MODERNISING THE UK'S MILITARY ENGINEERING CAPABILITIES

COLONEL ADAM FOLEY

COMBAT ENGINEER & LOGISTIC CONFERENCE
WALSAW, POLAND
12 – 14 MAR 24

AGENDA

- **Modernising the UK's Military Engineering Capabilities**
  - **Context** – What is MOBILISE and MODERNISE – Future Soldier, How we Fight 2026 (HWF26) & WAVELL:
    - **The Ends** - Credible Force/NFM.
    - **Ways** - MOBILISE & MODERNISE.
    - **Means** – The Mvr Sp Plan.
  - The UKs Mil Eng Modernisation Projects & Programmes.

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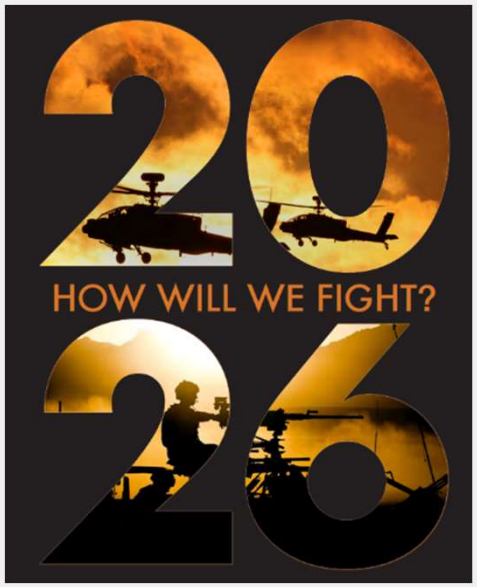
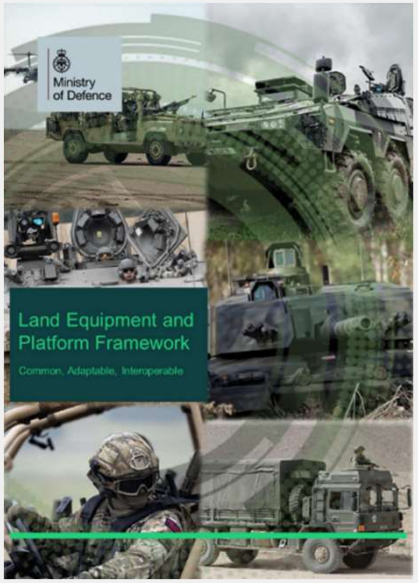
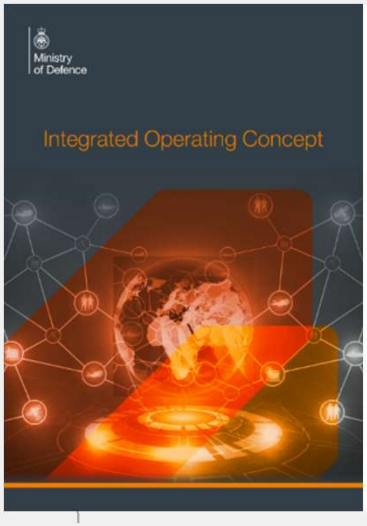
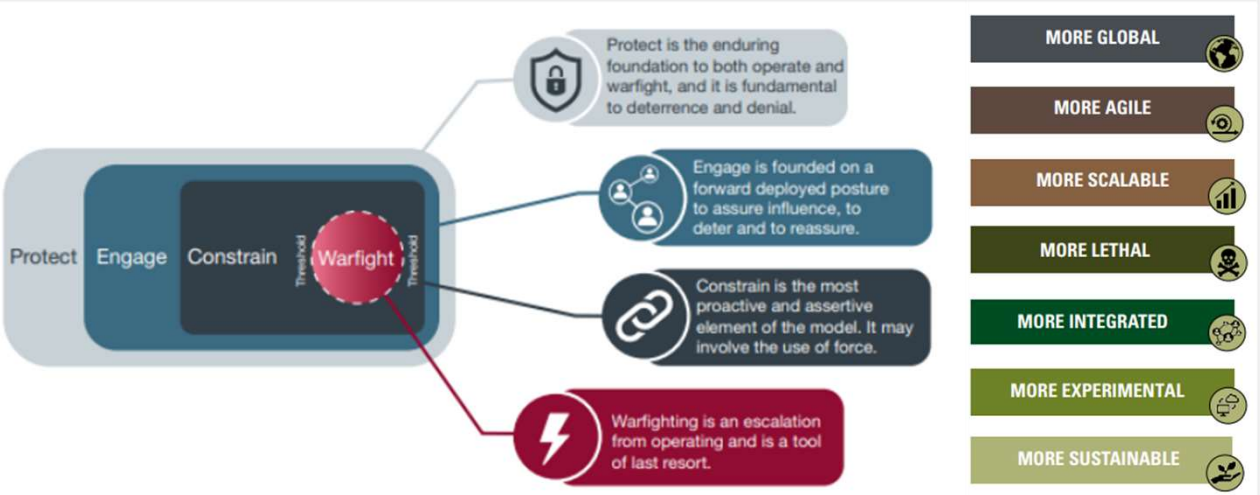
CONTEXT









