

Birmingham City Council

Report to Cabinet

30th July 2019



Subject: **CLEAN AIR HYDROGEN BUS PILOT: REVISION TO FULL BUSINESS CASE**

Report of: Waheed Nazir – Director, Inclusive Growth

Relevant Cabinet Member: Councillor Waseem Zaffar – Transport and Environment
Councillor Tristan Chatfield – Finance and Resources

Relevant O &S Chair(s): Councillor Liz Clements – Sustainability and Transport
Councillor Sir Albert Bore - Resources

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Are specific wards affected?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No – All wards affected
Is this a key decision? If relevant, add Forward Plan Reference: 006745/2019	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Is the decision eligible for call-in?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Does the report contain confidential or exempt information?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

1 Executive Summary

- 1.1 This report seeks approval to revisions to the Clean Air Hydrogen Bus Pilot (CAHB Pilot) full business case (FBC) which was approved by Cabinet on 24th October 2017, at a total estimated cost of £13.440m (£13.340m Capital, £0.100m Revenue). The project is primarily focussed on research and development and market intervention with the aim of supporting and accelerating the development of hydrogen vehicles as a viable zero emission

transportation option. The proposal is to procure up to 22 hydrogen buses, deploy the buses through a procured bus operator under an operating agreement of up to seven years and to facilitate development of hydrogen production/refuelling infrastructure and hydrogen fuel production.

- 1.2 The cost of the project was originally funded from £3.814m Office for Low Emission Vehicles (OLEV) grant, ££4.081m Joint Undertaking for Fuel Cell Hydrogen (FCHJU) grant, £2.156m GBSLEP Local Growth Fund (LGF) and £3.289m bus operator capital contribution towards acquisition of the buses and £0.040m Council revenue resources.
- 1.3 Since approval of the original FBC £1m OLEV funding has been defrayed (March 2018) to the hydrogen provider, ITM Power, enabling the deployment of the hydrogen re-fuelling site at Tyesley Energy Park and for the hydrogen re-fuelling equipment to be built, ready for installation; £1.340m OLEV grant funding was pass-ported to TFL, as joint applicant, in March 2019 and a framework agreement for the manufacture of hydrogen buses was awarded by Transport for London (TfL) in July 2018. However, difficulties experienced in procuring a third party bus operator partner due to concerns around commercial viability have caused the project to stall. Concerns focussed on the requirement for the bus operator to contribute towards the £11.000m capital costs of bus acquisition in addition to funding the operational costs during the CAHB pilot.
- 1.4 The revisions to the FBC are aimed at addressing bus operators concerns, with the key revision being to the funding strategy with the replacement of the bus operator capital contribution of up to £3.289m, with Clean Air Zone (CAZ) net proceeds up to same value. This is in line with the CAZ Charging Order report approved by Cabinet on 25th June 2019.
- 1.5 As a result of the change to the funding strategy, the procurement strategy has also been revised. The key changes include the removal of the requirement for bus operators to provide a capital contribution towards the bus acquisition costs. There will also be the addition of a requirement for bus operators to provide an outline hydrogen bus deployment plan (with operational costs).that prioritises routes that exceed air quality compliance levels. The revised procurement strategy is shown at Appendix A.
- 1.6 The project plan timeline has been be revised to take account of the delays experienced to date and is shown at Appendix C.
- 1.7 Grant funders have been informed of the proposed revisions and are content for the Council to proceed under the same conditions of grant.

2 Recommendations

- 2.1 Approves the revisions to the Clean Air Hydrogen Bus Pilot (CAHB Pilot) full business case (FBC) funding strategy, originally approved by Cabinet on 24th October 2017, replacing bus operator capital contributions of up to £3.289m

with Clean Air Zone (CAZ) net proceeds up to the same value, and the revised delivery timeline as detailed within Appendix C.

