



HEAT NETWORKS INVESTMENT PROJECT

CONSULTATION

Capital funding for building heat networks

Submission from the Chartered Institution of Building Services Engineers

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About the Chartered Institution of Building Services Engineers (CIBSE)

CIBSE is the primary professional body and learned society for those who design, install, operate and maintain the energy using systems, both mechanical and electrical, which are used in buildings. Our members therefore have a pervasive involvement in the use of energy in all types of buildings the UK. Our focus is on adopting a co-ordinated approach at all stages of the life cycle of buildings, including conception, briefing, design, procurement, construction, operation, maintenance and ultimate disposal.

CIBSE is one of the leading global professional organisations for building performance related knowledge. The Institution and its members are the primary source of professional guidance for the building services sector on the design and installation of energy efficient building services systems to deliver healthy, comfortable and effective building performance.

CIBSE has worked closely with the Association for Decentralised Energy (ADE) on the development of CIBSE Code of Practice 1 on Heat Networks¹ to provide a comprehensive, industry-led set of voluntary technical standards for heat network construction and operation. Further work in partnership with ADE is almost complete on a set of client checklists supported by a simple excel spreadsheet monitoring tool to enable clients to assess effective delivery against the Code or Practice, and these will be published very shortly.

CIBSE has established a register of Heat Network Consultants, who have undertaken training in the topic and in the use of the Code of Practice, and will be adopting the checklists once published. CIBSE is collaborating with the ADE on the rollout of the checklists and on promotion of the Register as an authoritative source of access to appropriate professional support for district heating schemes.

The Institution is also seeking to gain UKAS accreditation for the Register.

We therefore welcome the proposed use of CP1 in the consultation document to support compliance checking of schemes seeking access to funding through the Heat Networks Investment Project.

To supplement this response the latest draft of the CIBSE/ADE CP1 Client Checklist and supporting excel spreadsheet are included within the package for your further information. These are due to be published shortly, and we will inform you when publication is announced.

¹ <http://www.cibse.org/knowledge/cibse-otherpublications/cp1-heat-networks-code-of-practice-for-the-uk-new>

Notes on the response

We understand the preference for responses via the online form. However, this does not make it easy for responses to address any aspects that are not included in the form, and it also precludes the Institution easily publishing its response, which is our standard policy both for transparency to the membership and because, as a charitable body, it is appropriate for us to publish our responses to all government and parliamentary enquiries.

Response**General comments**

The Institution supports the proposed investment in the Heat Networks Investment Project. Heat Networks are long term infrastructure projects and require long term policy stability. The proposed investment helps to provide a clear signal to the public sector and also to demonstrate a clear commitment to potential private sector investors in district heating systems.

We also note that the 2016 Progress Report published by the Committee for Climate Change, whilst acknowledging the contribution made by the Heat Networks Investment Project to the delivery of low carbon heat, also calls for further investment and policy measures in this field. The report goes on (in Box 3.1, page 88) to note the important role of heat networks in contributing to carbon abatement. For these reasons CIBSE considers that the Heat Networks Investment Project is a particularly important initiative, which the institution wholeheartedly supports.

The Report continues, in Chapter 3 section 3 on page 90 to note the paucity of data on heat network deployment. It is therefore essential that the Heat Networks Investment Project (HNIP) is implemented in such a way that monitoring and reporting on the outcomes of projects is a mandatory activity, and that public taxpayer funding is absolutely conditional on full monitoring and reporting of supported networks.

Ideally the data collected would be made publicly available on the web to provide feedback and to demonstrate the achievements being made in the sector. This would go some way to implementing the Committee for Climate Change call for greater data collection and reporting.

1. Do you agree that the proposed Pilot phase should be aimed at local authorities?

- Yes
 No

2. Are there other public sector bodies that should be eligible to apply directly for support in the proposed Pilot and if so, why?

We agree that the pilot phase should be aimed at local authorities, but should also include other organisations from the public sector which can bring forward viable projects, such as universities and hospitals. If there are public sector bodies outside local authorities that have potentially viable heat network schemes then these should be eligible in the pilot phase if they fulfil the scheme criteria. At this stage we need to include any schemes that meet the criteria and are near to being “shovel or spanner ready” within the timescales.

3. Do you agree that the following types of heat network sponsors and owner-operators should be able to apply for capital funding in the full scheme? - Local Authorities, wider public sector, private sector, not-for-profit groups, and community groups.

