

Written evidence submitted by Rheinmetall BAE Systems Land (RBSL)

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1. Rheinmetall BAE Systems Land (RBSL) is a defence engineering company based in the UK. RBSL design, develop, manufacture and support military vehicles used by the British Army and international customers.
2. RBSL launched in July 2019 as a new, UK-based and independent joint venture business between BAE Systems and the German defence firm, Rheinmetall.
3. The joint venture currently sustains a skilled workforce of more than 450 employees across the UK. This includes over 250 engineers based across sites in Telford (Shropshire), Washington (Tyne & Wear), Bovington (Dorset), and Bristol. RBSL also have a thriving Early Careers community made up of apprentices and graduates.
4. RBSL will manufacture the Boxer 8x8 for the British Army's Mechanised Infantry Vehicle (MIV) programme and is seeking to lead on other strategic combat vehicle programmes, such as the Challenger 2 Life Extension Project (LEP). This is in addition to providing continued in-service support to the British Army's in-service armoured vehicle fleets, for which RBSL is Design Authority for the majority.
5. RBSL is submitting evidence as an Armoured Vehicle Prime Contractor in the UK Land Domain.

How flexible can the Army be in adapting its current armoured vehicle plans to the results of the Integrated Review?

6. The modularity of the BOXER makes it uniquely flexible in adapting to emerging requirements. In the first instance the current modules have a digital electronic architecture and therefore make the integration of new electronic mission systems cost effective and timely. Furthermore, these modules have growth potential in terms of payload and electrical power capacity. More strategically, the BOXER system has a modular construct meaning that entirely new mission modules can be integrated onto the chassis under operational circumstances. Furthermore, as the UK's Allies develop future modules for their BOXER fleets, UK will be able to enjoy the benefit of burden sharing between nations for the non-recurring element of cost associated with such development.
7. The Challenger 2 Life Extension project (CR2 LEP) that will deliver a network enabled, digital Main Battle Tank providing significant flexibility for the future. The CR2 LEP turret and the electronic architecture enable the spiral development of new mission systems and insertion of capabilities rapidly, as the operational situation requires.

Should the UK have a land vehicles industrial strategy, and if so what benefits would this bring?

8. The UK should have a funded, Land Industry Strategy (LIS) coherent with, and aligned to, a National Defence and Security Industry Strategy (DSIS).
9. The LIS should align HQ Army, UK MOD (Head Office and DE&S) and industry (including industry's Private Venture (PV) research and development). As a result, Defence will be appropriately positioned to provide Value for Money to the UK taxpayer, provide the British Army with the equipment it needs in a timely fashion and position the UK as a centre for defence exports. The LIS should provide clarity concerning Defence's plans and requirements leading to more agile capability upgrades and future capability acquisitions. Such a strategy must set out and recognise Sovereign Capabilities and should look 30 – 40 years into the future. The benefits are as follows:
 - a. **A Strong and Resilient UK Industrial Base** – a base that can understand and satisfy UK requirements, export globally and contribute to deterrence. An Industrial base that is available when needed to support operations and emergencies. An industrial base that is comparable to allies in Europe and the US, enabling the UK to compete in the global market, 'championed' by the British Army. A base that is able to support incremental upgrades up to and beyond the Out of Service Date, as well as future capabilities.
 - b. **Prosperity** – UK Prosperity is increasingly important, particularly as the UK is leaving the EU and suffering the economic impact of COVID-19. The benefits arising from UK manufacture must be recognised, and given due recognition in competitive procurement processes.
 - c. **Innovation** – a clearly articulated LIS will allow the UK MOD, academia and industry to plan and focus investment, both government and private venture, on appropriate innovation and capabilities. This will lower equipment costs, provide the Army with the battle winning capability it needs and assist in making UK suppliers competitive in the international market.
 - d. **Investment** – investment in innovation, capital equipment and people will be more forthcoming with a clear and funded strategy.
 - e. **Collaboration** – a LIS would facilitate and support national and international collaborative endeavours with allies in a timely and efficient fashion to the financial benefit of both the MOD and industry. Furthermore, it will allow the Government to make greater use of defence equipment as a tool of diplomacy. A strong industrial strategy ensures that the UK has the 'where with all' to actively participate in, and contribute to, international programmes and thereby provide the Government the negotiating leverage it will need, particularly outside the EU. Multinational programmes, in the Land Domain, just as in the Air and Sea domains, will become an increasingly important route to delivering capability and can deliver greater benefit than national endeavours.
 - f. **Increase Procurement Agility** - delivering technology earlier and reducing the obsolescence risk of fielded capability. SMEs are a key consideration in

achieving this and the environment must be appropriate to enable a vibrant SME community in the UK.

