

Framework for Provision of Electricity, Gas, Renewable Heat and Energy Efficiency Technical Consultancy - Sourcing Lists & User Policy

Introduction

The purpose of this document is to give an overview of the new Technical Framework and to inform users of the range and choice of suppliers available, and the policy regarding its use.

Section One provides an overview of the framework, Section Two details the user policy and Section Three details the sourcing lists and available suppliers under each Sub-Lot.

The new Framework will come into effect from 2nd June 2014 and will be valid until 2nd June 2016 with options to extend for a maximum of two further years. For further information on the Framework please contact Gareth Morris on extension 7372.

Section One - Framework Overview

The Technical Framework has been split into the following broad Lots:

- 1) Gas Advice
- 2) Electricity Advice
- 3) Renewable Heat Advice
- 4) Energy Efficiency Advice

Against each of these main areas there are Sub-Lots to reflect scopes of work that are more specific in nature. For example: Generation, Transmission, Heat Distribution, and so on.

For each Sub-Lot, source lists are available providing a choice of suppliers with appropriate skills and expertise aligned to that specific scope of work. All suppliers within each Sub-Lot must be invited to tender as set out in the User Policy set out at Section Two. Full details of the sourcing lists and associated suppliers for each Sub-Lot are provided below in Section Three.

The scope of work setting out the type of work covered by each Sub-Lot is set out at Annex A

Section Two - User Policy

This section provides details of the policy on how the framework is to be used.

- **Step 1**

Against the business requirement, the user should assess which Sub-Lot sourcing list, is the most appropriate (best-fit) in terms of scope of work.

- **Step 2**

Where there is not a clear choice of source list any combination of Sub-Lot source lists can be used. (For example Sub-Lot 1A, 1B, 2C etc.). Any number of source list combinations may be used but all suppliers within each source list should be invited to tender. This will create the supplier list for Invitation to Provide a Proposal (IPP) issue.

- **Step 3**

A mini-competition should be undertaken by issuing an IPP to all suppliers on the chosen Sub-Lot source list(s). This should be undertaken in line with internal Procurement policy. In certain circumstances direct award will be permissible providing there is a robust and considered business case.

Non-Framework Activity

Contracting against the Framework is Ofgem’s **preferred** approach and should be the first course of action. If the Framework does not provide an effective sourcing option then requirements should be discussed with Procurement who will assist you in assessing other suitable alternative options. All feedback as to why the Framework is not suitable is welcomed and will be used to inform planning of future Frameworks.

Section Three – Supplier Sourcing Lists

Sourcing Lists are available in the following Sub-Lots.

Lot 1. Gas Advice

Sub-Lot 1A - Gas Production & Utilisation (4 suppliers)

DNV GL
Fichtner
Ove Arup & Partners
Poyry

Sub-Lot 1B - Gas Transmission (8 suppliers)

DNV GL
Fichtner
Frazer-Nash Consultancy
Ove Arup & Partners
Parsons Brinckerhoff
Poyry
Rhead Group
Rune Associates

Sub-Lot 1C - Gas Distribution (10 suppliers)

DNV GL
E-Bridge Consultants
Fichtner
MJM Energy
Ove Arup & Partners
Parsons Brinckerhoff
Poyry
Rhead Group
Rune Associates
Wilcock Consultants

Sub-Lot 1D - Gas Metering (8 suppliers)

ARMS Consulting
DNV GL
Engage Consulting
Gemserv
MJM Energy
National Measurement Office
Poyry
Wilcock Consultants

Lot 2. Electricity Advice

Sub-Lot 2A - Electricity Generation (12 suppliers)

ABS Consulting
AF Mercados
Atkins
Black & Veatch
Fichtner
Frazer-Nash Consultants
Navigant
Ove Arup & Partners
Parsons Brinckerhoff
Poyry
Ricardo-AEA
SKM

Sub-Lot 2B - Electricity Transmission (16 suppliers)

