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# A more lethal Royal Navy: Sharpening Britain's naval power

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*New geostrategic thinking for a more competitive age*

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## Foreword

This Report is the first to be released by the Council on Geostrategy's Strategic Advantage Cell. Kindly sponsored by Lockheed Martin, this Cell is the first of its kind in the United Kingdom (UK). It was established to explore how Britain can induce 'strategic advantage' – a concept first introduced in the Integrated Review of 2021 – in its foreign and defence policies. This new initiative is pursuing four strands of research: maritime power, hypersonic weapons, space power, and British allies and partners. These themes were chosen due to their topicality and their importance to the UK's global position in the middle years of the 21st century.

As an island state, Britain and its overseas territories are heavily dependent on open access to the sea and freedom of navigation. The sea is a superhighway to access the rest of the world, whether by ship or by critical maritime infrastructure in the form of fibre optic cables, power lines, or gas pipelines. To meet its environmental commitments and maximise the opportunities of Net Zero, the UK also generates a growing percentage of its electricity from offshore wind farms. Guarding these maritime interests is the Royal Navy, as the custodian of the British nuclear deterrent which acts as the ultimate guarantor of the nation.

But a number of hostile states and competitors have grown stronger at sea over the past decade, countries which have sought to subvert the international order. To meet this challenge, it is widely acknowledged that Britain needs a larger and even more capable fleet. This Report provides a number of ideas as to how a stronger navy could be realised. More than that, it identifies areas where His Majesty's (HM) Government and the Royal Navy can induce strategic advantage by taking specific measures to enhance the lethality and survivability of British submarines, warships and auxiliaries, thereby strengthening their ability to deliver strategic effect. We hope you find its conclusions and recommendations insightful and useful.

**James Rogers**

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## Executive summary

- The United Kingdom (UK) is a maritime nation by virtue of geography and history. Britain's links to the rest of the world across and below the sea are vital to national security and prosperity.
- The threats at sea are growing. Russia is undergoing a naval modernisation programme which will make the submarine threat in the Euro-Atlantic the most serious it has been since the end of the Cold War. The People's Republic of China (PRC) is undertaking a substantial naval expansion programme, building up its ability to project naval power both in and beyond the Indo-Pacific. And threats to shipping from other actors – as shown by Houthi actions in the Red Sea – are proliferating.
- His Majesty's (HM) Government should consider how to optimise the Royal Navy for the missions it will need to undertake. The Royal Navy should aim, in conjunction with allies and partners, to:
  - Lead efforts to enact sea control in the Euro-Atlantic to protect Britain's maritime lifelines and support the North Atlantic Treaty Organisation (NATO); and
  - Contribute towards sea denial in the Indo-Pacific to deter the PRC from using military power to assert dominance in the region – and beyond.
- Presently, the UK does not have enough naval capabilities to realise these objectives. To achieve them, the Royal Navy needs to be more lethal. To increase lethality, greater mass, survivability and integration are needed alongside improving the proficiency in and variety of available capabilities.
- Investment should ensure the maximum potential of Britain's aircraft carriers. This includes procuring additional F35B Lightning II combat aircraft, experimentation into how drones can augment the airwing, and improving the carriers' defences.



- The Royal Navy's fleet of escorts (destroyers and frigates) is relatively under-armed and there are too few vessels for the tasks at hand – let alone those of the future. HM Government should invest in improving their armament, while ending the practice of building new warships 'for but not with' key weapons systems. The programme for the Type 45 destroyers' replacement should be accelerated; it should result in a class of far larger warships capable of generating more electrical power and carrying more missiles – which also helps integrate 'spiral developments' (an approach designed to support iterative developments) and new systems in the future. And, crucially, the UK should seek to expand the planned number of escorts.
- The submarine service should be de-risked by accelerating the build time for the Dreadnought class and procuring an additional Dreadnought as a missile submarine (SSGN) to provide extra deep strike and mitigate the risk of potential delays to the SSN-AUKUS programme.
- A third batch of five Offshore Patrol Vessels (OPVs) should be procured to replace the retiring Batch I River class OPVs and the retiring mine countermeasures ships. This will ensure more expensive and capable systems are not tied down with constabulary work.
- Littoral strike capabilities should be bolstered with the prioritisation of the Multi-Role Support Ship process to ensure that the programme delivers a strong design which fully encapsulates all of the capabilities of the Albion and Bay classes with significant capability for employing uncrewed systems.
- Mine countermeasures capabilities should be shifted towards autonomous uncrewed vessels with investment in the Mine Hunting Capability programme.
- There are significant gaps in replenishment capabilities due to delays in the Fleet Solid Support Ship Programme, which should be addressed via options such as additional Tide class ships.



- Seabed capabilities ought to be augmented by committing to procuring additional Multi-Role Ocean Surveillance Ships with the ability to add in or improve technologies as they develop within the testbed of Royal Fleet Auxiliary (RFA) Proteus.
- The recommendations of this Report, if carried out in full, necessitates a shift in British strategy towards viewing seapower as a national endeavour. As the next strategic defence review looms, HM Government should consider emulating Australia's approach by prioritising naval investment and focusing on the maritime domain, where Britain has innate strengths.



## 1.0 Introduction

On 17th August 1588, Queen Elizabeth I rode to Tilbury to deliver a stirring speech to her army gathered to defend against a possible Spanish invasion. She promised her troops that if ‘any prince of Europe, should dare to invade the borders of my realm: to which rather than any dishonour shall grow by me, I myself will take up arms, I myself will be your general.’<sup>1</sup> To add emphasis to her willingness to fight the Spanish, Elizabeth is alleged to have delivered the speech in a full suit of battle armour.<sup>2</sup> In reality, talk of generals and armies was all for Elizabethan propaganda. Across the windswept waters of the English Channel the nation had already been saved by the brave actions of the early forebears of today’s Royal Navy – several days earlier the Spanish Armada had been soundly defeated by a combination of British seamanship, superior naval technology, and bad weather.<sup>3</sup>

Of course, today, the United Kingdom (UK), protected by its nuclear deterrent – maintained by the Royal Navy’s ballistic missile submarines – is no longer under threat of invasion. But, despite the march of technology, Britain remains a maritime nation. Its geographical status as an island country, including its overseas territories, means that the defence of the nation – as well as the security of critical maritime infrastructure and links to the rest of the world – depends on open access to the sea. The Royal Navy is known as the ‘senior service’ for a reason: since Elizabethan times, the fleet has sat at the heart of the British Armed Forces, enabling the fulfilment of missions both close to and far from home.

The Royal Navy’s central position in British defence means it must be optimised for the missions it is expected by His Majesty’s (HM) Government to undertake. Specific tasking shifts according to geopolitical dynamics and government priorities, but in general for many decades, if not centuries, the overall goal has been for the Royal Navy to ensure a secure and resilient UK by helping to stabilise the

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<sup>1</sup> Andrew Lambert, *Admirals: The Naval Commanders Who Made Britain Great* (London: Faber and Faber, 2009).

<sup>2</sup> ‘Queen Elizabeth I’s speech to the troops at Tilbury’, *Royal Museums Greenwich*, <https://www.rmg.co.uk/> (checked: 09/05/2024).

<sup>3</sup> Andrew Lambert, *Admirals: The Naval Commanders Who Made Britain Great* (London: Faber and Faber, 2009).

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strategic maritime environment.<sup>4</sup> Unfortunately, the intensification of geopolitical competition since the mid-2010s has made it harder for HM Government to secure these objectives (see: Box 1).

### **Box 1: Why Britain needs a larger navy**

Over the last 10 years the threat to the UK at sea has grown. The Council on Geostrategy's recent Primer – 'Why Britain needs a larger navy' – explained why the UK requires a larger fleet.<sup>5</sup> For the first time since the end of the Cold War, two countries appear to be generating the maritime forces with which to challenge Britain and its allies' command of the ocean:

**The People's Republic of China (PRC):** Over the last two decades, Beijing has made clear the growing importance of the maritime domain to its global ambitions. The People's Liberation Army Navy (PLAN) is now central to the PRC's 'quest for great power'.<sup>6</sup> The PRC has greatly increased its defence spending and much of this investment has been funnelled into the meteoric expansion of the PLAN. Compared to 2000, the PLAN today is almost 300% larger in terms of displacement and growing. Even more concerning is the emphasis of this expansion. The PLAN is focusing on power projection capabilities (such as large surface warships, including cruisers and aircraft carriers, and an expansion of the submarine force). It has also built a large flotilla of auxiliary vessels to support distant operations. The PRC has shown clear intentions to exercise sea control both within and beyond the 'first island chain' (particularly in the South and East China seas). As part of this push, Beijing has put real effort into expanding a network of overseas bases – even as far afield as West Africa.

**Russia:** During the 1970s and 1980s, the Kremlin resourced a sustained naval build up centred on large missile carrying surface warships and a significant number of attack submarines (both nuclear and conventional). This navy represented a serious challenge to the North Atlantic Treaty Organisation's (NATO) ability to command the North Atlantic and secure the maritime communication lines between Europe and North America. In the aftermath of the Soviet collapse, Russia seriously struggled to maintain its fleet and the

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<sup>4</sup> 'Joint Doctrine Publication 0-10: UK Maritime Power', Ministry of Defence (UK), 18/10/2017, <https://assets.publishing.service.gov.uk/> (checked: 09/05/2024).

<sup>5</sup> William Freer and James Rogers, 'Why Britain needs a larger navy', Council on Geostrategy, 05/12/2023, <https://www.geostrategy.org.uk/> (checked: 09/05/2024).

