

## DPS FRAMEWORK SCHEDULE 4: LETTER OF APPOINTMENT AND CONTRACT TERMS

### Part 1: Letter of Appointment

Dear Sirs

#### Letter of Appointment

This letter of Appointment dated 5<sup>th</sup> January 2021, is issued in accordance with the provisions of the DPS Agreement (RM6018) between CCS and the Supplier.

Capitalised terms and expressions used in this letter have the same meanings as in the Contract Terms unless the context otherwise requires.

Order Number:	CR20129
From:	The Department for Business, Energy & Industrial Strategy, 1 Victoria Street, London SW1H 0ET (BEIS) ("Customer")
To:	Ricardo AEA Ltd, Gemini Building, Fermi Avenue, Harwell, Oxon OX11 0QR ("Supplier")

Effective Date:	Monday, 11 <sup>th</sup> January 2021
Expiry Date:	Wednesday, 31 <sup>st</sup> March 2021

Services required:	Set out in Section 2, Part B (Specification) of the DPS Agreement and refined by: the Customer's Project Specification attached at Appendix A and the Supplier's Proposal attached at Appendix B of this letter of appointment;
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Key Individuals:	<div style="background-color: black; width: 150px; height: 15px; margin-bottom: 5px;"></div> <div style="background-color: black; width: 250px; height: 15px;"></div>
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<p>[REDACTED]</p>	<p>[REDACTED]</p>

**FORMATION OF CONTRACT**

**BY SIGNING AND RETURNING THIS LETTER OF APPOINTMENT (which may be done by electronic means) the Supplier agrees to enter a Contract with the Customer to provide the Services in accordance with the terms of this letter and the Contract Terms.**

**The Parties hereby acknowledge and agree that they have read this letter and the Contract Terms.**

**The Parties hereby acknowledge and agree that this Contract shall be formed when the Customer acknowledges (which may be done by electronic means) the receipt of the signed copy of this letter from the Supplier within two (2) Working Days from such receipt**

**For and on behalf of the Supplier:**

**For and on behalf of the Customer:**

Name and Title: [REDACTED]  
[REDACTED]  
Signature: [REDACTED]  
[REDACTED]

Name and Title: [REDACTED]  
[REDACTED]  
Signature: [REDACTED]  
[REDACTED]

## APPENDIX A

### Customer Project Specification

#### 1. Background

##### **Context:**

Meeting the UK Government's legislated emissions reductions targets, including the Carbon Budgets and 2050 net zero emissions target, will require the rapid deployment of novel green technologies and infrastructure. Ensuring these technologies and infrastructure projects are able to access the capital and financing they need to scale up at the pace required is therefore essential.

However, evidence suggests that market failures persist for scaling up and commercialising emerging green technologies and infrastructure, particularly for larger scale projects (typically project finance as opposed to venture capital) that have demonstrated technical viability but lack a track record as a commercial investment.

Existing Government funding for emerging green technologies typically takes the form of advanced R&D or the establishment of technology or sector specific funds, often in the form of grant funding. Government also seeks to catalyse private investment through providing long term policy or revenue certainty to reduce market risk, such as through the Contracts for Difference Scheme.

This study will provide an analysis of market failures (and other barriers) affecting the flow of investment in "First of a Kind" (FOAK) green technologies and infrastructure in the UK. Specifically, the list of technologies in scope are defined by the BEIS Energy Innovation Needs Assessments and discussed further below. Based on this analysis the study will assess how identified market failures can be addressed effectively, with a focus on evaluating how interventions by a new UK infrastructure bank would compare against other options for Government intervention.

This work will take place in the context of the Government's commitment in the 2020 National Infrastructure Strategy to support and leverage private investment through the establishment of a major new UK infrastructure bank. This new institution will operate UK-wide, co-investing alongside the private sector in infrastructure projects, and will support the government's ambitions on levelling up and net zero.

##### **Research Collaboration:**

This project will be led by the BEIS Green Finance team within the BEIS Clean Growth Directorate. The BEIS Clean Growth Directorate coordinates Government action to meet the UK's emission reductions targets and accelerate the transition to cleaner economic growth. The Green Finance team is responsible for overseeing delivery of the Government's Green Finance Strategy (2019) and coordinates green finance policy across Government.

BEIS will coordinate engagement with other Government teams as required, principally the BEIS Corporate finance Advisory and Investor Relations (CAIR) team, other sector/technology policy teams in BEIS, and engagement with other Government Departments, such as HM Treasury.

