Maritime Command and Staff Trainer (MCAST)
Appendix A to SoW – Concept of Use
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Defence Equipment & Support

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Ministry of Defence

ROYAL NAVY

MARITIME COMMAND AND STAFF TRAINING (MCAST) SYSTEM

CONCEPT OF USE

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APPROVALS

	Name	Date	Signature
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[redacted]	[redacted]	[redacted]	[redacted]

AMENDMENT CONTROL

Version	Date	Authors	Purpose of Change
0.1	26 Apr 2020	[redacted]	Original draft.
0.2	18 Nov 20	[redacted]	SME updates
0.3	14 Jan 21	[redacted]	Desk-level circulation
0.7	12 Aug 21	[redacted]	Alignment with CONUSE
0.82	25 Feb 22	[redacted]	Alignment with Navy Transformation and CTNA
1.0	12 May 22	[redacted]	CT CEB Chair Endorsement
1.1	14 Dec 23	[redacted]	Amended SOTR included

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CONTENTS

PART 1 - INTRODUCTION

Single Statement of User Need (SSUN)

Commander Fleet Operational Standards and Training requires support to deliver synthetic training, assurance and validation exercises in order to prepare the Maritime Battle staff to meet their operational readiness requirements.

1.1. **Outline Description**. The Maritime Command and Staff Trainer (MCAST) is a RN synthetic training capability that will provide a Maritime Battle Staff (MBS)[1] Command and Control (C2) training capability for the 2-star Commander Strike Force (CSF), the 1-star Carrier and HQ Cdo Force[2] (CSG and HQCF), Littoral Response Groups (LRG) and Mine Warfare Battle Staff (MWBS). MCAST will be used for Collective Training (CT) at the Tier 1, 2 and 2+ level[3] for both teamwork and taskwork, and potentially, Tier 1 CT for HQ pillars or warfare groups. It could also be used to provide pre-deployment training to other fixed location MBS for operational duties and individual training for specific command and control software applications. MCAST could also support mission rehearsal and experimentation of Maritime Warfare Centre (MWC) developed tactical procedures and processes. The intent is for MCAST to be linked to the wider Defence synthetic training environment. Adherence to Defence Modelling and Simulation Office (DMSO) & JSP 939 principles will enhance coherence and interoperability, enable efficiencies, and facilitate integration with other synthetic environments. Links to NATO, other international partners and, potentially, component level organisations are expected to follow.[4]

1.2. **Aim.** This document details how the MCAST capability will be used in Service. [redacted] The document seeks to bound the MCAST project and ensure that stakeholders are aware of what will be delivered and their associated dependencies.

1.3. **Scope.** This CONUSE will introduce the capability delivered by MCAST, situate the capability within the Defence Capabilities Framework (DCF), introduce DLoD responsibilities, discuss constraints affecting the capability and make recommendations for future development. The CONUSE supports the Maritime Training Strategy (MTS) and provides a high-level overview of the MCAST capability and Operating Model, which will be updated as structures and processes mature during the Assessment, Implementation and In-Services Phases.

1.4. **Review.** The CONUSE[5] is a living document and will be reviewed following relevant changes to Defence Policy or CT Programme Board direction. A Programme Board endorsed version will support the MCAST Full Business Case (FBC).

1.5. **Project Milestones.** Project Milestones are defined as:

a. **Outline Business Case (OBC).** OBC approval was given 24 Nov 20[6].

b. **Planning Assumption for Service Entry (PASE).** PASE for the MCAST capability is Q1/Q2 24 on award of contract. Capability milestones will be refined during the Assessment Phase and In Service Date (ISD) will be confirmed prior to FBC approval.

[1] Maritime Battle Staffs may become referred to as Deployable Headquarters in emerging doctrine.

[2] Formally referred to as Littoral Strike Groups (LSG)

[3] JSP 822 Part 2.

[4] Connections to UK FE will use a UK Defence network, connection to coalition partners will be achieved by connecting the UK Defence network to an appropriate coalition network.

[5] Which supersedes the previously issued CONEMP Issue 1.0 dated 14 Sep 18.

[6] DE&S OBC Decision Panel and NCAC approval, 24 Nov 20

c. **Assessment Phase.** The Assessment Phase commenced in Nov 20 following OBC approval. Key stages through this phase will be the issue of an Invitation to Negotiate (ITN) (Q1 23) based on an endorsed Systems Requirement, and Statement of Work and the subsequent selection of the preferred capability provider by Q4 23.

d. **Full Business Case (FBC).** Naval Command Approval Committee (NCAC) Approval to enter the Delivery Phase is planned for Q1 24.

e. **Implementation Phase.** The Implementation Phase is planned to run from Q1 2024 to Q4 2024.

f. **Initial Operating Capability (IOC).** [redacted] ill underpin the FGen of Agile Maritime C2 at Component, Joint and Combined levels.

g. **Full Operating Capability (FOC).** [redacted]

h. **Out of Service Date (OSD).** There is no set OSD for MCAST due to the enduring requirement for MBS CT. The capability will be maintained and updated through a series of sequential contracts and could potentially be integrated into an RN synthetic enterprise framework.