<sup>6</sup> Bernard D. Cole, *China's Quest for Great Power: Ships, Oil, and Foreign Policy* (Annapolis, Maryland: Naval Institute Press, 2016).



threat in the High North was much diminished. However, the last decade has seen a serious attempt by the Kremlin to regenerate its naval power to threaten once again the UK with powerful sea denial capabilities. In addition to a slew of new missile frigates, Russia plans to build 25 modern nuclear powered submarines in the form of the Yasen (nuclear attack) and Borei (ballistic missile) classes, with four and six, respectively, already in service.<sup>7</sup>

In March 2021 in the Integrated Review, HM Government acknowledged the growing threat to British interests from geopolitical competition, particularly in the maritime domain.<sup>8</sup> It also accepted that the Royal Navy needed to grow to meet the challenge of generating a broader maritime posture. Since then, given the growing threat from countries such as Russia and the PRC, a broad political consensus has emerged that defence spending must be increased to at least 2.5% of Gross Domestic Product (GDP).<sup>9</sup>

To meet this challenge, while the Royal Navy will need to expand, a number of measures can be taken to catalyse existing systems and capabilities. Together by expanding and sharpening the fleet, overall lethality will be enhanced; ultimately, a navy's ability to secure national objectives depends on its ability to destroy an adversary's assets. At the same time, lethality does not exist in a vacuum – a heavily armed warship or submarine at the bottom of the ocean is incapable of providing lethality. Survivability is the twin of lethality.

With this in mind, this Report aims to make ambitious but realistic recommendations, which would result in a larger, sharper, and more survivable navy. Of course, this would necessitate significant improvements to the recruitment and retention of personnel and supporting infrastructure, as well as significant investment. These factors, however, are beyond the scope of this study. Rather, this Report aims to provide a new vision of the Royal Navy which will help inform

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<sup>7</sup> Alex Pape (ed.), *Jane's Fighting Ships 2023-24* (London: Jane's Information Group, 2023).

<sup>8</sup> 'Global Britain in a Competitive Age: the Integrated Review of Security, Defence, Development and Foreign Policy', Cabinet Office (UK), 02/07/2021, <https://www.gov.uk/> (checked: 09/05/2024).

<sup>9</sup> The Council on Geostrategy is attempting to shape this debate by leading a cross-party defence pledge, calling for all parties to commit in their manifestos to annual defence spending of 2.5% of Gross Domestic Product (GDP), rising to 3% by 2030. See: 'Defence Investment Campaign', Council on Geostrategy, No date, <https://www.geostrategy.org.uk/> (checked: 09/05/2024).



the UK's next strategic defence review – and it is hoped that the necessary investment will be committed to make this a reality.

Accordingly, the next section – Section 2 – explains how Britain's maritime strategy should evolve to meet the growing threat from geopolitical competition. It will also introduce the concept of strategic advantage and explain how the concept dovetails with the Royal Navy's evolving posture. Section 3 then provides an overview of the current state of the Royal Navy, and provides a set of recommendations for how it can be made larger, sharper, and more durable.

## 2.0 Maritime strategy and strategic advantage

The Royal Navy's force design should be determined by a combination of threats to the nation, the nation's resources, and the nation's interests. According to the Integrated Review Refresh (IRR) of March 2023, the present context of a belligerent Russia and an increasingly confrontational PRC means that Britain needs a more sober but determined approach to international relations.<sup>10</sup> As per the IRR's 'strategic framework', HM Government seeks to deter opponents and shape the international order in pursuit of British interests.<sup>11</sup> Equally, the IRR notes that as the Indo-Pacific becomes more connected to the Euro-Atlantic, the UK will not have the luxury of choice between one theatre or the other. It concludes that Britain should embrace being in both theatres of operation – the Euro-Atlantic and the Indo-Pacific – albeit with two different, though complementary, postures.<sup>12</sup>

To extrapolate, given Britain's location, the Royal Navy's primary focus should be on the Euro-Atlantic, working with NATO allies to enact *sea control* (see: Map 1). Sea control is achieved when a navy is able to establish a persistent, or even permanent, maritime presence which deters rivals from confrontation.<sup>13</sup> Depending on the capability of the country in question, the objectives it wants to achieve, and the strength of its adversaries, sea control can be enacted locally, regionally, or even globally. Meanwhile, in the Indo-Pacific, the Royal Navy should contribute to *sea denial* – which necessitates capabilities to prevent a rival navy from operating with impunity (i.e., from establishing sea control). This can be achieved in multiple ways including by threatening sea-based assets from land, the use of naval mines, and deploying naval forces themselves (usually larger numbers of smaller vessels).

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<sup>10</sup> 'Integrated Review Refresh 2023: Responding to a more contested and volatile world', Cabinet Office (UK), 13/03/2023, <https://www.gov.uk/> (checked: 09/05/2024).

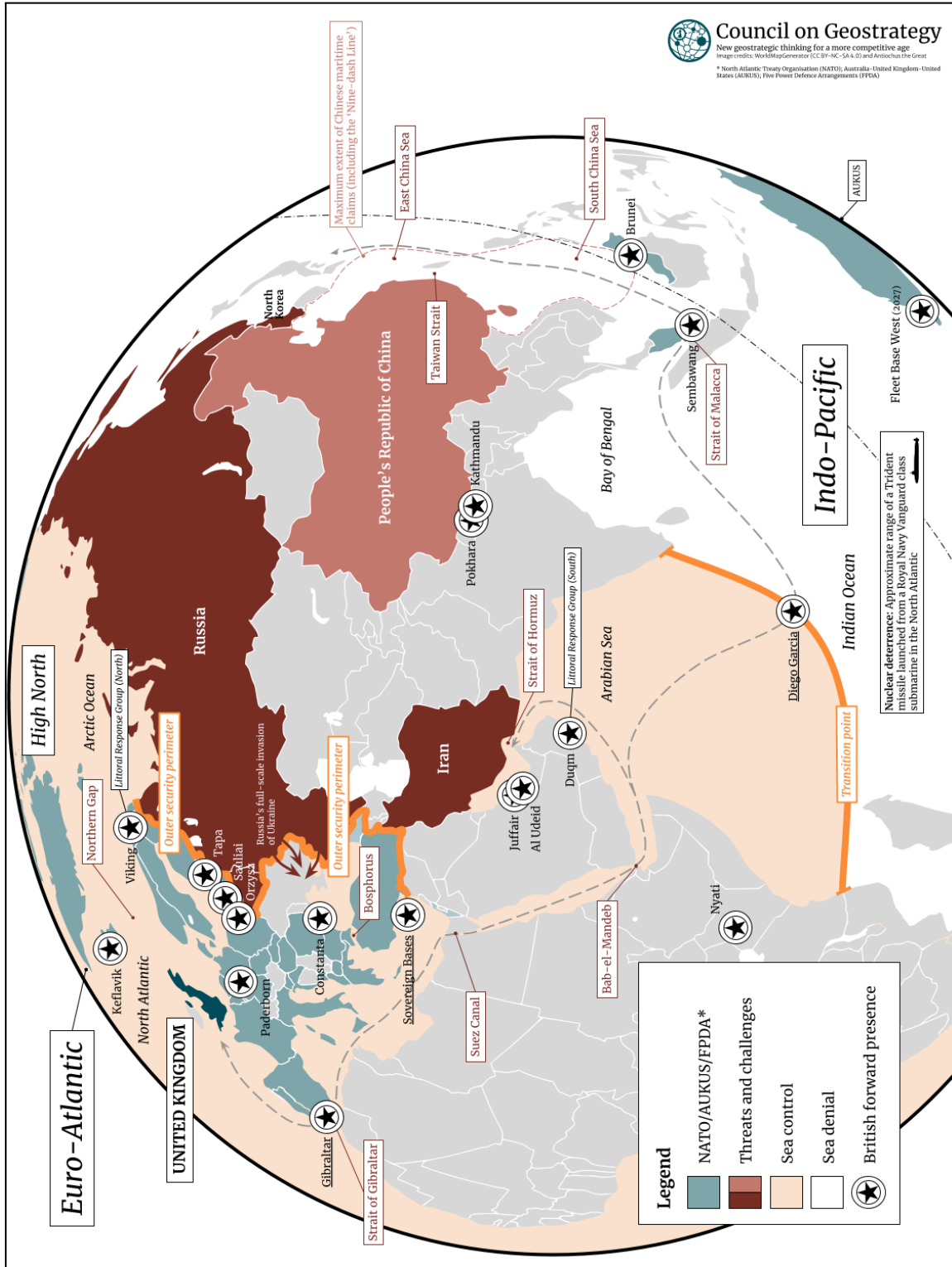
<sup>11</sup> *Ibid.*

<sup>12</sup> *Ibid.*

<sup>13</sup> 'Joint Doctrine Publication 0-10: UK Maritime Power', Ministry of Defence (UK), 18/10/2017, <https://assets.publishing.service.gov.uk/> (checked: 09/05/2024).



## Map 1: The United Kingdom: Sea control, and sea denial



Historically, Britain has been well versed at practising sea control and denial simultaneously. Since the reign of Elizabeth I, the Royal Navy, in conjunction with allies and partners, has been tasked with enacting sea control in the waters surrounding the British home islands, while modulating sea control and denial in more distant theatres, with this modulation being dictated by the geostrategic significance of the theatre and the strength of adversaries.<sup>14</sup> When the waters around the British Isles have been threatened by an adversary, the Royal Navy has been focused in North Atlantic waters. This has occurred many times throughout history, such as before the First World War, during the Second World War (until roughly mid-1944 when the German naval threat had been eliminated), and again in the 1970s and 1980s during the vast Soviet naval build-up.