AF Mercados
Atkins
Baringa
BPI
Bridge-It Advisory
DNV GL
Ecofys

Energy People
Fichtner
Ove Arup & Partners
PA Consulting
Parsons Brinckerhoff
Poyry
Rhead Group
SKM
TNEI

Sub-Lot 2C - Electricity Offshore Transmission (12 suppliers)

DNV GL
ABS Consulting
Atkins
Ecofys
Fichtner
Narec
Ove Arup & Partners
PA Consulting
Poyry
SKM
TNEI
Xero Energy

Sub-Lot 2D - Electricity Distribution (21 suppliers)

AF Mercados
Atkins
BPI
Bridge-It Advisory
DNV GL
EA Technology
Ecofys
Element Energy
Energy People
Engage Consulting
Fichtner
Frazer Nash
NAREC
Navigant
Ove Arup & Partners
PA Consulting
Parsons Brinckerhoff
Poyry
Rhead Group
SKM
TNEI

Sub-Lot 2E - Electricity Metering (10 suppliers)

AF Mercados
ARMS Consulting
Baringa
DNV GL
Engage Consulting
Fichtner
Gemserv
National Measurement Office
PA Consulting
Poyry

Lot 3. Renewable Heat Advice

Sub-Lot 3A - Generating Technologies (14 suppliers)

Aecom
Atkins
Black & Veatch
EA Technology
Ecofys
Eunomia
Fichtner
Gemserv
Narec
National Measurement Office
Ove Arup & Partners
Parsons Brinckerhoff
Ricardo-AEA
Sustainable Energy Ltd

Sub-Lot 3B - Heat Transfer Technologies (14 suppliers)

Aecom
Atkins
Black & Veatch
DNV GL
EA Technology
Ecofys
Eunomia
Fichtner
Frazer Nash Consultants
Gemserv
Narec
Ove Arup & Partners
Ricardo-AEA
Sustainable Energy

Sub-Lot 3C - Heat Distribution (12 suppliers)

Aecom
Atkins
Black & Veatch
BRE
Ecofys
Eunomia
Fichtner
Ove Arup & Partners
Parsons Brinckerhoff
Ricardo-AEA
SKM
Sustainable Energy

Sub-Lot 3D - Biomethane (8 suppliers)

Black & Veatch
DNV GL
Ecofys
ICF GHK
MJM Energy
Ove Arup
Ricardo AEA
Sustainable Energy Ltd

Lot 4. Energy Efficiency Advice

Sub-Lot 4A – Energy Efficiency (9 suppliers)

Aecom
BRE
Cutland Consulting
Element Energy
Energy Saving Trust
Eunomia
Gemserv
ICF GHK
Ricardo-AEA

ANNEX A - SPECIFICATION OF SERVICE AREA LOTS COVERED BY THE GAS, ELECTRICITY, AND RENEWABLE HEAT TECHNICAL FRAMEWORK

Lot 1 – Gas Advice

Sub-Lot 1A – Gas Production & Utilisation

MODULE	POSSIBLE TOPIC AREAS ON WHICH ADVICE MAY BE SOUGHT
Security of Supply	<ul style="list-style-type: none"> • Gas supply & availability forecasts • LNG imports, storage and re-gasification
Gas Specification	<ul style="list-style-type: none"> • Gas quality standards • Quality, specification and impacts of future supplies including LNG, biogas and ballasting / blending • European harmonisation issues
Seasonal and strategic storage	<ul style="list-style-type: none"> • Storage requirements • Storage options
Appliance and Usage Developments	<ul style="list-style-type: none"> • Impact of energy efficiency initiatives and emission reduction incentives on demand • Impact on network operation • Impact of gas quality issues
New Developments/Technology	<p>The impact on production and utilisation of:</p> <ul style="list-style-type: none"> • New plant, fitting and equipment developments • New installation methods, techniques and working practices • New storage technologies • New sources of supplies, e.g. biogas • New uses of networks, e.g. carbon dioxide transportation • Improved condition and system monitoring tools and processes
Safety and Environment	<ul style="list-style-type: none"> • General good practice and specific issues as required

