm: FOI, 2018), pp. 3–5.

by non-NATO allies, the threat of seizure could also be used as a means of keeping potentially useful partners out of a conflict.

All three islands are held by members of the JEF, which individually possess contingency plans to secure their own territory against a limited incursion but lack an overarching framework to cooperatively manage the security of these islands. Given the limitations of individual NATO members, there has been little emphasis on available opportunities to use coordinated littoral operations to enhance deterrence and security in the Baltic region more broadly. In principle, then, an adversary such as Russia can feint and concentrate against any given island. As such, a forward-engaged LSG could serve a coalescing function for the JEF and, moreover, translate the security of littoral islands in the Baltic into a means of constraining wider revisionism within the region.

To serve this function, the LSG would need to fulfil three functions in the region:

- Interfacing with local forces such as the Finnish Nyland Brigade and the Swedish Amphibious Corps to create a joint C2 and CONOPS.
- Utilising offshore positions to constrain Russian freedom of action in the Baltic.
- Enabling carrier strike operations in proximity to the Baltic.

A hypothetical scenario involving both NATO and non-NATO JEF partners might illustrate the utility of the concept. The build-up to a conflict in the Baltic region would likely be preceded by political signalling by both parties, in addition to coercive tacit messaging in the form of activities such as exercises. During the Constrain phase, an LSG could be dispatched to the region without much fanfare while the ASG could be sent as part of routine JEF exercises. Clinging to the crowded islands of the Scandinavian coastline, these vessels would be relatively difficult to distinguish from clutter using radar. A magazine ship would be broadly indistinguishable from a civilian vessel, posing problems for visual imaging. The Russian Baltic fleet has two *Kilo*-class submarines, which might be augmented with additional forces from its other fleets. However, submarines struggle to identify individual targets in crowded waters, a similar problem faced by coastal radar too.[142] It is assumed that at this phase of a conflict, neither party necessarily wishes to escalate to kinetic operations.

Under the aegis of JEF exercises, Commando companies backed by HIMARS batteries could be deployed to Bornholm, Åland and Gotland, along with other potentially useful strike assets such as containerised loitering munitions. After that, the magazine ship could withdraw to the Scandinavian coastline from where it could sortie to resupply at irregular intervals given the relatively short sprint to each island and the help offered by littoral clutter. The LSG, meanwhile, could loiter over the horizon off Kaliningrad. As this was occurring, a carrier strike group would likely be forming under the aegis of a NATO maritime force.

142. Tobias Oder, 'The Dimensions of Russian Sea Denial in the Baltic Sea', Center for International Maritime Security, 4 January 2018, <http://cimsec.org/dimensions-russian-sea-denial-baltic-sea/35157>, accessed 17 September 2019.

Figure 4: Sea-Denial in the Baltic Sea

Source: Adapted from US Geological Survey, 'EarthExplorer'.

Should operations proceed to kinetic clashes, XLUUVs commanded from the LOV could launch a combination of UAVs and SDB-IIs against the fire control and surface search radar that act as critical enablers for the three battalions of Bastion-P and older Bal coastal defence systems based in the Baltic under the 25th Coastal Missile Regiment.[143] The LDUUV aboard the vessel could also carry out mining operations around Kaliningrad. SBS teams might also attempt activities such as frogman operations or infiltration across a wide front to mount pinprick attacks using loitering munitions from within the redoubt itself. This latter option might prove excessively risky in terms of infiltration and exfiltration but might introduce an additional element of uncertainty into an opponent's decision-making cycle. Even without this, however, UAVs backed by SDB-IIs could significantly attrit a limited force of coastal batteries.

From positions ashore, HIMARS batteries deploying DeepStrike and anti-ship missiles could threaten Baltic Sea Fleet assets in Kaliningrad and St Petersburg. While these batteries can be suppressed by precision-guided munitions (PGM) salvos, this would force an opponent to exhaust scarce stocks of PGMs even as it prepared for a wider conflict on its central front. It takes a sizeable salvo to destroy, with high probability, dispersed sea-denial capabilities held by a company-sized unit on a relatively small island. This assumes the unit has some form of short-range air defence and engages in the use of terrain for camouflage, emissions management and decoying. Given the size of islands such as Gotland, this rate of expenditure would increase.[144] Given that operations against Gotland, Åland and Bornholm would be one line of effort in a

143. *Navy Recognition*, 'Russian Navy Strengthens its Coastal Missile Brigades with BAL and BASTION Systems', 16 January 2018. A battalion typically consists of two missile batteries.
144. *Marine Corps Gazette* 'Advanced Force HIMARS', (Vol. 99, No. 3, 2015), pp. 39–42.