Although the Royal Navy needs to support two regional postures, it does not necessarily need two separate fleets. Naval platforms are inherently flexible (due to the variety of systems they can host), and most of those operated by the Royal Navy can contribute to both postures to varying degrees (see: Table 1).<sup>15</sup>

**Table 1: How naval platforms contribute to sea control and/or denial**

<b>Platform</b>	<b>Sea Control</b>	<b>Sea Denial</b>
<b>Ballistic missile submarines (SSBN)</b>	Ballistic missile submarines are designed to contribute towards general nuclear deterrence, in particular by providing a survivable deterrent in the event of a first strike by an enemy.	
<b>Attack submarines (SSN)</b>	SSNs act as a screen for surface forces. They can operate in advance of surface ships, collecting intelligence and attacking adversarial naval forces which may seek to contest or deny control of the sea.	SSNs are very effective at sea denial. They are stealthy and can remain on station for prolonged periods. Unless an adversary has effective anti-submarine warfare (ASW) capabilities, the presumed presence of SSNs alone can persuade a

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<sup>14</sup> William Freer and James Rogers, 'Why Britain needs a larger navy', Council on Geostrategy, 05/12/2023, <https://www.geostrategy.org.uk/> (checked: 09/05/2024).

<sup>15</sup> *Ibid.*



		foe to remain in or return to port.
<b>Aircraft carriers</b>	Aircraft provide intelligence, signals and reconnaissance (ISR), strike, and defensive capabilities. For sea control, the air wing's ability to find and destroy naval threats is vital, as is the ability of the aircraft to conduct combat air patrols to detect and intercept incoming threats. This is especially true when operating far from friendly air stations.	Air power can be an effective means to achieve sea denial. The ability of modern aircraft to detect and destroy surface naval ships can prevent a foe from gaining sea control within a certain distance of air bases. However, air stations cannot be everywhere and often cannot be used without overfly rights with other nations. A carrier air wing, operating from a safe distance, can support sea denial efforts.
<b>Destroyers</b>	Destroyers provide air/missile defence and surface strike capabilities, both of which are vital to sea control. These warships protect friendly naval forces from attack, and (if equipped with the missiles to do so) provide a platform to strike land and maritime targets. Destroyers also tend to be larger vessels which gives them greater ability to operate at range and secure sea control far from home ports.	Destroyers can contribute to, but are less effective at, sea denial. Potentially a destroyer can carry a large number of missiles with which to attack other naval combatants attempting to enact sea control. However, if operating against a superior foe, a small number of destroyers could be vulnerable and overwhelmed if operating beyond the range of friendly air/missile cover.
<b>Frigates</b>	Modern frigates tend to focus on ASW, although they can have some air defence and surface strike capability. In hunting and destroying submarines, frigates make a	Frigates can make an effective contribution to sea denial. They are a cost effective way of providing surface-to-surface strike. A large fleet of dispersed





	big contribution to sea control. In addition, frigates can be effective at sea control by providing more mass (as sea control is reliant on presence).	frigates can prove taxing to track and engage. If equipped with surface-to-surface strike missiles they can provide a stand-off threat to superior naval forces.
<b>Offshore Patrol Vessels (OPVs)</b>	OPVs are not fighting ships and make little contribution to either sea control or denial. They are very lightly armed and designed for constabulary work, but they can free up more capable warships for other duties.	
<b>Littoral strike ships</b>	Littoral strike ships contribute to amphibious projection rather than explicitly to sea control or denial.	
<b>Mine countermeasures</b>	Mine countermeasures capabilities allow fleets to counter the sea control and sea denial attempts of adversaries through the detection and removal of mines.	
<b>Auxiliaries</b>	The auxiliary fleet contributes to the sea control and denial missions of the wider fleet through replenishment and support capabilities. By enabling a fleet to operate at range and stay on station for prolonged periods far from home ports, auxiliaries are central to sea control.	

While warships are flexible and can switch from sea control to denial with relative ease, the problem is that Britain’s rivals are regenerating or modernising their own fleets. HM Government designs the tasks it wants the Royal Navy to achieve and works out that it needs roughly three to four ships for each task a ship is required for (as some will be in refit, or preparation for deployment). The current posture was largely designed over a decade ago, when geopolitical competition was less severe. What required only a single ship or two in 2010 or 2015 will require potentially several by the 2030s or 2040s. And the UK does not have enough.

## 2.1 Strategic advantage

It is at this point that ‘strategic advantage’ becomes important. In addition to strengthening and broadening Britain’s maritime posture,



the 2021 Integrated Review also identified the possibility of cultivating strategic advantage.<sup>16</sup> Although the term was not explicitly defined, this was later resolved by the IRR where HM Government described strategic advantage as ‘the UK’s relative ability to achieve our objectives compared to our competitors’, by ‘cultivating the UK’s strengths’.<sup>17</sup> To develop this idea further, the Council on Geostrategy established a ‘Strategic Advantage Cell’. The launch paper for this cell – entitled ‘What is strategic advantage?’ – took the IRR’s definition as a starting point and developed the concept further as:

*The ability to induce catalysts to help secure, more efficiently and effectively, national objectives. It is derived from catalysing the resources and instruments at the country’s disposal, in other words, its national strengths, to generate a strategic effect which is more potent than if the catalysts had not been devised.<sup>18</sup>*

In addition to this, a typology was designed to determine the particular catalysts which provide strategic advantage, including:

- **Amplifiers**, which increase strategic effect;
- **Multipliers**, which broaden strategic impact;
- **Accelerators**, which speed up strategic success;
- **Extenders**, which further strategic reach.

These are not mutually exclusive – in fact, catalysts are most effective when they reinforce one another to generate systemic advantage. Our analysis of the ways in which Britain’s naval power can be ‘catalysed’ will be conducted through the lens of this definition and typology. While catalysing existing capabilities will not be sufficient in its own right to meet the growing threats at sea, it compounds efforts to enlarge the fleet, as well as make it more lethal and durable.

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<sup>16</sup> ‘Global Britain in a Competitive Age: the Integrated Review of Security, Defence, Development and Foreign Policy’, Cabinet Office (UK), 02/07/2021, <https://www.gov.uk/> (checked: 09/05/2024).

<sup>17</sup> ‘Integrated Review Refresh 2023: Responding to a more contested and volatile world’, Cabinet Office (UK), 13/03/2023, <https://www.gov.uk/> (checked: 09/05/2024).

<sup>18</sup> Gabriel Elefteriu, William Freer and James Rogers, ‘What is strategic advantage?’, Council on Geostrategy, 23/11/2023, <https://www.geostrategy.org.uk/> (checked: 09/05/2024).

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## 3.0 Preparing the Royal Navy for a more contested era

As per the Maritime Operating Concept, the Royal Navy is now in the process of moving away from a ‘platform-centric’ to a ‘system-of-systems’ approach where ‘the ability to deliver effect as a system drives capability’.<sup>19</sup> This new perspective will help generate a more integrated and technologically empowered navy for the increasingly contested 21st century. However, platforms will remain the building blocks of this new systemic approach; for this reason, a platform-by-platform approach has been taken in this section.

### 3.1 *The Submarine Service*

#### 3.1.1 Ballistic missile submarines

The UK’s continuous at-sea nuclear deterrent (CASD), established in 1969, provides HM Government with the means to devastate any conceivable opponent should Britain face an extreme threat. In the words of the ‘Defence Nuclear Enterprise Command Paper’ from April 2024:

Potential aggressors know that the costs of attacking the UK, or our NATO allies, would far outweigh any benefit they could hope to achieve. This deters states from using their nuclear weapons against us or carrying out the most extreme threats to our national security.<sup>20</sup>

This critical capability underscores Britain’s position as a great power, and acts as a **multiplier** for British influence within NATO and many other forms of international organisation.

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<sup>19</sup> ‘Maritime Operating Concept: The Maritime Force Contribution to the Integrated Operating Model’, The Royal Navy, 29/06/2022, <https://assets.publishing.service.gov.uk/> (checked: 09/05/2024).

<sup>20</sup> ‘Defence Nuclear Enterprise Command Paper: Delivering the UK’s Nuclear Deterrent as a National Endeavour’, Ministry of Defence (UK), 17/04/2024, <https://www.gov.uk/> (checked: 09/05/2024).

CASD is currently maintained by four Vanguard class nuclear-powered ballistic missile submarines (SSBNs) equipped with Trident II missiles. These boats will be replaced from the early 2030s by four Dreadnought class SSBNs, which feature more advanced technology and stealth capabilities, coupled with longer endurance. Given the length of patrols which the Vanguard class SSBNs have had to undertake – with the average amount of time at sea almost doubling over the last three years – the transition to the Dreadnought class is vital to ensure the continuity and future of the deterrent. The first in class cannot come soon enough.<sup>21</sup>

#### Recommendations:

- Investment in the Dreadnought class construction programme, including with a view to expand facilities to **accelerate** build times, to ensure the future of the United Kingdom’s CASD. To underpin this, HM Government should develop a Nuclear Industrial Strategy.
- Equip the Dreadnought class with a full complement of Trident II or successor missiles and warheads to **amplify** British strategic power. In recognition of the growing importance of nuclear deterrence, HM Government should consider recognising missile and warhead suppliers as strategic suppliers.

