

Heat Network Detailed Project Development Resource: **Commercial and Strategic Case**

08th February 2016

Tender Reference Number: 1123B/01/2016



ARUP

 Lux Nova Partners
clean energy lawyers

Willis Towers Watson 

 MAZARS

Covering Letter

To the Department of Energy and Climate Change

We are excited about the opportunity to submit this proposal to DECC's HNDU team to provide guidance to local authorities developing heat networks.

We have recognised that developing this nature of guidance for local authorities and heat network developers will require a broad field of expertise, so we have arranged to collaborate with specialist legal, insurance and tax advisors.

- **Arup** *Consortium Leaders, Commercial & Strategic Experts*
- **Lux Nova Partners** *Legal Guidance*
- **Mazars** *Tax Support*
- **Willis Towers Watson** *Insurance and Risk Advisory*

By working with a broad team of experts, we can draw on more experience and will ensure that this study will not simply formalise existing practices, but can resolve real best practices for local authorities to follow.

To provide a private sector ESCo perspective, **ENGIE** (formerly Cofely), **E.ON** and **Veolia Energy** have each confirmed that they will review and comment on the content. They have also agreed to open up their portfolio of schemes as case studies for the review.

The members of this team have a proven track record of advising on **decentralised energy** and other **infrastructure projects** in both the public and private sector, having overcome a range of challenges in each sector. We are confident that this team can demonstrate the full breadth of services required to provide the guidance needed to support the uptake of district heating in the UK.

We hope that this proposal will be of interest to you and I look forward to an opportunity to discuss our offer with the HNDU team at DECC.

Yours faithfully,

Stephen Cook
Project Director - Arup

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Appreciation and Approach

The announcement in the 2015 Autumn Statement of over £300 million to support the delivery of 200 heat networks will catalyse a step-change in the activity in the industry.

HNDU's decision to commission commercial and strategic guidance to support projects has come at a crucial time, as many local authorities and heat network developers are bringing their project opportunities forwards for investment and procurement decisions. Now is the time to help them confidently make the right decisions.

National standardised guidance on technical design issues has recently been launched through Arup's work on the London Heat Network Manual and work done by CIBSE and the ADE on the Heat Networks Code of Practice; however the equivalent on commercial and strategic issues remains to be filled.

Overall approach*

As specified in the ITT, our approach will be to anchor our heat network guidance to the wider framework of general guidance on these topics, enabling an efficient and focused output which is targeted towards the main likely heat network situations.

In particular the guidance will reflect the structure and language of **the Five Cases Model**, enabling the guidance to correspond to Government best practice guidance on public sector business cases.

The guidance will be flexible and will seek to differentiate between "minimum" requirements and "best practice." As with the CIBSE/ADE Heat Networks Code of Practice, our aim will be to enable local authorities to apply the guidance but also use it to procure cost-effective and suitable advice.

Breadth and depth

For all elements of guidance, we endorse DECC's approach to make extensive use of **case studies** to illustrate the variations and particularities which could arise for different situations. This will enable us to provide succinct broad guidance which covers most situations as well as richness of detail without trying (or being seen to try) to provide an exhaustive manual on these complex issues.

Form of Outputs

Our guidance will be image-rich and will make use illustrative graphics, diagrams, tables etc. as far as possible to make the guidance clear and usable. We want it to become a well-thumbed reference, not something to be read once and left on the shelf. Reflecting DECC's subsequent completion and publication stage, the graphic style will be kept simple and generated in easily editable format (e.g. PowerPoint)

As shown in the table to the right, we propose to produce separate MS Word documents for each **Work Package of guidance** but a consolidated spreadsheet for the **Literature Review**. The spreadsheet will be constructed as a single dataset with well-structured metadata (e.g. Author, Year, Scope, Type, Keywords).

We also propose **additional deliverables**

- **Dataset of case studies:** We will gather and record the features of the case studies in a common structure and format (e.g. location, size, form of governance, year, contact details). The dataset will enable DECC easily to refer back to the raw information collected on each case study, should the need arise in the course of transposing our final outputs to the

published guidance document.

- **Graphics library.** An editable file (MS PowerPoint) of graphics included in the report, for use by DECC to take to detailed design for the final published guidance.

Topic-specific approaches

Governance structures

District heating projects are unprecedented for most local authorities and there is no predetermined governance structure which will suit every situation or local authority.

There is, however, a finite number of basic forms which have been tried and tested by the early adopters in the new wave of heat networks. Our governance structure guidance will identify the **necessary project roles** for network delivery *and* provide a clear **taxonomy of basic forms of governance**.

Through graphic devices such as decision trees and checklists we will enable users to understand the factors they need to consider in selecting a particular delivery model.

Tax, Insurance and Contracts

These three topics are intrinsically linked to the governance structure of the project and apportionment of risks.

Our guidance will provide **an overview taxonomy of each topic** (with cross-referencing to source guidance) and then set out the **particular issues and options** for each governance option. This explanation will address inter alia impacts on apportionment of costs, revenues and risks for each party.

Drivers and Policies

See responses to Annex B, Questions 7 & 8.

Management and Review

We have assembled a substantial and senior

team, which is necessary to ensure we bring the depth of experience DECC needs to obtain an authoritative set of guidance documents. Given the programme and budget constraints, we will employ the following methods to ensure tight control over programme and deliverables:

- Internal team coordination calls, in addition to DECC meetings and calls
- Document templates and common structures / preambles generated at the start of the project.
- Documents reviewed and editing by core teams before issue of draft documents to DECC, but expert and cross-disciplinary review undertaken in parallel with DECC team review.
- Document management using secure cloud-based solutions, enabling simultaneous editing / review by multiple users / offices.

Work Package	Deliverable	
Literature Review	• Draft and final spreadsheet	
C1 Governance Structures	• Draft and Final report	
C2 Tax and Insurance	• Draft and Final report	
C3 Contracts	• Draft and Final report	
S1 National and Regional Policies	• Draft and Final report	
S2 Local Drivers	• Draft and Final report	
Additional deliverables	• Case study dataset • Graphics library	 

Schedule of deliverables

*Please note that additional details of our approach are provided in our responses to the ITT Annex B questions.

Our Team

A strong group drawing on Commercial and Strategic, Legal, Tax and Insurance Experts

Our team includes experts from each of the sectors identified for the guidance. **Arup** will lead and manage the work, and will deliver the commercial and strategic guidance. **Lux Nova Partners** bring specialist legal advisory expertise. **Mazars** will advise on tax considerations for each of the governance structures, drawing on their experience advising infrastructure clients. **Willis Towers Watson** will provide guidance on the risk issues and insurance requirements for networks.

ARUP

Arup

Commercial and Strategic Delivery Experience

Arup has been at the leading edge of the district heating market in the UK for a number of years.

Since 2011, Arup has operated London's Decentralised Energy Programme Delivery Unit. To date, this programme has delivered over £102m of new projects to market in the capital.

Experience supporting public and private sector project sponsors has challenged Arup to devise new ways to structure projects for delivery.

Project Role

- Arup will lead this commission.
- **Redacted.**
- Arup will be lead author for work packages C1, S1 and S2, drawing on an experienced team of consultants and planners.
- Arup will coordinate and finalise the input from the specialist partners in and draft the documentation for HNDU.
- Arup will prepare, host and facilitate the workshops at our offices in London



Lux Nova Partners

Specialist legal counsel to district heating developers

Lux Nova partners focus exclusively on low carbon and renewable energy, energy efficiency and climate change projects, regulation and agreements.

They have a wealth of experience in district heating, having advised clients throughout the energy supply chain: Governments, local authorities, regulators, developers, funders, generators, suppliers, commercial and industrial consumers, distribution companies, technology companies and community groups.

Project Role

- Lux Nova Partners will complete work package C3: Contracts in close collaboration with the other work packages. They will work with the team to ensure that governance structures and tax and insurance considerations are informed and aligned by the legal guidance.
- **Redacted.**
- Lux Nova will attend each of the workshops with the HNDU team.



Mazars

Tax and financial advisors to infrastructure

Mazars is one of the UK's top 10 tax, audit and accounting firms. They work with a wide range of infrastructure clients including large corporates and public sector entities.

The Mazars team bring particular expertise in the energy and infrastructure sectors, having advised public and private sector clients on CHP, EfW, AD, wind and solar projects in both a UK and international context.

Project Role

- **Redacted.**
- Mazars will work in collaboration with Willis Towers Watson to complete the combined Tax and Insurance guidance document.
- They will interface with the parallel work streams to insure tax implications are clearly understood regarding governance structures and contracts.
- Mazars will attend each of the workshops to add the tax dimension to the conversations and guidance.
- The final outputs will be reviewed by Mazars, to ensure it covers all of the necessary tax guidance and meets their standards.



Willis Towers Watson

Insurance and risk experts in major projects

Willis Towers Watson brings a deep, specialist investment risk and insurance broking perspective to the project team.

