NORTH LONDON WASTE AUTHORITY

REPORT TITLE: NORTH LONDON WASTE AUTHORITY CARBON CAPTURE PROJECT: ADVISER SERVICES PROCUREMENT STRATEGY

REPORT OF: PROGRAMME DIRECTOR

FOR SUBMISSION TO: PROGRAMME COMMITTEE

DATE: 23 SEPTEMBER 2022

SUMMARY OF REPORT:

This report provides an overview of the Carbon Capture Project Adviser Services Procurement Strategy. The Authority's ambition is to deliver a carbon capture solution at the EcoPark as soon as practicable in the 2030s. To realise this ambition in a timely manner it is recommended that the Authority procure advisory services to support future delivery of carbon capture at the Edmonton EcoPark in alignment with the Carbon Capture and Storage Outline Strategy.

RECOMMENDATIONS:

The Committee is recommended to:

A. Agree to the procurement of the following advisory services on the basis of the approach set out in the attached Carbon Capture Project Procurement Strategy for a period of up to 7 years, within the financial limit of £10 million:
   i) Contract 1: Carbon Capture Project Engineering and Project Management
   ii) Contract 2: Planning and development of Environmental Statement
   iii) Contract 3: Financial and commercial modelling and business case development
B. Agree to delegate authority to the Managing Director to award the above contracts with the preferred tenderers
C. Agree to delegate authority to the Managing Director to commence the Strategy Assessment Stage only, within the financial limit of £2.5 million with further approvals from Members to be sought for each subsequent stage up to completion.

SIGNED:  ..... **Programme Director**

DATE: 12 September 2022

1. INTRODUCTION

1.1. This paper provides an overview of the strategy for procuring advisory services for the delivery of advice relating to the plans to deliver an integrated carbon capture solution for the new Energy Recovery Facility at the Edmonton EcoPark.

2. CARBON CAPTURE OVERVIEW

2.1. Carbon capture and storage (CCS) is an engineered solution which involves:

2.1.1. Capturing carbon dioxide (CO2).

2.1.2. Conditioning and temporarily storing the CO2 ready for transportation

2.1.3. Transporting the CO2 from the emitter site to a permanent storage site through one or more modes of transport, e.g. pipeline, road or rail network, shipping

2.1.4. Injecting the CO2 into shared permanent storage; typically in undersea locations for the UK

2.2. Carbon Capture is a proven technology, in particular for oil and gas applications and is vital for decarbonizing hard-to-abate industrial emissions. In 2020, 40 million tonnes of CO2 were captured using this technology globally. The International Energy Agency predicts a need to increase CCS globally to around 5,635 million tonnes CO2 per year in 2050 in order to meet decarbonisation targets.

2.3. The Climate Change Committee (CCC) states that for the UK to achieve its Net Zero commitment, CCS is a necessity and not an option. The CCC predicts a need for 104 million tonnes CO2 per year CCS capacity to achieve Net Zero by 2050. In their Sixth Carbon Budget, the CCC states the waste sector carbon emission levels could be reduced by 75% by 2050 relative to today's carbon emissions levels. It also suggests that all new EfW facilities and extensions to facilities should be fitted with post-combustion carbon capture plants starting from early 2040s (or 'Tailwind Net Zero Pathway' by early 2020s) or should be built as 'CCS ready', with CCS fitted to all facilities by 2050.

2.4. To support these objectives the UK Government is aiming to establish at least two industrial clusters by the mid-2020s and four by 2030 at the latest, with a total annual capture rate of 20-30 million tonnes CO2 per year by 2030. Industrial clusters are groups of industries such as cement, steel and power plants located in such proximity that the size and aggregation of energy demand across industries creates opportunities for systemic capture of carbon. In October 2021, Government selected two clusters (East Coast Cluster and HyNet North West) to progress their cluster sequencing process with the goal to be the first projects that will start capturing and storing CO2 in the mid-2020s.

3. CARBON CAPTURE AND STORAGE: OUTLINE STRATEGY

3.1. At the September 2021 Programme Committee meeting Members agreed to the Carbon Capture and Storage: Outline Strategy (Outline Strategy) which formed part of the NLHPP Carbon Capture and Storage Update paper. The Strategy set out the high-level activities which would be delivered as part of the forward plan to ensure the Authority is well placed to implement CCS with an ambition to become one of the first such facilities in the UK to implement carbon capture.

3.2. In line with the Outline Strategy the Authority conducted a prefeasibility study which examined a number of key factors which could influence the successful and timely delivery of an integrated carbon capture solution. Following a workshop which convened a number of relevant experts a CCS Delivery Plan was developed with an associated schedule setting out the indicative sequence of activities needed to implement carbon capture at the EcoPark. The analysis concluded an implementation date from early to mid-2030s is feasible however, successful delivery is very dependent on several complex factors some of which are not under the direct influence of the Authority. Factors considered included examination of potential transport and permanent storage options, a techno-economic study and opportunities for the development of a regional cluster of industrial emitters.

3.3. In addition to progress on technical aspects it is also important for the Authority to establish the links and networks that are necessary to be part of a successful overall carbon and storage solution. Officers have therefore been active in working groups and dialogue with others. To support ambitions for shared regional infrastructure the Authority has signed separate non-exclusive agreements with two potential transport and storage operators who are actively engaged and investigating opportunities to establish regional infrastructure in support of carbon capture. The Authority is in regular discussions with these stakeholders to develop these links. These individual agreements convene groups of experienced project developers and potential future emitters such as large power emitters and other energy from waste plants who have strong interest in progressing a viable solution for a southeast cluster. These early cooperation agreements will ensure the Authority is well placed to engage with and influence key partners who are actively investigating opportunities for transportation and permanent storage in the region.

3.4. The Authority continues to liaise with other important stakeholders including the Department for Business, Energy, and Industrial Strategy to keep abreast of emerging policy thinking, development timelines and funding opportunities. Other important stakeholders the Authority has liaised with include trade associations and providers of carbon capture and liquefaction technologies. This has enabled the Authority to increase our understanding of the market and build knowledge on the range of technology solutions that may reach sufficient maturity by the early 2030s. Future stakeholder engagement will be prioritised based on the level of impact and influence attributed to stakeholders.

3.5. In order to progress the commitment to implement carbon capture at the EcoPark by the early to mid-2030's officers will need to procure technical and commercial advisory support to deliver on this ambition. This would enable the Authority to establish a structured and formal project framework to allow the project to proceed. As the project matures the Authority will return to Members at key milestones to verify that the case for carbon capture remains valid and affordable and seek formal approval to progress to subsequent stages.

4. CARBON CAPTURE PROJECT ADVISER PROCUREMENT

4.1. The Authority's ambition is to deliver a carbon capture solution at the EcoPark by the early to mid 2030s and become one of the first such facilities in the UK to implement carbon capture. This plan would ensure the Authority remains aligned to the objectives of the Paris Climate Agreement, the UK Climate Change Committee recommendations for waste management and the UK Governments ambition for a net zero economy.