- 2.2 Approves the revisions to the CAHB Pilot FBC procurement strategy originally approved by Cabinet on 24th October 2017, as detailed within Appendix A.
- 2.3 Authorises the Assistant Director Transport & Connectivity to approve the Bus Operator Deployment Plan, as a precursor to the award of the contract to enter into the operating agreement.
- 2.4 Delegates authority to the Director, Inclusive Growth, in conjunction with the Assistant Director, Development and Commercial Finance, the Chief Finance Officer, and the City Solicitor (or their delegates) to award a contract to enter into an operating agreement with the bus operator partner, subject to the outcome of the procurement process
- 2.5 Delegates authority to the Director Inclusive Growth, in conjunction with the Assistant Director, Development and Commercial Finance, the Chief Finance Officer, and the City Solicitor (or their delegates) to award a contract for the manufacture and delivery of up to 22 hydrogen buses subject to the values not exceeding pre-tender estimates and the successful award of the contract for the bus operator partner.
- 2.6 Approves temporary use of corporate capital resources of up to £3.289m to cash flow the final stage payment for the acquisition of the hydrogen buses, in the event of delays to the implementation of the CAZ resulting in insufficient net proceeds being available when required. And notes that this will be repaid from CAZ net proceeds once sufficient funds are available.
- 2.7 Authorises the City Solicitor to negotiate, execute and complete any necessary legal documentation to give effect to the above recommendations.

3 Background

- 3.1 The Clean Air Hydrogen Bus Pilot (CAHB Pilot) full business case (FBC) at Appendix E, was approved by Cabinet on 24th October 2017, at a total estimated cost of £13.440m (£13.340m Capital, £0.100m Revenue), funded from £3.814m Office for Low Emission Vehicles (OLEV) grant, ££4.081m Joint Undertaking for Fuel Cell Hydrogen(FCHJU) grant, £2.156m GFBSLEP Local Growth Fund (LGF) and £3.289m bus operator capital contribution towards acquisition of the buses and £0.040m Council revenue resources.
- 3.2 The project primarily focussed on research and development and market intervention with the aim of supporting and accelerating the development of hydrogen vehicles as a viable zero emission transportation option. The proposal is to procure up to 22 hydrogen buses, deploy the buses through a procured bus operator under an operating agreement of up to seven years and to facilitate development of hydrogen production/refuelling infrastructure and hydrogen fuel production.

- 3.3 The total capital cost of the project includes £11.000m for bus acquisition, £1.340m OLEV grant funding pass-ported to Transport for London (TfL) to support bus manufacturer procurement as joint applicant under the OLEV grant scheme and, £1.000m OLEV grant funding for the development of the hydrogen production/refuelling infrastructure by ITM Power. Subsequently OLEV grant funding of £1.340m was pass-ported to TfL to fund towards their hydrogen buses by March 2018 and OLEV grant funding of £1.000m was awarded to ITM Power by March 2018 under a Conditions of Grant Funding Agreement. Progress to date is detailed within 3.4 to 3.6 below.
- 3.4 As part of the CAHB Pilot, a framework agreement for the manufacture of hydrogen buses was awarded by Transport for London (TfL) in July 2018 from which the Council will call off in accordance with the framework protocol. The framework agreement included the acquisition costs, maintenance costs, servicing costs, warranties and parts replacement costs.
- 3.5 The award of £1.000m of grant funding in March 2018, has enabled development of the ground works for the hydrogen re-fuelling hub at Tyseley Energy Park, with the grant specifically used towards the building of hydrogen re-fuelling equipment, ready for on-site deployment by Autumn 2019.
- 3.6 However, difficulties have been experienced with the procurement of a third party bus operator, due to the market's concerns around commercial viability. Until a bus operator is in place the Council is not in a position to order the buses and as a result the project has stalled. The procurement process has been progressing with effect from January 2018, however, the operator pulled out on 16 November 2018. The CAHB project has since established after market consultation that competitiveness in the Birmingham bus market (as a de-regulated market) is critically dependent upon commercial viability. Specific concerns raised by the market focussed on a combination of the requirement to provide funding towards the capital acquisition costs of the buses, the higher operational costs of hydrogen buses during the pilot, (estimated to be in excess of £5m compared to current diesel bus operational costs including repair and maintenance) and other costs include depot retrofit to address health and safety standards and specific 'fit-out' costs. In summary, where the bus operator is already significantly contributing to increased operational costs, the pressure to provide funding towards the capital costs of the buses, as a condition of the operating agreement, makes deployment commercially unviable.
- 3.7 As noted above the CAHB Pilot FBC (Appendix E) was approved in October 2017. Since then, on the 10th September 2018 the Council approved the CAZ Business Case for a CAZ D+ (covering all vehicles) as the preferred option to address the level of poor air quality. Following CAZ implementation in 2020, subject to specific exemptions and mitigations, all non-compliant vehicles will face daily charges for entering the CAZ. The CAZ additional measures will also include the implementation of controlled parking zones, road closures,