Willis' portfolio includes some of the largest infrastructure projects in the UK, including Hinckley Point C Nuclear Power Station and Thames Tideway Tunnel. They are also leading local government advisors for residual waste management, ICT and output service contracts.

Project Role

- **Redacted.**
- Their input to the governance structures and contracts will ensure that the mapping and allocation of risk is clearly communicated to users of the final guidance.
- Willis Towers Watson will complete work package C2 in collaboration with Mazars.
- Willis Towers Watson will attend the workshops to provide input on insurance issues.
- All of the outputs will be reviewed by Willis Towers Watson, ensuring insurance and risk issues are covered by the guidance.

Programme

Work is divided and running in parallel to ensure delivery on time

The challenging timescales presented by this project have been addressed by planning much of the work to run in parallel. It is clear that this approach will require close control and regular communication between HNDU and the Arup project leadership, this has been reflected in the project management resource for the work.

A collaborative approach with DECC will ensure that the required reviewing time is kept to a minimum.

We have proposed three progress calls over the course of the project in addition to the workshops set out in the ITT, thereby ensuring at least weekly communication with the team.

We can confirm that all members of the team listed within this proposal have been mobilised and resourced to align with this project plan.

Key steps

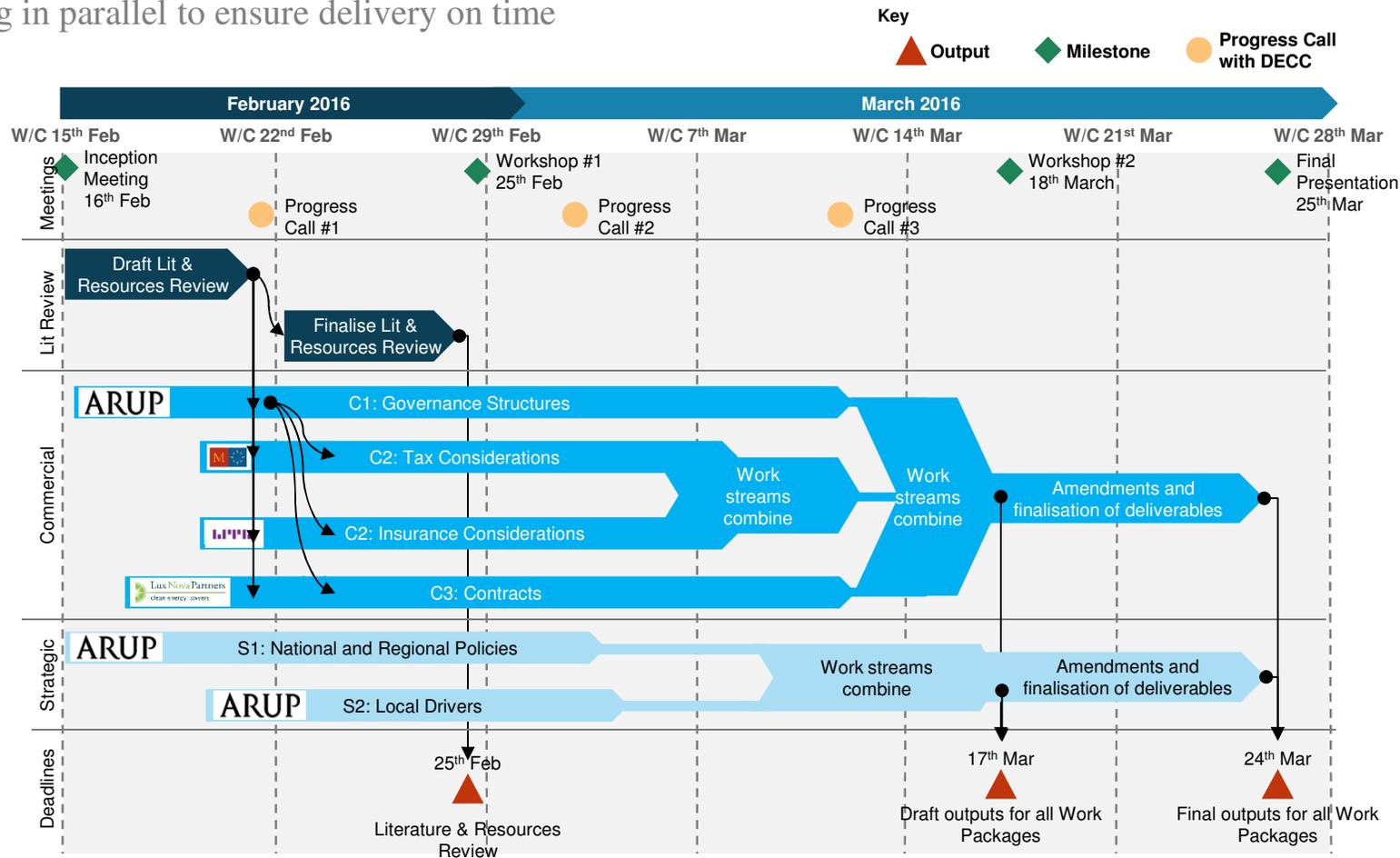
Inception

Upon notification of the tender outcome and in preparation for the inception meeting we would collate our existing materials on the governance structures for review and for national and regional policies in preparation for the inception meeting.

Literature and policy reviews

Following the inception meeting, the literature review will run in parallel with the early work on each work package.

- **Initial Scoping (2-3 days)** will involve consulting on documents across the team, DECC and our stakeholder partners to ensure we cover the relevant materials. A template spreadsheet will also be agreed.



- **Research (3 days):** reading / summarising docs by subject experts.
- **Reviewing and informing (2 days):** dissemination of findings to ensure the guidance builds on existing documents rather than replicating work.

- **Finalising (2 days)** will enable outstanding items to be completed before issuing the spreadsheet document to DECC for review.

Case Studies

A similar process for case studies will take

place to the policy review, except that the research will include contacting case study subjects, which will take up to 3 weeks to complete. All identified cases will be included in the case study spreadsheet, but these will be sieved to select the most suitable ones for inclusion in the guidance reports.

Project Team Organisation

A senior team of advisors working together to author clear, coordinated and useful guidance to local authorities

Commercial work packages

As shown in the programme, C1 must slightly precede the other work packages because they depend on the structures to develop guidance around tax, insurance and contracts.

Agreeing governance structures early will allow the specialists to focus on the legal, tax and insurance implications of each. The tax and insurance work packages will be combined into a single format and aligned with the work done on the governance and contracts.

The structures listed in this proposal and added to by DECC will be drawn diagrammatically and shared for review by the team. Once agreed, they will form the basis for Packages C2 and C3.

Strategic work packages

Preparation of the strategic work packages S1 and S2, are expected to be relatively independent, of the commercial work but will be referenced throughout the final guidance

Final production

We have programmed time for re-drafting and formatting into the final deliverables after the submission of the draft in order to maintain the programme.

We recognise that multiple cycles of reviews may be necessary to get the documents right. However, the programme set by DECC precludes lengthy review cycles; we assume DECC's reviews will be both timely and coordinated. We will run through your comments upon receipt and document how each will be addressed.

Forms of final outputs are as described previously.

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Comments on Team Structure

We have selected a senior team of technical experts, commercial consultants, financial advisors, insurance brokers and lawyers to deliver this commission for DECC.

We have structured the team to ensure an experienced hand to the work.

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Resourcing plan

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Appendix A

Answers to Questions posed in Annex B of ITT document

Questions

1. 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?
2. How will you ensure the guidance is future-proofed, to ensure minimal impact as the market changes?
3. Outline your skills and experience, and approach, of carrying out literature reviews or providing a summary of existing national and regional policies in the UK.
4. **Work Package C1:** Please provide an indicative list of the range of governance structures that could be discussed within the final guidance note, and an indicative list of suitable publications which could form the evidence base for this Work Package.
5. **Work Package C2:** Please provide an indicative list of the key tax and insurance considerations and issues that could be discussed within the final guidance note, and any experience you have on providing advice or guidance on tax and insurance issues relating to heat networks.
6. **Work Package C3:** Please provide an indicative list of the main contracts for which outline content and key clauses could be detailed within the final guidance note, and any experience you have on providing advice or working up contracts for existing heat networks in the UK.
7. **Work Package S1:** Please provide an indicative list of the key policies and strategies which could be included within the final guidance note.
8. **Work Package S2:** Please provide an indicative list of the key local drivers for heat networks that could be discussed within the strategic guidance document and detail which your contacts with existing schemes that may form case studies.

Question 1

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**?

Answer to Question 1, 498 words (500 limit)

Start simple before adding in complexity

We will ensure the introduction and executive summary is succinct and accessible and therefore open to non-technical users. The guidance will “start simple” before building up detail, with specific technical guidance sources referred to where relevant.

Graphical visualisations such as flow charts, decision trees and diagrams will be employed to communicate material visually.

The guidance will help project stakeholders determine at a high level what they want to achieve in the short, medium and long term in simple terms before moving to more in-depth, technical or legal issues.

