

Somerset Waste Board meeting  
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Report for information

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## Decarbonising SWP Operations

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<b>Forward Plan Reference:</b>	11.06.2021
<b>Summary:</b>	As set out in the Business Plan 2021-26, SWP has an ambitious agenda to decarbonise our operations. This paper updates the board on progress in key areas, specifically around electric vehicles, alternative fuels, exploring photovoltaics/lower carbon electricity at key depots, and progress with the Avonmouth Plastics Processing Facility.
<b>Recommendations:</b>	<b>That the Somerset Waste Board notes the progress made in decarbonising our operations.</b>
<b>Reasons for recommendations:</b>	Report for information only. The Board will be invited to view the trial electric RCV after the meeting.
<b>Links to Priorities and Impact on Annual Business Plan:</b>	Section 5 of SWP's Business Plan 2021-26 focuses on decarbonising our operations, highlighting that whilst what we do (i.e. recycling, decarbonising residual waste treatment etc) is a much more significant impact on our carbon footprint than how we do it, it is still crucial for us to continuously improve in this area.
<b>Financial, Legal and HR Implications:</b>	No legal or HR implications. Business cases are still being developed, but this paper indicates the likely financial implications of each initiative and the approach being taken to fund these costs.
<b>Equalities Implications:</b>	No equalities implications

<p><b>Risk Assessment:</b></p>	<p>The pace of technological change is rapid at the moment, and there is a risk that SWP may lock ourselves into sub-optimal solutions. Particularly when it comes to our waste and recycling lorries the optimal mix of long-term technological solutions are not yet clear, nor are the operational implications. This risk has informed our approach to trial technologies wherever possible. A further key risk is that constraints on local government finances may mean that we are unable to implement solutions even if there is a viable business case, and hence we may not be able to keep pace with public expectations/climate emergency needs.</p>
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## 1. Background

**1.1.** This paper sets out progress on the actions set out in the 2021-26 Business Plan around decarbonising operations, but by way of context it is worth highlighting some of the wider and previous work undertaken to reduce our emissions:

- a) SWP's commitment to quality (i.e. kerbside sort) and UK reprocessing is our single largest contribution to reducing carbon emissions. In the latest independent Carbon Index, SWP are ranked in the top 10% (compared to our top 20% position in the flawed weight-based recycling rate measures).
- b) The performance report attached to this paper highlights SWP's success in keeping our materials (especially plastics) in the UK where they are recycled properly.
- c) Moving away from landfill has also significantly reduced our emissions, but as set out in section 4 of the business plan we intend to go further in decarbonising residual waste. Every tonne of waste diverted from landfill to energy recovery reduces carbon emissions by about 200kg CO<sub>2</sub>e (carbon dioxide equivalent). For the period June 2020 to March 2021, that's a CO<sub>2</sub>e saving of circa 18,000 tonnes. Ongoing work to tackle hard to treat materials (e.g. mattresses and UPVC windows) should reduce what cannot be recycled currently at our HWRCs.
- d) With the appointment of SUEZ as a contractor we procured a new fleet of vehicles. The combination of better vehicles, newer engines, route optimisation (e.g. through Recycle More roll-out and garden waste day changes), electric bin lifts and other changes is expected to reduce carbon emissions by over 30%
- e) CMS Eco-Trak driving behaviour training and in-cab technology now gives us the capability to monitor issues like harsh braking/acceleration and idling. All supervisors and management have now been trained in its use, and we expect SUEZ to use this technology to monitor and drive improvement in driving behaviours and hence lower emissions.
- f) No idling signs have been erected at a number of HWRCs in Mendip. We

are still monitoring their effectiveness at changing behaviours.

- g) The use of diesel generators at our depots has ceased with the exception of Bridgwater which will cease by early 2022 following the depot upgrade. Grid electricity is now powering our sorting and baling equipment in the other depots.

## **2. Update on progress with decarbonising operations**

### **2.1. Electric Supervisors Vans: Trial**

As set out in action 5.1 of our Business Plan, SWP/SUEZ leased supervisor vans initially so that we could take advantage of maturing technology to procure electric vans suitable for operation across Somerset. The viability of this is dependent upon a business case being developed which involves additional capital expenditure with lower revenue costs giving a positive payback (and carbon savings). Roll-out will follow our depot infrastructure improvement programme, with Evercreech being retro-fitted first. Testing to date suggests electric vans are not viable for remote parts of the county, e.g. Exmoor, so some non-electric vans would continue to be required.

