

# £2.5 million available for research and innovation to help Defence better understand whole body vibration

- DASA has launched a new Themed Competition: Understanding Whole Body Vibration
- Funded by Defence Medical Services and Defence Science and Technology
- Up to £2.5 million in funding available for innovative technologies and ideas that may be used as the basis for further research into whole body vibrations

The [Defence and Security Accelerator](#) (DASA) is pleased to launch a new Themed Competition, [Understanding Whole Body Vibration](#). Run on behalf of the Defence Medical Services and Defence Science and Technology, this competition seeks to enhance our understanding of whole body vibration (WBV), including its links to injury and effects on performance.

## Key dates and funding

£2.5 million (Exc. VAT) funding is available for this Themed Competition. DASA expects to fund between 1-3 proposals.

The deadline to submit a proposal is midday on Wednesday 18 January 2023 (GMT).

[Do you have a disruptive idea or concept? Read the full competition document and submit a proposal.](#)

## What is whole body vibration?

WBV is defined as vibration transmitted to the whole body, typically from a supporting surface or platform, including vehicles and machinery.

Service personnel across Front Line Commands may experience WBV during training and operations, for example, when occupying wheeled or tracked vehicles that traverse rough terrain, or aboard small boats. Testing new platforms and vehicles also often involves exposure to WBV. Injuries that can be caused by WBV are not clearly defined and are often non-specific, for example, neck pain, back pain or dizziness.

These symptoms are difficult to attribute directly to specific levels of WBV exposure. Similarly, evidence that details the short-term impact of WBV is often anecdotal. To help Defence better understand WBV, we require detailed, robust epidemiology and experimentation and modelling of WBV effects.

The proposals submitted to this Themed Competition will help address the following outstanding WBV questions, such as:

- what is the scale of injury related to WBV and how does this affect deployability?
- how does vibration cause musculoskeletal injury?
- what happens when vibration and shock are combined with other environmental factors such as heat, cold, noise, altitude, etc.?
- how do we measure WBV exposure at the individual level?
- what are the short-term effects of exposure to WBV and how do they differ for males and females?

## **Whole Body Vibrations: Challenge areas**

This competition has 3 challenge areas.

### **Challenge 1: Define the size and nature of the problem**

This challenge area seeks definitive data on the prevalence and severity of WBV in service personnel working with armoured vehicles or boats.

Ideas that may help solve this challenge area may include:

- machine learning algorithms to mine clinical databases that establish patterns of injury in at risk groups
- mechanistic models that increase our understanding of how WBV causes musculoskeletal injury in males and females and how to predict and prevent future injury

### **Challenge 2: Quantify exposure to WBV**

This challenge area seeks to determine a dose-response relationship between WBV and injury.

Ideas that might help solve this challenge area may include:

- platform agnostic wearable sensors to evaluate personal exposure to WBV and shock
- platform instrumentation that can capture and transmit vibration and shock signatures for use in research and development

### **Challenge 3: Establish the short-term effects of WBV on performance of duties**

This challenge area seeks evidence for the effects of WBV exposure on human performance, such as visual tracking ability, cognitive skills, and physical performance.

Ideas that might help solve this challenge area may include:

- development of military-specific, validated outcome measures that are sensitive to the influence of WBV exposure

- technology that can reproduce experimental conditions of vibration and shock signatures experienced by individuals across different platforms

For a more detailed breakdown of this themed competition's challenge areas, [read the full competition document](#).

## Webinars

### 17 November 2022

This webinar will provide more information on the challenge areas and how to submit a proposal. There will also be an opportunity to ask questions in the Q&A. If you would like to get involved, please register on the Eventbrite page.

[Register now](#)

### One-to-one sessions

A series of 15 minute one-to-one teleconference sessions, giving you the opportunity to ask questions.

If you would like to participate, please register for one of the sessions below:

## Submit a proposal

Do you have a potentially disruptive idea or concept that will help the Defence Medical Services and Defence Science and Technology understand WBV? Submit your idea and help Defence better protect service personnel from the effects of whole body vibration.

[Learn more and submit a proposal](#).

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## [Laser power moves a step closer for UK defence](#)

The MOD's Defence Science and Technology Laboratory (Dstl) has hosted the UK's first high-powered, long range laser directed energy weapon (LDEW) trial on its ranges at Porton Down.