We will ensure the guidance does not promote over complication, but instead encourages the putting in place robust frameworks for long term operation and expansion, which can be readily achieved, but are not a bar to later developments.

Straightforward, easy to navigate format

The user’s experience of the guidance documentation will be central to and will shape our output. The guidance will be designed in such a way that it is easy to navigate and reference.

We will draw on our relevant experience

developing guidance documents for similar audiences including the London Heat Network Manual, which is commonly cited as a key reference for project sponsors.

User input

We will ensure that the guidance meets the needs of local authorities through early engagement with typical users of the guidance. As part of the preparation for this proposal, we have already reached out to local authorities where we have an existing relationship with various local authorities across the UK.

They have indicated to us a need for more broad scenario case studies, articulating the benefits and risks. Specialist advice can be obtained, but the local authorities indicated a need for more guidance how to commission specialist work.

We would build on this with a wider consultation with interested parties as a part of engagement on case studies.

Writing for multiple uses

Guidance such as this will be used for learning and capacity building, as a reference for officers drafting their own business cases, and as a basis for specifying consultancy services to help with business case, procurement and delivery stages of projects.

Our drafting will include both general guidance and sections written with client specifications in mind.

Align with the other references in the industry

In order to ensure that the final guidance is practically useful, we would cross reference this study with industry standard documents, such as the Code of Practice, HM Treasury Green Book guidance and the Five Case Business Model, and the final guidance will reference generic project support documents, indicating how they are applied to specifically to heat network applications through examples.

Use of examples to promote knowledge sharing

The use of case studies is critical to illustrate the principles and bring to life an otherwise dry topic and this is incorporated into the programme.

Other formats

Due to programme / budget we have not proposed alternative media – e.g. web-based, interactive, knowledge networks - but these could be discussed at inception.



Arup wrote the London Heat Network Manual guidance document for the Mayor of London in 2014, which has become an industry guide for project delivery.

Question 2

How will you ensure the guidance is **future-proofed**, to ensure minimal impact as the market changes?

Answer to Question 2, 495 words (500 limit)

Throughout the document, each section will be reviewed in the context of future-proofing. It will be broken into easy to navigate sections and cross referenced, allowing any modifications to be made with minimal impact. This will also be compatible with a web-based platform (e.g. the Planning Portal).

The guidance will be structured to accommodate future developments and changes in the market which we know will include as a minimum:

Technology

Improvements in controls, use of metered data and additional sensors as well as improvements to additional low carbon heat generation sources are anticipated to be delivered by the government's commitment to the heat market.

These will be addressed in the guidance, and advice to projects sponsors will be approached in a way that does not impede technical innovation.

Complementary and Competing Markets

Changes to the electricity and gas markets can have a significant impacts to the business case for a heat network.

The guidance will include means in which this should be approached through pricing, contracts and supply agreements.

Regulation

It is possible that regulation of the heat market (or elements thereof) may be introduced over the lifetime of the agreements for new projects using this guidance.

We will identify the likely impacts of regulation and advise users regarding how they should make provisions for these in projects.

Developments in subsidies

Policy risks will be examined and guidance given how to manage uncertainties regarding changes to market subsidies.

Commercial Flexibility

While projects do not need to be fully accommodating of issues including future expansion, asset transfers, demand changes, the commercial and legal structures should be adaptable such that they do not obstruct future developments driven by market changes.

The guidance will set out key steps to ensure this mind-set is adopted by the project.

Prepare networks for the long-term

The guidance will recommend that users themselves take a long-term approach to their projects and networks, highlighting future risks and aspirations, such as:

- network extensions
- changes in land ownership
- planning for future developments.

- changing energy generation assets to achieve lower carbon emissions or additional income

The guidance will address strategies for applying a maturity model to network governance; i.e. such as starting with significant outsourcing and a small organisation for the network owner, but then learning and growing to reabsorb functions into the direct control of the organisation.

The guidance will aim to deliver a resilient balance between discussing issues in abstract but future proof terms, and being specific to a point in an evolving market.

Limitations to future-proofing

As with the networks themselves, there is often a cost as well as a benefit to future-proofing; the guidance will not be able to account for every eventuality. We believe a lifespan of this edition of around five years is appropriate as a guide.

If achieved it would see the guidance into the next Parliament, by which time it can be expected that enough will have changed – in policy and practice – that a significant revision will be needed.

Heat networks: Code of Practice for the UK

Raising standards for heat supply

This guidance will complement the existing resources available to local authorities and project developers. Over the last five years, Arup has been involved drafting, review and advising on numerous market guidance documents.

Question 3

Outline your skills and experience, and approach, of carrying out **literature reviews** or providing a summary of existing national and regional **policies in the UK**.

Answer to Question 3, 430 words (500 limit)

Research skills and experience

Arup is a major research organisation as well as a provider of design and consultancy services; we maintain strategic partnerships with major universities such as UCL and Imperial College and undertake funded research across every field of consultancy services. Arup's own annual R&D budget is over £10m.

The proposed team is highly experienced in delivering detailed literature reviews as a core research-related activity. Our CVs (Appendix B) include a variety of research papers and other publications, most of which included a literature review.

Recent projects including literature reviews include:

- **Green Construction Board and Waste and Resources Action Program (WRAP):** we conducted an extensive literature review of local, regional and national policies. The work included key decision points, actions, deadlines and targets to deliver a low carbon built environment.
- **Siemens research partnership:** We have worked with Siemens on four research reports concerning urban infrastructure and smart cities. In each

case a literature review was carried out covering energy markets, technology trends, case study searches and governance and policy options.

- **Climate hazard and adaption planning research:** We undertook two studies for the C40 Climate Leadership Group and Bloomberg Philanthropies to create a taxonomy of climate hazards and a road map for adaptation planning. Both studies involved extensive literature review including formal published documents and grey literature. Over 100 documents were reviewed and cited

Policy skills and experience

Through our advisory work to developers, policy makers and consultancy services for infrastructure and development projects, we are acutely aware of the national and regional policy landscape in the UK.

It is part of the **core business** of our planning consultants to undertake reviews of the UK policy landscape in order to best advise clients. Every planning application or plan we prepare must include a thorough and accurate recital of national, regional and local policy. With three chartered town planners in the team, this experience will be applied to ensure the review is focussed and

comprehensive. Additional examples:

- **Rockefeller Foundation 100 Resilient Cities (100RC) programme:** we are working with 11 cities (3 in the UK) to develop resilience strategies. For each city the starting point was a review of 30-50 existing policies, plans and strategies.
- **North London Heat and Power Project:** Arup led the production of this recent Generating Station DCO application, which included a policy review and recital for the Planning Statement, Energy Statement and EIA.
- **UK Energy Legislation Timeline:** Arup undertook research of existing, draft and planned legislation, regulation and policy across the Energy and Carbon landscape to produce a user-friendly timeline of energy legislation spanning the period 2012-2050.



Arup are advisors to the C40 Cities Climate Leadership Group, and regularly undertake literature, policy and regulatory reviews at a large scale.

Question 4

Work Package C1: Please provide an indicative list of the range of governance structures that could be discussed within the final guidance note, and an indicative list of suitable publications which could form the evidence base for this Work Package.

Answer to Question 4, 497 words (500 limit)

List of governance structures

The design, delivery, ownership, and operation of each asset in the network can be allocated to various parties throughout the evolution of a project to suit the local authority’s objectives, budget and appetite for risk. Through our work advising clients, we have advised on many governance options and the criteria for decision.

In every case it is necessary first to identify the full suite of roles which need to be performed for a complete and coherent governance system (e.g. sponsor, owner, operator, constructor, funder, consumer, supplier, regulator etc.). These roles can be assigned, combined or shared.

Time and phasing also matter: structures may evolve over time to enable actors to divest or to extend their roles, or to extend the network itself (a frequent instance is when a social landlord contemplates extending a network to serve private tenants or leaseholders). Facilitating the transition from development-scale heat networks to city-scale has significant implications for governance, for example in relation to heat transmission networks carrying heat from a range of sources.

Table 5 of the CIBSE/ADE Code of Practice

(COP) (reproduced opposite) sets out a range of structures for ownership and operation of heat networks, but does not give a comprehensive summary of the options available and does not fully relate the structures to the roles. Our list would include:

- **GenCo:** supplying heat on a bulk basis to a purchaser, which may be a landlord or campus owner, or an ESCo
- **PipeCo:** owner of primary and/or secondary network, with revenue through:
 - Sale of heat
 - Carriage of heat (UoS)
- **ESCo:** integrated owner of system and seller of heat, typically a private company but could also be a Council, an ALMO, a public SPV or a PPP SPV.
- **HeatCo:** the supplier of the heat service to consumers (which may be integrated with one of the above roles).
- **Contractor:** providing outsourced services such as design, build, operate, maintain, metering and billing etc.
- **Developer:** whose involvement may be limited to the construction phase, with handover of assets / liabilities to other parties on completion.

