

Title: Continuation of Hydrogen Hub Project
Lead Officer: Katie McAuley / Dave Barber
Portfolio Holder: Councillor Alan Rhead
Wards of the District directly affected: All

Summary

To seek approval to progress the potential development of a Hydrogen Hub in Warwick District to the next stages, based upon recommendations in the Hydrogen Hub Feasibility Study Executive Summary attached at Appendix 1 and full (confidential) Feasibility Study at Appendix 2.

Recommendation(s)

- (1) That the findings of the Hydrogen Hub feasibility study as set out in section 1.2.1 be noted as the basis for progressing a hydrogen hub proposal to the next stages
 - (2) That specialist commercial partnership advice is procured to establish effective and compliant processes to enable the Council to bring on board a development partner (or partners) to deliver the Hydrogen Hub
 - (3) That a budget of up to £50,000 be set aside from the Climate Action Fund to procure the specialist commercial partnership advice proposed in Recommendation 2
 - (4) That once a preferred development partner has been identified, a further report be brought to Cabinet to seek approval to proceed with the development of a hydrogen hub, including the detail of the financial arrangements and implications of its delivery and ongoing management
 - (5) That an exemption from the procurement code of practice be agreed as set out in para 1.6.1 to 1.6.5 to enable ongoing consultancy advice to be provided by Kingscote Enterprises on the hydrogen hub and associated matters such as power supply.
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1 Background/Information

1.1 Hydrogen Hub Background

- 1.1.1 As set out in the Climate Change Action Programme (agreed in November 2021) the ambition for a Hydrogen Hub in the District warranted the commissioning of an initial feasibility study and strategic outline case. The feasibility study has since been completed and sets out that the development of a Hydrogen Hub producing green hydrogen is indeed feasible and could offer significant benefits to the district, not only in terms of decarbonisation (a key priority within the Climate Change Action Programme), but also commercial benefits. Please see Appendix 1 for the executive summary of the feasibility study.
- 1.1.2 Green hydrogen is produced using only renewable energy, meaning it can be regarded as zero-carbon and, as such, could benefit from subsidy schemes such

as government grants towards the development process, the capital costs incurred during the construction of the hub, as well as a financial contribution to the purchase price of the hydrogen when produced.

- 1.1.3 The work undertaken to date has explored 3 different Hydrogen Hub models, focusing on 1MW and 3MW electrolyzers, but also contemplating a 5MW electrolyser, for the electrolysis process which produces the hydrogen. The costs to deliver the 1MW and 3MW models are approximately £2.1m and £3.7m respectively, however it should be noted that WDC would not be expected to provide funding for this in its entirety. Funding options are explored further in 1.2.1 and in Appendix 1.
- 1.1.4 Ahead of any potential commercial benefits, one of the principal reasons for the local production of hydrogen would be to fuel the Council's RCV fleets, to achieve the CCAP's ambitions. With all 3 electrolyser sizes covered in 1.1.3, there would be sufficient capacity to produce enough hydrogen to fuel the RCV fleets and have varying degrees of surplus hydrogen supply. The surplus would provide a number of opportunities, including the potential to sell hydrogen commercially. Further exploration of these options would be required during the next stage of the project development process.
- 1.1.5 The cost of retrofitting the Council's RCV fleets with dual fuel adaptation technology is expected to be between £35,000-£45,000 per vehicle, of which there are around 30. It should be noted that the retrofitting of the vehicles is subject to operational conversations to establish its impact on performance. These conversations would be had as part of further feasibility stages of the hydrogen hub project.
- 1.1.6 In addition to these operational conversations and in parallel with our work to identify a development partner, we would liaise with Stratford District Council to make a case for the conversion of the vehicles and to establish their appetite for jointly funding the conversion of some or all of the RCV fleet. Once the level of input is understood, this will be incorporated into the project plans going forward.
- 1.1.7 The retrofitting of the Council's RCVs is estimated to reduce carbon emissions by 490 to 1,000 tonnes per year. Given that the total annual carbon emissions for all of Warwick and Stratford District Councils' contract vehicles is around 3,200 tonnes, this would be a significant reduction.
- 1.1.8 It should be noted that this report does not look to seek approval for the development or construction of a Hydrogen Hub, but instead seeks to progress to the next stage of identifying a potential development partner with whom the detail can be worked up. A further report will therefore be brought to Cabinet in due course, providing further detail and considering the business case and approach for the development of the Hydrogen Hub.

1.2 Recommendation (1)

- 1.2.1 As detailed in Section 1.1, the Feasibility Study has produced a promising outlook on the potential opportunity that is the addition of a Hydrogen Hub in Warwick District. Key findings, taken from the full Executive Summary in Appendix 1, are as follows:
 - A green hydrogen production facility and distribution station would produce hydrogen for the supply of fuel to zero carbon refuse collection vehicles (RCVs) owned by the council and currently operated by the Council's waste collection contractor.
 - There are retrofit technologies that could be applied to the existing RCV fleet

to commence decarbonisation once the hydrogen hub is available and operational.

