

Molinelli Gabriele is a journalist and blogger. In the UK is mostly known for his blog, UK Armed Forces Commentary (<http://ukarmedforcescommentary.blogspot.com/>) which has reported on UK defence issues for over a decade. Since 2014 he has been responsible for the UK chapter of the annual World Defence Almanac by Military Technology and from 2019 writes for the leading Italian defence publication, RID – Rivista Italiana Difesa.

1 – Royal Navy roles and ship requirements

Littoral Response Groups

Royal Navy's main fronts of action are the High North, in which focus must be on ASW and containment of Russia initiatives, as well as protection of UK interests in the Arctic area; and East of Suez. The Review has endorsed the Future Commando Force plan with its two standing afloat task groups, the Littoral Response Groups (North) and (South).

The LRGs are arguably the main factor in the Royal Navy's contribution to the new UK's strategic posture and should be supported and enabled accordingly through Forward Basing of suitable capabilities in the form of amphibious and support shipping and well armed escorts.

The LRGs are the first responders and the everyday security element, with the Carrier Strike Group being the battle fleet that comes to their aid when necessary.

In the North, cooperation with Norway is key and the main adversary is Russia, although China might quickly enter the picture as well depending on whether the arctic sea routes will indeed open up for regular use.

LRG composition will depend on the availability of the ALBION and BAY classes of amphibious ships, and this effectively means that, at best, each group will have access to 1 ship of each type. Currently, one out of 2 ALBION-class LPDs is in mothball, while 1 out of 3 BAYs is needed in the Persian Gulf as mothership and support vessel to the Mine countermeasure component. This could limit the LRG (South) to literally a single BAY, putting in jeopardy its credibility.

One urgent measure to be taken is thus the reactivation of the dormant LPD.

Future Commando Force is reshaping each Commando into 4 STRIKE Companies, each of which, completed with supports from across 3rd Commando Brigade, makes up a Littoral Strike Unit (LSU), operating dispersed and embarked indicatively on a single ship. Multiple LSUs are meant to form a LRG.

A minimum of 2 ships per group is needed; an ALBION plus a BAY is a reasonable composition and each Commando (45 Cdo for the North, 40 Cdo for the South) will be able to rotate the 2 forward-deployed companies to sustain the enduring commitment.

The main weakness of the LRGs is that the current amphibious ships have little to no aviation maintenance capability. They have no hangar for helicopters because they were once meant to be completed by HMS OCEAN. The Royal Navy in recent years has tried to fill that gap by using RFA ARGUS when possible, but this ship is expected to pay off in 2024, making the problem even worse.

The announced 50 million refit of a first BAY is probably going to add a new superstructure block with a hangar, but the reality is that the once promised Littoral Strike Ship¹ remains badly needed. It is a poor man's replacement for OCEAN to complete each group with extra space for troops, equipment and, crucially, with a big flight deck and facilities for a group of helicopters, which are crucial to the ability of the LSUs to move and operate.

The failure to procure a couple of Littoral Strike Ships quickly means that the loss of RFA ARGUS will not be mitigated and the aviation capability gap of the LRGs will linger on until the promised "up to 6" Multi Role Support Vessels mentioned by the Review come online in the 2030s. These appear to be, effectively, the replacements for the ALBION and BAY classes, so there is no capability growth whatsoever in the short-medium term and even in the 2030s it seems that, at best, the Royal Navy will stay roughly still on current levels of amphibious lift.

We don't yet know anything about MRSS design, but we can assume it might look a bit like the BMT Ellida² proposal: a well dock with 2 large landing craft (half as many as a ALBION holds, but twice as many as a BAY has) and a large flight deck and hangar for helicopters.

In the middle, there is no answer on what happens once the current contract for provision of the 4 POINT class RoRO sealift vessels comes to an end in 2024. The capability must be preserved.

Littoral Response Groups are quasi-Special Forces elements, small and agile but ultimately light and with limited mechanization. They are a potent pre-landing force, more than a true amphibious capability. Royal Marines on their own don't have the resources to appropriately meet all challenges in the 2 regions, and it is indispensable to craft a plan that involves the British Army.