### 3.2.1 Attack submarines

Nuclear attack submarines (SSNs) are designed for ASW and anti-surface warfare, as well as carrying cruise missiles to attack targets on land. Modern SSNs are stealthy – they run quietly and can spend a considerable amount of time submerged without the need to surface. Regular submarine patrols contribute considerably to deterrence, as an adversary fleet cannot be sure of its ability to operate unchallenged within a patrolled area. This was demonstrated effectively by the return to port of the entire Argentine fleet in 1982 following the sinking of the light cruiser General Belgrano by HMS Conqueror – an SSN – during the Falklands War. SSNs offer substantial capability in combat, given their ability to target enemy assets below

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<sup>21</sup> George Allison, ‘Vanguard submarine returns from long patrol’, *UK Defence Journal*, 21/09/2023, <https://ukdefencejournal.org.uk/> (checked: 09/05/2024).

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the surface, on the surface, and on land – and their stealthiness permits them to use surprise to gain an initial advantage. Both Russia and the PRC have large submarine fleets, and the PLAN has made submarines a central focus of its ongoing military expansion and modernisation programme.

The Royal Navy's SSN fleet currently consists of five Astute class boats, with two more to come, and one Trafalgar class boat which has been upgraded to extend its service life through to 2025.<sup>22</sup> Both classes are equipped with Tomahawk Block IV land-attack cruise missiles and Spearfish heavy torpedoes for naval warfare. The Tomahawks will be upgraded to the Block V version over the next couple of years to **extend** their striking range and provide more dynamic targeting capabilities.

The Astute class will be replaced with a new class of SSN by the late 2030s as part of the AUKUS programme, in concert with Australia and the United States (US). There has not yet been an announcement of how many SSN-AUKUS boats the Royal Navy will procure, with various numbers between seven (a like-for-like replacement of the Astute class) and 12 having been suggested.<sup>23</sup> The first Astute class SSN was commissioned in 2010 and the AUKUS class is predicted to enter service in the late 2030s. Care should be taken to ensure that there is no capability gap between the retirement of the Astute class and the entry into service of the AUKUS class.

### Recommendations:

- Procure at least one additional Dreadnought class boat to insure against delays in the design phase of the AUKUS programme. This fifth vessel can be operated as a conventionally armed nuclear powered attack submarine (SSGN) designed to carry a large payload of strike missiles. This would both **amplify** Britain's conventionally armed submarine force (and act as cover to the SSBN fleet should one of those boats face issues) and keep the submarine industry's workforce active, abating the risk of delays to the AUKUS programme from the need to rebuild the workforce – as happened during the gap between the commissioning of the Vanguard class and Astute class.

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<sup>22</sup> Richard Scott, 'UK to extend two Trafalgar-class submarines in service', *Janes*, 26/03/2021, <https://www.janes.com/> (checked: 09/05/2024).

<sup>23</sup> Aubrey Allegretti, 'Size of UK's nuclear submarine fleet could double under Aukus plans', *The Guardian*, 13/03/2023, <https://www.theguardian.com/> (checked: 09/05/2024).



- Order 12 SSN-AUKUS boats and ensure their design has significant land-attack and anti-ship missile capability, including vertical launching systems (VLS). This will **multiply** the opportunities for interoperability and interchangeability with AUKUS partners and **extend** automation to reduce crew size. The SSN's combination of stealth and surface-to-surface missiles is a potent combination and adding VLS will further **amplify** the firepower of British submarines, enabling them to launch a greater number of strikes. VLS would also open the opportunity for SSN-AUKUS to be a launch platform for future Hypersonic Cruise Missiles (HCMs).

## 3.2 The Surface Fleet

### 3.2.1 Aircraft carriers

Since usurping the battleship's premier position in naval warfare during the Second World War, the aircraft carrier has been the ultimate symbol of maritime projection. But due to their growing vulnerability (from threats as varied as long-range ballistic missiles and swarms of short-range drones) the future of the carrier has come into question.<sup>24</sup> There are those who argue the Royal Navy should abandon carrier operations to free up resources, but this would be a profound mistake.<sup>25</sup> Although carriers are more vulnerable to emerging technologies, they remain well protected by their escorts – usually two to four destroyers and frigates, a supply ship, and a SSN – with which they intersect and empower forming a Carrier Strike Group (CSG). Another crucial advantage is mobility. Air stations are even more vulnerable to long-range weapons as they are static and are relatively straightforward to target. But unlike an air station, an aircraft carrier must be both detected and adequately tracked in order for it to be targeted, let alone hit.

The utility and flexibility of the carrier still outweighs its increased vulnerability. Key capabilities include the space and electrical generation for command and control (C2) and electronic warfare (EW) facilities; the striking power of the airwing; the air cover which can be

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<sup>24</sup> 'Aircraft-carriers are big, expensive, vulnerable – and popular', *The Economist*, 14/11/2019, <https://www.economist.com/> (checked: 09/05/2024).

<sup>25</sup> Peter Suci, 'Royal Navy's Ultimate Nightmare: Selling An Aircraft Carrier', *The National Interest*, 29/02/2024, <https://nationalinterest.org/> (checked: 09/05/2024).

provided to other ships no matter how far from friendly air stations; and an array of intelligence, signals and reconnaissance (ISR) assets. Further to direct military capabilities, aircraft carriers act as **multipliers** to influence allies and partners. Few countries possess such platforms, allowing Britain to wield significant convening and aligning power (as the many carrier deployments have shown already), adding to the nation's capacity to shape the international order in accordance with its interests.<sup>26</sup>

Given that the two Queen Elizabeth class carriers may be in service for in excess of 50 years, HM Government should invest in the platforms to **amplify** and **extend** their impact.

#### Recommendations:

- **Amplify** the power of the airwing by procuring sufficient numbers of F35B Lightning II combat aircraft. Capable in both air superiority and strike missions, each F35B can deliver 22,000 pounds of payload.<sup>27</sup> 74 have so far been ordered of a planned 138.<sup>28</sup> Each carrier is designed to carry three squadrons of 12 aircraft for a total of 36, but there is surge capacity for up to 72 airframes, although not all of these will be F35Bs.<sup>29</sup> HM Government should procure a full complement of these potent aircraft, which means at least six squadrons and a training squadron (plus spares) for a total of at least 90. This would enable both carriers to deploy with a standard airwing if needed. However, the F35B is a shared resource with the Royal Air Force (RAF), which has its own needs. To ensure the needs of both services are met, HM Government should remain committed to the 138 originally planned.
- **Accelerate** the current approach to integrating drones, which will augment the capabilities of the F35B Lightning II, not replace them. In order of priority, the focus should be on: replacing the

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<sup>26</sup> 'Carrier Strike Group success as task group completes UK phase of NATO exercise', Royal Navy, 12/04/2024, <https://www.royalnavy.mod.uk/> (checked: 09/05/2024).

<sup>27</sup> 'HMS Prince of Wales' fully-laden F-35 paves way for future carrier strike ops', Royal Navy, 20/10/2023, <https://www.royalnavy.mod.uk/> (checked: 09/05/2024).

<sup>28</sup> 'Aviation Procurement: Winging it?', House of Commons Defence Committee, 05/09/2023, <https://committees.parliament.uk/> (checked: 09/05/2024).

<sup>29</sup> 'Equipment/Ships: Queen Elizabeth Class', Royal Navy, No date, <https://www.royalnavy.mod.uk/> (checked: 09/05/2024).

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Merlin-carried Crowsnest Airborne Early Warning (AEW) with a drone which can carry a larger radar for longer and at a higher altitude to **extend** AEW coverage (both spatially and in length of time on station); introduce a fleet of long-range, long-endurance ISR drones; and explore the possibility of a drone with in-flight refuelling capability (to **extend** the range and endurance of the F35B). A review should be conducted to determine the effectiveness of operating a large fleet of smaller drones (which would also be operable on other platforms) compared to a smaller fleet of larger drones. AEW and refuelling would likely require larger drones, possibly requiring arrestor wires added to the flight deck for recovery and potentially a short drone catapult for launch.

- **Amplify** shipborne defences. The carriers currently possess three 20 millimetre Phalanx Close-In Weapons Systems (CIWS) capable of autonomous search, detect, evaluation, track, and engage functions to 1.5 kilometres.<sup>30</sup> In comparison, France's smaller Charles de Gaulle aircraft carrier is defended by 32 missile cells and three 20 millimetre autocannons. The larger American Ford class carriers are defended by three Phalanx, 16 cells for medium-range missiles and 42 for short-range missiles.<sup>31</sup> To avoid the risk of debris on the flight deck from missile efflux, VLS should not be used – instead launchers should be placed on the platforms below the deck. Each carrier should be fitted with at least two SeaRAM launchers (autonomous systems similar to Phalanx which can be bolted to any suitable surface). This would provide an additional 22 cells for short range (up to 10 kilometres) and relatively cheap missiles perfect for dealing with any threats which penetrate the CSG's outer defences (known as 'leakers').<sup>32</sup> This would **amplify** the number of short range missiles available to a CSG to deal with leakers.

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<sup>30</sup> 'MK 15 – Phalanx Close-In Weapon System (CIWS)', America's Navy, 20/09/2021, <https://www.navy.mil/> (checked: 09/05/2024).

<sup>31</sup> Alex Pape (ed.), *Jane's Fighting Ships 2023-24* (London: Jane's Information Group, 2023).