- To fuel the RCV fleet, WDC would require a 1MW electrolyser (1 MW electrical input). This would be capable of over-production by about 20%, which would be absorbable within the business case without external hydrogen sales.
- A 1MW facility would cost around £2.1m to deliver whereas a 3MW plant would cost around £3.7m.
- A 3MW facility would reduce the cost of hydrogen from £12.09 to £8.11 per kg, which in the context of the anticipated upsurge in demand for hydrogen over the coming years may be worth considering. Further increases in production may potentially reduce the cost of hydrogen further.
- it would be possible to produce and supply hydrogen profitably whilst maintaining or reducing the cost of fuel for the fleet.
- Hydrogen can only be considered 'green' or zero carbon if all of the power utilised to drive the electrolysis process is renewable. This would likely need to be supplied through a mix of grid delivered power purchase agreements and locally generated electricity delivered through the grid or directly connected renewable generation. The cost of such delivery reduces significantly with direct connection.
- There are a number of known potential solar PV developments in the area and WDC is in discussion with the main protagonists regarding potential offtake and / or acquisition.
- Government policy is currently very supportive of low carbon hydrogen production and there are a number of subsidy schemes that WDC could benefit from in the delivery of a hydrogen hub (detailed in Appendix 1).
- Delivering a hydrogen hub would require significant engagement with a relatively new industry in the UK but contracting structures and processes are well understood and discussions to date have indicated that there are a number of potential private sector partners that could work with WDC.
- In terms of location, the following sites were considered: the Stratford Road depot, Harbury Lane playing fields and Greys Mallory (on the site of the proposed New House Farm development). Greys Mallory / New House Farm has been identified as the preferred site given its location close to the strategic road network (between junctions 13 and 14 of the M40), access to the grid and local renewable generation, and current plans for the local area.
- The local benefits of developing a hydrogen facility would be a mixture of financial, economic, social and environmental. The facility would provide a solid financial return to WDC in whichever capacity the council chooses to participate.
- It is recommended that the potential hydrogen hub development proposed by WDC progresses to the next business case stage. Further discussion with market is also recommended with a view to identifying potential development partners and participants in terms of vehicle provision and retrofit, power systems and renewable electricity, technology providers, dispensers and operators.

1.2.2 Given the key steps outlined above from the Feasibility Study, it is recommended that these are taken as the basis for progressing a hydrogen hub proposal to the next stages.

1.3 Recommendation (2)

- 1.3.1 Given that the Council remains ambitious to deliver a green hydrogen hub to fuel our own fleet vehicles and if viable to provide green hydrogen to the market, it will be necessary to partner with a commercial partner to provide expertise and finance that is beyond the scope of the Council. Given that this is a new type of venture for Warwick District Council, it is recommended that WDC procures specialist commercial partnership advice to support a compliant and effective process for bringing this commercial partner on board. At this stage, officers are of the view that the process for doing this and the partnership model to plan and deliver the Hub should be flexible. The adviser would initially work with the Council to scope out options for the process and the partnership vehicle before then acting alongside the Council in the procurement and/or negotiation process. This will not only ensure an effective and compliant partnership/collaboration but will also ensure the Council's best interests are served and risks to the Council are minimised.
- 1.3.2 In tandem with work alongside internal legal and procurement officers, this advisor would help WDC to construct a form of partnership, or a 'delivery vehicle', through which the Hydrogen Hub proposal could be driven forward, in partnership with a private sector company.
- 1.3.3 It is acknowledged that developing and managing a Hydrogen Hub are not areas of expertise for the Council. It is therefore assumed that some form of partnership with industry specialists will always be required, but the design of how an arrangement like this might be structured to best protect the Council's interests in the proposal moving forward is where an advisor experienced in this area would be best placed to assist.

1.4 Recommendation (3)

- 1.4.1 Subject to Recommendation 2 being agreed, a sum of up to £50,000 is recommended to be set aside from the 2022/23 Climate Action Fund for this specialist role. No additional funding from other budgets will be requested for this piece of work. It is expected that the cost of the initial advice will be substantially less than £50,000. However, it is not currently known to what extent the Council will require ongoing support in negotiations with prospective development partners. In the event that these negotiations are complex, there could be a requirement for ongoing advice. Flexibility has therefore been built into the costs to allow for this.

1.5 Recommendation (4)

Prior to any commitment to progress to the development a hydrogen hub, a further report will be brought to Cabinet in due course. This timing and precise content of the report will largely depend on the outcome of the advisor's assistance, the further work carried out by the specialist hydrogen consultants, Kingscote Enterprises (as set out in para 1.6.1 to 1.6.4) and any dialogue with potential commercial partners.