and re-routing signs. Given that private car users, represent 83% of all transport entering the city centre, a key focus for behaviour change/modal shift initiatives, will be to encourage the move towards walking, cycling and public transport (including ultra-low and zero emission options). In addition, if the approved CAHB deployment plan includes switching existing diesel buses on city routes that exceed air quality compliance for hydrogen buses, this will further support the objectives of the CAZ implementation. With the deployment of the hydrogen buses modelled as an additional measure to provide impact on reducing emissions as part of the CAZ implementation actions, the case for the CAHB Pilot to align with the CAZ objectives, is increasingly more significant as part of the revised procurement strategy. Therefore, potential operators will be asked to provide an outline hydrogen bus deployment plan, as part of their tender response, taking account of CAZ priorities for meeting air quality compliance.

- 3.8 In order to unlock the CAHB Pilot it is necessary to restart the procurement process for a bus operator and to do this, the concerns raised around commercial viability detailed in 3.6 above must be addressed. Having considered feedback from the market it is proposed that the funding strategy within the original FBC (at Appendix E, section 3) is revised, replacing the bus operator capital contribution of up to £3.289m, with Clean Air Zone (CAZ) net proceeds up to the same value (as set out 7.3.1). This is in line with the CAZ Charging Order report approved by Cabinet on 25th June 2019.
- 3.9 The original procurement strategy (Appendix E Annex A) approved by Cabinet required a bus operator to currently be operating on Birmingham bus routes, to deploy the hydrogen buses under an operating agreement covering a seven year term. The revised procurement strategy will remove the requirement for bus operators to currently operate a route in Birmingham. Whilst a focus on the replacement of diesel buses with hydrogen buses on existing bus routes remains an option, there are opportunities for operators to consider different routes and bus service options within Birmingham (as this is a de-regulated market allowing any bus operator to operate on any bus route). Bus operators will be required to submit a bus deployment plan as part of their tender. This will need to include proposed deployment route; the level of investment in operational and deployment costs; potential for a revenue share; contribution to CAZ objectives; framework for monitoring and evaluation including hydrogen fuel use, operational costs, kilometres travelled and impact on air quality.
- 3.10 In order to mitigate against the bus operator procurement exercise failing, indicative operational costs associated with the base specification buses will be made available to tenderers as part of the tender process. These indicative costs are based upon the finalised TFL framework agreement rates, which were not available at the time of the original procurement exercise.

- 3.11 As part of the original project FBC the term of the operating agreement had been set at seven years, which aligned with what was estimated to be the useful economic life of a hydrogen fuel cell engine and in turn ensured the funding received from the operator could be recognised as a capital receipt to fund the acquisition of the buses. As a result of the revision to the funding strategy, the opportunity to reconsider the length of the agreement has been taken. Through consultation with the bus industry, it has been confirmed that the proposed term of seven years does align with the lifetime of a fuel cell engine, the length of fuel cell warranties and repair & maintenance contracts and in addition, the term is within the range that would be required to support the level of investment required to deploy the buses and deliver an acceptable return on investment. Once contract negotiation stage is reached with a bus operator, contract length and break clauses, will be agreed in line with the bus operator's proposed deployment plan.
- 3.12 Subject to approval of this report, the high level indicative timescale for the project includes: commencement of the bus operator procurement by August 2019; contract awarded by the end of October 2019; buses ordered by the end of November 2019; and the last tranche of buses delivered by December 2020. Full details of the project timeline are shown at Appendix C.