potentially wider conflict between the West and Russia, it would compete for Russian PGM stocks with other missions. If successful, the cumulative effect of these operations would be to augment the capacity of follow-on carrier strike forces. The capacity for information sharing between HIMARS and the F-35B could allow DeepStrike-equipped batteries to pass the baton with strike aircraft, easing the pressure on the JSG's target sets. A NATO-wide carrier strike force could generate sorties closer to the theatre of combat if anti-ship missile batteries in Kaliningrad were suppressed and the Russian Baltic Sea Fleet was penned into its harbours by land-based fires. Indeed, this would not resolve every threat to the carriers. Carriers would still need to be defended against air-based threats and submarines by traditional pickets, for example, but carrier operations could be more readily contemplated.

In the Compete and Constrain phases, then, forward deployment of forces would flip the anti-access challenge to reinforce deterrence in two ways:

- **Deterrence by punishment:** the threat to impose additional costs on assets such as the Baltic Sea Fleet would represent a form of lateral escalation to complement deterrence by denial effected by ground forces in the main theatre. This would render any effort to extend the A2AD bubble by seizing a feature such as Gotland more difficult by emplacing a force that both acts as a tripwire and a credible sea-denial force at all but the very highest levels of escalation. This level of escalation would obviate a strategy dependent on a swift land grab with limited forces.
- **Deterrence by denial:** the threat that forward-fielded Littoral Strike Forces (LSFs) might disrupt and reverse some of the gains made by anti-access forces raises the spectre – if not quite the certainty – of forward-deployed carrier strike groups carrying out sorties at a higher rate and tempo than Russian campaign planning can accept. This is due to the fact that the 30-day timeframe for Russian campaign planning requires absolute preponderance in the early stages of a conflict and the maintenance of early momentum. These are preconditions that higher rates of carrier-based sorties would call into question.

Seizing Abu Musa

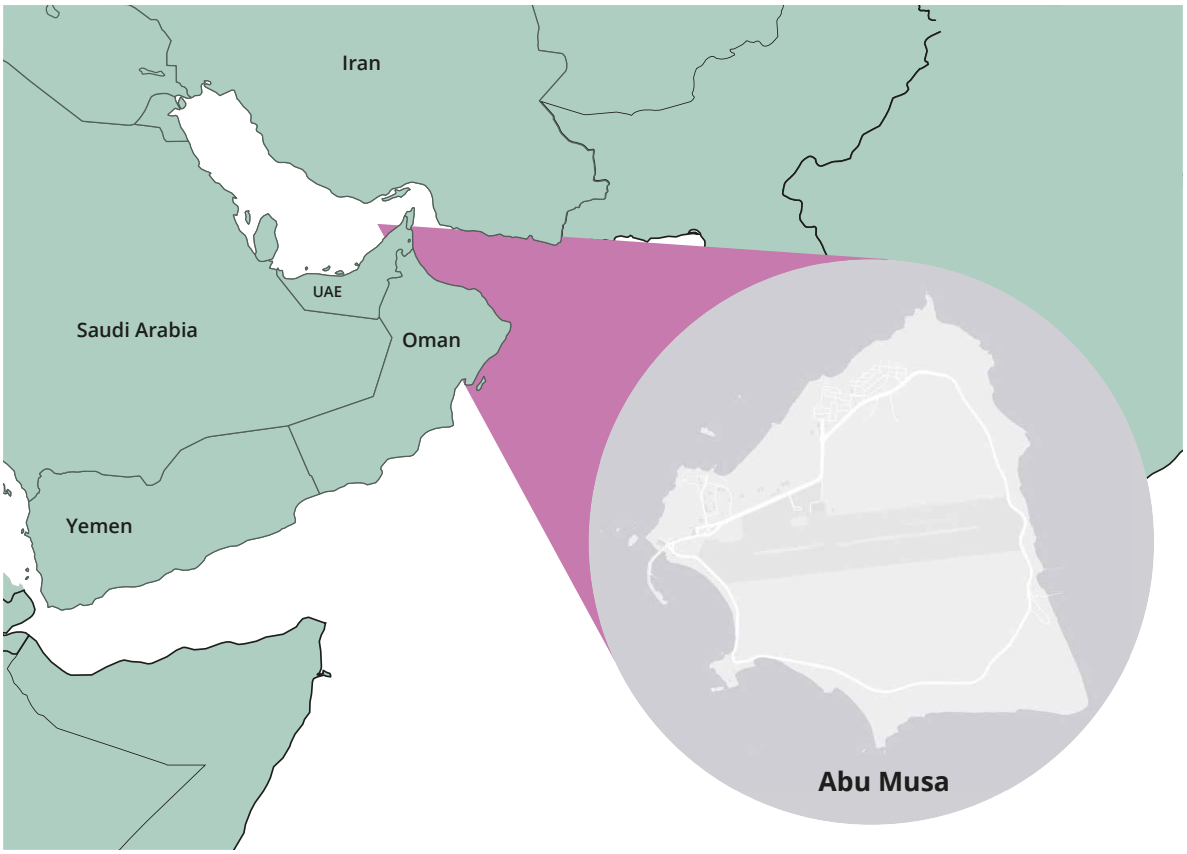
The island of Abu Musa sits in the strategic waterway of the Strait of Hormuz, through which between 20% and 25% of global oil traffic passes each day.[145] Tehran has threatened several times to close the strait to commercial shipping by laying mines, in retaliation for US economic sanctions.[146] Whether these threats are serious is debatable; in many ways, the threat is more useful to Iran than acting upon it.[147] However, the Iranian government has the capability to