<sup>32</sup> 'SeaRAM Close-In Weapon System (CIWS) Anti-Ship Missile Defense System', America's Navy, 20/09/2021, <https://www.navy.mil/> (checked: 09/05/2024).

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## 3.2.2 Escorts

Escorts include destroyers and frigates. As the Cold War entered the missile age, their function in naval warfare began to crystallise, with destroyers supplying air defence and frigates providing ASW. However, to an extent both have become general-purpose warships designed to host an array of systems – many modern frigates possess capable air defences and many destroyers can conduct a degree of ASW.

The Royal Navy has sought strategic advantage through maximising time at sea for the escort fleet over the last decade, but this is a short-term solution and creates a serious long-term problem in fatiguing both the ships and their crews. The only answer would be to either cut commitments – impossible given Britain’s global interests and the worsening geopolitical outlook – or to increase the number of available escorts.

Alongside the need for more hulls, the Royal Navy’s escorts are relatively under-armed, particularly when it comes to offensive firepower. This was due to a combination of limited maritime threats from peer competitors, cashing in on the post-Cold War ‘peace dividend’ (when the Type 45 class of destroyers were designed), and the remodelling of the armed forces for counter-insurgency warfare in Afghanistan and Iraq. Compared to similar warships, especially those of the newest Chinese and Russian designs, the Royal Navy’s destroyers and frigates carry fewer missiles (see: Figure 1).<sup>33</sup> In addition to greater missile-launch capacity, the Royal Navy will also need to overcome the improving EW and air and missile defences of adversaries – this will require longer-range weapons capable of operating in a denied environment and with more autonomy.

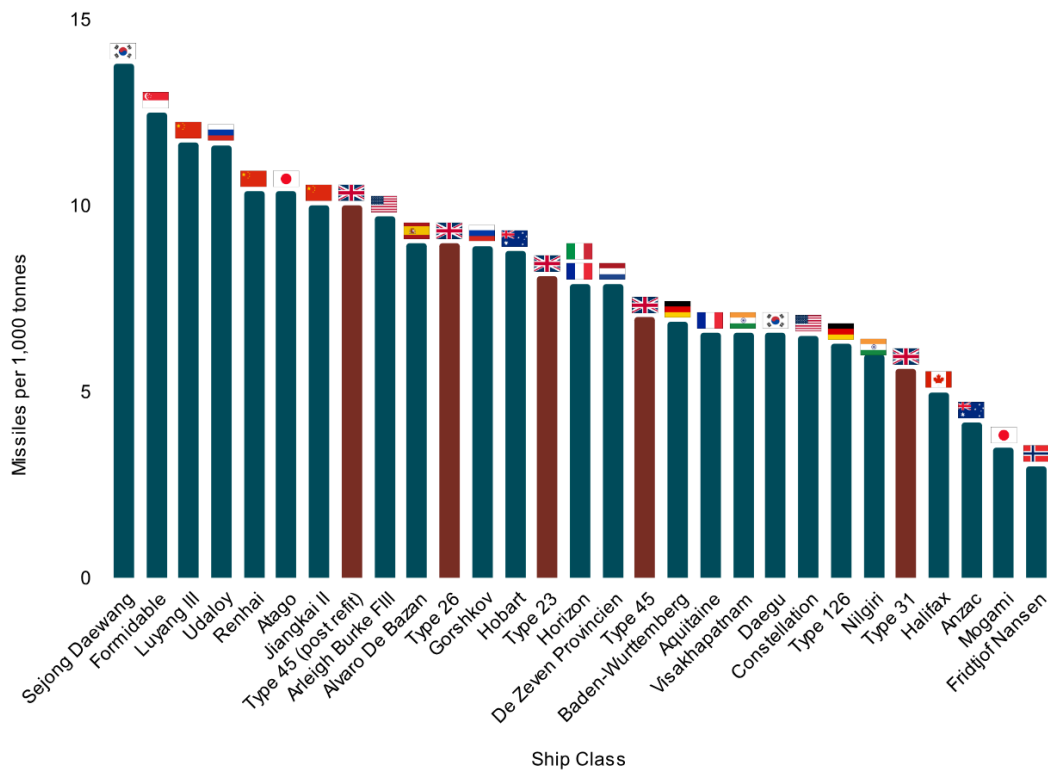
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<sup>33</sup> For this data, ‘missiles’ includes all missile cells whether VLS, horizontal launchers or canisters for surface to surface missiles.

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Figure 1: Missile cells/launchers per 1,000 tonnes of select current and future destroyers and frigates<sup>34</sup>



### Recommendations:

- Amplify** short-range, low-cost missile capacity for Royal Navy escorts. All escorts are equipped with one or more 30 millimetre automated guns. This weapon has an effective range of two kilometres and is suited to engaging slow moving aerial and surface threats – perfect for dealing with the proliferation of drones.<sup>35</sup> But the limited range makes it easier for drone swarms to overwhelm defences. The solution lies in weapons such as the Martlet missile – it has a range of eight kilometres and is a less expensive (around £65,000 per missile) way to deal with small

<sup>34</sup> Missiles per 1,000 tonnes is a crude but illustrative method for showing the relative lack of firepower on British warships. What is in the missile cells and how effective the kill chain is are crucial components of modern naval firepower, but far harder to represent.

<sup>35</sup> 'Equipment/Ships: River Class: Rapid Fire Retaliation', The Royal Navy, No date, <https://www.royalnavy.mod.uk/> (checked: 09/05/2024).



manoeuvring targets.<sup>36</sup> The Wildcat helicopter, which all Royal Navy escorts are capable of hosting, can carry up to 20 Martlets. This allows the missile's range to be **extended**, yet there may be times when the helicopter must land to reload, is unable to fly, or is not onboard (often the Merlin helicopter is carried instead). To **amplify** short-range missile capacity – and **extend** the range at which small targets can be engaged should the ship's Wildcat be unavailable – the Royal Navy should install lightweight missile launching capability to all escorts. A five-cell launcher attached to the 30 millimetre guns was trialled, but due to missile efflux was abandoned.<sup>37</sup> The Royal Navy should invest in redesigning a 30 millimetre and lightweight missile launcher combination which resolves the efflux problem.

### 3.2.2.1 Destroyers

The Royal Navy's six Type 45 class destroyers are some of the most advanced in the world. But for the sake of saving costs, their combat capability was crippled by building them 'for but not with' additional weapons (the number of vessels planned was also reduced from 12 to 8, and then to six).<sup>38</sup> Thankfully, in light of the growing threats, HM Government has decided to fund improvements. The headline changes will be the addition of a further 24 cells for Sea Ceptor missiles (taking total cells to 72), the replacement of eight Harpoon surface-to-surface missiles with eight of the more modern Naval Strike Missiles, and improved Ballistic Missile Defence (BMD) capabilities.<sup>39</sup> These decisions should be lauded insofar as they **amplify** the destroyers' offensive and defensive firepower.

The Type 45 class will be replaced by the Type 83 class destroyer (part of the Future Air Dominance system), which is still in its concept phase. Given the retirement of HMS Daring – the first Type 45 class

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<sup>36</sup> A contract worth £48 million for 1,000 missiles was signed in 2014, accounting for inflation this would give a rough unit cost of £65,000. See: 'The Martlet missile – the Wildcat helicopter gets its claws', *Navy Lookout*, 15/06/2020, <https://www.navylookout.com/> (checked: 09/05/2024).

<sup>37</sup> Tom Sables, 'Royal Navy Tests New Anti-Ship Missile', *Forces Network*, 17/07/2019, <https://www.forces.net/> (checked: 09/05/2024).

<sup>38</sup> 'We're Going to Need a Bigger Navy: Third Report of Session 2021-22', House of Commons Defence Committee, 14/12/2021, <https://committees.parliament.uk/> (checked: 09/05/2024).

<sup>39</sup> '£500m firepower upgrade for Type 45 destroyers', Ministry of Defence (UK), 06/07/2021, <https://www.gov.uk/government/> (checked: 09/05/2024).



destroyer – will come well before 2040, the procurement process for the Type 83 should begin in earnest. The Type 45 class took over 10 years to enter service from signing the contract with the supplier.<sup>40</sup>

Two factors will be key for future destroyers: space, primarily for large numbers of VLS; and power generation, as all the systems on board demand a great deal of energy. This demand for power will only grow over time – particularly due to the introduction of Directed Energy Weapons (DEW) (see: Box 2). Ample space and power generation also leaves room for spiral developments and other systems to be more easily integrated, which would put the Type 83 class destroyers in a strong position for adaptation into the role of a command ship to direct a fleet of dispersed arsenal ships when (or if) the concept develops further (see: Section 3.2.3). The Type 83 class destroyer should be designed to have plenty of both, which will require a larger displacement than the Type 45 (at approximately 8,000 tonnes), although there will be limits on what displacement the current infrastructure can support.<sup>41</sup> There should also be a focus on improving striking power. This is something which Royal Navy warships have lacked for some time, relying instead on submarines and carrier aviation to provide lethality at and from the sea. This was highlighted by HMS Diamond’s inability to participate in strikes against Houthi targets in January 2024 – instead RAF Typhoon aircraft had to make a lengthy round-trip from RAF Akrotiri on Cyprus.<sup>42</sup>

## **Box 2: Direct Energy Weapons**

DEWs do as they say: they direct highly focused energy towards a target, and can come in various forms, including high-energy lasers (HEL), high-powered radiofrequency (HPRF), or microwave (HPM) systems.<sup>43</sup> Different types of DEWs will have different effects such as dazzling, disrupting, or destroying targets.

