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Summary of responses on 'Heat Networks: Code of Practice for the UK' consultation

July 2015

This document is a summary of responses received by CIBSE and the Association for Decentralised Energy during the consultation on 'Heat Networks: Code of Practice for the UK'. We are grateful to all organisations that provided comments.

Executive summary

With recent research outlining the potential for heat networks to supply up to 14% of heat by 2030, it is an opportune time to develop and implement minimum performance guidelines for district heating. As new entrants respond to the growth in district heating schemes, the industry is increasingly worried about its reputation being damaged by poor quality schemes.

Therefore, the industry body, the Association for Decentralised Energy (ADE), and the standard setter on building services engineering, CIBSE, have jointly developed a Code of Practice which to enable the development of heat networks that operate effectively and meet client and end-user expectations.

The draft Code of Practice was developed with inputs from a Steering Committee of experts from across industry, heat customers and Government. The draft Code of Practice was issued in September 2014 for a 6-week consultation period. It is a complementary document to both the Independent Heat Customer Protection Scheme and the Heat Networks Technical Guide from the BRE Trust.

The Code of Practice provides minimum requirements for how to conceive, design build and operate heat networks in a format that avoids limiting technical innovation. It applies to heat networks designed to supply new developments, networks that are retrofitted to supply existing buildings and networks' extensions.

There are key themes and responsibilities that run throughout the document to improve the efficiency of heat production and distribution. These include the importance of correct sizing of heat mains and pipework, the need to ensure low heat losses by lowering return temperatures and using variable flow control, and the opportunity for integration of low-carbon heat sources.

It is envisaged that in the absence of legislation, adoption of the Code of Practice will be voluntary, but may become a condition of procurement contracts.

CIBSE is establishing to provide training in the Code for Heat Network Professionals. There are considerable benefits from up-skilling the current workforce through training in the skills required for the future heat networks city-wide schemes. A training accreditation scheme will help organisations to promote their products, where they are built against quality minimum standards collectively recognised by the industry.

Summary of consultation responses

We received 28 individual responses to the consultation. Overall, a majority of organisations that responded to the consultation belonged to consulting engineers organisations.

Number of responses received 28

Types of organisations

Turnkey solution provider	6
Manufacturer	1
Consultant	17
Operation and maintenance	2
Government body	1
Others	2

Overall appreciation

The first paragraph of this summary reflects comments on the scope, style and consistency of the technical guidance of the Code of Practice. Following this, we have set out an overview of responses to the training course proposal. Finally, issues raised by organisations are gathered together under a range of technical themes (e.g. return temperatures, future proofing etc.).

Scope and style of the document

Length

Some responses highlighted that the Code document is too long, which was seen as a barrier to accessibility.

Committee response: The length of the document reflects the significant number of technical challenges and specifics of district heating projects, which must be understood from feasibility through to operation if an efficient supply of heat is to be provided to customers. The narrative gives some background on district heating operations for a wide audience whilst the structure of the document facilitates navigation for day-to-day use. Whilst it is appreciated that the document is long, it was felt that, on balance, significant shortening of the document would risk undermining its integrity.

Structure

A number of organisations mentioned that the Code's structure is clear and flows well. A response suggested that all sections of the Code should be brought together to reflect CIBSE's Technical Manuals normal structure.

Committee response: The structure of the document fits its purpose well.

Relevance of the document for small schemes and small organisations

Some organisations felt that the Code was not appropriate for communal heating and smaller networks. The Code sets out minimum standards to achieve a specific output in order to ensure the overall quality of new schemes or schemes extensions. Additional comments suggested that small networks may apply abridged requirements if preferred.

Committee response: The Code of Practice was designed to work for smaller and larger schemes by being based on principles. It is a difficult balance to strike between detail and document length. As a voluntary Code smaller schemes are not obliged to use it but the minimum standards set are likely to improve the outcome of a scheme.

Scope: contractual work

Some organisations suggested that the requirements set under the Objective 3.6 (Achieving a low-cost network) should be linked to contractual arrangements in situations where meeting the minimum standards entails the active participation of another organisation (this may be the developer, local authorities etc...).

Committee response: The view of the Committee has been that due to the wide variety of structures for heat network contractual arrangements, commercial structures, retrofit schemes or new development schemes and stakeholders, it is not appropriate to stipulate contractual terms. The contractual work is best placed to occur between the particular parties involved.

Technical guidance and references

Some responses mentioned that specific company names should not appear in the document.

Committee response: Where specific companies have provided technical material or voluntary time then this should be acknowledged but otherwise company names have been removed from the text. The list of references was also supplemented with the references provided by respondents and the Greenhouse Gas Emissions Guide published by DECC. Photos with specific company names will be removed.

Training course

We asked views on the optimal duration of a training course based on materials taken from the Code of Practice. A small majority of organisations mentioned their preference for a training course taking place over 2-3 days, for an average price ranging from £250 to £350 per day. Some organisations either did not want training or felt that the Code was not specific enough to run a training course.

