

# Tender to develop a National Strategy for Materials Innovation

## Stage 2 – evidence gathering and production of strategy

### Introduction and Scope

Through 2023/24 Royce is seeking to promote and support the development of a National Strategy for Materials Innovation<sup>1</sup>. To achieve this, we are drawing on the UK's research community and contracting resource to develop the required framework – specifically helping to manage and support its development.

Royce is therefore inviting an organisation/s to drive the development this National Strategy for Materials Innovation which will build on the Framework developed in Stage 1, be underpinned by a broad consultation process with support from government, including the Department for Science Innovation and Technology (DSIT). The Strategy development will be owned and directed by a new Materials Innovation Leadership Group, which is in the process of being formed and launched.

The role of the commissioned organisation/s will be to undertake the following programmes of work:

**Activity 1 - Materials Innovation Strategy development** – this is the major activity of this call and the ultimate output will be delivery of a final, publishable report and strategic plan which builds from the Strategy Framework, key drivers and ambition set out in this tender (expected duration 12 months, in parallel with activity 2)

**Activity 2 - Programme management** – overall coordination of the activities associated with development of the Materials Innovation Strategy (expected duration 18 months)

**Activity 3 : Econometrics study (ies)** – a report and background database to provide essential information and input to support the business case for implementing recommendations from the Materials Innovation Strategy (expected duration 4 months from overall project start – expanding on the existing [recently produced Government commissioned](#) evidence-base)

Organisations are invited to bid for all three work packages together, or single work packages if they can offer specific skills set, expertise and approach that demonstrates a strong understanding of the brief. Indicative budgets are set out towards the end of this document. As there is a strong likelihood that

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<sup>1</sup> defined as any material (system) to which substantial 'value' is added through processing or modification. Materials can therefore range from innovation in steels and ceramics, through polymers to metals, composites, functional devices and many other materials. Mining/extraction, bulk chemicals and pervasive low value, commodity materials are excluded from this work

multiple parties will be engaged, successful organisations will need to be content to work with other parties and recognise that outputs will be primarily Royce branded.

The outputs of this strategy will be used in policy discussions with government, to inform and direct academic/industry collaboration and to underpin engagement with the investment community. They will support decision making and act as an anchoring point to ensure prioritisation and focus in the coming decade.

## Building on Stage 1 – background and importance

Stage 1 of this activity was completed in the first quarter of 2023. The output was a short [Materials Futures summary](#) and a [National Materials Innovation Strategy Framework](#).

*The focus for the strategy is innovation and technology translation against national need: while material's research is an acknowledged UK strength, we recognise the need to be much better at linking the science to commercial reality. Successfully moving beyond TRL6/7 and scaling-up and making a significant commercial and/or societal impact is at the heart of this challenge. The aim of the Strategy must be to identify opportunities and stimulate measures which close this gap and ensure that the UK is a front runner in embedding materials innovation into our manufacturing sectors such as transport, digital, energy, building and health.*

The Framework report lays out the detailed process by which the strategy will developed, which starts by scoping, definition and appropriate grouping of:

- National and industrial sector priorities including trends and drivers, market needs and industrial sectors
- Key application and process developments to which materials innovation can contribute via value-creation opportunities
- Materials innovations to support these applications and processes and further highlight needs for cross-sector collaborations
- The associated non-technological supporting enablers

To this end, the Framework proposes a strong Challenge-led element aimed at:

- confirming the key materials innovations required (including the exploitation and re-engineering of existing materials in light of societal and commercial drivers)
- clarifying the technology gaps and interfaces which need to be addressed
- Identifying and closing the finance gap (including how we might reduce perceived investment risk)
- Promoting materials technologies and in turn synergies across sectors – including stimulation of industry willingness to adopt and manufacturing readiness
- Improved communication, engagement and dialogue across the materials community – including academia, industry and Government
- providing a series of recommendations around these gaps and interfaces

Further, it is recognised that most materials innovations span historic industrial sectors and hence the Framework has been structured to *highlight cross-industry technology development opportunities*

which will support a more agile materials user/manufacturing community which can adapt to changing global markets.

Sustainable use of resources and national resilience must be a further axis underpinning the prioritisation process in the strategy.