- g. **Export** – a strong and coherent domestic market, as the result of a LIS, will facilitate and support exports. Furthermore, defence exports can be leveraged to support diplomacy and broader government agendas, in addition to contributing to the balance of trade, jobs and prosperity. Only with a prosperous domestic sovereign defence capability can the UK continue to benefit from defence exports.
- h. **Skills** – the defence sector, as is the case with all sectors employing highly skilled staff, needs to be in a position to maintain and develop skills across its workforce. It must be in a position to support British forces when a sovereign capability is needed and successfully compete in national and international markets. A LIS will support the strategic workforce planning activities that all major defence companies undertake allowing synergies in apprentice, graduate and mid-career training to be exploited. This leads to reduced costs and crucially reducing the risk that core skills are lost forever, as has been the case in other strategic industries. Furthermore, sustaining the key skills needed to support sovereign capabilities will provide the British Government the Freedom of Action it has needed in the past and is likely to need in the future, whilst supporting broader government defence, diplomatic and economic agendas.
- i. **Levelling Up** – The defence sector generally, and defence manufacturing in particular, is well placed to facilitate the Government’s agenda in this respect. The Land Vehicle sector is active across the Midlands and Northern England, Wales, Scotland and Northern Ireland.
- j. **Freedom of Action** – The UK must be able to act in its own best interest without intervention from other nation states and as such, it must have the industrial capability and capacity to deliver Freedom of Action. This includes, but is not limited to, research and development facilities, manufacturing facilities, skilled staff and access to the appropriate technology. Additionally, the ability to upgrade equipment to counter emerging threats, including meeting very rapid urgent capability requirements. UK Industry had an excellent record in doing this for the Iraq and Afghanistan campaigns.

What sovereign capability for the design and production of armoured vehicles does the UK retain?

10. A Land Industry Strategy (LIS) is essential if the UK is to retain the skills to design, develop and manufacture armoured vehicles for the British Army and export markets. Industry is keen to collaborate with the Army in the development of such a strategy, which must set out what the UK considers strategically important Sovereign Capabilities. Those capabilities which the Government is comfortable can be procured internationally must also be clear, noting that they will be subject to the export restrictions of others and national priorities, which have in the past come to the fore in times of need.

11. The rich heritage of capability from companies such as GKN, Alvis, Royal Ordnance and Vickers is now vested in Rheinmetall BAE Systems Land (RBSL), based in Telford and Washington. RBSL has retained key skills across all engineering disciplines to ensure a sovereign engineering capability in the UK, focused on weapons systems, such as large calibre turrets. Current and future programmes such as AJAX, Warrior Capability Sustainment Programme (WCSP), Mechanised Infantry Vehicle (MIV) and Challenger 2 Life Extension Project (CR2 LEP) will further rejuvenate this capability and allow knowledge transfer back to the UK if gaps have emerged. The retention and development of these skills will be key to future technology exploitation and collaboration in projects such as the Franco-German Main Ground Combat System (MGCS) programme. These skill areas include survivability, weapons engineers, product safety and emergent areas such as laser technology, autonomy and hybrid electric drive technology.
12. Whilst vehicle production is an important enabler of prosperity, investment in design and engineering provides a sustainable capability that ensures Freedom of Action and exports. To ensure balance it should be noted that UK cannot afford to design and manufacture everything it requires. Furthermore, the UK must decide early whether it wishes to participate in international collaborative projects and stand by the decisions made; sitting on the fence or jumping in and out of collaborative project is not an option.
13. The UK currently has the foundation from which to design, develop, manufacture and support wheeled and tracked armoured vehicles. There is the engineering competency to design the armour, the suspension systems, steel track, the electronic architecture and the surveillance & target acquisition systems (sensors) and the capability to maintain and upgrade the current in-service fleets. There is also the capability to undertake the assembly, integration and test of such vehicles. However, the UK does have capability gaps. For example, the production of Boxer for the MIV Programme will see highly skilled armoured vehicle welding undertaken in the UK for the first time in a decade. All modern armoured vehicles use power packs (engines, transmissions and cooling systems) manufactured in Europe or the US.
14. A LIS will not prevent market forces, but it would prevent things happening by accident and mitigate the law of unintended consequences. A LIS would ensure these capability areas are understood and those that should be retained are more likely to continue, whilst those the Government is happy to do without can be knowingly allowed to fade. This would allow the Government to control its own destiny and give it the Freedom of Action it will need.

Does it make sense to upgrade the Challenger 2 when newer, more capable vehicles may be available from our NATO allies?