The trials involve firing the UK DragonFire demonstrator at a number of targets over a number of ranges, demanding pinpoint accuracy from the beam director.

These tests improve the UK's understanding of how high-energy lasers and their associated technologies can operate over distance and defeat representative targets. The ability to deliver high levels of laser power with sufficient accuracy are two of the major areas that need to be demonstrated in order to provide confidence in the performance and viability of LDEW systems.

### [DragonFire LDEW Trial](#)

The programme has developed a UK sovereign 'centre of excellence' staffed with experts from multiple fields. Laser directed energy weapons have the potential to provide lower cost lethality, reduced logistical burden and increased effectiveness when compared to other weapon systems – the technology could have a huge effect on the future of defence operations.

The programme's specialist industry partners are:

- MBDA, with overall responsibility for the system; MBDA have developed the advanced command and control (C2) and image processing capabilities
- Leonardo, who have developed the beam director which can track and point at targets with pin-point accuracy
- QinetiQ's laser experts, who have built a phase-combined laser capable of generating in the order of 50kW of power, with the ability in the future to scale fire-power levels

Dstl's Technical Partner, Ben Maddison said:

This trial is the culmination of design, development and demonstration activity over a number of years. DragonFire has already successfully demonstrated an ability to track targets with very high levels of precision and to maintain a laser beam on the selected aim-point. This trial has assessed the performance of the laser itself – the outcome shows that the UK has world-leading capability in the technologies associated with laser directed energy weapons (LDEW) systems.

Chris Allam, UK Managing Director and Executive Group Director of Engineering at MBDA said:

These successful trials are the latest step in accelerating delivery of a UK sovereign laser directed energy weapon (LDEW) capability. MBDA, Leonardo, QinetiQ and Dstl all working together are putting the UK at the forefront of research and technology in laser domain. The results from these trials have verified analysis and given the team confidence that DragonFire will offer a near term and unique capability.

The trial is the culmination of significant joint investment by the UK

Ministry of Defence (MOD) and industry over a number of years totalling around £100 million.

Mark Hamilton, Managing Director Electronics UK, Leonardo said:

The DragonFire project draws on our decades of high energy laser and beam director heritage to put the UK at the very forward edge of what is possible in laser technology. The results of this live trial, which saw our beam director integrated into the DragonFire system, were impressive. We are looking forward to the next stages of the programme.

QinetiQ Chief Executive, Steve Wadey, added:

We are delighted to have been involved in the trial, which has brought together the best of UK industry expertise in the complex weapons environment to work in close collaboration with Dstl. QinetiQ's coherent beam-combining technology offers a laser system that can achieve an enhanced power density and increased engagement range, that is scalable for future uses. The trial has proven the performance of these laser technologies and their potential for adoption in sovereign defence capabilities.

This technology could provide the basis for a number of future weapon systems. The DragonFire project is running in parallel and closely connected to other defence programmes including the [Novel Weapons Programme](#).

Through the Defence and Security Accelerator (DASA), Dstl is currently seeking [innovations to better understand the next steps necessary to develop and introduce the first generation of deployed directed energy weapons](#).

Testing of the DragonFire system took place on Dstl's Porton Down Range, which for decades has undertaken novel and challenging trials. In this instance and to ensure absolute safety, it was necessary that the effects were contained within the Range area.

The Range has defined distances over which the trial serials were conducted to a maximum distance of 3.4km from DragonFire. The capability of DragonFire is classified.

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**[UK steps up climate finance support](#)**

## for African countries

- Foreign Secretary announces fresh finance to support African countries to adapt to the impacts of climate change
- The UK funding pledged at COP27 in Egypt will help deal with severe drought and floods across the continent
- James Cleverly said the funding will go, via the African Development Bank, to “those most affected by the impacts of climate change”

The Foreign Secretary has announced a significant increase in the UK’s financial support to African countries on the frontline of climate change.

Speaking alongside African leaders at an event at COP27, the Foreign Secretary confirmed the UK will provide £200 million to the African Development Bank (AfDB)’s Climate Action Window (CAW).

The CAW is a new mechanism set up to channel climate finance to help vulnerable countries adapt to the impacts of climate change, from severe drought in the Horn of Africa to floods in South Sudan.