145. US Energy Information Administration, 'The Strait of Hormuz is the World's Most Important Oil Transit Chokepoint', 20 June 2019.
146. Saeed Kamali Dehghan, 'Iran Threatens to Block Strait of Hormuz over US Oil Sanctions', *The Guardian,* 5 July 2018.
147. Edward Chang, 'The Real Iran Military Threat: Close the Strait of Hormuz (Watch Oil Prices Jump)', *National Interest*, 16 May 2019.

do so, and may – if sanctions bite further without prospect of relief – ultimately carry it out. Although the Royal Navy maintains mine-clearing vessels in Bahrain, these could not be deployed during a period of such heightened tensions due to the risk of attack from Iranian small boats and anti-ship missiles. A mine clearance operation, therefore, would need to be preceded by the destruction of Iranian radars, air defences, ballistic missile sites, coastal batteries and naval installations. As Iran possesses a large number of missiles, many of these strikes would need to be undertaken within as short a timeframe as possible to reduce the threat to allies in the Gulf. While the US Fifth Fleet is positioned and capable of undertaking the missions required to reduce Iran's defences, the number of tasks needed to be prosecuted synchronically would render allied assistance welcome. The UK has several vital interests to defend in such an eventuality, from showing its support for regional allies to upholding rights to freedom of navigation. Consequently, there would be both a desire from the US for UK participation, and likely an interest in London to review military options.

For the purpose of considering the CONOPS for the FCF, this scenario will assume that within the wider plan to reduce Iranian defences, the UK took on the task of seizing Abu Musa. The island is approximately 3 kilometres wide from east to west and spans 4 kilometres north to south. It is bisected by a large military airfield running east to west and contains one point of significant elevation in the north. The island also has two small harbours for light craft: one on its western side; and the other on its east. The largest settlement is on the northern coast, and there is a barracks on the northwest shore.

Figure 5: Abu Musa Island



Source: Inset adapted from US Geological Survey, 'EarthExplorer'.

There are approximately 1,500 civilians on the island, and approximately a battalion's strength of Iranian troops, although they are divided across several small units comprising both regular forces and the Islamic Revolutionary Guards Corps (IRGC).[148] Abu Musa is a hub for the IRGC Navy's fast boat fleet, though their exact number is subject to significant variation.