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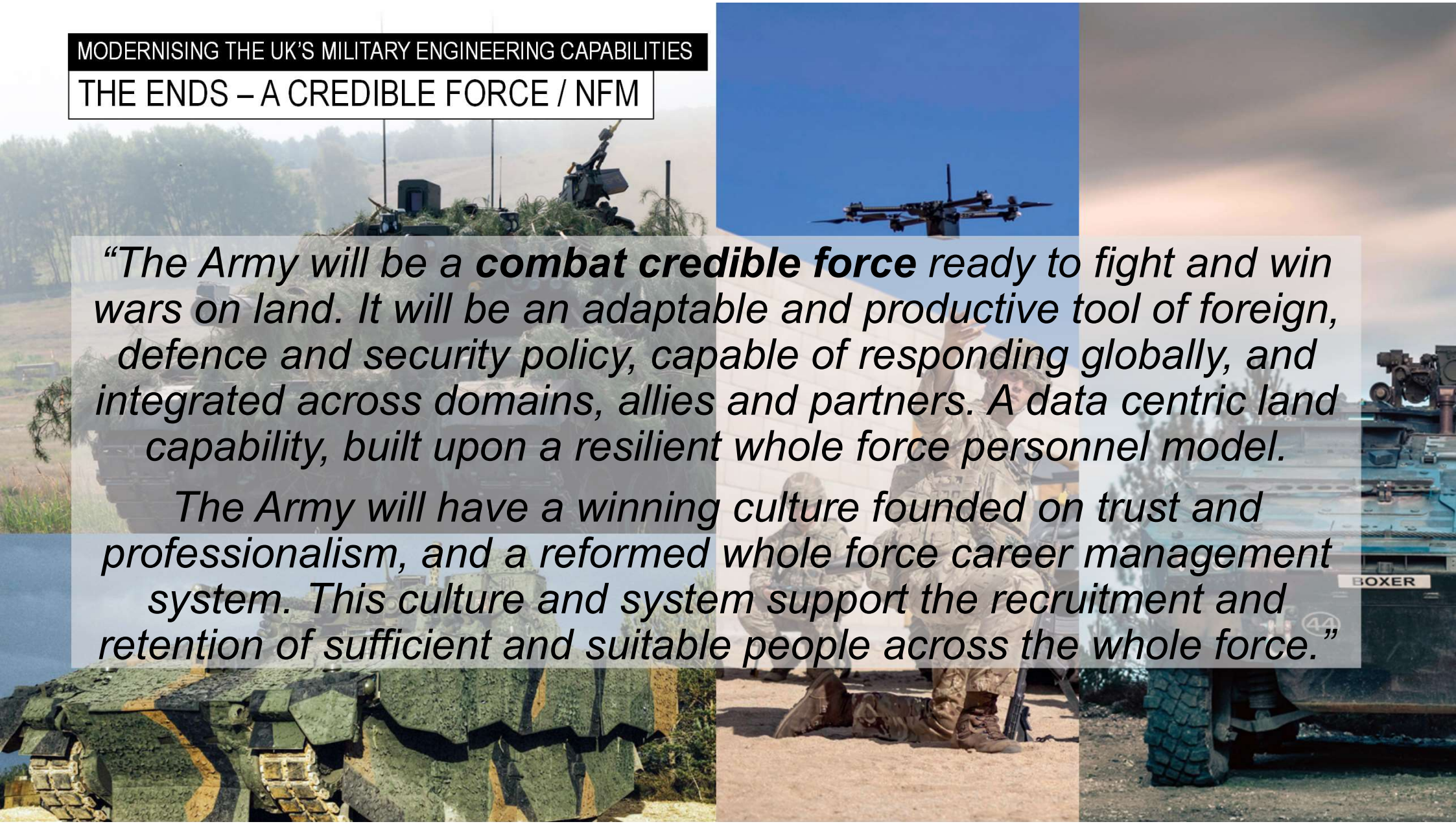
THE ENDS – A CREDIBLE FORCE / NFM



*"The Army will be a **combat credible force** ready to fight and win wars on land. It will be an adaptable and productive tool of foreign, defence and security policy, capable of responding globally, and integrated across domains, allies and partners. A data centric land capability, built upon a resilient whole force personnel model.*

The Army will have a winning culture founded on trust and professionalism, and a reformed whole force career management system. This culture and system support the recruitment and retention of sufficient and suitable people across the whole force."

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THE ENDS - NATO FORCE MODEL (NFM)

NEW NATO FORCE MODEL

At the NATO Summit in Madrid leaders agreed a new NATO Force Model. The NATO Force Model will deliver an Allied response at much greater scale and at higher readiness than the current NATO Response Force, which it will replace. It will provide a larger pool of high readiness forces across domains, land, sea air and cyber, which will be pre-assigned to specific plans for the defence of Allies. It will improve NATO's ability to respond at very short notice for any contingency, and enable Allies to make more forces available to NATO on an assured basis

Under the current NATO Response Force, Allies can make approximately 40,000 troops available at less than 15 days readiness. When fully implemented, the NATO Force Model will provide well over 300,000 troops at high readiness. The details of the NATO Force Model, including its precise scale and composition, continue to be developed. The transition to the model is planned to be completed in 2023.

TIER 1 FORCES
WELL OVER 100,000
UP TO 10 DAYS

TIER 2 FORCES
AROUND 200,000
AROUND 10-30 DAYS

TIER 3 FORCES
AT LEAST 500,000
UP TO 30-180 DAYS

*"The **UK Defence's NATO offer** and the need to protect the homeland **will drive the Army's capability targets**. The Army's contribution to each offer will be founded on the Future Soldier capabilities and develop in line with Future Soldier transformation programmes.*

The Army's NFM offers will be iterative over time, with 2024 and 2026 being critical waypoints for capability and force development towards the 2030 offer."

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THE WAYS - FUTURE SOLDIER

FUTURE SOLDIER

Delivering a modern British Army fit for the challenges of the future

"More agile and lethal. More mobile and much better protected"

2022 — **2024** — **2026** — **2035**

HWF26

Proj WAVELL

MOBILISE

- Restoring a combat credible force
- Sustaining Ukraine in its fight
- Meeting NATO New Force Model targets
- Increasing productivity – doing more with what we have

MODERNISE

Optimising the Army

A modernised Army able to win wars on land and project UK power and influence worldwide

- More lethal
- More agile
- More expeditionary
- More resilient

"Ready for the next challenge, not the last"

"A modern expeditionary Army for a Global Britain"