- **Landlord / Owner**, of different types:
 - of occupied buildings, which must be supplied with a heat system
 - of land under NH assets, and may charge a rent to asset owner.
- **Funder:** which may be a lender or equity investor, or a grant-making body
- **Regulator:** e.g the Heat Trust, to tackle residential customer service and customer protection aspects of governance
- **Supplier of last resort:** e.g. the local authority, which in promoting a network has an interest in ensuring local residents are not without heat if an ESCo collapses.

- GLA, London Heat Network Manual (primarily authored by Arup)
- SFT documents
- Zero Carbon Hub, Legal Frameworks
- LEP, Making ESCos work

Indicative List of Publications

Publications which could form the evidence base for this work package include:

- Powering Ahead, LDA 2009
- Heat Trust Scheme Rules
- Heat Trust Scheme By-Laws
- Sustainable Urban Energy Policy: Heat in the City
- The documents listed in the ITT:
 - CIBSE/ADE Heat Networks Code of Practice

Table 5: Different options for ownership and operation of heat network schemes

OPTION	Energy centre		Heat network		Heat supply
	Own	Operate	Own	Operate	
A	PSCo	PSCo	PSCo	PSCo	PSCo
B1	LA	LA	LA	LA	LA
B2	LA	PSCo	LA	PSCo	LA
C	SPV	SPV	SPV	SPV	SPV
D1	PSCo	PSCo	LA	LA	PSCo
D2	PSCo	PSCo	LA	LA	LA
D3	PSCo	PSCo	SPV	SPV	PSCo
E1	LA	LA	PSCo	PSCo	PSCo
E2	LA	LA	PSCo	PSCo	LA
F	COOCo	COOCo	COOCo	COOCo	COOCo

LA = Local Authority
PSCo = private sector company
SPV = public-private special purpose vehicle
COOCo = community owned company

Figure reproduced from Page 30 of the CIBSE Heat Networks Code of Practice - Table 5: Different options for ownership and operation of heat network schemes.

Question 5

Work Package C2: Please provide an indicative list of the **key tax and insurance considerations** and issues that could be discussed within the final guidance note, and any **experience you have on providing advice or guidance on tax and insurance issues** relating to heat networks.

Answer to Question 5, 490 words (500 limit)

Tax Considerations

Our guidance will provide local authorities with the *vocabulary of tax regimes* which may be associated with networks generally, and with each governance structure / entity in particular.

From a UK taxation perspective, the main considerations arising will be relating to UK corporation tax, VAT, employment and stamp taxes. Key considerations for the guidance to consider would include:

- Governance and structural tax considerations – including the extent to which certain structures fall within the scope of taxation
- Potential tax treatments and associated cashflow impacts
- Tax risks inherent to the sector
- Tax risks associated with change in law, particular in relation to financing structures
- Allocation of tax risks between the different parties to the transactions

In respect of heat networks in particular, then some of key issues arising from a tax perspective would centre around commercial matters including:

- Asset procurement and asset ownership
- Revenues and customer bases
- Funding structures and financing arrangements
- Ownership structures and realisation/returns on investment

Tax advice experience

Mazars has significant experience in the energy, infrastructure and waste sectors working with public and private sector bodies. Specific examples include:

- Tilbury Green Biomass: corporation tax, VAT and SDLT
- Isle of Wight Waste: tax risk from project sponsor's use of available funding
- Norwich Research Park: structuring to meet objectives and manage tax risk
- Centre for Research & Enterprise – RoCRE: tax options relating to the large scale project

We have a track record in working closely with our clients' and their other advisers, such as banks and legal advisers to achieve the most efficient ways to deliver the best advice and commercial solutions.

Insurance Considerations

Insurance is an important risk mitigation tool, but many project sponsors are unfamiliar with the language and methods of risk management. Our insurance guidance will therefore provide a *vocabulary of insurances* which might (or must) be obtained; it will also provide *guidance* on how to think about project risks and how to ensure insurable risks are allocated to the party best able to manage those risks most cost effectively.

Insurance guidance will set out a framework to achieve value for money relative to treatment of insurance related issues.

Key insurable risks include:

Works phases

- Contractors "All Risks" Insurance
- Delay In Start Up Insurance
- Construction Third Party Liability Insurance
- Professional Indemnity Insurance
- Insurances required by law or regulation in the UK

Operational phases

- Property Damage "All Risks" Insurance
- Engineering Breakdown Insurance

- Business Interruption Insurance
- Third Party Public and Products Liability Insurance
- Insurances required by law or regulation in the UK

Insurance experience

Willis has extensive public sector infrastructure project experience including:

- **District Heating:** advising London Waste Limited on a potential heat offtake arrangement from its existing EfW plant.
- **Energy and waste:** Hinckley Point C, Dundee & Angus Residual Waste Project, West London Waste Authority project, Clyde Valley Residual Waste Project, and Greater Manchester Waste Project.
- **Local Government:** Stoke on Trent Council housing, Suffolk County Council PFI, Angus Council campus, Cornwall Council PFI, and Bristol new arena.

Question 6

Work Package C3: Please provide an indicative list of the main contracts for which outline content and key clauses could be detailed within the final guidance note, and any experience you have on providing advice or working up contracts for existing heat networks in the UK.

Answer to Question 6, 499 words (500 limit)

List of Main Contracts

Looking across the spectrum of possible DH schemes what is appropriate for a particular client, scheme, opportunity, etc. depends on multiple factors, most of which are not strictly “heat” related. However, there is a limited number of contract choices at the core of each contract matrix, as illustrated in **Diagram A**.

Contract content should follow contract selection, which should follow structuring of the contract matrix, which should follow commercial structuring. **Diagrams B to D** illustrate factors that influence delivery structure and contract choice, relevance and content.

Our experience

The team at Lux Nova Partners have extensive experience advising on the spectrum of district heating contracts and related commercial and legal issues, having advised on many of the biggest district heating schemes in the UK. Their experience includes:

- advising on governance and commercial and contract structuring for clients such as the **London Borough of Enfield** (Lee Valley Heat Network), **Sheffield City Council** (DEPDU funded Governance and

Ownership Study) and the **Corporation of London** (Feasibility of a City DH network);

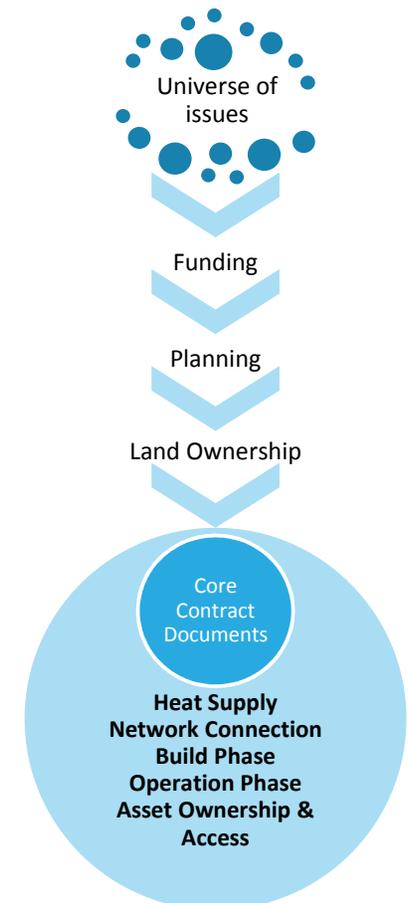
- creating unbundled delivery structures for clients such as **Knight Dragon** (separating an enduring AssetCo from an enduring HeatCo and replaceable Operator on the Greenwich Peninsula) and **Sheffield City Council** (recommending a PipeCo model to unlock potential DH expansion by joining the EON and Veolia networks)
- creating the documentation, end-to-end, for delivering district heating “ESCo” concessions for clients such **LendLease** (Greenwich Peninsula, Elephant & Castle) **EcoCentroGen** (eg. Bath Western Riverside), **Metropolitan Housing** (Clapham Park Housing Development) and for outsourcing various DH functions for clients such as the **University of Cambridge** (North West Cambridge Development) and **London Borough of Enfield** or simply template heat supply agreements for clients such as **Kirklees Council** and **Springbok Community Wood Heat Co-operative**
- flagging and addressing “*supplier of last resort*” concerns and problem solving SOLR and other gaps on existing district heating schemes for clients such as

LendLease and **East Village Management** both obliged to connect to the Cofely network on the Olympic Park

- creating ESCo documentation within a housing PFI context for clients such as **Regenter** (Myatts Field North) and **Wates Living Space** (Woking)

Lux Nova have a full toolbox of precedent DH agreements and drafting, including concession agreements, connection, supply, use of system, D&B, O&M, billing and metering, customer services agreements, energy centre, plant room and pipework leases and easements, etc – developed over years of experience and known to be acceptable to the developer, contractor, consumer and funder markets.

Arup will add a technical dimension to Lux Nova’s legal perspective, having also worked on numerous heat network contract negotiations and procurements.



