

Cheltenham Borough Council
Cabinet – 30 November 2021
Introduction of alternative fuels in the
Cheltenham Borough Council fleet to support net zero by 2030

Accountable members	<p>Councillor Iain Dobie – Cabinet Member, Waste, Recycling and Street Services</p> <p>Councillor Max Wilkinson – Cabinet Member Climate Emergency</p>
Accountable officer	Karen Watson, Environmental Partnerships Manager
Ward(s) affected	All
Key Decision	Yes
Executive summary	<p>The Council declared a climate emergency in 2019 and is serious about its ambition to reach net zero by 2030. To achieve this tangible action is required as soon as possible by the Council and the recent COP26 climate change summit has reinforced the need for action globally.</p> <p>Cheltenham Borough Council is responsible for the procurement of the fleet of vehicles operated by Ubico in Cheltenham which deliver environmental services across the borough. In 2019/20, these vehicles were responsible for emitting 1,394 tonnes of CO2 even though majority of them use the latest Euro 6 engine technology delivering the most stringent limits on harmful emissions when burning traditional mineral B7 diesel.</p> <p>The Council has already installed electric charging points at the Swindon road depot for 3.5 tonne and under vehicles. Two electric vehicles are on order and due for delivery in December or January which residents will see operating in Cheltenham in the New Year replacing two diesel vehicles.</p> <p>Not all our fleet can move across to electric immediately due to the high cost of installing the electric charging infrastructure and available supply of electricity locally, particularly for the heavy goods vehicles.</p> <p>Moving to certified palm oil free hydro treated vegetable oil however will enable a rapid move away from burning traditional mineral B7 diesel for many of our vehicles delivering up to a nett 91% reduction on well to wheel greenhouse gas emissions and is therefore recommended as an interim solution to help reach net zero by 2030. This will enable the more environmentally friendly technology to be further developed and available on the market hopefully delivering the necessary capability for the fleet and within our available financial resources.</p> <p>The recommendations within this report seek to deliver rapid reductions in CO2 emissions to improve air quality and reach net zero by 2030.</p>

Recommendations

That Cabinet approves:

- 1. The introduction of hydro treated vegetable oil (HVO) fuel, procured from sustainable sources that is certified palm oil free, for use in the Cheltenham Borough Council fleet operated by Ubico, where appropriate to replace diesel as set out in the report, as soon as possible to reduce carbon emissions and improve air quality.**
- 2. The purchase and installation of a new fuel tank installed at the Swindon Road depot to facilitate the change to HVO, at an estimated cost of £55,000, to be funded from the climate change capital budget.**
- 3. The increase in revenue costs associated with the move to HVO from diesel be approved by Council as part of the budget setting process.**
- 4. The continued procurement of internal combustion engine vehicles and plant where no suitable alternative fuel vehicle or plant (electric or otherwise) is available on the market or within available resources with a view to such vehicles operating on HVO fuel where appropriate and as set out in the report (see list of vehicles required within this financial year 2.17).**
- 5. The council's management of the capital replacement plan for both Ubico operated fleet and plant, and the Council's own fleet, should directly support our climate change ambitions of net zero by 2030 by moving to alternative fuels or away from internal combustion engines for all our fleet and plant as quickly as practicable where alternatives are available and within available resources.**