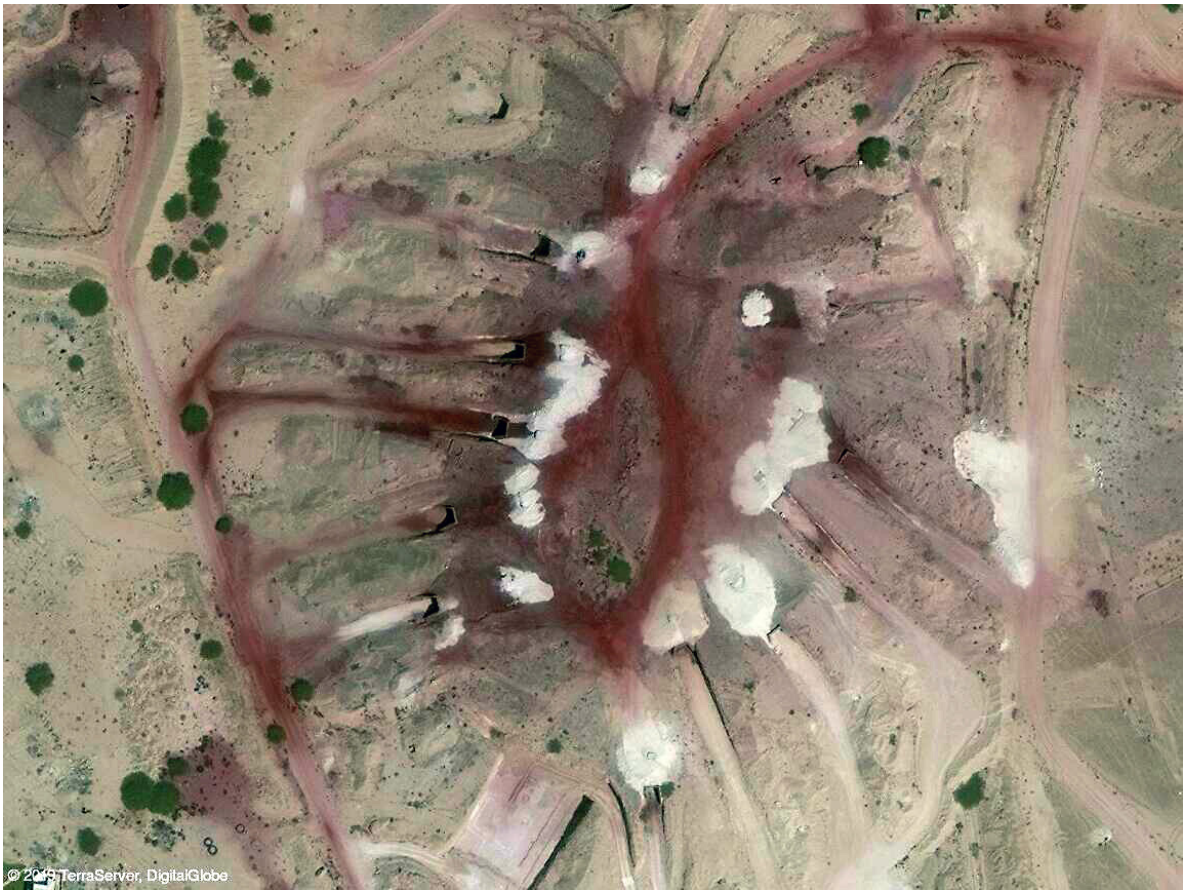
148. David Hartwell and Allison Puccioni, 'Island Fortresses – Abu Musa and Greater Tunb', *Jane's Intelligence Review*, 14 August 2009.

Figure 6: Anti-Aircraft Emplacements

Source: TerraServer, captured 24 August 2019.

The airfield is defended by Hawk anti-aircraft missiles, concealed below ground, but movable into prepared emplacements (see Figure 6), while there are batteries of Silkworm anti-ship missiles in dug-in launch sites to the northeast (see Figure 7).

Figure 7: Anti-Ship Missile Emplacements



Source: TerraServer, captured 24 August 2019.

Extensive underground shelters host artillery, some armoured vehicles and other equipment, while the perimeter of the island has a dense network of berms and emplacements, though without fixed installations.

Figure 8: Coastal Defences

Source: TerraServer, captured 24 August 2019.

Any move against Abu Musa would need to be coordinated with the wider suppression of Iranian assets. The precise approach taken in such an operation would be dependent on the steps leading to an outbreak of hostilities and the position of forces relative to the Strait of Hormuz. The following description is therefore indicative of what might be possible using the force package, and not a suggested blueprint for operations.

Assuming that a Type 31E frigate were on station west of the Strait prior to the crisis, it is reasonable to expect the LOV, XLUUVs and magazine ship to transit the straits by keeping to Emirati waters. As the political crisis developed, a naval task force would be moved to the Gulf of Oman. For the purpose of this scenario it will be assumed to include HMS *Albion* or HMS *Bulwark*, two Type 26 frigates, two Type 45 destroyers, a *Bay*-class LSD, and either HMS *Queen Elizabeth* or HMS *Prince of Wales*. HMS *Albion*, the LSD, one frigate and one destroyer would form the ASG, while the carrier and remaining frigate and destroyer would constitute the JSG. The ASG would have one Commando aboard HMS *Albion* and a second aboard the LSD, with the landing craft for the second divided between the magazine ship and LSD. The ASG would then round the Strait of Hormuz within Emirati waters and dock at Sharjah. It would also take

