

Somerset Waste Board
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Report for information

Energy from Waste: Carbon Capture, Utilisation & Storage

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Forward Plan Reference:	<i>20/02/03</i>
Summary:	<p>This report outlines the past year's performance of the Avonmouth Energy from Waste (EfW) Plant, future development plans and introduces Viridor's future Carbon Capture, Utilisation & Storage (CCUS) plans.</p> <p>A presentation will be made to the Board by a representative of Viridor.</p>
Recommendations:	That the Somerset Waste Board notes the report contents and presentation by Viridor
Reasons for recommendations:	Report for information only but clearly sets out the development works taking place by Viridor, in order to reduce the carbon impact of Energy from Waste operations in the UK, including the part that the Avonmouth EfW plant and Somerset's residual waste plays in that plan.
Links to Priorities and Impact on Annual Business Plan:	To help preserve our environment and ensuring our household residual waste is not wasted but used as a valuable resource, whilst keeping the climate change emergency at the centre of what we do in promoting and supporting Viridor achieve their net negative Carbon capture, utilisation & storage plans.
Financial, Legal and HR Implications:	No direct financial, legal or HR implications.

Equalities Implications:	No equalities implications.
Risk Assessment:	A summary of risk is now included within each quarterly performance report. No direct risks are associated with this report.

1. Background

- 1.1.** The New Waste Treatment Facility Contract (NWTF) for the treatment of Somerset's residual household waste was signed with Viridor Waste Management Ltd in March 2017, commencing in April 2020, for a term of 25 years (extendable by 5 years).
- 1.2.** In delivery of the NWTF contract, Viridor manages the 2 in county transfer stations and is responsible for the forward management of all of Somerset's household residual waste, including its storage, sorting, collection and transport to the Avonmouth Energy from Waste Plant for final treatment.
- 1.3.** Regular updates on the performance of the NWTF contract are brought to the Board as part of the quarterly Performance Reports.
- 1.4.** During the last full financial year (1st April 2021 to 31st March 2022) the Avonmouth EfW handled nearly 305,000 tonnes of residual waste, exporting over 225,000 Megawatt Hours of electricity to the national grid.
- 1.5.** Somerset's residual household waste accounted for approximately one third (102,700 tonnes) of the total waste input to Avonmouth, of which 76.8% was recovered and helped produce electricity, 22.2% recycled (metal & incinerator bottom ash), with only 1% (unusable air pollution control residues) being disposed of.
- 1.6.** Somerset's total residual household waste totalled 110,900 tonnes during 2021/22, with the remaining 8,200 tonnes (7.4%) having been diverted to landfill, this being the non-viable EfW material such as mattresses or high carbon items such as UPVC window frames, most of which is subject to our Business Plan aspirations (Item 3.2) for increasing recycling. Upon completion of the waste analysis planned for later this year, we should know which materials (and projected quantities) remain in the landfill skips and thereby focus our attention.
- 1.7.** Whilst our Business Plan aims continue to be focused on reusing and recycling as much of Somerset's household waste as possible, there is acknowledgement that some residents choose to place recyclable items in their kerbside refuse bin. To counter this, and following an initial small-scale trial at the Walpole

Transfer Station last summer, Viridor are deploying plastic extraction machinery to undertake a larger scale trial. The plan is to remove all viable plastic fractions from the mixed household residual waste, that is delivered to Walpole, and to source recycling routes for that extracted material. The added benefit of extracting such material from the waste stream is that it removes high Calorific Value items and thereby helps protect the integrity of the Avonmouth plant whilst also lowering key emission results.

- 1.8.** Whilst our move up the waste hierarchy and away from a reliance on landfill was key to meeting our climate change and environmental ambitions, continuing to reduce the amount of household waste that we send to the Avonmouth EfW plant must remain one of our key focuses. This is further evidenced by the possible inclusion of Energy from Waste plants in to the UK Emissions Trading Scheme from circa 2028. If Government decide to pursue this route, and depending on the final details of the Scheme, it may cost an additional c£35 (at current trading prices) per tonne. Until the Government plans firm up, we won't know the exact process or impact the inclusion within the Trading Scheme may have, but one way to possibly mitigate any potential additional costs could be the use of Carbon Capture, Utilisation & Storage plans, such as the one being developed by Viridor.

2. Viridor's Net Negative Carbon Capture, Utilisation & Storage Plans

- 2.1.** Viridor, one of the UK's leading recycling, resources and waste management companies, and majority owned by KKR, recently announced plans to help the UK accelerate its decarbonisation agenda through an international partnership for next-generation carbon capture, utilisation and storage technology (CCUS). The plan could unleash up to £1bn private investment into the UK.
- 2.2.** To support the delivery of Viridor's CCUS plans, modular CCUS plants will be considered for installation on five Viridor energy-from-waste (EfW) sites across the UK, current plans include Avonmouth. Viridor has partnered with CCUS specialist Aker Carbon Capture for the delivery of the five modular plants. Aker Carbon Capture's plug-and-play CCUS solutions are based on the company's proprietary and carbon capture technology, which it has developed over the past 20 years.
- 2.3.** The modular carbon capture plants will allow the technology to be deployed within fifteen months of planning and permitting, reducing fossil emissions at these sites by up to 90%. Developing the modular CCUS plants on the five EfW sites combined with two planned bespoke CCUS plants, would deliver c.1.5 MT CO₂ savings a year, meeting 15% of the Government's 2030 emissions reduction target (removal of 10m tonnes of CO₂ by 2030 from hard to decarbonize industries). This investment would also create around 1,000 construction jobs and up to 180 skilled green jobs in throughout the UK.
- 2.4.** This builds on Viridor's existing plan to develop a circa 0.9m tonne carbon

capture plant at the EfW site in Runcorn, Cheshire, as part of the HyNet industrial CCUS cluster in the north-west of the UK. Independent analysis published in October 2021 indicates that the 15 EfW sites within 20 miles of the UK's 5 industrial CCUS clusters could capture and permanently store just under 5 million tonnes of CO₂ per year by 2030. The research also suggests that CCUS on EfW facilities could be lower cost in absolute terms than any other industrial sector.

- 2.5.** The recent announcement is the latest phase of Viridor's decarbonization plan. In May 2020 Viridor outlined a five-step action plan to net zero emissions by 2040, and the ambition to be the first net negative emissions waste and recycling company in the UK by 2045. In addition to taking steps to substantially increase recycling rates, the plan outlined Viridor's intention to use carbon capture technologies to minimize emissions from waste that cannot be recycled. This new plan would enable the company to become net zero by 2030, a decade ahead of schedule.
- 2.6.** Dr Tim Rotheray, Director of ESG and External Affairs has been invited to the September Board to further update Members on the next steps of Viridor's journey to becoming a net negative business and how that is likely to beneficially impact the treatment of Somerset's residual household waste.