##### **Research Drivers:**

The project will primarily seek to develop a clear evidence base on whether a new publicly funded investment institution could help to unlock investment in emerging green technologies and infrastructure.

##### **Research Outputs:**

The outputs of this research will allow a greater understanding of market failures (and other barriers) affecting investment flows in emerging green technologies and infrastructure, how and to what extent these market failures/barriers are impacting the current pipeline of projects and investor sentiment, and ultimately how the new UK infrastructure bank can help to unlock green investment at the pace and scale the UK's climate commitments require.

By helping to build this knowledge base, the expectation is that this study will inform the Government's approach to catalysing investment in emerging green technologies and infrastructure.

The outputs of this research will be used in a number of ways, including but not limited to:

- Strengthening BEIS' evidence on investment gaps and finance-related market failures affecting investment in emerging green technologies and infrastructure, including triangulating our existing knowledge base through market engagement;
- Assessing the role a new UK infrastructure bank could play in catalysing private investment into emerging green technologies and infrastructure;
- Providing a business case for intervention, including high-level design options on how a new UK infrastructure bank could most effectively intervene in this space, for example through co-investing with the private sector.

## 2. Aims and Objectives of the Project

### Overview:

This study will analyse market failures affecting the flow of investment in emerging green technologies and infrastructure and identify the pipeline of UK green projects currently seeking to raise private capital. The analysis will inform BEIS evaluation of the role a new UK infrastructure bank could play in unlocking green investment at the scale and pace required to meet the UK's Carbon Budget and Net Zero commitments.

### High-level research questions:

At a high level, the study will seek to answer the following questions:

1. **What are the market failures** and wider barriers affecting the flow of private investment into emerging but technically proven (FOAK) green technologies and infrastructure? Market failures may include coordination problems, asymmetric information, externalities and so on. Market barriers may include lack of access to capital, lack of priority among others, including behavioural/organisational factors.
2. **How could market failures be addressed effectively** – what levers could be used to address identified market failures and ensure emerging green technologies are able to attract private investment at the scale and pace required to meet the UK's climate commitments? How would interventions by a new UK infrastructure bank compare against business as usual and alternative policy options?

### Project overview:

We envisage four main parts to the study:

- i) Brief desk-based review (drawing on existing BEIS analysis) of the current/evolving investment landscape for emerging clean technologies
- ii) Primary research and engagement with industry practitioners on existing real project pipelines and associated market failures
- iii) Appraisal of intervention options against a BAU reference scenario using social cost-benefit methodologies and multi-criteria analysis
- iv) Business case for intervention by a new UK infrastructure bank, including high-level recommendations on design principles, such as specific financial instruments for co-investment with the private sector, that will maximise additionality and the crowding in of private finance

### Specific research questions:

A list of specific research questions are outlined below:

**RQ1.** What are the barriers/market failures affecting the flow of sufficient private investment in emerging but proven (FOAK) green technologies and infrastructure?

- What policy support currently exists for different technologies at different parts of the innovation chain from R&D through to deployments?
- How do barriers/market failures vary by technology and sector?
- How are the identified market failures impacting the scale of investment into green technologies?
- Can the identified market failures be addressed through non-fiscal policy interventions alone?

**RQ2.** What live green emerging (FOAK) projects currently in the UK pipeline are struggling to access private capital and why?

- Why are these projects struggling to access private capital at adequate cost/scale? Why do existing policy levers not adequately address barriers to investment?
- Which of the current pipeline of live projects could be targeted by a new publicly funded investment institution?
- To what extent would a new publicly funded investment institution encourage more projects to come to market?

**RQ3.** How could a potential new publicly funded investment institution address the identified market failures and ensure emerging (FOAK) green technologies can attract investment at the scale and pace required to meet the UK's climate commitments?

- How does a publicly funded investment institution compare against other potential intervention options against the following criteria?
  - a. Social cost-benefit and value for money (VfM)
  - b. Potential to leverage in (and not crowd out) private investment
  - c. Emissions reduction
  - d. Any additional benefits (e.g. innovation spillovers, competitiveness)
- What are the key uncertainties and how sensitive are findings to different assumptions (e.g. level of policy ambition)?
- What other (quantitative) evidence exists with respect to the efficacy of other public finance initiatives in unlocking private investment into infrastructure broadly and green infrastructure specifically?
- Qualitatively, are there any barriers that a dedicated investment institution is uniquely well-placed to address (e.g. technical expertise in project appraisal)

**RQ4.** What is the business case for intervention by a new UK infrastructure bank to address those market failures affecting the deployment of emerging but proven (FOAK) green technologies and infrastructure?