1.6 Recommendation (5)

- 1.6.1 While we have already received the Feasibility Study and Strategic Outline Case for the Hydrogen Hub from Kingscote Enterprises, of which both contain useful information around the practicalities of the development of a Hydrogen Hub,

there remains a great deal of further exploration required to be able to confidently say that a Hydrogen Hub in Warwick District would be a good investment.

- 1.6.2 Technical details such as the effective running of a private wire from a local solar farm to the Hydrogen Hub site, grid connections (and capacity) and negotiations with other renewable energy providers in the local area are all areas which need exploring by those with technical expertise.
- 1.6.3 It is for this reason that it is recommended the original consultancy contract with Kingscote Enterprises is extended for a further 18 months (until approx. end of 2023) for a maximum sum of £40,000. These funds would come from the Climate Action Fund, meaning there is no request to be made to release funds from another budget.
- 1.6.4 It is anticipated that, once a Development Partner comes on board, the requirement for specialist consultancy in this area might lessen. However, until the partnership model has been worked through and WDC has a clear idea of how the relationship will work, it is recommended that the current consultants' contract be extended up to the end of 2023. The consultants' work would be on a call-off basis.
- 1.6.5 Kingscote Enterprises was originally awarded a contract for phase 1 for a value of up to £50,000 by exemption. An extension of this contract by 18 months up to an additional maximum sum of £40,000 increases the contract award to £90,000. In accordance with the Code of Procurement Practice, a contract increase above £50,000 requires an exemption to be granted by members. It is therefore requested that an exemption is granted to the Council's Codes of Procurement Practice to enable an increase in value to the contract awarded to Kingscote Enterprises, to £90,000.

2 Alternative Options available to Cabinet

- 2.1 The alternative to procuring an advisor experienced in the field of public/private sector commercial partnerships would be for Cabinet to recommend that officers independently attempt to bring on board a Development Partner for the Hydrogen Hub, without any specialist knowledge. Nonetheless, within this scenario, officers would still be advised by a solicitor on legal matters.
- 2.2 The alternative to granting an exemption to the procurement code of practice in relation to the contract with Kingscote Enterprises would be for Cabinet to recommend that officers do not extend this contract and instead pause this stage of technical research, until an underdetermined future point. This would delay progress to the Hydrogen Hub proposal, as there would still be unanswered questions by the time a Development Partner could be onboarded, which would cause a knock-on delay to the next stage of work.

3 Consultation and Members' comments

- 3.1 This report was discussed at the Climate Emergency PAB on Tuesday 14th June. Members were generally supportive but detailed feedback to follow.

4 Implications of the proposal

4.1 Legal/Human Rights Implications

- 4.1.1 In terms of legal implications, Recommendation 2 aims to set out a legally compliant procurement process for the specialist commercial partnership advice. Recommendation 5 acknowledges that the contract with Kingscote Enterprises has come to an end and aims to extend this contract through a legally compliant process.

- 4.1.2 Legal advice will be sought at the appropriate time on potential options to develop the Hydrogen Hub, including any land and property implications.
- 4.1.3 In relation to the full Feasibility Study, this will be treated as a confidential appendix for the following reason: it contains information relating to the financial or business affairs of any particular person (including the authority holding that information).
- 4.1.4 The appendix could become public once the hydrogen hub is developed or after the final decision has been made not to proceed.
- 4.1.5 There are no human rights implications of the proposal.

4.2 Financial

- 4.2.1 The combined sums of £50,000 for Recommendation 2 and £40,000 for Recommendation 5 will be funded by the Climate Action Fund, which is already committed. This means there will be no requests for additional funding from other budgets.

4.3 Council Plan

- 4.3.1 The development of a hydrogen hub has the potential to supply a low carbon fuel for Council fleet vehicles and for businesses across the area. If developed, it will support the Clean, Green and Safe and Enterprise & Employment strands of the Business Strategy. In the longer term it has the potential to provide an income source to support the Council's requirement for a firm financial footing.

4.4 Environmental/Climate Change Implications

- 4.4.1 The hydrogen hub, if developed will support the achievement of the Council's Climate Change ambitions, specifically:
 - a) the ambitions to be a net zero organisation by 2025 and that services provided through contractors deliver net zero by 2030
 - b) The ambition to reduce the District Carbon emissions by 55% by 2030.

The proposals take forward a number of the specific commitments set out in the Climate Change Action Programme, most notably commitment 7.2 which seeks to explore the development of hydrogen production and storage facilities.

4.5 Analysis of the effects on Equality

- 4.5.1 At this stage of the Hydrogen Hub project, officers do not deem an Equality Impact Assessment necessary. However, it is acknowledged that an EIA will be required ahead of the development stage of the project.

