Leeds CITY COUNCIL

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Report of: Director of Environment and Housing

Report to: Executive Board

Date: 15 July 2015

Subject: Compressed Natural Gas Filling Station

Capital Scheme Number: 32389/000/000 - Investment in Gas Fuelled Refuse Collection Vehicles

Are specific electoral Wards affected? If relevant, name(s) of Ward(s): Burmantofts and Richmond Hill	☒ Yes	☐ No
Are there implications for equality and diversity and cohesion and integration?	☐ Yes	☒ No
Is the decision eligible for Call-In?	☒ Yes	☐ No
Does the report contain confidential or exempt information? If relevant, Access to Information Procedure Rule number:	☐ Yes	☒ No

Summary of main issues

1. There is an urgent need for the Council to take action to improve Air Quality across the city as public health impacts from pollution are significant. Nationally, the government's plans to improve Air Quality in order to meet 2010 targets set by the EU were dismissed as insufficient and quashed by the Supreme Court in April 2015. The court ruled on the basis that plans would not achieve legal limits in some British cities until after 2030. Client Earth (an environmental pressure group) took the case to the Supreme Court on the basis of the government's failure to plan effectively and to further demand that the EU then expedite the case against the UK government and press for fines for failure to meet obligations. Client Earth's case concerned 16 cities and regions, with Leeds, London and Manchester being repeatedly referred to in national press coverage of this ruling.
2. Poor air quality today is less visible than the smoke and smogs that dominated much of the 20th century. Modern air quality problems, however, are still dangerous in terms of their impact on human health.

3. The Council has therefore been exploring opportunities for reducing its own impact on Air Quality, particularly emissions from transport. A regional Low Emissions Strategy is under development that the Council expects to sign up to, and this will be supported by a clear action plan to reduce emissions. This paper outlines one of the major actions that support this wider objective.
4. Assessment of the feasibility of operating vehicles on natural gas has been undertaken through a successful trial involving five Refuse Collection Vehicles (RCVs), fuelled from a small installation that receives deliveries of natural gas in liquid form. However, to enable the entire fleet of waste collection vehicles to transfer to this cleaner fuel a scalable refuelling infrastructure is required. A proposed Compressed Natural Gas (CNG) filling station, connected directly to the gas main, will allow for a sustainable supply and enable a significant reduction in harmful emissions from the council's waste collection fleet.
5. Soft market testing has revealed that a significant barrier to the private sector investing in and developing a CNG station project is the cost of the connection to the gas main. The private sector is willing to invest in the build/operation of a station, however it has been indicated that the cost of connection to a gas main would make a venture too risky for them to embark on, unless there was an established customer base to support the business case.
6. Without established demand for CNG, investors will be reluctant to develop a station, however without a station, potential early adopters are reluctant to invest in CNG vehicles. As such, this 'chicken and egg' scenario leads to in-action. Consequently, the Council is proposing an innovative model to make a breakthrough and open up opportunities for this cleaner fuel to be introduced to the city.
7. Currently no locations exist in the UK to accommodate large scale conversion of city based vehicles to CNG. These vehicles could include any depot based vehicles for example Refuse Collection Vehicles (RCVs), buses, local taxis, fleet vans.
8. The Council, working with Northern Gas Networks (NGN) as the body responsible for the gas distribution network, is developing a bid to OFGEM's Network Innovation Competition (NIC) to fund elements of a CNG filling station project, most significantly the gas main connection aspect that the private sector have been reluctant to invest in. A key selling point of the bid, is for the CNG Project to act as a business case as a UK proof of concept accelerating private sector investment and the onset of the CNG market at a city wide scale. This would mean that the Leeds CNG station would be accessible to both public and private sector customers. To test the appetite for supporting the project, the Council submitted a screening phase application which has been accepted by OFGEM. Work is now taking place to put together the full bid. Approval for this scheme would allow for significant emission savings to be delivered in respect of the council's transport fleet, with RCVs being put forward as an initial anchor load. This paper therefore outlines the proposal and the approvals required from members.

