ADUR & WORTHING COUNCILS

WBC Cabinet Member for Resources
ADC Cabinet Member for Finance and Resources
16 May 2023
Decision Ref No: JAW/022/22-23
Decision to be taken on or after 24 May 2023

Key Decision: Yes

Ward(s) Affected: All Worthing

Grant Funding for the HyCrem Project

Report by the Director for Digital, Sustainability & Resources

Executive Summary

1. Purpose

1.1. This report sets out an opportunity to utilise grant funding to conduct a fully-funded trial to temporarily replace the natural gas supply to one cremator at Worthing Crematorium with a green hydrogen supply.

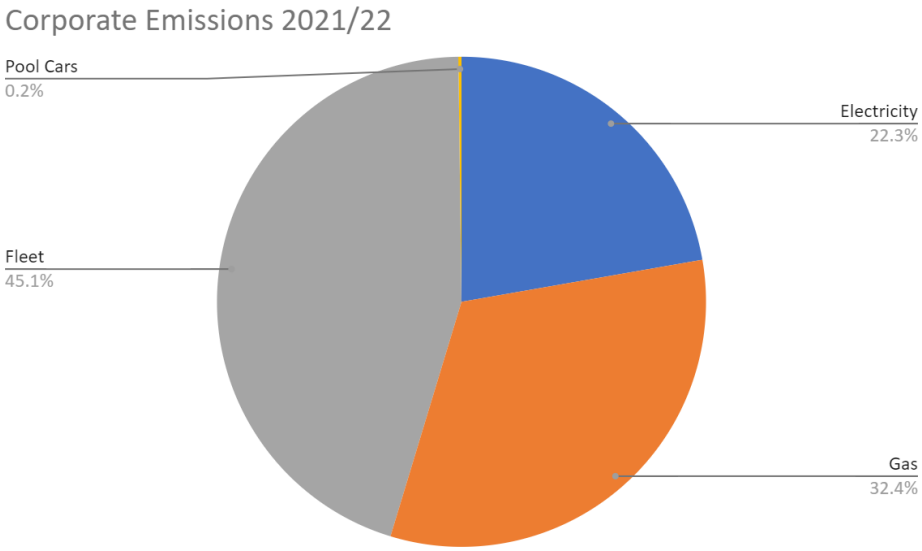
2. Recommendations

2.1. To accept Industrial Fuel Switching grant funding to conduct the pilot and amend the budget accordingly.

3. Context

3.1. In order to meet its Carbon Neutral 2030 target, the council adopted its Carbon Neutral Plan in 2019. This also identified the crematorium as a site requiring intervention in order for the councils to meet the 2030 target.

3.2. In 2021/22, Adur & Worthing Councils jointly emitted greenhouse gases equivalent to 2,417 tonnes of carbon (tCO2e), broken down as follows:



3.3. Worthing Crematorium accounts for over 35% of the gas emissions (or 11.5% of total emissions) and is the councils' second largest source of emissions, after the refuse and recycling fleet.

3.4. In addition, the price the councils pay for gas has increased significantly due to the energy price crisis. The crematorium, as the single largest user of gas within the Councils' portfolio, is therefore subject to significant additional operational pressure.

3.5. Whilst the current DFW[1] cremators are out-of-warranty, they are regularly serviced and are believed to have considerable useful life remaining.

4. Issues for consideration

4.1. The Council has previously secured Low Carbon Skills Funding[2] to conduct a feasibility study into electrifying Worthing Crematorium. This was carried out by CDS Consultants, who noted that whilst the carbon emissions from an electric cremation service would be substantially lower than a gas-fired equivalent, there are significant challenges in retrofitting it, namely:

- Maintaining operational service whilst works are ongoing - it would be virtually impossible to continue with cremations during the works, which are likely to disrupt workings for potentially three or more months[3].

[1] https://dfweurope.com/
[2] https://www.salixfinance.co.uk/public_sector_low_carbon_skills_fund
[3] See Lambeth, which have just decided to do this

- Crematorsize. Electric cremators require more space, which would be difficult to accommodate in the existing building
- Staffing. Electric cremators require more time per cremation and ideally operate continuously, as this is significantly more efficient than the current weekday-service schedule. This would require significant staffing reorganisation.
- Capacity. An additional cremator would likely be needed to meet current demand with the same level of resilience provided by the current service. This would necessitate an extension to the current building, which is difficult given the constraints of the site.

4.2. As can be seen by LB Lambeth, an electric retrofit is possible, but is very difficult and disruptive to the service.

4.3. CDS recommended a budget of £4.8m for the works in 2021. Whilst running costs would decrease compared to gas, it is unlikely the cost would be recouped over the life of the cremators.

4.4. As an alternative, officers decided to explore the potential to substitute hydrogen for natural gas.

4.5. DFW are developing hydrogen-ready burners that could be utilised in existing gas-fired crematoria. Whilst unproven, it is believed that this conversion would be significantly less disruptive than an electric option as it should only be the burners within each cremator that need replacing (and a hydrogen supply secured).

4.6. Most hydrogen supply in the UK is 'grey hydrogen' (made by burning fossil fuels to produce hydrogen for use in fertilisers etc). Supplies of Green hydrogen (i.e. hydrogen produced by renewables) is still in its infancy, however H2Green and Shoreham Port are leading on the development of a 'hydrogen hub' at the Port that could be a local supplier of Green hydrogen for any customer nearby.