Policy Guidance

1.6. **Future Operating Environment 2035 (FOE 35).** The FOE is expected to remain Congested, Cluttered, Contested, Connected and Constrained, although not always in every environment. Increased globalisation may mean that states and individuals, particularly those seeking to manage and employ effect on the battlespace, have significantly less time to plan for and respond to rapidly emerging global and regional events. UK actions may be more constrained by legal and societal norms than those of potential enemies; therefore, the RN will increasingly rely on its people to provide the UK's qualitative edge - requiring greater investment in cognitive elements of training.[7] To train effectively for such environments will require repeatable, complex scenarios set in accurate representations of real-world operational theatres[8] and exercise the Integrated Operating Concept.[9]

1.7. In some cases, synthetic environments provide the only opportunity to train seamlessly for these complex scenarios and to exercise the full range of sovereign capabilities against realistic opponents; in all cases, the synthetic environment can be used to complement live training events, and to develop key relationships[10] that prove challenging due to geographical and logistical constraints.

[7] Solving complex problems with incomplete information and 'thinking to win.'
[8] The Final Exercise Report on Virtual Warrior 21, a synthetic training exercise for CSG21 prior to certification, noted that the Maritime Composite Training System (MCTS, a Tier 1 CT facility) was suboptimal for the Tier 2/2+ training events.
[9] Integrated Operation Concept (Aug 2021) updates UK thinking on deterrence, recognising that our rivals are seeking to win without eliciting a warfighting response. It also levers Information Advantage (JCN 2/18) and Full Spectrum Targeting (JSP900.)
[10] With other FE, OGDs, components or allies.

1.8. **Future Force Concept (FFC).**[11] The FFC combines the separate environmental operating concepts into a single document designed to guide coherent future force development. The FFC is the authoritative high-level analytical concept and will shape design and development of the future force out to 2035. Part 2 of the FFC states: "the anticipated complexity of the future battlespace cannot be reflected in current live exercises" and notes that "synthetic environments offer opportunities to improve the quality and potentially the availability of training opportunities, including live/synthetic blending for CT and rehearsal."[12] Part 4 of the FFC summarises the principal deductions and insights to guide coherent future force development across all commands, and suggests that "More effective training environments, which exploit technology to offer greater challenge to our people and teams, offer the prospect of increasing returns. Targeted and responsive training will enhance capability, interoperability and adaptability."[13] MCAST will support this by providing an opportunity to experiment, push the boundaries and 'fail' in a safe, realistic representation of complex operational environments, allowing MBS to exercise in a repeatable manner in order to facilitate learning, Tactics, Techniques and Procedures (TTP) development, capability assurance and mission preparation.

1.9. **National Security Context.** The SDSR10 Study 9.2 Simulation & Training paper[14] articulated an aspiration to transfer 25% of current live training to simulation by 2015 and a further 25% by 2020, together with a commitment to take an enterprise approach to acquisition of training systems. This target has since been refined for the RN, aiming for a 25:75 live/synthetic mix by 2030[15]. The Simulation and Training paper anticipated that use of commercial off-the-shelf (COTS) technology would enable development of highly realistic, cost-effective synthetic solutions for a broad range of Team and CT tasks. This direction of travel was supported in SDSR10 and SDSR15.

1.10. **Capability Readiness Assessment Framework (CRAF).** [redacted]

1.11. **Joint High Level Operating Concept (HLOC).** The HLOC provided a conceptual headmark for Joint operations for 2020 and beyond in order to inform Force Development.[17] It breaks the 7 components of the DCF into 3 core functions (Operate, Command, Inform) and 4 supporting functions (Prepare, Project, Protect, Sustain). The Prepare function is further divided into Deep, Functional and Immediate Preparation and effective use of the synthetic environment is identified as a key requirement.[18]

1.12. **Defence Modelling and Simulation Office (DMSO) Coherency.** The DMSO vision is for a coherent framework of modelling and simulation enablers, accessed through the Defence Simulation Centre (DSC) Front Door, that are interoperable, reconfigurable and cost effective.[19] DMS) & JSP 939 compliance is mandatory and, building compliance into MCAST design and delivery processes will reduce costs and maximise Value for Money (VfM), facilitate cross-Defence coherence, ensure interoperability and enable reuse of information

[11] Joint Concept Note 1/17, dated July 17. See also Future Navy Operating Concept, (FNOC) Jul 2020.
[12] FFC, para 2.28.
[13] Ibid, para 4.8.
[14] SDSR Study 9.2 Simulation and Training, dated 25 Jun 2010.
[15] COMFOST, 2022. 2SL has set a challenge to achieve the live-virtual training balance as 50:50% by 2025 and 25:75% (email 2SL-MA to DNS-Dir).
[redacted]
[17] HLOC, para 103.
[18] Ibid, para 619.
[19] JSP 939 - Defence Policy for Modelling and Simulation V2.0, dated Apr 20.

and equipment. Furthermore, the JWC Multi Domain Integration (MDI)[20] concept aims to widen future interoperability across departments, including their synthetic training systems.

1.13. **Maritime Training Strategy**. The Navy Board's strategic direction, as articulated in Maritime Strategy 2035[21], captures the intent for the RN to develop its ability to fight at scale. By minimising single platforms undertaking Fixed Tasks, all remaining FEs are freed to support a Responsive Force, forming the core of a warfighting capability. Fixed Tasks will include Continuous At Sea Deterrence (CASD) and Territorial Integrity. The balance of the RN is then available for the Responsive Force, the core of which is the operation of a Carrier-based MTG, delivering Carrier Strike (CS) and a Littoral Strike (LS) capability. The RN recognises the benefits afforded through the increasing and coherent use of synthetics in CT as articulated in the Maritime Training Strategy[22], foremost of which is the opportunity for the RN to train and generate as it would fight against peer or near-peer threats. Synthetics also offer the opportunity to create space and time in FGen cycles for training and to exploit continual development in technology.