Financial implications	<p>The one off capital expenditure for the additional fuel tank estimated at £55,000 will be funded from the 2021/22 climate change capital budget.</p> <p>The additional revenue costs will be included within the budget setting process. This is estimated at an additional £50,000 per year once all appropriate vehicles are using HVO fuel.</p> <p>Contact officer: <i>Jon Whitlock</i>, jon.whitlock@cheltenham.gov.uk, 01242 26 4354</p>
Legal implications	<p>The Council's Contract Rules will need to be complied with when procuring the goods which are the subject of this report.</p> <p>The Climate Change Act 2008 imposes a target on Central Government to be net zero by 2050. The Council has, along with others, set an earlier target of 2030.</p> <p>Officers will need to ensure that what is proposed complies with the requirements of the recently passed Environment Act 2021.</p> <p>Contact One Legal: legalservices@onelegal.org.uk</p>
HR implications (including learning and organisational development)	<p>There are no HR implications as a result of this report other than staff training for any new systems or technology.</p> <p>Contact officer: Julie McCarthy, julie.mccarthy@publicagroup.uk 01242 264355</p>
Key risks	<p>The key risks are set out in the risk assessment attached to this report.</p>
Corporate and community plan Implications	<p>The recommendations within this report support key priority 3 in the Council's corporate plan – achieving a cleaner and greener sustainable environment for residents, businesses and visitors.</p>
Environmental and climate change implications	<p>In 2019 the Council declared a climate emergency and committed to reducing carbon emissions by 2030 to net zero. This report sets out the significant contribution to this commitment that the recommendations in this report will achieve in both the short and long term. A switch from diesel to HVO can reduce CO2 emissions by up to 91% and particulate matter (PM) by up to 48% per vehicle. A reduction in PM leads to improved air quality.</p> <p>Contact officer: Laura Tapping, laura.tapping@cheltenham.gov.uk, 01242 264263</p>
Property/Asset Implications	<p>Minor works will be required for the installation of the additional fuel tank as set out in the report and funded from the climate change budget.</p> <p>Contact officer: Gemma.Bell@cheltenham.gov.uk</p>

1. Background

- 1.1** The Council's environmental services provider, Ubico, operates a fleet of Council owned vehicles to deliver waste, recycling, street cleansing and grounds maintenance activities across Cheltenham. Each year the Council agrees a fleet replacement plan and the capital budget required is agreed as part of the Council's budget setting process.
- 1.2** In 2019, the Council declared a climate emergency and committed to reducing carbon emissions by 2030 to net zero. There is an opportunity with the Council owned fleet of vehicles operated by Ubico to deliver a rapid reduction in emissions by transitioning away from a greenhouse gas (GHG) emitting fossil fuel such as diesel to a more environmentally friendly fuel such as HVO. The fleet is currently based on internal combustion engine vehicles burning traditional mineral B7 diesel and represents the largest source of carbon emissions for the Council (1,394 tonnes CO₂ in 2019/20). However, the majority of the vehicles in the fleet do use the latest Euro 6 engine technology delivering the most stringent limits on harmful emissions when burning traditional mineral B7 diesel. In a year when national governments met at COP26 to discuss more positive actions that can be achieved globally, the Council does not accept that this goes far enough to meet our ambition to reach net zero by 2030 and a move to HVO will reduce these emissions by up to 91%.
- 1.3** The most recent assessment of our carbon emissions suggests that the fleet of vehicles and plant burning traditional mineral B7 diesel in Cheltenham every day delivering environmental services generates approximately 1,314 tonnes of CO₂ and our ambition is to significantly reduce this in the short and long term. Moving away from diesel to certified palm oil free hydro treated vegetable oil (HVO), a second generation biofuel, would deliver an immediate reduction in carbon emissions and is expected to provide up to a nett 91% saving on well to wheel greenhouse gas emissions.

2. Reasons for recommendations

- 2.1** The Council's environmental services provider, Ubico, operates a fleet of Council owned vehicles to deliver waste, recycling, street cleansing and grounds maintenance activities across Cheltenham. At present nearly 50% of our fleet, 46 out of 101 vehicles, have appropriate approvals from the manufacturers to run on HVO now. The remainder of the fleet will move over to HVO when possible or to other more suitable alternative fuels such as electric for vehicles that are 3.5 tonnes and under.
- 2.2** Our domestic refuse and garden waste is collected by 12 Dennis Eagle RCV's (refuse collection vehicles), our recycling is collected by 13 DAF Romaquip recycling vehicles all of which have the appropriate approvals from the manufacturer to run on HVO EN1590. Our 2 mechanical 15 tonne road sweepers also have the appropriate approvals from the manufacturer to run on HVO.
- 2.3** This year we expect to use 501,600 litres of fuel which would equate to approximately 1,314 tonnes of tail pipe carbon emissions per year. It is widely accepted by experts that vehicle emissions created by petroleum based mineral B7 diesel (traditional diesel) used in all engines have a negative effect on air quality and are harmful to human health and the environment.
- 2.4** Having reviewed with Ubico the alternative options available to us which are set out below in Section 3 of the report, the reduction in harmful emissions is largest when moving from diesel to HVO.
- 2.5** Given the Council's commitment to reach net zero by 2030 it is important that tangible action is taken now to reduce carbon emissions from our own fleet in Cheltenham therefore, where appropriate and where electric vehicle equivalents are unavailable or not feasible, the move from diesel to certified palm oil free HVO is recommended as soon as possible. This will be alongside the introduction of electric vehicles in the 3.5 tonne and below category where available on the market and within available financial resources.

