

Committee(s)	Date(s):
Corporate Asset Sub-committee – For decision	05 09 2018
Resource Allocation Sub-committee – For decision	04 10 2018
Subject: Feasibility study to expand Citigen energy network	Public
Report of: The City Surveyor (Report ref. CS 357/18)	For Decision
Report author: Andrew Crafter, Principal Engineer, City Surveyors Department	

Summary

This report seeks the approval of Members to undertake a feasibility study in accordance with a Government scheme targeted at Local Authorities to examine how the Citigen energy network might be expanded within the area to the south of Smithfield. The scheme provides technical advice for heat load mapping, feasibility, detailed project delivery models, and commercialisation.

The scheme is open to all Local Authorities and offers grant funding of up to 67% towards the cost of the study. The balance would be shared equally by the City Corporation and Citigen.

This scheme provides an excellent opportunity at a suitable time to develop plans to expand the Citigen energy network, led by the City. After many years with little or slow development, it would mark the first step forward in the strategic expansion of the CHP system, a position not envisaged since the system's inception in the early 1990s.

Recommendation(s)

Members of Corporate Asset Sub-committee are invited to approve the proposal to undertake a feasibility study at a cost of up to £100,000 in accordance with the Government scheme described in this report to examine how the Citigen energy network might be expanded within the area to the south of Smithfield subject to a successful grant application for 67% of the cost and a 16.5% contribution from Citigen.

Members of Resource Allocation Sub-committee are invited to note the contents of this report and approve the contribution of up to £16,500 (16.5% of the total cost, estimated at £100,000) to be allocated from the Community Infrastructure Levy towards the cost of the study.

Main Report

Background

1. The City of London Combined Heat and Power (CHP) system is operated by Citigen (London) Ltd from their energy centre at 47-53 Charterhouse St, EC1, and generates electricity, heat and cooling. Electricity generated is sold via the grid through the parent group, whilst hot and chilled water are circulated via an underground district pipe network to a number of City and private properties for heating and air-conditioning purposes.
2. The City Corporation supports the development of the system and has a long-term cooperation agreement with Citigen running to 2021, which provides the framework for this support. Commercial negotiations are on-going to extend the agreement. The City's planning policies encourage the development of low-carbon heat networks in line with GLA, Government and international policies.
3. The existing district pipe network is ca. 2 kilometres in length, and runs from the energy centre to the Barbican, Guildhall and Museum of London, serving a total of 19 customers. Appendix 1 provides a map of the system. It has not expanded since the last section was installed in 1998, although a number of branches have been added since then to connect new customers, which is continuing.
4. Since 2013, the Government has been encouraging the development of heat networks for environmental reasons - in pursuit of its decarbonisation agenda. It has a target of increasing the proportion of heat supplied to buildings in the UK from heat networks from 2% to 18%, as most recently set out in its 'Clean Growth Strategy'.
5. To provide support (technical guidance and grant funding) to local authorities in England and Wales to progress the development stages of heat networks projects, the Government established The Heat Networks Delivery Unit (HNDU) within the Department of Energy and Climate Change in 2013 - now the Department of Business, Energy and Industrial Strategy (DBEIS). Since its inception in 2013, HNDU has awarded support to over 200 schemes across 140 local authorities in England and Wales, including over £17 million of grant funding.
6. Round 8 of the scheme opened in May 2018 and runs to 31 December 2018. Local authorities may apply for up to 67% of the estimated eligible external costs of the development studies, with the remaining 33% to be secured by the local authority in match funding. Details of the scheme can be viewed at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/707805/HNDU_Round_8_guidance.pdf. The scheme is only open to local authorities, although third parties may contribute to the match funding. A detailed description of each stage can be seen at Appendix 2.

Current Position

7. After 25 years of operation, the Citigen network is at the stage at which strategic expansion needs to be considered. The HNDU scheme provides the opportunity for a detailed study to be carried out in a structured manner with external support and guidance, with up to 67% of the cost being met by Government.
8. The City and Citigen have agreed that, if approved, a study could be undertaken under the scheme which focuses on development of the system within the area

south of Smithfield. The study would include both the heating and cooling networks. The reasons for selecting this area are:

- Completion of the full route as far as London Wall Car Park would link up with the existing network, forming a ring circuit (allowing heat and cooling supplies from both directions), increasing the capacity and resilience of the entire network, being key aims of both the City and Citigen;
 - It offers good prospects for new heating and cooling connections from existing properties along the route, underpinned by good 'anchor' loads. Its entire length lies within the City's boundary;
 - The route would allow the connection of Central Criminal Court, an aim previously supported by Corporation committees. Other than the Barbican Estate, the Courts are the last major Corporate property in the City still to be connected to the CHP system;
 - The route would also allow St Paul's Cathedral to be connected, which previously expressed interest; Paternoster Square and the BT Headquarters in Newgate Street would be further valuable customers if they could be secured, also Barts Hospital when their current CHP unit becomes due for renewal;
 - It would address the capacity constraint in the existing district cooling network;
 - It can make use of the City's existing pipe subways. There may be a case for extending some of these in conjunction with any new pipework installed;
 - The high-profile customer connections and backing of the City could make this a 'flagship' for the scheme and the energy industry, re-establishing Citigen's reputation as one of the UK's leading district energy schemes.
9. Citigen have no other known plans for the strategic expansion of the network and recognise the need for the City Corporation to be closely involved in the future expansion.
10. The City and Citigen met HNDU at DECC offices in 2016. Indications were that an application from the City would be well received.
11. It is estimated that the construction phase could take up to 10 years to complete at a cost of £15-20 million (for which further Government financial support would be available). It would be a complex project ideally carried out in phases.

Proposals

12. It is proposed, subject to Member approval, to submit an application to DBEIS HNDU for support under the HNDU scheme in accordance with the guidelines published to undertake a full study for the area identified.
13. It is estimated that such a study would take around six months and cost around £100,000. Citigen have confirmed in writing that they are fully supportive of an application being made to DBEIS on this basis and are willing to contribute to the cost.
14. It is proposed that the City's application would be for the full 67% of the total cost. Citigen have confirmed they are willing to share the cost of the balance, £33,000, equally with the City. It is proposed subject to Member approval that the City's share, £16,500, would be met from the Community Infrastructure Levy (CIL). This

would also demonstrate to Citigen a commitment by the City to the system development with both financial support and staff resources.

15. CIL funding may be subject to a requirement that should the study conclude the expansion is unfeasible, CIL payments may be reimbursable. However, the likelihood of this is considered remote.
16. If approved, the study would be led and coordinated by the City Corporation. Citigen would provide information and assistance. External consultants acceptable to all parties would be engaged to carry out the main work.
17. HNDU state they will help identify potential issues and raise pertinent questions as the project progresses, provide guidance on tender specifications, review critical project documentation, help steer the local authority on the most effective project development path, provide telephone and email support and attend key project meetings. The outcome of the study will be a publically-available detailed report with appendices, the starting point for whichever party executes the project.

Corporate & Strategic Implications

18. The system supports the following Strategic Aims:

- To provide modern, efficient and high quality local services and policing within the Square Mile for workers, residents and visitors with a view to delivering sustainable outcomes.
- To provide valued services to London and the nation.

19. As a low-carbon energy source, the CHP system has a key role to play in future energy supplies for the City, supporting the London Plan and City's Local Plan and national policies, and has the potential for major expansion. The recently completed City of London Zero Emissions Study promotes the use of district heating/cooling networks using waste heat sources as an important element of the transition to a zero carbon City. If the City wishes to see its carbon emissions reduced in line with the recommendations of the Committee on Climate Change then systems such as Citigen will need to be replicated across London.

Implications

20. Advice from the Comptroller & City Solicitor has been received that any grant awarded under the scheme would not infringe State Aid rules and therefore there is no requirement to limit the amount sought in any application to meet such rules.

Conclusion

21. This Government scheme provides an excellent opportunity at a good time to develop plans to expand the existing Citigen energy network, led by the City. After many years with little or slow development, it will mark the first step forward in the strategic expansion of the CHP system.

Appendices

- Appendix 1 – Current map of the CHP System
- Appendix 2 - Stages of the HNDU scheme