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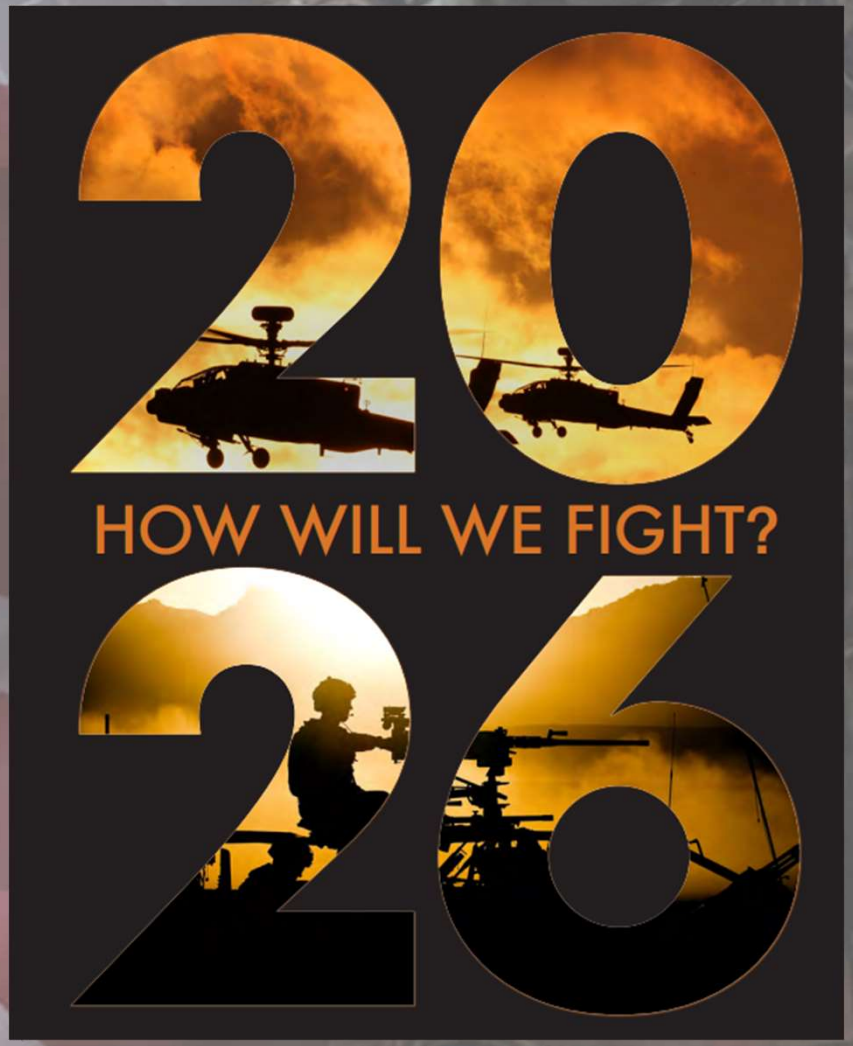
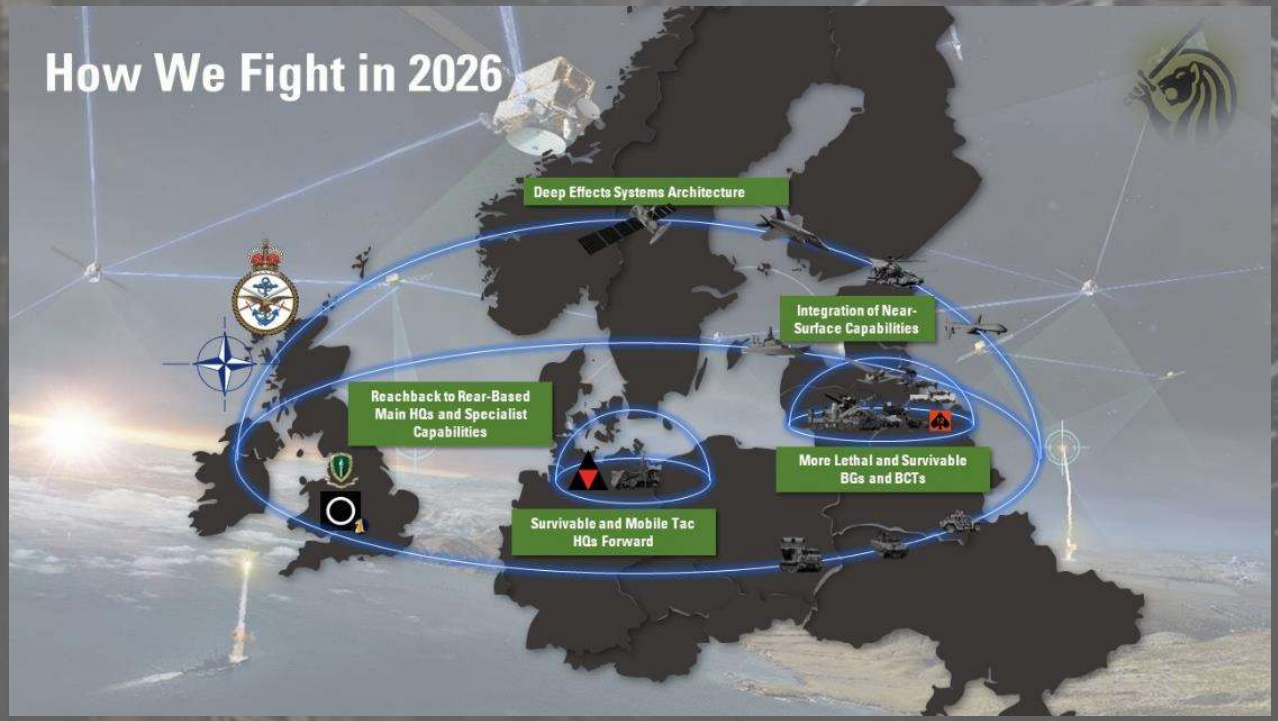
THE WAYS – MOBILISE – HOW WE FIGHT 26



"From now the Army will have a singular focus – an **acceleration of the most important parts of Future Soldier's bold modernisation agenda**… an **increased focus on readiness** and combined arms training and a **broader institutional renewal** that creates the culture required to win if called upon..."

