# Annex B: Specific Questions for bidders in response to the ITT

A. How would you ensure the **guidance you produce will be practically useful** for local authorities in building their business case, and progressing through to project delivery? (500 words)

GT prides itself on its ability to distil complex concepts into understandable, non-technical and plain English language. Both quantitative and qualitative key findings need to be summarised in a manner that is insightful and accessible.

Based on the experience described elsewhere in this tender, having developed infrastructure project guidance for local authorities, and in the case of municipal infrastructure business cases, worked with guidance across a range of sectors, we understand what that guidance should look like so that it is user friendly and is broad enough to cover the diverse nature of projects that will be assessed.

We will ensure that the guidance:

- is based on solid evidence through our literature reviews and from the experience of both GT and AECOM;
- is structured and written in a way that supports rather than constrains;
- works in conjunction with the other elements of the business case guidance; and
- is subject to cold review internally by members of our GIA team encompassing a range of sector and who are used to developing business cases

***Solid Evidence Base***

There have been instances in different sectors where similar guidance in the past has been challenged and / or ignored, and where the analysis is not based on robust, demonstrable sources. Credibility is therefore key and that comes from a combination of who has developed the guidance (have they delivered business cases and projects?), as well as justification for and confidence in the evidence base. We can deliver both. Our experience and expertise in research, and effectively collating a breadth of data, from work such as our EMR evaluation means that all parties can have confidence in the analysis. Our plan to use Huddle as a data sharing tool for ourselves, AECOM and the HNDU team means that you can review our analysis in real time.

***Structuring and content***

We will ensure that our guidance includes:

- Worked examples to guide the user through the process;
- Consistent language and referencing; and
- Does not overly prescribe but sets out parameters and key considerations that local authorities and their appointed advisors can use and work within.

***Works in conjunction with other sections of guidance***

We fully recognise that the Economic and financial case guidance is one part of a wider business case guidance which to be practically useful needs to be consistent. As we are fully aware of how the 5 Case model works as a total package, and will develop our elements of the guidance with this in mind. We will also work with you and other appointed advisers proactively from the outset to ensure that there is consistency and cohesion. This is particularly important given the tight delivery timetable, and the parallel working of the various workstreams.

***Cold review***

To help ensure that our guidance is fit for purpose, we will get colleagues experienced in developing business cases from a range of sectors to feed into both the initial structuring of the guidance and then doing cold reviews to assess whether it delivers against the objectives.

## B. How will you ensure the guidance is future-proofed, to ensure minimal impact as the market changes? (500 words)

GT's E&E team has been advising government on infrastructure projects for many years. We have therefore seen numerous significant movements in the market, e.g. oil prices, steel prices, interest rates, inflation, and most significantly the impact of the 2008 credit crunch. It is important to note that whilst market variables will change, the principles which make up a financially and economically viable infrastructure projects will not. We understand the economics and the drivers of district heating projects through our experience in the sector. This will be supplemented by use of long-standing, best-practice principles, such as HM Treasury's Green Book (Appraisal and Evaluation in Central Government)

To ensure our guidance is future-proofed in relation to market changes we will set out a principles based approach to our guidance documents, proposing both relative and numerical sensitivity testing / optimism bias which should be applied. Through this 'principles' rather than 'prescriptive' approach, we will ensure that the guidance stands the test of time.

Nobody can predict how key variables will change over the coming years, but for a number of these by analysing historic variances, we can make reasonable assumptions about the ranges over which these variables are most likely to change. Having closed over 30 private/public sector deals in the Energy & Environment sector, we have a vast 'bank' of financial models which we can review for key assumptions and how they might vary over time. This bank of financial models includes those developed by both GT, other financial advisors, government and commercial operators.

Engaging Aecom to bring their understanding of the developments in the sector will help us to consider the impact on costs going forward of developments in technology, the potential impacts of growth in the UK supply chain and the potential for economies of scale driven by the increase in projects. One key way we will assess the likely impact will be to review markets and sectors which could be considered in advance of the UK district heating market to see the effects of a maturing market on the prices and assumptions made. However, it is important not to be too optimistic about, say, price reductions in a maturing market, which will be dealt with in further detail in our response to Specific Question F.

It is also very difficult to predict how the political climate is likely to look over the coming years. District heating scheme development may well be impacted by: subsidies, planning policy, regulatory requirements, and international relations. We will set out the ways in which these factors may impact district heating schemes and quantify this wherever possible.

As the market matures and there is a greater evidence base for costs and income, and reflecting the potential for extreme changes in macro-economic factors, policy and the sector, it may be sensible to recognise in the guidance documents that updates to specific aspects of it may be required.