- Yes
 No

4. Please set out who should or should not be eligible to apply directly for support in the full scheme and explain why?

The initiative should widen after the pilot phase so as not exclude other heat network opportunities e.g. large commercial buildings or industrial sites acting as a heat supplier to a wider district heat network. We support public bodies being the main focus of the pilot phase, but ultimately some heat networks opportunities may be more likely to be instigated by large heat generators such as industrial sites, energy from waste plants, anaerobic digestion schemes and even power stations.

Eligibility should be broad as listed in Q3 to ensure that the most viable schemes with the greatest financial, environmental and social benefit can apply for funding. However, large industrial organisations with waste heat should also be included as possible private sector sponsors/instigators of schemes.

5. Should the Heat Networks Investment Project provide funding for commercialisation work where these costs are capitalised?

- Yes
 No

6. Please set out why funding for commercialisation work that is capitalised should or should not be provided under the Heat Networks Investment Project and whether it should be provided through grants and/or loans. Please provide supporting evidence if available.

Funding for commercialisation work that is essential to the progression of projects should be provided but this should be carefully defined as this can be a grey area. Loans are preferable to grants. Moving projects from feasibility and initial planning through to commercialisation is costly and complex, so support in this area is welcome but careful scrutiny of the costs will be required. There is a danger that any funding going into commercialisation will be absorbed by professional fees, and this needs to be guarded against, particularly if funding at this stage encourages public bodies to pursue unreasonably speculative projects at taxpayer expense.

- a) The project should be required to demonstrate beyond reasonable doubt that it is the commercialisation phase that is holding back the particular scheme before funding any commercialisation
- b) In this case, the money should be offered as a soft loan that gets paid back by the project.
- c) Commercialisation investment should be kept separate from actual capital investment in the scheme
- d) There should also be a % limit (of total CAPEX) on the amount that can go to commercialisation

We are concerned that this could be too much of a grey area and become open-ended. However, where a public body can offer clear and undisputed evidence that it is commercialisation that is stopping 'pipes in ground' then funding should be available. It is highly desirable that this aspect in particular is tested at the pilot stage on one or two real projects to see if it is realistic to include this, and if not, to drop it from the full scheme.

7. Should the Heat Networks Investment Project provide funding for refurbishment of heating and hot water systems inside existing end user premises (including distribution in multi-tenanted properties) that are connected to a new or refurbished heat network supported by HNIP? This will exclude heating and hot water systems inside new-build properties.

- Yes
 No

8. Please set out why funding for internal heating and hot water system refurbishment as described in the previous question should or should not be provided under the Heat Networks Investment Project and whether it should be provided through grants and/or loans. Please provide supporting evidence if available.

The ADE/CIBSE Code of Practice notes that the design of the heating and domestic hot water services can have a significant impact on the capital costs and operating costs of a heat network. For example, hot water systems which facilitate low return temperatures will reduce capital costs for the network, and result in lower heat losses and pumping energy. Any funding should be closely limited to this type of work and clearly justified to avoid diverting funds from the primary infrastructure element of heat network projects.

In particular, installing Return Water Temperature Limiting Valves to ensure low return temperatures. It may also be extended to include heating controls in premises. Whilst it is arguable that the latter should have these included anyway, without them the return temperature and therefore system performance and therefore financial performance of the whole scheme will be undermined. Since there is a pilot phase, then the impact and importance of ensuring that the non heat network elements of the system are satisfactory for connection to the network should be explored. There is no point funding an excellent set of 'pipes in the ground' if they are connected to a very poor heating system in a building that compromises the performance of the whole system.

Insulating internal distribution pipework should also be excluded as, although it will help the Heat Network, the CAPEX could be significant and therefore draw funding away from the main aim of the HNIP. Internal distribution systems should be fully insulated to comply with Part L of the Building Regulations and this cost should be included in any tenders, and should not be subsidised by taxpayers.

We are concerned that funding for internal works could be used to support internal installation of new radiators or complete refurbishments, conversion of all-electric heating etc. that should be done anyway. The key aim of this scheme is to get 'pipes-in-ground', and that should be the focus of the funding. This programme is about heat networks, not building refurbishments. However, the networks are systems of pipes and internal heating distribution together, and overall efficiency and performance is dependent on the whole system, not just the heat network.

It may be appropriate, on reviewing the financial costs and customer impacts of changing existing heating and hot water systems that it is acceptable to only make minimum changes. However, due to the significant potential capital and operating cost impacts on the heat network, it is appropriate the HNIP takes a 'system approach' and allow refurbishment of heating and hot water systems to be eligible for funding.