Operational Employment

1.14. **Key User Requirements (KUR).** The 9 endorsed MCAST KURs are reproduced below and detailed within the URD.

Table 1.1 – Key User Requirements

Number	Requirement
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

[20] JCN1-20.
[21] Maritime Strategy 2035, NAVB/P (16)14, dated 4 Jul 16.
[22] Maritime Training Strategy, Version 4, Guiding Principles 7 and 8.

1.15. **Capability Milestones.** The project has 8 Capability Milestones (CM); [redacted]

1.16. **Capability Integration.**

a. **Internal**. [redacted]

b. **External**. [redacted]

1.17. **Funding Responsibility.** The project is funded through the Assessment Phase and the initial 5-year contract, subject to MCAST FBC Approval, via Tranche 1 provision. Funding bids will be made by NCHQ to sustain the MCAST capability beyond the initial contract. Currently, MCAST Infrastructure is a dependency on the Operational Advantage Centre project and MCAST Infrastructure will therefore require additional NCHQ funding; [redacted]

Endorsed Roles and Capabilities

1.18. **Programme Outcomes.** MCAST should deliver 5 project outcomes from IOC and are outlined below:

- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]

Relationship to Other Endorsed Concepts and Associated Capabilities

1.19. The programmes, projects and initiatives that influence MCAST are tabulated below.

Table 1.2 MCAST Relationships

Programme/Project/Initiative	Organisation	Comment
Army Collective Training Transformation Programme (CTTP)	HQ Land	Will include CAST, previously used to deliver Commando Group training.
Carrier Enabled Power Projection (CEPP)	NCHQ	MCAST as key tool for MBS/ linked to CEPP FOC
DOTC(A) (Gladiator)	HQ Air Cmd/ CSAV	Including Air and Mar FW and RW assets
EXONAUT	Joint Training and Exercise Planning Staff (JTEPS)	Exercise & CT planning toolset delivered by 4C Solutions. Currently used by Army

[redacted]

		at CAST and being trialled by JTEPS as a Capability Concept Demonstrator (CCD).
RN Warfighting Centre	NCHQ	RNFWC will house CSF, CSG, MWBS, Joint Training and Exercise Planning Staff Assurance Group (JTEPS)[27].
JCAST	JW	JW use JCAST, a contracted service to deliver Tier 3 CT events within the Defence Exercise Programme (DXP).
Joint Multi-National Interoperability Assurance Network (JMNIAN) / JMNIAN +	Defence Digital (DD), UK StratCom	Defence Training Network dependency for distributed trg .
LRG/Future Commando Force (FCF) Concepts	NCHQ	Structure will drive LRG trg requirement for RM BS in both UK and deployed
MCTS	Maritime Warfare School (MWS), Collingwood	Assumed utility within the future Navy Synthetic Training Environment alongside other legacy simulators. (SELBOURNE)
Multi Domain Integration (MDI)	UK StratCom	Concept to promote wider integration of capabilities across domains
Op Advantage Centre (OAC)	NCHQ/DE&S	Centre of Excellence for information exploitation and maritime doctrine
CSF Enterprise Transformation	RN Infrastructure and Asset Management Organisation	Following delegation of Defence Infrastructure Organisation (DIO) funding back to Front Line Commands (FLCs), design of op model and processes to support and deliver infrastructure and estates management within Navy Command. Focus will be on developing training centres of excellence. This now an integral part of Generate-Operate Transformation.
Project PENSEIVE	MWC	Development of Tactical Reconstruction Capability for live operations and exercises
Whole Force Approach	MOD	Use of personnel including Regulars, Reservists, Contractors

Opportunities

1.20. **Potential Opportunities, Roles and Capabilities.** The following opportunities are aspirational (or unfunded) and offer potential future benefits for the RN and Defence.

[redacted]

[27] The Joint Strike Training and Assurance Group merged with JTEPS under project EAGLE (2021DIN05-021).

[redacted]

1.21. **Assumptions.** MCAST Key assumptions[32] relevant to this CONUSE are:

Table 1.3 MCAST Assumptions and Dependencies

Serial	Assumption	Potential Impact
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

[redacted]

[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
	Dependency	**Potential Impact**
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

1.22. **Sponsor and User Community.**

a. **Sponsor**. The MCAST capability sponsor is the Fleet Commander. Responsibility for delivery of MBS training has been delegated to CSF N7 (TRA) and JTEPS as the Training Provider (TP).

b. **Senior Responsible Owner (SRO)**. The MCAST project SRO is COMFOST. The SRO will be accountable to the Fleet Commander for the successful delivery of the project and realisation of expected benefits. The Project Director will be COS COMFOST within FOST HQ. At IOC the project will be handed over to the Responsible Senior Owner (RSO to be nominated).

c. **Business Change Manager (BCM)**. CSF, as the TRA, will be the BCM and Acceptance Authority. The Acceptance process and criteria will be defined in the DE&S Integrated test and Evaluation and Acceptance Plan.

d. **DE&S Operating Centre (OC)**. The Equipment and Logistic DLOD elements of the programme will be delivered and managed by Maritime Combat Systems (MCSPT) within DE&S Ships OC.

e. **Lead User**. The lead user for the MCAST capability is COMFOST as the Training Delivery Authority (TDA), who will own the Training and Organisational DLOD deliverables. Training delivery will be delegated to JTEPS.