Progress to date is that:

- The business case for the trial of 5 electric supervisor vans based at Evercreech depot is nearly finalised.
- It is expected that the net additional revenue cost (compared to the existing diesel vans) is c£5k as a worst-case scenario.
- Once the prices of vehicles that meet our needs (i.e. large batteries to reflect the long distances covered) they will be validated by sharing with our partners who have been securing quotes for other types of electric vehicles.
- Charging infrastructure will be needed at Evercreech. The final quote received is for £12k + VAT. Details of proposals will be shared with our partners to draw on their experience of on-street/car park electric vehicle charging points.

### **2.2 HVO fuel: Trial**

What is it:

- Hydrogenated Vegetable Oil created from treated (recycled) waste vegetable oil
- 70% – 95% reduction in net CO<sub>2</sub> – reductions in NO<sub>x</sub>, PM and CO
- More expensive and 10% increase in usage due to lower calorific value
- Alternative to red diesel (especially from April 2022 when use of red diesel largely outlawed)

Potential costs/benefits from trial at Evercreech:

- 40k litres per annum, 93 tonnes of CO<sub>2</sub> saved, Cost per tonne of carbon saved: £108.69
- £10k funding from SWEEP fund: jointly SWP/SUEZ funded from existing resources

How we will use it:

- A 'drop in fuel' – i.e. Can be changed at any time with no adjustments to supply or plant (other than emptying tanks before switching)
- Potential to replace the fuel for mobile plant i.e. shovels, telehandlers etc
- Trial at Evercreech to confirm assumptions on usage and any operational issues (currently 40k out of total 143k litres used across all sites)
- May also enable us to understand operational issues from using in front-line fleet

Next steps:

SUEZ are monitoring current fuel usage in order to gather a baseline. It is anticipated that the first order of HVO will be delivered 21<sup>st</sup> June. Whilst SUEZ have secured commitments from the supplier that only waste vegetable oil will be used as a source of our HVO fuel, SWP will be understandably keen to ensure that this is validated and that there are no negative consequences from the source of the fuel.

## 2.3 **Electric Refuse Vehicle**

Action 5.3 of our Business Plan set out that we would work with our vehicle suppliers (primarily Romaquip for recycling vehicles and Dennis Eagle for refuse vehicles) to trial electric vehicles in Somerset. We remain in dialogue with Romaquip about trialling a vehicle in Somerset and are keen that Somerset is the first in England to trial an electric Romaquip. However, our focus has been on exploring e-RCVs given that we want to be well placed to explore alternative fuelled refuse vehicles when we come to a partial refleet in 2024 - our 23 2016 plate refuse vehicles.

SWP are exploring the trial of a Dennis Eagle conversion/retrofit of diesel RCV to electric (reconditioned - retains chassis and most of rear body). SWP will trial one for 6 weeks in Somerset (predominantly Bridgwater area) from late June. The plan is to cover each route in Bridgwater during the trial with the aim that if the vehicle is procured then it could then be trialled in all districts to establish the number of viable routes that could be electrified by 2024. The main purpose of this trial is to ensure that it is operationally viable so that we fully understand the issues ahead of our partial refleet in 2024 (likely to cost millions, and hence crucial that we know everything we can about electric vehicles ahead of making this major decision). Board members will have an opportunity to view the vehicle after the meeting on 26 June.