4.2. If the Authority is to realise this ambition in a timely manner it is recommended that the Authority procure advisory services to support future delivery of carbon capture at the Edmonton EcoPark in alignment with the CCS Outline Strategy. Appendix A sets out a proposed comprehensive procurement strategy. Under this strategy a contract would be awarded for the services described below. The contract would have multiple stages. At each stage officers would report back to Members and seek approval for the next stage to proceed.

4.3. As the development of a carbon capture and storage solution would be a major technical undertaking involving engineering, planning, financing, development of agreements with other parties and project management, it is proposed that the contract should have a 7 year duration and a value of up to £10 million. The initial work – and the financial delegation sought at this stage – is for £2.5m. This would enable key tasks to be carried out including identification and costing of carbon capture solutions as technology develops, development of documents to support a planning application for necessary infrastructure, commercial engagement with transport and carbon storage providers, establishment of an initial delivery plan.

4.4. The approach to the development of carbon capture is intended to follow HM Treasury Guidance for developing the project business case which is based on the Treasury Green Book and sets best practice in terms of appraising and managing major projects. The contracts would be let accounting for three delivery stages where progression from one stage to the next would require Member approval based on the gateway project assurance process as per HM Treasury Guidance for Major Projects as described previously. The three delivery stages as per the Guidance are:

4.4.1. Strategic Assessment - Determining the strategic context and undertaking the Strategic Assessment, including the elements described in section 1.13 above

4.4.2. Stage: 1 Business Justification - Scoping the scheme and preparing the Strategic Outline Case (SOC)

4.4.3. Stage 2: Delivery Strategy - Planning the scheme and preparing the Outline Business Case (OBC)

4.5. At each gateway the project would be subjected to a rigorous assurance process which would confirm that the project is on-track, that the business rationale for the scheme remains valid and the project remains aligned with the organisational goals.

4.6. To deliver the scope it is recommended to procure technical and commercial advisory support for the specialist areas divided into the following appointments:

4.6.1. Carbon Capture Project Engineering and Project Management

4.6.2. Planning and development of Environmental Statement

4.6.3. Financial and commercial modelling and business case development

4.7. The Strategic Assessment stage would be procured based on a fixed price with a maximum value of £2.5 million at which point the Authority would seek approval from Members for delegation to progress to the next stage following the outcomes of the preceding gateway.

4.8. Stage 1 and Stage 2 would be let on a provisional sum based on a fixed schedule of rates which would be agreed with the tenderer on a competitive basis as part of the award and evaluation of the contract. The Authority would not progress activities under Stage 1 and subsequently Stage 2 without first seeking approval from Members as described under the Strategic Assessment.

5. EQUALITIES IMPLICATIONS

5.1. There are no implications relating to the Equality Act 2010 arising from this report or the Procurement Strategy.

6. COMMENTS OF THE LEGAL ADVISER

6.1. The Legal Adviser has been consulted in the preparation of this report and comments have been incorporated

7. COMMENTS OF THE FINANCIAL ADVISER

7.1. The Financial adviser has been consulted in the preparation of this report and comments have been incorporated.

Contact officer:

Jacqueline Fitzgerald
Unit 1b Berol House
25 Ashley Road
London N17 9LJ
jacqueline.fitzgerald@nlwa.gov.uk

APPENDIX A ADVISORY SERVICES PROCUREMENT STRATEGY

North London Waste Authority
Carbon Capture Project
Adviser Services Procurement Strategy

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List of Abbreviations

CCC	Climate Change Committee
DCO	Development Consent Order
EfW	Energy from Waste
ERF	Energy Recovery Facility
FBC	Full Business Case
FEED	Front-end engineering and design
IPCC	Intergovernmental Panel on Climate Change
ITT	Invitation to Tender
NLHPP	North London Heat and Power Project
OBC	Outline Business Case
SOC	Strategic Outline Case
SQ	Selection Questionnaire
T&S	Transport and storage

1 Introduction

1.1 Purpose

This document sets outs the Authority's strategy for procuring advisory services for the delivery of advice relating to the plans to deliver an integrated carbon capture solution for the new Energy Recovery Facility at the Edmonton EcoPark.

1.2 Project Context – The Climate Crisis

Since 2015 more than 190 countries have adopted the Paris Agreement, a legally binding international treaty on climate change reached at the 21st Conference of Parties. The Agreement aims to keep a rise in global temperatures to below 2°C from pre-industrial levels, by the end of this century. The Intergovernmental Panel on Climate Change (IPCC) published a special report on the impacts of global warming of 1.5°C in 2018. The report found there would be severe climate impacts with 1.5°C of warming but the effects would be significantly worse with 2°C.

In response, the UK government set a legally binding target to achieve net zero by 2050. The Government's latest carbon budget (the sixth carbon budget covering the period 2033-2037) set a target to achieve a 78% reduction in greenhouse gas emission by 2035 compared to 1990 levels. As set out in the Government's Net Zero Strategy the achievement of these targets will require a transformation of every sector of the economy. This does not mean emissions will drop to absolute zero by 2050 and technologies such as carbon capture will be essential to compensate for the residual emissions arising from hard-to-decarbonise sectors such as aviation, agriculture, power and waste management.

The Climate Change Committee (CCC) is an independent body set up by an Act of Parliament to advise the Government. The CCC states that for the UK to achieve its Net Zero commitment, carbon capture and storage (CCS) is a necessity and not an option. The CCC's 'Balanced Net Zero Pathway' predicts a need for 104 million tonnes CO_2 per year CCS capacity to achieve Net Zero by 2050. The Government is committed to the delivery of CCS in the UK. Government has already confirmed support for the delivery of two industrial carbon capture clusters including HyNet Northwest and the East Coast Cluster. A further 2 clusters will be delivered by 2030 capturing around 20-30 million tonnes CO_2 per year across the economy to help meet the UK's 2050 net zero target.