Sub-Lot 1B – Gas Transmission

MODULE	POSSIBLE TOPIC AREAS ON WHICH ADVICE MAY BE SOUGHT
Network Design and Costing	<ul style="list-style-type: none"> • Assessment of existing network capability including the impact of general load growth, specific new demands and capacity substitution. • Application of planning standards and Codes • Scenario planning and forecasting • Network modelling and analysis • Costing of network components & systems • Assessment of network investment and operating costs
Network Performance	<ul style="list-style-type: none"> • Security of supply • Shrinkage • Asset utilisation and levels of constraints
Network Operation	<ul style="list-style-type: none"> • Gas Supply/demand forecasting and matching • Turbines emission reduction processes and costs • Gas compression and emissions • The management of network constraints and contracting solutions as an alternative to network reinforcement • Economic evaluation of capex & opex proposals • Safety standards and risk management policies • Emergency planning • Commercial operation of gas transmission networks • Contracting strategy and execution
Interconnectors	<ul style="list-style-type: none"> • Review of cost data • Due diligence covering gas and construction
Storage Options	<ul style="list-style-type: none"> • Linepack • HP holders • Offtake from Long, Medium & Short Range storage including LNG, salt cavities, etc.
Information Provision	<ul style="list-style-type: none"> • The content of: <ul style="list-style-type: none"> • Ten year plan • Planning standards / codes • Cost information relating to asset construction, maintenance and replacement
Asset Management	<ul style="list-style-type: none"> • Asset replacement policies and their technical and economic justifications • Risk management practices • Condition monitoring of assets • Criticality of assets • Asset risk measures • Maintenance policies and practices • Overall strategy for network development • Review of asset data and company submissions
Safety and Environment	<ul style="list-style-type: none"> • Pipeline safety regulations • General good practice and specific issues as required

Price Controls	<ul style="list-style-type: none"> • Technical advice to assist the Authority in assessing the efficient level of historical or proposed future costs and outputs by the price controlled networks
New Developments/Technology	<p>The impact on transmission of:</p> <ul style="list-style-type: none"> • New plant, fitting and equipment developments • New installation methods, techniques and working practices • New storage technologies • New sources of supplies, e.g. biogas • New uses of networks, e.g. carbon dioxide transportation • Improved condition and system monitoring tools and processes
Ad hoc assessments	<ul style="list-style-type: none"> • Technical advice to assist the Authority in assessing the efficient level of historical or proposed future costs and outputs associated with specific investment projects or operating costs • Engineering due diligence covering gas and construction

Sub-Lot 1C – Gas Distribution

MODULE	POSSIBLE TOPIC AREAS ON WHICH ADVICE MAY BE SOUGHT
Network Design and costing	<ul style="list-style-type: none"> • Assessment of existing network capability (including impact of general load growth, and specific new demands) • Application of planning and technical standards • Network modelling and analysis • Assessment of new connections design proposals including cost assessment • Impact of the competitive connections market • Assessment of the interaction and development of independent distribution networks and private networks
Network Performance	<ul style="list-style-type: none"> • Security of supply • Available capacity • Shrinkage, Environmental Emissions and Leakage Model evaluation
Network Operation	<ul style="list-style-type: none"> • Gas Supply/demand forecasting and matching • Safety standards and risk management policies • Reported escapes and incidents • Economic evaluation of capex, repex and opex proposals • Diurnal Storage including HP storage, LP holders and linepack • Commercial operation of gas distribution networks
Information Provision	<ul style="list-style-type: none"> • The content of: <ul style="list-style-type: none"> • Planning standards • Responses to specific customer requests • Cost information relating to asset construction, maintenance and replacement
Load Characteristics	<ul style="list-style-type: none"> • Changes to existing assumptions