C. Work Package F1: Outline your approach to providing the guidance for **developing techno-economic models, risk management structures and key sensitivities** for heat networks, and any experience you have. Please provide an indicative list of the minimum key sensitivities you expect to address in the guide. (Please note that a final list of sensitivities to be included in the guidance would be agreed at the workshop.) (500 words)

From our experience, a good financial model creates a picture of the future in a credible and transparent way, with flexible assumptions that can be understood and easily changed to gain insight into the opportunities and risks facing the project. Our guidance will describe how to:

- Design and structure a good model (including left-to-right logic, timelines and dedicated input pages)
- Consistently apply indexation and discounting
- Systematically apply and record outputs of sensitivity testing
- Design a relevant and user-friendly 'outputs dashboard'
- Draw conclusions based on key indicators such as NPV, IRR, MIRR
- Consider non-financial benefits/impacts

We will set out how to identify and categorise risks to the project which may be e.g. financial, political, economic, social, technological, legal, environmental or reputational. These risks should be recorded on a risk register (for which we will provide a template) for evaluating the impact and likelihood of a risk occurring and developing strategies for mitigation and risk reduction. We will also set out a number of key risks which should be considered as a minimum for any district heating project. This will include:

- Technology failure
- Unavailability of funding to match Project IRR
- Lack of supply/demand
- Wider investment criteria not met
- Project Board approvals not timely / not received
- Development / Planning issues

Noting those categories proposed by DECC, below is a listing of key sensitivities for a district heating project (truncated due to word limit) and the categorisation which we would propose:

***General / Macro-Economic Factors***

We would recommend an additional category for General Macro-Economic Factors, which could affect all areas of the project:

- Inflation rates
- Electricity Prices, Oil Prices, Spark Spread

***Project***

- Commencement
- Duration
- Phasing
- Expansion
- Configuration

***Capex***

- Under the heading of capex, it is important to understand all factors which might impact the price of installation, transportation of materials and the cost of the raw materials/components themselves. In addition there is the risk variables that impact on the capital costs including Foreign exchange rates and the Capex profile (including lifecycle).

### *Opex*

Under the heading of opex, it will be important to distinguish between fixed and variable operating expenditure. For example:

*Fixed*

- Management
- Customer services (telephone, website etc)
- Legal/accounting
- Staff
- O&M (contracts)
- Standing charges
- Insurance
- Metering / IT systems
- Data management and billing

*Variable (which should be linked to variable Revenues where appropriate)*

- Fuel and electricity cost (volume and price)
- Heat loss factors
- DUOS / TUOS
- Other utility (water, telecoms)

### *Revenue*

As with opex, it will be important to distinguish between fixed and variable revenues. For example:

*Fixed*

- Developer contributions and connection charges
- Standing charges
- PPAs

*Variable*

- Heating, electricity and cooling sales volume (demand, unit price, network charges)
- Occupancy rate
- Subsidies

In terms of sensitivities **'Pricing Tariffs'** is a component part of 'Revenues' for which appropriate sensitivities will be suggested.

### *Funding*

This is important and will need to reflect the proposed financing structure and sources, rather than just a blended cost of capital.

### *Taxation*

- Tax Rate
- Capital allowances

### *Avoided Cost / Business As Usual (BAU)*

- Cashflows which would have occurred under the counterfactual

## D. Work Package F2: Outline your approach to **preparing a guideline for tariff pricing structures** that could be used by local authorities, and any experience you have. (500 words)

GT has assisted numerous clients in setting tariffs for energy, waste treatment, accommodation, and transport and is therefore well placed to prepare guidelines to promote well-thought out, commercial and bankable pricing structures.

Several areas will be explored within our guidance which we note below. Our guidance will discuss each of these points including the pay-offs between them, e.g. having low tariffs may alleviate fuel poverty but may not incentivise energy efficiency.

### *Economics*

- In principle, standing/fixed charges should cover fixed costs (opex, funding). Variable costs should then be covered by the related variable income.
- The higher the element of variable income, the higher the risk of the project being unsustainable.
- There may be lower uptake / connection to the project, if users are required to pay significant standing and / or connection charges.
- Were bank funding is being sought, it is likely that significant fixed / guaranteed revenues will be required to give comfort over the viability of the project.
- Indexation on tariffs is likely to reduce the risk of significant inflationary changes on the vendor.

### *Social Objectives*

- When setting tariffs, local authorities should consider their social objectives for the project which may including alleviating fuel poverty and therefore offering low rates for energy. This is likely to have an impact on the profit levels available within a scheme.
- It could be that different tariffs are set for different customers, e.g. social housing vs. commercial offices.
- Local authorities could consider taking a joined-up approach to the installation of district heating. For example, health budgets could be used to cover connection charges / standing charges, in light of the correlation between ill health and poorly heated housing stock.

### *Environmental Objectives*

- When setting tariffs, local authorities should consider their environmental objectives for the project, such as reducing energy use.
- Setting prices high may reduce energy use but this is likely to conflict with objectives of alleviating fuel poverty.
- A holistic view on energy efficiency can be taken including increasing energy efficiency of appliances and improving insulation. It is important to bear in mind that this is likely to have an impact on volumes of demand and therefore on the revenues of the project.
- Customers paying on a 'metered basis' are likely to use less energy than those paying on a fixed / block charge. (See more on metering below.)