- 2.6** The first generation of biodiesel (also known as fatty acid methyl ester – FAME was relatively unsuccessful in gaining manufacturers approval because of oxidisation and temperature issues associated with FAME. HVO is a second generation biofuel and is a paraffinic bio-based liquid diesel fuel. It is a ‘drop in fuel’ - a fuel that doesn’t require any adaption to the operational fuel infrastructure, the vehicle (where manufacturer use is approved) or the vehicle maintenance regime.
- 2.7** The hydrogen treatment removes all oxygen from the oil; this gives the advantage of avoiding oxidation. The HVO that Ubico would consider using is required to meet specific European and UK fuel specifications (EN1590).
- 2.8** The feedstock can be the same or of a lower quality than FAME biodiesel enhancing sustainability. The temperature level that HVO biodiesel can still operate normally in is less of a consideration than FAME biodiesel. HVO operates at temperatures colder than minus 20°C.
- 2.9** HVO is readily available in formats that have not included palm oil in its manufacture. Manufacturers can identify the origin of the raw material to verify the credentials of the HVO product. Ubico will ensure that all supplies of HVO they purchase will NOT be manufactured using palm oil (certified palm oil free), but will utilise other sustainable products such as rapeseed, sunflower, animal fats, used cooking oil and soybean. Fuel is currently purchased via the Crown Commercial Services National Fuels Framework and Ubico will seek the same route to market in the procurement of HVO.
- 2.10** The UK market for vehicles using HVO is relatively small. However, HVO has been in use regularly over the past five years in Europe and has increased by 50% globally over the past 3 years.
- 2.11** The Governments renewable transport fuel statistics (Renewable Transport Fuel Obligation statistics: Period 10 (2017/2018), report 6 [DfT 2019]) show that the average GHG emission savings using pure HVO biofuel (HVO100) is 91% when compared to petroleum based mineral diesel. 91% is the total ‘well to wheel’ saving including feedstock, production and tail pipe emissions. Cheltenham Borough Council is confident it will achieve between 80 and 90% less greenhouse gas emissions if using HVO.
- 2.12** Not all manufacturers approve the use of HVO, but a significant number of the manufacturers for our fleet do. The non-approval does not necessarily mean that that HVO has been tested and failed, but more likely that certain manufacturers have not tested the product at all, and this will come in the future. It is important to note that non approval is often because the test procedure for the manufacturers to approve everything is extremely time-consuming and expensive. Mercedes, Volvo, Dennis Eagle, DAF, Ford, Citroen, Peugeot are makes of vehicles that the council operate that have been approved for HVO use as long as it meets EN15940 standards. Isuzu, Fuso and some Renault vehicles have not yet been approved for HVO use and these will continue to operate on traditional diesel.
- 2.13** Given only approximately half of our fleet will operate on HVO, a separate fuel tank and systems will be required for all vehicles that could operate on HVO therefore a new fuel tank will be required to facilitate separating out the two fuel types. HVO fuel, which is freely available in Gloucestershire, will be held in one tank and traditional mineral B7 diesel in the other. The new fuel tank will be installed at Swindon Road depot for a cost of approximately £55,000 including fuel pumps, telemetry points, dispensing ID and integration with the existing fuel management software system (Triscan). The governance of the fuel transaction and the dispensing of the correct fuel will be controlled by the fuel management system and to further improve the fuel monitoring data an ‘ad blue’ pump system will also be installed.
- 2.14** Whilst the cost of HVO is currently 15-20% higher than diesel, it is considered that the environmental benefits outweigh this small additional cost which will be considered by Council as part of the budget setting process. Some of this additional revenue cost may be offset by the

continued roll out of telematics and driver performance analysis going forward.