Recommendations

9. To support the Council's involvement in the NIC bid.
10. To approve the injection of £1.58 million into the Capital Programme to be fully funded by unsupported borrowing (contingent on the success of the NIC bid), for use as set out in this report.

11. To authorise delegated powers to the Director of Environment and Housing to enter into the contractual arrangements with NGN for the delivery of a gas main connection.
12. To support in principle the decision to enter into arrangements with a private sector partner to deliver a CNG station, anticipated to be a joint venture.

1 Purpose of this report

1.1 To inform the Executive Board of the progress made to date in developing a business model that facilitates the build of a Compressed Natural Gas filling station in Leeds.

1.2 To request that the Executive Board provides approval to the request for a commitment from the Council to support this project, including a commitment for the additional funding for the required fleet conversion.

2 Background information

2.3 Overall approximately 25,000 premature deaths are attributed annually to poor air quality in England and these impact most markedly on the young, the old, those form lower socio-economic groups and those with existing cardio-respiratory conditions.

2.4 There are three main transport related air pollutants of concern: Nitrogen Dioxide, Ozone and Particulate Matter. They can all cause both long and short term effects, ranging from shortness of breath and inflammation of lungs in healthy people to worsening the effects of bronchitis, emphysema and asthma and impacting on respiratory, heart and immune systems.

2.5 The Network Innovation Competition (NIC) has selection criteria for applicants to meet in order for bids to be considered. The Council's bid is built on demonstrating a "specific novel commercial arrangement". Bids must also be of benefit to the UK gas customer and must reduce NGN's carbon emissions.

2.6 The bid has been broken down into costed elements. The elements that meet with the criteria above are being applied for through NIC. The other elements are intended to be sourced internally or from the private sector.

2.7 The fundamental aspect of the bid is the need to meet the capital cost of the high pressure main connection. The bid therefore seeks to overcome the key barrier to creating appetite for further investment in the scheme from the private sector.

2.8 Currently there is no commercial mechanism that allows for deferred upfront high pressure connection costs to subsequently achieve pay back (including interest) based on the economic life cycle performance of a CNG fuelling station. Therefore the proposed model would be a new, novel commercial arrangement; structuring the bid this way enhances its chance of success.

3 Main issues

3.1 The successful delivery of a CNG station directly contributes to the City's 'Low Carbon Breakthrough' programme due to the CO_2 savings CNG vehicles offer against diesel counterparts. It will also make a significant contribution to the reduction of harmful emissions from the council's fleet and will therefore support Air Quality targets in line with the Low Emission Strategy Action Plan.

RCV Capital Injection

3.2 There is an additional injection of capital required to allow the Council to convert its refuse collection vehicle (RCV) fleet from diesel to gas. This is due to gas

RCVs attracting a premium of around £22-27k per truck (although it is expected this will reduce over time as use of the technology becomes more prevalent). This replacement would be in line with the existing vehicle replacement programme, and the business case for CNG demonstrates that fuel cost savings would enable pay back on these vehicles within the vehicles' lifetime.

3.3 Information published by The Department for Energy and Climate Change (DECC) shows three different scenarios for future oil price rises. Taking the median scenario, oil prices are expected to increase from 2017 onwards with the curve becoming steeper from 2020 onwards. Based on these predictions, it is likely the price per litre of diesel will rise back to levels of £1.15ppl by 2022. This forms the basis of the assumptions used in the financial business case (see section 4.4.5). The duty differential between diesel and CNG is fixed until 2024.

3.4 The Council's replacement profile from 2017 to 2022 includes 66 RCVs. This means c£1.58m additional capital will need to be injected into the replacement programme over five years to facilitate a full shift away from diesel. RCVs are one of the worst polluters in the city in respect of air quality and the highest consumers of fuel in the Council's fleet (with an average of 3.2mpg).

