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Preparing for Future Clean Air Challenges: Interdisciplinary research and innovation consortia

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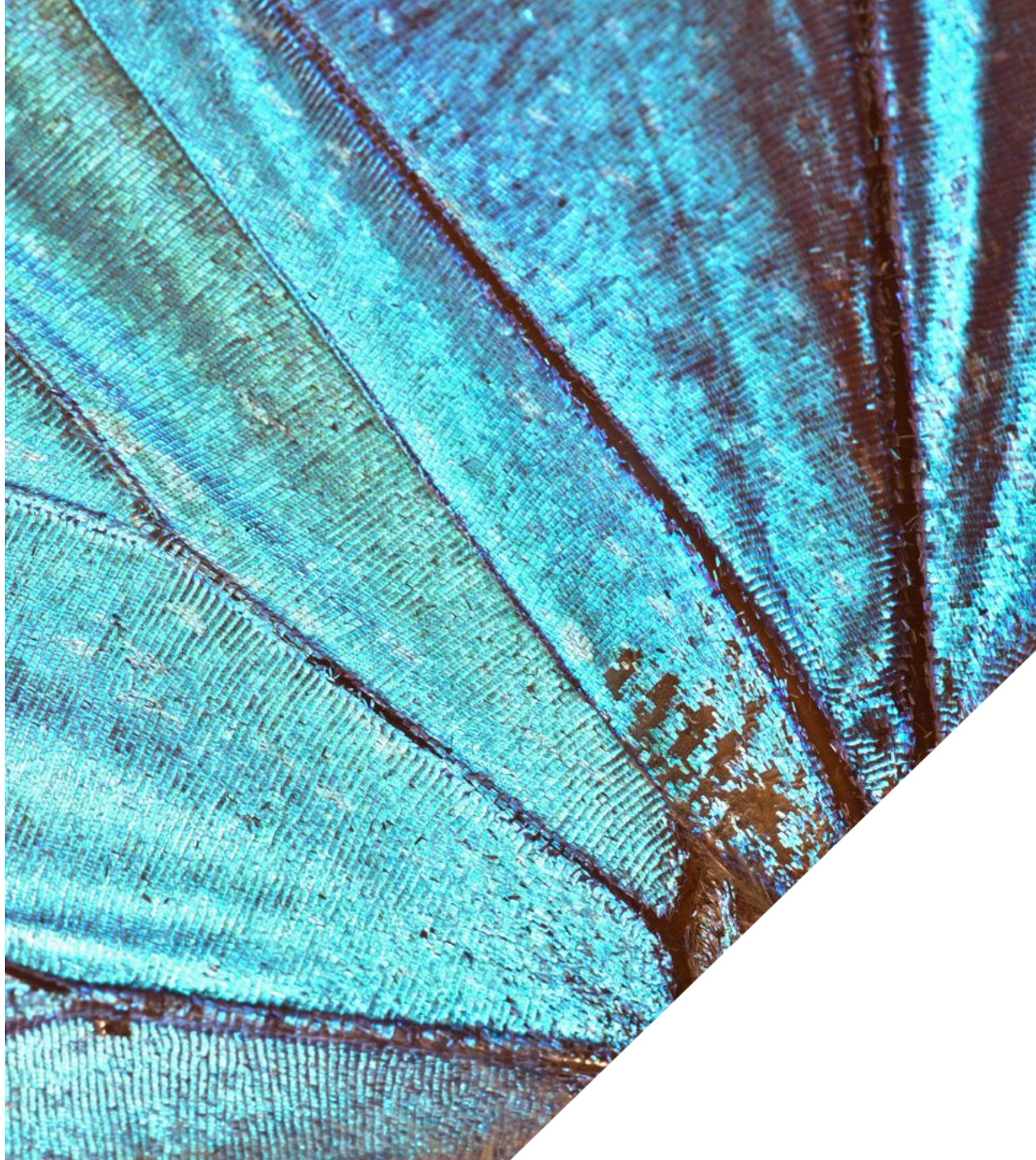

Strategic Priorities Fund

The Strategic Priorities Fund (SPF) is being led by UKRI to:

- drive an increase in high quality multi- and interdisciplinary research and innovation
- ensure that UKRI's investment links up effectively with government research priorities and opportunities
- and ensure the system responds to strategic priorities and opportunities

SPF builds on Paul Nurse's vision of a 'common fund', to support high quality multidisciplinary and interdisciplinary research programmes, which could have otherwise been missed through traditional funding channels

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Clean Air Programme

The Clean Air programme is jointly delivered by the Natural Environment Research Council (NERC) and the Met Office, with the Economic and Social Research Council (ESRC), Engineering and Physical Sciences Research Council (EPSRC), Innovate UK, Medical Research Council (MRC), National Physical Laboratory (NPL), Science & Technology Facilities Council (STFC), Department for Environment, Food and Rural Affairs (Defra), Department for Health and Social Care (DHSC), Department for Transport (DfT), Scottish Government and Welsh Government.