CGS #LWC2022



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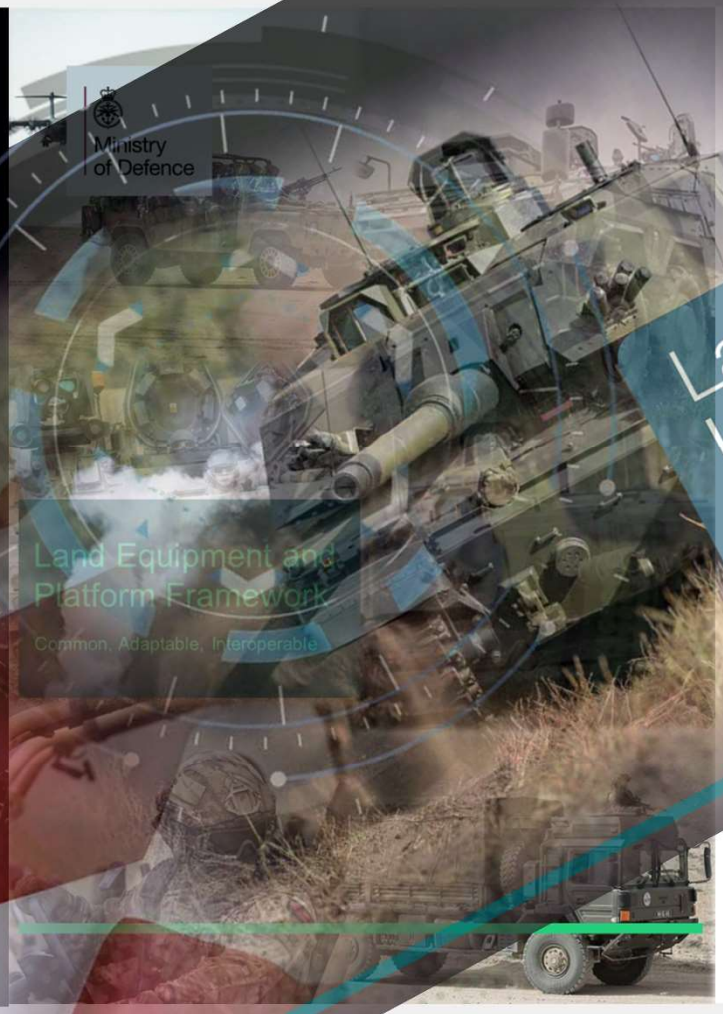
THE WAYS – MODERNISE



Land Industrial Strategy

Pushing our capability and industrial objectives

FIELD ARMY STRATEGY 2023 - 2027

Introduction

...World Ukraine has reminded us that the Fd Army must be ready to fight, and win, a conventional war. Whilst we balance our ability to 'Fight Tonight' and modernise our future capabilities, our immediate structure is focused to be battle ready for potential conflict against a peer enemy. The mobilisation of the Fd Army will be driven by our ambitious NATO Force Model (NFM) ...ntments and How We Will Fight 26 (HWF 26). Although our primary focus must be ...loping our warfighting capabilities to counter the real and present danger of Russian aggression, we will continue to develop our global campaigning and land network. To achieve these ambitions we will reach, train, Fd Army will inculcate a culture of individual and collection readiness to be as effective as possible in the generation of force.

To achieve our operational targets we are learning, adapting, and transforming. Our formations and units are reconfiguring their capabilities to better meet the requirement to 'Fight Tonight' and modernise for the future fight. Fd Army is pursuing five lines of operation to ensure our people, training, posture, Reserves and support are best configured to deliver now – and continue to improve. We are deliberately focusing additional effort on HWF 26 which will bridge the gap between our current capabilities and our modernised future force. HWF 26 is aiming to deliver a high-tempo 'find-understand-predict-prioritise-strike' deep battle capability, an enhanced and survivable C2 network, more lethal combat elements and the ability to sustain our fires.

We must acknowledge the key risks that threaten our strategy. The Fd Army currently carries risk against our combat potential in various capabilities. The Army continues to face challenges in its ability to recruit and retain the right people. We operate in a fiscally challenging environment which requires us to balance our desired investments with the resources available. The threats that we face now and in the future will not march to the beat of our drums and we will not have the luxury of optimal preparation time. However, these are not insurmountable challenges and we will not use them as an excuse for stasis. We do not have time for rumination; we must uncover our bias for action.

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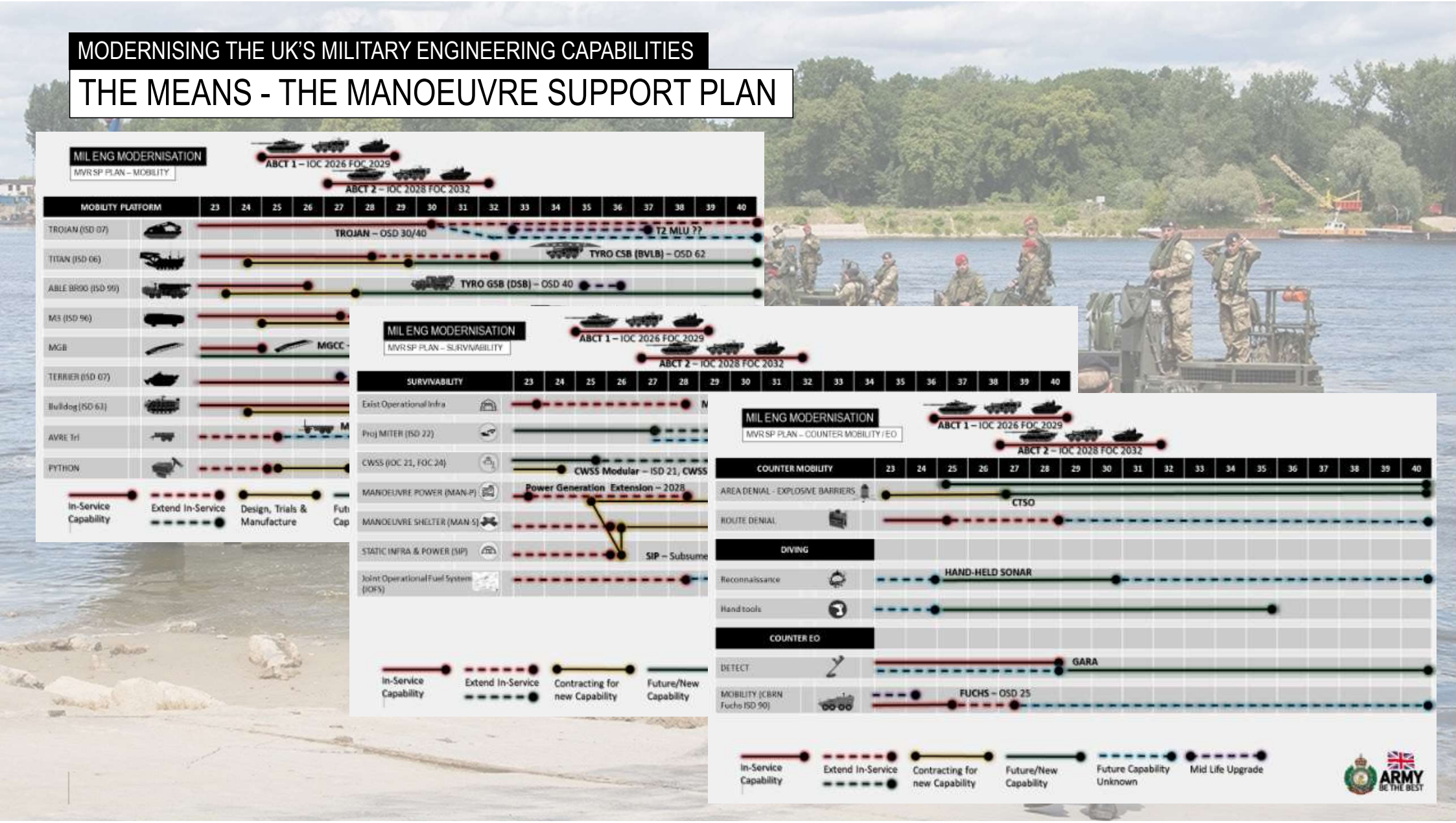
THE MEANS - THE MANOEUVRE SUPPORT PLAN



