

## Waste and Recycling Committee

Date: 17 January 2024

Subject: The Management of Carbon Emissions from Non-Recyclable Residual Waste

Report of: Paul Morgan, Head of Commercial Services, Waste and Resources Team

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### Purpose of Report

This report updates the Committee on progress on the introduction of the UK Emissions Trading Scheme for carbon emitted from energy from waste facilities and how this is likely to impact GMCA. The report also looks at a proposal for the capture and storage of carbon generated at the Runcorn thermal power station where around 75% of GMCA's residual waste is recovered. It also seeks approval from the Committee to write an initial in principle letter of support to Viridor to enable further discussions on how the scheme will operate and to identify risks and mitigations.

### Recommendations:

The GMCA is requested to:

1. Note the report and the potential implications of the UK Emissions Trading Scheme on GMCA residual waste management costs;
2. Note the proposal for the capture and storage of carbon emitted from the thermal recovery of residual waste at the Runcorn thermal power station and the potential implications for GMCA as a significant supplier of residual waste to that facility; and
3. Approve an in-principle letter of support for the carbon capture project and the exploration of the opportunities, implications and potential impacts.

### Contact Officers

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# Equalities Impact, Carbon and Sustainability Assessment:

## Recommendation - Key points for decision-makers

The thermal recovery of waste emits carbon dioxide (CO2). This is to be recognised through the UK Emissions Trading Scheme (ETS) resulting in a levy paid for every tonne of fossil-based CO2 emitted from 2028. GMCA has the opportunity to have a significant proportion of this CO2 captured rather than emitted at no greater cost than the ETS. This report seeks approval to provide an initial non-binding letter of support to enable further discussions.

## Impacts Questionnaire

Impact Indicator	Result	Justification/Mitigation
Equality and Inclusion		
Health		
Resilience and Adaptation	G	
Housing		
Economy		
Mobility and Connectivity		
Carbon, Nature and Environment	G	
Consumption and Production	G	

Contribution to achieving the GM Carbon Neutral 2038 target

The proposal to capture and store carbon emitted from a significant proportion of GMCA's non-recyclable residual waste will significantly reduce the amount of carbon emitted through the thermal recovery of that waste. The application of the UK Emissions Trading Scheme to residual waste recovered at energy from waste facilities should further promote the recycling of fossil carbon-based products (plastics) as a means of avoiding the payment of the UKETS 'levy'.

<b>Overall</b>	<b>G</b> Positive impacts overall, whether long or short term.	<b>A</b> Mix of positive and negative impacts. Trade-offs to consider.	<b>R</b> Mostly negative, with at least one positive aspect. Trade-offs to consider.	<b>RR</b> Negative impacts overall.
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## Risk Management

The risks associated with the UK Emissions Trading Scheme and the alternative option is captured in the Service's risk register.

## Legal Considerations

Legal considerations are summarised in the report. If we send waste to an energy from waste facility we will be obligated to pay the required amounts under the UK Emissions Trading Scheme.

## Financial Consequences – Revenue

There are revenue consequences as a result of the introduction of the UK Emissions Trading Scheme – these are estimated in the report.

## **Financial Consequences – Capital**

There are no capital implications resulting from this report.

**Number of attachments to the report:** None.

## **Comments/recommendations from Overview & Scrutiny Committee**

N/A

## **Background Papers**

- UK Emissions Trading Scheme consultation and government response [Developing the UK Emissions Trading Scheme \(UK ETS\) - GOV.UK \(www.gov.uk\)](#)

## **Tracking/ Process**

Does this report relate to a major strategic decision, as set out in the GMCA Constitution?

Yes

## **Exemption from call in**

Are there any aspects in this report which means it should be considered to be exempt from call in by the relevant Scrutiny Committee on the grounds of urgency?

N/A

## **GM Transport Committee**

N/A

## **Overview and Scrutiny Committee**

N/A

## **1. Introduction/Background**

The incineration of non-recyclable residual waste emits carbon dioxide (CO<sub>2</sub>) – about one tonne of CO<sub>2</sub> for every one tonne of residual waste incinerated. The source of the carbon within that one tonne of CO<sub>2</sub> is split approximately (depending on the composition of the waste) 50:50 fossil (anthropogenic or hydrocarbon based) carbon and biogenic carbon. Therefore, waste management is a considerable contributor to the UK's climate change emissions.