We work with the government to invest over £7 billion a year in research and innovation by partnering with academia and industry to make the impossible, possible. Through the UK's nine leading academic and industrial funding councils, we create **knowledge with impact**.

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SPF Clean Air

Atmospheric pollution in the UK is responsible for approximately 40,000 early deaths and has a cost of around £20 billion to health services and business, per year.

The UK is entering a transformative period in air quality, as transport, heating, energy, solvent use and agricultural emissions change. Most of the 'easy wins' to reduce particulate matter, volatile organic compounds, ammonia and nitrogen oxides have already been implemented in the UK.

Future improvements will require innovative solutions underpinned by new research to protect the health of society, whilst pursuing clean growth and increasing national productivity.

UKRI Met Office NPL National Physical Laboratory Department for Environment Food & Rural Affairs Department of Health & Social Care Department for Transport The Scottish Government Riaghaltas na h-Alba Llywodraeth Cymru Welsh Government

SPF: Clean Air

Wave 1 - Clean Air: Analysis & Solutions

Developing solutions to air pollution to help policymakers and businesses protect health and work towards a cleaner economy. (£20.5 m)

Wave 2 - Clean Air: Addressing the Challenge of the Indoor/Outdoor Continuum

The programme aims to equip the UK to proactively tackle new air quality challenges related to changing emissions and exposure patterns, in order to protect human health and support clean growth. (£22 m)

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SPF Clean Air Champions

The Champions provide leadership (internally and externally) and visibly advocate for the programme, build an integrated programme community through facilitating and maximising links across the funded programme portfolio and with other UK and international efforts as appropriate for the programme, and enhance knowledge exchange with a range of researchers and stakeholders, including inputs to the policy process for greater impact.

https://www.ukcleanair.org/about-us/clean-air-champions/

Professor Stephen Holgate

Professor Martin Williams

Dr Jenny Baverstock

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SPF Clean Air Wave 1

Wave 1 - Clean Air: Analysis & Solutions

The programme will support multidisciplinary research and innovation to stimulate solutions for clean air through predictive understanding of future air quality challenges, a systems approach to analysis, new technologies and innovative policy and practice interventions to benefit vulnerable groups, improve public health and support clean growth

- drive forward new multidisciplinary research and innovation;
- leverage existing UK investments and enable a challenge-focussed multidisciplinary community to work together for the first time;
- inform implementation of the Clean Air Strategy; and
- develop new solutions to reduce emissions and protect public health, whilst avoiding perverse consequences.

Wave 1 Supported Activities: https://www.ukcleanair.org/research/wave-1/

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SPF Clean Air – Wave 2

The scientific, technical, behavioural and policy approaches used to assess and manage exposure to air pollution need radical change to reflect the indoor/outdoor continuum of exposure.

Human exposure to air pollution occurs in the home, at school and in workplaces, whilst travelling, and during leisure activities.

Managing human exposure to the very smallest airborne particulate matter (PM1 and ultra-fine PM) and the complex cocktail of volatile organic compounds (VOCs) is likely to grow in health significance as concentrations of larger primary particles (e.g. PM10 and nitrates from tailpipe No_x) decline.

Indoor air quality is dynamic: the introduction of new emissions in the indoor environment together with the trend towards more energy efficient buildings (impacting insulation/ventilation) will increase indoor air exposures.

It will no longer be effective to attempt to manage public health impacts solely through controlling outdoor sources.

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SPF: Clean Air Wave 2 – Addressing the Challenge of the Indoor/Outdoor Continuum

The aim of the second wave of funding is to equip the UK to proactively tackle new and emerging air quality challenges related to changing emissions and exposure patterns and health impacts on groups of people most at risk.