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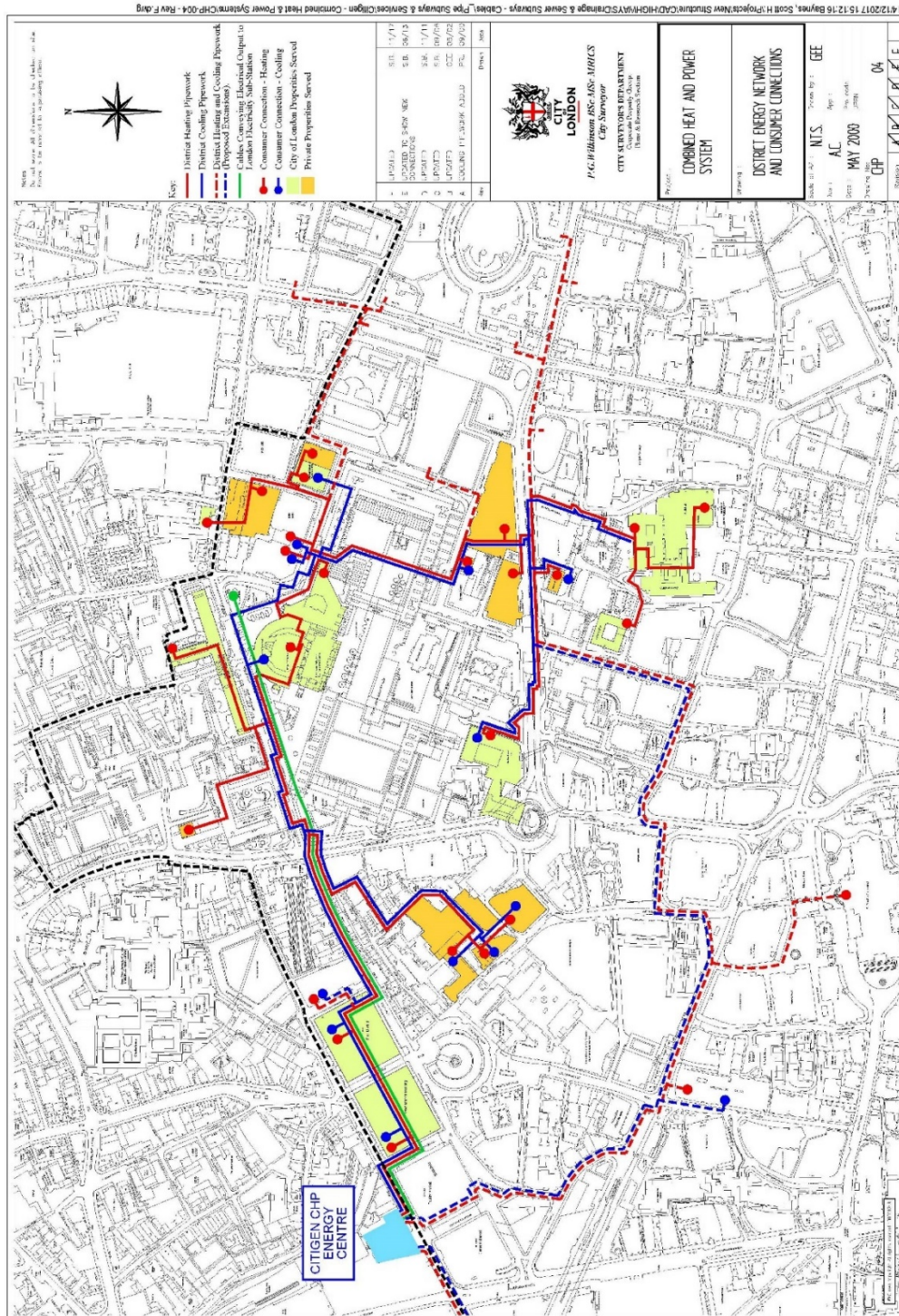
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Appendix 1 – Current map of the CHP System

The map below shows the location of the CHP system pipework. Dotted lines indicate future expansion options.

The blue and red dotted lines running from Charterhouse Street to London Wall to the south of the existing network, referred to as the 'Southern Loop', would form the subject of the proposed study. The length of this is about 1 kilometre.



Appendix 2 – Stages of the HNDU scheme

Heat Networks Delivery Unit (HNDU) Round 8

Stage	Detail
1. Heat mapping	Area-wide exploration, identification and prioritisation of heat network project opportunities.
2. Energy master planning	Area-wide exploration, identification and prioritisation of heat network project opportunities.
3. Feasibility study	Technical feasibility and options appraisal; scheme definition and concept design; detailed techno-economic modelling; development of financial model; initial scheme-specific business model/commercial structures options identification & evaluation; delivery programme.
4. Detailed project development	Development of business/commercial model and financing options; development of outline business case (typically green book compliant depending on scheme size); development of detailed financial model; development of procurement strategy; further scheme design including development of proposed network route, network sizes, and customer connections, development of proposed energy centre solution and location; costing reviews to improve cost certainty; initial scoping and development of commercial agreements; soft market testing.
5. Commercialisation	Reasonable legal costs such as in relation to developing customer commercial agreements, heat supply contracts, necessary land purchase, land access arrangements, etc.; further development of tariff structure for customer contracts; further development of financial model and business case and associated commercial advice costs where necessary. Potential for preparatory works depending on scheme needs, assessed on a case-by-case basis.