PART 2 – CAPABILITY DESCRIPTION

2.1 **Contribution to the DCF**. Effective operational training must reproduce the complex operational environments in which the RN expects to operate. MCAST will contribute principally to the PREPARE element of the DCF by closing existing training gaps and enhancing the quality of MBS CT for MBS.

CAPABILITY

2.2. **Introduction**. MCAST is a system intended to provide a RN CT capability to train MBS within a single virtual battlespace to achieve and sustain required readiness levels and provide a future opportunity to conduct mission rehearsals. [redacted]

2.3 **MCAST Boundaries**. The MCAST capability will comprise the physical architecture, the virtual environment, and staffs to manage the training programme, the synthetic environment and delivery of exercise services. It will be delivered primarily through a contracted MCAST Operating Service covering both permanent contracted personnel and equipment, interacting with the TRA and TDA who key training management functions on behalf of the RN. During training delivery of major events, there will be a key dependency on external augmentation to the core service – from within the contract and/or military personnel, to establish a White Force capable of delivering the exercise. The expectation is that the contracted MCAST Service provider will leverage technical and other methods of innovation, from initial acquisition onwards, to drive down the levels of augmentation significantly[33] below those traditionally required. Figure 2.1 indicates the boundaries for the MCAST capability, with constituent elements described in following paragraphs.


[redacted]

[33] A Key System Requirement target of military augmentation for a White Force of no more than 50% of the TA, ie max 40, not including JTEPS, compared to traditional levels for 2* CSF and 1* CSG/HQCF events necessitating almost 2:1 WF:TA using MCTS.

2.4. **MCAST Operating Service (MOS)**. The MOS contract will cover the equipment, a permanent core of contract personnel and limited additional contracted augmentation for CPX EXCON. A conceptual organisation is shown in Figure 2.2 to show a functional structure across training management, environment assurance and the WF established for CPX. JTEPS will deliver the command and training management functions as well as providing the most up-to-date Operational experience and advice to ensure realism and credibility of MCAST events. The contracted staff will primarily plan and deliver the training and exercise requirements endorsed by the CT Customer Executive Board (CT CEB).

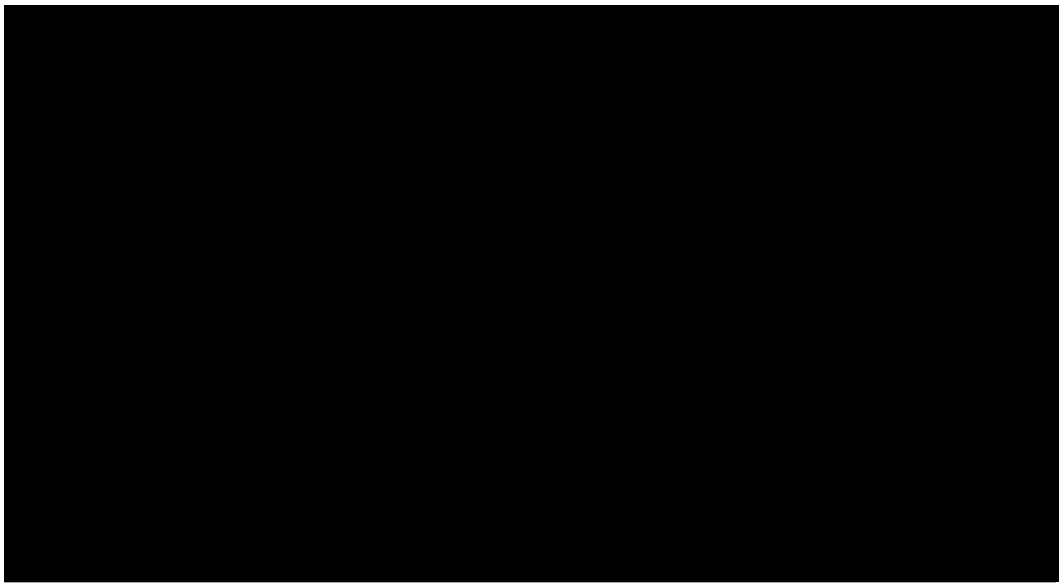

Figure 2.2 MCAST Functional Organisation.

a. **Exercise Planning**. Contracted staff will form planning teams with the task of developing the Main Event List and Main Incident List (MELMIL). Planning teams will be supported by the RN SMEs within MCAST, and externally as required, to support dedicated planning periods and sprints. Initially, the intent is to undertake the detailed CPX planning within 6 months prior to the event, reducing to 4 months prior as MCAST becomes established and efficiencies are realised. Efficiencies are expected in areas including but not limited to scenario catalogues and more effective processes and tooling. The initial planning demands, combined with the SOTR, may necessitate 2 planning teams at contract award but with the expectation of workforce efficiencies as the MCAST exercise catalogue builds and technical solutions develop and mature through incremental innovation.

b. **Exercise Delivery.** The exercise delivery function is to facilitate effective synthetic training to meet the needs of the TA. Core MOS personnel will help form the core WF but will not be sufficient to support all EXCON posts; there will therefore be an enduring requirement for augmentation through either MOS-provided temporary support or using RN augmentees. While the current assumption is that augmentation will align initially with traditional levels for the different types of event, a key RN requirement is to drive down their augmentation commitment. The intent, therefore, is for the MCAST contractor to demonstrate and exploit innovative tools and processes that will reduce the augmentation levels through early and incremental adoption of innovation. Limited mitigation may be offered through the MCAST contracted service subject to sufficient funding being available. Responsibility for augmentation management to support both the TA and WF will rest with the sponsoring HQ with initial bids being ideally placed a year in advance of the event.