- Based on the analysis, what are the high-level design principles that would maximise the value (additionality and private finance crowd in) of any future publicly funded investment institution?

**Technology scope:**

Established and innovation-stage clean technologies are out of scope for this project. The focus is on emerging stage technologies only, i.e. technically proven but not yet commercial and attracting private investment at scale, and therefore requiring of FOAK investment. Examples include hydrogen, CCUS, advanced nuclear (including SMRs), advanced heating technologies and

networks, advanced storage, and broader supporting infrastructure for decarbonisation e.g. hydrogen networks, carbon storage, EV charging and so on. Emerging FOAK climate adaptation technologies may also be considered within scope, e.g. agri-tech and meteorological monitoring systems. The BEIS team will agree on the final sub-set of technologies to consider with the successful consultant.

### **3. Suggested Methodology**

The proposal should include a detailed description of the proposed methodology and approach to the research specification. Submissions should clearly identify how they will address each of the key objectives and research questions outlined in “*Aims and Objectives of the Project*”.

An indicative, high-level outline of each of the key stages of the methodology is provided below. This includes an anticipated resource split [%] for each stage of the research. This approach should not be considered prescriptive and the contractor is encouraged to propose alternatives to this methodology where suitable. Where contractors expect to deviate from the indicative methodology, we ask that this is clearly explained in detail.

#### **Stage 1 – Technology/investment landscape [10%]**

To determine the scope of subsequent analysis, this first stage of research will briefly assess the current investment landscape and market failures affecting emerging clean technologies. It is anticipated that this desk-based review will collate and assess any relevant recent academic/grey literature sources to:

- Define focus technologies and sectors. In consultation with the BEIS project team, the consultant will delineate key technologies and sectors on which to focus the analysis. It is expected that these technologies will largely be based on existing work around technology prioritization, including the Energy Innovation Needs Assessments.
- Briefly at a high-level, map out existing support for chosen technologies. For different technologies, what Government support already exists at different points along the innovation chain from R&D through to commercialization and deployment? Mapping out the existing policy landscape will help to identify potential areas where additional policy support may be needed.
- For each technology, briefly summarize current/projected finance requirements, estimated ticket size for FOAK commercial projects, and deployment/abatement potential
- Establish in broad terms the barriers/market failures affecting deployment of these emerging (FOAK) clean technologies – e.g. those resulting from imperfect or incomplete information, coordination problems, transaction costs (real or perceived), and policy uncertainty
- Qualitatively assess how these market failures apply to specific FOAK clean technologies

To note, discussion should not be limited to “market failures” in the strict definition of the term, but also include reference to any additional barriers to increased private sector development in low carbon technologies including, for instance, technology risk, construction risk, project delivery risk, market risk, and lack of experience/track record on the part of both developers and investors.

#### **Stage 2 – Project pipeline analysis and market intelligence [20%]**

The second stage objective is to establish for each of the prioritised technologies a clear understanding of their project pipeline over short-to-medium time horizons. It is expected that the consultant will combine desk-based review of relevant datasets, supplemented and corroborated by interviews with relevant industry/financial-sector players. This analysis is intended to:

- i) Catalogue live FOAK clean tech projects held-up due to limited private sector finance – including a description of any underlying market failures and (where

possible) quantification of investment needs, abatement potential, and anticipated economic benefits of delivery

- ii) Assess market sentiment in relation to catalogued projects and other emerging clean tech prospects – including the perceived influence of current/prospective policy interventions on finance flows and anticipated impacts on the scale/speed of technology deployment.

An example of a study that might provide a helpful framework for this piece of the analysis is Geddes et al. (2018). *The multiple roles of state investment banks in low-carbon energy finance: An analysis of Australia, the UK and Germany*. Energy Policy 115 (158-170).

### **Stage 3 – Appraisal of intervention options [50%]**

This third stage will draw upon evidence already assembled and wider secondary data sources (as required) to appraise options for bridging the investment gaps affecting emerging clean technologies. This should at a minimum consider the following intervention options for each shortlisted technology:

- a) Business-as-usual counterfactual based on current/announced policies
- b) New publicly funded investment institution
- c) Alternative policy interventions

Contractors should use the proposal to outline how they would design the scenarios. For each intervention option, a quantitative assessment of value for money should be provided through social cost-benefit analysis (or equivalent method) to determine value for money (VfM). Contractors should use the proposal to outline the proposed approach to the cost-benefit analysis (CBA) analysis, including costs and benefits to be considered. It is expected that the contractor demonstrates familiarity with the HMT Green Book (2020) methodology. We would expect the analysis to address:

- Potential to leverage private investment
- Emissions reduction
- Distributional impacts

A publicly funded green investment institution may also contribute to other policy objectives that are challenging to quantify as part of a formal CBA. Examples include progress towards broader policy goals, such as meeting Carbon Budgets and boosting UK competitiveness in both technology and financial services. The consultant should outline how these factors could be considered, for instance as part of a multi-criteria analysis (MCA).

