Corporate Management Committee – 21 March 2024

Addendum

Agenda item 5 - Referral from the Environment and Sustainability Committee - Sustainable Fleet Management Strategy

Additional officer recommendation:

- That the amendments to the Strategy, as set out in this addendum, be agreed.

Proposed amendments to the Sustainable Fleet Management Strategy following comments made by the Environment and Sustainability Committee on 7th March

Proposed new text is shown **bold and underlined** and text proposed for deletion is shown struck through.

Proposed amendments to chapter 4: Fleet Profile and Operating Budget, pages 8 and 9

4.5 At the time of producing this strategy, the gross book value of the assets which make up the Council's owned fleet stood at £4.6m with a net book value of £1.7m, indicating that most of the fleet are being run on past their estimated useful lives. The Council's overall annual fleet operating budget varies significantly from year to year. For the 2023 calendar year, it stood at ~~£698,349.87~~ **£702,017.82** which can be broken down as follows:

Item	Spend/Amount (January-December 2023)	Notes
Diesel use	261,652 litres £291,133.36	Existing vehicle fleet based on 79 vehicles
Cost of leasing **the Meals at Home vans**	£18,257.79	For Meals at Home fleet from **May** ~~midway through year~~
Running cost of EV Meals at Home vans	**£3667.95**	**This includes the electricity used to fuel the van (£2591 and the diesel used to heat the ovens £1076.93). The cost of running the 4 diesel vehicles over the same period has been calculated at £5469.55 (or £1801.60 more expensive).**
SFS Service and maintenance labour	£81,446.39	Also includes centre operating costs
SFS parts and materials	£139,183.33	Includes external works
Road Fund License	£13,979	
Fleet insurance	£154,350	
TOTAL	£**702,017.82** ~~698,349.87~~	

Proposed amendments to chapter 6: Making our fleet more environmentally friendly, sub section on biofuels (page 16):

6.10 Biofuels: Produced from some forms of biomass material, including wastes, residues, and crops and can either be blended with fossil fuels or used in their place. According to the Department for Environment, Food & Rural Affairs, the most widely used source for biofuel production in the UK to fuel UK road transport is used cooking oil, followed by tallow and food waste.[1]

6.11 The principal benefit of biofuels is the CO_2 emission savings delivered compared to fossil-fuel sources over their lifecycle. This is because the biomass feedstock used to produce biofuel has captured carbon dioxide through photosynthesis during the cultivation process, therefore although the tailpipe emissions are not zero, the produced CO_2 emissions from the tailpipe are considered equal to that sequestered during production. Although many variables determine the lifecycle emission savings, a report by the International Energy Agency suggests typical reductions are between 32% and 98% for biofuels compared to fossil fuel sources.[2]

6.12 **In exploring the reduction in carbon emissions for the Council's fleet that could result if it was transitioned from diesel to HVO fuel, all fleet vehicles are presently fuelled on site at the Ford Road Chertsey depot using the onsite diesel tank and fuel management system. The fleet uses approximately 21,000 litres of diesel per month. In the 2023 calendar year, the fleet used 261,652 litres of diesel which equated to 657 tCO2e.**

6.13 **Using the fuel usage for the 2023 calendar year and the 2023 emission conversion factors from the Department for Energy Security and Net Zero (DESNZ), it is estimated that a 100% transition to HVO could result in a greenhouse gas emissions saving of up to 648 tonnes of CO2e per year. Taken against the 657 tCO2e generated by the diesel fuel use, this represents a significant potential reduction in emissions (98.6%). It is recognised however that the actual emissions saving achieved will be reliant on the feedstock from which the HVO fuel is generated, and also whether it is used alone or in a blend with diesel fuel.**

6.14 However, limitations to these fuels exist, hence why they are often considered a transitional technology to support net-zero ambitions, rather than a long-term solution. Among these are the often-higher costs of production compared to fossil fuels (although this can be reduced by using waste materials),[3] limited biofuel feedstocks (particularly from waste sources which offer the dual-benefit of emission reductions and supporting circular economy principles), associated emissions from direct or indirect land-use change, and competition for biofuels within hard-to-decarbonise sectors, such as aviation and shipping.