Regarding the scope of the training, a number of organisations mentioned that the training should be modular and should be structured around three themes: firstly preparation up to design and procurement, then construction up to operation and maintenance and finally customers' expectations. Some organisations felt that a minimum qualification level in building services engineering should be required for people to be allowed to attend the course. Also, some comments flagged that the accreditation of district heating schemes would be useful to sign-off schemes built against the proposals of the Code of Practice.

CIBSE has considered these recommendations in the design of the training course.

Main technical issues raised in the responses

Low return temperatures

Some responses suggested the technical guidance under Objective 1.3 (to define appropriate service levels for the heat supply) may be misleading since variable flow rate control does not necessarily result in lower return temperatures.

A number of organisations raised a question about whether the Code effectively supported the transition towards '4th generation DH networks' with very low flow temperatures (down at 55°C). Others however raised the issue of *Legionella* risk mitigation normally addressed by higher temperatures.

Committee response: Requirement 2.4.7 will be amended to better support 4th generation scheme whilst including a caveat about Legionella risks. District heating water source flow temperature references will be removed.

Low heat losses

A number of people raised an issue about whether the 15% heat losses figure was too high or too low and if it should be proportionate to pipe length.

One response suggested that the theme of return temperatures should be treated under the feasibility stage rather than the design stage because of its impact on potential customers and heat delivered.

Committee response: The text of requirement 3.5.4 will be amended to reflect that heat losses "shall not normally" be higher than 15%. A caveat in the Best Practice section will mention that it "may be significantly less in dense networks". Table 3.3 will be deleted.

District heating efficiency

A number of organisations mentioned that CHP is a common feature of efficient district heating schemes but that it is not always the best generation solution. It was recommended that "prime mover" or "low carbon heat source" should be used instead of "CHP".

One organisation sought for more detail on electrical aspects of combined heat and power (CHP) and remarked that little detail was provided in the document.

Committee response: The Code of Practice is a technology neutral document and the Committee decided to replace CHP with "low-carbon heat source" or "for example, CHP" throughout document. The caveat is that CHP is often the main technology currently supplying district energy customers, but this might change in the future. It is worth noting that a number of Guidance documents on CHP have been published by the ADE and CIBSE DH-CHP Group covering operation, installation and support mechanisms.

Economics of schemes

Some responses suggested that the monopoly status of heat networks needs to be balanced by different tariffs for high and low users or a guaranteed discount compared to alternatives. Some organisations raised a question about whether the 'Customers expectation' stage should be replaced by a link to the Independent Heat Customers Protection Scheme proposals, which aims to establish a common standard in the quality and level of protection for household customers and micro-businesses.

Committee response: The Committee's view is that it cannot comment on what tariffs should be offered by heat suppliers.

Future proofing of schemes

A number of organisations suggested that future proofing of schemes should be a broad theme which needs to be considered in each stage of a project. Examples were provided, such as considering neighbouring heat loads at the feasibility stage which may help to diversify the heat demand, and making space available for future heating plants to minimise potential additional costs through multiple temporary Energy Centres.

Committee response: We have strengthened the text to address these issues

Overheating

Some organisations touched on the overheating issue, which is occurring in certain locations and may lead to a loss of well-being. It was recommended that the Code should have greater emphasis on the need to work with the building design experts to ensure there is sufficient ventilation in premises to avoid the risk of overheating.

Committee response: This was considered to be outside the scope of the Code although schemes designed, installed and operated under the Code should lower the risk of overheating.

CO₂ and NO_x emissions

A few responses raised an issue about whether several CO₂ emission factors should be used or if a common set of emission factors should be used for both existing and new buildings to avoid confusion between calculations. One organisation suggested that NO_x emission factors would normally be set by local AQM requirements and should not be specified in the Code of Practice.

Committee response: Regarding CO₂ emissions level, requirement 3.10.3 will be amended to suggest that with low carbon plants, CO₂ emissions will typically be less than 150g/kWh. Regarding NO_x standards, requirement 3.13.2 will be amended to change the level of NO_x to 500mg/Nm³.

Assessment of schemes built against the Code of Practice

A number of the responses recommended further clarification on whether compliance with the Code of Practice is “all or nothing” and if organisations would be denied compliance for a single requirement missed out.

Committee response: At this initial stage the Code is not seen ‘as all or nothing’ and it would not be unreasonable to say “we have met the Code’s minimum standards on design” for example. To date the committee view has been that where a specific output can be met through a route which is not specified in the Code, alternative solutions could be agreed between parties but that this should be adequately justified and the specific output achieved. As the Code is likely to be enforced between contracting parties it is for those parties to determine how the Code will be used.

Following late input received after the completion of the consultation process, the Committee included minor changes in the following areas:

- Additional commentary around radiator performance
- Additional commentary around the use of return temperature limiters and the benefits of variable volume control from TRVs vs compensation control.
- Amendments to Tables 2 and 6 to avoid the use of direct connection being penalised
- Additional commentary in Appendix E about the impact of a higher delta T on smaller pipe sizes and heat losses
- Additional commentary on p.48 about the diversity curve from DS439 including discussion of ‘normalised dwellings’ and related formula