- 2.15** It should be noted that biofuels can be manufactured from palm oil but they don't have to be and there are manufacturers that do not use palm oil in the manufacture of biodiesel. The use of palm oil in biofuels is believed to have been a driver for deforestation of tropical rain forests. Deforestation is understood to have a significant negative impact on greenhouse gasses as well as depleting natural habitats for wildlife. Ubico will not source HVO manufactured from palm oil.
- 2.16** The production of renewable fuels is highly complex and environmental performance varies significantly with feedstock. Cheltenham Borough Council and Ubico would only source biofuels produced from sustainable feedstock and would seek procurement routes where hydrogen had been manufactured from sustainable off-shore wind or similar future sustainable technologies (green hydrogen).
- 2.17** Officers are currently working with Ubico on longer term solutions for heavy goods vehicles as part of our annual capital replacement plan for fleet, taking into account changes which will be required in response to the Environment Bill in the coming years.

The following list of vehicles/plant urgently require replacement this financial year and following approval of this report they will be ordered. These are all internal combustion engine vehicles or plant which will burn traditional mineral B7 diesel fuel because there are either no electric vehicle alternatives available on the market or they can't initially be fuelled by HVO: Waste materials handler; 2 x Chassis cab vehicles with plant and go body conversion; panel van (specific payload); 2 x 4WD pick-ups.

3. Alternative options considered

- 3.1** The council has considered the infrastructure requirements and costs for electric vehicles with a view to swapping out all vehicles when due for replacement to electric where appropriate however the Swindon Road depot does not have adequate infrastructure to enable this to happen. Additionally the cost of electric vehicles is at least double that of like for like internal combustion engine vehicles. This option, however desirable, is unaffordable at this time as well as not being possible due to the lack of appropriate infrastructure. Our preferred option, moving to HVO where possible, is expected to deliver up to a nett 91% reduction in well to wheel greenhouse gas emissions immediately.
- 3.2** The Council could choose to remain operating diesel internal combustion engines until such times as both infrastructure for appropriate electric supply and electric vehicles themselves are affordable. It is uncertain how long it will take for the market to produce sufficient electric vehicles at an affordable cost or how local authorities will be able to afford the significant costs of electric charging infrastructure for heavy goods vehicles. Due to this uncertainty, and the carbon reduction imperative, action is needed now consequently this option has been discounted.
- 3.3** Biomethane is a renewable equivalent biofuel for vehicles that run on natural gas. None of our vehicles currently run on natural gas therefore, Bio-methane is not considered a suitable alternative at this time.
- 3.4** The two biofuels potentially available to us to operate the diesel vehicle fleet are Traditional FAME biodiesel (Fatty Acid Methyl Ester) – a first generation biodiesel; and HVO biodiesel (Hydro treated Vegetable Oil) – a second generation bio diesel. Biodiesel fuels are a replacement for traditional mineral B7 diesel fuels. Biodiesels are produced from any carbon source that is easy to replace. Natural vegetable oils and fats are probably the most well-known example or renewable organic materials used to create biodiesels. Biodiesel is a liquid fuel produced from these renewable organic materials.
- 3.5** Biodiesels used in vehicles burn much cleaner than petroleum based diesel fuel and produce lower harmful emissions. FAME biodiesel and HVO biodiesel are different products even though

they can both be produced from renewable organic materials. FAME is a first generation biodiesel and can retain moisture in its production process that when used in higher blended percentages may not be ideal for modern engines. HVO is a second generation biodiesel where contaminants are removed during the production process creating the same chemical composition as traditional mineral diesel.