c. **Operations Management**. [redacted]

d. **MCAST Technical Service (MTS)**. The MTS will comprise the CIS and supporting personnel that will enable the MBS to train using a single, realistic synthetic environment. It will also consist of equipment allowing the Training Operations to design, plan and deliver complex synthetic scenarios with large numbers of doctrinally pure, realistic entities while allowing the TA to interact in real time in valid operational environments. [redacted]

(1) **Training Environment**. [redacted]

(2) **Refresh Rates**. [redacted]

2.5. **Stakeholder Working Relationships.** [redacted]

[redacted]

Table 2.1 RACI Table

[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]		[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]		[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]		
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]		
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]		
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]		
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]		
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]		
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[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]		[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]		[redacted]

Training Management for MCAST 2*/1* Events

2.6 **Training Requirement.** [redacted] that

[redacted]

[redacted].

provides biennially a full exercise for the 1* and 2* HQs and 2 exercises [redacted] to meet the LRG rotational deployment requirements. [redacted] The training requirement as set out in the SOTR will be delivered within the MCAST core contract and budget; however, additional events to support the wider RN/Joint exercise programme will be costed as additional activity by the Contractor with an appropriate funding uplift required. [redacted]

[redacted]

2.7. **SOTR Process**. [redacted]

2.8. **Event Cycle**. T[redacted]

[37] The MCAST SOTR will be set 2 years in advance to synchronise with FGen live and virtual training requirements.
[38] Particularly the Initial Planning Conference (IPC).

[redacted]

2.9. **Exercise Specification**. [redacted].

2.10. **Training Objectives**. [redacted]

CPX Design and Plan

2.11. **Design and Develop**. [redacted] A planning team will form around the MOS permanent core to design the exercise scenario and develop a MELMIL that will exploit vignettes[40] to provide the training opportunities against the mandated CTOs/EOs. During this process, there may be exercise stakeholder (including TDA, TP, TA) planning meetings to ensure the exercise aim and objective can be met, operational staff work will be available and appropriate updates have been made to vignettes and the associated scripting complete. It is anticipated that these processes will become more efficient through the generation of an accessible store of exercise settings and supporting information, including but not limited to real-world information and intelligence, and a catalogue of vignettes, events and artefacts that can be used and adapted to accelerate the planning process. Planning will conclude with the production of an exercise plan (EXPLAN) and a brief to the TDA on readiness to proceed to exercise delivery.

[redacted]

[40] Vignettes are pre-planned training epochs that may run for hours or days within which one or more training opportunities and events are planned. Multiple vignettes may be active at any time.

[redacted]

CPX Delivery

2.12. **Exercise Delivery Structure**. [redacted] Of note, the WF is shaped around a traditional model, while the assumption is that the Training/Assurance functions will be delivered by the wider RN outwith the MCAST framework.

[redacted]

2.13. **Training Provider**. The TP will be JTEPS assisted by Tier One TPs where appropriate and supported by MOS and MTS enabling the training exercise. During exercise delivery, a WF will be established from these elements. Military augmentation will especially be required within the HICON and SIDECON areas where there is net benefit as a secondary TA. JTEPS will be responsible for training delivery and assurance to the TDA and TRA respectively. JTEPS will lead Exercise Control (EXCON), and act as the TDA for planning to ensure continuity and achievement of all designated CTOs.

2.14. **Exercise Control (EXCON)**. [redacted]

[redacted]

2.15. **Events and Incidents**. [redacted]

CPX Analyse and Report

2.16. **Data Capture**. [redacted]

2.17. **INVAL**. MOS staff will conduct an INVAL of the CPX in consultation with the JTEPS to assess the delivery of the training exercise and use the feedback for continuous improvement of the exercise environment, event management and provision of stimulus to all pillars of the MBS.

2.18. **TA Evaluation**. JTEPS will analyse the training exercise to assess and report on the performance of the TA against the CTOs and Standards, reporting through the TDA to the TRA.

2.19. **LFE**. A final exercise report will be raised by JTEPS, aided by MOS staff, to capture all Lessons Identified (LI) during the exercise. The report will provide external validation and contribute to training management, exercise structure and content, the processes and procedures used by the TAs and help inform RN doctrine.

MBS One-Day and Team Training

[redacted]

2.20. **Training Events**. [redacted]

2.21. **Personnel**. The scale of such events should ensure the support for training delivery can be achieved within MOS core manning supplemented by minimal CSF/CSG/HQCF internal resource for EXCON. As the Officer Conducting the Exercise (OCE), MBS N7 will be responsible for organising Vignette and Team training.

Capability Management

2.23 **Capability Transition**. MCAST must deliver efficiencies in the planning, execution and analysis of exercises and training events. This would require adoption of new processes and practices to maximise the benefits of the new capability. There will inevitably be a period of adaptation[43], especially as the capability moves towards IOC, and RN and contracted staff learn to exploit the system. [redacted]

2.24 **Security**. [redacted]

2.25 **Resilience**. The MCAST capability will be designed to be resilient to disruption in the physical, information and cyber environments. A Business Continuity Plan (BCP) is being developed and will be refined following contract award and will be reviewed annually or following significant changes to the MCAST capability or facility.