## Stage 2 Activity – deliverables within this tender

Stage 2 is recognised as much longer programme of work that we expect to last up to 18 months, including collection of the necessary evidence and its interpretation. It is important to recognise that:

- Output will be continually expected from this programme of work, and it will be expected to be contain the necessary detail to feed into areas of national policy related to materials in the coming year
- Output will be cross-sector in nature, rather than going down the traditional sector-based route to industrial strategy development. The proposed framework is new because it is the first time that it is attempted to identify the cross-sector impact of selected, priority materials innovations
- The cross-sector approach should open up a significantly greater appreciation of the potential social, economic and environmental benefits and hence the justification of more concerted investment of time and funding in key priority areas.

The strategy will be developed via a top-down process and will be underpinned by a system-wide perspective of the whole materials ecosystem. This process will prioritise material innovations which will deliver maximum benefit for the country, with the following key policy drivers:

- Getting to net zero
- Growing a high-wage, highly skilled workforce
- Strengthening the UK as a global technology leader
- Rebalancing the UK economy
- Supporting national resilience and security
- Enabling healthy, happy lives

In addition, it is expected that mapping the main elements of supply and value chains for key markets will enable the identification of value-creation opportunities and key material innovations that generate the most economic, societal and environmental value.

This second stage will require wide engagement and input which builds on the Framework methodology and the momentum gained following the launch event in London in April 2023. This is essential given the breadth and depth of materials innovation as a discipline which spans Research, Development and Innovation (RDI) across a diverse research base in the UK and beyond.

The Framework was designed to be used in a series of sequential steps. Multiple priority value creation opportunities can be explored and analysed in parallel, enabling numerous cross-sector insights and actions to emerge. As the sequence is followed, consolidation of the outputs should aggregate key materials innovations, recommendations and actions so that industry, academia and policymakers

may act in a coordinated fashion, thus addressing the need for the materials community to “speak with one voice” opposite the opportunities identified.

The key identification of the gaps, barriers, enablers and interfaces in technology translation and commercialisation should be the main thrust of this Strategy.

The process of applying the Framework has six key steps:

- Cross-sectoral **clustering** of the national materials innovation scene for engagement and deeper analysis
- Identification of **national priorities** for the relevant economic, social, and environmental trends and drivers for new and emerging materials developments
- Identification of **high-priority cross-sector opportunities** for detailed exploration and development – a combination of both 1 and 2
- Identification and assessment of the **materials innovation contribution** to each opportunity area, including associated risks and uncertainties in the opportunity workstreams
- Confirmation of **cross-sector priorities and identification of associated enabling actions** required by the opportunity workstreams
- Strategy consolidation including a published report setting out overall recommendations and actions

For a comprehensive output it is considered essential that, in parallel a detailed econometric study is undertaken (building on previous studies undertaken in the last decade) around materials impact for the UK to establish the business case which will sit alongside the strategy.

## Development of key recommendations

Ultimately, the strategy must deliver focussed, insightful evidence-based output which the **Materials Innovation Leadership Group**, Government and the materials community can act upon. Including recommendations for:

1. Funding and other support for the commercialisation and translation of materials capabilities, technologies, and know-how, to support the acceleration of the materials commercialisation cycle. It is also possible that new or high priority areas of materials research and innovation are signalled to existing funding bodies. This recommendation should be underpinned by a review of current funding in materials research and innovation and how such research aligns with the strategy. This will in turn identify the need either for new areas / more research or a redirection of funds to strategically important research
2. Encouraging the development of investment vehicles including public-private partnerships that may bridge the gap between basic research and commercialisation, and can lead to the development of advances in materials application - the exploitation and innovation in current and new materials with regard to performance and functionality
3. Providing incentives for companies to invest in new materials innovation and adoption. This can include tax credits, grants, and other forms of financial support to help offset the costs of research and development. In addition, the government can provide regulatory incentives to encourage the uptake of materials innovation in key industries.

4. Where appropriate considering education and training programmes in materials science and engineering – recognising the development of a skilled workforce in materials science and engineering is critical to the success of a national materials innovation strategy

## Work Plan

Our expectation is that that the appointed delivery partner(s) will manage three strands of activity:

### **Activity 1 - Materials Innovation Strategy development – expected duration 12 months**

The Materials Innovation Strategy should be aligned with the Framework produced in stage 1 (significant departures from this approach may be considered but will require substantial evidence based justification which will be reviewed by the selection panel). Submissions should clearly address the following aspects:

- 1) Incorporation of the econometrics study to be carried out in activity 3 (in parallel with this study)
  - (a) Any additional requirement for commissioning studies to provide background evidence
- 2) The approach taken to provide the necessary level of stakeholder engagement and input
- 3) A short summary of the approach to prioritising opportunities and interventions for the UK including
  - (a) Identifying viable innovation opportunities and priorities
  - (b) Addressing people and skills retention/development
  - (c) Alignment with national objectives for 5-20 years
  - (d) Investment and policy requirements/recommendations
- 4) The interim and final reporting structure and strategic plan which relates to the Strategy Framework, key drivers and ambition as set out in this tender.