4 Options considered and Recommended Proposal

4.1 Discontinue the CAHB pilot.

- The opportunity to stimulate development of the hydrogen market and the benefits of initiating zero emission public transport, the economies of scale of bus procurement, hydrogen production, and reduction in operational costs will be forgone.
- The Council's reputation for leadership in implementing key measures to address air quality as part of the CAZ implementation, and actions towards climate emergency zero emission actions will be at risk.
- The Council would be subject to potential clawback of £1.000m of OLEV grant funding already awarded to ITM Power as outlined in 6.5 below.

4.2 Continue the CAB pilot through the use of CAZ net proceeds

This is the recommended proposal.

- The opportunity to stimulate development of the hydrogen market and the benefits of initiating zero emission public transport, the economies of scale of bus procurement, hydrogen production, and reduction in operational costs will be taken.
- Demonstrates proactive leadership of the Council in implementing key measures to address air quality and actions towards climate emergency zero emission actions.

- It aligns with the spend priorities of the Clean Air Zone 'Charging Order' (in reference to 7.3.4 of the CAZ Charging Order report to Cabinet June 2019) for spend of the CAZ net proceeds for zero emission and sustainable transport and infrastructure.
- The Council would not be subject to potential clawback of £1.000m of OLEV grant funding already awarded to ITM Power as outlined in 6.5 below.

5 Consultation

- 5.1 External consultation has been undertaken with Grant Providers (OLEV, FCHJU and GBSLEP) who support continuation of the CAHB Pilot. Consultation has also been undertaken with hydrogen bus manufacturer, hydrogen fuel infrastructure provider, bus operators and large fleet organisations who are particularly supportive of the objectives to reduce hydrogen vehicle and fuel costs through economies of scale.
- 5.2 The Assistant Director Transport and Connectivity (Senior Responsible Officer for the CAZ), Operational Manager for Air Quality and Environmental Services and the Assistant Director Planning have been consulted and support the proposal.

6 Risk Management

- 6.1 CAZ net proceeds are set to commence by July 2020, and the use of specific grant funding has been aligned with the anticipated stage payments to ensure that CAZ net proceeds are not required until December 2020. There is a risk that further delays to the implementation may result in insufficient net proceeds being available when required, To mitigate this risk the report seeks approval to the temporary use of corporate capital resources of up to £3.289m to cash flow the final stage payment. This will be repaid from CAZ net proceeds when received.
- 6.2 Whilst revisions to the FBC have been made to address market concerns there remains a risk that a contract cannot be awarded for a commercial bus operator. Should this occur no capital expenditure will be committed and the Council will review the position, liaising with grant providers and through Council governance as required. Where it is deemed not possible for the project to progress grant funding will be repaid in line with the grant conditions.
- 6.3 Should the order for the buses not be placed by the end of November 2019, there is a risk that the grant funding from the FCHJU will be withdrawn. In this event the project would not progress and grant funding would be repaid. Whilst there are no financial implications, the Council would look to manage any potential reputational risk through evaluating and evidencing the strategies

employed to enable 'readiness' of the bus market intervention within the CAHB pilot.

- 6.4 Once contracted there remains a risk that the bus operator may choose to 'walk away' from the project (e.g. due to commercial performance) prior to the delivery of the required outputs (i.e. within the two years of operation and monitoring). In these circumstances the Council may be subject to grant clawback. As mitigation the operating agreement will include clauses to protect the Council's position, requiring the operator to make good any financial impact.
- 6.5 Should the CAHB Pilot project not progress, the Council faces grant clawback in respect of £1.000m grant awarded to ITM Power, the hydrogen partner, for development of the hydrogen production/refuelling infrastructure. Whilst a Condition of Grant Agreement (COGA) is in place with ITM Power which covers grant repayment in such circumstances, the process may be complex and lengthy. As a result the Council may be required to make good the repayment of £1.000m until resolved.
- 6.6 Risks at 6.1 – 6.5 above are detailed within the full risk register at Appendix B.