Ultimately, the Heat Networks Investment Programme will be judged on the outcomes from the complete systems that it supports. If it needs to fund upgrades to the internal heating systems that the network supplies in order to get value for money from the overall system, then that is probably the most appropriate answer. This does demonstrate the need for rigorous engineering assessment of proposed schemes, and not just the network aspects. If this is done well, and appropriate criteria are set and enforced when proposals are evaluated for potential funding, then the Programme should only fund those

projects where the whole system is appropriate and has a realistic prospect of delivering appropriate performance and financial outcomes for investors and building users and occupants.

9. Do you agree with the impact of grants on heat network sponsors and investors outlined in Table 2 of the consultation document?

- Yes
 No

10. Please set out your views on the impacts of grant funding below.

Grant funding should be easy to administer and provide a catalyst for projects. As the funding will not fully finance projects, applicants will still need to put some serious work in to make projects viable.

Grants are easy to administer and 'should' directly improve the bottom line of potential heat network projects that are perhaps marginal. However, we believe they may be viewed as easy money compared to loans, where the requirement to repay may encourage applicants to think more carefully about applying.

Matched funding grants might be an option, i.e. for every £1 grant, the scheme developer must contribute an additional £1. This might be an even more positive way of 'proving' the leverage and additionality that the scheme sets out to achieve.

11. Should grants be provided to contribute towards the costs of additional technical or commercial future-proofed characteristics (see 'Future-proofing as eligibility, scoring or additionality criteria' section) only?

- Yes
 No

District heating networks are strategic assets. Technical and commercial future proofing is important but can create additional costs. Providing grants towards these extra costs is important but may be too open ended. Where additional work has a small or no improved impact on project economics but does add strategic value, the grant value should be up to 100% of the cost, provided the total grant falls within the percentage support allowed for total project value under the General Block Exemption Regulation.

12. What advantages does grant funding provide over other capital funding mechanisms to heat network sponsors and investors?

The advantage of grant funding is that it is provided at the beginning of a project so can leverage other capital because the funding is not discounted over time.

Delivery is a risk in this situation so recipient projects will require careful due diligence and management to ensure that agreed outcomes are achieved. A significant advantage of grants is that they can be offered on condition that the funding that the grant offer can leverage must be firmly committed before the grant funding can be released.

13. Do you agree with the impacts of soft loans on heat network sponsors and investors as outlined in Table 2 of the consultation document?

- Yes
 No

14. Please set out your views on the impacts of soft loan funding below. Including what advantages soft loans provide over other capital funding mechanisms to heat network sponsors and investors?

Soft Loans – we believe this is probably the most appropriate way forward. LA's can already borrow at low rates but some have already borrowed to their limit. Excluding HNIP funding from their borrowing limit would be advantageous. Soft loans should be at lower rates than LA's can get normally. However, the soft loan should be tailored to the cash flow and capex expenditure of the project so as to bring greater cash flow benefit to the project. This could be a really attractive aspect for applicants and ultimately help stimulate the sector. This could be in the form of a draw-down account where only funds drawn down are charged interest. We believe soft loans are the leading solution of all those proposed in the consultation and would make applicants think more carefully about applying – but the loans still need to be soft enough to be attractive to developers.

15. Please rate which of the following features, alone or in combination, would make soft loans most effective for heat networks?

16. Do you agree with the impacts of equity on heat network sponsors and investors as outlined in Table 2 of the consultation document?

- Yes
 No

17. Please set out your views on the impacts of equity below including what advantages equity provides over other capital funding mechanisms to heat network sponsors and investors?

There is probably a place for all three options, grants, soft loans and equity stakes. One objective of the Pilot phase should be to establish the benefits and potential of each mechanism. However, there is a concern that more complex funding arrangements will incur significant professional fee costs to establish them and, possibly, to manage them over the life of the asset, which could tie public bodies to significant future costs.

18. Do you agree with the impacts of guarantees on heat network sponsors and investors outlined in Table 2 of the consultation document?

- Yes
 No

19. Please set out your views on the impacts of guarantees below. Including what advantages guarantees provide over other capital funding mechanisms to heat network sponsors and investors. In particular, please set out whether construction period guarantees could help achieve the Heat Network Investment Project aims.