Where possible a bottom-up model should be used, matching viable projects to available capital. This will support evaluation of the impact of policy changes on the viability of projects, and the costs and benefits of each intervention option. Where necessary a top-down model may be adopted by estimating the quantities of capital required to meet demand scenarios.

Scenario analysis should be used to address any significant uncertainties regarding economic, social, and environmental conditions. For example, high, medium, and low policy ambition scenarios and various levels of capitalisation for a new UK infrastructure bank may be considered. Minor uncertainties in parameter values should be addressed via sensitivity analysis.

#### *Other criteria for assessing intervention options*

Beyond the quantitative analysis, the contractor is encouraged to assess whether there is any qualitative evidence, for instance based on engagement with market participants, that

would strongly recommend one policy intervention over another. Specifically, it would be helpful to assess how a publicly funded investment institution compares against other interventions at addressing the market failures outlined earlier in the analysis. The consultant should outline any additional criteria they feel are relevant (e.g. policy flexibility in the face of technological uncertainty).

The long-term second order effects of increased levels of patient capital directed towards green and low carbon technologies finance are difficult to quantify with any degree of certainty. However, any high-level evidence on the potential for transformative spillover benefits from technological innovation would be informative.

Similarly, while the focus of this study is on addressing market failure, the contractor may wish to briefly reference any further justification for Government intervention based on other economic schools of thought, e.g. the role of Government in market shaping and transformation based on evolutionary economics.

#### **Stage 4 – Business case and design recommendations [20%]**

The study will conclude by presenting the business case for intervention by a new UK infrastructure bank to address market failures affecting the deployment of emerging but proven (FOAK) green technologies and infrastructure. The case for the additionality of this intervention should be made relative to a business-as-usual scenario and other potential interventions. Case studies on where a new UK infrastructure bank would operate and invest should be clearly drawn out in the business case.

The study may offer high-level reflections on how a new UK infrastructure bank could be designed to intervene in this space most effectively, e.g. mandate, financing terms, instruments and additionality. These principles should ensure that any co-investment with the private sector is designed in a way to best meet the objectives (a-d) listed in RQ3 above. Note that detailed analysis on the design of any new public financing institution would require further analytical work that is out of scope for this analysis.

#### **4. Deliverables**

Research outputs must include:

- **Final report:** A written summary report (c.20 pages) covering the key findings and conclusions of the study. This will be accompanied by any relevant technical annexes.
- **Modelling data and assumptions:** BEIS will receive all relevant information and supporting materials used in the cost-benefit analysis.
- **Presentation of results:** The consultant will provide an in-house presentation, including a short slide deck, to facilitate engagement with the findings across BEIS and Whitehall.
- **Interim report:** A draft outline report covering initial research findings will be produced at least 2.5 weeks before the final report to allow for review and comment
- **Excel calculator** allowing for the adjustment of parameters (e.g. level of public investment, assumed WACC, cost of different technologies) to explore impact on cost/benefits

To note, it is important that interim findings from the research are made available as they emerge so as to shape ongoing HMG thinking. We encourage bidders to outline how they will effectively communicate emerging results on an ongoing and iterative basis in both their proposed approach and suggested project timeline. At a minimum it is expected that

the contractor will provide regular updates to the BEIS project team as the research develops in order to outline findings as they emerge, detail the progress of the project, and evaluate progress against key research milestones. We request the contractor to schedule weekly 30-60 minute check-ins for this purpose.

A half day inception meeting/workshop should be built into the project plan. This is to allow for in-depth discussion of the proposed methodological approach and existing available data prior to the start of research.

All outputs must be quality assured in line with BEIS Aqua Book guidance.

**Ownership of Outputs:**

BEIS will hold ownership of the report and any underlying data that is used in the research.

Contractors should propose a project team (using job titles) and include the tasks and responsibilities of each team member. This should be clearly linked to the work programme, indicating the grade/ seniority of staff and number of days allocated to specific tasks. Contractors should identify the individual(s) who will be responsible for managing the project.

## Part 2: Contract Terms



Contract Terms v6.0