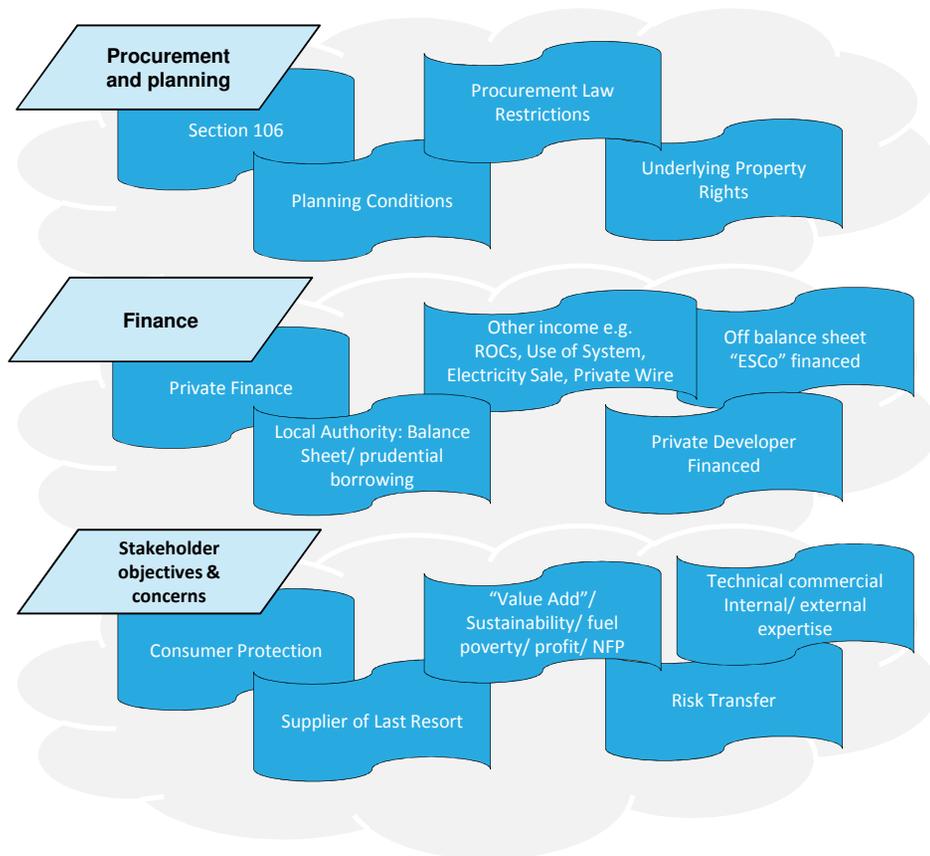
Legal Considerations and Contract Structures – **Diagram A**

Question 6

Work Package C3: Legal Considerations and Contract Structures – Diagram B Governance



What shapes and influences contract structure: **Governance**



Example Contracts to manage the overall governance of a heat network

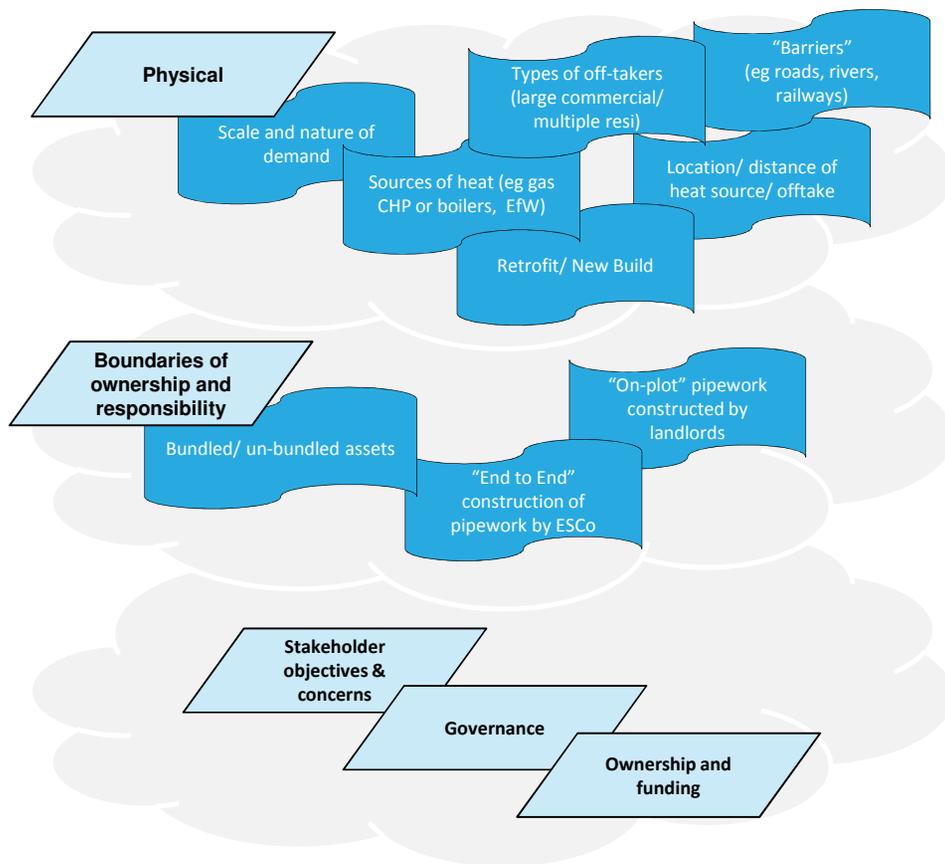
Local Authority	Public / Private	Private
Local Authority SPV incorporation	PFI with Project Agreement plus ESCo sub-contract	Concession Agreement with ESCo
Framework governing suppliers with call off contracts	JV/ SPV structure	Revenue Sharing Arrangements
Procurement Processes	Procurement Processes	Self-build/ internal governance
Board Reserved Matters		
Multiple LA Board of Governance		
Debt funder influences: Funding Agreements/ Direct Agreements		

Question 6

Work Package C3: Legal Considerations and Contract Structures – Diagram C Heat Generation and Distribution



What shapes and influences contract structure: **Generation and Distribution**



Example Contracts to manage generation and distribution works / services

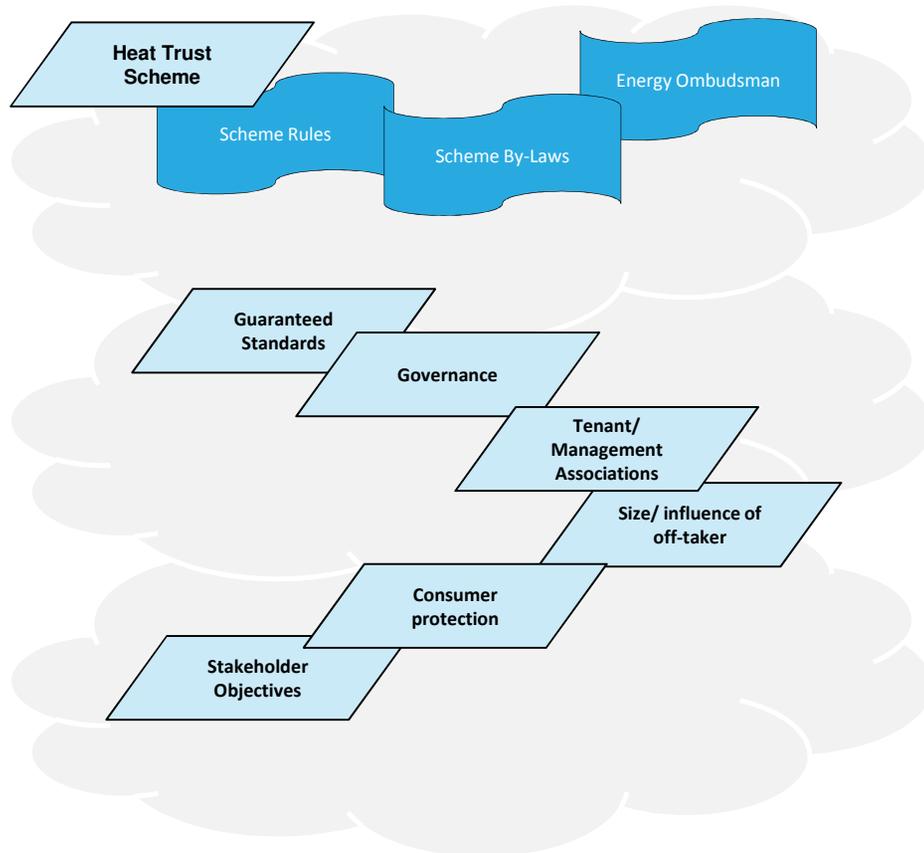
Construction	Operation	Assets
EPC Contract/ Collateral Warranties/ PCGs	O&M Agreement/ Warranties/ PCGs	Asset Sale and Purchase
Concession Agreement	Concession Agreement	Asset Adoption
Packaged Sub-Contracts	O&M Sub-Contract packages	Lease/ License of constructed Assets
Plot Connection Agreements	Plot Connection Agreements	Use of System Agreement
Specifications	Fuel Procurement	Metering and Billing
Construction license	Land rights (easements/ leases)	

Question 6

Work Package C3: Legal Considerations and Contract Structures – Diagram D Heat Consumption



What shapes and influences contract structure: **Heat Consumption**



Example Contracts to manage the consumption of heat and related matters

With Landlord	With Tenant / Consumer	With Others
Construction/ Landlord Supplies	Residential Supply Agreement	Power Purchase Agreements with Electricity Utility
"Void" Supply Agreement	Commercial Supply Agreement	
Housing Association Supply Agreement	Charging provisions to be made in leases	
	"Anchor" heat load purchase agreement with Local Authority	

Question 7

Work Package S1: Please provide an indicative list of the key policies and strategies which could be included within the final guidance note.