### *EU Energy Efficiency Directive*

- Metering requirements are now imposed for district heating / cooling and this comes at a cost of installation and information and data management. Pricing structures will need to reflect this cost.
- The directive states that Member States may consider the introduction of transparent rules on the allocation of the costs of heat consumption in multi-apartment buildings, which would restrain the flexibility of pricing structures.
- Rules to govern billing information must be created. Again, the cost of this will need to be considered as well as the transparency involved, which compounds the social obligation to set prices in a fair and auditable way.

E. Work Package F3: Please provide an indicative list of **revenue maximising opportunities/avoided costs** for heat networks that will be explored as a part of this project, and any experience you have in identifying these. (Please note that a final list of opportunities/costs to be included in the guidance would be agreed at the workshop.) (500 words)

In particular through our work within the energy and waste sectors, we know that a holistic view on opportunities and cashflows is required to optimise a project. The following should be considered as opportunities to maximise revenues and avoid costs:

***Budgets***

- Local authorities will not have specific existing budgets for district heating. Therefore, consideration will need to be given to what budgets will be impacted and the ability to reduce costs in other areas (energy purchase, property maintenance) as a result.

***Funding***

- Depending on the availability of internal funding / Prudential Borrowing, the local authority may consider funding the project itself to avoid the private sector cost of funding.
- Local authority funding could be considered to take the project through the construction phase (generally considered to be the most risky phase of the project), at which point private sector refinancing could be considered and which could allow capital to be recycled for future phases.
- The UK Green Investment Bank has flexible funding available to invest in heat networks.
- Grants may be available for the project
- Section 106 agreements can secure financial contributions from developers to provide infrastructure by way of planning obligations.
- The lower the actual /perceived risk in the project, the lower the cost of funding is likely to be. Local authorities can consider taking on planning, permitting and licensing risks, or reduce counterparty risk through offering demand guarantees / anchor loads.

***Diversified Services***

- CHP can be used to efficiently generate electricity as well as heat and therefore increase selling opportunities via private wire or into the grid.
- Where electricity is sold to the grid, additional electricity income may be achievable such as from the Capacity Market, TRIAD & STOR and DUOS revenues, and generally looking to exploit peak demand..
- Providing additional utility services such as telecoms and water. (Note that the Water Act means that from April 2017 public bodies can enter the water market place.)
- Cooling & HVAC systems.

***System Efficiency***

- Increased intelligence / controls around energy use, such as Demand Side Reduction (DSR) & Active Network Management (ANM) can open up opportunities for load shifting and access to high grid tariffs.
- Thermal Storage and insulation to reduce energy losses

***Collaboration***

- Shared utilities trenching
- Timing developments to share the cost of groundwork

***Procurement***

- The procurement route should be designed so as to maximise market interest and therefore drive economies of scale.

## F. Work Package F4: Outline your approach for addressing the challenge of optimism bias in relation to heat networks. (500 words)

Through GT's financial advisory on numerous PFI deals in the housing and health sector, we have significant experience of assessing and applying optimism bias to make adjustments to estimates of capital and operating costs, benefits values and time profiles. We are therefore well placed to apply the standard HM Treasury guidance on optimism bias to the specifics of district heating.

We will accumulate a data bank from past projects or similar projects to develop guidance on upper and lower bound optimism bias levels. We will also reference the generic project categories and comment on how district heating might link to this cross-departmental guidance.

Areas where optimism bias may be applicable to district heating is likely to be in the below categories. Of particular note, and something which will affect all categories is that district heating is a nascent market in the UK so it could be expected that costs will reduce over time as the market capacity and resources in this sector mature. It will be important not to be over-optimistic about the impact that this factor will have on the market and cost of projects.

***Capex***

- Omission of costs
- Misunderstanding of stakeholder requirements (e.g. size of plant required, desire to connect to the scheme)
- Construction period overruns

***Opex***

- Omission of costs
- Over-optimistic assumptions regarding e.g. staff, fuel and maintenance costs

***Revenues***

- Over optimistic assumptions regarding demand (there is a significant impact of 3rd party consumer choice which is out of the control of the local authority)
- Seasonal/weather changes will impact demand

***Timeline***

- Significant project delays are often seen with any infrastructure project. Delays may be caused by planning issues, delays in the approvals process or seeking funding.

***Under Delivery of Benefits***

- The local authority may be over-optimistic about wider benefits such as reductions in carbon emissions, jobs created, alleviation of fuel poverty. It will be important for the local authority to consider what the minimum levels required for these factors are in order to make informed decisions about the benefits of the investment.

We will show worked examples to demonstrate how local authorities should consider, apply and draw conclusions from optimism bias.

We will offer guidance as to how local authorities can engage with stakeholders (especially future service users), obtain accurate costing data and manage project risks to reduce the impact of optimism bias.

We will highlight how assessment of optimism bias should link closely to sensitivity testing and risk management strategies and how it is important to be transparent with sponsors about the potential impact of risks and bias on their proposals.