Asset Management	<ul style="list-style-type: none"> • Asset replacement policies and their technical and economic justifications • Risk management practices • Condition monitoring of assets • Criticality of assets • Asset risk measures • Maintenance policies and practices • Overall strategy for network development • Review of asset data and company submissions
Safety and Environment	<ul style="list-style-type: none"> • General good practice and specific issues as required
Price Controls	<ul style="list-style-type: none"> • Technical advice to assist the Authority in assessing the efficient level of historical or proposed future costs and outputs by the price controlled networks
New Developments/Technology	<p>The impact on distribution of:</p> <ul style="list-style-type: none"> • New plant, fitting and equipment developments • New installation methods, techniques and working practices • New storage technologies • New sources of supplies, e.g. biogas • New uses of networks, e.g. carbon dioxide transportation • Improved condition and system monitoring tools and processes
Ad hoc assessments	<ul style="list-style-type: none"> • Technical advice to assist the Authority in assessing the efficient level of historical or proposed future costs and outputs associated with specific investment projects or operating costs

Sub-Lot 1D – Gas Metering

MODULE	POSSIBLE TOPIC AREAS ON WHICH ADVICE MAY BE SOUGHT
Metering Developments/Technology	<ul style="list-style-type: none"> • Range of metering available • Cost of metering services • Cost benefit of advanced / 'Smart' metering • Metering industry standards • Metering accuracy • Remote reading • Drafting of guidance to allow policy implementation • Advice on meter and component locations • Remote metering/monitoring packages/equipment and whether regulatory technical requirements are met • Smart metering installation and data flows <p>The impact on metering of:</p> <ul style="list-style-type: none"> • New plant, fitting and equipment developments • New installation methods, techniques and working practices • New storage technologies • New sources of supplies, e.g. biogas • New uses of networks, e.g. carbon dioxide transportation • Improved condition and system monitoring tools and processes
Safety and	<ul style="list-style-type: none"> • Data exchange supporting meter competition

Environment	<ul style="list-style-type: none">• Safety legislation• General good practice and specific issues as required
Price Controls	<ul style="list-style-type: none">• Technical advice to assist the Authority in assessing the efficient level of the future funding requirements of price-controlled meter providers.

Lot 2 – Electricity Advice

Sub-Lot 2A – Electricity Generation

MODULE	POSSIBLE TOPIC AREAS ON WHICH ADVICE MAY BE SOUGHT
Fuels and other Energy Sources	<ul style="list-style-type: none"> • Fuel measurement, sampling and analysis • Fuel treatment including gasification, pyrolysis • Fuel upgrading processes • Fuel production and classification • Identification of renewable element of fuels • Use of fossil fuel within renewable generating station • New and novel fuels • Identification of energy crops • Load factors • Identification of feedstock used in electricity generation and their corresponding properties • Quantifying other energy sources (e.g. wind & hydroelectric installations)
Plant Characteristics	<ul style="list-style-type: none"> • Available technologies • Features and issues associated with particular machines • Comparative merits of different technologies • Definition and extent of a generation station. • Losses • Schematic diagrams and interlocking of standby generation.
Technical Performance	<ul style="list-style-type: none"> • Modelling of technical parameters • Evaluation of machine performance • Evaluation of net capacity • Machine capability with respect to the following: <ul style="list-style-type: none"> • Frequency response • Reactive power • Black start services • Operational flexibility (including ramp rates and achievable FPNs) • Infeed to faults
Economic Performance and Efficiency	<ul style="list-style-type: none"> • Impact of different operating arrangements on machine life and efficiency • Fuel and other operating costs • Impact of trading arrangements on operating costs • Losses
Maintenance Requirements	<ul style="list-style-type: none"> • Typical maintenance periods and frequency • Sensitivity to changes in operating regimes • Cost implications of short term running regimes • Condition of existing plant
Impact on Networks	<ul style="list-style-type: none"> • Capability of networks that supply primary fuel (e.g. gas) to dispersed generators • Likely changes to the utilisation of transmission and distribution networks.