Land Options

3.5 There is a need to identify suitable land on which to build the station. The high pressure main runs through the Aire Valley, as such the ideal location for a station is within, or in the vicinity of, the Leeds Enterprise Zone (LEZ). The development of the station within or in the vicinity of the LEZ will help to attract companies, especially those with larger fleet, to locate within the area as it will offer them a more sustainable and cheaper alternative to diesel.

3.6 The CNG station together with the Recycling and Energy Recovery Facility (RERF) and Kelda's large wind turbine will give a visible demonstration of our commitment to new low carbon technologies in the wider Aire valley.

3.7 A consultant specialising in CNG identified a plot of land owned by Yorkshire Water that would be ideal in terms of proximity to the gas main and vehicle access from the main road that borders the enterprise zone. CNG converted RCVs, would therefore be able to refuel adjacent to where they will tip waste at the Residual Energy from Waste Plant.

3.8 There are, however, contingency land options which are capable of being pursued in the event that Yorkshire Water's land is unsuitable following further investigations.

NGN Agreement

3.9 If the NIC bid is successful, the basis on which the NIC shall provide the funding for the high pressure main is subject to contractual agreement between the Council and NGN. The costed breakdown of the project elements are as follows:

Project elements	Cost	Source	Recoverable
High Pressure Main Connection	£927k	NIC	Yes [1]
Metering	£50k	NIC	Yes [1]

Land	c£600k	LCC	Yes [1]
Station build	c£2m	LCC/ Private Sector under JV delivery model	Yes [1]
Conversion of RCVs	c£1.58m	LCC	Yes (on an invest to save basis)
OPEX	£100k pa	Private Sector	Yes [1]
Web portal/ marketing/ stakeholder mgmt & support	£260k	NIC	No

[1]Future revenues generated by the operation of the CNG station will be used to repay the recoverable elements

3.10 NGN have suggested a commercial arrangement where the initial funding is provided to the Council from NGN as a 'loan'.

3.11 The Council then enter into arrangements with a private sector operator to deliver payback of the loan based on a percentage of profit from the station related to the volume of CNG offtake. It is proposed that the arrangement between the Council and the operator shall also allow the Council to claim back some of its costs invested in bringing the station to completion.

3.12 The deadline for the full NIC bid submission is 24 July. To give the bid standing, there is a requirement for the Council to agree in principle the commercial arrangements and provide commitment to the other project elements, such as the conversion of the RCVs and land arrangements.

CNG Station Delivery Model

3.13 There are a variety of alternative models which may be suitable for delivery and operation of the CNG station following the development of the gas main connection. These models depend upon the risk appetite of both the private sector and the Council, anticipate the Council providing the land and the gas main connection, and are considered in summary below.

3.14 Sub-contract arrangement – where the Council would procure a sub-contractor to design, build and operate (DBO) the CNG station and would pay the sub-contractor for the capital cost and an operating fee. Any profits would be for the Council's benefit, or subject to a sharing mechanism with the operator to incentivise further profit. The Council would take the most risk in this approach.

3.15 Joint Venture – the Council would procure a partner to DBO the CNG station. Profit and risk would be shared equally. This approach would generally only be suitable if both the Council's and operators priorities are directly aligned. In the

event that they are not, conflicts may arise which may limit the success of the relationship.

3.16 Concession – the Council may let a concession contract to a company to DBO the CNG station. The Council would not make any payment (though would provide the land and gas main connection). The risk of recovering the capital and operating costs, and achieving a profit, would sit with the operator. The Council may seek to receive reduced CNG costs/a sharing of excess profits.

3.17 As the business case is developed in more detail, the risks associated with the options and the potential benefits will need to be fully investigated. If the anchor load provided by the Council is sufficient to allow the station to reach a break-even point, the risk to the Council will be significantly reduced. However, if the full financial analysis shows that a greater throughput than that of the Council is required, the Council will have to determine how much risk it is prepared to take.