Infrastructure

2.27 [redacted]

[43] BMT Training Study Annex D, ET001049, 28 May 21, highlights the need for a change management process to ensure MCAST has a smooth introduction to service.

[redacted].

[redacted]

[45] Likely JMNIAN.

PART 3 - FORCE DEVELOPMENT IMPLICATIONS ACROSS DEFENCE LINES OF DEVELOPMENT (DLoD)

Training

> The Training DLOD should provide the means to practise, develop and validate the practical application of Defence doctrine to deliver a military effect within necessary constraints (such as resources, op tempo and readiness). It is to ensure that the right people receive the right training through a coherent through-life strategy. The ideal is to train as one intends to fight.[46] Train the trainer should be the responsibility of the Capability Provider

3.1 **DLOD Owner**[47]. The Training DLOD owner is COMFOST, who is also the TDA.

3.2 **Individual Skills/Specialisation Training**. To maximise the MCAST capabilities, it is likely that investment in people and skills will be required up to 2 years before PASE. MCAST will professionalise the MBS Training staff (train the trainer) and develop the requisite skills to be able to Develop, Produce, Evaluate and Report on staff and products output by MCAST.

3.3 **Collective Training Needs Analysis (CTNA)**. More detail on the requirements and breadth of training required for MCAST capabilities will be addressed through the Training DLOD. This should be conducted by TRA, held to account by CT CEB. An MBS CTNA was commissioned[48] and has reported.

Equipment

> The Equipment DLOD should provide military platforms, systems and weapons, either expendable or non-expendable, which are needed to equip an individual, group or organisation. It is to ensure that trained personnel receive the right equipment.

3.4 **DLOD Owner**. The Equipment DLOD owner is Maritime Command Systems (MCS) PT which sits within DE&S Ships.

3.5 **Equipment Functionality**. [redacted]

3.6 **Equipment Ownership**. [redacted]

Personnel

> The Personnel DLOD should provide sufficient, capable and motivated personnel to deliver Defence outputs, both now and in the future. It is to ensure that the right people, in sufficient numbers, are employed in the right way to maximise the capability.

3.7 **DLOD Owner**. The Personnel DLOD owner is PCAP, NCHQ.

[46] MOD Knowledge in Defence (KiD)
[47] DLOD owners need to be confirmed – each DLOD will be assigned an owner, who will be accountable for delivery and assurance.
[48] BMT have been contracted to conduct a full CTNA for MBS that will cover all aspects and media for MBS training.

3.8 **Workforce Requirements**. The MCAST capability will make maximum use of the Whole Force Approach, with the potential to draw from military personnel, reservists, contractors, Civil Servants and wider Industry personnel. There will be an enduring contracted MCAST core staff with a primary role of maintaining the synthetic environment and artefacts, exercise design and delivery within the MOS. All such personnel will hold appropriate security clearances in line with their roles. The capability will require a cadre of WF/EXCON drawing on augmentation by RN regular forces or FTRS SME to assist and provide advice on current operational practices during medium and large exercise delivery. The main element of such augmentation will be posts within the HICON and SIDECON that have a secondary TA value. It must be noted that affordability may limit the ability to bring in contracted augmentation to fulfil the wider EXCON roles required to run complex CPXs. Any shortfall in available WF personnel would have to be covered by RN augmentation and should be requested as part of the EXSPEC within the planning process.

3.9 **Military Personnel Assumptions**

a. MBS have the training margin to achieve CTOs using MCAST – to be defined by MBS Staff Transformation

[redacted]

Information

The Information DLOD should provide a coherent development of data, information and knowledge requirements for capabilities and all processes designed to handle and gather data, information and knowledge. Data is defined as raw facts, without inherent meaning, used by systems and humans. Information is defined as data placed in context. Knowledge is information applied to a particular situation.

3.11 **DLOD Owner**. The Information DLOD owner is Navy Digital. It is expected that certain aspects will be delivered by Defence Digital (previously ISS)[49] on their behalf.

3.12 **Data and Information**. [redacted]

3.13 **Operational Networks**. [redacted]

3.14 **Distributed Training and Testing Networks**. The security requirements for training will need to be fully understood, appropriate procedures adopted, and accreditation achieved. Adherence to DMSO standards will maximise potential for future connectivity to other Defence networked training, such as DOTC(A) or future distributed Tier 3 battle staff training events. Supporting contracts must be flexible enough to cater for out-of-hours activities (e.g. multi-national exercises) when connected to or through allied systems.

[49] A Cluster organisation within UK StratCom which acts as Design Authority for Defence Information and Communications Technology (ICT).

3.15 **Synthetic Environment and Exercise Management Systems.** [redacted]

Doctrine and Concepts

> Doctrine is an expression of the principles by which military forces guide their actions and is a codification of how activity is conducted today. It is authoritative, but it requires judgement in application. A Concept is an expression of the capabilities that are likely to be used to accomplish an activity in the future.

3.16 **DLOD Owner**. The MBS Doctrine and Concepts DLOD owner is the 2* CSF BS. As the SME, they will advise MCAST contractor, which documents are valid.[51]

3.17 **UK Doctrine**. UK Concepts and Doctrine will align whenever possible with those of NATO partners. [redacted]

3.18 **MCAST CONOPS**. [redacted]

3.19 **MCAST Project**. Outputs will need to be reviewed regularly to ensure that they remain coherent with NS, tri-Service and NATO plans for related capabilities. A coherent CONUSE is required prior to FBC approval in conjunction with URD and Services Statement of Requirement refinement.