### **Activity 2 – programme management – expected duration 18 months**

We expect this activity to be delivered under the stewardship of, and acting for Royce. The contracted party will be responsible for the following:

1. Coordinate the activities associated with development of Materials Innovation Strategy
2. Act as the key interface to, and secretariat for, the Materials Innovation Leadership Group who will own the strategy development and implementation
3. Own the communications strategy and policy engagement – working with the Royce communications and engagement team
4. Coordinate the delivery of intermediate outputs from the econometric and materials innovation strategy throughout the course of the projects
5. Coordinate the econometric study(ies) (activity 3) to feed into the Materials Innovation Strategy

### **Activity 3 - Econometrics study (ies) – expected duration 4 months**

Econometrics study(ies) for materials innovation in the UK will provide essential background information and input to support the business case for implementing recommendations from the

Materials Innovation Strategy. This will mean investigating available information and data and providing interpretation of this to underpin strategy development and recommendations. Presenting a detailed analysis of the contribution of materials and both a national and regional level to highlight their contribution and performance and inform the business case for new or continued strategic intervention/investment (or indeed non-intervention/tapering investment). This work will be expected to expand on the recently published [BEIS Advanced Materials Assessment](#)

This will include:

- 1) Consolidation of the necessary information to inform markets and opportunities (including emerging and enabling technologies)
  - i) Consideration of previous studies to inform both the baseline position of the UK's materials innovation capability/economic viability and value contribution
  - ii) Any existing Government, trade body and industry sector output which inform the challenges to be addressed and any indication, or specific examples, of the value this could provide to the UK.
- 2) Necessary research to close the gaps identified in available information sources
- 3) High level summary of major recent or ongoing funded programmes to inform around the current national investment profile
- 4) Final comprehensive report covering both the econometrics study (ies) and summary of current funding/funded programmes, alongside the longer-term strategic direction of future/planned Government funding.

## Management and Governance

The contract(s) will be directly managed by the Royce CEO or their delegate, through a small project team. The ultimate Strategy programme will be overseen by the Materials Innovation Leadership Group.

## Tentative Timeline

We envisage the project will follow this timeline, with some flexibility where necessary.

- Invitation to Tender: Thursday 8 June 2023
- Closing date: Friday 30<sup>th</sup> June 2023
- Appointment of Contractor/s: week commencing 17 July 2023
- Initial Planning Meeting week commencing 7<sup>th</sup> August 2023

## Indicative Budgets

**Activity 1: Materials Innovation Strategy development - £150k**

**Activity 2: Programme management** – overall coordination of the activities associated with development of Materials Innovation Strategy - **£50k**

**Activity 3: Econometrics study (ies)** for materials innovation in the UK to provide essential background information and input to support the business case for implementing recommendations from the Materials innovation strategy (expected duration 4 months at start of project) - **£50k**

**These proposed budgets may be flexed following discussion with appointed contractor/contractors**

All proposals should be inclusive of VAT and expenses:

## How to submit a proposal

Proposals should be no longer than C.2500 words and may address all or individual activities of the three highlighted above (single activities are limited to c.1500 word submissions). We are seeking a demonstration of understanding for the working being proposed, outline methodology and capability/track record.

**Submission date: Friday 30<sup>th</sup> June**

A contractor will be selected by:

- Understanding of the brief
- An outline methodology for achieving the brief.
- A statement of credentials in relation to the brief including key personnel and examples of previous work
- Costs including fees and expenses (inc. VAT)
- Previous customer feedback on similar work

Please submit proposals by email to [info@royce.ac.uk](mailto:info@royce.ac.uk)

Any enquiries about this tender should also be directed to [info@royce.ac.uk](mailto:info@royce.ac.uk)

## Proposal Evaluation

We will evaluate proposals using the following criteria:

- Understanding of the brief and proposed methodology - 50%
- Previous experience and subject knowledge - 25%
- Value for Money - 25%