- Build a new UK interdisciplinary community to address research challenges across the interface of indoor/outdoor air quality through collaboration between wider disciplines and stakeholders including: environmental, social and medical sciences, engineering, economics, and health.
- Deliver new knowledge that:
  - provides critical foresight on emerging air pollution challenges and associated health risks and impacts; and
  - enable an increased understanding and quantification of human behavioural change and practices in order to develop and assess interventions, that limit harmful exposure to mitigate the negative health impacts of individuals most at risk.
- Provide consistent, evidence-based advice for stakeholders through open data and tools in order to stimulate policy and regulatory innovation.
- Stimulate business-led innovation for sustainable products and services to protect health across the indoor/outdoor air quality interface and grow UK businesses.

2. SPF: Clean Air Wave 2 – Activities

Led by NERC

- Networks to build interdisciplinary communities to address air quality challenges at the indoor/outdoor interface
- Interdisciplinary research and innovation consortia to generate new knowledge and tools to influence policy and regulation.

Led by IUK

- Business-led innovation projects to develop new clean air products and services

Led by Met Office

- Delivery of further research related to outdoor and indoor air quality health impacts and the continued development and extension of the Clean Air Framework

Activities led by the Clean Air Champions to coordinate and integrate activities across the programme, and to maximise the impact of the larger portfolio.

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Networks to build interdisciplinary communities to address air quality challenges at the indoor/outdoor interface

Indoor/outdoor Bioaerosols Interface and Relationships Network – BioAirNet	The aim of BioAirNet is to act as the leading voice for the UK BioPM science community by taking a transdisciplinary approach to understand the complexity and connectivity among people, BioPM exposure and the indoor-outdoor continuum.
Air Pollution Solutions for Vulnerable Groups (CleanAir4V)	The aim of CleanAir4V is to develop innovative and cost-effective behaviour and technology interventions to reduce further air pollution exposure and improve health of vulnerable groups and implement these interventions through policy advice, planning and business innovation.
Breathing City: Future Urban Ventilation Network	The aim of Breathing City is to define a new integrated health evidenced approach to urban building design and technology innovation for vulnerable groups, by understanding how airflows transport pollutants in indoor and urban environments.
Tackling Air Pollution at School	The aim of Tackling Air Pollution at School is to bring together interdisciplinary expertise to develop the research base to design and operate healthy schools in the environment of the future.
The health and equity impacts of climate change mitigation measures on indoor and outdoor air pollution exposure (HEICCAM)	The aim of HEICCAM is to strengthen evidence to optimise the health and equity impacts of changes in air pollution at the indoor/outdoor interface as we transition to a low carbon future.
Optimising air quality and health benefits associated with a low-emission transport and mobility revolution in the UK	The aim of the TRANSITION network is to identify, prioritise and tackle indoor and outdoor air quality challenges linked to the UK low emission mobility revolution, bringing together academics, researchers, policymakers, business, civil society and the wider general public.

Preparing for Future Clean Air Challenges: Interdisciplinary research and innovation consortia

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Consortia - Ambitions

To fund solution focussed, interdisciplinary consortia in the area of the indoor/outdoor air quality interface which will deliver new knowledge that:

- provides critical foresight on emerging air pollution challenges and associated health risks and impacts; and
- enable an increased understanding and quantification of human behavioural change and practices in order to develop and assess interventions, that limit harmful exposure to mitigate the negative health impacts of individuals most at risk.

Up to £ 10 m is available to support approximately 3 - 4 Consortia at £ 2 – 3.3 m (80%FEC) each for 4 years from 1 September 2021.

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Consortia - Timeline

Call Launched	July 2020
Outline Proposals opens on Je-S	23 July 2020
Notification of Intent - form on NERC webpage	16:00 3 September 2020
Outline Proposals deadline	16:00 15 October 2020
Outline Assessment Panel	November 2020
Outline Panel Outcomes and Invite to submit full proposals if successful	December 2020
Deadline for submission of Full Proposals (INVITE ONLY)	16:00 25 February 2020
Expert Panel	June 2021
Projects start	1 September 2021

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Consortia - Call Scope

- Trends expected over the next decade will bring about a different range of air quality challenges to the ones we are facing today.

- Impact across the indoor/outdoor interface

- Emergency public health measures to contain the COVID-19 pandemic have offered a glimpse of this low carbon future and have changed the way we travel with higher levels of active transport

- Epidemiological studies, whilst having shown important health impacts of fine particles, have shed little light on the relative toxicity of indoor or outdoor particle components.