- 3.6 UK legal requirements for current traditional mineral B7 diesel is a 7% FAME blend (known as B7, which means the fuel is made up of a maximum 7% FAME and 93% mineral diesel)
- 3.7 The potential problems associated with FAME Biodiesel and the lack of vehicle manufacturer support of the existing Council owned vehicle fleet make up effectively meaning that FAME biodiesel in any high blend above 7% should not be considered by Ubico as a replacement for traditional mineral B7 diesel and HVO is a suitable alternative and is therefore recommended in this report.

4. How this initiative contributes to the corporate plan

- 4.1 Whilst the council’s recycling rate continues to increase year on year and work is being done to maximise efficiencies in waste collection generally to support key priority 3 of the corporate plan - achieving a cleaner and greener sustainable environment for residents, businesses and visitors, the Council has also declared a climate emergency and reducing carbon emissions on the path to net zero is a significant part of its future ambitions which is woven into all of its key priorities currently.

5. Consultation and feedback

- 5.1 The Council has reviewed case studies and taken advice from Ubico and other industry experts as well as other local authorities who have already implemented trials or a complete move to HVO fuel instead of diesel.
- 5.2 Councils which have already recently moved to, or are trialling HVO, include Hounslow, Bournemouth, Christchurch and Poole, Mid Suffolk, East Suffolk, Hackney and Portsmouth.

6. Performance management –monitoring and review

- 6.1 The Council’s client function, managed by the environmental partnerships manager, oversees the fleet replacement plan and procurement of any vehicles, plant or equipment in line with the constitution and contract rules. As part of this function, any procurement is challenged to ensure it is delivering the most sustainable outcomes possible within available financial resources. This is monitored regularly by finance and delivered in conjunction with Ubico, benefiting from their industry expertise. In addition, the Council’s climate change team regularly report on emissions using data provided by Ubico. This data, will in future be part of the quarterly review meetings with Ubico.

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Appendices	1. Risk Assessment
Background information	1. https://www.sciencedirect.com/science/article/pii/S0016236117314151

The risk				Original risk score (impact x likelihood)			Managing risk				
Risk ref.	Risk description	Risk Owner	Date raised	Impact 1-5	Likelihood 1-6	Score	Control	Action	Deadline	Responsible officer	Transferred to risk register
	If action is not taken rapidly to reduce CO2 emissions from the Council owned fleet operated by Ubico, the Council will be less able to reach net zero by 2030 and air quality improvements will not be realised.	Tim Atkins	10/11/2021	4	4	16	Reduce	Cabinet approves the move to certified palm oil free HVO and electric vehicles where possible and within available financial resources	2030	Karen Watson	
	If HVO is unavailable locally, diesel will continue to be used.	Tim Atkins	10/11/2021	4	1	4	Reduce	Ubico has established that supplies are readily available in Gloucestershire and the procurement framework facilitates more secure procurement.	April 2022	Karen Watson	
	If, during the transition to HVO, vehicles are damaged, the financial costs will have to be funded by the Council.	Tim Atkins	10/11/2021	4	1	4	Reduce	Ubico has established that other authorities operating with the same vehicles have already transitioned to HVO successfully without issues. Vehicles will only be transitioned to HVO where there is minimal risk of any issues in line with the experiences of others or the advice of manufacturers.	April 2022	Karen Watson	
	If the price of HVO increases there will be a	Tim Atkins	10/11/2021	2	2	4	Accept	Procurement frameworks will seek to	April 2022	Karen Watson	

	greater negative impact on revenue costs							safe guard pricing however, as with diesel which is increasing in price currently, we are exposed to market conditions and have little influence but Ubico believe the price of HVO to be stable.			

Explanatory notes

Impact – an assessment of the impact if the risk occurs on a scale of 1-5 (1 being least impact and 5 being major or critical)

Likelihood – how likely is it that the risk will occur on a scale of 1-6
(1 being almost impossible, 2 is very low, 3 is low, 4 significant, 5 high and 6 a very high probability)

Control - Either: Reduce / Accept / Transfer to 3rd party / Close