7 Compliance Issues:

7.1 How are the recommended decisions consistent with the City Council's priorities, plans and strategies?

7.1.1 The recommendations of this report are fully consistent with the Council Plan 2018-2022, with clean air as key corporate priority, and aligned with the Council's Climate Emergency commitment motion with Climate Change as a sixth priority.

7.1.2 Improving air quality is a key ambition of the Birmingham Health and Wellbeing Strategy and supports the delivery of policies included in the Birmingham Connected Transport White Paper, which in turn, supports delivery of the Birmingham Development Plan and the West Midlands Combined Authority's Movement for Growth.

7.1.3 Birmingham Business Charter for Social Responsibility (BBC4SR)

7.1.4 Compliance with the BBC4SR is a mandatory requirement that will form part of the conditions for this contract. Tenderers will submit an action plan with their tender to cover their commitments that will be evaluated in accordance with the procurement strategy including apprenticeships, employment of local people, and level of spend with local companies, as set out in Appendix A. The action plan of the successful tenderer will be implemented and monitored during the contract period.

7.2 Legal Implications

- 7.2.1 The proposed funding arrangements set out in this report come within the Council's general powers of competence contained in S.1 Localism Act 2011.
- 7.2.2 The Air Quality Standards Regulations 2010 ("the Regulations") that require the Council to meet clean air zone targets in their area, have brought Directive 2008/50/EC of the European Parliament and of the Council on Ambient Air Quality and Cleaner Air for Europe in to UK Law.
- 7.2.3 S.111 Local Government Act 1972 empowers the Council to do anything which is calculated, conducive or incidental to the discharge of any of its functions.

7.3 Financial Implications

- 7.3.1 The total estimated capital cost of the CAHB Pilot approved in original FBC on 24th October 2017 was £13.340m and this has not changed as a result of the revisions within this report. However, the funding strategy has been revised, replacing the bus operator capital contribution of up to £3.289m with CAZ net proceeds up to the same value. In addition, as a result of the delays experienced the profile of expenditure has also been revised. Grant funders have been made aware of the revisions to the FBC and timeline and all have provided confirmation that grant conditions remain unchanged. Further information is provided in the table below and following paragraphs:

	2017/18	2018/19	2019/20	2020/21	Totals
	£m	£m	£m	£m	£m
Hydrogen Buses:					
Capital Costs					
Bus Procurement:					
City Council - 22 buses x £0.5m			3.400	7.600	11.000
Contribution to Transport For London for Procurement of buses <small>Note 1.</small>	1.340				1.340
Hydrogen Infrastructure:					
Contribution towards Hydrogen Compressor, Storage & Dispenser <small>Note 2.</small>	1.000				1.000
Total	2.340		3.400	7.600	13.340
Funding					
Bus Procurement:					
OLEV	1.340		1.244	0.230	2.814

FCHJU				4.081	4.081
GBSLEP			2.156		2.156
CAZ Net Proceeds				3.289	3.289
Sub-Total	1.340		3.400	7.600	12.340
Hydrogen Infrastructure:					
OLEV	1.000				1.000
Total	2.340		3.400	7.600	13.340

Notes:

1. £1.340m Grant funding pass-ported to Transport for London (TFL) to progress bus manufacturer procurement.
2. £1.000m Grant funding awarded to ITM Power to facilitate development of hydrogen production/refuelling infrastructure and hydrogen fuel production.

7.3.2 The total capital cost for the acquisition of twenty two hydrogen buses is £11.000m, funded from £2.156 GBSLEP Local Growth Fund (LGF) grant, £1.474m OLEV grant, £4.081m FCHJU grant and, subject to approval sought within this report up to £3.289m CAZ net proceeds. The cost per bus and the total cost along with the associated funding sources is set out below:

Funding Source	Contribution Per Bus £M	Total Contribution (x22 Buses) £M
OLEV Low Emission Bus Funding	0.0670	1.474
Horizon 2020 / Fuel Cell and Hydrogen Joint Undertaking (FCH JU)	0.1855	4.081
Clean Air Zone net proceeds	0.1495	3.289
GBSLEP Local Growth Fund (LGF)	0.0980	2.156
Total	0.5000	11.000

7.3.3 The capital cost detailed above relate to the base bus specification. The bus operator will, as part of the procurement exercise, be required to confirm any additional costs that exceed this base specification and evidence that they can fund as part of their bus deployment plan additional costs could include seat and floor covering, CCTV security, integrated technology systems such as wifi capability. It will be made clear as part of

the procurement process that the Council will not be responsible for any such costs..