1.3 Carbon Capture Prefeasibility Study

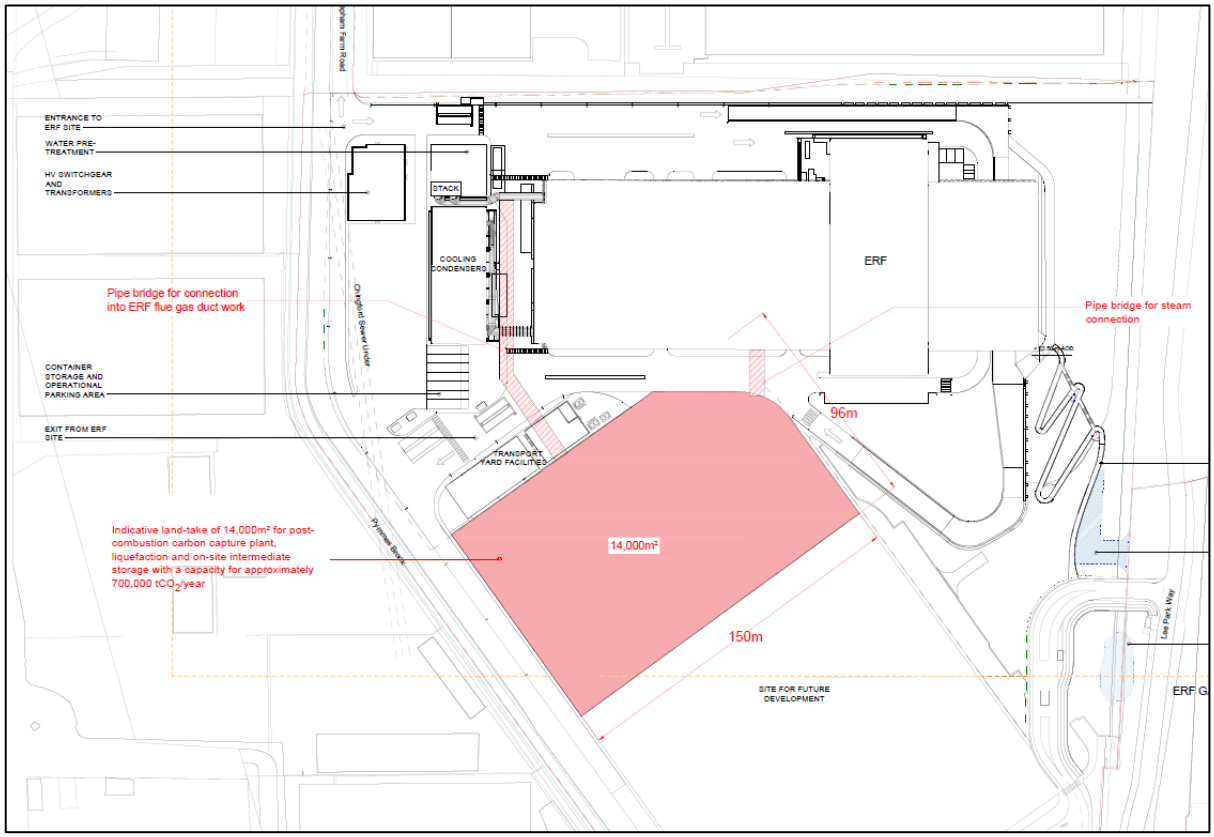
1.3.1 Early research and Outline Strategy

The Authority is taking active steps to realise the successful implementation of carbon capture at the EcoPark as part of our longer-term plan for managing carbon. Critical to ensuring that CCS can be delivered for the NLHPP is to safeguard sufficient space for a carbon capture plant at the Edmonton EcoPark site.

Early work conducted by the Authority in 2021 concluded that once the existing Energy from Waste (EfW) facility is decommissioned and demolished there would be sufficient space available to implement carbon capture. It is estimated that the freed-up space from the deconstruction of the existing EfW facility will comprise an area of approximately 35,000m^2. The Authority has committed to capture up to 700,000 tonnes of CO_2 per year which would require an area of approximately 14,000m^2 for carbon capture plant. Figure 1 shows the proposed

location of the carbon capture plant and approximate footprint requirement. The carbon capture plant footprint requirements would be further refined once a decision is made on the most suitable transport method for the captured carbon, as different transport methods will require different on-site storage arrangements.

Figure 1: Indicative layout a 700,000 tCO2/year capture plant and associated footprint of approximately 14,000m2



Members agreed to the Carbon Capture and Storage: Outline Strategy (Outline Strategy) at the September 2021 Programme Committee meeting. The Strategy sets out the high-level activities which would be delivered as part of the forward plan to ensure the Authority is well placed to implement CCS with an ambition to become one of the first such facilities in the UK to implement carbon capture.

1.3.2 Prefeasibility Study

In line with the Outline Strategy the Authority recently concluded an early-stage study to understand the feasibility of implementing CCS on the EcoPark. The prefeasibility study examined a number of key influencing factors such as:

- Regional levels of industrial carbon emissions;
- Potential transport options including road, pipeline, rail and marine;
- Permanent storage options in the southern north sea;
- Financial and commercial considerations;
- Opportunities for clustering in the south-east; and
- Initial implementation timeline.

Major Regional Emitters

There are numerous large-scale emitters in and around London and the South East / East of England which could form the anchor for any potential transport and storage (T&S) operators in the region. In London and the South East / East of England other industrial CO2 emitters including energy production, water and energy utilities, manufacturing, aviation, and waste treatment facilities, among others, are emitting an estimated total of 12.6 million tonnes of CO2 per annum. Energy from waste facilities in the region emit around 5 million tonnes per annum. The proposed Project Cavendish low carbon (blue) hydrogen production facility on the Isle of Grain could capture up to 3.3 million tonnes of CO2 per annum from the production process.

Identifying these emitters as part of the prefeasibility works has aided the undertaking of the transport and storage assessment and techno-economic study of the carbon capture solution for the ERF. It is also recognised that such emitters could form future collaborators enabling the potential use of shared carbon capture infrastructure. These aspects will warrant further investigation in any future feasibility study.

Transport and permanent storage options

The complexities of implementing CCS within the next decade were examined in particular the need to maintain a flexible approach to potential transports options as development towards a viable southeast cluster emerges; for example, a single pipeline solution versus a combination of pipeline, rail or shipping solutions.

Road: Early analysis suggests that liquification of CO2 and transport off-site by road would present significant challenges due to the large number of road traffic movements (around 100 vehicle movements per day). The prefeasibility work suggests that the most efficient and cost-effective way to transport large volumes of CO2 over long distances is by pipeline in the dense (liquid) phase where downstream of the capture stage, the gas is compressed and cooled to the liquid phase.

Pipeline: There is currently no indigenous subsurface CO2 storage facility onshore in the UK and so any pipeline solution would need to tie into an offshore pipeline to connect to the offshore permanent storage site. The closest potential permanent storage sites lie offshore from the East Anglia coast in the southern North Sea. The closest onshore connection points to the potential permanent storage sites are at Bacton on the Norfolk coast and the Isle of Grain in North Kent.

Routing a pipeline away from the EcoPark through north London, Essex and then Suffolk or Kent will be challenging, particularly in the immediate vicinity of the EcoPark. Routing of a CO2 pipeline will require careful consideration to ensure a viable route is identified. The density of underground utility infrastructure such as gas, water, power lines etc. in north London is very high which could present challenges in terms of identifying a viable route which satisfies both technical design requirements for pipeline infrastructure, safety requirements as well as wayleave requirements from landowners.

Rail: Transport by rail was explored as part of the study The challenge will be the capacity on the orbital routes around North London depending on the ultimate destination of the CO2. This is one of the more congested parts of the UK rail network and physically connecting to the Network Rail system from the EcoPark will be a challenge. It is likely that rail freight transport paths to and from the EcoPark site may be permitted at night so as not to conflict with the high-frequency passenger rail timetable. This would need to be explored in greater details as part of any future transport analysis.

Marine: Transportation of CO2 using a marine solution in whole or as part of a broader multi-modal option was explored. The River Thames can be accessed from the EcoPark via the Lee Navigation (a canal) and the Limehouse Basin. The Lee Navigation is part of the Canal and River Trust network. It is predominantly used by houseboats and some recreational users. There is no precedent in recent time for transport of bulk liquids on the River Lee at the rate required for this project. The challenges considered cumulatively suggest the solution may be difficult to achieve in practice. Marine transport could be viable if supplied by a pipeline or potentially via rail to an estuarine or coastal marine facility in the area. Such a facility would need to be developed in an established port, with a harbour authority that provides safe navigation and with a coast suitable for the required infrastructure. This limits options in the region to the Port of London, Medway Ports and potentially Felixstowe/Harwich (which is around 100km away from the EcoPark site).

