Department for Energy Security & Net Zero

Triple Point HEAT NETWORKS INVESTMENT MANAGEMENT

Green Heat Network Fund

Guidance for applicants

Version 8.0

Any enquiries regarding this publication should be sent to the GHNF delivery partner, Triple Point Heat Networks Investment Management at:
enquiries@tp-heatnetworks.org

Contents

1 The guidance

This guidance document exists to provide detailed information about the GHNF application process from start to finish. It details how the scheme operates, the eligibility criteria, how applications are to be made and how they will be scored and assessed. It then explains the contractual arrangements and how successful schemes will report progress.

- A summary document the *Green Heat Network Fund – Scheme Overview* is available to provide a brief introduction to the scheme.
- Further guidance in relation to Market Transformations Commitments is available in Annex 1 *Green Heat Network Fund – Market Transformation Commitment*

These additional guidance documents can be downloaded from the gov.uk website[1].

2 Introduction

The Green Heat Network Fund (GHNF) is a capital grant programme that opened to applicants in the spring of 2022. Initially a £288m fund, further funding has since been provided to support organisations in the public, private, and third sectors, offering commercialisation and construction funding for heat network projects in England. It builds on the progress and development made by the Heat Network Investment Project (HNIP) and the Green Heat Network Fund Transition Scheme.

The GHNF is a core element of Government's Heat Network Transformation Programme, which alongside market regulation and heat network zoning aims to create the market conditions to accelerate deployment of reliable, decarbonised heating and cooling networks through to 2050. Through a set of closely related heat network projects, we aim to create the market conditions for accelerated delivery of low carbon heating and cooling through heat networks. This will be vital to achieving a clean, cost effective and just transition to net-zero and to delivering a wide variety of benefits to the environment, consumers, and the economy. They can utilise otherwise wasted energy and provide grid balancing services, offering a low carbon supply of heat at competitive prices to households and businesses alike. Large scale investment is essential to the development of this market, and we are committed to ensuring that projects of the highest quality come forward.

The GHNF will help tackle some of the most prominent barriers to decarbonisation of heat networks. Increased deployment of low carbon technologies will help bring down the up-front capital costs of low carbon technology due to greater standardisation. The utilisation of low carbon technology will help bring down operating costs in the long term and help upscale the skills and knowledge required to operate heat networks to the benefit of both the customer and network operators. The upscaling of the supply chain, skills, procurement and the overall increase in competition within the heat network market that will result from the GHNF are all crucial if the market is to become both self-sustaining and

[1] https://www.gov.uk/government/publications/green-heat-network-fund-ghnf

low carbon. This is an important requirement for meeting the future carbon budgets of the late 2020 and early 2030s.

Please note that the GHNF is being delivered by the Department for Energy Security and Net Zero and that its delivery has not been affected by the dissolution of the Department of Business Energy and Industrial Strategy.

2.1 What are the aims and objectives of the GHNF scheme?

Our vision for the GHNF is to accelerate the heat network market transition to low carbon heat sources via targeted financial support, which will help stimulate the increased deployment of low carbon technologies at scale. The GHNF objectives are to:

- Achieve carbon savings and decreases in carbon intensity of heat supplied.
- Increase the total amount of low carbon heat utilisation in heat networks (both retrofitted and new heat networks).
- Contribute towards market transformations across the investment landscape and supply chain that will better prepare the heat network sector for further decarbonisation.

3 How does the GHNF operate?

3.1 GHNF Operation

The GHNF is a grant-only scheme, disbursed over a series of funding rounds, providing funding across the financial years 2022/23 to 2027/28.

GHNF grant funding is available to applicants from the private and public sectors in England. The maximum allowable grant is up to, but not including, 50% of the estimated eligible commercialisation and construction costs of the project. The GHNF will award no more than 4.5p of grant per 1kWh of heat delivered to customers over the first 15 years of operation. It is important to note that these are the absolute scheme limits, and most projects are expected to significantly out-perform these to score well in competition.

Generally, the GHNF applicant will be the grant recipient and deliver the project. There are circumstances where the Department for Energy Security and Net Zero may permit grant funding to be on-granted, for example where a Special Purpose Vehicle (SPV) will be established to deliver the project. In these cases, the grant recipient will continue to be bound by the terms of the grant agreement and will be required to pass down duties, such as the reporting requirements under the on-grant agreement. Where an SPV is to be formed, and suitable financial guarantees can be provided, the Department may agree to the SPV being the grant recipient. Any other arrangement to on-fund GHNF grant, e.g., by way of a loan or equity, will only be agreed to by exception and subject to the Departments approval.

There will be an upper limit of £1 million for commercialisation support. This value will be subject to review and, as such, should an applicant have assessed that support in excess of this amount is required, and all other application gated metrics are met, they may make such an application. However, the Department reserves the right to decline such an application.

Table 1: GHNF commercialisation vs construction support across GHNF

	Support offered
Commercialisation-only support	Yes
Commercialisation + construction support	Yes
Construction-only support	Yes

Each application to the GHNF will be assessed on its own merits but any potential award will be subject to budget availability. Where the demand for funding in a round is oversubscribed, funding applications will be ranked, and awards prioritised competitively.

Applicants applying for commercialisation-only funding will be required to provide an explanatory note setting out how their construction activities will be funded from non-GHNF sources. They will be required to complete the application process in full and will not be able to apply later for construction funding.