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<sup>40</sup> It will also potentially cost billions of pounds to extend the service life of the Type 45 if the Type 83 is delayed.

<sup>41</sup> Alex Pape (ed.), *Jane’s Fighting Ships 2023-24* (London: Jane’s Information Group, 2023).

<sup>42</sup> ‘Statement on Air Strikes against Houthi military targets in Yemen: 3 February 2024’, Ministry of Defence (UK), 03/02/2024, <https://www.gov.uk/government/> (checked: 09/05/2024).

<sup>43</sup> James Black, ‘Directed Energy: The Focus on Laser Weapons Intensifies’, RAND, 25/02/2024, <https://www.rand.org/> (checked: 09/05/2024).



In the realm of naval warfare they represent an extremely cost-effective solution to drone swarms. The UK is already a leader in the development of DEW – testing the ‘DragonFire’ laser in March 2024, able to destroy airborne drones with pinpoint accuracy. Each shot of the weapon costs only £10.<sup>44</sup> However, there are some drawbacks: DEWs demand a great deal of excess power to operate, are limited to line-of-sight engagement, require that great care be taken for what is behind the target (including satellites in low-Earth orbit, which requires warships to have increased space domain awareness), and can be degraded by weather and atmospheric conditions.

## Recommendations:

- Undertake a review into the Type 45 class destroyer’s upgrade programme to ascertain whether it is possible for any of the warships to receive Mk41 VLS in place of the Sea Ceptor cells. There is room for 16 Mk41 cells on the Type 45 class. This would **amplify** armament and allow for a greater number, and wider variety, of missiles to be carried because Mk41 can ‘quad-pack’ short-range missiles and can carry longer surface-to-surface missiles (such as Tomahawk). Six of the 16 Mk41s could be quad-packed to replicate the defensive firepower of 24 Sea Ceptor cells, allowing for 10 cells to be dedicated to surface-to-surface missiles.
- **Accelerate** the Type 83 programme. The requirements should be drawn up as soon as possible to ensure the warships can enter service before HMS Daring retires. Contract award for Type 83 class destroyer cannot come soon enough to ensure a smooth transition. Requirements should be centred along the following lines:
  - **Amplified** offensive and defensive capabilities: The aim should be for 100+ VLS cells (requiring a larger displacement). These cells should provide a powerful mix of a small number of quad-packed short-range air defence

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<sup>44</sup> ‘Advanced future military laser achieves UK first’, Ministry of Defence (UK), 21/03/2024, <https://www.gov.uk/> (checked: 09/05/2024).

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missiles, a large number of long-range air defence missiles and a large number of strike missiles. There will have to be a decision as to what mix of VLS should be used – US and/or European (Mk41 and its successor or Sylver and its successor). In addition a small number of Growth-VLS should be considered for the design – these larger cells, in development for the US DDG-X class destroyer, will be capable of launching Hypersonic Glide Vehicles (HGVs), **extending** striking range, and potentially quad-packed supersonic/subsonic strike missiles to further **amplify** the ship's firepower.<sup>45</sup> The Type 83 class destroyer should not have a large-calibre gun: these weapons have utility but more space for VLS would provide greater advantage, particularly as DEWs come into service. Should the need for naval gunfire support materialise, the fleet's frigates can be called upon. However, small/medium-calibre guns (in the 20 millimetre–57 millimetre bracket) to deal with threats over the horizon and provide an additional layer to point defence should remain under consideration. Radar and combat management systems, including potentially a common combat management system interoperable with key allies, designed to deal with a wide array of increasingly sophisticated threats (such as hypersonic weapons), will also be needed to deliver effect.

- Built to host novel systems: DEWs as part of layered defences can significantly **amplify** survivability and reduce the cost of engagement. Ensuring sufficient power generation will be vital, particularly as systems will only become more power-hungry over time. The Type 83 class destroyers should be designed with abundant excess power to facilitate developments. Despite the Type 45 class' initial power problems, they now have – through the Direct Drive Integrated Full Electric Propulsion (IFEP) system – one of the world's leading propulsion systems which generates a great deal of power relative to the size of the vessel.<sup>46</sup> To

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<sup>45</sup> Aaron-Matthew Lariosa, 'Lockheed Martin Developing New, Larger VLS For DDG(X)', *Naval News*, 14/04/2023, <https://www.navalnews.com/> (checked: 09/05/2024).

<sup>46</sup> 'Type 45 Destroyer - Daring Class World's First Full Electric Propulsion Combatant Ship', GE Vernova, 18/01/2022, <https://www.governova.com/> (checked: 09/05/2024).

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support the creation of a next generation of IFEP system for the Type 83 class, the UK should **multiply** the effort by seeking joint development with the US. The US Navy's Arleigh Burke class destroyers are nearing the limits of their power generation capacity and the US will need an improved system for the DDG-X class. The US Navy's Zumwalt class, like the Type 45 class, also has an IFEP system and the two allies should collaborate on the next generation IFEP system.<sup>47</sup>

- Procure eight Type 83 class destroyers as part of an overall goal of returning the escort fleet to a 32 hull force. This represents a like-for-like replacement of Type 45, plus two.

### 3.2.2.2 *Frigates*

The Royal Navy's frigate force has been reduced to a precariously low level, but is expected to see a modest resurgence by the early 2030s. The Type 23 class frigate has been the workhorse of the Royal Navy for three decades. While one of the best general-purpose frigate designs of their time, they are ageing – and have been heavily overworked.<sup>48</sup> Current plans will see a mixed frigate fleet of high-end and lower-end warships. This will include: eight cutting-edge dedicated ASW Type 26 class; five less capable but still potent Type 31 class; and possibly five Type 32 class (the design for Type 32 is not yet clear, but will most likely be a more autonomous version of the Type 31).<sup>49</sup> This will provide a total frigate force of 18.

These warships would provide the Royal Navy with a cost-effective balance between hull numbers, lethality, and survivability. The Type 26 class will carry 48 VLS cells for Sea Ceptor and 24 cells of Mk41, for a total of 72 cells.<sup>50</sup> The original plan for the Type 31 class had been for it to carry only eight cells for Sea Ceptor – fortunately, this decision was changed and the class is now set to carry

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<sup>47</sup> 'GE Powers US Navy's 1st Full-Electric Power and Propulsion Ship', GE Vernova, 11/06/2022, <https://www.ge.com/> (checked: 09/05/2024).

<sup>48</sup> 'We're Going to Need a Bigger Navy: Third Report of Session 2021-22', House of Commons Defence Committee, 14/12/2021, <https://committees.parliament.uk/> (checked: 09/05/2024).

<sup>49</sup> Tom Dunlop, 'Babcock plans next-gen frigates with crews as small as 50', *UK Defence Journal*, 14/02/2024, <https://ukdefencejournal.org.uk/> (checked: 09/05/2024).

<sup>50</sup> Alex Pape (ed.), *Jane's Fighting Ships 2023-24* (London: Jane's Information Group, 2023).





32 Mk41 cells, a significant uplift in capability.<sup>51</sup> The Type 32 class design is yet to be announced, but it has been described as a ‘Type 31 Batch 2’ so may also come equipped with 32 Mk41 cells. The Royal Navy’s approach to rebuilding the frigate force is to be commended, and by the mid-2030s will see a larger and more capable fleet. But there is still a need for further hulls and increased lethality to ensure the Royal Navy can effectively enact sea control in the Euro-Atlantic and contribute to sea denial in the Indo-Pacific.

### Recommendations:

- Procure an additional two Type 26 class frigates, taking the total order to 10 vessels. Russia and the PRC are both placing heavy emphasis on their submarine fleets and ASW frigates will be in higher demand in the coming years.
- Integrate the Anti-Submarine Rocket (ASROC) system with the Type 26 class. ASROC is Mk41 VLS compatible and will **amplify** the Type 26 class’ already potent ASW capabilities. The Type 26 class currently will rely on their Merlin helicopters to launch torpedoes at detected submarines – ASROC would **amplify** ASW capability by ensuring the Type 26 can fire at submarines (at ranges of around 10 miles) if its helicopter is rendered inoperable.<sup>52</sup> As part of this integration, the possibility of using the UK-built Stingray light torpedo with ASROC should be explored. If this is not possible, more American Mk54 lightweight torpedoes will need to be procured (Britain has already purchased a number for its P-8 Poseidon aircraft). The Type 26 is already set to become the world’s leading submarine hunting warship – integrating ASROC will turn it into an even more lethal submarine killer.
- Ensure that Type 32 class frigate design – as a ‘Type 31 Batch 2’ – does not see a reduction in the capabilities of the Type 31 design.

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<sup>51</sup> *Ibid.*

<sup>52</sup> ‘Vertical Launch Anti-Submarine Rocket ASROC (VLA) Missile’, America’s Navy, 31/08/2021, <https://www.navy.mil/> (checked: 09/05/2024).