Organisation

> The Organisation DLOD relates to the operational and non-operational organisational relationships of people. It typically includes military structures, MOD civilian organisational structures and Defence contractors providing support.

3.20 **DLOD Owner**. The Org DLOD owner is COMFOST.

[50] The OpCIS applications may be provided within a dedicated multi-tenant OPNET Node with associated operator workstations. This would ensure the TA were using the same systems and applications for training and operations. OPNET as GFA is the current recommended solution for MCAST OPCIS and is awaiting formal endorsement by the SRO.

[51] CSF BS are not respective doctrine document sponsor/originator or responsible for maintaining the documents but will advise on currency of the library set that is in use by CSG and LRG/HQCF.

[redacted]

a. CSF will be the TRA for MBS CT and will need to be resourced appropriately. A constraint is to minimise RN permanent and temporary staff within the MCAST capability.

b. COMFOST will be the TDA.

c. JTEPS will report to the TDA as the Training Provider (TP).

d. MCAST will need permanent military presence within the MOS for Training Management and current specialist knowledge (para 3.10). This function will interact with the CT CEB, TRA, TDA and the TA in establishing the annual training programme detailed within a Training Authorisation Document.

e. The contracted service provider for MOS will propose an organisational structure they consider will deliver the service in an efficient manner. During the negotiation phase of letting a contract the RN will need to agree on the optimum organisation structure to ensure RN oversight and control, and the placement of RN SMEs in critical posts.

3.21 **Governance, Programming and Priorities**. Governance of the capability needs to be managed to reflect evolving NS MCAST CONOPS. It should also link to and be coherent with other change initiatives.

Infrastructure

The Infrastructure DLOD is the acquisition, development, management and disposal of all fixed, permanent buildings and structures, land, utilities and facility management services (both Hard and Soft Facility Management (FM)) in support of Defence capabilities. It includes estate development and structures that support military and civilian personnel.

3.22 **DLOD Owner**. The Infrastructure DLOD owner is Navy Infra.

3.23 The MCAST project includes user requirements to consider a range of infrastructure options. The intent is for DIO to conduct a study to a determine the best VfM solution; however, there will not be a permanent facility available before MCAST ISD. A further study is therefore being completed to identify options for an interim solution; this DLOD will be updated from that study.

3.24 **Geographic Location**. [redacted]

3.25 **Interim MCAST Exercise Venues**. [redacted]

M[redacted]

3.26 **Potential Future MCAST Venues**. [redacted]

- [redacted]
- [redacted]

3.27 **MCAST Exercise Design and Planning Office**. Prior to the Execute Phase of MCAST exercises, design and planning activities need to take place up to 18 months before the start of the exercise. As such, year-round design, planning, execution, monitoring and assurance of MCAST exercises and associated management tasks will need to take place and will require access to MCAST systems and services.

3.28 **Basing Studies**. Basing analysis should include a comprehensive assessment of infrastructure requirements for buildings, utilities and life support. Maximum use should be made of existing/shared facilities at the selected location; where this is inadequate, or of insufficient capacity, the MCAST Programme will be expected to identify supplementary facilities. The selected sites must allow for continued development of the facility and testing of its technologies as new MCAST capabilities are brought into service.

Logistics

The Logistics DLOD is the science of planning and carrying out the operational movement and maintenance of forces. It relates to the aspects of military operations, which deal with: the design and development, acquisition, storage, transport, distribution, maintenance, evacuation and disposition of materiel and facilities. It includes the acquisition or furnishing of services, medical and health.

3.29 **DLOD owner**. The Logistics DLOD owner is Maritime Command Systems (MCSPT) which sits within DE&S Ships.

3.30 **General Support**. This will be a contracted service support solution to provide the MCAST services which includes the provision of the contractor element of the professional WF, the exercise CIS and maintenance, Upgrade, Upkeep and Modification of the MCAST capability.

[redacted]

PART 4 - CONSTRAINTS AND LESSONS

Project Constraints

4.1. Project delivery constraints that may affect timely delivery of the capability include:

a. **Availability of SME/SQEP**. It is expected that MOS and WF members will be contractors, supported by military augmentation for exercise delivery. The optimum construct of MOS and WF, including EXCON, based on the contracted service and standard operating procedures (planning, execution and reporting) for MCAST will be determined during Invitation to Negotiate (Q1, 2023).

b. **Transformation**. MCAST is a training capability to meet the CT needs of MBS. The capability requirements have been formulated against the backdrop of change driven by CSF Enterprise Transformation, the FCF structure and associated LRGs. As these changes mature, they may affect MCAST.

c. **Infrastructure.**

[redacted]

d. **Security**. [redacted]

Lessons

4.2. **Procurement**. The MCAST Project team have engaged with the JCAST and Army CAST Project Teams to understand key lessons from recent procurements these will be collated into a Lessons Register and will form part of the MCAST Risks, Assumptions, Issues, Dependencies and Opportunities (RAIDO) document; this approach and will be maintained as an important method of de-risking capability delivery.