More detailed routing studies are the next step in investigating the feasibility of all transport and permanent storage options.

Prefeasibility technoeconomic modelling

Techno-economic modelling was undertaken using a multi-asset modelling approach to calculate indicative cost of implementing a carbon capture solution for the ERF, transport of the liquified captured CO2 and undersea permanent storage in the southern North Sea.

In total 8 transport scenarios were examined involving different transport modes and routes, assuming assumed permanent storage in the southern North Sea with two possible entry points being Bacton in Norfolk or a pipe from the Isle of Grain. The initial analysis showed that the costs in rough order of magnitude associated with implementing a full carbon capture solution ranged from £77 per tonne for a dedicated pipeline up to £114 per tonne for a combined transport solution with a direct pipeline to Southampton and shipping to the southern North Sea (based on 2021 prices).

These are outline indicative estimates. They do not take account of potential Government support to secure national net zero objectives, not do they take account of potential income opportunities which could arise from the sale of carbon credits associated with the biogenic proportion of the residual waste feedstock. The Authority will continue to monitor developments as they emerge. The financing of proposed solutions and the commercial viability will be explored in more depth as part of the development of any future business case.

Southeast cluster development and stakeholder engagement

The viability of CCS at the EcoPark depends greatly on establishing a shared infrastructure hub or ‘cluster’ in Greater London and the southeast of England for carbon dioxide transport, intermediate storage and shipment to a long-term storage facility offshore.

Collaboration with other carbon emitters and companies that are seeking to provide T&S services has the potential to reduce the cost to NLWA by sharing the transport infrastructure with others, although a dedicated connection via pipeline or pipeline and rail solution to the Bacton gas terminal site may also be cost-effective but would be explored as part of the any future techno-economic study.

To further the objective of establishing shared CO2 transport and storage infrastructure in the southeast the Authority has signed separate cooperation agreements with two potential T&S operators.

Both potential T&S operators are playing roles in coordinating opportunities for a transport network to serve the southeast including the Thames area and are participating in the North

Sea Transition Authority competition to lease storage fields in the southern North Sea. These early cooperation agreements will ensure the Authority is well placed to engage with and influence key partners who are actively investigating opportunities for transportation and permanent storage in the region.

Prefeasibility Study – key points

The prefeasibility study identified a range of potential options for transporting CO2 from the EcoPark which could include a dedicated pipeline solution or a number of multi model options such as combined pipeline, rail or marine transport. There are advantages in collaborating with other carbon emitters in the region which could have the potential to reduce costs by sharing transport infrastructure although a dedicated pipeline or rail solution to the Bacton gas terminal site in Norfolk could be a cost effective for the Authority and the economic modelling suggests it should not be discounted at this early stage.

More detailed assessments are required to further develop the assumptions and initial findings from the prefeasibility transport assessment. The early techno-economic study identified potential cost ranges. With time these costs could be optimised through economies of scale as the CCS sector matures. The findings and experiences the industry will gain through the ongoing industrial clusters projects (such as Hynet and the East Coast Cluster) is expected to lead to further cost optimisation in the future.

The quantitative carbon study undertaken as part of the prefeasibility work identified that there are significant volumes of industrial emissions in the region to incentivise potential T&S operators. As such the Authority has engaged with and signed confidentiality agreements with potential T&S operators in order to understand the opportunities for shared infrastructure in greater detail and influence the potential future solutions.

The wide-ranging challenges highlighted by the prefeasibility work are widely understood by industry and government. It is well recognised that if the UK is to realise its net zero ambitions such barriers must be overcome. It is recommended that further assessments are conducted to understand in more detail which scenario are likely to present the most viable solution for an integrated carbon capture solution at the EcoPark.

CCS Delivery Plan

To assist the Authority with addressing the challenges associated with implanting CCCS in the next decade, these complexities were the subject of an expert workshop held earlier in the year.

A CCS Delivery Plan was developed with an associated schedule setting out the high-level sequence of activities needed to implement carbon capture at the EcoPark. This study identified an implementation date of 2033 as feasible however, the achievement of this date is reliant on the realisation of many complex factors. Implementation of the CCS Solution cannot start until the existing EfW plant is demolished and the site cleared which is expected to be around 2030. Other external factors include the emergence of a viable transport and permanent storage solution, stakeholder support, as well as the development of a viable business case including affordability and funding.

Given the significance of carbon capture to realising the Authority's net zero ambitions and need to undertake more detailed assessments it is recommended that the Authority procure advisory services to support future delivery of carbon capture at the Edmonton EcoPark by the early to mid 2030s.

2 Procurement Strategy

2.1 Carbon Capture Project Objectives

The objectives of the carbon capture project are:

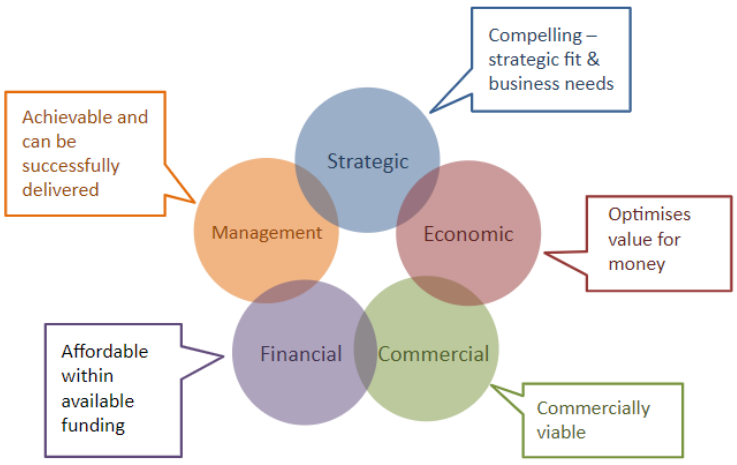
- Develop an integrated solution for the implementation of carbon capture at the EcoPark with a capacity to capture up to 700,000 tonnes of CO_2 per annum;
- Develop a robust Business Case providing the basis for an investment decision taking account ongoing development in Government policy and business models
- Develop a delivery strategy and detailed programme for design, implementation, and operation of the carbon capture plant with key milestones and decision points identified.
- Broaden and expand ongoing stakeholder engagement activities with BEIS and wider industry with a particular emphasis on opportunities for developing a south-east cluster.

2.2 Project Governance and Gateway Process

Successful project delivery means delivering agreed objectives within the agreed parameters of time, quality and cost, and within reasonable levels of tolerance and uncertainty. This requires active management throughout, from clearly defining objectives at the outset of the initiative, to transitioning to 'business as usual' at the end.

In delivering the carbon capture project the Authority intends to follow HM Treasury Guidance for developing the project business case which is based on the Treasury Green Book. The guidance reflects best practice in terms of appraising and evaluating proposed projects using the 'five case' model of business case development, to ensure that recommendations and decisions are robust and well-evidenced. The five case model incorporates the five key elements of good practice business cases including the Strategic, Economic, Commercial, Financial and Management case dimensions (see Figure 2). This allows targeted activities to be planned within each business case stage and brings alignment of the components around key decisions.