- The scientific, technical, behavioural and policy approaches used to assess and manage exposure to air pollution need radical change to reflect this indoor/outdoor continuum of exposure and avoid unintended consequences of these drivers for change.

Consortia - Call Scope

There are 5 main objectives that this call seeks to address:

1. Understanding and characterising indoor air pollution and its influence on outdoor air quality.
2. Understanding the toxicology and health effects of future exposure and emission scenarios.
3. Understanding airborne biological materials and their impacts on health.
4. Influencing behaviours and practices related to emissions and exposures.
5. Interventions in the built environment.

Across the funded portfolio of consortia, the funders anticipate elements of all these 5 objectives will be addressed but individual consortia do not need to address all of these objectives within their project.

The funders have identified the relative toxicological properties including the formation and toxicity of secondary pollutants, across the indoor/outdoor interface in the context of future scenarios such as future new mixes of air pollution as a gap (objective 2) and therefore, expect to fund at least one consortia with a major toxicology element.

Consortia – Proposal Requirements

It is anticipated that successful consortia will define an interdisciplinary challenge aligned with the objectives set out in the call scope and propose a consortia and programme of work that:

- demonstrates how it will achieve a step-change in our levels of knowledge and understanding of the subject;
- articulates how the new knowledge and solutions will protect and improve human health through the provision of clean air across the indoor/outdoor interface;
- proposes interdisciplinary approaches and draws appropriate expertise from across diverse academic disciplines and wider stakeholders;
- demonstrates co-design between academic research and users, such as including those from across healthcare, policy, practice, industry, 3rd sector and the publics, as appropriate, and leverages in-kind support to deliver transformational change;
- demonstrates commitment to delivering impact, with clearly described mechanisms for influencing policy and practice, which are responsive to the challenges of a rapidly changing landscape.

Consortia - Call Scope

- Consortia will deliver new knowledge, insight, capability and technology to enable us to understand and answer the critical emerging air quality challenges and the associated health impacts facing the UK population.

- Consortia will translate this new knowledge and innovation to support and inform government policy to reduce emissions, improve public health, influence behaviour and develop infrastructure.

- Proposals focussing on issues relating solely on indoor or outdoor air pollution alone are out of scope.

- ‘Those most at risk’: justify individuals or groups that are most at risk which their proposal focusses on. E.g. individuals and groups at vulnerable stages of the life course, with established disease and/or those disadvantaged by inequalities.

- Research focussing exclusively on air quality issues in other countries is out of scope.

- UKRI held two events at the start of the 2020 to facilitate the scoping of this call. A report from these events may be found here.

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Consortia – Knowledge Exchange and Impact

Knowledge exchange (KE) is vital to ensure that environmental research has wide benefits for society and should be an integral part of any research.

All funded projects may also be required to engage with programme-wide KE activities and work with the Clean Air Champions, e.g. partaking in a Clean Air programme conference and other programme-wide events.

Consortia should include funding to support travel to attend one UK based programme event per year.

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Consortia – Eligibility

This call is open to UKRI eligible research organisations and PSREs fitting the criteria below:

- UKRI grants may be held at approved UK Higher Education Institutions (HEIs), approved Research Council Institutes (RCIs) and approved Independent Research Organisations (IROs).

- PSREs with 10 or more researchers with PhDs (or equivalent) are eligible to apply. If PSREs wishing to apply have not previously applied for UKRI funding and are not currently designated PSRE status they will be required to complete an eligibility form to ensure they have the required research capacity, systems and controls in place to manage the research and grant funding. PSRE applicants should contact avril.allman@nerc.ukri.org at the earliest opportunity to discuss their interests in applying.

- Standard NERC individual eligibility rules apply, however it should be noted that both PIs and Co-Is from **all disciplines supported by UKRI** are welcomed and encouraged to apply.

- Any Met Office or NPL collaborations should be recorded as Project Partners and individuals from these organisations will use their own funds to participate in Consortia activities.

- Investigators may participate as a Co-I or a PI in a **maximum of two proposals submitted to this call** and only one of these may be as the lead Principal Investigator (PI).

Brokering Service

To facilitate collaboration and ensure prospective consortia have the expertise needed, we will be providing a mechanism for applicants to share expertise offered or wanted. Applicants can provide these details via an online brokering form throughout application process, with the list of expertise offered or needed displayed on this web page.