the magazine ship under command. Prior to the commencement of kinetic operations, the LOV would hold station off Abu Musa, deploying its UUVs to scout the approaches and manoeuvring the XLUUVs into positions off the island's coast. The LOV might also conduct reconnaissance of the electromagnetic spectrum around the island and seek to interfere with radars to encourage defensive positions to light up and reveal themselves. The LOV's activities would be shielded by the Type 31E, providing point-defence air cover and limited ASW against Iran's mini submarine fleet. In addition, special operations forces would deploy from the LOV as frogmen to scout and potentially lay charges in the harbours. This force is potentially vulnerable to saturation. However, given that the described actions are occurring prior to the commencement of hostilities, and during significant Fifth Fleet activity, the assumption is that the opponent may launch limited raids but will abstain from full-scale non-deniable operations. It is also worth noting that, at present, the IRGC's navy struggles with coordinating swarm attacks of more than ten boats at a time.[149]

The commencement of kinetic operations would require simultaneous strikes across the Gulf in order to knock out Iranian standoff capabilities. Although these wider operations would be taking place, they are not to be described here, but must be understood to be going on in parallel to operations against Abu Musa.

The attack on Abu Musa would begin with the launching of Blackwing UAS from the LSG to jam and suppress Iranian defences and encourage radar systems to light up. As this took place, the ASG would be moving from the Emirati coast, while strike packages of F-35Bs would be launched from the carrier. The initial kinetic strikes would be synchronised so that all 60 SDB-IIs were launched from the XLUUVs a couple of minutes before the first four F-35Bs came on station, able to identify and engage any systems that attempted to go active as a result of the initial strike with a further 32 SDB-IIs. The strikes would prioritise hitting radar, C2 sites, and anti-air and anti-ship missile sites. As these sites were knocked down, targeting would shift to concentrations of defending troops and vehicles. Fire Scout, launched from the LOV, would seek to identify enemy troops moving from shelters and entering prepared positions, passing the coordinates to the magazine ship, which would engage with GMLRS.

While the bombardment was taking place, the ASG would move forward, screened by the Type 31E, one Type 26 and one Type 45. These vessels would have the primary tasks of protecting the ASG from small boats, submarines and aircraft respectively. However, they would move in with the ASG to deliver naval gunfire support, suppressing enemy ground forces before the arrival of landing craft. Landing craft would deploy in three waves. Where to assault on the island is a challenge. The airfield essentially bisects Abu Musa, providing a central strip of clear ground that would be difficult to cross if covered by fire. The northern half of the island includes concentrations of buildings and elevated ground. The south, meanwhile, has extensive areas of open ground and prepared defences along the coast, but is more accessible. For the purposes of

149. Anthony Cordesman, *The Iranian-Sea-Air Missile Threat to Gulf Shipping* (Washington, DC: CSIS, 2015), p. 33.

illustrating how the force might operate, it is assumed here that the amphibious strike is made against the beaches north of the eastern harbour.

The first wave would comprise the recce company deploying from the LOV in fast boats, conducting feints around the island in order to fix defenders to hold a wide perimeter and to mask the intended point of assault. The second wave would comprise two companies, joined by converging recce troops, which would land on the northeastern shore to take up firing positions, calling in naval gunfire support to prevent enemy guided weapons being emplaced to hit the slower-moving assault craft of the third wave. The assault craft would aim to deploy one company to the eastern extremity of the runway, which would establish a firebase to deny defenders the ability to cross it from south to north. They would also establish blocking positions on the coast road to the south. The other company of the first wave would deploy to screen the urban areas to the north of the landing zone. The third wave would comprise the assault craft deploying four companies. Two of these would move inland over the ground to the north of the runway towards the terminal building, aiming to seize the high ground. The other two would join the northern screening force and begin to assault the urban areas. As soon as they had deployed their units, the landing craft would return to HMS *Albion* to bring ashore heavy weaponry comprising the self-propelled 120mm mortar battery. As the force built up, one Commando would be tasked with holding the northern edge of the runway and the high ground, while setting up indirect firing positions to support the second Commando, pushing from east to west through the urban centre. Once the northern half of the island had been cleared, forces in the south could be asked to surrender or else defeated in detail.

Figure 9: Company Objectives

Source: Adapted from US Geological Survey, 'EarthExplorer'.

Once the island had been secured resupply could be achieved by A400M, which could use the runway. HIMARS could also be moved from the arsenal ship to the island, which once reloaded with DeepStrike could subsequently be used to conduct strikes in support of US operations on the Iranian mainland coast.