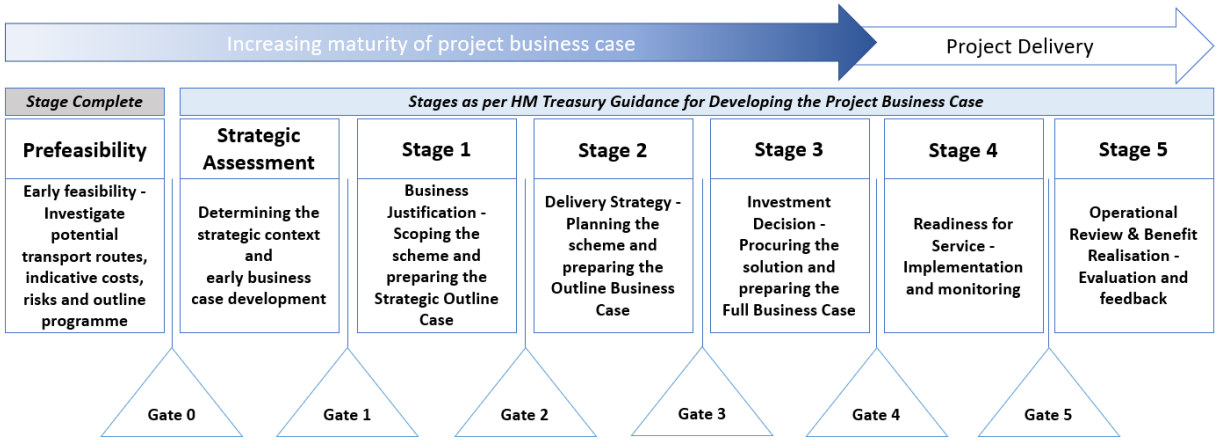
Figure 2: HM Treasury Five Case Model for Business Case Preparation



The development of the project business case will take a staged approach reflecting the maturing project lifecycle. During each stage the business case would be re-examined and each element of the 5 case model (i.e. strategic, economic, commercial, financial and management) would be updated based on increasing understanding of all project aspects.

At each gateway the project would be subjected to a rigorous assurance process which would confirm that the project is on-track, that the business rationale for the scheme remains valid and the project remains aligned with the organisational goals. The assurance gateways are based on the HM Treasury Guide to Developing the Project Business Case[1] and the Infrastructure and Projects Authority Assurance Process[2]. The Framework is recommended best practice for major projects. It sets out a well-tested staged approach to project delivery setting the project up for success from the beginning.

Figure 3: Key gateway review points, HM Treasury Guide to Developing the Project Business Case



A summary of the HM Treasury business case development framework mapped against the overarching objectives for the carbon capture project at each stage is provided in Table 1 below. The scope of each stage relevant to this procurement and the expected duration is expanded on in the next section.

Table 1: HM Treasury stages for the Business Case Development Framework

Stage No	HM Treasury / IPA Description	Stage Summary for Carbon Capture Project
Strategic Assessment	Strategic Assessment - Determining the strategic context and undertaking the Strategic Assessment	Enabling early decision-making and governance over early-stage funding. Clarifying options and agreeing assumptions and building the strategic case with industry and T&S operators.
Stage 1	Business Justification - Scoping the scheme and preparing the Strategic Outline Case (SOC)	Narrowing the options to a target solution and enabling delivery through appropriate stakeholder partnerships and agreements.
Stage 2	Delivery Strategy - Planning the scheme and preparing the Outline Business Case (OBC)	Developing the capability to deliver – resources, consent planning and procurement development.
Stage 3	Investment Decision - Procuring the solution and preparing the Full Business Case (FBC)	Entering into contracts and delivering (directly or through partnerships) of the solution(s).
Stage 4	Readiness for Service - Implementation and monitoring	Operational delivery

[1] https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent
[2] https://www.gov.uk/government/collections/infrastructure-and-projects-authority-assurance-review-toolkit

Stage 5	Operational Review & Benefit Realisation - Evaluation and feedback	Opportunity development associated with cluster formation after the system is proven.

2.3 Project Scope Overview

The scope of the project has been developed in accordance with the HM Treasury business case methodology and aligned to overall strategic objectives of the project. The scope of each project stage is informed by a series of questions and evidence points which require robust assessment in order to progress through each gateway.

The Authority's ambition is to deliver a carbon capture solution at the EcoPark by the early 2030s and become one of the first such facilities in the UK to implement carbon capture. In order to meet the anticipated timeline it will be necessary to procure appropriate technical and commercial advisory support at the earliest opportunity.

The Authority proposes to procure support to deliver the project objectives up to and including Stage 2 (Outline Business Case and planning approval). Progression to each stage will be dependent on the outcomes of a very detailed assurance and approvals procedures conducted as part of the gateway review process.

The estimated timeline for each stage is provided in Table 2 below. Progress through each stage will greatly depend on the emergence of a viable and affordable regional transport and storage solution. If a solution for a suitable transport and storage network develops the duration of the Strategic Assessment and Stage 1 could be compressed. Through the early strategic assessment work the Authority will look to accelerate the timeline by driving progress towards the development of a regional cluster. This would support the Authority's ambition to implement carbon capture by the early 2030s.

Stage 3 involves the development of the full business case and progression towards construction. Given the timeframes involved with delivery of these stages and the likelihood of new or additional expertise required to deliver the expected outcomes, stage 3 onwards was not considered appropriate for inclusion in the scope of this procurement.

Table 2: Project stages included in the scope of the procurement

Stage	HM Treasury / IPA Description	Expected Duration	In Project Scope?
Strategic Assessment	Strategic Assessment - Determining the strategic context and undertaking the Strategic Assessment	2023 – 2024/25 (~1 – 2 years)	✓
Stage 1	Business Justification - Scoping the scheme and preparing the Strategic Outline Case (SOC)	2024/25 – 2026 (~2 years)	✓
Stage 2	Delivery Strategy - Planning the scheme and preparing the Outline Business Case (OBC)	2026 – 2029 (~3 years)	✓

2.4 Detailed Scope

A summary of the key outcome of each scope is provided in the sections below. The total duration of all three stages is expected to take around 7 years. The programme is highly dependent on external factors in particular:

- Timely decommissioning and demolition of the existing Energy from Waste Facility;
- Development of funding, financing and commercial plans which are affordable and deliver value for money; and
- Emergence of a viable transport and storage route and/or development of a south east cluster

The project relies on parallel delivery of these elements to achieve the 2033 implementation date. At each gateway review a thorough assessment of these external dependencies will be conducted in order to determine project readiness to progress to the subsequent stage.

An overview of the proposed deliverables per stage is provided in Appendix 1.

Strategic Assessment - Determining the strategic context and undertaking the Strategic Assessment

The intent of this stage is to fully define the target outcome of the programme. Building on the prefeasibility work this stage will examine the initially identified transport routes and investigate in more detail which routes are likely to be more feasible to deliver. The strategic assessment will build on the early feasibility work taking into account developments in project dependencies such as potential storage locations. The North Sea Transition Authority have launched a major carbon storage licensing competition which includes the licencing of geology storage capacity in the southern North Sea. This is the first licensing round and the outcome is expected in early 2023. The strategic assessment will review these and other influencing factors to ensure the project remains aligned to the outcome of this competition.

