

NORTH LONDON WASTE AUTHORITY

REPORT TITLE: CARBON CAPTURE AND STORAGE PROJECT UPDATE

REPORT OF: MANAGING DIRECTOR

FOR SUBMISSION TO: AUTHORITY MEETING

DATE: 8 FEBRUARY 2024

SUMMARY OF REPORT:

This report provides an update on national policy developments relating to carbon capture and an interim update on the carbon capture and storage project. Specifically, the report provides details of:

1. An update on the carbon capture and storage cluster sequencing process and the Government's Vision Statement for the carbon capture sector.
2. An interim update on the progress and forward plan for the carbon capture and storage Project.

RECOMMENDATIONS:

The Authority is recommended to:

- A. Note the Government policy updates and considerations for the carbon capture and storage project;
- B. Note the update provided on the carbon capture and storage project and that the Authority will bring the outcome and recommendations from the Strategic Assessment stage to the June 2024 Authority meeting;
- C. Agree to delegate Authority to the Managing Director to respond to upcoming consultations which could have implications for the Authority and the carbon capture and storage project.

SIGNED:  Managing Director

DATE: 29 January 2024

1. INTRODUCTION

- 1.1. This report provides an update to Members on recent carbon capture policy developments and potential implications for the Authority's carbon capture project. An update is also provided on Strategic Assessment Stage work which is currently ongoing.

2. BACKGROUND

- 2.1. In 2019, the UK Government set a legally binding target to achieve net zero by 2050 which commits the UK to achieving a 100% reduction in greenhouse gas emissions. This target will require a highly ambitious transformation of the UK economy to combat the extreme threats of climate change and it is widely accepted that there is minimal chance of reaching net zero without rapid deployment of carbon capture and storage (CCS). The UK currently produces over 500 million tonnes of carbon dioxide equivalent emissions.
- 2.2. At the United Nations Climate Change Conference of the Parties in December 2023 (commonly referred to as COP 28), the first Global Stocktake set out progress towards delivering the targets of the Paris Agreement to limit average global temperature rise to 1.5°C compared with pre-industrial temperature levels. The world is not on track and the best estimate forecasts a peak temperature by the end of the century in the range of 2.1°C to 2.9°bringing with it terrible climate change implications.
- 2.3. There is broad international consensus that CCS is essential in meeting the Paris Agreement and that without CCS, Net Zero is not achievable. An international consensus position reached at COP28 called for the acceleration of zero- and low-emission technologies and for the first time recognised the importance of carbon capture and utilization and storage, particularly in hard-to-abate sectors.
- 2.4. The UK's independent advisor on climate change, the Climate Change Committee (CCC), has said that carbon capture is a 'necessity, not an option' for the transition to net zero. Government is clear that carbon capture is the only net zero compliant technology for residual waste management facilities such as energy from waste.
- 2.5. In recognition of the climate crisis, the North London Heat and Power Project (NLHPP) Carbon Strategy, which was approved by NLWA members in May 2021, commits the NLHPP to achieving a Net Zero carbon status for the operational phase of the ERF.
- 2.6. At the September 2021 Programme Committee meeting, Members agreed to the Carbon Capture and Storage: Outline Strategy which formed part of the NLHPP Carbon Capture and Storage Update paper. The Outline Strategy set out the

Authority's ambition to deliver a carbon capture solution at the EcoPark as soon as practicable in the 2030s.

- 2.7. The Carbon Capture Project commenced last year with the Strategic Assessment Stage and a progress update is further discussed in Section 5.