MODERNISING THE UK'S MILITARY ENGINEERING CAPABILITIES

UK'S MILITARY ENGINEERING (MIL ENG) MODERNISATION PROGRAMMES

MilEng Cbt 2028

Vision: Deliver an integrated, balanced, safe and sustainable military engineering capability to Defence delivering greater tempo to JF25, embracing new technology to enable modernised Mob Sp and enhanced Mil Eng decision support.

Close and General support bridging to support ABCTs. Engr decision support systems and underwater fixing tools

Deployable Infra 2028

Vision: Deliver safe, integrated and balanced capabilities to Defence at readiness. Enable the deployed force to live, move and fight, and facilitate the efficient deployment and sustainment of the Joint Force.

Defence earth-moving, engineer construction and MHE, combat water supply systems, deployable power and shelters to support manoeuvre units and static HQs.

Next Generation Wide Wet Gap Crossing Capability

Vision: Enable modernised armoured forces manoeuvre through a modular, scalable and configurable amphibious bridging and ferrying system. It will be capable of providing mobility support to all Land forces including the Hvy BCTs and their heavier armoured platforms. It will be a highly relevant capability to Defence across the IOpC framework, by being capable of supporting high readiness forces including support they offer to Humanitarian Assistance and Disaster Relief operations.

TRITON is to deliver a modular, scalable and configurable bridging and ferrying system to enable MLC 100(T)/130(W) crossing of wet gaps over 40m in the Land and Littoral Environments from 2032.

CBRN Protect

Vision: The CBRN Protect will provide next generation capability; physical protecti wing crew; and a suite of C capabilities to ensure Defer may operate in a contempo and fulfil national security o

Protective Measures fo hazard detection and m

Counter Mobility Programme

Vision: The CMob Prog is to deliver both area and route denial capability to Defence.

Counter Measures

CM Programme will provide dical countermeasures and specialist) that will eats prioritised by the cessful programme Delivery nce Future Force 2025 may CBR environment and fulfil s.

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Deployable Infrastructure 2028
DI28
Small Hybrid Power
Medium Hybrid Power
Containerised Power
On Hold (NB Apr 25)
Manoeuvre Power (MAN-P)
Transitioned to Fd Army (Sep 23)
Project MITER
Water Packaging
Water Treatment
Water Distribution
Combat Water Supply Systems (CWSS)
Role 1 & 2 Med Fac
HQ Shelters
On Hold (NB Apr 26)
Manoeuvre Shelter (MAN-S)
To be delivered by MAN-P & MAN-S)
Static Infrastructure & Power (SIP)
Role 3 Med Fac
Domestic Accommodation
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PROJECT TYRO CLOSE SUPPORT BRIDGE (CSB)

Project TYRO CSB (CAT A)

What is Project TYRO CSB?

Provide Defence with the capability to cross MLC 100 gaps up to 14m in the Direct Fire Zone. Designed for use during contested crossings, it will have operational mobility to match a Boxer-based ACBT, with the tactical mobility to provide Close Support in sp of CR3. Accompanying the Boxer-based launcher (BVLB) is a new bridge resupply system (BRS), PLS, plus bespoke compatible flat racks with spare bridge, trestle for combination bridging and other key equipment.

What will Project TYRO CSB do?

Deliver a wheeled bridge launcher, that meets the higher-level characteristics, keeping operational and tactical pace of relevance with an ABCT, and support MLC 100 crossings. It will provide the next generation of Close Support Bridging capability out to 2062, and modernised training, with a higher volume of platforms per BG/ABCT to increase FOMA and options for the Tactical Commander.

Single Statement of Need:

TYRO CSB is to deliver a close support bridging system to enable MLC 100 crossings of wet and dry gaps in support of 2 x ABCTs by 2032.

2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Breakout from TYRO GSB				RFQ FBC	Contract Award	Trials		EDD	IOC		FOC			

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PROJECT TYRO CSB

- **Part of the Boxer Strategic Pipeline.** TYRO CSB is Build Configuration 7 (BC7) in BSP.
- **IOC:** 1 x AES (5 BVLB) to Fd Army.
- **FOC**: 2 x CS Engr Regts (30 + 20)
- **BOXER Vehicle Launched Bridge (BVLB)**. Bridge layer on Boxer. Same mobility and survivability as Boxer, but able to be remote controlled to lay bridges in most dangerous use-cases. Launch mech. and bridges interoperable with NATO allies.
- **14m MLC100 CSB**. A bridge strong enough to support CR3 using metal unaffected by stress corrosion cracking, and a trestle to enhance combination bridging.
- **Bridge Resupply System (BRS)**. A combination of an Enhanced Pallet Loading System, with an adapted flat rack, and contains the Trestle components, amongst other sub-systems (long storage thermal sheeting).