It is expected that this stage would establish the management and execution approach for subsequent delivery, including necessary resources and enable a governance decision to be made to sanction and fund the next stage of works, with clear scope and outcomes defined.

The success of the programme is highly dependent on external factors in particular the development of a viable transport and storage route. As such a key objective underpinning the earlier development work will be to engage with potential partners in the formation of a potential CCS cluster in the southeast. Such partners may include other regional emitters (e.g. power plants or other EfW facilities), transport and storage developers and operators (e.g. offshore oil and gas operators), trade bodies, regulatory bodies and funding organisations. The emergence and development of a southeast cluster is highly uncertain at this stage. The outcome of this aspect will inform the approach taken in later stages.

The expected duration for this stage is around 1 to 2 years to complete assuming commencement in early 2023 (2023 – 2024/25). As discussed previously opportunities to accelerate the expected timeline will be explored if external factors such as transport and storage opportunities emerge.

Stage: 1 Business Justification - Scoping the scheme and preparing the Strategic Outline Case (SOC)

This stage is intended to provide definition of a single technical solution, including capture technology, conditioning and transport solution that will be taken forward for development. This stage will see the commencement of early stages of Front-end engineering and design (FEED) in order to refine the design solution informed by the most likely transport route and mechanism e.g. pipeline, rail and/or shipping.

This stage will see the refinement of the “Five Case” business model as well as further detailed scrutiny of the whole life costs, affordability and approval by key stakeholders.

It is also intended to define the mechanism by which a permanent storage solution will be delivered whether through agreement with third party, direct licence or partnership etc. In principle, any changes required to the ERF design to allow for future integration of CCS should be identified by the end of this stage.

The expected duration for this stage is around 2 years (2024/25 – 2026). This duration of this stage could be compressed dependent on external factors such as funding, transport and storage. The development of the Strategic Outline case will provide the full picture of the identified solution and the re-justification of the project purpose and strategic objective taking into account wider external development since the project inception. A formal baseline will be established as well as full implementation of project controls.

Stage 2: Delivery Strategy - Planning the scheme and preparing the Outline Business Case (OBC)

This is the planning phase for the project, which will result in the production of the Outline Business Case (OBC) and the submission of a full planning application for approval of the identified solution. At conclusion of the OBC, senior decision makers should be in position to consent to the procurement phase of the project and the business case across the five dimensions of the Five Case Model.

It is not intended to include the construction procurement within the scope of this phase of the project (procuring the solution and full outline business case is considered under Stage 3 of the HM Treasury guidance). The intention is to develop the detailed design to a point where a robust environmental impact assessment can be undertaken informing the submission of a full planning application. This will involve appropriate consultation and management of all stakeholders including relevant statutory and non-statutory stakeholders.

The approach to planning will be highly dependent upon the maturing transport and storage solution which will be taken forward by third party operators as well as the development of a suitable southeast or London cluster. Additional considerations include the potential need for the Authority to develop an intermediate transport route providing a link between the EcoPark site and the wider transport network for carbon.

The expected duration of this Stage will be around 3 years (2026 – 2029) and is dependent on which planning route is selected (for example a DCO application versus a local planning application). This stage would bring the preferred solution to an appropriate level of design detail such that an environmental screening, scoping and impact assessment can be undertaken as part of a planning application. The Environmental Permit application is a separate process and would likely be developed in parallel to the planning application.

2.5 Proposed Tender Approach

The intention is to divide the scope into a series of separate appointments. There are multiple reasons for this approach which are set out below:

- This is to ensure smaller organisations who may have the necessary skills for individual scope elements are not excluded from bidding for the contract;
- Dividing the scope means the Authority is more likely to achieve a more competitive procurement leading to improved value for money; and
- Through this approach the Authority is likely to receive a wider range of bids with differing approaches to implementation giving the Authority greater flexibility and insight into how best to deliver on the Authority's requirements. This will not preclude the appointment of one single bidder to allow flexibility between the potentially differing approaches.

This approach will mean a greater degree of collaboration will be required between potentially competing organisations. The Authority has significant experience managing multiple organisations working on complex projects therefore it is felt that the collaborative element can be effectively managed. The proposed appointments are as follows:

1. Carbon Capture Project Engineering and Project Management
2. Planning and development of Environmental Statement
3. Financial and commercial modelling and business case development

A summary of the key tasks per appointment and an indication of the level of effort afforded to each task across the various stages is provided in the table below.

Table 3: Carbon Capture Project activities within scope per stage

	Strategic Assessment	Stage 1	Stage 2
1. Carbon Capture Project Engineering and Project Management			
i. Full suite of project management services including development of the project execution plan, full project programme covering entire life cycle, risk management and development of project control, reporting and governance requirements	✓	✓	✓
ii. Development of a socio-economic research programme and public benefits case for the project	✓		
iii. Lead the development of project business case (Strategic, Economic, Commercial, Financial, Management) through collaborative working with other appointed Project Advisers	✓	✓	✓
iv. Explore and establish opportunities to develop a regional cluster in which the Authority could participate	✓	✓	✓
v. Development and implementation of a CCUS stakeholder management strategy covering all aspects of the supply chain including regional emitters such similar waste or industrial processes	✓	✓	✓
vi. On behalf of the Authority establish relationships with elements of the supply chain including regionally dispersed emitter sites	✓	✓	✓
vii. Monitor and provide expert advice on implications of relevant policy and regulatory development as they emerge	✓	✓	✓
viii. Represent the Authority's views with stakeholder groups and events	✓	✓	✓
ix. Market engagement study to identify preferred technology solution(s) including preferred solvent(s) for capture and utilisation options	✓		
x. Spatial study including all supporting assets such as liquification, compression	✓		

	Strategic Assessment	Stage 1	Stage 2
xi. CCUS Pre-Front End Engineering and Design (Pre-FEED) study to establish an integrated concept solution with the Energy Recovery Facility processing 700,000 tonnes of residual local authority collected waste or similar waste	✓	✓	
xii. Development of transport solutions in anticipation of future off-shore storage including development of routing options, considering a variety of transport methods (pipeline and non-pipeline methods) and CO2 gas processing requirements	✓	✓	
xiii. Consider integration with the ERF and implications on the EcoPark and heat network - Cost - Schedule - HSE - Feasibility, constructability and operability	✓	✓	
xiv. Whole Lift Carbon Emissions Study including wider emissions reduction strategy for the ERF and integrated equipment	✓		
xv. Development of approach to permitting including engagement with EA on all technical matters for the integrated solutions as well as identification of any other relevant permits or consents to support the integrated solution	✓	✓	✓
xvi. Provide technical advice and support as require in support of procurement, planning, permitting and Business Case development	✓	✓	✓
xvii. Provide technical advice and support as required in support of Authority's external communication activities	✓	✓	✓
xviii. Development of technical information in support of planning documentation as required		✓	✓
xix. Provide technical support and advice into procurement approach and related documentation as required	✓	✓	✓
2. Planning and development environmental statement			
i. Development of approach to gaining planning consent of the integrated solution including exploring Section 35 Direction request to Secretary of State	✓	✓	✓
ii. Develop and implement planning specific consultation and engagement Strategy in support of gaining planning approval			✓
iii. Undertaken an environmental impact assessment including screening, scoping and development of the environmental statement			✓
iv. Identify and provide assistance with other documentation in support of the planning			✓