Answer to Question 7, 328 words (500 limit)

Compared with governance, tax and contracts, Government policy is more familiar territory for local authorities, but the multiple layers and the seemingly continuous cycle of change create their own challenges: The purpose of the policy guidance is to bring together in one place a catalogue of relevant national and regional policies covering England and Wales.

Bearing in mind the balance of resources indicated in the ITT, therefore, our focus would be on the collection these documents – both published and in draft – with a succinct, graphics-led overview of key documents.

Our team has been selected to bring knowledge across several policy domains and both England and Wales.

REDACTED

National Polices and Strategies

Legislation

- European Energy Directive (2009/28/EC)
- Local Government Devolution Act 2016
- Energy Act 2011
- Climate Change Act 2008
- Landlord and Tenant Act (various)

Policy

- National Planning Policy Framework
- National Policy Statements on energy (especially EN-1 and EN-3)

Strategies and plans

- Strategy and Policy Statement to Ofgem: Consultation draft (2014)
- Delivering UK Energy Investment: Networks (2015)
- The National Infrastructure Plan (2014)
- Delivering UK Energy Investment (2014)
- Annual Energy Statement (2014)
- The Future of Heating: Meeting the challenge (2013)
- UK Renewable Energy Roadmap Update (2013)
- The Future of Heating: A Strategic Framework for Low Carbon Heating in the UK (2012)
- Planning Our Electric Future (2011)
- The Carbon Plan: Delivering our low carbon future (2011)
- The UK National Renewable Action Plan (2010)
- UK Renewable Energy Action Plan (2010)
- UK Renewable Energy Strategy (2009)
- The UK Low Carbon Transition Plan

(2009)

Welsh Policies and Strategies

Legislation

- Environment (Wales) Bill 2016
- Well-being of Future Generations (Wales) Act 2015
- Planning (Wales) Act 2015

Policy

- Planning Policy Wales (Edition 8, January 2016);
- The Wales Spatial Plan (Update 2008)
- Technical Advice Notes, notably TAN 8: renewable energy (2005) and TAN 21: Waste (2014)

Strategies and plans

- Energy Wales: A Low Carbon Transition (2012);
- Climate Change Strategy for Wales (2010);
- Economic Renewal, A New Direction (2010);

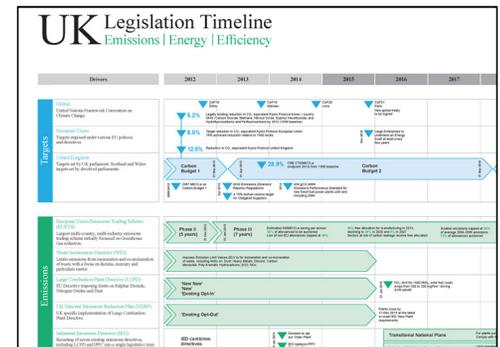
Local Policies and Strategies

We believe that local authorities would value a selection of local strategies and plans, to provide examples of how they might apply policy locally themselves. London, Bristol, Greater Manchester and Liverpool, for example are all pursuing innovative policy

and strategy approaches to deliver low carbon energy infrastructure in their cities.

Similarly, Scottish policy and strategy may provide a useful pool of examples showing potential alternative approaches heat network frameworks.

Arup has offices in the above-mentioned cities and in Scotland and could efficiently draw upon that local knowledge pool to extend the guidance to these areas.



Arup's user-friendly timeline of legislation and regulatory cycles, giving a clear picture of expected changes to inform energy, efficiency and emissions strategies

Question 8

Work Package S2: Please provide an indicative list of the **key local drivers for heat networks** that could be discussed within the strategic guidance document and detail **which of your contacts with existing schemes** may form case studies.

Answer to Question 8, 487 words (500 limit)

Local Drivers

A local driver, in this context, is an issue or performance indicator which can be affected, either beneficially or adversely, by a proposed heat network. Hence drivers may be something to be reduced or avoided, or something to be promoted and maximised.

Each time we undertake a study or develop a business case for a proposed heat network, we find there is a core set of drivers which local authority clients identify to us and which form the basis of the evaluation of the network or network options. These drivers (and their typical units of measurement) are:

- Carbon emissions, (tonnes CO₂ equivalent per annum)
- Local air quality (primarily NO_x and PM10 as set out in supplementary planning guidance for Sustainable Design and Construction)
- Cost of energy for customers (£/kWh and £/annum)
- Fuel poverty reduction (fuel bill as a % of annual income after tax and housing costs, sometimes measured by proxy, such as number of rental units connected)
- Job creation (FTE employment per annum, for construction and operation

phases)

- Revenue potential and funding reallocation drivers for the Council (£ per annum)

Most of these drivers have been constant over the past decade, although we have observed a shift since the Recession from a predominant concern with carbon to a more balanced position which co-values environmental, social and economic drivers. This is important because many revenue optimisation measures – such as connecting cooling loads to heat networks through absorption chillers – tend to reduce the carbon performance of a network (and vice versa)

Other drivers which are less often articulated but which we consider should be included are:

- stimulation of the local economy / retention of energy expenditure in the local economy (£ GVA);
- energy resilience / energy security (measured in terms of risk-adjusted avoided future costs compared with a BAU case)
- Local capacity and skills development, especially for the council (qualitative measure)

Contacts for Existing Schemes

As noted above, we have secured the agreement of Engie (formerly Cofely), E.ON and Veolia Energy to make their portfolio of networks available for inclusion as case studies. In addition, we have identified the following networks (with contact organisation / name) which we believe would be suitable as a pool from which to draw case study material.

Due to time constraints in preparing the bid we have not contacted all these parties in advance, but all persons mentioned are known personally to one or more of the partners:

- Somers Town (REDACTED)
- Bunhill (REDACTED)
- Elephant and Castle (REDACTED)
- SELCHP (REDACTED)
- Olympic Park and ExCeL (REDACTED)
- Cranbrook (REDACTED)
- Woodberry Down (REDACTED)
- Anglia Ruskin University
- Kings Cross Central (REDACTED)



An Arup and Lux Nova team collaborated to provide technical, commercial and legal services to Lend Lease during their negotiations with a Major ESCo at the £1.6Bn redevelopment at Elephant and Castle.

- Imperial College London (REDACTED)
- Royal Free Hospital (REDACTED)
- Lee Valley Heat Network (REDACTED)
- Bloomsbury Heat & Power (REDACTED)

This list would be supplemented with additional Arup projects and with those operated by Engie and Veolia Energy.

Appendix B

Signed Declarations and Pricing Schedule

1. Declaration 1: Statement of non-collusion
2. Declaration 2: Form of Tender
3. Declaration 3: Conflict of Interest
4. Declaration 4: Questions for tenderers
5. Pricing Schedule

Declaration 1: Statement of non-collusion

To: The Department of Energy and Climate Change

We recognise that the essence of competitive tendering is that the Department will receive a bona fide competitive tender from all persons tendering. We therefore certify that this is a bona fide tender and that we have not fixed or adjusted the amount of the tender or our rates and prices included therein by or in accordance with any agreement or arrangement with any other person.

We also certify that we have not done and undertake not to do at any time before the hour and date specified for the return of this tender any of the following acts:

communicate to any person other than the Department the amount or approximate amount of our proposed tender, except where the disclosure, in confidence, of the approximate amount is necessary to obtain any insurance premium quotation required for the preparation of the tender;

enter into any agreement or arrangement with any other person that he shall refrain for submitting a tender or as to the amount included in the tender;

offer or pay or give or agree to pay or give any sum of money, inducement or valuable consideration directly or indirectly to any person doing or having done or causing or having caused to be done, in relation to any other actual or proposed tender for the contract any act, omission or thing of the kind described above.

In this certificate, the word “person” shall include any person, body or association, corporate or unincorporated; and “any agreement or arrangement” includes any such information, formal or informal, whether legally binding or not.