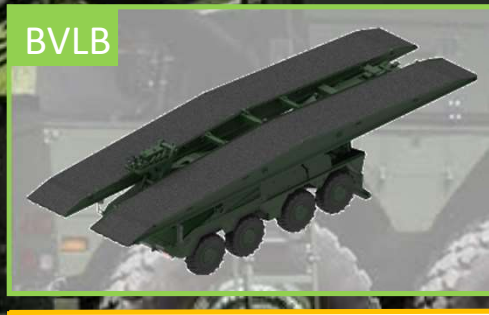
TYRO CSB: IOC = 2029, FOC = 2031

InterOp / Dependencies

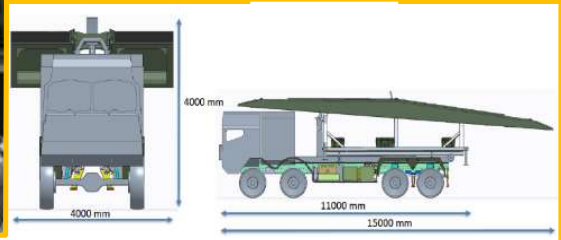
- **Leguan Launch Mechanism.** LLM User Group is 19 other nations, providing interoperability with key Allies, and reducing through life upgrade/development costs.
- **Interoperability & Flexibility.** BVLB MM compatible with **MLC50 22m & 12m TEJU bridges**.
- **Key Dependencies**. MLC 100T dependency for CR3. Bridge dimensions and system readiness dependency with Armd Cav, and Tactical & Operational Mobility dependencies with MIV.



BVLB



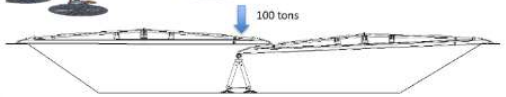
Bridge Resupply System (BRS)



Trestle design

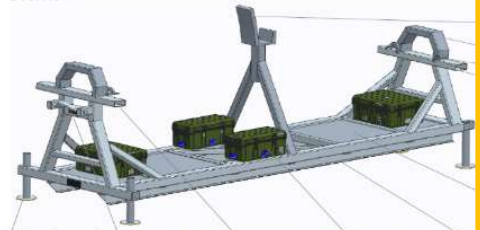
Properties, characteristic, dimensions

- Support structure consisting of cross meml legs, stiffener crosswise / lengthwise and fi bridge load
- Bearing capacity of 100 tons
- Trestle weight 650 kg
- Material:
  - High strength aluminum alloy - cross mer stiffener
  - High strength steel for connecting elemer



Flatrack design

Overview



TYRO CSB BRS

Benefits:

- Reduced complexity in Trg Pathway compared to TBT
- Reduced Log/Infra demand compared to TBT
- Can perform secondary/auxiliary tasks when not moving bridges unlike TBT
- Carries Trestle components, lane marking system, and CES for combination bridging

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PROJECT TYRO GSB

Project TYRO GSB - Aims to restore manoeuvre support capability to the ABCT and the Warfighting Div out passed 2040.

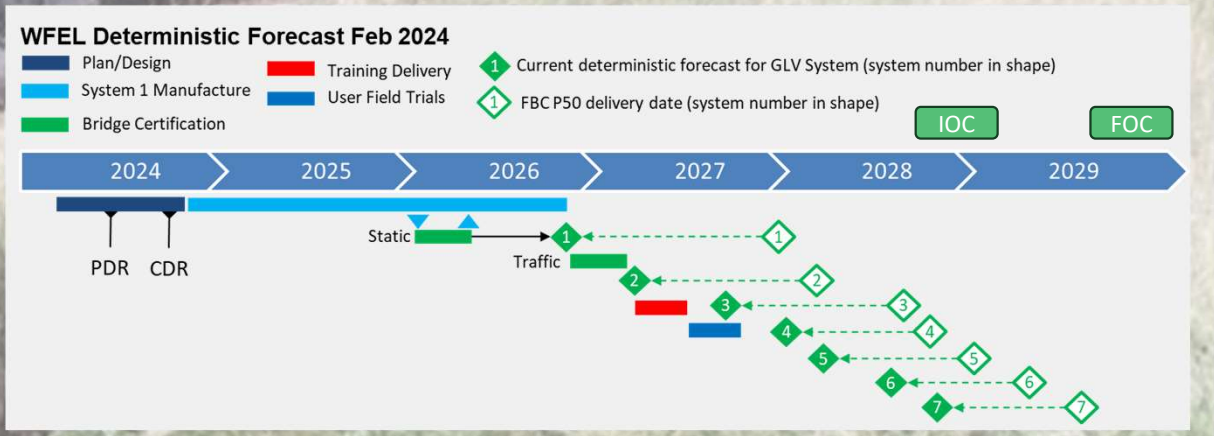
Why? Current capability (ABLE) is subject to Stress Corrosion Cracking (SSC) and does not support MLC100(T) crossings. Outside western Europe there are very few bridges that can support the weight of British heavy vehicles.

Capability. Relatively easily transportable MLC100 46m bridge that can be built in <90mins with little site prep, by a small 8-person team and with little technical support/design.

Military off the Shelf (MOTS). The WFEL Dry Support Bridge (DSB) system is a MOTS solution giving the capability to cross gaps up to 46m with a single span threshold MLC 100(T) and 130(W).

Non traditional process. In line with MOTS solution and timelines of ABCT/CR3 dependencies means limited/no demo period.

Project performance. Contract award Q4 23.



TYRO General Support Bridge Project

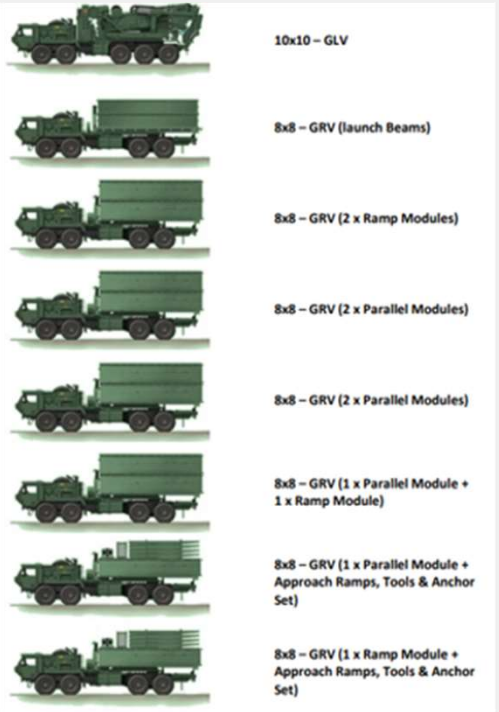
"You cannot cyber your way across a river" - Chief of the General Staff, RUSI Land Warfare Conference, 2022