Co-generation Plant	<ul style="list-style-type: none"> • Identification of auxiliary loads essential to generation plant
Distributed generation	<ul style="list-style-type: none"> • Private wire and licence exempt distribution networks.
Electrical Standards and Licensing	<ul style="list-style-type: none"> • Knowledge of electrical standards and the ability to assess installations of renewable technologies (including photovoltaic, wind, hydroelectric, combined heat and power units). • License requirements of renewable technologies including hydroelectric installations

Sub-Lot 2B – Electricity Transmission

MODULE	POSSIBLE TOPIC AREAS ON WHICH ADVICE MAY BE SOUGHT
Network Design & costing	<ul style="list-style-type: none"> • Assessment of existing network capability (including the impact of general load growth, and new demand and generation connections) • Application of planning standards • Scenario planning and forecasting • Network modelling and analysis • Constraints modeling • Power flows modelling • Network planning • Cost benefit analysis • Least worst regrets analysis • Costing of network components & systems • High Voltage DC transmission systems
Connections	<ul style="list-style-type: none"> • Design proposals including cost assessment • Assessment of economic application of planning standards • Impact of the competitive connections market • Development of private distribution networks and energy parks • Construction techniques and programming in marine conditions
Network Performance & Assessments	<ul style="list-style-type: none"> • Security of supply • Power quality including voltage dips and harmonics • Asset utilisation and levels of constraints • Reactive power provision
Network Stability	<ul style="list-style-type: none"> • Modelling and stability analysis • Assessment of risk management policies • Analysis of defence plans • Analysis of sensitivity to changes in network configuration
Network Operation	<ul style="list-style-type: none"> • The impact of NETA including balancing mechanism • Ancillary services required • The use of network constraints as an alternative to network reinforcement • Safety standards and risk management policies • Outage planning processes • Frequency control • Economic evaluation of proposals • Commercial operation of electricity transmission networks

	<ul style="list-style-type: none"> • Procurement strategies • Risk assessment and mitigation • Security and planning standards • Supply chain issues
Interconnectors	<ul style="list-style-type: none"> • Review of cost data • Engineering due diligence covering electricity and construction
Protection	<ul style="list-style-type: none"> • Systems available to effectively and safely protect the network • Use of intertrip schemes to improve utilisation of existing assets • Low frequency relays • Network automation including auto reclose schemes
Information Provision	<ul style="list-style-type: none"> • The content of: <ul style="list-style-type: none"> • Seven year statement • Quality of supply report • Responses to specific customer requests • Grid code • Planning standards
Asset Management	<ul style="list-style-type: none"> • Asset replacement policies and their technical and economic justifications • Risk management practices • Condition monitoring of assets • Criticality of assets • Asset risk measures • Maintenance policies and practices • Overall strategy for network development • Review of asset data and company submissions
Price Controls	<ul style="list-style-type: none"> • Technical advice to assist the Authority in assessing the efficient level of historical or proposed future costs and outputs by the price controlled networks
Ad hoc assessments	<ul style="list-style-type: none"> • Technical advice to assist the Authority in assessing the efficient level of historical or proposed future costs and outputs associated with specific investment projects or operating costs • Engineering due diligence covering electricity and construction

Sub-Lot 2C – Electricity Offshore Transmission

MODULE	POSSIBLE TOPIC AREAS ON WHICH ADVICE MAY BE SOUGHT
Offshore Substation Platform Installation	<ul style="list-style-type: none"> • Construction of support platforms and loading limits • Maintenance access arrangements for main plant items sited on platform • Substation and main plant layout options including maintenance housings and telecommunications/control housings • Support structures, piling and topsides • Cable J-tubes and scouring protection • Possible use of floating platforms and use of mooring for