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- Procure an additional four Type 32 frigates, taking the total order to 9 vessels. Warships can only be in one place at any given time and a larger number of warships will **amplify** and **extend** the Royal Navy's ability to protect British interests.
- Fit the Type 31 and Type 32 class frigates – designed 'for but not with' – with eight canisters for surface-to-surface missiles to **amplify** their offensive firepower.<sup>53</sup> One option would be for NSM to be transferred from the Type 23 class frigates as they retire; although some will transfer to the Type 45, there should be enough to fit out the five Type 31 class with Naval Strike Missiles. The remaining five to nine vessels, depending on whether a further four are ordered, will need to be fitted with new canisters for the Future Cruise/Anti-Ship Weapon (FC/ASW) in development and due to enter service in 2028 – or, if FC/ASW is delayed, more sets of Naval Strike Missiles (or other weapons such as the Long-Range Anti-Ship Weapon (LRASM)) could be procured).<sup>54</sup>
- **Amplify** the systems with which submarines can be detected. The P-8 Poseidon aircraft is capable of providing this capability but is only available in limited numbers. Bolstering the effort could come through ensuring investment into the Merlin helicopter life-extension programme and exploring how long-range drones, able to operate across multiple platforms, can contribute to ASW.

### 3.2.3 Arsenal ships

The arsenal ship, the idea of a platform which carries a large number of missiles and little else, has been around for some time but is now starting to make real progress. The US Navy is exploring the potential for Large Unmanned Surface Vessels (LUSVs) and Large Optionally Crewed Surface Vessels (LOSVs).<sup>55</sup> Having spent some years experimenting, the US plans to order up to nine LUSVs/LOSVs between

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<sup>53</sup> Alex Pape (ed.), *Jane's Fighting Ships 2023-24* (London: Jane's Information Group, 2023).

<sup>54</sup> George Allison, 'MOD confirm new cruise missile to enter service in 2028', *UK Defence Journal*, 20/01/2024, <https://ukdefencejournal.org.uk/> (checked: 09/05/2024).

<sup>55</sup> 'Navy Large Unmanned Surface and Undersea Vehicles: Background and Issues for Congress', Congressional Research Service, 20/12/2023, <https://sgp.fas.org/> (checked: 09/05/2024).





2025–2028, which are expected to cost on average US\$250 million (£195 million) each.<sup>56</sup> They will displace around 1,800–2,000 tonnes and carry 16–32 VLS cells.<sup>57</sup> The Australian Navy, following its Surface Fleet Review in 2024, also plans to procure up to six LOSVs based on US designs.<sup>58</sup> The theory behind them is to provide a greater number of missiles and distribute these missiles across more platforms, minimising the consequences of losing one to enemy action. They will be semi-autonomous, with instructions and sensor capabilities coming either from motherships or ashore.<sup>59</sup>

However, arsenal ships are not without limitation. First and foremost, they would lose the flexibility which naval platforms bring. A Type 31 frigate may be more expensive, but it can undertake a much wider range of missions due to the larger crew. Another issue is that of EW. Although autonomous, LUSV/LOSVs still rely on receiving information and instructions from elsewhere to function, and these signals can be interfered with.<sup>60</sup> Another potential pitfall could be the temptation of mission creep during procurement. For example, there could be an urge to push for the vessel to have its own point defences, then its own radar to detect threats and act more autonomously – all of which would require it to be larger. This process could go on until the design has simply become an optionally-crewed frigate.

### Recommendations:

- **Accelerate** the UK’s exploration of the arsenal ship concept by procuring a single LOSV as soon as feasible, this could be based on the proven River class OPV hull (stripped of everything apart from minimal crew quarters and packed with VLS), to act as a testbed platform. This will allow for the Royal Navy to evaluate the utility of arsenal ships. If the extra VLS capacity is evaluated to be more beneficial than the loss of flexibility the Royal Navy can acquire more – potentially **multiplying** the effort by following the Australian approach and replicating the US design.

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<sup>56</sup> *Ibid.*

<sup>57</sup> *Ibid.*

<sup>58</sup> ‘Enhanced Lethality Surface Combat Fleet: Independent Analysis into Navy’s Surface Combatant Fleet’, Department of Defence (Australia), 18/02/2024, <https://www.defence.gov.au/> (checked: 09/05/2024).

<sup>59</sup> ‘Navy Large Unmanned Surface and Undersea Vehicles: Background and Issues for Congress’, Congressional Research Service, 20/12/2023, <https://sgp.fas.org/> (checked: 09/05/2024).

<sup>60</sup> *Ibid.*



## 3.2.4 Offshore Patrol Vessels

OPVs are not warfighting ships. In a peer conflict they would be neither lethal nor survivable. Their ability to enact either sea control or denial is very limited, but they still make a vital contribution to the work of the Royal Navy. The OPV is incredibly versatile, low-cost, and has great endurance. They are able to perform less dangerous constabulary tasks such as fisheries protection and disaster relief. OPVs are also a great way for young officers to build experience of command, a role which will become more important as the mine warfare fleet heads for retirement (see: Section 3.2.6). In terms of making the Royal Navy more lethal, the OPVs free up more sophisticated and costly warships – there have been too many occasions where destroyers and frigates have been tasked with operations well below their capabilities, such as drug busting in the Caribbean.<sup>61</sup> This is important work, but not work for £1 billion warships.

The Royal Navy currently has three Batch I and five Batch II River class OPVs.<sup>62</sup> The Batch Is are tasked around the British Isles and their only armament is a 20 millimetre cannon, more than suitable for the service they fulfil. They are due to retire by 2028.<sup>63</sup> The Batch IIs are larger and better armed (with a 30 millimetre cannon). They are tasked with performing similar functions, but overseas. HMS Spey and HMS Tamar have been deployed to the Indo-Pacific, where the ships will remain for years. OPV performance in the Indo-Pacific has been a considerable success, **extending** British influence and acting as **multipliers** for maritime security across the region.<sup>64</sup>

There is no plan to replace the Batch Is. The current plan is for Type 31 frigates to replace (or potentially augment) HMS Spey and HMS Tamar in the Indo-Pacific, and for the Batch II OPVs to replace the role of the Batch I OPVs in home waters. This reduction in the OPV fleet from eight to five, and planned reductions to the mine countermeasures fleet, will leave a gap in low-end capability and add to hull number

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<sup>61</sup> 'Royal Navy destroyer scores £60m drugs bust in the Caribbean Sea', Royal Navy, 03/11/2023, <https://www.royalnavy.mod.uk/> (checked: 09/05/2024).

<sup>62</sup> 'Organisation: Surface Fleet', Royal Navy, No date, <https://www.royalnavy.mod.uk/> (checked: 09/05/2024).

<sup>63</sup> Richard Scott, 'UK extends Batch 1 River-class OPV life out to 2028', *Janes*, 18/10/2021, <https://www.janes.com/> (checked: 09/05/2024).

<sup>64</sup> Patrick Triglavcanin, 'Britain and narrative projection in the Indo-Pacific', *Britain's World*, 12/07/2023, <https://www.geostrategy.org.uk/> (checked: 09/05/2024).

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pressures, and would likely see the Type 31 and Type 32 class frigates take up some of these roles.

Recommendations:

- Order a third batch of five OPVs to replace the Batch Is, to enter service in the late 2020s and early 2030s. This will help reduce the workload of the more heavily armed escort fleet and make them available for more dangerous tasks.

### 3.2.5 Littoral strike

The Royal Navy currently operates two Albion-class landing platform docks and the RFA operates three Bay-class landing ship docks and RFA Argus, which recently has been converted into a 'Littoral Strike Ship'. These ships are all earmarked to participate in Littoral Response/Strike Group operations – providing the Royal Navy with amphibious capability.

The Multi-Role Support Ship programme is intended to develop a single design to replace these six ships. The programme is still in its concept phase, so no details are publicly available on its design, cost, or timeline beyond an estimate of up to six ships entering service in the early 2030s.

The classes which it is replacing have a slightly differentiated role. The Albion class is the main platform for amphibious assault, bringing the first wave of amphibious troops and acting as the command platform. The Bay class provides logistic and replenishment support to the bridgehead, bringing follow-on troops, ammunition, stores and so on. The Multi-Role Support Ship design will need to incorporate the twin needs of enabling an initial amphibious landing and supporting an extant bridgehead, as well as having a flight deck for helicopters, and defensive armament. The new design would also offer an opportunity to embed uncrewed system capability, particularly aerial, the potential for amphibious platforms – with their ample space, flight deck, and command and control systems – makes them a promising 'mothership' to **multiply** a variety of systems.



## Recommendations:

- Prioritise the Multi-Role Support Ship process to ensure that the programme delivers a strong design that fully encapsulates all of the capabilities of the Albion and Bay classes without significant delay.
- Explore the option of procuring Mk70 containerised VLS cells to amplify the firepower of the new ships.

### 3.2.6 Mine countermeasures

The Royal Navy currently operates one Sandown-class and six Hunt-class minehunters, the latter of which can also have a secondary role as OPVs. They use sonar to scan for mines from the surface to the seabed, which are then destroyed by remote-controlled mine-disposal vehicles, clearance diving teams, or the SeaFox Mine Disposal system. Clearing mines allows for other ships to pass through or operate safely in an area. The UK's adversaries maintain large stockpiles of sea mines.<sup>65</sup>

The 2021 Integrated Review included plans to replace both classes of minehunter ships with uncrewed systems. The Mine Hunting Capability programme is transitioning mine countermeasures capability from platforms to uncrewed autonomous units. The plans include the development and fielding of scalable mission packages employing autonomous systems which can be deployed from any suitable Royal Navy, RFA, or commercial platform, or from the shore. The first such dedicated ship, RFA Stirling Castle, has just come into service and carry systems including the joint French/British Maritime Mine Counter Measures (MMCM) system, the Combined Influence Sweep (SWEEP) system, and Medium Underwater Autonomous Vehicles (MAUVs).