Contract Numbers

- **3 x 'Full' Sets, 1 x 'Trg Set' and 3 x Op Stock (provides cost effective optimised overall capability)**

Full 'Set' x 3

- **1 x 46m or,**
- **2 x 28m or,**
- **1 x 34m and 1 x 22m**

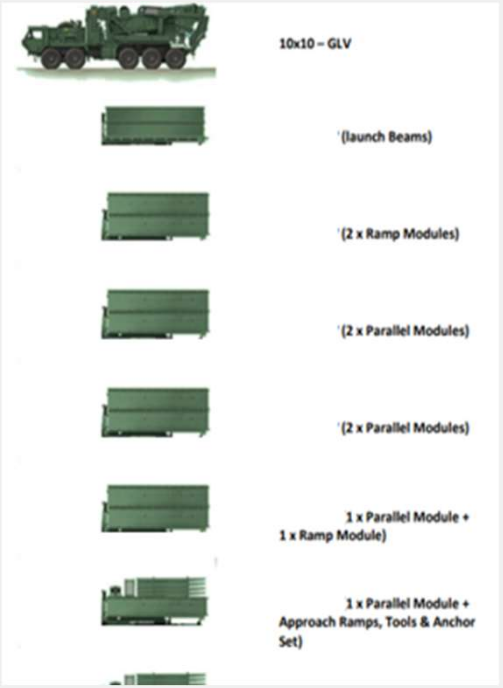


Trg 'Set' x 1

- **4 GRV's (EPLS) only**

Op Stock x 3

- **Launchers and Bridges ONLY**



Operational Capability

- 7 Launchers gives redundancy across Div/Bde frontage of 3 MSRs
- Up to 14 bridges of at least 22m
- GSB Capability within the full bridging fleet (CSB, GSB, MGCC, WWG, LSB) provides a sufficient current capability for 3 MSRs

Optimal Numbers

- Less than 7 launchers and bridges is below a viable capability
- 7 'sets' optimises CT, meets workforce, reduces pan-DLOD integration risks
- More than 7 is unaffordable, cannot be crewed, increases portfolio DLOD integration risk

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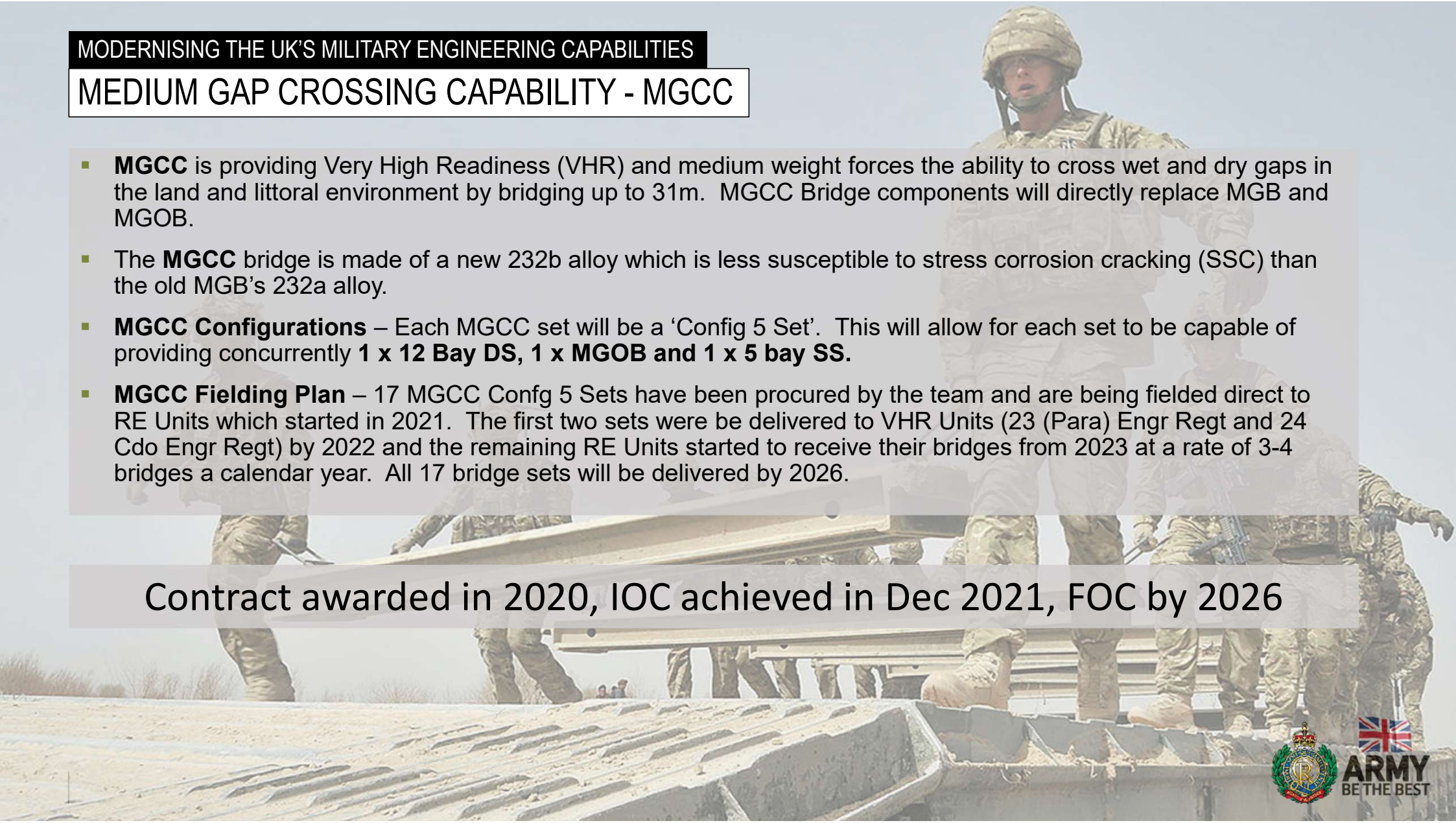
MEDIUM GAP CROSSING CAPABILITY - MGCC