Foreign Secretary James Cleverly said:

Climate change is having a devastating impact on countries in Sub-Saharan Africa facing drought and extreme weather patterns, which have historically received a tiny proportion of climate finance.

This new mechanism from the African Development Bank will see vital funds delivered to those most affected by the impacts of climate change, much more quickly.

Lack of access to climate finance for the world’s poorest countries was a central focus at COP26 in Glasgow. This £200 million of UK funding is helping us to make tangible progress to address this issue.

The President of the African Development Bank Group, Akinwumi Adesina, welcomed the additional funding from the United Kingdom and said:

I applaud the UK government for this major contribution towards the capitalization of the Climate Action Window of the African Development Fund, as it seeks to raise more financing to support vulnerable low-income African countries that are most affected by climate change.

This bold move and support of the UK will strengthen our collective efforts to build climate resilience for African countries. With increasing frequencies of droughts, floods and cyclones that are devastating economies, the UK support for climate adaptation is

timely, needed, and inspiring in closing the climate adaptation financing gap for Africa.

I came to COP 27 in Egypt with challenges of climate adaptation for Africa topmost on my mind. The support of the UK has given hope. I encourage others to follow this leadership on climate adaptation shown by the UK", said Adesina.

The Glasgow Climate Pact included a commitment from donors to double adaptation finance in 2025 from 2019 levels. Yesterday the Prime Minister announced the UK will surpass that target and triple adaptation funding from £500 million in 2019 to £1.5 billion in 2025. This funding package provided to the AfDB will be part of this commitment.

The Netherlands has also announced that it will contribute to the CAW alongside the UK funding, and the Foreign Secretary has called on other countries to contribute over the coming months.

The Prime Minister also [confirmed](#) yesterday that the UK is delivering the target of spending £11.6 billion on International Climate Finance (ICF). This comes alongside new and expanded solar and geothermal power plants in Kenya backed by British International Investment, UK export financing for Nairobi's ground-breaking Railway City and a major public-private partnership on the Grand Falls Dam hydropower project – including a \$3 billion investment led by UK firm GBM Engineering.

Yesterday the Foreign Secretary [announced](#) a series of significant UK investments worth more than £100 million to support developing economies to respond to climate-related disasters and adapt to the impacts of climate change.

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## [How HMRC assesses profits for some sole traders and partnerships to change](#)

### **What is changing and when**

The way HMRC assesses your profits if you're a sole trader or a partnership that uses an accounting date between 6 April and 30 March is changing. This change will not affect companies.

Your accounting date is the last day of the period that you prepare your accounts for. You choose your accounting date and will normally make your accounts up to that date every year.

If your accounting date is between 31 March and 5 April this change will not affect you.

From 6 April 2024 you will be assessed on your profits for each tax year that runs from 6 April to 5 April. This change will affect how you fill in your tax return if you use an accounting date between 6 April and 30 March.

There will be a transition year from 6 April 2023 to 5 April 2024, to allow any overlap relief that you may be due to be used against your profits for that tax year.

The changes will mean the amount of tax that you owe in the 2023 to 2024 tax year may change if you use an accounting date between 6 April and 30 March. You will be assessed on both the tax for profits for the:

- 12 month accounting period you have previously been using
- rest of the 2023 to 2024 tax year – minus any overlap relief that you may be due – spread over the next 5 tax years

You can spread the profits from the rest of the 2023 to 2024 tax year over a shorter period if you wish.

## **How your profits for the 2023 to 2024 tax year will be assessed**

The way your profits are assessed if you use an accounting date between 31 March and 5 April will not change.

Profits for businesses with accounting periods ending between 6 April 2023 and 30 March 2024 will be divided and assessed over the 5 tax years starting on 6 April 2023. If you have any overlap relief available, that will be set-off against those profits first.

Any increased profits from the 2023 to 2024 tax year will be treated in a special way to minimise the impact on benefits and allowances.

### **Overlap relief**

If you used an accounting date between 6 April and 30 March when you started your business, you may have paid tax twice on some of your profits and be entitled to overlap relief.

Usually, businesses can only use overlap relief to get this tax back when they stop trading or when they change their accounting date. However, we will allow any business that uses any accounting period and that has unused overlap relief to use it in the 6 April 2023 to 5 April 2024 transition year.