In the high North, the availability of an Army brigade focused on arctic capability would ensure that the Commando pre-landing force work is integrated by an heavier force that can follow them on shore.

In the Middle East and Indo-Pacific, the LRG(S) similarly needs to be able to count on an heavier Army force coming ashore behind it. Much has been said about how the UK will "treble" size of its base in Oman, which has already seen the Army deployed for armoured battlegroup exercises. If the Army had a forward deployed element in this base, coordinated with the LRG(S), the credibility and usefulness of the whole would be countless times greater.

Carrier Strike Group

Disappointingly, the Review has not firmed up a requirement for the UK F-35 fleet. It is widely understood that 4 frontline squadrons are needed to ensure that a fleet of fighter jets can properly sustain itself and its tasks. Having 4 squadrons is indispensable to ensure that the UK is realistically able to embark up to 2 (24 jets) regularly on a carrier, with the ability to surge to a full air wing in emergency.

2 Squadrons are, quite simply, not enough to sustain an enduring commitment. The last fleet down to 2 Squadrons was the HARRIER GR9, with the consequence we all remember. UK needs to firm up plans to procure a second batch of at least around 30 F-35B between 2023 and 2030, so that the second pair of Squadrons can be formed.

¹ <https://www.naval-technology.com/features/littoral-strike-ship-prevail-partners-refines-multi-role-vessel/>

² <https://www.bmt.org/media/4197/bmt-das-uk-ellida-200-multi-role-logistics-ship-a4-210x297mm.pdf>

Beyond F-35, the capability of Carrier Strike Group is tied to the embarkation of large unmanned aircraft / loyal wingman. It currently appears that, despite early promises from the RAF that the LANCA wingman would operate from the carriers alongside the F-35B, the aircraft being developed is not compatible with carrier operations. In part, this is understandable, because trying to build something compatible with a STOVL carrier implies limitations to the jet's weight, mass and capability, and adds cost. From its land-based point of view, the RAF sees such constraints as undesirable.

The consequence is that the Royal Navy is accordingly having to sustain a side program, VIXEN³, for an embarked unmanned aircraft for STRIKE, Airborne Early Warning and potentially Air to Air Refuelling work. This will hopefully re-use LANCA technology as much as possible, but the split is regrettable.

Inexorably, the need to embark large unmanned aircraft is in turn driving a quest for a catapult and arresting wire solution which will have to be retrofitted to enable the launch and recovery of such large aircraft.

This once more evidences all the limitations of the Joint Force that has been forced upon carrier operations decades back. The need to embark RAF pilots without the need for carrier landing training was a key driver in going with a STOVL design, but in turn this condemns the carriers to depend utterly on the F-35B and makes it much harder to bring large UAVs on deck.

One only needs to look to the other side of the Channel to see that the French, having allowed their naval aviation to determine its own requirements, have always stuck to the catapult. France will have an easier time adopting UAVs for its carrier, and showing its usual pragmatism it is working to include carrier-compatibility in its FCAS 6th generation new fighter. The UK does not have that pragmatic option with TEMPEST.

The Royal Navy needs a catapult system that can be retrofitted at acceptable cost.

It also needs VIXEN to succeed. One of its first applications would have to be Airborne Early Warning, because the use of a jet would ensure far greater capability than the current helicopter-borne CROWSNEST, and it would release invaluable MERLIN HM2 helicopters back to anti-submarine role.

AEW and Strike roles should be the main focus of VIXEN, with Air to Air refueling only following at a distance: while embarked AAR would be a good force multiplier, the truth is that a carrier-launched tanker will never be able to carry enough give-away fuel to be able to truly revolutionize the air wing's capabilities. AAR should only come if it does not impede the satisfactory, timely acquisition of capability in the main roles.

Escort vessels

The Integrated Review makes little mention of anti-ballistic and anti-hypersonic missile defence, but there is every evidence that ballistic and hypersonic threats will proliferate in the near future. It appears certain that adding BMD capability to the Type 45s will soon be non-discretionary.

³ <https://www.naval-technology.com/news/royal-navy-project-vixen-exploring-potential-carrier-uas/>

It arguably already is, and that attaches incredible importance to the American destroyer USS The Sullivans being part of HMS QUEEN ELIZABETH's task group as she sails to the East, because it is the only ship in the group with the capability to adequately confront a BMD threat.