The Business Case is still being developed and a verbal update will be provided to the Board on 26 June. Key elements of the business case are likely to be:

- Ongoing costs (e.g. maintenance) will be managed by SUEZ with no additional costs to SWP. We are confirming the expected useful life but expect Dennis Eagle to commit to maintenance over 8 years.
- Potential sale to Dennis Eagle of one of SWP's old (2016) RCVs offset against the cost of the e-RCV (this old RCV will then be refitted by Dennis Eagle as an e-RCV).
- We are finalising the contractual discount that SWP will receive should we fund the purchase and comparing that to other options (SUEZ capital finance, the purchase of a new e-RCV etc). The capital cost of a retrofitted e-RCV is likely to be c£350k, compared to c£180k for a diesel RCV and c£514k for a new e-RCV. A mobile charging unit (meaning we can use it in all our depots) is likely to be c£19k.
- Subject to further modelling the annual CO<sub>2</sub> saving is expected to be 307 tonnes, meaning that the cost per tonne of carbon saved is likely to be over £300. This will be refined ahead of finalising the business case.
- Even once the fuel saving (c£8k per annum) is taken into account we expect the lifetime costs of a retrofitted e-RCV to be higher than a diesel RCV [currently £121k higher] and a capital bid is likely to be required to enable this business case to proceed.

We expect to be in a position to finalise the business case and learn from the trial in August 2021 and will then present the final business case to SMG/s151 officers to identify if funding can be secured. Board members will be kept updated.

## **2.4 Photovoltaics at key depots**

Working with SUEZ we have agreed that the Taunton and Evercreech depots are our priority for exploring alternative sources of electricity given their high and stable demand for electricity because of their sorting and baling equipment. An initial options appraisal by SUEZ identified photovoltaics (PV) as the most viable option. SUEZ have undertaken a procurement to identify a preferred bidder (Olympus –based in Exeter)

Based on outline data this suggests a potential capital cost of c£276k (£164k for Evercreech and £112k for Taunton) with a payback of 6.2 years for Evercreech and 5.5 years for Taunton. These figures are very indicative, and further work is needed to develop a full business case, including:

- Refining scale of PV (SWP focus is on decarbonising operations, not maximising generation)
- Detailed site surveys
- Considering need for battery storage
- Updating data and undertaking surveys to refine modelling
- Agreeing financial model with SUEZ (SWP capital and revenue saving)

- Explore availability of any grants to offset costs

SWP have agreed to fund the next stage of work (at a cost of £6,200 – funded from existing revenue funding and agreed with SMG/s151s) to develop a full business case. Taking this to the next stage does not commit SWP. Should we proceed to deliver this than £4k of costs would be offset by Olympus. A verbal update will be provided to the board on progress with developing the full business case. SWP are also exploring whether there is a viable opportunity to access other low carbon sources of fuel local to these depots.

## **2.5 Plastic Processing Facility**

The Avonmouth Plastics Reprocessing Plant is due to start its commissioning phase toward the end of August/early September. Once fully operational, it will use between 70GWh to 105GWh (23 to 34%) of the power generated by the adjacent Energy from Waste facility, as well as use some of the heat produced, making both the EfW & plastics plant even more carbon efficient. SWP continue to encourage SUEZ and Viridor to work together to see if a commercial arrangement can ensure that SWP's kerbside collected plastics can be processed at Avonmouth (and will also have this conversation with Biffa should they take over running our HWRCs).

To emphasise Viridor's change of direction to becoming a more 'Energy' focused business, late last week they also launched their 5 point plan to becoming a 'Net Zero Emissions Company', involving the decarbonisation of the services they continue to provide across their fleet of EfW plants, in order to help the fight against climate change. The plan focuses on reducing direct emissions from all their core operations whilst maximising the amount of waste that is recycled, capturing & storing the carbon emissions at their strategic sites (including Avonmouth EfW), generating negative emissions by expanding the carbon capture to their national network of sites whilst exploring whether new products can be created from the CO<sub>2</sub> waste stream and finally to supply more homes and businesses with clean heat.

## **3. Consultations Undertaken**

- 3.1.** SMG have been updated throughout the process of developing business cases, as have the quarterly joint meetings of s151 officers, as some of these initiatives are likely to require additional funding. The Chair and vice-chair of the Board have been updated in the Partnership Board with SUEZ.

## **4. Implications**

- 4.1.** Should the business cases be viable, and funding be available, then this will reduce SWP's carbon emissions and provide very visible reminders of SWP's commitments. It may however raise public expectations of the scale and pace of change that we are unlikely to be able to meet. Most of the initiatives are initial trials, as we are keen to make best use of public funds by investing both where the cost per tonne of carbon saved suggests we can maximise the environmental value, but also ensure we understand any operational implications.

## **5. Background papers**

- 5.1.** SWP Business Plan 2021-26