Intervention in Hodeidah

In April 2018, Yemeni forces supported by Emirati advisers were pushing north along the western coast towards the port city of Hodeidah. Having fallen to the Houthis in 2014,[150] the port remained one of the few areas under their control with access to the sea. It was therefore a critical artery for food aid entering Houthi territory, where almost 70% of Yemen's population lived. International pressure from the US, UK and other states eventually halted the advance against the Houthis just south of the city, with widespread concern as to the humanitarian impact of damage to the port facility. Subsequent negotiations, however, have been used by the Houthis to effectively freeze the conflict, while localised fighting has increased across the

150. Mohamed Ghobari, 'Houthi Rebels Take Over Yemen's Hodeidah Port: Residents', *Reuters*, 15 October 2014.

country with no respite to the humanitarian catastrophe.[151] Significant quantities of food have rotted in warehouses in Hodeidah.[152] For the purposes of this scenario let us suppose that the UK had instead taken the view that depriving the Houthis of Hodeidah might convince them to negotiate in good faith, and would in any case provide the Yemeni government and its backers with a victory, which could enable concessions. The effects of taking such a course are beyond the scope of this paper, but the resultant theoretical mission to capture Hodeidah provides a useful practical example of the CONOPS that the UK's amphibious forces could employ.

The Houthis held Hodeidah with little local support. The coalition received information from the approximately 450,000-strong local population.[153] Until forces under the command of General Tareq Saleh, backed by the UAE, made an advance on Hodeidah airport to the south, Houthi forces in the city were estimated to be around 500 strong. Subsequently, reinforcements entered the city along the Sana'a road. The Houthis maintained some lightly armoured vehicles, but are primarily an infantry force, with mobile fire support mounted on technicals. After a decade of fighting, core Houthi units from Sa'ada have a well-developed tactical doctrine, fighting in platoon-sized, family-based units.[154] In addition to significant numbers of anti-tank guided missiles, MANPADS, light artillery and mortars, the Houthis had access to dated Chinese and Russian anti-ship ballistic missiles, taken from Yemeni state arsenals. They had used these to strike and severely damage a UAE logistical ship – the *Swift*[155] – and had fired on the USS *Mason*, though without effect.[156] The Houthis also had an arsenal of target UAVs and unmanned surface vehicles, based on Iranian designs, which had struck Saudi naval vessels. Further complicating operations against Hodeidah was a thick belt of minefields to the south of the city. These were largely made up of a variety of old mines converted into IEDs with Iranian-supplied detonators.[157] There were also a significant number of naval mines deployed around Hodeidah harbour. Previous amphibious probes by the UAE had proven unsuccessful.

151. *UN News*, 'Plan for Troop Pullback "Now Accepted" by Rival Forces around Key Yemen Port, but Fighting Intensifying Elsewhere, Security Council Warned', 15 April 2019.
152. Aziz El Yaakoubi, 'U.N. Races to Process Rotting Yemeni Grain after Reaching Hodeidah Store', *Reuters*, 5 May 2019.
153. Rawan Shaif and Jack Watling, 'Fragmentation of Yemeni Conflict Hinders Peace Process', *Jane's Intelligence Review*, June 2018, pp. 38–41.
154. Michael Knights, 'The Houthi War Machine: From Guerrilla War to State Capture', *CTC Sentinel*, (Vol. 11, No. 8, September 2018), pp. 15–23.
155. H I Sutton, 'UAE's Swift Fast Transporter Hit By Missile', <http://www.hisutton.com/HVS-2%20Swift%20hit.html>, accessed 19 September 2019.
156. Jeremy Vaughan, Michael Eisenstadt and Michael Knights, 'Missile Attacks on the USS Mason: Principles to Guide a U.S. Response', *Washington Institute*, 12 October 2016.
157. Conflict Armament Research, 'Mines and IEDs Employed by Houthi Forces on Yemen's West Coast', September 2018, pp. 15–26, <https://www.conflictarm.com/download-file/?report_id=2949&file_id=2954>, accessed 1 September 2019.

Figure 10: Hodeidah

Source: Adapted from US Geological Survey, 'EarthExplorer'.

The LSG would have three tasks. Approaching the port by night, the LOV would deploy its UUVs to recce approaches to the harbour and detect and deactivate mines. Recce units, meanwhile, would go ashore to conduct four tasks:

- Recce sections would insert to find and identify radar, missile launch sites and C2 infrastructure.
- A recce section, likely supported by other agencies, would liaise with Tareq Saleh's forces, joining his headquarters in Mocha.
- The HUMINT section would meet disaffected members of the population, arranged by other agencies.
- Recce appropriate landing points.