The Review promises an expansion of the SEA VIPER (ASTER) arsenal for the Type 45s, and unspecified improvements which are thought to be the Block 1 New Technology⁴ upgrade for the ASTER 30 missile, to be acquired jointly with Italy and France.

France is also driving efforts on the continent for the development of ASTER evolutions offering more BMD capability and a future anti-hypersonic capability (see project TWISTER⁵). UK could explore whether there is a satisfactory possibility of industrial returns from following them, but it is extremely likely that, even in the best of cases, these efforts will field, many years into the future, capabilities that are available now in US systems.

The UK should urgently consider adoption of the SM-6 missile⁶, that is quickly becoming the US Navy's key equipment for defence against ballistic and hypersonic missiles, as well as an hypersonic anti-surface weapon as secondary effect. The investment that the Americans can pour into this system remains unmatched, and the UK, even working with various European partners, is very unlikely to be able to keep pace.

SM-6 is undoubtedly an expensive missile, but proliferation of ballistic and hypersonic threats will soon dictate a response. Whenever someone suggests that carrier strike or amphibious operations are "obsolete" because they are too vulnerable, what it is actually doing is implicitly saying that the escort ships are the problem. If we don't trust the escort ships to be able to protect the carrier, we can't expect them to protect anything else either.

Escort ships are undoubtedly increasingly inadequate to face the latest threats, and significant effort is needed to adapt the weapon systems. This is arguably THE priority, because otherwise the ability to operate on the surface of the sea is lost.

CAMM / SEA CEPTOR is a short range missile with limited capabilities. Similarly, ARTISAN 3D radars look increasingly dated in the current world, where all other countries are moving towards multi-face AESA radars with arrays multiple times the size of ARTISAN. The choices Australia and Canada made for the radar of their own variants of the Type 26 frigates should inspire urgent reflection on the limitations of the RN's baseline variant.

The Type 45s will soon enough enter "Mid-Life Upgrade territory", and the effort to counter modern threats should begin with this. ASTER 30 BLOCK 1 NT is a welcome step, but arguably the ships need BMD / Anti-hypersonic capability added in; as well as a greater density of ready-to-fire weapons to face swarm threats.

Accordingly, the space reservation available in the design should be exploited to fit 16 MK41 missile cells, with SM-6 missiles. The short range ASTER 15, conversely, could be abandoned: a single ASTER 15 cell can contain up to 4 SEA CEPTOR missiles, meaning that, while opening up more of the existing cells for extra ASTER 30 Block 1 NT, the total number of missiles embarked could increase very significantly.

⁴ <https://www.mbda-systems.com/wp-content/uploads/2017/01/2017-01-What-the-Aster-B1-NT-brings.docx.pdf>

⁵ <https://www.mbda-systems.com/press-releases/mbda-ready-to-meet-the-challenge-of-europes-missile-defence/>

⁶ <https://www.thedrive.com/the-war-zone/40178/navy-sm-6-missile-will-attempt-to-swat-down-a-mock-hypersonic-weapon>

It is probably too late to adopt the Australian radar at build for the second batch of Type 26, but a move beyond ARTISAN 3D should definitely become a priority for the future. The Type 26 already come with 24 MK41 cells and, if they received adequate radars and data links for cooperative targeting, could improve their ability to defend the task group by many orders of magnitude.

Increasing anti-submarine capability will be equally important. The Royal Navy experiments with large unmanned submarines are to be particularly welcome; unfortunately the Review didn't even mention it and does not provide any indication of when the imagined 30-meters, 3000 miles capability could effectively be fielded.

Plans for a flotilla of such unmanned subs would greatly expand the Royal Navy's ability to form an ASW "barrier" in the North Sea / GIUK, and / or ahead of a surface battlegroup.

Early suggestions of carrying the new lightweight torpedo on quadcopter drones are also to be welcomed, as this would enable a frigate to target submarines at long range without depending entirely on the single manned helicopter.