An applicant may apply for both commercialisation and construction funding and the Investment Committee may decide to award commercialisation funding only. In this case (and subject to GHNF funding availability) the project will be encouraged to apply for construction funding once they have made sufficient progress against commercialisation milestones.

A key principle of the GHNF is that the applicant, on applying, will know if the project does or does not meet the scheme's core eligibility requirements (see *GHNF eligibility criteria)*. All projects that meet the application gated metrics (qualifying projects) would be eligible for funding, subject to a deliverability assessment (see *section 14*) and availability of funds.

Main scheme funding rounds are intended to take place on approximately quarterly basis with notification letters to be issued as soon as practicable following the Investment Committee and subject to all relevant approvals being received.

The planned timing of the current funding round (Round 8) is provided in Table 2. We expect that Round 9 will open following the close of Round 8 and close in January 2025. Further details on scheme rules for Round 9 will be published in Round 9 Application Guidance in the Autumn. Note that, whilst we will endeavour to align rounds with these timings, changes could be made by exception. We will inform stakeholders via our

mailing list[2] of any changes to the submission dates and when an updated guidance document will be issued.

Table 2: GHNF Scheme Funding Rounds

GHNF Application Rounds	Final Submission Date for Inclusion in Round
Round 8	28 June 2024
Round 9	January 2025 (exact date TBC)

Applicants will be required to submit detailed project documentation in addition to their completed application form, to provide evidence to support their application. Qualifying projects that have completed the application form and submitted this by the current round closing date will be assessed and scored against set GHNF criteria. A checklist of required documents is provided as part of this guidance – see *Application supporting evidence*. An explanation of what is expected, as a minimum, for each document submitted is also provided.

The outcome of the assessment process is then submitted to the GHNF Investment Committee for a final decision on which applications are to be awarded funding within that funding round. However, if it is determined that the project fails the deliverability assessment (Stage 2) then the applicant will be informed as soon as practicable. This is to try to maximise the time available to project applicants to rectify issues identified in advance of the next suitable funding round.

Applications are awarded funding on a competitive basis to maximise carbon savings, heat produced and value for money. However, even if an application meets all the eligibility criteria and scores well, there is no guarantee of a funding award.

All applicants must provide monthly forecasts of the programme of works for the immediate stage that is to be funded (commercialisation or construction). The profile of expenditure must match the values entered into the application form both in value and timing in line with financial years (April-March).

Once funding is awarded to a project, a Grant Funding Agreement (GFA) or a Memorandum of Understanding (MOU) will be signed with applicants depending on the type of applicant.

Prior to the release of funds to applicants, evidence needs to be submitted to ensure that, when funds are released, they will be used as intended at the time of the application being assessed and funds being allocated. This should align with the programme and expected grant drawdown profile that the project submitted during the application process. Section 10.2 of this guide provides more detail on what is required.

It is important to note that funding requests made to GHNF will typically span across multiple years. For example, a request for £5m may be forecast to be spent over a 2

[2] To join the GHNF mailing list, visit https://tp-heatnetworks.org/contact/subscribe

or 3-year period, currently up to March 2027. In a given financial year (April-March), all applicants must have carried out works up to the value of the grant awarded within that given financial year. Failure to do so may result in the loss of a portion of the total grant awarded.

Table 3: Worked example of a funding request spanning multiple years

	2022/23	2023/24	2024/25	Total
GHNF Grant	**£1m**	**£2m**	**£2m**	**£5m**
Actual Spend	**£0.3m**	**£5.7m**	**£5m**	**£11m**
Grant lost	**£0.7m**	**£0**	**£0**	**£0.7m**

Following release of the awarded funds, projects are required to carry out monitoring, and reports will need to be provided by recipients. This is to enable the monitoring of progress against milestone activities and the assessment of short, medium, and long-term impacts of the GHNF.

A condition of all awards is that the procurement of contractors for respective design, build, operate and maintain contract(s) will need to include a requirement to fulfil the reporting requirements of GHNF for a minimum of 15 years[3] from the point of the funded heat network going live. The GHNF reporting requirements for each stage are set out in the monitoring and reporting requirements section.

The GHNF is designed to sit alongside other government funding schemes, however funding from different schemes cannot be double counted. Please contact your Relationship Manager to discuss combining grant funds.

The GHNF is continuously reviewed and evaluated to allow us to enhance the design of the scheme and improve its effectiveness from each funding round to the next.

[3] If the successful applicant of GHNF is also intending to fulfil part or all of design, build, operate and maintain aspects of delivering a GHNF supported scheme then the applicant will be obliged to fulfil the reporting requirements.

3.2 UK Infrastructure Bank (UKIB)

Applicants should note that where they intend to satisfy the Project Funding Requirements (see section 8.1) by way of a Letter of Support from the UK Infrastructure Bank ("UKIB")[4], then they must engage with the Bank as soon as possible and no later than four weeks before submitting their GHNF application.

The UKIB is a government-owned policy bank. Its mission is to partner with the private and public sector to increase infrastructure investment to tackle climate change and drive regional and local economic growth across the United Kingdom. Heat Networks are a priority sector for the bank. Please see here for further information on how the bank is looking to support the sector.

UKIB's investment approach is designed to be flexible and the products it can offer across private sector and Local Authority projects are set out below.

We encourage all projects to consider discussing their financing needs with UKIB alongside other sources of capital. If an Applicant would like more information about potential UKIB support, please contact projects@ukib.org.uk or the GHNF Relationship Management Team at enquiries@tp-heatnetworks.org who will be able to put you in touch with the correct UKIB team.