To seek to address this and as part of work to contribute to the UK's net zero target, the Government consulted on, the inclusion of the energy from waste (EfW) sector in the existing UK Emissions Trading Scheme (UK ETS) – effectively a levy on the emission of fossil carbon to the atmosphere.

This report explores the implications of the introduction of the UK ETS on GMCA and summarises a proposal to develop a carbon capture and storage scheme for the CO<sub>2</sub> emitted from the Runcorn thermal power station where a large proportion of GMCA's residual waste is recovered.

Of the just over 1 million tonnes per annum of household waste managed by the GMCA, around 500,000 tonnes is residual waste of which around 80% is converted to secondary recovered fuel at our mechanical treatment and recovery (MTR) plants and sent by rail to the Runcorn EfW facility under contract to TPSCo Ltd to 2034 (TPSCo Ltd is a joint venture company between Inovyn and Viridor). The remaining 20% is incinerated with energy recovery at our Raikes Lane EfW facility.

## **2. The UK Emissions Trading Scheme**

In 2022 the Government consulted on the inclusion of the EfW sector in the UK ETS – the outcome was that it would be included from 2028.

The UK ETS is a government-run scheme designed to reduce greenhouse gas emissions. It works on a 'cap and trade' principle, setting a cap on the total amount of certain greenhouse gases that can be emitted by energy intensive industries. The scheme sets an initial cap on emissions at 5 per cent below what the UK's share would have been under the EU ETS (so it is therefore a little stricter than its EU predecessor scheme). The UK ETS came into force on 1<sup>st</sup> January 2021 replacing the EU version.

Participants in the scheme are required to obtain and surrender allowances to cover their annual greenhouse gas emissions. If needed, participants can purchase allowances at auction or trade them with other participants, which allows the market to find the most cost-effective way to reduce emissions.

The price that is 'charged' for the emission of one tonne of carbon reflects the auction price for the purchase of carbon allowances and is variable. In 2022 the carbon price ranged from £62 - £90 per tonne with an average of £75.42 per tonne.

## **2.1 Potential financial impact of UK ETS**

The UK ETS effectively sets a charge on the amount of fossil carbon emitted from facilities. This charge is based on a number of variables. The elements of the UK ETS calculation are:

- The market price of carbon – a variable that changes on a daily basis; and
- The quantity of fossil carbon-based CO<sub>2</sub> based on:
  - The fossil carbon content of the residual waste being treated; and
  - The quantity of residual waste recovered.

Below is an illustrative example of the potential cost of the UK ETS for the GMCA's residual waste. If GMCA sends a total of 500,000 tonnes to energy from waste (both Raikes Lane EfW and Runcorn EfW) the UK ETS cost could be:

- 500,000 tonnes of residual waste = 500,000 tonnes of CO<sub>2</sub> generated
- 50% of that 500,000 tonnes of CO<sub>2</sub> is fossil carbon so 250,000 of applicable CO<sub>2</sub>
- The 2022 average carbon auction price of £75.42/tonne
- UK ETS obligation for GMCA under those circumstances would be £18,855,000 for the year.

## **2.2 Mitigating the Potential Financial Impact of UK ETS**

### **1 Packaging Extended Producer Responsibility**

Although not yet confirmed, it has been suggested that the cost of the UK ETS for packaging containing fossil carbon should be one of the constituent elements of the Extended Producer Responsibility (EPR) money that will eventually flow from the packaging supply chain to waste collection and disposal authorities to cover the management of packaging waste. This could cover around 30% of the UK ETS charge.

It is also understood that consideration is being given to providing some new burdens funding towards local authority UK ETS costs but that there may still be a shortfall that should incentivise the diversion of plastics from energy from waste.

## **2 Increasing Fossil Carbon Recycling**

The UK ETS applies to fossil-carbon as detected in stack emissions - the less fossil-carbon detected the lower the financial obligation. It is clearly in our interests to remove as much fossil carbon from our residual waste (whether it is found in plastic packaging, textiles etc.) before it reaches the EfW facilities.

With the likely shortfall in any support towards the costs of the UK ETS, local authorities could actively pursue improving the capture of plastics for recycling on an invest to save basis. This supports the decision to invest in new sorting infrastructure to recover plastic pots, tubs and trays (PTTs) and soft plastics/flexibles.