Mine countermeasures is the ideal area for uncrewed systems – it is repetitive and dangerous work. Minehunting drones are cheaper than ships, remove crewmembers from danger, and can operate faster. The UK has specialised for some time in minehunting, while several allied navies have divested themselves of mine countermeasures capability,

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<sup>65</sup> Greg Mapson, 'The looming threat of sea mines', *ASPI Strategist*, 15/04/2020, <https://www.aspistrategist.org.au/> (checked: 09/05/2024).

which automatically **multiplies** British influence and increases the Royal Navy's contribution to multinational operations (so long as this capability is maintained). Shifting to uncrewed systems rather than replacing the Sandown and Hunt classes like-for-like is a good decision which retains British expertise in mine countermeasures while spending less.

Recommendations:

- Continue with investment in the Mine Hunting Capability programme to shift mine countermeasures capabilities towards autonomous uncrewed vessels. This would **multiply** the number of platforms which could conduct mine countermeasures activities to any vessel capable of hosting the equipment.
- Ensure the supplemental offshore patrol capability of the Hunt class minehunters is not lost when those ships are retired (see: Section 3.2.4).

### *3.3 The Fleet Auxiliary*

The Royal Navy's operations are made possible by the support of the RFA. While it is tempting to focus solely on the sharp end of things when considering lethality, too often auxiliary capabilities are overlooked and under-resourced, with considerable impact on naval operations. A lethal and survivable navy has a strong auxiliary fleet behind it – and the RFA deserves considerable investment in order to **amplify** and **extend** the Royal Navy's strategic effect. While several RFA ships have been covered in previous sections where they directly overlap with the Royal Navy's warfighting force, a number of additional capabilities within the RFA's purview are ripe for augmentation.

#### **3.3.1 Fleet Support Ships**

The capability to replenish Royal Navy surface ships while underway, with both liquid (fuel and fresh water) and solid stores (food, ammunition, spare parts, and so on), is a vital one for any deployment. RFA ships **extend** both the time at which warships can remain on station and the range at which warships can operate from naval bases.



Given the operational tempo of the Royal Navy seems likely to increase, with deployments in both the Euro-Atlantic and Indo-Pacific, a strong and resilient replenishment capability is vital. However, the RFA's replenishment fleet has shrunk substantially over the last two decades.

The RFA currently operates four Tide class fast fleet oilers (plus two older Wave class oilers in reserve) for fuel and water replenishment, and RFA Fort Victoria (a multi-role replenishment ship for fuel and solid stores), all armed with Phalanx CIWS and machine guns. A decision on a future replacement for the oilers is expected within the next decade.

The Fleet Solid Support Programme is intended to procure three fleet solid support ships to replace RFA Fort Victoria. With delays to the programme meaning that the three vessels are unlikely to enter service until 2032, the Royal Navy's solid-store replenishment capacity will be limited until then. This is of particular concern for carrier operations – while the Tide class has some solid-store replenishment capability via helicopter transfer, RFA Fort Victoria is the only vessel capable of providing solid store replenishment to HMS Queen Elizabeth and HMS Prince of Wales. If RFA Fort Victoria were not available for any reason, either due to maintenance or simply being in the wrong place due to a prior mission, contingency replenishment would have to be achieved by significant improvisation using the Tide class vessels or assistance from allies.

### Recommendations:

- **Accelerate** the Fleet Solid Support Programme, to avoid any further delays.
- Assess options for short-term solid-store replenishment capability to cover the gap. Such options could include buying or leasing a commercial vessel, buying or leasing a similar vessel from another nation, or refitting a Tide class ship to increase its solid store replenishment capability.
- **Amplify** the RFA's overall replenishment capabilities over the medium term by procuring more fleet solid support ships beyond the three currently planned, and either building more Tide class ships or by **accelerating** the design of the new class of oiler.





### 3.3.2 Ocean surveillance and Seabed Warfare (SBW)

The RFA currently operates one Multi-Role Ocean Surveillance Ship, RFA Proteus, a converted commercial ship. Another ship will be purpose-built and enter service around 2029. These ships' purpose is to research the maritime environment and to protect critical maritime infrastructure, such as telecommunications cables and gas pipelines. Given the current threat to such important infrastructure, particularly in the Euro-Atlantic, where the British Isles are central to numerous telecommunication cables, this ship class has the capacity to act as a useful **multiplier** for the UK, particularly given that few NATO allies have such vessels.

RFA Proteus is equipped with advanced sensors and acts as a mothership for several remotely operated and autonomous undersea drones. This new class of ship offers an opportunity to explore and develop new ways to integrate uncrewed systems into surveillance and protection operations in peacetime, and to blend these capabilities into the wider force during times of conflict.

Recommendations:

- **Amplify** the UK's seabed capabilities by committing to procuring additional Multi-Role Ocean Surveillance Ships with the ability to add in or improve technologies as they develop. RFA Proteus is a valuable testbed for such technologies, and future vessels should be able to take advantage of the progress made.

Develop the mothership aspect of the design with a view to developing a similar capability for surface and subsurface combat drones. Uncrewed vessels working with and from crewed ships are woven throughout current Royal Navy plans and the recommendations of this Report, and RFA Proteus offers a good route for refining mothership capabilities for future use.

## 4.0 Conclusion

As events surrounding Elizabeth I's speech at Tilbury in 1588 show, the Royal Navy has always been vital to the nation's security. Geopolitics has changed greatly since then, but the Royal Navy remains one of the premier instruments through which HM Government can deter aggressors, shape the international environment, and secure British interests. The emerging 'maritime century' – focused on the Indo-Pacific as well as the Euro-Atlantic, with less geopolitical unevenness, and more actors – calls for significant upgrades to Britain's senior service.<sup>66</sup> The UK should lean into its strengths and regenerate a larger and more capable navy to match the growing threats at sea.

To reflect the growing threat from Russia and the PRC in the maritime domain, the British fleet should focus on sea control in the Euro-Atlantic and sea denial in the Indo-Pacific, though this should not mean force projection capabilities should be deprioritised. A CSG is like a swiss army knife: it can project force onto the land, enforce sea control in the Euro-Atlantic, or contribute to denying the sea in the Indo-Pacific.

An enhanced posture means, to use the words of the Defence Select Committee, that 'we're going to need a bigger navy'.<sup>67</sup> This mass should come in the form of generating a full airwing for the carriers, expanding the escort fleet, and ensuring the number of lower-end and auxiliary vessels does not fall too low, to avoid increased unavailability and fatigue to more capable, expensive platforms. But as explained in this Report, the Royal Navy can also pursue strategic advantage to catalyse lethality, both in terms of strengthening the defensive shield around British vessels but also in terms of **multiplying** the sources, **amplifying** the volume, and **extending** the range of offensive firepower – all enabled by an effective combat management system and capable, integrated networks of sensors.

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<sup>66</sup> Anne-Marie Trevelyan, Speech: 'First Sea Lord's Sea Power Conference 2023', Foreign, Commonwealth and Development Office (UK), 16/05/2023, <https://www.gov.uk/> (checked: 09/05/2024).

<sup>67</sup> See: 'We're Going to Need a Bigger Navy: Third Report of Session 2021-22', House of Commons Defence Committee, 14/12/2021, <https://committees.parliament.uk/> (checked: 09/05/2024).

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Crucially, implementing this Report's recommendations in full requires a significant effort to recognise sea power as a truly national endeavour. This mandates a significant shift in focus from HM Government, not least of which would require more naval investment. Both the Conservative and Labour parties have promised to increase defence investment to 2.5% of GDP when the 'conditions' or 'resources' allow.<sup>68</sup> Whether this investment comes or not, the UK should also explore moving towards a more 'focused' force, better tailored to its geostrategic position and core interests – the Australian approach of shifting towards a more 'integrated, focused force' centred on the maritime domain represents an example of how this can be achieved.<sup>69</sup>

The case for a surge of investment into the Royal Navy is made even more compelling by the growing strength of British allies on land and the limits of their strengths at sea, as shown by the key European powers' limited ability to send warships to protect shipping in the Red Sea. The accession of Sweden and Finland to NATO and Poland's army expansion programme alone will see 20 brigades added to NATO's terrestrial strength (while Britain considers how to generate an armoured division of three brigades).

In short, to continue adequately to protect British interests and help uphold the free and open international order, not least at sea, the Royal Navy requires more warships and submarines backed by efforts to **amplify, extend, multiply, and accelerate** their durability and lethality. Sharpening Britain's naval power should be at the front of the agenda as HM Government contemplates the country's next strategic defence review.

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<sup>68</sup> Hugo Gye, 'Starmer: Labour will increase defence spending to 2.5% and boost nuclear deterrent', *iNews*, 12/04/2024, <https://inews.co.uk/> (checked: 09/05/2024) and Peter Sault and James Gregory, 'Ministers urge government to increase defence spending to 2.5% of GDP', *BBC*, 09/03/2024, <https://www.bbc.co.uk/> (checked: 09/05/2024).

<sup>69</sup> 'National Defence Strategy', Department of Defence (Australia), 17/04/2024, <https://s3.documentcloud.org/> (checked: 09/05/2024).



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This Report is part of the Council on Geostrategy's Strategic Advantage Cell, kindly sponsored by Lockheed Martin. The first of its kind in the United Kingdom, the Cell explores the country's ability to induce catalysing effects to achieve its objectives in a more efficient manner compared to its competitors and rivals across multiple domains. The Cell provides a platform of choice for a new national conversation on some of the most intractable questions facing British strategists and diplomats.





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