UK INFRASTRUCTURE BANK

UK Infrastructure Bank lending to Local Authority applicants

Local Authorities applying to the GHNF can access lending from UKIB. UKIB provides loans to Local Authorities at preferential rates and seeks to support an increase in the scale and ambition of net-zero and regional local growth-supporting infrastructure developments. It can also offer advice on individual projects through its local authority advisory function.

UKIB loans offer more flexible financing than the Public Works Loans Board – loans are offered at the relevant Gilts rate +40 basis points (i.e., 40 basis points lower than the PWLB Certainty rate).

UK Infrastructure Bank lending to private sector applicants

UKIB offers private sector financing. If you are a private sector applicant interested in exploring UKIB lending you can contact the GHNF Relationship Management Team who will be able to put you in touch with the correct UKIB team.

[4] https://www.ukib.org.uk/

Investment principles

All projects seeking support from UKIB must meet its investment principles of:

- Supporting regional and local economic growth or helping tackle climate change;
- Being investment in projects relating wholly or mainly to infrastructure (which includes networks, assets, technologies and critical supply chain);
- Delivering a positive financial return; and
- Crowding in significant private capital over time

A UKIB lending decision will include consideration of **the same project-related application information submitted to the GHNF, as well as any additional information as may be required. If you have any questions, please contact the GHNF Relationship Management Team** who will be able to put you in touch with the correct UKIB team.

Please note that UKIB is operationally independent of government, and its assessment of project proposals for UKIB funding will be considered separately to the process followed by DESNZ in relation to applications to GHNF. Please see Annex 2 for the DESNZ disclaimer relevant to information signposted in this document related to UKIB.

For the avoidance of doubt, UKIB does not have any involvement in the assessment or award of GHNF funding to applicant projects.

Further information about how UKIB will consider projects that may be suitable for debt support is provided in Annex 2.

Information Sharing

Applicants will be able to **opt-in** to be contacted by UKIB as part of the application process. Applicants are required to confirm in writing (by emailing apply@tp-heatnetworks.org) that they are interested in being contacted by UKIB and to discuss its financing offer and that their application data and any supplemental information provided to DESNZ thereafter can be shared to facilitate this. This information will be used by UKIB to understand projects and consider financing needs ahead of any engagement to assess whether the project could benefit from UKIB's financing offer.

Please see the GHNF Privacy Notice[5] for further details on how DESNZ will use your personal data, and your rights. You can contact the GHNF Team in your email to apply@tp-heatnetworks.org if there is any information in your application that should not be shared with UKIB (e.g. commercially sensitive information relating to third parties).

[5] https://www.gov.uk/government/publications/green-heat-network-fund-ghnf/green-heat-network-fund-privacy-notice

Applicants will be able to withdraw their consent anytime by emailing enquiries@tp-heatnetworks.org.

3.3 Routes to Market

The Heat Network Zoning Route to Market is a process that is designed to ensure a fair and open competition for the award of Zone Rights on an exclusive basis to design, install, operate and maintain heat networks within designated Heat Network Zones. This process will be compliant with the Procurement Act (PCR/UCR) and is expected to provide private developers with the opportunity to deliver zones or areas of zones without being classified as utilities. This means that they can avoid the complex procurement procedures that would otherwise be required. GHNF applicants will be required to demonstrate compliance with the Route to Market processes when designing and delivering their commercialisation activities.

The Zone Consent, which will be awarded by the Zone Coordinator or the Central Authority, is the key element of the Heat Network Zoning Route to Market. The policy is still in development and will be finalised during 2024. The objective is to move towards a two-option delivery model for the route to market policy for Heat Network Zoning.

The first option is the Joint Venture model, where the public sector will be able to financially invest in a heat network. This model provides the opportunity for the public sector to work in partnership with private developers to deliver heat networks in a collaborative and efficient manner.

The second option is either a concession model or a consent model. These models provide private developers with the opportunity to deliver heat networks independently, without the need for financial investment from the public sector.

It is a key objective of the Heat Network Zoning Route to Market policy to respect past investment decisions into heat networks. This means that even if a governance model is adopted through GHNF that is ultimately not taken forward as the main route to market under Heat Network Zoning, the decisions made as part of GHNF will still be respected.

4 GHNF eligibility criteria

4.1 Who can apply?

The GHNF is open to all organisations responsible for the development of heat networks (including cooling networks) that meet the application gated metrics (see section *14*), that are able to provide all supporting documentation (see section *Application supporting evidence*) and which are legal entities. For the avoidance of doubt, this includes Other Government Departments.

The GHNF is open to projects in England only.

Applicants may be:

- Public sector organisations including NHS Trusts and Universities, and Other Government Departments.
- Private sector organisations that are registered companies and submit annual accounts.
- Third sector organisations such as registered charities, community investment companies and other such organisations that are officially registered and submit annual accounts.

Individuals, households and sole traders cannot apply to the fund. Potential applicants that are unsure whether their projects meet the GHNF eligibility criteria should contact enquiries@tp-heatnetworks.org

It is inherent in the design of GHNF that funding must provide additionality and GHNF should only support heat networks that would not be developed without government support. GHNF funding is not considered additional if either of the following are true:

- There is a legal requirement for customers to connect to a low carbon heat network, such as a Section 106 agreement with the Local Authority.
- An acceptable investment return can be achieved if market rate tariffs and connection charges are paid by customers.