HMRC will publish guidance on how to check how much overlap relief you may be due in the future.



## Example where overlap relief is used against profits

1. Your accounting period is from 1 October to 30 September.
2. Your assessable profit is £42,000 from 1 October 2022 to 30 September 2023.
3. Your assessable profit is £21,000 from 1 October 2023 to 5 April 2024.
4. You have £5,000 of unused overlap relief that you use to reduce your assessable profit for 1 October 2023 to 5 April 2024 to £16,000 (£21,000 minus £5,000).
5. The £16,000 profit is divided equally and assessed over the next 5 tax years at £3,200 a year (£16,000 divided by 5).
6. In the 2023 to 2024 tax year your total assessable profits will be £45,200 (£42,000 plus £3,200).

## Changing your accounting period

You do not have to change your accounting period and can continue to use whatever accounting date suits your business.

However, you may want to consider changing your accounting date to 31 March or 5 April. If you do, this will align your accounting period with the end of the tax year and you will not need to apportion profits on your tax return every year.

The restrictions on changing your accounting date that are currently in place will be lifted starting from the tax return for 2023 to 2024. If you change your accounting date in your tax return for a year before 2023 to 2024 you will not be able to spread any extra profits that arise in the tax year that you have made the change in.

If you decide to change your accounting period, you'll need to complete box 11 on the self-employment (full) (SA103F) page of your tax return.

## Get more information

You can find out more about accounting periods in sections 13 to 17 of [Self Assessment helpsheet HS222](#).

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## [Intervention at Liverpool City Council expanded to deliver value for money for taxpayers](#)

Levelling Up Secretary Michael Gove has today (8 November 2022) expanded the government's intervention into Liverpool City Council to get the city's

finances back on a stable footing and deliver value for money for the taxpayer.

Stephen Hughes has been appointed as Finance Commissioner to oversee Liverpool City Council's financial management and help lead the Council to a brighter future.

New powers for Commissioners over governance, financial decision-making and recruitment have also been announced, to improve the running of the Council.

The move comes after the report on the council's progress revealed serious shortcomings, particularly around financial management and senior leadership. It also criticised the slow progress made in driving improvement measures.

**Levelling Up Secretary Michael Gove said:**

I am committed to helping Liverpool City Council come out of this intervention as a stronger organisation and that is why I am taking further steps to put the Council on a firmer footing.

Liverpool is a city of fantastic potential and under the guidance of the new Finance Commissioner I am confident they will be able to rebuild trust with those they serve and deliver for the taxpayer.

**Liverpool City Council Lead Commissioner, Mike Cunningham, said:**

Our last report, written in June, identified significant areas of failure at Liverpool City Council. We welcome the Secretary of State's decision to expand the intervention, and warmly welcome Stephen Hughes' appointment as Finance Commissioner, who joins the team at a critical point in the intervention.

We have been encouraged by the progress the Council has made under the leadership of the interim Chief Executive and interim Director of Finance in recent months. However, the Council faces substantial challenges in the next year, not least in agreeing a balanced budget, holding all out elections, and delivering a transformative improvement programme. We will continue to work closely with the Mayor and Council leadership to address these challenges in the year ahead.

Stephen Hughes is an experienced finance officer who has recently worked as a finance and management consultant and previously worked as interim chief executive at Bristol Council. The role is entirely new and created to assist the Council.

The new Finance Commissioner will use his expertise to ensure that the Council sets a balanced budget and uses its money wisely. This includes strengthening financial resilience, management and accountability across the

council, ultimately rebuilding trust between the people of Liverpool and their council and helping level up the area further.

The Commissioners alongside the Liverpool Strategic Futures Panel will help Liverpool to level up and recognise its full potential.

- Further information on the Liverpool Strategic Futures Panel will be announced in due course.
- On 10 June 2021, the government [intervened in Liverpool City Council](#), appointing 4 commissioners to oversee the councils' highways, property and regeneration functions of the council at the request of the former Secretary of State.
- Following the report, in addition to setting up the new Strategic Futures Panel, the former Secretary of State Greg Clark announced that he was minded to appoint a commissioner to oversee the authority's financial management and to transfer functions associated with governance and financial decision-making to the commissioners together with powers regarding recruitment to improve the running of the organisation.