Guarantees are an interesting option if they provide long term security to investors. However, the primary barrier to the deployment of district heating is of timing, does the developer invest in the infrastructure hoping that consumers will connect, or should consumers be signed up first before the infrastructure is rolled out? This is a widely acknowledged challenge but needs to be tackled if a sustainable heat network market is to be developed. It is not clear how guarantees will actually disburse part of the £320M in funding.

However, one of the key problems in getting a heat network started is very much a “horse and cart” challenge. Does the developer put pipes in ground hoping that consumer will connect or does the developer try and get the consumers signed-up first. Stalemate! This is one of THE key problems in HN’s, lots of feasibility studies but no guarantee of demand so the scheme can’t get started. Once the scheme exists it is slightly less of a problem – but not a lot. Initial start-up in guaranteeing heat-take from initial anchor loads is key, which is why HNs grow around large public sector anchor buildings/clusters. This is at the heart of the current problems facing developers and isn’t a problem in Scandinavia where LA’s simply insist on connection.

The ideas in Table 2 all sound good but we are unsure how they would work in practice and how easy they would be to set up legally. In particular, some way of guaranteeing heat demand would really help developers and change the sector. But it is not entirely clear how this will work.

A combination of attractive soft loans ‘and’ heat demand guarantees could be a really powerful boost to the sector.

20. Are there any other opportunities and challenges presented by potential funding mechanisms that Table 2 does not cover? Or are there other capital funding mechanisms that should be considered to support heat network deployment?

Constructing the legal framework required e.g. for guarantees, is a challenge which should not be underestimated. Implementing the chosen funding mechanisms in a fair and robust way will take time and should be done carefully to avoid perverse outcomes or unintended negative consequences.

- 21. One of the aims of this project is to help create the conditions for a self-sustaining heat network market. Increased build rates of heat networks may require new investors. What would this project need to demonstrate to build awareness and confidence with new, private, third-party investors and draw them into the UK heat networks market?**

District heating networks are strategic assets, and investment in them is a long term strategic decision. The *Investor confidence in the UK energy sector* inquiry by the Energy and Climate Change Committee has already highlighted that policy inconsistency and contradictory approaches have sent mixed messages to the investment community about the direction of travel with regards to energy policy.

A long-term vision is essential for investment decisions to be made about renewable and low carbon heating projects, and to draw more people into the UK heat networks market. The Heat Network Investment Project is a key component of this long-term vision and we encourage Government to set out a clear commitment for sustainable energy infrastructure that includes high quality heat networks. Appropriate soft loans and guarantees could really help this sector develop rapidly and provide opportunities to a range of technologies connect to heat networks. Indeed it might also give a lead to other energy efficient sectors.

- 22. Please indicate which factors below should be used in combination as the minimum eligibility threshold which all first stage applications must meet AND which should be competitive factors that should be used to assess, score and compare applications at the second stage of the application process.**

CIBSE supports all of these for both eligibility and scoring, weighted in this order:

1. Customer BENEFIT in heat price (not just avoiding detriment)
2. Customer BENEFIT in customer service (not just avoiding detriment)
3. Social NPV
4. Carbon
5. Commercially future proofed
6. Technically future proofed
7. Explored range of technical options
8. Sector transformation

1-3 are really important, 4-6 are important, 7-8 would be 'nice to have'

CIBSE recommends that the Department should strongly consider using linear heat density (MWh/m) as both an eligibility and scoring measure. This is a good indicator of likely success, and economics, and is also a proxy for network heat losses. Anything above 2MWh/m is good. See IEA Status report 32.

Please set out below the reasons for your choices, including which, if any, you would prioritise. Please also indicate where there are existing, published, common methodologies, datasets and units of measurement that should be used.

Q23 – Q25. These are financial questions which are not CIBSE’s primary area of expertise.

We have significant reservations about a scheme wide hurdle rate. Schemes coming forward will have different objectives, and the benefits of a scheme delivering more economic low carbon heating in an area of social deprivation should not be assessed on the same narrow financial terms as a marginal private sector development scheme with a public sector partner, for example.

We believe that it is important to have transparent financial criteria that provide some scope for socially important schemes to demonstrate the additionality of achieving their social objectives.

Q26 not answered.

27. Do you agree that the areas set out on pg. 44 of the consultation document (see 'More Information' tab above) are important components of a sustainable heat network market (or the transition towards such a market)?