Applicants should therefore consider whether either of these additionality tests apply and any requested award should be restricted to a level that demonstrates additionality.

If applicants are unsure about their eligibility for support and would like to discuss their application in detail, please contact enquiries@tp-heatnetworks.org.

4.2 How will applicants be assessed?

The GHNF will assess the following core metrics which all applicants must meet in order to be funded. The metrics listed below are calculated and appraised within the application form itself once the applicant has entered all required inputs. Greater detail on each is provided in the scored elements of the GHNF applications section.

Table 4: GHNF application gated metrics summary

Metric	Limit
Carbon gate	100gCO_2e/kWh thermal energy delivered (lower is better).
Customer detriment	Domestic customers and micro-businesses must not be offered a price of heat greater than a low carbon counterfactual for new buildings and a gas/oil counterfactual for existing buildings.

Social IRR	Projects must demonstrate a Social IRR of 3.5% or greater over a 40-year period. Note: The Investment Committee will also consider a maximum acceptable post-GHNF Grant project IRR, this is not made public for commercial purposes.
Minimum demand	For urban networks a minimum end customer demand of 2GWh/year (including existing customers). For rural (off gas grid) networks a minimum number of 100 dwellings connected. This is to be achieved within a 5-year window from the date of first connection.
Limit on award compared to eligible costs	Combined grant requested up to but not including 50% of the estimated eligible commercialisation and construction costs of the project.
Capped award	The total award may not exceed 4.5 pence of grant per kWh delivered over the first 15 years of operation.
Non-heat/cooling cost inclusion	For projects including wider energy infrastructure in their application, the value of income generated/costs saved/wider subsidy obtained should be greater than or equal to the costs included.

All projects that meet the application gated metrics and are assessed to be deliverable**,** are projects that the GHNF would be able to fund in a given funding round to the extent that budget is available in that round.

Projects that request larger amounts of funding, expressed in p/kWh, will score less well than projects requesting lower amounts. Higher scoring projects are more likely to be funded, so applicants will maximise their chances of securing an award by requesting no more than the project needs to be financially viable, see table below.

Where projects need a higher award assessors will be looking for an explanation of the award requested and any wider benefits that the project may bring.

Table 5- Award ranges for GHNF applications

Award range (p/kWh)	Description
<1.5	Projects are likely to be among the highest scoring applications in any given round and are most likely to be funded as they represent the best value for money.
1.5 –3.5	Projects that are typical of the core range of support levels expected.
3.5 – 4.5	Projects with significant financial challenges to overcome and which are less likely to be funded. Projects are more likely to be funded only where there are strategic benefits associated with them.
>4.5	Not eligible.

Adjustment metrics are used to differentiate projects that score closely to one another, and these relate to the following:

- The extent to which a project is assessed to be deliverable
- The carbon abatement potential of the project
- Overall volume of thermal energy delivered to customers
- The expansion potential of the network
- Innovation and energy efficiency credentials of the project.

The maximum adjustment these metrics could result in is a 30% variation of the score.

Once all the projects from an Application Round have been assessed, a table of scores will be compiled. The Investment Committee will consider each project in turn, starting with the top scoring project and working down. Funding will be allocated according to need, and until the allocated budget for the Round is met.

4.3 What projects will the GHNF fund?

The GHNF will support new and existing heat networks that deliver low carbon heat at a volume of heat that is consistent with our strategic objectives for heat network market growth in England.

A heat network, for the purposes of GHNF, is a series of connected pipes[6] that distribute thermal energy to customers, uses low carbon technology and is centrally managed.

The GHNF will operate on a principles-based approach for cost eligibility and therefore Section 6 – *Exclusions* – sets out what the GHNF will **not** fund rather than specifying a list of what is eligible. A key purpose of the application gated metrics is that projects that are able to demonstrate that they will satisfy the metrics and are assessed to be deliverable (see section 14) bring about the outcomes of the GHNF at a price that demonstrates value for money.

The overriding principle that governs eligibility for commercialisation and construction costs for the GHNF, is that costs can be attributed directly to delivering the low carbon network. Evidence of the low carbon design intent must be submitted as part of the GHNF application.

4.4 Aggregation of communal heating systems

A communal system is defined as a heating system in which one source of heat serves all the customers in a building. This applies most often to blocks of flats, but it is also used in many commercial buildings. A heat network is the term used when the customers are in more than one building.

Depending on the age, size and energy efficiency of the homes in a block, the annual heat demand of a flat will typically be in the range 4-10 MWh per year. As a result, to reach the threshold of 2 GWh per year for a heat network serving domestic properties only, an estimated minimum of 200 – 500 homes will need to be supplied with heat. Each applicant will need to work out the actual number of homes needed as a minimum, based on their specific data.

Because of this scale, it is expected that few communal schemes will qualify for GHNF as a single building. However, it is clearly important to enable these homes to decarbonise, and the options for individual homeowners in a block are obviously limited. Therefore, a solution at a whole block scale is likely to be appropriate.

For these reasons, a number of communally heated systems can be aggregated to form a single GHNF application, such that the total heat demand is large enough.

However, communally heated buildings are good candidates to join conventional higher temperature heat networks, which may have access to low cost, low carbon heat.

[6] For the avoidance of doubt, hydraulic separation, in the form of heat exchangers, is permitted within the definition of heat network.

Therefore, it is important to check that other opportunities for decarbonisation are not being missed when adopting a single building solution e.g., by seeking to identify locations where a larger scale heat network is likely to be available in the next few years, such that a solution at the single building scale may not be the best option. GHNF would not knowingly fund schemes that would damage the prospects of future, larger heat networks.