## **3. Carbon Capture and Storage – An Alternative for GMCA**

Payments under the UK ETS can be avoided if the CO<sub>2</sub> generated is not emitted to the atmosphere. The only viable alternative is the capture of that CO<sub>2</sub> and storage in secure storage facilities.

The Runcorn EfW facility is one of two that is currently actively pursuing the possible construction of carbon capture and storage technology supported by Department for Energy Security & Net Zero (DESNEZ). This may provide an opportunity for GMCA.

### **3.1 What is Carbon Capture and Storage?**

Put simplistically, in the case of CO<sub>2</sub> generated by the thermal recovery of waste, the carbon will be diverted from the emissions stack and (as a gas or liquid depending on the process) transferred to the permanent and sealed storage facility. As CO<sub>2</sub> is not emitted to the atmosphere the quantities can be excluded from emissions inventories.

### **3.2 The Runcorn Proposal for CCS**

As mentioned above our contract for the recovery of household residual waste is with INEOS Runcorn (TPS) Limited (TPSCo) and Viridor operates the EfW. The Viridor Runcorn EfW is one of two projects currently being actively pursued to construct CCS infrastructure in the UK. This is being driven and financially supported by DESNEZ as this is seen as a significant way to reduce the country's carbon emissions.

In short, if the proposal is successful (and it has several stages yet to go through) the CO<sub>2</sub> emitted from the circa 1 million tonnes of waste recovered at Runcorn will be captured and transferred via pipeline to exhausted gas fields under the Irish Sea where it will be pumped into the previously gas-bearing strata for permanent, safe and secure storage. It is anticipated that the infrastructure would come online some time in 2028/29.

This obviously does not come without costs and it is a technology that is emerging. Officers from the Waste and Resources team received a presentation from Viridor on the project to seek initial support.

For the project to be financially viable a charge has to be levied and this is matched to the carbon price used for the UK ETS so customers using the Runcorn plant will effectively pay the same in the first 10 to 15 years as they would if they were paying the UK ETS levy so they would be no better or no worse off.

Effectively, the financial impact of using Runcorn's CCS would be the same as that estimated in section 2.1 above. However, the waste that we send to the plant would be considered carbon negative so we would see a sharp reduction in the CO<sub>2</sub> emissions attributed to GMCA services which will assist in GMCA's target of net zero by 2038 (subject to clarification on reporting of Scope 3 emissions).

### **3.3 Supporting the Runcorn Proposal**

GMCA has only been presented with the high-level principles and benefits of the CCS project and there are some significant contractual implications that will need to be resolved before we could consider signing up to the scheme. GMCA is a major contributor to the facility supplying around 30% of its fuel so our support is crucial to the ultimate deliverability of the project.

Viridor has asked for an 'in principle' letter of support from GMCA to enable them to progress through the stages of the project with DESNEZ. This letter would not commit GMCA at this stage but simply reflect our interest and willingness to discuss matters further with any agreement to participate being subject to agreed terms and conditions and a GMCA decision. If we are to commit to the scheme, we would need to do so by the end of 2025.

## 4. Summary

Around half of our residual waste contains fossil carbon in the form of plastics comprising packaging as well as an element of other types of wastes such as textiles. This has been recognised as a significant contributor to climate change hence the energy from waste sector has been included in the UK Emissions Trading Scheme with the accompanying financial implications to those waste producers (such as GMCA) delivering fossil carbon to those facilities.

To some extent GMCA may be able to mitigate some of the financial impacts through the payments it will receive in the future from the packaging extended producer responsibility (EPR) scheme (but this is not confirmed) but there will be a shortfall that will need to be captured within the Levy.

The carbon capture and storage proposal, albeit in relatively early stages of development, provides the GMCA the opportunity to claim carbon negativity for the fossil carbon content of its residual waste avoiding the emission of around 200,000 tonnes of fossil carbon-based CO<sub>2</sub> to atmosphere annually. This would be at no additional cost over and above our applicable UK ETS obligations so on the face of it the proposal looks attractive although there is a lot of detail to be obtained and discussions to be had. Any letter of support will have no firm commitment other than to participate in further discussions with any final agreement being subject to a full understanding and agreement to final terms and conditions.