3. CARBON CAPTURE CLUSTER SEQUENCING UPDATE

- 3.1. Carbon capture is an emerging sector that is of central importance to decarbonising the UK's economy and the pace of deployment which is required to meet climate change targets is extremely demanding.
- 3.2. In response Government has committed to deploying CCS in two industrial clusters by the mid-2020s and a further two clusters by 2030, with the aim of capturing and storing 20 to 30 million tonnes of carbon dioxide (CO₂) per year by 2030. These clusters are CCS 'hubs' where emissions from several industrial facilities in hard-to-abate sectors are captured and stored offshore using a shared transport network. To support this Government has committed up to £20 billion for early projects to support the development of up to 78 billion tonnes of storage potential in the North Sea.
- 3.3. From 2030, there will be a need for a continued ramp up in delivery of carbon capture across multiple sectors of the economy and locations in the UK. By the mid-2030s, the amount of CO₂ annually stored may need to increase to at least 50 million tonnes per annum (Mtpa). To achieve this, it is likely that the CCS sector will need to increase the annual amount of CO₂ stored by at least 6 Mtpa from 2031. Set against the UK's overall CO₂ emissions, this is only a start of the total carbon abatement needed.

UK Cluster Development Progress Update

- 3.4. Government selected the first eight carbon capture projects to connect to the Track-1 clusters in March 2023 (originally set for Quarter (Q) 3 or 4 2022) and identified the two Track-2 Transport and Storage clusters in July 2023 (originally set out for Q2/3 2022).
- 3.5. The 'Track 1' cluster includes the East Coast Cluster, comprising Teesside and Humber, and the HyNet cluster, which covers the Merseyside area in the Northwest. In December 2023, industry welcomed Government's launch of the Track 1 HyNet expansion inviting new applicants to submit their plans.
- 3.6. The delayed 'Track 2' process commenced in July 2023 when Government announced Acorn (Scotland) and Viking (Humber) clusters would be taken forward. In early 2024 Government intend to invite Acorn and Viking to submit plans for assessment of an 'anchor phase' of initial capture projects provisionally targeting

deployment from 2028-29 (subject to technical feasibility, affordability, and value for money).

- 3.7. This announcement was again welcomed by industry however, this phase will not include projects using non-pipeline transport (e.g. road, rail and shipping) rather proposals should include for a provisional cluster expansion plan for a 'buildout phase' of additional network and storage expansion to enable additional piped and NPT projects in the future.
- 3.8. Although the timeline to deploy four clusters by 2030 with an injection target of 20 to 30 million tonnes per year still stands there are concerns emerging from industry over the pace of progress. There are broader concerns linked to potential delays related to the UK's position in the global market (both the EU and US have announced highly ambitious funding packages). This is coupled with concerns about the availability of a construction workforce in suitable numbers and skills to deliver carbon capture projects by the end of the decade. For NLWA, and other emitters in the south of England, a further concern is that the Track 1 and Track 2 clusters are all in northern England or Scotland. None are in locations which would readily connect with Edmonton and would almost certainly necessitate non-pipeline transport likely to add more cost and complexity to project plans.
- 3.9. A key aspect of the UK's efforts to deploy CCS technologies is the development and deployment of CO₂ transportation and storage (T&S) networks which provide a route to take captured CO₂ for secure and safe storage in geological storage sites. Any delays to the clusters sequencing process and the delivery of T&S networks will have a cascading effect on carbon capture projects and the wider supply chain.

4. GOVERNMENT VISION TO ESTABLISH A COMPETITIVE CARBON CAPTURE MARKET

- 4.1. Government has said it remains committed to the establishment of the carbon capture industry in the UK. However, it is essential that momentum is maintained in order that the confidence is maintained of the sectors and investors whose involvement is necessary to make a success of CCS. In December 2023, the Department for Energy Security and Net Zero (DESNZ) published its long-anticipated carbon capture, use and storage Vision Statement.
- 4.2. The Vision Statement set out the Government's blueprint for establishing the carbon capture industry over the short, medium and long term and envisages the roles of government and industry evolving over time through three phases:
 - 4.2.1. **Market creation:** Storing 20 to 30 million tonnes per annum CO₂ by 2030,
 - 4.2.2. **Market transition:** Reduced Government support and the emergence of a commercial and competitive market post 2030; and

- 4.2.3. **A self-sustaining carbon capture market:** 2035 onwards low levels of government support and significantly reduced need for Government funding.