.....
Signature (duly authorised on behalf of the tenderer)

REDACTED

.....
Print name

Ove Arup and Partners Limited

.....
On behalf of (organisation name)

Date: **08th February 2016**

Declaration 2: Form of Tender

To: The Department of Energy and Climate Change

1. Having considered the invitation to tender and all accompanying documents (including without limitation, the terms and conditions of contract and the Specification) we confirm that we are fully satisfied as to our experience and ability to deliver the goods/services in all respects in accordance with the requirements of this invitation to tender.
2. We hereby tender and undertake to provide and complete all the services required to be performed in accordance with the terms and conditions of contract and the Specification for the amount set out in the Pricing Schedule.
3. We agree that any insertion by us of any conditions qualifying this tender or any unauthorised alteration to any of the terms and conditions of contract made by us may result in the rejection of this tender.
4. We agree that this tender shall remain open to be accepted by the Department for 8 weeks from the date below.
5. We understand that if we are a subsidiary (within the meaning of section 1159 of (and schedule 6 to) the Companies Act 2006) if requested by the Department we may be required to secure a Deed of Guarantee in favour of the Department from our holding company or ultimate holding company, as determined by the Department in their discretion.
6. We understand that the Department is not bound to accept the lowest or any tender it may receive.
7. We certify that this is a bona fide tender.

.....
Signature (duly authorised on behalf of the tenderer)

REDACTED

.....
Print name

Ove Arup and Partners Limited

.....
On behalf of (organisation name)

Date: **08th February 2016**

Declaration 3: Conflict of Interest

I have nothing to declare with respect to any current or potential interest or conflict in relation to this research (or any potential providers who may be subcontracted to deliver this work, their advisers or other related parties). By conflict of interest, I mean, anything which could be reasonably perceived to affect the impartiality of this research, or to indicate a professional or personal interest in the outcomes from this research.

.....
Signature

REDACTED

.....
Print name

Ove Arup and Partners Limited

.....
On behalf of (organisation name)

Date: **08th February 2016**

Declaration 4: Questions for tenderers

In some circumstances the Department is required by law to exclude you from participating further in a procurement. If you cannot answer ‘no’ to every question in this section it is very unlikely that your application will be accepted, and you should contact us for advice before completing this form.

Please state ‘Yes’ or ‘No’ to each question.

Has your organisation or any directors or partner or any other person who has powers of representation, decision or control been convicted of any of the following offences?	Answer
(a) conspiracy within the meaning of section 1 or 1A of the Criminal Law Act 1977 or article 9 or 9A of the Criminal Attempts and Conspiracy (Northern Ireland) Order 1983 where that conspiracy relates to participation in a criminal organisation as defined in Article 2 of Council Framework Decision 2008/841/JHA;	REDACTED
(b) corruption within the meaning of section 1(2) of the Public Bodies Corrupt Practices Act 1889 or section 1 of the Prevention of Corruption Act 1906; where the offence relates to active corruption;	REDACTED
(c) the offence of bribery, where the offence relates to active corruption;	REDACTED
(d) bribery within the meaning of section 1 or 6 of the Bribery Act 2010;	REDACTED
(e) fraud, where the offence relates to fraud affecting the European Communities’ financial interests as defined by Article 1 of the Convention on the protection of the financial interests of the European Communities, within the meaning of:	REDACTED
(i) the offence of cheating the Revenue;	REDACTED
(ii) the offence of conspiracy to defraud;	REDACTED
(iii) fraud or theft within the meaning of the Theft Act 1968 , the Theft Act (Northern Ireland) 1969, the Theft Act 1978 or the Theft (Northern Ireland) Order 1978;	REDACTED
(iv) fraudulent trading within the meaning of section 458 of the Companies Act 1985, article 451 of the Companies (Northern Ireland) Order 1986 or section 993 of the Companies Act 2006;	REDACTED
(v) fraudulent evasion within the meaning of section 170 of the Customs and Excise Management Act 1979 or section 72 of the Value Added Tax Act 1994 ;	REDACTED
(vi) an offence in connection with taxation in the European Union within the meaning of section 71 of the Criminal Justice Act 1993;	REDACTED
(vii) destroying, defacing or concealing of documents or procuring the execution of a valuable security within the meaning of section 20 of the Theft Act 1968 or section 19 of the Theft Act (Northern Ireland) 1969;	REDACTED
(viii) fraud within the meaning of section 2, 3 or 4 of the Fraud Act 2006; or	REDACTED
(xi) making, adapting, supplying or offering to supply articles for use in frauds within the meaning of section 7 of the Fraud Act 2006;	REDACTED
(f) money laundering within the meaning of section 340(11) of the Proceeds of Crime Act 2002;	REDACTED
(g) an offence in connection with the proceeds of criminal conduct within the meaning of section 93A, 93B or 93C of the Criminal Justice Act 1988 or article 45, 46 or 47 of the Proceeds of Crime (Northern Ireland) Order 1996; or	REDACTED
(h) an offence in connection with the proceeds of drug trafficking within the meaning of section 49, 50 or 51 of the Drug Trafficking Act 1994; or	REDACTED
(i) any other offence within the meaning of Article 45(1) of Directive 2004/18/EC as defined by the national law of any relevant State.	REDACTED

Pricing Schedule

Part A – Staff/Project Team Charges

Set up Costs – please specify	REDACTED
Expenses	REDACTED

Our commercial proposal is based on the following assumptions:

- REDACTED.

Grade/level of staff	Daily rate (ex VAT)	No. days offered over course of contract	Tasks to be undertaken on this project	Total price offered per staff member
Partner	REDACTED	REDACTED	REDACTED	REDACTED
Director / Associate Director	REDACTED	REDACTED	REDACTED	REDACTED
Associate	REDACTED	REDACTED	REDACTED	REDACTED
Senior Consultant	REDACTED	REDACTED	REDACTED	REDACTED
Reviewer (Blended rate)	REDACTED	REDACTED	REDACTED	REDACTED
Consultant	REDACTED	REDACTED	REDACTED	REDACTED
Sub-total				REDACTED

Part B – Non-staff/project team charges

Item	No. of items	Price per item (ex VAT)	Total price per offered
None Included		£	REDACTED
Sub-total			REDACTED

Part C – Full Price Offered

Sub-total (Part A + Part B)	REDACTED
VAT	REDACTED
TOTAL (Sub-total + VAT)	REDACTED

Replicated from Annex A of the ITT

Appendix C

Team CVs

REDACTED

Appendix D

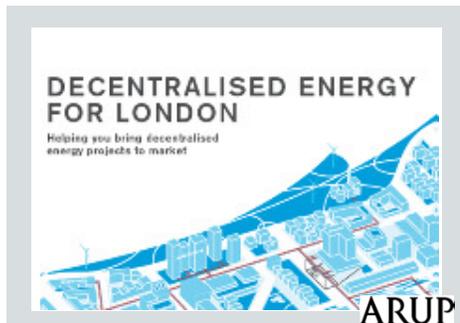
Project Experience

Project Experience

1. **Decentralised Energy Programme Delivery Unit (DEPDU)** | The Greater London Authority
2. **The London Heat Network Manual** | The Greater London Authority
3. **Energy Masterplanning in the UK** | Various Local Authority and Private Clients
4. **Decentralised Energy Masterplan Manual** | Haringey Council
5. **Commercial Negotiations with ESCOs** | Various Private Developer Clients
6. **Development of a Licence Lite** | The Greater London Authority
7. **Which? Consumer Protection Review** | Consumer Rights Group Which?
8. **The Price of Heat** | CIBSE
9. **Heat Tariff and Connection Charge Review** | The London Borough of Islington
10. **Analysis of policies, activities and Literature** | C40 Climate Action Group and The Rockefeller Foundation
11. **Launching a new Geothermal Heat Supply Business** | Geon Energy Ltd.
12. **Residential Heat Network, Derwenthorpe, York** | Joseph Rowntree Housing Trust
13. **Lee Valley Heat Network** | The London Borough of Enfield
14. **Greenwich Peninsula** | Knight Dragon
15. **Clapham Park Housing Development** | Metropolitan Homes
16. **Sheffield District Heating Scheme** | Sheffield City Council

Project Experience

We have included recent projects which are relevant to this commission and we believe demonstrate our experience



Decentralised Energy Programme Delivery Unit (DEDU)

Greater London Authority

Over five years, Arup supported the GLA as part of the Decentralised Energy Project Delivery Unit. Arup provided London Boroughs and other heat network project sponsors with the technical, commercial and technical assistance bring their heat network projects to market. Over the lifetime of the programme, the team helped deliver £120m of projects to market.

Services provided:

- Technical, commercial and financial modelling guidance to local authorities.
- Procurement management and market engagement with ESCos and Contractors.
- Strategic advice to the GLA



London Heat Network Manual

Greater London Authority

Arup authored the London Heat Network Manual, to support local authorities, energy services companies, developers and planners by providing guidance to support the delivery of heat networks.

The document includes:

- Contract structures, procurement strategies and management
- Tariff structures and guidance on pricing
- Planning policy and typical requirements of local planning authorities
- Technical design principles and concepts for the physical infrastructure of a heat network



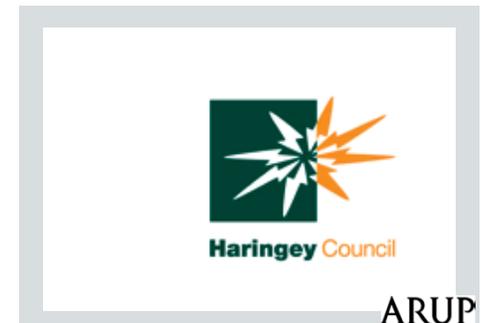
Energy Masterplanning in the UK

Various

Arup has completed a number of energy masterplans for large scale public and private sector clients. This work has developed a keen understanding of the issues surrounding the challenges rolling out heat networks.