- **MGCC** is providing Very High Readiness (VHR) and medium weight forces the ability to cross wet and dry gaps in the land and littoral environment by bridging up to 31m. MGCC Bridge components will directly replace MGB and MGOB.
- The **MGCC** bridge is made of a new 232b alloy which is less susceptible to stress corrosion cracking (SSC) than the old MGB's 232a alloy.
- **MGCC Configurations** – Each MGCC set will be a 'Config 5 Set'. This will allow for each set to be capable of providing concurrently **1 x 12 Bay DS, 1 x MGOB and 1 x 5 bay SS.**
- **MGCC Fielding Plan** – 17 MGCC Confg 5 Sets have been procured by the team and are being fielded direct to RE Units which started in 2021. The first two sets were be delivered to VHR Units (23 (Para) Engr Regt and 24 Cdo Engr Regt) by 2022 and the remaining RE Units started to receive their bridges from 2023 at a rate of 3-4 bridges a calendar year. All 17 bridge sets will be delivered by 2026.

Contract awarded in 2020, IOC achieved in Dec 2021, FOC by 2026

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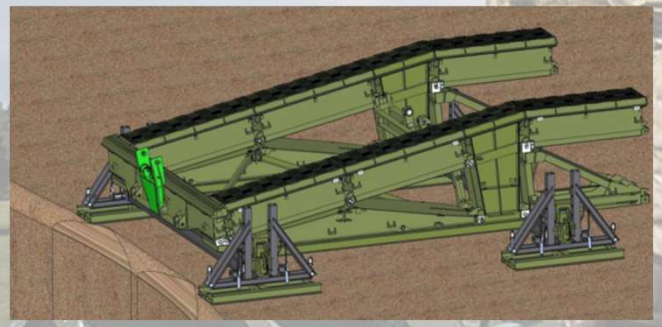
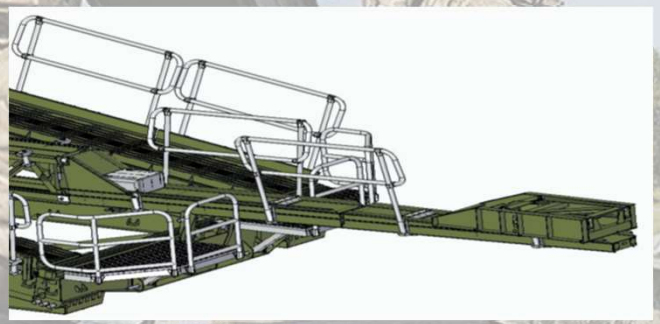
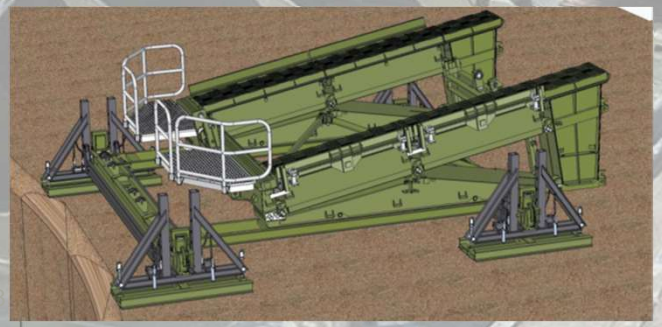
MGCC WAH SS

MGCC Working at Height Safety Systems (MGCC WAH SS)

- To ensure compliance with legislation and reduce the risk of Working at Height during the construction of all MGB configurations.
- Assessment and development into understanding working at height risks and legislative compliance.
- Development of equipment to reduce the risk of injury during training and operations.







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PROJECT TRITON

Project TRITON

(Cat B)

What is Project TRITON?

Proj TRITON will provide Defence with the capability to cross wet gaps wider than 40m. It will be operationally mobile on land and configurable to a bridge or ferry on water. It will build upon the high level of interoperability within the DEU / UK Amphibious Engineer Battalion (Amph Engr Bn) at Minden. The Amph Engr Bn provides NATO with 900m of capability. TRITON will be fully interoperable with the DEU system and deliver 300m of sovereign WWGC capability.

What will Project TRITON do?

Project TRITON will deliver a replacement to the current in-service M3 Rig. It will provide the next generation of WWGCC beyond 2034 in support of manoeuvre formations up to and including the Warfighting Division. This will provide enhanced freedom of manoeuvre for BCTs.

Single Statement of Need:

TRITON is to deliver a modular, scalable and configurable bridging and ferrying system to enable MLC 100(T)/130(W) crossing of wet gaps over 40m in the Land and Littoral Environments from 2032.

Proj TRITON Approved Industry Partner

GENERAL DYNAMICS
European Land Systems–Bridge Systems

2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Prog Initiation	SOC	MoU	OBC	FBC	Contract Award			Trials				EDD	IOC	FOC

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PROJECT TRITON KEY REQUIREMENTS

Proj TRITON is the primary Proj in NG WWGCC Prog.

It is a key manoeuvre enabler for the Modernised Div and will provide Defence with:

- Capability to cross WWG over 40m at increased MLC of 100(T)/130(W).
- Be operationally mobile on land, & configurable to a fixed bridge or mobile ferry on water.
- Fully interoperable within DEU / UK MN Amph Engr Bn delivering 300m of sovereign WWGC capability and 900m when operated jointly.

Current capability (M3 Rig) in service for c30 yrs. Despite a life extension Proj (THAUMA), is fast approaching obsolescence, compounded by acceleration of CR3 Prog, resulting in ABCTs facing a significant capability gap.

TRITON is a bilateral procurement with DEU - part of MOD drive to '**give meaning to interoperability**', **reaffirming the centrality of NATO**, becoming '**allied by design**'.

Delivers an integrated Mil Capability (incl sp) that is strategically prepared, responsive, operationally effective & maximises the benefits of Intl co-operation. Supports Interoperability Road Map with DEU to 2030, reinforced by UK / DEU Strategic Vision Statement declared by both service chiefs, a key tenet of which is the Amph Engr Bn.

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adam.foley515@mod.gov.uk

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