For this reason, a proposal based on aggregation should be accompanied by an appropriate strategy document to explain why the proposed solution is the preferred option, and that alternative schemes have been considered. As appropriate, the strategy could have been developed for a whole local authority area or have been developed for the applicant organisation.

In all cases the scheme solution needs to be designed in a way that makes it easy for a future connection to a heat network to be made. This requires space within the plant room for a heat substation to take heat from the external heat network together with a route for the external network flow and return pipework to pass into the plant room and connect to the substation.

Any project that is considering applying for a scheme that relies on aggregation of loads should contact the GHNF team well in advance of the application deadline in order to agree what form of strategy document is appropriate and how to fill out the application form.

4.5 Existing networks

For the purpose of a GHNF application, an existing network is a network where the majority of heat/cooling demand is to be supplied to existing customers or where annual heat demand for new connections is less than the application gated metric for volume of heat (see section 14.1).

4.5.1 Network performance report

Where an existing network applies for GHNF support to decarbonise the heat supplied to its existing customers, the GHNF is not intended to fund the cost of addressing pre-existing performance issues. The owner/operator should demonstrate that it has sought support for such costs from other Department for Energy Security and Net Zero schemes such as the Heat Network Efficiency Scheme (HNES)[7] where they are available.

Therefore, for existing networks, the applicant must provide a report that assesses the performance of the existing network. As a minimum the report should include:

- the design performance of the existing network (to the extent that original design performance information is available);
- the actual performance of the existing network;

[7] https://www.gov.uk/government/publications/heat-network-efficiency-scheme-hnes

- proposals for practical[8] interventions required to improve network performance; and
- the cost of implementing such proposals and predicted impact(s) on performance.

Performance issues can often act as barriers to low carbon technologies working efficiently and effectively. This is a key reason why a performance report is required by GHNF.

Where proposals for performance improvements have not been implemented, the costs associated with performance measures that are proposed to be undertaken by the project must be excluded from the application costs and the applicant must confirm in a written statement that key performance measures will be undertaken in advance of or as part of the works supported by GHNF.

The GHNF intends for a maximum of 40% of its annual budget to be allocated to existing network decarbonisation. In the first year of the scheme, the GHNF will review the level of support awarded to new and existing schemes. If it is found that support is unduly skewed to existing schemes, or vice-versa, then GHNF may consider whether segmentation of the fund is required.

4.5.2 Sleeving of low-carbon heat/coolth through an existing network

For many existing networks, it may not currently be possible to entirely decarbonise the heat supplied to existing customers. Where projects intend to only partially decarbonise their existing network then the following "sleeving" principles will need to apply when making the application:

- At least 2GWh/year of additional heat load must be forecast to connect to the existing network, or the rural (off gas grid) heat network provision must apply (see section 4.7), within 5 years of start of operation of the new low carbon plant;
- New low/[9]zero carbon heat generating plant must be installed to meet the new additional heat loads. This new plant's heat generation can be treated as if all of its supply is delivered to the new heat loads connected;
- Any heat supplied from the new low/zero carbon plant over and above that required by the new connections can be included, less average network distribution losses, in the application as heat demand from existing customers. It is recommended that applicant's contact GHNF where they intend to install new plant that exceeds the capacity of the new connections so that their application can show the full benefits of their intended solution.

[8] Constraints such as existing pipe diameters or insulation or buried pipework may not be practical to upgrade
[9] Note: this is for the purpose of the GHNF only and may not reflect how such connections are treated by other regulatory or reporting requirements (for example Building Regulations).

- As with new networks, fossil-based peaking plant is permitted to be included in a manner compliant with GHNF rules.
- The additional capital and operating costs of installing the new plant, adjustments necessary to the existing energy centre, distribution network, customer connections as well as the new customer connections should be included in the application form. No past costs already incurred should be included.

While the blended carbon intensity of the overall network is unlikely to be below the GHNF threshold, this method is intended to allow large existing networks to deploy low carbon technology while not undermining past fossil-based heat generation investment decisions. As the life cycle of those technologies comes to an end it is anticipated that future policies will promote the transition to low carbon heat sources. Experience of such technologies, having been funded through the GHNF, should further enable the network operator to do so.

4.6 New Build Residential Developments

Where the proposed heat network will serve new build residential development that will build out past 2025, the scheme will need to:

Pass the gated metrics and deliverability assessment,

AND EITHER

Use recovered heat as the primary heat source.

Recovered heat must be from a man-made process such as an EfW plant, an industrial process, a data centre or sewer. Heat can be recovered either directly or using heat pumps.

Heat that is derived from natural sources such as the ground, air or water courses is not recovered heat as defined by GHNF.

OR

Where the primary heat source is not recovered heat, the scheme should:

- Offer carbon savings compared to a blended counterfactual.
  The blended counterfactual assumes individual gas boilers for existing dwellings and individual air source heat pumps for the new build dwellings.
  The carbon savings against the blended counterfactual will be calculated by the application form automatically.

and

- Provide a note in REF 10.1 setting out how the scheme will provide further carbon savings. This could be through:
  - Future expansion.

- Changes in low carbon technology, i.e., transitioning from heat pumps to industrial waste heat in future.
- Where a sleeving application is being made, providing a low-carbon plant over and above that necessary for the new connection(s) to decarbonise existing network connections.