15. It makes complete sense from an economic, strategic and military perspective to upgrade Challenger 2. Furthermore, it would be wrong to suggest that newer vehicles are available from our allies; the German Leopard 2 was introduced into

service in 1979, the US M1 Abrams was introduced into service in 1980 and the French Leclerc introduced into service in 1992. All are older than Challenger 2, which was introduced into service in 1998. However, all these tanks and indeed other platforms held by NATO countries have benefited from a series of incremental upgrades, which supports the case for a Land Industrial Strategy (LIS).

16. The Challenger 2 Life Extension Project (CR2 LEP) will create the most capable Main Battle Tank (MBT) in NATO. The proposed upgrade exploits several years of MOD and company investment in all elements of the platform. CR2 LEP will deliver a network enabled, digital Main Battle Tank ensuring a true 21st century deterrent through to the Out of Service Date of 2040. The programme will introduce a proven smooth bore gun, providing a step change in lethality and shall include significantly improved platform survivability. The proposal blends the very best technology RBSL, its parent companies, the government research organisation DSTL and a range of suppliers from both the UK and overseas allies can offer. As a project, CR2 LEP has met all its milestones and will sustain high end engineering capabilities across the UK economy to ensure that the UK retains and develops the core competencies required to design and develop a modern armoured vehicle. The project in itself satisfies a number of Government agendas ranging from UK Prosperity to Levelling Up. The sights have been designed, developed and will be manufactured in the UK as will the digital electronic architecture and night driving sights. Ancillary equipment will be sourced from suppliers across the UK, including SMEs, thereby ensuring that UK engineering and manufacturing capabilities develop over the course of the next 5 years and are able to support the British Army's MBT fleet until their out of service date in 2040.
17. Moreover, it will ensure that the UK, be it industry, or government research facilities, has the skills, expertise and technology to either develop or coherently upgrade current or next generation armoured vehicles and participate on a level playing field with allies in the development of collaborative projects. Without appropriate technical and manufacturing capabilities one cannot be part of a collaboration, one is merely a customer. A coherent and forward-looking LIS is an essential component in achieving these goals and CR2 LEP is an essential stepping-stone. CR2 LEP gives the UK the skills and credibility to influence and have a key role in future ground combat systems, which will undoubtedly be politically driven, international collaborative programmes.
18. The CR2 LEP development and delivery will be led out of Telford in the West Midlands where the manufacturing will be undertaken with suppliers based in England, Scotland and Wales. RBSL alone will see the creation and sustainment of some 200 jobs including up to 130 engineers and 70 high skilled technicians and apprentices.
19. CR2 LEP will support and enhance the UK supply chain, including SMEs, mitigating supplier vulnerability and ensuring that the UK has, in country, the skill and expertise to support the vehicles throughout their operational life. It is estimated that there will be 250 skilled jobs in the UK supply chain created and sustained throughout the

life of the platform. RBSL has currently identified and down selected over 30 tier 3 and 4 suppliers.

20. Investment will be made across the industrial base in people, training and capital equipment leading to increased supply chain productivity. CR2 LEP will see a £20m infrastructure investment in RBSL's facility in Telford alone.
21. Main Battle Tanks are a visible component of 'Enhanced Forward Presence' and a tangible element of 'hard power'. The UK's Main Battle Tanks are part of NATO's conventional deterrence and make a demonstrable contribution to 'burden sharing' with the USA to security in Europe. This is currently being demonstrated by British Challenger 2 Tanks in Estonia as part of the Enhanced Forward Presence. Recent geo-political conflicts in Ukraine, Syria, and Iraq show that tanks and AFVs, together with long range precision strike and electronic warfare, are essential for military success.
22. CR2 LEP will deliver the best Main Battle Tank in NATO and a tank turret that can be exported from the UK. There has been interest from several potential customers and in addition, the Sultanate of Oman, a current Challenger 2 user, has held Observer Status throughout the CR2 LEP programme.
23. The CR2 LEP programme has already provided the skills and business foundations to develop and exploit new, innovative technologies in the UK. There are on-going parallel activities, funded by MOD and industry, into hybrid electric drives for armoured vehicles, robotics and autonomy, artificial intelligence and machine learning, sensors and novel weapons. SMEs are playing key roles in these opportunities.
24. The sustainment of a high-end armoured fighting vehicle design, development and production capability will provide the UK the industrial capability and capacity for our next generation Armoured Fighting Vehicle, the Future Ground Combat System (FGCS). This will undoubtedly be an international, collaborative programme at government to government level. The people, skills and capabilities generated by CR2 LEP will enable the UK to take a key role in such a programme – the battlefield of the future has yet to be determined but the UK needs to be in a position to shape it through its sovereign capabilities.

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