		Strategic Assessment	Stage 1	Stage 2
	application as required including statutory consultation			
v.	Provide planning advice and support as required in support of Authority's engagement with relevant planning and regulatory bodies	✓	✓	✓
vi.	Development and implementation of a consultation and stakeholder management plan for statutory and non-statutory stakeholders including delivery of workshops, public engagement campaign, development of information as required in specified medium (e.g. digital and non-digital)			✓
vii.	Provide technical advice and support as required in support of Authority's external communication activities			✓
3.	**Financial and Commercial Modelling**			
i.	Develop a commercial basis for an investment decision including complete project lifecycle financial modelling (DEVEX, CAPEX, OPEX) and a levelized cost of carbon abatement model	✓	✓	✓
ii.	Investigate opportunities for external grant funding or financing options with external bodies	✓	✓	✓
iii.	Business case development options analysis	✓	✓	✓
iv.	Development of procurement strategy including budget development, financing strategy, levy modelling and gate fee implications	✓	✓	✓

2.6 Contract Value and Duration

The value of the in-scope activities is based on known or expected tasks and is estimated to be around £7.8 million for a duration of 7 years. This based on a mix of blended and actual day rates from current market prices for technical, financial and planning advisors.

The Authority is acutely aware that there will be known and unknown risks associated with bringing forward "First of A Kind" projects. As such a maximum contract ceiling of £10 million is proposed to account for the particular complexities associated with bringing forward this project.

Carbon capture is an emerging sector driven by the globally recognised need to address the worst effects of climate change. The systemic industrial transformation which needs to happen over the next decade will not be without its challenges as the UK seeks to establish an integrated infrastructure network to capture, transport and store carbon emissions where currently no such networks exist. The contingency allowance of approximately £2.2 million accounts for the following:

- The carbon capture, transport and storage industry is a new and emerging sector in particular the transport and storage element. A southeast and/or London cluster has yet to emerge as such the implications of delivering a transport and storage solution is not yet fully understood by industry;
- There is likely to be additional work associated with the integration of the transport network as a carbon capture solution for the EcoPark beings to emerge;

- The permitting requirements for the EcoPark are unclear as such installations have not been delivered in the energy from waste sector;
- The route to gaining planning consent is unclear and may depend on the how a viable transport network emerges. The Authority may need to consider some form of intermediate transport route (such as a short pipeline or railway spur) in order to connect into a wider transport network; and
- The regulatory environment is adding to the uncertainty which could result in additional studies to satisfy the regulatory authority

Table 4:Estimated value of in-scope activities and proposed contract value with contingency (at September 2022 prices)

Appointment	Strategic Assessment	Stage 1	Stage 2	Total SA, 1, 2,
Approximate Stage Duration	1 – 2 years	2 years	3 years	7 years
1. Project and Engineering Management	£1.72m	£1.44m	£0.86m	£4.02m
2. Planning Advice	£0.07m	£0.15	£2.15m	£2.37m
3. Financial and Commercial	£0.32m	£0.52m	£0.52m	£1.36m
Total per stage	£2.11m	£2.11m	£3.53m	£7.75m
Total Contract value including contingency	£10 million (maximum contract ceiling)			

2.7 Contract Strategy

The Authority's preferred approach is to let a advisory services contract for the proposed activities with an expected contract duration of around 7 years. The contract would be let taking a staged approach where progression from one stage to the next would require approval based on the gateway project assurance process as per *HM Treasury Guidance for Major Projects* as described previously. At each gateway the project would be subjected to a rigorous assurance process which would confirm that the project is on-track, that the business rationale for the scheme remains valid and the project remains aligned with the organisational goals.

The Authority will seek delegation to a let a contract covering all 3 stages with a maximum contract value of £10 million. Strategic Assessment would be procured based on a fixed price with a maximum value of £2.5 Million (allowing for expected costs and contingency allowance) at which point the Authority would seek approval from Members for delegation to progress to the next stage following the outcomes of the preceding gateway.

Stage 1 and Stage 2 would be let on a provisional sum based on a fixed schedule of rates which would be agreed with the tenderer on a competitive basis as part of the award and evaluation of the contract. The Authority would not progress activities under Stage 1 and subsequently Stage 2 without first seeking approval from Members as described under the Strategic Assessment.

The pricing strategy for the contract reflects the fact that the activities under Stage 1 and 2 are dependent on the outcomes of the predecessor stage.

2.8 Procurement High-Level Risk Assessment

As part of the development of the scope and procurement approach the following high-level risks and associated mitigation actions were identified:

Identified Risks	Risk Description	Risk Mitigation
Market Interest	Lack of interest from bidders across all or individual lots	- Speaking at conferences - Multiple meetings with potential services providers - Conducted preliminary work to inform and test the scope
Market Interest	Too many bidders such that the procurement timeline becomes difficult	- The Authority is following the restricted procedure taking through a maximum of 5 bidders and a minimum of 3 bidders to ITT stage
Procurement	Conflict of Interest due to the need to exchange IP between different organisations	Engineering and project management scopes combined to avoid the need for exchange of commercially sensitive information and intellectual property between different organisations
Procurement	A single organisation wins the entire scope due to strong performance in a single area rather than all areas	Separated lots into three individual contracts. No significant increase in the amount of work required to undertake the procurements
Procurement	Bids of insufficient quality and/or lack of understanding of scope	Scope is aligned to HM Treasury guidance for the development of project business case which is best practice and is well understand by the market
Resources	Limited Authority resources and timing to deliver the procurement	Procured the support of SH Forward planning the programme in advance Utilise standard procurement templates where appropriate
Programme	Failure to appoint Advisors by the anticipated timeframe and loss of project momentum	Procured the support of SH Forward planning the programme in advance Utilise standard procurement templates where appropriate

3 Procurement Procedure and Form of Contract

In order to ensure the Authority procures the right advisers for the work the Authority has selected **restricted procedure**. The restricted procedure is a two stage process that, in the first stage, makes use of a selection questionnaire (SQ). Use of the SQ will:

1. Restrict the number of organisations invited to tender, making bid review less onerous;
2. Improve the quality of bids by providing a mechanism to select tenderers based on experience, track record and approach.

Other procurement options were considered but were discounted because:

- **Open Procedure**: this process, that aligns with more simple procurements, could potentially lead to the time-consuming assessment of weak bids.
- **Competitive Procedure with Negotiation and Competitive Dialogue**: There are no elements of the scope that require a negotiation and this procurement would not meet the limited circumstances set out in the Public Contracts Regulations 2015 that allow use of these procurement routes.

