

Future Surface Combatants: A Military and Industrial Challenge

by *Commodore Steve Brunton, Royal Navy*

Appointed as Director Equipment Capability (Above Water Effect) (DEC AWE) in July 2007, Steve Brunton is the UK MoD's Director responsible for complex warships and their associated systems. At the RUSI Maritime Conference in June 2008, he set out the future challenge of delivering and sustaining the Future Surface Combatants for the Royal Navy. This article brings his presentation up-to-date and sets out the challenges for the UK MoD, Royal Navy and industry in delivering this essential capability.

During my leadership of the Sustained Surface Combatant Capability (S2C2) Pathfinder study in 2006/7 it became apparent that our extant processes had resulted in a number of problems in our management of capability. Rectification demanded a transformation of both the MoD and industry's approach to the delivery of the capability we need from our ships in the future. Many of the Pathfinder ideas have now been taken forward by the Defence Acquisition Change Programme and are more specifically recognised as Through Life Capability Management (TLCM). The challenge is for all of us to change. This has already resulted in a different approach to MoD's relationship with industry, and specifically capability change delivery management. The need for surface combatants will be an opportunity to demonstrate this new way of working to the benefit of the taxpayer and our armed forces.

Surface combatants cover a broad number of ships from the

"The UK is a maritime nation whose prosperity, stability and security depend on the unique access provided by the sea and the maintenance of an international system of law and free trade. Out to 2025, an increasingly interdependent, yet competitive world will be characterised by intense, but uneven globalisation, continuing tensions and rivalries between states, the accelerating exploitation of ocean resources and a variety of trans-national pressures. The UK will therefore need the means to continue to discharge sovereign responsibilities and protect its political and economic interest in an era of increased maritime complexity and competition and as a result of more diverse dependencies on the sea."

Future Maritime Operational Concept (2007)

Type 45 Destroyer (T45) to Patrol Vessels. For the purposes of this article I am going to refer primarily to the vessels that will update and upgrade the capabilities provided today by the T22- and T23-class frigates – the proposed C1 and C2 concept that emerged from the S2C2 Pathfinder in 2007.¹ These platforms will need to meet the challenge of an uncertain future, but one whose primary aim will be to contribute to and defend UK and dependent-territory interests. Managing this change is complex, not just from an equipment perspective but across all the Lines of Development² and, importantly, its impact on different industry sectors.

Our future platforms must be flexible, versatile and configurable to enable tailoring of specific capabilities to match the unique demands posed by each mission

The Royal Navy deploys a broadly-based maritime capability with a wide utility across a spectrum of missions. This balanced capability allows the government of the day to respond to a variety of challenges, some of which were never considered as part of the portfolio of requirements to be met by today's platforms and their associated equipments. This is testament to both the original designs and their flexibility, but also the ingenuity of our people. We will need much more of this in the future. From the strategic punch of warships, which are capable of undertaking and supporting complex warfighting to the continuous coercive deterrence of Maritime Security Operations our need for this capability is clear. It transcends short-term decision-making and seeks to enable a secure United Kingdom and its contribution to the wider world community as directed by our politicians.

Flexible, Versatile and Configurable

In contributing to the Defence Aim our future platforms must be flexible, versatile and configurable to enable tailoring of specific capabilities to match the unique demands posed by each mission. The FSC will, like the T22s and T23s be the workhorses of the future Royal Navy, seeking to meet the challenges that we can predict and having the agility to flex to those we cannot. We will be routinely operating with others, be it our colleagues in the Army and RAF, Other

Government Departments (OGDs), Non Governmental Organisations (NGOs) or other nations (through both formal and informal military alliance). In short, our platforms will need to be capable of operating in national, Joint and combined task groups across the globe. They will also need to be capable of deploying alone (or with an RFA tanker) often for considerable periods at significant distance from the UK, conducting the array of tasks that fall to the Royal Navy short of warfighting. So, nothing new there then!