Cannon-launched depth charges such as the BAE Kingfish would provide a snap response capability, quick and long range, which could be key to, if not sink, at least drive back enemy submarines.

MCM and Type 32

Drones are the future of MCM and arguably also its present, since they already represent both the disposal and much of the "find" function of current HUNT and SANDOWN classes, through the SEAFOX and REMUS unmanned systems. The SWEEP⁷ drone has actually reintroduced sweeping capability that the manned fleet lost in 2005.

The drones entering in service offer exceptional capability and should more than replace what the current manned vessels do. However, these drones are short ranged and can be controlled, at present, from just about 12 miles away. While it is true that they can be deployed literally from the shore in some cases, and that they can be carried into theatre by air, they will still often need a mothership for support, maintenance, command and control. A manned ship will also have to be at hand to support the operation of divers, which remain important.

There definitely is a concern about adequacy of RN plans for suitable motherships. While it is true that the new MCM systems will be able of quick embarkation on civilian ships taken up directly in the region (much as would happen with the airlifted Submarine Rescue System held at readiness in Faslane), and elements could operate directly from the mission bays of Type 26 and Type 31s as well as from other vessels of multiple size and shape (from RIVER OPV to BAY class LSD, potentially), having at least some permanent motherships would be key.

Belgium and Netherlands will use drones for MCM, but will build dedicate OPV-like motherships⁸ for them. France, similarly, plans 4 motherships and a separate class of 5 small vessels for divers support, for example.

⁷ https://www.atlas-elektronik.com/fileadmin/user_upload/01_Images/Solutions/ARCIMS/Sweep_Brochure.pdf

⁸ <https://www.navalnews.com/naval-news/2019/05/this-is-what-the-future-belgian-dutch-mcm-motherships-will-look-like/>

Apparently, in the Royal Navy, Type 32 frigates will be kitted as motherships, probably not just for MCM but also for off-board, unmanned ASW equipment which we hope will appear in the future.

The Defence Command Paper adds that the Type 32 will be expected to be part of the Littoral Response Groups.

This is ambitious, yet achievable. We don't know anything about current RN thinking about the Type 32 design, but one opportunity is the adoption of the Danish ABSALON⁹ design as base. This design remains very similar to that of Type 31 in many ways, making the transition from building one class to the next smoother, but comes with a significant difference: a much larger "flexible deck" located in the stern, continuous and very roomy.

Completed with a suitable launch and recovery system, such mission bay would be perfect for carrying and deploying all sorts of large payloads in support of ASW, MCM and Commando operations.

The Type 26 mission bay, and even more so the Type 31s, are not quite as adequate due to their shape and position, up high amidship. A Type 26 mission bay can embark 4 11-meters boats side by side, for example, but considering that the new MCM solution "ideal" shape contains at least 2 11-meters USV plus a container for the Command and Control and an unspecified number of containers for the unmanned underwater vehicles and supporting kit, the room rapidly runs out. Not a whole MCM suit might fit; and the frigate would be down to a single 9.5 meters ship's boat.

It is also undesirable to tie down a Type 26, a very finite and precious resource, in MCM role unless the area is very dangerous and thus requires a well defended platform.

Even with 5 Type 32s being built, a few more or less dedicated, cheaper motherships would arguably help greatly. A perfect opportunity to acquire such units could be the replacement for the OPVs of the RIVER Batch 1 class. The Royal Navy will also need to replace the 2 multi-role survey vessels ECHO and ENTERPRISE, and this presents another opportunity.

Legitimate concerns remain on timeframes, since HUNT and SANDOWN should be gone by the beginning of the 2030s while it will be 2035, at best, before 5 Type 32s are available.

On the way to 2030, the HUNT class itself could be the interim mothership: for many years the Royal Navy has had plans to refit these vessels's open stern for launch and recovery of two 11-meters USVs as used by both the SWEEP and MMCM suites. The option of refitting a first HUNT in this way was part of the 2018 contract with ATLAS for the SWEEP System, and it would be wise to exercise it as soon as practicable.

⁹ ABSALON class overview: <https://www.naval-technology.com/projects/absalon/> the Type 31 design is based on that of the IVER HUITFELDT class, which itself is a derivative of the ABSALON.