	<ul style="list-style-type: none"> continental shelf and deep sea work Earthing arrangements
Offshore Cable and its Installation	<ul style="list-style-type: none"> Types of AC and DC cables Loading weights for cables and continuous length limits/ship tonnage limits Required ships for laying and availability and costs for hire Modern cable laying practice and embedding techniques Interface joints to land cables and substations Earthing arrangements Cost modelling of cable supply and installation costs Approaches to cable testing
Offshore Substation	<ul style="list-style-type: none"> Types of equipment and special housing requirements and/or remote monitoring for faults Offshore DC installations Practical DC VSC technology and technical limits Substation Earthing/transformers
Onshore substation	<ul style="list-style-type: none"> Control interfaces for offshore systems (including wind, OTEC, tidal, wave) Reactive compensation installation and equipment types/typical pricing and standardisation Earthing arrangements
Offshore Generation	<ul style="list-style-type: none"> Types of generator and sizes Excitation systems Control of wind farm generated output Wind Blade types/controls Wind Gearbox lubrication OTEC prime mover systems and generators Tidal prime mover systems and generators Wave prime mover systems and generators
Offshore Working Practice- Operations and Maintenance	<ul style="list-style-type: none"> Health and safety working offshore and associated legislation Risk assessment and access limits for staff in bad weather Practical access and maintenance frequency Asset life for equipment, asset policy and failure rates International databases for failure statistics
Design and General Technical Advice	<ul style="list-style-type: none"> Use of DC over AC technology and cost criteria/technical limits used to choose between options Other renewable generator systems (i.e. tidal, OTEC, wave) and associated electrical networks Generator design, control and excitation systems Optimisation of reactive compensation equipment Reviews of existing designs for offshore Installations Control and protection systems
Tender Evaluation	<ul style="list-style-type: none"> H&S and Environmental compliance Technical capability and infrastructure management records of third parties
Technical Failure Investigation	<ul style="list-style-type: none"> Reviews of working practices and procedures for offshore and onshore Protection settings

	<ul style="list-style-type: none"> • Plant failure mechanisms for static compensation plant, cables and switchgear • Typical repair times, spares and supply chains
--	---

Sub-Lot 2D – Electricity Distribution

MODULE	POSSIBLE TOPIC AREAS ON WHICH ADVICE MAY BE SOUGHT
Network Design & costing	<ul style="list-style-type: none"> • Assessment of existing network capability (including impact of general load growth, and new demand and generation connections) • Application of planning standards • Scenario planning and forecasting • Network modelling and analysis • Interaction with other privately managed distribution networks • New generation connection techniques • Costing of network components and systems
Connections	<ul style="list-style-type: none"> • Design proposals including cost assessment • Assessment of economic application of planning standards • Impact of the competitive connections market • Development of private distribution networks and energy parks
Network Performance	<ul style="list-style-type: none"> • Security of supply • Power quality including voltage dips and harmonics • Losses • Asset utilisation and levels of constraints • Reactive power provision • The impact of expected increase in embedded generation connections
Network Stability	<ul style="list-style-type: none"> • Modelling and stability analysis • Assessment of risk management policies • Contribution to national defence plan • Analysis of sensitivity to changes in network configuration and expected increase in embedded generation connections
Network Operation	<ul style="list-style-type: none"> • The impact of use of network constraints as an alternative to network reinforcement • Safety standards and risk management policies • Outage planning • Fault management techniques • Impact of increase in embedded generation connections • Economic evaluation of proposals • Commercial operation of electricity distribution networks
Protection	<ul style="list-style-type: none"> • Systems available to protect the network • Use of intertrip schemes to improve asset utilisation • Low frequency relays • Network automation and remote control schemes
Information	<ul style="list-style-type: none"> • The content of:

Provision	<ul style="list-style-type: none"> • Long term development statement • Quality of supply report • Responses to specific customer requests • Distribution code • Planning standards
Asset Management	<ul style="list-style-type: none"> • Asset replacement policies and their technical and economic justifications • Risk management practices • Condition monitoring of assets • Criticality of assets • Asset risk measures • Maintenance policies and practices • Overall strategy for network development • Review of asset data and company submissions
Quality of Supply	<ul style="list-style-type: none"> • QoS reporting frame work both interruptions and telephony • Auditing of measurement systems and reporting of QoS data including connectivity model • Auditing of exceptional events data and assessing performance • Network resilience • Any other technical advice on QoS issues
Price Controls	<ul style="list-style-type: none"> • Technical advice to assist the Authority in assessing the efficient level of historical or proposed future costs and outputs by the price controlled networks
Ad hoc assessments	<ul style="list-style-type: none"> • Technical advice to assist the Authority in assessing the efficient level of historical or proposed future costs and outputs associated with specific investment projects or operating costs

SUB-LOT 2E – ELECTRICITY METERING

MODULE	POSSIBLE TOPIC AREAS ON WHICH ADVICE MAY BE SOUGHT
Metering Developments	<ul style="list-style-type: none"> • Range of metering available • Cost of metering services • Cost benefit of advanced / 'Smart' metering • Metering industry standards • Metering accuracy • Remote reading • Drafting of guidance to allow policy implementation • Advice on meter and component locations • Remote metering/monitoring packages/equipment and whether regulatory technical requirements are met • Smart metering installation and data flows • Large-scale power station metering set-ups, mapping components to the different processes occurring on site
Price Controls	<ul style="list-style-type: none"> • Technical advice to assist the Authority in assessing the efficient level of the future funding requirements of price-controlled meter providers

Lot 3 – Renewable Heat Advice

Sub-Lot 3A – Generating Technologies

MODULE	POSSIBLE TOPIC AREAS ON WHICH ADVICE MAY BE SOUGHT
Combustion technologies	<ul style="list-style-type: none"> • Boiler construction • Fuel combustion characteristics • Combustion efficiency
Metering (heat meters)	<ul style="list-style-type: none"> • Accuracy of temperature metering • Metering and data logging technologies • Metering regulatory/eligibility requirements • Appropriateness of meter and component locations • Interpretation and drawing schematics • Calibration of heat meters • Drafting of guidance to enable policy implementation • Pre-existing and industry standards • Software/technology necessary for enabling heating systems to be monitored remotely
Fuel	<ul style="list-style-type: none"> • Fuel supply • Sustainability standards • Fuel prices • Renewable content of fuel • Fossil fuel contaminants • Energy crops
Safety and Environment	<ul style="list-style-type: none"> • General good practice and specific issues as required
Technical Auditing	<ul style="list-style-type: none"> • Solar Thermal, Biomass Boilers, Biomass Stoves, Air Source Heat Pumps and Ground Source Heat Pumps

Sub-Lot 3B – Heat Transfer Technologies

MODULE	POSSIBLE TOPIC AREAS ON WHICH ADVICE MAY BE SOUGHT
Solar Thermal	<ul style="list-style-type: none"> • Design and installation of technology • Cost and limitations of installations • Coefficient of performance • Deeming heat output
Air/Water/ground source heat pumps	<ul style="list-style-type: none"> • Design, installation and maintenance of heat pumps including assessment of design calculations and commissioning data • Cost and limitations of installations • Coefficient of performance • Cooling systems (negative 'heat') • Environmental impact of technology • Deeming output • Evaluation of technical evidence relating to heat pumps supplied by applicants • Assessment/evaluation of metering arrangements for heat pumps including integrated boilers and components • Heat pump defrost cycles

	<ul style="list-style-type: none"> • SPF (Seasonal Performance Factor) measurement
Biomass heating technologies	<ul style="list-style-type: none"> • Design and installation of technology • Cost and limitations of installations • Efficiencies of secondary heating systems (stoves) • Efficiency of primary heating systems • Environmental impact of technology. • Deeming output. • Biomass boilers and stoves
Novel Heat source technologies	<ul style="list-style-type: none"> • Assessment of new and novel heat source technologies.
Installation standards	<ul style="list-style-type: none"> • knowledge of MCS installation standards for all renewable heat technologies • Knowledge of electrical, gas and oil installation standards