4.7. As part of its membership of Hydrogen Sussex[4], the council was invited to participate in Phase 2 of the Industrial Fuel Switching project[5].

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[4] http://hydrogensussex.org/

[5] https://www.gov.uk/government/publications/industrial-fuel-switching-competition-phase-2-demonstration-projects

4.8. This project aims to conduct what is believed to be a UK (possibly world)-first pilot of fuelling cremations solely through the use of green hydrogen. It is expected that this would be for a period of approximately 4 weeks, although much will depend on the design stage of the project.

4.9. The bid was successful and the following activities are now fully funded, subject to agreement by all parties:

- Design and installation of new burners
- Design and installation of temporary hydrogen infrastructure at the crematorium
- Testing and commissioning
- 4 weeks of pilot burns using Green hydrogen on one cremator[6]
- All health & safety requirements
- Evaluation of demonstration project
- Supply chain review and scaling up opportunities study in order to inform future investment plans

4.10. The following partners have all been engaged and it is hoped will form part of the project:

- FT Pipeline Systems (lead partner, designer, provision of hydrogen infrastructure)
- Net Zero Associates (project management)
- DFW Europe (cremator manufacturer and design support)
- GeoPura (green hydrogen supplier)
- Ricardo (evaluation and supply chain review)
- PJ Combustion Solutions (current maintenance provider, installer)
- Safety Monitors (health & safety)
- Abbott Risk Consulting (health & safety)
- University of Brighton (evaluation and air quality monitoring)

4.11. The councils' role would also be fully funded, with staff able to charge for their time involved. Including costs for groundworks, the total amount of funding the council stands to receive is £205,658 out of a total project cost of £1.169m. The remainder of the funding is for other partners.

4.12. The timelines for the project are as follows:

Approval and Project Start	April 2023
Design starts	April 2023

[6]To minimise operational risk and maximise comparability between fuels

Opportunities for installation and commissioning at Worthing Crematorium	October 2023, March 2024, October 2024 (during planned maintenance)
Potential pilot	Winter 2023/24, Summer 23/24, Winter 2024/25
Project Complete	March 2025 (deadline set by funding)

4.13. Following the completion of the pilot project, all infrastructure will be removed, however the council will retain the burners. These should be more efficient than the existing (aged) natural gas-fired burners and will be able to run on either natural gas or hydrogen. Once the pilot has been evaluated a fuller business case will be developed (if appropriate) to fully decarbonise the crematorium using hydrogen technology.

5. Engagement and Communication

5.1. The project team, led by Net Zero Associates, have engaged extensively across the hydrogen and cremation industries and supply chains to compile this bid.

6. Financial Implications

6.1. Overall the Council will receive funding of £205,660 towards the Council's costs of taking this project forward. This will fund all of the costs associated with taking this initiative forward. Under our financial regulations, the Cabinet Member has the ability to approve budget virements of up to £250,000.

6.2. This is a fully-funded proof of concept project and so after the trial the Crematorium will revert to its current operational model and the majority of the pipework will be removed so there are no longer term financial consequences.

6.3. If the pilot is successful, then there will be an opportunity to develop a business case for full conversion of the crematorium to hydrogen fuel in due course.

7. Legal Implications

7.1 Under Section 111 of the Local Government Act 1972, the Council has the power to do anything that is calculated to facilitate, or which is conducive or incidental to, the discharge of any of their functions.

7.2 s1 of the Localism Act 2011 empowers the Council to do anything an individual can do apart from that which is specifically prohibited by pre-existing legislation

7.3 Section 3(1) of the Local Government Act 1999 (LGA 1999) contains a general duty on a best value authority to make arrangements to secure continuous improvement in the way in which its functions are exercised, having regard to a combination of economy, efficiency and effectiveness.

7.4 Section 1 Local Government (Contracts) Act 1997 confers power on the Council to enter into a contract for the provision of making available assets or services for the purposes of, or in connection with, the discharge of the function by the Council.

7.5 Any grant funding received must be spent in accordance with the grant funding conditions and the Council's Contract Standing Orders.

7.6 Further consideration to legal requirements will have to be given at a later date,should the Council decide to switch to this alternative fuel source.

Background Papers

- JSS-C(W)/29/22-23**: Carbon Emissions for 2021/22**
- Carbon Neutral Plan

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Sustainability & Risk Assessment

1. Economic

As a substantial consumer of gas, the crematorium is highly susceptible to gas price volatility. Reducing the councils' reliance on this therefore insulates against future price rises.

2. Social

2.1 Social Value

No impacts identified. Specialist nature of the project and supply chains restricts opportunities for social value.

2.2 Equality Issues

No impacts identified.

2.3 Community Safety Issues (Section 17)

No impacts identified.

2.4 Human Rights Issues

No impacts identified.

3. Environmental

There are potentially significant benefits of conducting this trial insofar as the crematorium is the single largest consumer of gas within the council's current operations.

4. Governance

Health & Safety at the crematorium is vital to its successful ongoing operation. Specific risk management and health & safety firms are involved in the core project team and will ensure that all regulation is adhered to at all times.