4 Corporate Considerations

4.1 Consultation and Engagement

4.1.1 Initial consultation has been commenced with the relevant Executive Member.

4.1.2 Soft Market testing and consultation has established appetite in the private sector.

4.1.3 The impact on the community living and working in the affected ward area is minimal; the proposed location of the filling station is 1.3 miles from the nearest residential property. Staffing of the station is expected to create a modest number of jobs. Anticipated impacts on businesses in the locality are positive, creating opportunities for conversion from diesel to gas, potential operational savings and environmental benefits.

4.2 Equality and Diversity / Cohesion and Integration

Equality, Diversity, Cohesion and Integration Screening assessment has been completed with no impacts identified that require further consideration. The assessment is attached at Appendix 1.

4.3 Council policies and the Best Council Plan

4.3.1 The successful delivery of a CNG station directly contributes to the City's 'Low Carbon Breakthrough' programme, directly contributing to the sub area of making low carbon Leeds a reality by planning for a more sustainable future and setting a revised and improved carbon target for 2050. It will also make a significant contribution to the reduction of harmful emissions from the council's fleet and will therefore also support the sub area of delivering air quality improvements by transforming the Council's fleet of vehicles and establishing a green transport infrastructure.

4.3.2 The affected policies include the Council's Executive and Decision Making Procedure Rules, and the Council's Contract Procedure Rules.

4.3.3 The development of a CNG refuelling station directly contributes to the Council's forward looking commitment of introducing 21st Century infrastructure.

4.3.4 The use of CNG as a vehicle fuel shall directly contribute to a reduction in the Council's carbon emissions, a measurable KPI included in the Best Council Plan.

4.4 Resources and value for money

4.4.1 There are financial and resource implications arising from the CNG project.

4.4.2 In respect of financial implications, the Executive Board is asked to support in principle the injection of additional capital into the replacement programme to allow for the conversion of the RCV fleet from diesel to gas. From a value for money perspective, this investment is anticipated to payback within the lifetime of the vehicles.

4.4.3 Please see table below that shows the capital expenditure profile over the five year replacement period.

4.4.4 Capital Funding and Cash Flow :

Previous total Authority to Spend on this scheme	TOTAL £000's	TO MARCH 2015 £000's	FORECAST 2017/18 £000's	2018/19 £000's	2019/20 £000's	2020/21 £000's	2022 on £000's
LAND (1)	0.0						
CONSTRUCTION (3)	0.0						
FURN & EQPT (5)	0.0						
DESIGN FEES (6)	0.0						
OTHER COSTS (7)	0.0						
TOTALS	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Authority to Spend required for this Approval	TOTAL £000's	TO MARCH 2015 £000's	FORECAST 2017/18 £000's	2018/19 £000's	2019/20 £000's	2020/21 £000's	2022 on £000's
LAND (1)	0.0						
CONSTRUCTION (3)	0.0						
VEHICLES (4)	1584.0		360.0	384.0	48.0	408.0	384.0
DESIGN FEES (6)	0.0						
OTHER COSTS (7)	0.0						
TOTALS	1584.0	0.0	360.0	384.0	48.0	408.0	384.0

Total overall Funding (As per latest Capital Programme)	TOTAL £000's	TO MARCH 2015 £000's	FORECAST 2017/18 £000's	2018/19 £000's	2019/20 £000's	2020/21 £000's	2022 on £000's
USB Departmental	1584.0		360.0	384.0	48.0	408.0	384.0
Total Funding	1584.0	0.0	360.0	384.0	48.0	408.0	384.0
Balance / Shortfall =	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Revenue Implications

There are revenue implications. The additional costs of the unsupported borrowing are anticipated to be met from the savings that can be expected to accrue from using a cheaper form of fuel.

4.5 The capital requirement has been developed using the RCV replacement profile over the five year period from 2017-2022. This is shown in the table below.