C1 - Task Group Enabled Surface Combatant

A Force ASW and Precision Strike optimised combatant that will contribute to and enable the Joint Force’s ability to deliver strategic effects of Insight, Coercion, Deterrence, Stabilisation, Prevention, Disruption and Destruction primarily in medium- and large-scale warfighting operations, but with wider non-warfighting utility. This is achieved through the ability to secure safe theatre entry, force protection, sea control, freedom of manoeuvre and precision fires for the deployment and sustainment of the Joint Force within core regions and transit between.

C2 - Stabilisation Surface Combatant (General Purpose)

A consort protection optimised combatant that will contribute to and enable the strategic effects of Insight, Coercion, Deterrence, Stabilisation, Prevention, Disruption and Destruction in:

- Concurrent small-scale warfighting operations through precision strike [IPMD], surveillance, maritime interdiction and the provision of secure safe theatre entry, AAW, ASuW, ASW close consort protection and sea control for the deployment and sustainment of the force package.
- Medium- and large-scale operations through the protection of national SLOCs and contributing to the protection of coalition SLOCs for the core regions and transit between.

What does this mean to the taxpayer? What is increasingly recognised by the Royal Navy and the maritime sector is the sea blindness in the UK at large; the lack of awareness of our dependency as a nation on sea trade. With 95% of the UK’s trade by volume conducted by sea, we are absolutely reliant on the sea for trade. Every second, 18.5 tonnes of trade arrives in UK ports compared to 63 kilos through our airports in the same time period. Piracy is on the increase as evidenced by recent events off Somalia. Human trafficking is worth \$7–10Bn per annum, much of it by sea. Maritime drug trafficking continues to grow. The UK is set to become a net importer of oil in this decade and is already a net importer of gas. Any interruption to supplies around the world will be felt almost immediately with

serious effects on our nation. Surface combatants are, and will continue to be, a key national asset for the UK Government to deploy in securing our national security interests.

Affordability and Numbers

Navies around the world are adopting a more modular approach to meet this agile demand, but I would advocate that there is a reality check on this flexibility as it costs. So, perhaps now is the time to mention the obvious elephant in the room – affordability. In my mind there are three key parameters to this: how many to buy; how much capability to have; and how to support these platforms over the next 20–30 years.

The debate on numbers is inevitably emotive but I face the reality of available budgets, and given the current funding situation we should be aiming to support the build of a new combatant about every 12 months or so. To build more and faster would challenge the wider defence budget (which is already under considerable pressure). With existing frigates expected to remain in service for up to twice their original design intent, my aim is therefore simply to get the programme to the build start line as soon as is possible and affordable. How capable is a big cost driver. Without doubt we need to be clear on what we need, and where that clarity does not exist we need to provide suitable margins and space to allow us to accommodate technologies that are likely to change during platform life. This will be key to the early design trade-off and a key function of the Naval Design Partnership.³ The final part of that trade-off will be ensuring that the design is not prohibitively expensive to support and maintain, be it equipment, manpower, training or infrastructure. In summary we must “design to cost and support the design”.

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Relationship between MoD and Industry

The Defence Industrial Strategy published in 2005 was a watershed in the relationship between MoD and industry, which when combined with the Defence Acquisition Change Programme raised the profile of the industrial impact that follow from MoD’s decisions. This impact and our improving understanding is now recognised in our Capability Planning process, and the practical involvement of industry in capability planning is being taken forward under the oversight of the National Defence Industries Council. For the maritime sector the Maritime Industrial Strategy is key. At its heart are the components of the wider Maritime Change Programme managed by DE&S. This is big stuff and is central to changing and modernising the landscape of how we purchase and

support our platforms and their equipments, resulting in the following key themes:

- **Cost Control.** Designing for support and cost-effective upgrade creating a sustainable and affordable future is key, but is perhaps contradictory to designing for cost-effective build. The challenge will be to achieve both and have the incentives to continually improve value-for-money through life and as more platforms are built. Additionally, we need to design in simplicity to avoid costly training and maintenance structures.
- **Continuous Improvement.** Evolution not revolution will assist in both supporting the design cost-effectively and allowing technology insertion through life. This will involve pulling through investment made in equipments elsewhere in MoD to a greater extent than hitherto. A modular approach is certainly in our thinking, but clarity and pragmatism in what modules we require will be key to making the financial case. Designing in this approach from the outset should ensure that we develop a platform that would enable UK industry to flex to other customers' detailed requirements and therefore improve the export potential. Thinking about this from the outset has not always been our natural or default thought process. But it is a by-product of achieving the design agility we want for the future by having the appropriate design margins in at the beginning.
- **Constancy.** We need to smooth the feast-and-famine approach to realise benefit for both MoD and industry. Steadying the throughput allows more predictability and better linkage of demand to capacity. It also gives confidence to the MoD/industrial relationship, allowing investment for the future. Appropriate use of standards is not to save money, but to ensure the right target for investment in survivability and availability through the life of the platform.

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The Challenge

So, what is my challenge to DE&S and therefore industry in achieving this future? Certainly we must be clear about the requirement, but in recognising the fiscal realities we must design to cost and deliver to it. Innovation and efficiency will be essential, but overspending has to be funded from someone else's disinvestment decision and probably from within the maritime environment's share of the pot. Cost can be controlled by minimising risks by using common equipments across many platforms. This helps my intent of reducing equipment variability and putting capability on to an evolutionary rather than revolutionary path. Cost can also be controlled by ensuring the Whole Life Cost is minimised by designing for cost-effective support through life. Cheaper to operate than a T23 today with reduced manpower and improved fuel efficiency will help.

We must also ensure that the ship is designed to be retention positive. Answering questions posed by the moral component means reducing drudgery such as cleaning, routine maintenance and domestic processes, while ensuring it is a safe platform with good individual and platform protection, not just by having hard- and soft-kill technologies, but by designing in survivability from the outset and potentially using materials such as those developed for current land operations.

In designing for cost-effective upgrade we will achieve the platform agility required. In doing so we need to recognise the different 'battle rhythms' of technology and we will look to our integrated research and development programme to inform this. It will also ensure timely and cost-effective capability upgrade through life, help mitigate the impact of late design decisions and, as I have already stated, contribute to export potential. We must also make sure we do not create an 'environmental or legislative flank' by ensuring that countries cannot stop us using their waters because we are not consistent with international agreements. Finally, to make the case the end result must be a bench mark for warship design, build, support and value-for-money.

Our procurement programmes over the next decade will have a generation-changing impact on the Royal Navy, its people and those who support us. They need proactive management, determined leadership and engagement by all aspects of our organisation, no matter where any of us are in the food chain. This is a challenging remit – broad, demanding, but essential. Industry and MoD must work together to enable the vision for a mutually beneficial, enduring military capability, effectively delivered. The Future Surface Combatant (FSC) has had several false starts in the past. This refreshed FSC programme is at the vanguard of a new era for acquisition – smarter perhaps, realistic certainly and definitely an opportunity to change our approach to deliver this essential capability for Defence. ■

NOTES

- ¹ The C3 programme is not part of the FSC programme and funding at this time. The C3 concept is evolving and its future will be linked to the technology and system integration readiness and maturity as well as an ability to deliver on a business case that may be similar to that derived for the River class. The recently completed joint MoD/industry Capability Investigation into Future Mine Countermeasures capability has been a way of maturing the capability, but also testing the new approaches with industry from the DACP and under the oversight of the NDIC Capability and Planning and Development sub-group.
- ² Training, Equipment, Personnel, Information, Doctrine and Concepts, Organisation, Infrastructure, Logistics.
- ³ A joint MoD/industry MIS initiative to conduct Maritime Platform concept design work. Formed in April 2008, it is a mixed industry sector team based in the Bristol Business Park.