Where the primary heat source is not recovered heat and the scheme fails to save carbon against the blended counterfactual, the scheme must submit further information in the evidence note provided in REF 10.1 showing the strategic value of their scheme. Examples of a strategic network would include networks that:

- Reduce, by a significant amount, the installation of new electric infrastructure capacity to support decarbonisation.
- Offer significant expansion opportunities.
- Decarbonise sites that would be difficult to decarbonise using individual ASHP or other stand-a-lone solutions.
- Offer an opportunity to either fully or partially decarbonise an existing heat network.

Applicants should note that the definition of "significant", as used in the above examples, is essentially at the discretion of the Department and supporting evidence needs to be provided as to why they believe their project to be of national significance.

Where planning permissions have been granted for new build customer sites, copies of S106 agreements and planning approvals, if conditioned, should be included in REF 1.11: Relevant Correspondence. If an energy strategy has been provided with the planning application a copy of this should also be included in REF 1.11.

4.7 Rural (off gas grid) heat networks

In light of the Green Heat Network Fund consultation[10] it has been acknowledged that in off-gas grid rural settings, a 2GWh volume of heat threshold may preclude valuable low carbon heat network opportunities that could be replicable across certain settings.

Instead of a volume-based threshold, a dwelling-based threshold is proposed. For off-gas grid rural heat networks applying to the GHNF, a minimum of 100 dwellings connected to the network is proposed within a minimum 5-year window from the date that heat is forecast to be first supplied to customers.

4.8 Shared Ground Loops and Ambient Loops

Ambient loops

An ambient loop is a term used to describe a heat network that operates at a temperature that is much lower than that used in traditional heat networks. Different solutions will vary,

[10] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1015591/green-heat-network-fund-government-response.pdf

but a typical system may operate with flow temperature of 20-30°C and a return of around 10°C. These temperatures are typical of external temperatures, hence the use of the term 'ambient'. Because of these low temperatures, heat losses are much reduced from conventional systems and cheaper, flexible pipes can more easily be used.

Because of the temperature of the network, each building on the heat network will generally have its own heat pump(s) to raise the temperature to the level needed for its purposes. This is a benefit in that the specific requirements of each building can be met, but it does mean that each building must maintain its own system and manage the refrigerants safely. The total cost of buying many small heat pumps may be higher than that for fewer, larger heat pumps.

An additional potential benefit of an ambient loop is that both heating and cooling can be taken from the network. Where there are significant cooling loads this can enhance the system efficiency, as the rejected heat from the cooling process is used to raise the temperature of the network, and 'free' cooling can be taken from the cold return loop.

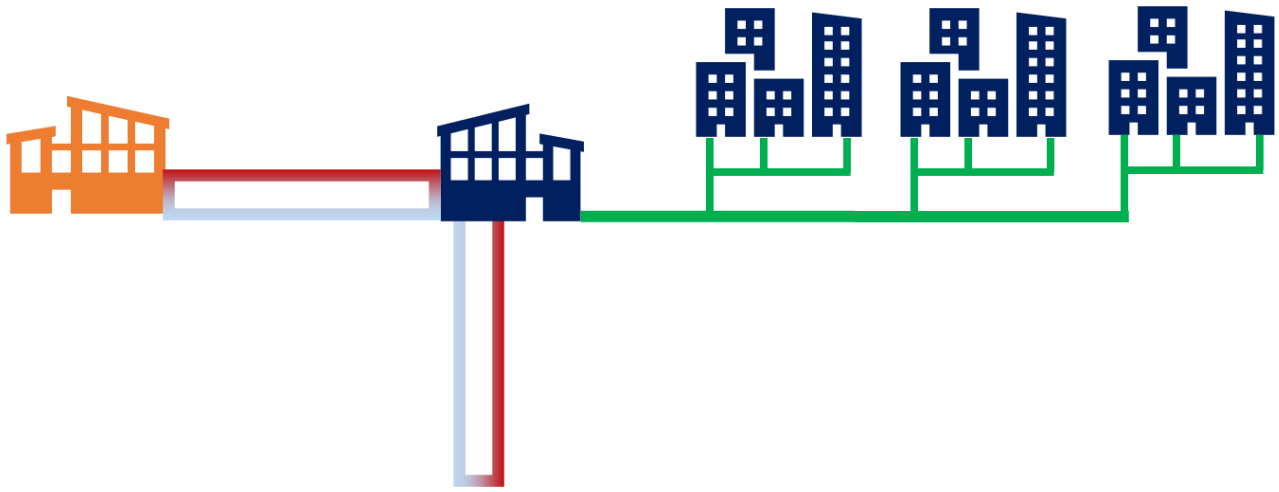

Figure 1: Ambient Loop heat network

Finally, an ambient loop can take heat from a wide range of potential sources of heat at a range of temperatures. Sufficient heat must be available from these sources to balance the heat lost in the customer buildings. However, this balancing heat could come from one or several of air, ground or water, chillers in large buildings, electrical infrastructure, solar thermal schemes, industrial processes, or an existing heat network linked to power generation or energy from waste.

In the illustration above there is heat being supplied from an industrial process and from a ground loop. It is then supplied to multiple buildings.

An ambient loop system will generally need to sell heat to the customers on the network, but these customers typically pay for their own electricity to power the heat pumps.

Shared Ground Loops

A shared ground loop is a specific type of ambient loop. As the name suggests the source of heat is the ground, usually several closed loop boreholes drilled into the ground near

the heat loads. This warmed water is pumped around to the buildings on the scheme, and each customer has their own heat pump. It is possible for the pumping energy for the loop to come from the set of heat pumps, so that there is almost no shared infrastructure apart from the ground loop itself.