	2017/18	2018/19	2019/20	2020/21	2021/22	Total Capital
Number of RCVs to be replaced	15	16	2	17	16	
Capital Costs £ *(on-cost against a standard diesel replacement)*	360,000	384,000	48,000	408,000	384,000	1,584,000

4.6 The capital costs are then offset against the ad blu and diesel savings over the five years lifecycle of each vehicle. The annual repayment and savings profile is depicted in the table below:

	Year 1 £	Year 2 £	Year 3 £	Year 4 £	Year 5 £	Total £
Financing Costs *(@4.5% interest rate)*	87,472	174,922	185,878	278,817	366,289	
Total Costs	87,472	174,922	185,878	278,817	366,289	1,093,378
Adblu Savings	6,242	12,901	13,733	20,808	27,467	
Fuel Savings	74,646	186,520	229,265	373,096	561,153	
Total Savings	80,888	199,421	242,999	393,904	588,619	1,505,832
Total Profit/ Loss	-6,584	24,499	57,120	115,087	222,331	412,453

4.7 There is sufficient resource included in the Low Carbon Breakthrough programme budget to cover the input required from PPPU to formulate the bid documents and engage in the NIC competition process. Should the bid be successful, a further paper will be brought back to Executive Board laying out the proposals for project delivery as a joint venture, which will cover any resource implications going forwards.

4.8 Legal Implications, Access to Information and Call In

4.8.1 The decisions to be taken by Executive Board as detailed in this report are subject to call-in.

4.8.2 Any arrangements to be entered into with NGN for the development of the gas main connection are excluded from the Council's procurement obligations, given NGN's exclusive right in such regard. Any future land interest or contractual arrangements entered into by the Council shall comply with all relevant law and the Council's internal procedures.

4.9 Risk Management

4.6.1 The project to deliver the CNG Filling station reports to the Environment Programme Board. The governance of this board requires a highlight report that will identify risk and issues that require escalation to the board. A risk register will be maintained throughout the project. The risks involved with converting the RCV fleet away from diesel to CNG are as follows:

- The logistics of tipping/refuelling need to be carefully planned to avoid any disruption to services. To mitigate against this, the procurement process shall

need to be sufficiently robust to ensure the specification deals with the operational planning elements.

- There is a risk that the station isn't as successful as hoped, resulting in the cost of CNG remaining at the higher end of the scale due to lower levels of offtake, which would affect the payback of the premium for the RCVs. However, to mitigate this risk, the NIC bid includes an amount of money to fund an intensive marketing programme and web-portal to publish data to showing performance of the station, to encourage its use and replication of the business model in other areas.
- The successful implementation of the CNG station is intrinsically linked to the conversion of the Council's RCVs, an objective that can only be met if the RCVs are located within the same area of the City. Waste management have been involved in all discussions to date on the establishment of the CNG station.
- The business case has been developed using cost projections from DECC on diesel, and CNG priced as per the same and feedback from soft market test respondents, and a CNG consultant. However there is a risk that if diesel prices do not behave as predicted, e.g. rise, then the payback model and fuel cost savings may not be as significant as anticipated.

5 Conclusions

5.1 Moving away from reliance on diesel is an essential component in the drive to cut transport based emissions. As electric vehicle technology is not suitable for all vehicle types, particularly heavy vehicles, then development of infrastructure to bring gas into the range of solutions makes sense from air quality and financial perspectives. The NIC bid provides a viable opportunity to develop a CNG station, which is commercially viable, offers value for money in satisfying the Council's CNG needs and helps towards the Council's Air Quality duties.

6 Recommendations

6.1 Executive Board is asked:

- To support the Council's involvement in the NIC bid
- To approve the injection of £1.58 million into the Capital Programme to be fully funded by unsupported borrowing (contingent on the success of the NIC bid), for use as set out in this report
- To authorise delegated powers to the Director of Environment and Housing to enter into the contractual arrangements with NGN for the delivery of a gas main connection.
- To support in principle the decision to enter into arrangements with a private sector partner to deliver a CNG station.

Background documents[1]

[1] The background documents listed in this section are available to download from the Council's website,

None.

unless they contain confidential or exempt information. The list of background documents does not include published works.