Show 20 entries

Search:

Type	Name	Organisation	Title	Description	Email

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Consortia - Timeline

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Consortia – Notification of intent (NOI)

NOI should be submitted via the NOI form which can be found on the NERC webpage for this Announcement of Opportunity. Deadline: 16:00 3 September 2020

Outline Je-S proposals submitted without a prior NOI will be rejected.

NOIs are not assessed. The information is used to plan the assessment process

PI	May not change
Co-Is (space for up to 10 on the NOI form)	May change – please let NERC (atmospheric@nerc.ukri.org) know if there are significant changes to Co-Is
Project Title	May change – please let NERC (atmospheric@nerc.ukri.org) know if there is any change to your title
Abstract	The spirit of the project detailed in the abstract may not change.
Potential reviewers	Not compulsory to complete.

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Consortia – Outline Proposal

Outline proposals must be submitted through Je-S. Deadline: 16:00 15 October 2020

One proposal submitted by the PI, per project and cover all consortium parts

Outline Proposal Form	
Case for Support (max 4 sides of A4	• Objectives and anticipated outputs • Outline of the proposed Consortia programme of work • Composition and experience of the research team. • Role of Project Partners and co-funding (proposed and secured). • Outline of project management plan • Outline of data management plan. Please briefly identify data sets likely to be made available for archiving. • Proposed use of any UKRI Facilities, please see section 4.5 UKRI Facilities of this document. • Equipment to be requested and the expected NERC % contribution required. • References
Capital Idea Proposal (0.5 side A4)	Not compulsory – will be covered in later slides

Consortia – Full Proposal (Invite only)

Only Full proposals which have been invited by the Funders following the Outline stage will be accepted. Full proposals must be submitted through Je-S.

Full proposals – Please follow NERC large grant format (Section F of the NERC research grant and fellowships handbook) and specific requirements set out in the AO.

NERC large grant format	includes: Proposal Form; Case for support; Outline Data Management Plan; Justification of resources; C.V.s; Project Partner Letter of Support; Letter of support (where prior permission is sought from researchgrants@nerc.ukri.org); Facility Form; Technical Assessment; Equipment Section attachments; Proposal Cover letter
Ethics forms	Using the “Annex A: Use of animals and/or human participants – template form” found on the NERC webpage for this Announcement of Opportunity.
Capital Idea Proposal up to £500 k	this proposal should be included as a separate attachment. Will cover in next slides

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Assessment

Outline Stage:

- Outlines received prior to the deadline which fit the basic requirements of the call will be assessed by an Assessment Panel who will shortlist those that will be invited to submit Full Proposals.
- Outline Proposals will be assessed on: *Likely* Fit to Scheme and *Potential* for Excellence

Full Stage:

- All proposals invited to be taken forward from the outline stage which meet the eligibility criteria will be peer reviewed and this will include an expert interdisciplinary panel.
- Proposals will be assessed on: Fit to Scheme and Excellence.
- Applicants will be invited to the expert panel to give a presentation and answer questions to assist the assessment process

The funding recommendations made by the expert panel will be made to the SPF Clean Air programme board. A portfolio approach will be used to ensure the breadth of the scope is addressed. The funders will use the recommendations of the expert panel alone with the overall call requirements and the available budget in making the final funding decisions.

Further information here regarding ‘Fit to Scheme’ and ‘Excellence’:

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Consortia – Capital Idea Proposals £500 k

The Capital proposals are separate to the consortia proposal and the consortia proposal should not be reliant on successful Capital funding. Capital proposals should be scalable and indicate what could be achieved with variable funding amounts. The funders also reserve the right to not administer any capital funding through this opportunity

Applicants to the Consortia call are invited to include a proposal for a Capital Idea as part of their application, up to the value of £500k. Capital is defined as the creation or purchase of an asset that has a useful life exceeding one year and that costs more than £10,000.

Where Capital Idea Proposals are successfully awarded, the funding should be spent by 31 March 2022.

Outline Proposal Stage: Capital Idea Proposal (0.5 side A4)	• Brief summary: how the Capital Idea Proposal would support, and add value to, the consortia proposal programme of work and the wider community • High-level estimation of the full cost and the % being requested from the funders.
Full Proposal Stage: Capital Idea Proposal Business Case (up to 2 sides of A4)	• How the Capital Idea Proposal would support, and add value to, the consortia proposal programme of work and the wider community • Evidence of an evaluation of the use of existing relevant capital assets • Cite the full cost of the equipment, confirm the % being requested from the funders and provide confirmation that the remaining funds have been secured

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