The intention would be to appoint advisers using the Authority's standard form of services contract for the following reasons:

- The standard form of contract is reliable, robust and has been used multiple times on Authority advisory services contracts;
- It is the contract used for the North London Heat and Power Project and, to date, has proven successful on a complex, long term contract;
- The standard form is based on the Authority's internal processes and standing order requirements ; and
- It is not thought that there will be a crossover of liability between the work of the consultants across the three stages and work to be undertaken in the subsequent construction phase so as to require a contract form that is closely compatible with the contract form for the construction phase.

4 Procurement Timeline

If the Authority is to realise this ambition in a timely manner it is recommended that the Authority procure advisory services as soon as possible to support future delivery of carbon capture at the Edmonton EcoPark by the early to mid 2030s.

Therefore, the Authority will seek to issue the contract notice and invitation to tender (ITT) documentation by the end of September 2022. Allowing for the required time periods for evaluation of the Selection Questionnaire (SQ) and evaluation of the final tender documentation we expect to conclude the evaluation by February 2023.

5 Recommendations

The Authority's ambition is to deliver a carbon capture solution at the EcoPark by the early 2030s and become one of the first such facilities in the UK to implement carbon capture. There any many complex factors which will influence the successful delivery of a carbon capture solution such that an implementation date from early to mid 2030s is likely. If the Authority is to realise this ambition in a timely manner it is recommended that the Authority procure advisory services imminently. This aligns with the recommendations set out in the Carbon Capture and Storage: Outline Strategy (Outline Strategy) agreed by Members at the September 2021 Programme Committee meeting.

It is recommended that the Authority let a contract using the Authority's standard form to procure advisory services for a duration of 7 years and a maximum contract value of £10 million (at September 2021 prices).

The contract would be let accounting for three delivery stages where progression from one stage to the next would require Member approval based on the gateway project assurance process as per HM Treasury Guidance for Major Projects as described previously.

It is recommended to procure technical and commercial advisory support for the specialist areas divided into the following appointments:

1. Carbon Capture Project Engineering and Project Management
2. Planning and development of Environmental Statement
3. Financial and commercial modelling and business case development

The Strategic Assessment stage would be procured based on a fixed price with a maximum value of £2.5 million (allowing for expected costs and contingency allowance) at which point the Authority would seek approval from Members for delegation to progress to the next stage following the outcomes of the preceding gateway.

Stage 1 and Stage 2 would be let on a provisional sum based on a fixed schedule of rates which would be agreed with the tenderer on a competitive basis as part of the award and evaluation of the contract. The Authority would not progress activities under Stage 1 and subsequently Stage 2 without first seeking approval from Members as described under the Strategic Assessment.

Appendix 1 – Summary of scope and deliverables per stage

Strategic Assessment outline deliverables

Capture Plant and On-site Conditioning	**Delivery Strategy –** Development of the outline approach to the eventual procuring and construction of the capture plant, including the advisory and early engineering resources and the associated timing and methodology. **Site Integration** – to consider the capture technology options, the requirements of the EcoPark site to host the plant and associated activities, including services, utilities, footprint and the interfaces with the conditioning facilities.
Transport	**Options Assessment / Pre-Feed** – Expand on the feasibility study for transport scenarios to verify assumptions and viability, de-risk options and develop more detailed studies of key options to develop routes, cluster connections and interfaces with rail, pipeline and marine networks. Understand what conditioning solutions each of these transport options require.
Permanent Storage & Injection	**Options Assessment / Pre-Feed** – Expand the available options and scenarios and develop the understanding of what each would entail regarding system integration and stakeholder engagement.
System & Site Integration	**Basis of Design** (first revision) – Setting the underlying parameters to be used in the project moving forward. **ERF Integration** – developing a study to fully understand the interface points between the ERF and capture system to define requirements and options for early future proofing versus later retro-fitting activities. **Cluster identification** – what opportunities exist with the chosen solution to integrate with other emitters/transporters and to what extent could the EcoPark form a "hub" within a cluster? **Overall System Assurance** – A full-chain flow assurance assessment to determine the optimum CO_2 conditions and the need for additional conditioning and site storage assets
Programme Management	**Planning, Permitting and Consenting Strategy –** Identification of the optimum approach to achieving consent based on the proposed options for both the Ecopark ("onsite") assets and the external ("offsite") transport solution. **Strategic Assessment –** Delivery of the "five case" elements that define the outline business case and provides the basis for the governance decision to proceed. Incorporates the strategic, economic, commercial, financial and management case. **Budgeting and Financing Plan** – outline view of how the budget will be developed and options for funding and financing of the full project. **Stage 1 Project Execution Plan*** – Development of the means and methods to establish, maintain and monitor a project environment suitable for CCS delivery, including identifying systems, governance, resources and processes necessary. **Vision and Outcome definition** – Establishment of the overarching vision and supporting outcomes to align the organisation and direction. * There is a likely need for a high-level Strategic Assessment PEP (Project Execution Plan) to help coordinate and control the identified activities, while the Stage 1 PEP is developed. It is assumed that this would "piggy-back" on the existing NLHPP programme manual and therefore minimise the need for new initiatives.

Stage 1 outline deliverables

Capture Plant, and On-site Conditioning	Procurement of Engineering Advisor/Supplier and technology assessment/selection. FEED Study – Development of the options and technical engineering that leads to the down-selection of technology and facility options. Definition of consenting requirements based on technology solution, Outline design developed sufficient for consent submission (level of design will be heavily dependent on ultimate strategy for consent and nature of design/construction procurement approach).
Transport	FEED Study – Development of the options and technical engineering that leads to the down-selection of transport options and detailed development of plausible routes. Engagement with stakeholders/partners and possible procurement of specialist advisor/partner.
Permanent Storage & Injection	Review outcome of 2022 storage license provision and assess implications for partnership and access. FEED Study – Development of the options and technical engineering that enables the complete system solution to be identified.
System & Site Integration	**ERF Integration** - Agreement on the extent of integration between the capture plant and ERF design/construction that optimises both the designs. Update to the site integration report, including technology choice layout, route exit points, **Cluster identification** – what opportunities exist with the chosen solution to integrate with other emitters/transporters and to what extent could the EcoPark form a “hub” within a cluster?
Programme Management	**Strategic Outline Case**: Providing the full picture of the identified solution and the justification for why. Providing updated views of the various business case elements, including affordability and funding **Procurement of delivery resources**. **Stage 2 Project Execution Plan** Establishment of formal baseline and implementation of governed change control.

Stage 2 outline deliverables

Capture Plant and On-site Conditioning	Design and Project Development to readiness for design freeze and in line with any consent and planning obligations arising.
Transport	Stakeholder engagement and decision on approach to provision of the transport solution. Examination of potential procurement (or alternative means) for the construction of the transport solution.
Permanent Storage & Injection	Stakeholder engagement and decision on approach to provision of the permanent storage solution. Examination of potential procurement (or alternative means) for the construction of the transport solution.
System & Site Integration	Ongoing monitoring of the overall system assurance and integration between developing solution designs.
Programme Management	**Environmental Statement** – Development of a full environmental impact assessment based on the preferred solution **Planning & Consent** – Development and delivery of appropriate planning and consent application(s) and associated engagement with planning authorities and stakeholders. **Stage 3 Project Execution Plan** Preparation of the plans and approach to managing procurement, contracting strategy and future construction works onsite and where appropriate offsite.