- 7.3.4 In line with the original FBC, in order to protect the Council's obligations under the grant conditions, orders for buses will not be placed until the successful bus operator's deployment plan has been approved as part of the procurement exercise and the associated legal agreements have been signed by the Council and the bus operator, and (the latter to include clauses to protect/mitigate the Council's position in the event the bus operator "walking away" prior to the delivery of the required outputs).
- 7.3.5 It is anticipated that buses will be ordered by the end of November 2019, with buses due to be delivered in 2 tranches of 8 and 14 buses. The final payment will be due upon receipt of the final tranche of buses, anticipated to be December 2020.
- 7.3.6 CAZ net proceeds are set to commence by July 2020, and the use of specific grant funding has therefore been aligned with the anticipated stage payments to ensure that CAZ net proceeds are not required until December 2020. In the event that further delays to the implementation of the CAZ result in insufficient net proceeds being available when required, this report seeks approval to the temporary use of corporate capital resources of up to £3.289m to cash flow the final stage payment. This potential temporary requirement will be factored into the Council 2020/21+ budget process. Any temporary funding will be repaid from CAZ net proceeds when received.
- 7.3.7 As part of the original project FBC the term of the operating agreement had been set at seven years, to align with the estimated useful economic life of a hydrogen fuel cell engine and to ensure the funding received from the operator could be recognised as a capital contribution towards the acquisition of the buses. The proposed revision to the funding strategy has provided the opportunity to reconsider the length of the agreement. Through consultation with the bus industry, it has been confirmed that the seven years term does align with the lifetime of a fuel cell engine, the length of fuel cell warranties and repair & maintenance contracts. In addition, the term is within the range that would be expected to support the level of investment required to deploy the buses and deliver an acceptable return on investment. It will therefore be proposed through the procurement process that the operating agreement will be for a period of up to seven years. The final contract term will be negotiated as part of the procurement process on the basis of the bus operators proposed deployment plan.
- 7.3.8 Future use/ownership of the buses will be reviewed towards the end of the operating agreement in order to ensure best value for the Council. Considerations will include the remaining useful economic life, potential

operating agreement extensions, residual values, asset transfer and the prevalent market. There are no associated grant repayment conditions.

Revenue Implications

7.3.9 The procured bus operator will be responsible for all operational costs including hydrogen fuel, staffing, overnight storage and insurance, servicing, repair and maintenance and parts costs. The procured bus operator will, as part of the procurement process, be required to confirm that all costs can be funded as part of their bus deployment plan.

7.4 Procurement Implications

7.4.1 The revised procurement strategy is set out within Appendix A.

7.5 Human Resources Implications (if required)

7.5.1 The development of the project, procurement activity and the subsequent contract management will be undertaken by Council staff.

7.6 Public Sector Equality Duty

7.6.1 Equality Assessment (EQUA210) is provided as Appendix D, as submitted as part of the CAHB Cabinet report, October 2017. This document is being kept under review.

8 Appendices

8.1 Appendix A – The Revised CAHB Pilot Procurement Strategy

8.2 Appendix B – Updated CAHB Risk Register

8.3 Appendix C- Updated CAHB Milestones and Timeline

8.4 Appendix D –CAHB Equality Analysis

8.5 Appendix E – Original CAHB Pilot FBC 24th October 2017

8.6 Appendix F- Original CAHB Cabinet Report 24th October 2017

9 Background Documents

9.1 Birmingham Clean Air Zone submission of a Preferred Option Business case to Government, Cabinet report 10th September 2018.

9.2 Birmingham Clean Air Zone submission of full business case and request to proceed with implementation, Cabinet Report, 11th December 2018.

9.3 Clean Air Zone Charging Order and Indicative Allocation of Net Proceeds. Cabinet Report 25th June 2019.