Information about the civil population would be fed back to military intelligence personnel and members of 30 Commando Information Exploitation Group stationed on the LOV, who would be developing information products to release upon the commencement of kinetic operations. The objective of these products would be to reduce panic among the civil population and to avert a common tendency in Yemen for local civilians to mobilise in defence of their homes, often

leading to an escalation cycle with intervening forces.[158] It is important to note that feedback from contacts with the local population, and from liaison with Saleh's headquarters, would have been needed to determine whether to carry out the mission. The key questions would be whether Tareq Saleh's 35,000 troops could be expected to conduct a timely assault on the airfield to the south, and whether the population was sufficiently disaffected to accept his return to the city. In both cases, there were good reasons for believing the conditions could be met, but it demonstrates a need for persistent engagement, from which the LSG could benefit, but would not have provided beforehand.

Meanwhile, the ASG and JSG would transit the Suez Canal on the pretext of exercises in Oman. Briefing of the two battlegroups embarked would take place once afloat. Before HMS *Albion* entered the A2AD threat envelope, the LSG's XLUUV would strike identified high-value targets. As this occurred, Tareq Saleh's forces would move northwards from their final start line, drawing Houthi forces to defend the airfield. Meanwhile, under cover of darkness, the ASG would approach Hodeidah port and deploy a Commando using its assault craft, one company landing on the breakwater and two north of the harbour. These would then push south into the port facility along the coastal road.

Once ashore, the company on the breakwater would advance to its neck and dig in, blocking Houthi forces from moving along the breakwater to gain overwatch over the harbour. Using UAVs, the LOV would direct further strikes by the XLUUVs to target Houthi reinforcements moving towards the port. Blackwing could also be deployed to jam Houthi communications and disrupt enemy UAVs. Meanwhile, the second company would occupy the offices of the Yemeni Flour Mill Company, with a seven-storey building, and walled compounds. The third company would push through the main docking area and seize the entrance buildings of the port, inside the perimeter wall. This would provide the three companies with overlapping arcs of fire over the open ground in front of the port. Meanwhile, a second wave of assault craft could deploy indirect fire support onto the breakwater.

158. As occurred during the raid on Yakla. See Namir Shabibi and Nasser al Sane, 'Nine Young Children Killed: The Full Details of Botched US Raid in Yemen', *Bureau of Investigative Journalism*, 9 February 2017.

Figure 11: Company Objectives

Source: Adapted from US Geological Survey, 'EarthExplorer'.

Once the approaches to the far port were blocked from direct fire, indirect fire systems could be positioned to provide fire against Houthi force concentrations, and the JSG could approach, with the RORO entering the harbour to deposit a Strike Battlegroup comprising MIV and AJAX. Tactical disembarkation would need to be practised, and also highlights a need for the Commandos to integrate elements of the Joint Force into their exercises. Once ashore, the battlegroup would drive north, and then east, circling the city in a 14 km march with one company providing a screen to the northeast, and a second seizing Fahdli Station on the Hodeidah–Sana'a road. This would block Houthi reinforcements from reaching the city. The third company could advance to support the Yemeni forces attacking Hodeidah airport, setting up firing positions on their eastern flank, preventing Houthi defenders from retreating into the city.

The ultimate success of this mission would depend upon the reaction of the population of Hodeidah, the majority of whom are not Houthis, but are also unlikely to welcome UK forces. The critical points here would be to have Yemeni commanders meet local sheikhs as soon as possible and use the seizure of the port to immediately surge food shipments into the city. It is important to note that a significant proportion of Saleh's staff were responsible for administering Hodeidah between 2014 and the killing of Ali Abdullah Saleh on 4 December 2017, which led

his subordinates to switch sides. Throughout their advance up the west coast, coalition forces had excellent intelligence provided from within Hodeidah and maintained a detailed picture of the local political landscape. The plan to exploit these relationships would be critical to the decision to launch the operation in the first place. Clearing Houthis from the inner city would best be left to Yemeni forces, because the UK would lack the mass, and risk being opposed by both Houthis and the local population. When the Yemenis retake the city, the UK battlegroups could withdraw. Alternatively, they could cordon off the port and airport to support aid entering the city and the establishment of a field hospital.