Sub-Lot 3C – Heat Distribution

MODULE	POSSIBLE TOPIC AREAS ON WHICH ADVICE MAY BE SOUGHT
Heat loads	<ul style="list-style-type: none"> • Assessment of potential heat loads • Assessment of steam usage • Heat consumption by industrial processes • Heat consumption by domestic and commercial premises • Knowledge of SAP, rdSAP and any other methods for calculating annual space heating and hot water demands
Heat distribution networks and systems	<ul style="list-style-type: none"> • Design and limitations of heat distribution networks • High temperature/ low temperature steam networks • Hot water networks • Practical heat distribution systems • Identification of areas where heat is or could be generated or wasted/dumped • Assessment of heat output data against stated scenarios • Heat distribution circuits directly from heat pumps and biomass plant • Complexity of new scheme proposals for applicants, installers etc.
Heat supply economics	<ul style="list-style-type: none"> • Security of supply • Price control on distributed heat • Price of heat
CHP	<ul style="list-style-type: none"> • Impact of heat utilisation on electricity output. • CCHP (absorption chilling)
Ad hoc assessments and auditing	<ul style="list-style-type: none"> • Technical advice to assist the Authority in assessing the efficient level of historical or proposed future costs and outputs associated with specific investment projects

Sub-Lot 3D - Biomethane

MODULE	POSSIBLE TOPIC AREAS ON WHICH ADVICE MAY BE SOUGHT
Network Design	<ul style="list-style-type: none"> • Assessment of existing network capability including biogas import

and Costing	<ul style="list-style-type: none"> connection potential • Cost of connection
Gas Specification	<ul style="list-style-type: none"> • Gas quality standards • Quality, specification and impacts of future supplies including LNG, biogas and ballasting / blending • Uprating technologies • Use of Syngas (CO/H₂/C_xH_y type gases compared with CH₄ Based gases) • Contaminants and purification of gas • Impact of temperature and pressure on gas mixtures
Measurement	<ul style="list-style-type: none"> • Gas production assessments • Gas consumption assessments • Carbon dating
Gas & Electricity generation	<ul style="list-style-type: none"> • Landfill gas production modelling • Anaerobic digestion • Pre-treatment of feedstocks • Gas generation potential and lifespan for feedstocks • Gasification and Pyrolysis technologies
Safety and Environment	<ul style="list-style-type: none"> • General good practice and specific issues as required • Risk management practices
Ad hoc assessments	<ul style="list-style-type: none"> • Technical advice to assist the Authority in assessing the efficient level of historical or proposed future costs and outputs associated with specific investment projects

Lot 4 – Energy Efficiency Advice

Sub-Lot 4A – Energy Efficiency

Module	Possible topic areas on which advice may be sought
Insulation products/ systems	<ul style="list-style-type: none"> • Performance of insulation products/ systems • Lifetime of insulation products/ systems
Heating products/ systems	<ul style="list-style-type: none"> • Performance of heating products/ systems including but not limited to boilers, heating controls and district heating systems • Lifetime of heating products/ systems
Energy efficiency standards	<ul style="list-style-type: none"> • Product standards and regulations • Installation standards and regulations • Installer standards and regulations • Building standards and regulations
Energy performance of buildings	<ul style="list-style-type: none"> • SAP and RdSAP • Appropriate methodologies including alternative calculation methodologies
Buildings	<ul style="list-style-type: none"> • Construction types and forms
Research	<ul style="list-style-type: none"> • Research and development within energy efficiency and energy reduction in UK buildings
Microgeneration	<ul style="list-style-type: none"> • Performance and installation of microgeneration technologies