Enhanced Competitive Allocation

- 4.3. The 'market creation' phase reflects the Government's current approach which is centred around the cluster sequencing process. This process has identified four clusters and Government have allocated an initial £20 billion in funding to support projects via the carbon capture business models. This funding will cover the capital and operational costs of deploying carbon capture and storage, including transport and storage fees and is only available to facilities who are successfully awarded contracts as part of the cluster sequencing competition.
- 4.4. The market transition phase envisions the emergence of a commercial and competitive market moving away from government-led cluster sequencing approach to the private sector taking on the risk for new carbon capture and storage projects. The business models are expected to move to a more competitive allocation process (e.g. an auction-based system), similar to the Contract for Difference Model, with regular scheduled allocation rounds expected from around 2027.
- 4.5. No further detail was provided on how the allocation process would work but Government will launch a consultation in 2024 on the future market frameworks. To support the competitive allocation process a process for the future allocation of transport and storage economic licences would need to be developed and be in place by 2025/26 to be consistent with UK carbon targets (Carbon Budget 6) as well as the ability to grant licences transferred to Ofgem at the appropriate time, as provided for in the Energy Act 2023.
- 4.6. The new market framework is likely to require further legislation, establishment of an allocation body and setting up of a new delivery framework to effectively enable a series of regular allocation rounds. Business models for both capture projects and CO₂ transport and storage (which could include different models for onshore transport, offshore transport and storage) will also need to adapt.
- 4.7. A further announcement adding to the uncertainty is the removal of the Government Revenue Support Agreement during the market transition phase (a mechanism to mitigate demand-related revenue risks to transport and storage companies and improve investor confidence). CO₂ Transportation and Dispersed Sites
- 4.8. In the Vision Statement, Government recognises that there is a need for its continued role in relation to the strategic coordination of a national CO₂ transport network. This would need to feed into and complement the development of the

UK's first spatial plan for energy infrastructure announced by the Prime Minister in September 2023 and Government intend to collaborate with industry on this going forward.

- 4.9. However, the Vision Statement leaves a significant degree of uncertainty around the extent to which such networks should be strategically planned by Government against defined set of criteria. At this stage Government has taken an open view on this point.
- 4.10. During the market transition, Government plan that less intervention will be provided to enable the establishment of new CO₂ transport networks and network expansion, meaning that industry will have to work collaboratively to align the timing between the capture projects and transport and storage networks.
- 4.11. Government recognises that there will be a need for multiple forms of non-pipeline CO₂ transport. As around half of industrial emissions are outside of the main industrial clusters non-pipeline transport options will be required to help decarbonise those emitters which are not able to use pipeline transportation.
- 4.12. In early 2024 Government plans to publish its initial proposals on how it envisages non-pipeline transport being delivered in the UK. This will likely be the first of such publications which suggests there is unlikely to be further clarity around Government policy in the short term however, Government anticipate that non-pipeline projects will be eligible for selection as capture projects from 2025 onwards. Notwithstanding this lack of clarity significant work will be needed to facilitate non-pipeline transport across the UK in addition to the deployment of the related policy.

Considerations for our Carbon Capture Project

- 4.13. It is the Government's view that the level of direct government funding will be significantly reduced and that the 2030s will see a significant shift to a carbon capture and storage sector largely free of government support.
- 4.14. Government's position is that cost reductions due to the maturity of CO₂ transport networks, technological developments and the de-risking of industry through government intervention in Phase 1 alongside market factors such as the UK Emissions Trading Scheme will mean a reduction in the need for Government funding.
- 4.15. While markets can develop and adapt rapidly, the Government's approach is based on extremely optimistic assumptions. The Government indicate that they expect they will be able to disengage relatively soon from funding and planning, and the competitive market will provide necessary infrastructure and services. There is a high degree of risk and uncertainty with this approach given the nascent state of the industry. In addition, the emissions trading scheme is very unlikely to create a

sufficient cost incentive for the waste sector as industry estimates suggest a very high and sustained carbon price would be required to make carbon capture and transport infrastructure a viable investment for energy from waste.