4.6 Data Protection

- 4.6.1 There are no data protection issues within the proposal.

4.7 Health and Wellbeing

- 4.7.1 As with the Equality Impact Assessment, further Health and Wellbeing assessments are deemed necessary for the next stages of the project.
- 4.7.2 For this current stage, the immediately obvious health and wellbeing benefit would be the improved air quality with the adoption of low-emission fuel, which would in turn help combat respiratory issues.

5 Risk Assessment

- 5.1 If the Hydrogen Hub proposal reaches the point where the Council is considering its development, an in-depth risk assessment will be required. Within this risk

assessment, a variety of risks would be covered, but some worth raising now are:

- The risk that the demand for hydrogen might not be sufficiently high to justify the levels of hydrogen production by the time the hub is constructed. As covered in Appendix 1, the feedback on market research states 'the perception is that hydrogen vehicles are some way off and as such it would take time for demand to emerge. This will evolve over the coming years, but it could be reasonably expected that demand will grow alongside the increase in production.' Therefore, it is reasonable to believe that it might always be difficult to know the right time to invest in a hydrogen hub, given that the demand will only increase in conjunction with the supply.
- The risk that the retrofitting devices could bring operational issues that were irresolvable, which would complicate the process of fuelling the Council's RCV fleet with hydrogen. In the event that retrofitting is not feasible, for whatever reason, there might be the risk that new vehicles are required, which would potentially cause delays to the refuse collection service and impact performance levels. This is something that would be explored in much greater detail should the project reach the next stage.
- In addition to operational issues, there is also the potential risk that Stratford District Council, who have shared the cost of the RCVs, may not wish to share the cost of the conversion. As previously noted, the average cost of conversion is likely to be around £40,000 per vehicle and with approximately 30 vehicles across both Warwick and Stratford District Councils, this could amount to approximately £1.2m to convert the whole fleet. However, this may be mitigated if the hydrogen fuel costs are lower than diesel fuel costs. While Stratford's decision not to contribute would mean alternative approaches would need to be explored, it does not necessarily mean the project would become unviable. Nonetheless, in-depth discussions will need to be had during the next feasibility stage to assess Stratford's appetite for investment in RCV conversion and the impact, either way, on the project's progression.

5.2 However, at this stage and in relation to the recommendations in this report, the following are deemed to be the main risks:

- The risk that we procure an advisor to help us onboard a Development Partner, only to find that there is not a suitable partner available. This would not only put a stop to the project, but the Council would also have spent up to £50,000 on the advisor's services, without benefitting from the desired outcome. This eventuality seems unlikely, given the information provided in the Feasibility Study, and given that this is a growing industry.
- The risk that we might not be able to deliver a Hydrogen Hub, even after extending the consultancy contract, procuring an advisor, and onboarding a Delivery Partner. This could be due to lack of suitable locations, or if funding the development becomes unfeasible. Again, this eventuality seems unlikely, given that the Feasibility Study has identified a preferred location and a suitable 'Plan B', in addition to setting out a number of subsidies available for green hydrogen projects.

6 Conclusion/Reasons for the Recommendation

6.1 The report sets out the way forward for the next stage towards the development of a hydrogen hub. In particular for the reasons set out in section 1 of the report, it seeks agreement to procure specialist advice to progress the concept and to bring a development partner on board. The funding for these next steps can be

accommodated from within the existing Climate Action Fund budget.

7 Background papers

7.1 None.

Report Information Sheet

Please complete and submit to Democratic Services with draft report

Committee/Date	Cabinet - 6 th July 2022	
Title of report	Continuation of Hydrogen Hub Project	
Consultations undertaken		
Consultee *required	Date	Details of consultation /comments received
Ward Member(s)	N/A	
Portfolio Holder WDC & SDC *	20.06.22	Cllr. Alan Rhead
Financial Services *	13.06.22	Andrew Rollins & Steven Leathley
Legal Services *	13.06.22	Kathryn Tebbey
Other Services	13.06.22	Rebecca Reading
Chief Executive(s)	13.06.22	Chris Elliott
Head of Service(s)	10.06.22	Dave Barber
Section 151 Officer	13.06.22	Andrew Rollins
Monitoring Officer	13.06.22	Andy Jones
CMT (WDC)	N/A	
Leadership Co-ordination Group (WDC)	20.06.22	
Other organisations	N/A	
Final decision by this Committee or rec to another Ctte/Council?	Yes	Recommendation to :Cabinet / CouncilCommittee
Contrary to Policy/Budget framework		No
Does this report contain exempt info/Confidential? If so, which paragraph(s)?		No
Does this report relate to a key decision (referred to in the Cabinet Forward Plan)?		Yes, Forward Plan item-1293 scheduled for 6 th July
Accessibility Checked?	Yes	File/Info/Inspect Document/Check Accessibility