PART 5 - LIST OF ABBREVIATIONS AND TERMS

Abbreviation	Meaning
3 Cdo Bde RM	3 Commando Brigade Royal Marines (1* Command)
C2	Command and Control
CEB	Customer Executive Board
CEPP	Carrier Enabled Power Projection
COMFOST	Commander Operational Sea Training
CPX	Command Post Exercise
CRAF	Capability Readiness Assessment Framework
CS	Carrier Strike
CSF	Commander UK Strike Force
CSG	Carrier Strike Group
CT	Collective Training
DLOD	Defence Line of Development
DMSO	Defence Modelling and Simulation Office
DOTC(A)	Defence Operational Training Capability (Air)
DXP	Defence Exercise Programme
EXCON	Exercise Control
FWC	Fleet Warfighting Centre
HQCF	Headquarters Commando Force
HICON	Higher Command Control
JEF	Joint Expeditionary Force
JMNIAN	Joint Multi-National Interoperability Assurance Network
JSP 939	Defence Policy for Modelling and Simulation
JTEPS	Joint Training and Exercise Planning Staff
JW	Joint Warfare
KUR	Key User Requirement
LOCON	Lower Command Control
LRG	Littoral Response Group
LSG	Littoral Strike Group
MBS	Maritime Battle Staff
MCAST	Maritime Command and Staff Training
MCTS	Maritime Composite Training System
MDI	Multi-Domain Integration
MELMIL	Main Events List Main Incident List

Abbreviation	Meaning
MOS	MCAST Operating Service
MTG	Maritime Task Group
MTS	MCAST Technical Services
MWBS	Mine Warfare Battle Staff
MWC	Maritime Warfare Centre
OPCIS	Operation Command and Information Systems
OPNET	Operation Network, hosting OCIS applications
RACI	Responsible, Accountable, Consulted, Informed
SIDECON	Side Control (liaison elements, grey forces etc)
SOTR	Statement of Trained Requirement
SOTT	Statement of Training Task
SRD	Systems Requirement Document
TDA	Training Delivery Authority
TP	Training Provider
TRA	Training Requirements Authority
TrAD	Training Authorisation Document
UKStratCom	UK Strategic Command
URD	User Requirement Document

List of Terms

Term	Explanation
Accountable (RACI)	The stakeholder who directs the task, provides the final review before it is deemed completed.
Assurance	The second stage of CT, comprising an evaluation that force elements or components have been successfully generated, validation of the FGen process, and certification that the TRA accepts any risks. CT must be assured prior to the participation of force elements or components in higher tier activity.
Certification	An agreement by the TRA that a force or force element can be operationally deployed, including the acceptance of any risks. This may include recertification following FSus phases, such as deployed (continuation or in-theatre) training or a change of operational role.
Collective Training	Training that aims to improve the ability of teams, units or formations to function as a cohesive entity and thus enhance operational capability.
Consulted (RACI)	The stakeholder(s) who provide input to the task based on their role and expertise.
Defence Joint Collective Training and Exercise Committee	Provides a detailed Defence Exercise Prog to meet UK Defence commitments and training requirements that is balanced, affordable, effective and realistic, aligned with Defence Strategic Direction and balances military utility with political imperatives.
Evaluation	An assessment by the TDA – typically through exercising – that FGen has been completed to the required standards and a judgment of the value of the CT via an assessment of any associated risks owing to shortfalls. This results in a report of readiness based on risk management.
EXCON	The grouping of facilities and personnel that manage the detailed conduct of training events. The EXCON is location independent and can comprise MOD and/or contractor staff.
HICON	The grouping of facilities and personnel that provide input to training and assurance and is representative of a higher formation. A HICON is location independent and can consist of roleplayed, simulated or real input (or a blend thereof) from MOD and/or contractor staff.
Informed (RACI)	The stakeholder(s) who need to be kept informed of the activity progress and outcome.
Internal validation (INVAL)	Conducted by the TDA against the TRA's requirement to assess how well it was met relative to expenditure and reported to the TRA directly or via the CT CEB.
LOCON	The grouping of facilities and personnel that provide input to training and assurance and is representative of lower formation. A LOCON is location independent and can consist of roleplayed, simulated or real input (or a blend thereof) from MOD and/or contractor staff.
Responsible (RACI)	The stakeholder(s) who will complete the task.
SIDECON	The grouping of facilities and personnel that provide input to training and assurance and is representative of external interfaces that would be a part of operations. A SIDECON is location independent and can consist of roleplayed, simulated or real input (or a blend thereof) from MOD and/or contractor staff.

Term	Explanation
Tier 0	Sub-Unit level CT that prepares individuals to operate as teams below Unit level.
Tier 1	Unit-level CT that prepares units and sub-units to take their place within a tactical formation or Combined/Joint Force Component.
Tier 2	Tactical Formation-level CT that prepares tactical formations operating below the Combined/Joint Force Component level for operational employment.
Tier 2+	Component-level Joint CT that prepares one or more Combined/Joint Components for operational employment. It may be conducted in combined or joint contexts on a UK, NATO or Coalition Partner framework basis. This Tier is of significance with enduring NATO requirements and the next higher HQ (HICON) will be the Joint Task Force HQ.
Tier 3	Combined/Joint Task Force-level CT that prepares a Combined/Joint Task Force for operational employment or a Permanent Joint Overseas Base for an operational role. It may be conducted in combined or joint contexts and on a UK, Joint Expeditionary Force, NATO, EU or Coalition Partner framework basis.
Validation	An appraisal of how well the training met the FGen requirement relative to expenditure (Internal Validation) and that the evaluation was sufficiently objective to assess readiness via risk management (External Validation).
White & Grey cells	Organisations that are outside of NATO and opposition/enemy force structures, which are typically referred to as White (for International Organisations (IOs) and Non-Governmental Organisations (NGOs)) and Grey (for host nation military and non-IO/NGO officials) cells.