- 4.16. The Edmonton EcoPark is considered a 'dispersed' site because there are not other industrial emitters in the immediate area which could warrant the formation of a sizeable cluster to attract a transport and storage company for offtake of the CO₂. The site is only 10 miles from the Thames, which is being considered by a number of companies as a possible waterborne transport route for CO₂. But there would be a need for a connection from Edmonton to a port site.
- 4.17. The Vision Statement means there is still a lack of clarity on how the transition phase will work in practice and what it might mean for dispersed sites such as the EcoPark which may need to depend on non-pipeline transport to connect to a shared CO₂ network. The Government currently lacks a formal strategy to enable carbon capture in dispersed sites however has committed to consulting on how it envisages non-pipeline transport being delivered in the UK shortly.
- 4.18. Through insights gained during the Strategic Assessment work and engagement with wider stakeholders it is likely that the Authority will need to take sole responsibility for the transport of CO₂ away from the EcoPark to an intermediate point. This means a multi-modal transport solution may be required at the EcoPark increasing the complexity and potential cost.
- 4.19. Achievement of the UK's net zero commitment will require extensive provision of CCS and transport infrastructure, but it is not clear how the Government intends to be involved in enabling and supporting the development of transport networks in particular, which raises challenges for delivery by the Authority. Authority officers continue to monitor progress and request delegated Authority to respond to related Government consultations as they emerge in the coming months.

5. CARBON CAPTURE AND STORAGE PROJECT UPDATE

- 5.1. As reported at the June 2023 Authority meeting the intent of the Strategic Assessment stage is to fully determine the target outcome of the project and identify viable options to achieving the Authority's carbon capture ambitions. The work follows HM Treasury best practice guidance for delivering the business case. The three delivery stages as per the Guidance are:
 - 5.1.1. **Strategic Assessment:** Determining the strategic context and undertaking the Strategic Assessment.
 - 5.1.2. **Stage 1: Business Justification:** Scoping the scheme and preparing the Strategic Outline Case.

5.1.3. **Stage 2: Delivery Strategy:** Planning the scheme and preparing the Outline Business Case.

- 5.2. In keeping with this guidance, the Strategic Assessment Stage commenced in Summer 2023. As reported to Members at the June 2023 Authority meeting, a team of advisers were appointed with expertise covering project management, technical and engineering, environmental planning and financial advisory. In line with the Infrastructure Projects Authority guidance project management processes are being developed to ensure appropriate controls are put in place to manage the project as it matures. This includes establishing the initial Project Execution Plan and associated project schedule, risk controls, cost controls, external stakeholder management strategy and information management protocols.
- 5.3. Part of the Strategic Assessment involves the re-examination of the initially identified CO₂ transport routes taking account of the developments in carbon policy and the cluster sequencing process. This work is ongoing and largely undertaken by the technical and engineering workstream and is informed by insights gained through external stakeholder engagement activities.
- 5.4. Officers expect to bring the outcome and recommendations from the Strategic Assessment stage to the June 2024 Authority meeting. The forward plan for the carbon capture project is highly influenced by external factors in particular Government support policy. As indicated by the Vision Statement, the detail is yet to emerge and is expected to evolve following further Government consultations. Officers will consider potential implications on the project and will provide further updates to Members at the June Authority meeting.

6. EQUALITIES IMPLICATIONS

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

7. COMMENTS OF THE LEGAL ADVISER

- 7.1. The Legal Adviser has been consulted in the preparation of this report.

8. COMMENTS OF THE FINANCIAL ADVISER

- 8.1. The Financial Adviser has been consulted in the preparation of this report and comments have been incorporated.

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