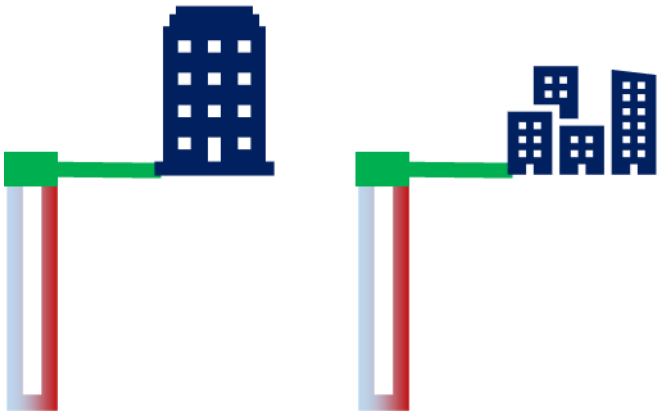

Figure 2: Examples of shared ground loops

In the two examples shown in Figure 2, there is a shared ground loop serving a single building with many flats in it on the left, and a system serving several buildings on the right.

Scale of ambient and shared ground loops

Although there are no requirements in either case, typical installations for ambient loops are larger than those for shared ground loops. The latter solution is being used for groups of homes as a more cost- effective solution to deliver low carbon heat than every home having its own system. It also avoids the need to install air source heat pumps on every home and the resulting noise and visual impact. Typical shared ground loop systems serve 10s of homes, often in one or a small number of blocks.

Ambient loops benefit particularly from customers with cooling and heating loads and might be expected to be larger in scale.

In GHNF terms this may well mean that Shared Ground Loops will often fall below the 2GWh per year requirement for delivered heat, and so these schemes would only qualify if aggregated into a combined scheme.

GHNF applications from ambient and shared ground loop schemes

In these systems where there is a heat pump in every customer's property, a proportion of the heat is provided by the heat network and the rest from the electricity that is used in the heat pump. For the purpose of the calculations in GHNF, it is the total heat delivered to the customer that is used, not the heat supplied by the loop. At a COP of 3, two thirds of the heat is from the loop, one third is from the electricity.

In the cash flow calculations, we need to be clear on the total cost of heat to the customer, which includes the electricity, whilst the income to the heat network does not include the cost of that electricity. Similarly, the carbon calculations need to include the electricity

used in the customer's heat pumps. Therefore, the electricity used in the customer's heat pumps should be included in the fuel usage inputs on the Main Application tab. Applicants planning to use these types of systems should contact us early for advice on how to present their information.

4.9 Recovered Heat

There are schemes that benefit significantly from sources of heat recovered from other processes, at low or high temperatures. These can be both cost effective and low carbon, and so form a valuable part of a network. However, depending on the nature of the source of heat, they may also bring an additional element of risk to the scheme, relating to the impact of the loss of that source of heat. There is most likely to be a risk where the source of heat is unique and could cease to operate at relatively short notice.

Applications that are based on sources of recovered heat should include a section in their cover note to address contingency plans in the event of the loss of their intended source of heat.

5 Applying to the GHNF

5.1 Expression of Interest

Applicants are able to register an Expression of Interest (EoI) ahead of submitting their applications for funding. This is voluntary and is not a pre-requisite of applying. Please see section 5.2 for information on how to register for an application pack.

An Expression of Interest can be submitted on tp-heatnetworks.org via a webform[11]. The funding round that the applicant will be applying for is recorded in the form. An application manager will send the applicant an email with details of how to apply, as well as the application pack ahead of the relevant funding round. If an applicant / consultant is expecting to submit / support multiple applications, they can contact enquiries@tp-heatnetworks.org.

To register an expression of interest, please visit https://tp-heatnetworks.org/expression-of-interest/.

5.2 Applicant registration

Applicants can register interest in applying for GHNF funding using the above Expression of Interest webform. Once the online form is completed, they will receive the application pack which includes the form and guidance documents. Alternatively, Applicants can

[11] https://tp-heatnetworks.org/expression-of-interest/.

request the application pack by emailing enquiries@tp-heatnetworks.org. They can also request a meeting with a Relationship Manager to discuss the application.

When an Applicant is ready to apply, they should alert an Application Manager by emailing apply@tp-heatnetworks.org. The email should also stipulate which funding round they would like to be considered in. Applicants will then receive sign up details and a link to an individual SharePoint site which will be sent via email. Please note the link that you will be emailed will contain 'on behalf of Gemserv Ltd' in the subject title -please proceed using this link.

An application pack will also be shared with the Applicant via email. This pack contains Application Form Guidance, the Application Form, and other useful documentation.

The GHNF Application Form may be updated for subsequent application rounds. Applicants are advised to check with their Relationship Manager that they have the latest version of the application form when applying. Alternatively, applicants can contact enquiries@tp-heatnetworks.org to request the latest version.

5.3 Application supporting evidence

In addition to submitting the application form, the applicant is required to provide supporting evidence. Primarily, this is to enable the assessment of project deliverability. The core supporting documents are expected to be documents that a heat network developer would already hold irrespective of whether they are applying to the GHNF; however, additional memoranda may be required to help an assessor understand aspects of the application. Additional memoranda will be kept to a minimum and are intended to be short summary notes.