- Yes
- No

28. If applicable, please indicate what should be monitored instead / as well.

- 1.Customer BENEFIT in heat price (not just avoiding detriment)
- 2.Customer BENEFIT in customer service (not just avoiding detriment)
- 3.Social NPV
4. Carbon abatement

The first three should all come before carbon. We agree carbon is a key issue but it is even more important to get the heat network sector expanding as it is vital to show economic and social benefit. Unfortunately, carbon is now of particularly low importance to developers and even some LA’s. Heat networks are seen as an economic decision (or means to affordable warmth) but rarely do they get implemented for carbon savings – carbon is now seen as almost a nice to have, icing on the cake.

We are not arguing that climate change and carbon are not really important, but proving the economic case will have a greater effect on this sector at this stage, and is key to influencing developers. This in turn will then drive greater carbon abatement actions.

Monitoring

It is essential that a condition of the money invested through the scheme is that all data on the heat network will be provided to DBEIS including operational data for up to 5 years. This data should also be made publicly available on a web site

to help feedback information into the sector but also to prove that taxpayer's money has been spent effectively and efficiently.

Availability of data is a key component in measuring the effectiveness of heat networks and therefore will be the transition to a sustainable market. Data (including operational data) from all projects funded should be provided to the DBEIS for a useful period of time e.g. five years. The data should also be made publicly available to assist with feedback and learning in the sector, plus showing value for money.

29. Are you aware of existing evidence on what facilitates, or works against, the transition to a self-sustaining market (i.e. one that does not require government funding)?

An issue to consider is the viability of heat-only schemes versus heat + private wire schemes. A wider systems thinking approach to the market would be valuable, thinking about energy in a more comprehensive sense and encouraging more comprehensive projects. Private Wire Electricity revenue can be a driver in installing heat networks for the longer term.

30. Is the supply chain ready for accelerated deployment of heat networks?

- Yes
- No

31. If you feel the supply chain is ready, what evidence do you have for this and what support do you think is needed to manage cost and quality as heat network deployment accelerates?

The supply chain is ready for the most part but requires further strengthening and building to ensure that high quality heat networks are delivered. For example, projects often involve multiple suppliers and sub-contractors who need to be brought together in a consistent manner. There also needs to be greater focus on UK companies having the skills and knowledge to be able to explore feasibility, design, build, operate and maintain heat networks effectively. Long-term signals from Government to support investment for heat networks will be required to create a connected supply chain with more stable, consistent environment for those working in this sector to ensure that the skills and capability required are supported and developed.

Are you aware of existing evidence on what facilitates, or works against, the transition to a self-sustaining market (i.e. one that does not require government funding)?

IEA status and economic report (s) 32 are good evidence, but the horse-cart guarantee of signing up heat consumers is the real problem to address in the sector and in any HNIP investment scheme.

Also, what hasn't been addressed in this consultation is that currently it is quite hard to make 'heat-only' schemes viable whereas heat with private wire schemes are much more likely to go ahead as they are far more viable. This needs to be taken into account when considering investment. Aware investors are investing in heat and private wire before 'heat only' schemes as success is more likely. It is therefore possible to argue that heat only needs more support but government does need to invest the £320M where it is really going to add maximum value and success. Currently this is in private wire + heat schemes.

Is the supply chain ready for accelerated deployment of heat networks?

If you feel the supply chain is ready, what evidence do you have for this and what support do you think is needed to manage cost and quality as heat network deployment accelerates?

The supply chain for heat networks is still fairly broken as often 3-5 different suppliers are involved plus their sub contractors – CIBSE/ADE CP1 aims to pull this supply chain together so its use in the HNIP is essential.

There are not enough companies in the UK capable of feasibility, design, build and operation.

The cost of HN hardware in Scandinavia is much lower and therefore paybacks for HNs are better. Anything that can be done to encourage more players/suppliers in the HN sector would be valuable and could bring prices down. The Danish and Swedish embassies in the UK are working on this but more needs to be done including Michael Kings's initiative on DEPA to set up a UK framework for international suppliers.

32. Do you have any comments on the evidence/assumptions DBEIS has used in its cost-benefit appraisal of the scheme? We would welcome any supplementary evidence on the cost and performance of heat network or counterfactual technologies that you are able to provide as part of your response to this consultation.

All our additional remarks are included at the beginning of the consultation, as they are important to frame the context of the CIBSE response.

We have also provided the latest draft of the CIBSE/ADE CP1 Client Checklist and supporting excel spreadsheet for your further information. These are due to be published shortly.