Areas of study for clients have included:

- Kingston Upon Thames
- Brighton
- Lambeth
- Southall
- Wandsworth
- Leeds
- Sheffield
- Southwark
- Waltham Forrest
- Chippenham
- Camden
- REDACTED



Decentralised Energy Masterplan Manual

Haringey Borough Council

Arup produced a manual and excel tool to allow local authorities to produce their own energy masterplans. The DEMaP guidance enabled Haringey and others to enable the roll-out of heat networks. The manual describes the process, from start to finish, from capacity building and evidence base through to feasibility studies and project delivery.

Services provided:

- Drafting guidance on heat networks
- Programme management
- Advice on planning and regulation
- Technical guidance on engineering, financial and commercial issues around DE.

Project Experience

We have included recent projects which are relevant to this commission and we believe demonstrate our experience



Commercial Negotiations with ESCos

Various

Arup and Lux Nova Partners have previously collaborated successfully to guide private developers through their negotiations with ESCos to deliver new heat networks as part of major developments. This has included guidance on commercial strategy, pricing and contract structures.

Recent clients we have advised include:

- REDACTED



Development of a Licence Lite

The Greater London Authority

Arup has been developing the GLA's application to Ofgem for a Licence Lite. The GLA will acquire a licence and buy electricity from embedded decentralised electricity generation, selling it on at retail prices to selected consumers. Arup is now supporting the GLA develop its approach and a programme to deliver a successful application.

Services Provided:

- Application and engagement with Ofgem,
- Development of GLA's business model
- Advice to London Boroughs on provision of supply generation capacity and development of contracts with consumers;



Which? Consumer Protection Review

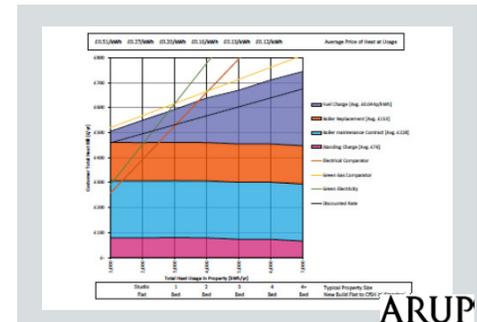
Which?

The consumer rights group Which? commissioned Arup to review the implications of district heating support policies from a customer perspective and report on likely impact on heat tariffs and associated levels of service.

Arup provided recommendations for tariff structures and the development of a framework to ensure protection of customers outside of a formal regulatory system.

Services Provided:

- District heating pricing and consumer protection advice
- Review of regulatory options for emerging utilities.



The Price of Heat

CIBSE

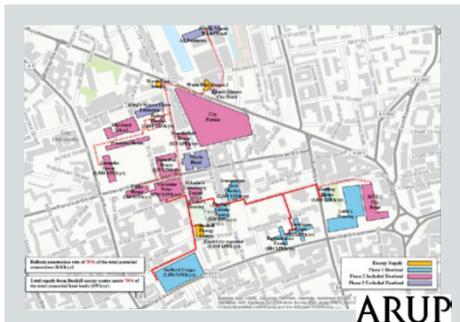
Arup have conducted internal research into heat pricing. The work built on a three month study into fuel supplies and technology selection drivers to provide avoided cost comparisons and customer price perceptions for the price of heat.

Since being presented at CIBSE's technical symposium in 2015, the work has been updated to provide a partner piece illustrating how the fixed and variable costs to a heat network impact the tariff selection for heat network operators.

The research informs a number of studies Arup undertakes when advising clients on effectively pricing heat and communicating messages to heat customers.

Project Experience

We have included recent projects which are relevant to this commission and we believe demonstrate our experience



ARUP

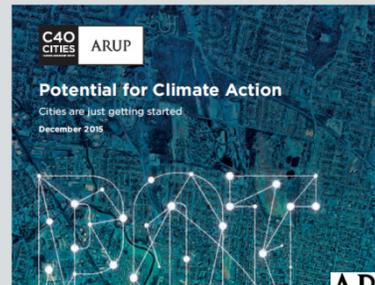
Heat Tariff and Connection Charge Review

The London Borough of Islington

Arup undertook a review of the heat tariff and connection charges for Islington as they prepared for a new phase of expansion. This involved modelling the projected capital and operational costs over the lifetime of the project in order to develop a tariff, compliant with state aid issues for market rates while minimising costs to social housing customers.

Services Provided:

- Commercial modelling of network
- Tariff development and testing
- Review of operations regarding state aid issues.
- Advice on commercial operation of scheme.



ARUP

Analysis of policies, activities and Literature

C40 Cities & The Rockefeller Foundation

As advisor to the C40 Climate Leadership Group and to the 100RC network, Arup regularly undertake large literature review and policy summaries for local and national governments across the globe to baseline the existing action and support mechanisms.

Our consultants review existing, policies, plans and strategies in place to determine how they address overarching needs and use those existing policies as a launch pad to find new opportunities.

Services Provided:

- Literature Review
- Review of Regulatory Options
- Drafting of guidance for governments



ARUP

Launching a new Geothermal Heat Supply Business

Geon Energy Ltd.

Arup is collaborating with Geothermal Engineering Ltd. (GEL) to devise and commercialise a new concept heat supply technology. The Geon System uses a single borehole to provide heat with lower capital costs than a conventional geothermal system.

As business partners with GEL, Arup are devising the contracting structures, company governance and agreeing heat supply arrangements.

The first project is supported by DECC's Innovation Fund which will provide heat to a university campus in Crewe in late 2016.



ARUP

Residential Heat Network, Derwenthorpe, York

Joseph Rowntree Housing Trust

Joseph Rowntree Housing Trust set out to provide a community with dwellings that could be lived in for an entire life. The housing development had to be low energy demand and supplied by low emission heating.

Arup reviewed, commented and helped sign off the developers' and contractors' detailed designs.

During the development Arup produced a range of operational and financial options for the ongoing construction of the heat network, and future operation and maintenance.

Arup took this advice through to construction and bringing on a concessionaire. This has resulted in large savings at early stages.

Project Experience

We have included recent projects which are relevant to this commission and we believe demonstrate our experience



Lee Valley Heat Network

London Borough of Enfield

Enfield Council are setting up the largest new DH scheme in the UK, in Enfield Borough, north London, serving c. 8000 new homes plus commercial connections.

Lux Nova are advising the Council on the structuring, set-up, governance, funding and contracting in relation to the scheme.

Services Provided:

- Advice on structuring and governance included reports on vires, procurement, company law and state aid
- Drafting all major bespoke agreements, from review of company articles, development of DBOM, to connection and supply agreements



Greenwich Peninsula

Knight Dragon

Knight Dragon are the master developer, on delivery of a district heating scheme to supply heat to a 10,000 home, development on the Greenwich Peninsula, around the O2 Arena. Lux Nova acted as project counsel to developer, ESCo and OPCo.

Services Provided:

- Structuring, drafting and negotiating master concession, plot connection, customer supply and service provider agreements
- Delivering 'value add' through our advice on value and bankability, carbon accounting, supplier of last resort, heat pricing, customer protection, utility regulation, State Aid, Competition and off-site connection



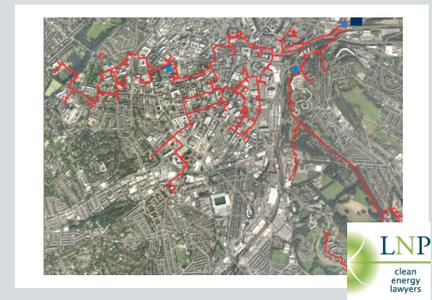
Clapham Park Housing Development

Metropolitan Homes

The Housing Association, Metropolitan Homes, is tendering for third party ESCo services to adopt and/or retrofit existing underperforming district heating within existing housing blocks on the Clapham Park Housing Development and to expand the heating network and build new heat sources to serve c. 1500 new homes.

Services Provided:

- Advising the Housing Association on the procurement of the ESCo
- Developing the suite of tender documents, including Concession Agreement and Heat Supply Agreements



Sheffield District Heating Scheme

Sheffield City Council

The Council, under a DECC HNDU-funded study, was investigating the potential for the expansion of the UK's current largest DH Scheme. Lux Nova advised the Council on governance and structuring options relating to the joining of networks owned and/ or separately operated by E.ON and Veolia.

Services Provided:

- Running workshops to explore various unbundling options and recommending PipeCo contracting structures
- Identifying the lowest risk and most appropriate option for catalysing connection between the City's two biggest schemes, already in complex commercial arrangements.

ARUP

For further information this
submission please contact:

REDACTED

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London,
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