6.15 For road transport, ethanol, biodiesel (FAME), and hydrotreated vegetable oil (HVO) are the most common biofuels used. However, biodiesel (FAME) must be blended with fossil fuels due to its poor cold flow properties and modern exhaust gas after-treatment systems, and ethanol also needs to be blended with fossil fuels, which limits emissions reduction potential from these sources.

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[1] Department for Environment, Food & Rural Affairs (2021) Area of crops grown for bioenergy in England and the UK: 2008-2020 (Section 1: Biofuels)
[2] IEA Bioenergy (2020) The Role of Renewable Fuels in Decarbonising Road Transport
[3] IEA Bioenergy (2020) Advanced Biofuels – Potential for Cost Reduction

6.16 HVO therefore is likely to be the most suitable form of biofuel to reduce emissions from the Council's fleet in the short to medium term. It can be used in neat form as a 'drop-in' (direct substitute) for fossil diesel, therefore providing full emission reduction potential and without the need for any additional maintenance or changes to existing operational procedures. As a solution for fleet vehicles which are harder to decarbonise using zero-emission technology, such as HGVs, HVO provides an alternative transitional solution.

6.17 **In relation to local pollutants, studies which bridge multiple regions and vehicle types generally agree that HVO reduces the quantity of pollutants including carbon monoxide (CO), particulate matter (PM), and total unburned hydrocarbons (THC). Although nitrogen oxides (NOx) exhibit a more mixed picture, studies reviewed often also point to a reduction in these pollutants. However, it is important to note that the greatest reductions in pollutants tend to be seen when the fuel used is 100% HVO, rather than a blend.** ~~Multiple studies have also noted the benefits of HVO fuel in relation to reductions in other pollutants such as carbon monoxide, particulate matter and nitrous oxides which impact local air quality.~~ **For example, a study published in the 'Journal of Cleaner Production' provides a lifecycle assessment on the use of petro-diesel, HVO from palm and soybean oil, and bioethanol in various operating conditions in a diesel engine. Results showed that pure HVO led to a 30% reduction in NOx, 75% reduction in THC, 81% reduction in CO, and 55.3% reduction in PM.[4] Furthermore, the Technology Collaboration Programme on Advanced Motor Fuels found that NOx emissions when using HVO generally reduce by up to 16% but some engine technologies and adjustments can lead to increases up to 5%, PM emissions consistently reduce by 12-45%, and CO and HC emissions reduce substantially between 20-80% compared to sulphur-free diesel.[5]**

6.18 One specific consideration when considering transitioning to HVO fuel is the biomass feedstock used to produce it. According to a report by the International Energy Council for Clean Transportation in 2021, lifecycle emissions from HVO production can be higher than from fossil fuel sources dependent on the feedstock. This is because indirect land-use change which may be associated with specific feedstocks, such as palm oil and soybean oil, pushes emissions above those from fossil fuels.

6.19 Consequently, procurement of HVO as an alternative fuel for the Council's diesel fleet must ensure that the HVO fuel supplier chosen can deliver emissions benefits based on the feedstock.

6.20 In addition to the three technologies identified above, hydrogen ICE and hybrid solutions such as ICE-electric trucks are also available or in development. However, whilst these solutions provide a reduction in emissions, they do not provide technological solutions that are capable of decarbonising to the extent and scale required to achieve the Council's 2030 operational net zero target.

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[4] Roque, L. F. A. et al. (2023) Experimental analysis and life cycle assessment of green diesel (HVO) in dual-fuel operation with bioethanol. *Journal of Cleaner Production*, 389, article number 135989.
[5] Technology Collaboration Programme on Advanced Motor Fuels (n.d.) Emissions. [Online]. Available at: https://www.iea-amf.org/content/fuel_information/paraffins/emissions [accessed 14/11/2023].