Conclusions

THE CHARACTER OF warfare in the 21st century provides a strong rationale for the logic of expeditionary operations, but requires the adoption of an altogether different operating concept to traditional amphibious assault. A growing tendency towards limited positional conflict and deniable operations provides a strong incentive for countries to develop operationally and strategically mobile forces that can exert calibrated pressure on key national assets to secure a favourable position when both sides come to the negotiating table. A growing body of economic literature illustrates that the centrality of maritime trade to the economic wellbeing of important urban centres will lead to a clustering of states' economic and demographic centres of gravity in urban littoral zones that also constitute hubs for administration and transport. The mercantile and military networks of peer competitors, such as Russia and, in particular, China, will create new economic and political opportunities for states that invest in far-flung outposts, but will also generate vulnerabilities for peer competitors in areas beyond their immediate regions that savvy opponents can exploit.

When contemplating limited operations to exert control over the inevitable post-conflict negotiations, states will increasingly look to influence these critical littoral zones. Dominance of key urban nodes, the capacity to deny or control access to them and the mobility to hold an opponent's far-flung assets at risk all represent economic means of exerting leverage without engaging in acts such as full-scale intervention in a civil conflict or untrammelled escalation vis-à-vis a peer competitor. The littoral, then, represents a critical region in an era in which escalation manipulation has replaced escalation dominance.

Important changes at the strategic, operational and tactical levels of war mean that traditional amphibious assaults are no longer fit for purpose. The outsized visibility of amphibious assault vessels renders them risky assets to deploy during phases of a conflict in which both actors are competing in a deniable way. The maturing of reconnaissance strike complexes and the increasingly cluttered nature of coastal areas render existing concepts of operations for the deployment of amphibious forces moot.

To evolve in order to meet these challenges, amphibiosity needs to be nested within a CONOPS that achieves four ends:

- **Presence within the anti-access bubble:** Many of the challenges associated with A2AD, including the passivity induced by one's assets being held at risk, poor warning times and the ability of one's opponent to operate within one's OODA (Observe-Orient-Decide-Act) loop, can be shifted on to the enemy if forces capable of penetrating and disintegrating anti-access bubbles are forward-engaged before large-scale kinetic exchanges occur.
- **Scalability**: Forward-deployed forces are critical to early theatre entry and shaping operations but cannot comprise assets so visible and expensive as to preclude early

deployment. To this end, forces must be subdivided into scalable packages capable of managing subcomponents of a campaign ranging from forward engagement and containment operations through to high-end warfighting. These forces need to fit into an overarching operational framework that delineates their roles and articulates the ways in which each subcomponent of the overall force facilitates the entry and operations of the next, larger force in the scalable model.

- **Operational initiative**: LSFs cannot wait until an anti-access bubble has been 'turned on' before attempting theatre entry. The ability to forward deploy assets that are sufficiently low-profile to loiter in theatre and carry out suppression operations to disrupt and disintegrate anti-access bubbles is critical, as is the ability to flip the A2AD equation on adversaries, to exploit gains.
- **Jointness**: Perhaps most crucial, it is of cardinal importance that rather than being seen as a niche capability, amphibious forces are integrated with a joint CONOPS. This implies clearly articulating the ways in which forward-deployed LSFs can facilitate the work of carrier strike units from within the wider Navy as well as naval operations more generally. Thinking of littoral units as a forward enabler, and subsequently a supporting force, as opposed to either an independent force or a supported one, will entail important shifts with regards to their operational imperatives within a wider campaign. Within the wider force, integrating littoral strike conceptually with comparable concepts such as concept for deployment of the Army's strike brigades will provide a joint mobile contact layer in a high-end fight and a force capable of agile intervention during out-of-area operations.[159]

While this paper has outlined a framework for an Expeditionary Strike Force and the contours of the FCF that it could deploy, this is by no means a blueprint. One particular avenue of research that the military might pursue on the basis of this paper is experimentation regarding the specific force structures that might fit within the conceptual rubric outlined here. Second, the inherently joint CONOPS outlined here which, by necessity, entails littoral strike units passing the baton to carrier strike and land forces raises important follow-on questions regarding how concepts such as carrier strike might be adapted to fit within this joint expeditionary framework. Finally, this paper has sought to focus on technology that is either already available or has passed proof of concept phase. There are, however, a number of disruptive technologies, particularly in the realm of directed energy, which might alter the trajectory of the force at the tactical and operational levels. As such, examining the ways in which the littoral strike model might be altered if and when specific disruptive technologies come into play might represent a final avenue for research for which the concept outlined here could represent a baseline against which models could be tested.

159. Jack Watling and Justin Bronk, 'Strike: From Concept to Force', *RUSI Occasional Papers* (June 2019).

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