Summary of documents required: GHNF Checklist

Please note that the GHNF checklist and supporting evidence required are subject to revision. The application guidance will be updated accordingly, and stakeholders will be informed via our mailing list of any changes made.

When submitting documents, applicants must ensure that the documents are labelled to correspond to the reference numbers provided.

Evidence listed as contingent only needs to be provided when the project is of the type discussed, e.g., only existing networks need provide information on the performance of the network.

Table 6: Summary of evidence required

REF	Evidence always required
1.1	Completed Application form and Supplier Information form
1.2	Cover note

1.3	Business case
1.4	Programme up to the date that all customers included in the application are connected to the network
1.5	Customer and tariff note
1.6	Techno-economic feasibility study or equivalent
1.7	Techno-economic cash flow model
1.8	Signed market transformation commitment statement.
1.9	Technical drawings
1.10	Network Diagram
1.11	Relevant correspondence
1.12	Energy supply agreements (binding or non-binding): these should include network customer agreements and any agreements for the supply of heat to the heat network.
1.13	Letter(s) of support from project sponsors
1.14	Risk register and mitigation approach
1.15	Counterfactual thermal energy source
1.16	Confirmation of CP1 compliance and submission of CP1 checklist
1.17	Confirmation of Heat Trust compliance or equivalent
1.18	Applicant Corporate Structure and Project Delivery Structure
1.19	Company Accounts
1.20	Governance
1.21	Unaudited profit and loss, and balance sheet

REF	Optional evidence for enhanced scoring
2.1	Innovation and energy efficiency justification note
2.2	Future expansion potential note
2.3	Full financial model
2.4	Credit rating

REF	Contingent evidence: COMMERCIALISATION & CONSTRUCTION
3.1	Construction-only budget
3.2	Commercialisation and Construction budget
3.3	Wastewater heat recovery risk allocation principles statement

REF	Contingent evidence: AGGREGATION OF COMMUNAL NETWORKS
4.1	Supporting note
4.2	Relevant energy strategy, plan or LA endorsed mapping and master planning report
4.3	Confirmation statement that communal systems will be designed to enable future connection to a wider heat network

REF	Contingent evidence: EXISTING NETWORK
5.1	Supporting note
5.2	Performance report
5.3	Confirmation statement that key improvement measures highlighted in the performance report will be undertaken prior to or during works supported by GHNF

REF	Contingent evidence: RURAL (OFF GAS GRID) NETWORKS
6.1	Confirmation statement that dwellings are off-gas grid

REF	Contingent evidence: EFW z-factor where assessment has been undertaken
7.1	Technical report assessing z-factor / heat-to-electricity ratio

REF	Contingent evidence: Carbon intensity of network above carbon gate
8.1	Explanatory note and confirmation statement that carbon intensity of the project will meet the maximum 100g CO_2e/kWh threshold within 3 or 5 years of heat on.

REF	Contingent evidence: REAPPLICATION
9.1	Supporting note

REF	Contingent evidence: New Build Residential
10.1	Supporting note

The following sections set out the requirements for each of the different elements of supporting evidence.

REF 1.1 Completed Application form and Supplier Information form

Applicants are required to submit a fully completed GHNF Application Form. Applicants are also requested to embed the Application Form sheet called 'Main Application' within their Techno-Economic Model (TEM) and to link the cells of this sheet to the outputs and calculations of the TEM. An unlocked version of this sheet is available on request.

Applicants can request the GHNF Application form guidance by emailing enquiries@tp-heatnetworks.org or completing our expression of interest form here: https://tp-heatnetworks.org/expression-of-interest/.

REF 1.2 Cover note/letter

GHNF applications must be comprehensive, and their strategic aims should be clearly articulated.

Cover note/ letters should be no more than 5 pages setting out the essence of the application, covering as a minimum:

- The amount of grant applied for.
- Project description: This needs to explain the project to someone who is unfamiliar with the scheme or its development in a concise manor and should include the location (with an image that provides an over-view of the network), customers connected, technology selection and how the project will be delivered (Governance, commercial and contractual arrangements as far as known at the time of the application. This may be options at that time so please articulate these).
- Who is applying.
- Required project hurdle rate (pre-tax real). This hurdle rate should be a precise value (not a range nor a minimum) and grant will not be awarded which results

in the post intervention IRR exceeding this value. Where a hurdle rate is quoted that relates to a different organisational metric (post-tax, nominal for instance), then a note should be provided that explains how the organisational metric maps to the GHNF metric.

- Overview of project programme from the GHNF application to the connection of all customers included in application for the heat network.
- Where there is uncertainty over the timing of commercialisation / construction cashflows across financial years (i.e., the risk of costs moving from one financial year to another); the project should describe the action(s) they will take to ensure that this risk is minimised.
- Details of any other grants that the project has applied for and received, has applied for and not received or intends to apply for in the future to support the development of the heat network project.
- A summary of the funding plan that demonstrates that the project is fully funded and that the funding is approved and deliverable.

REF 1.3 Business case

It is **not** a requirement that an HMG Green Book compliant business case is provided. However, a business case must contain the following as a minimum:

- Overview of the project
- Technology selection and energy centre location – how did the project assess that the technology funding being applied for is appropriate?
- Network routing and customers connected – how were the customers due to be connected identified for inclusion in the phase of work being applied for? How developed is the engagement with customers?
- The rationale for investment, covering:
  - Project returns pre-/post- GHNF intervention;
  - Rationalisation of required pre-tax post-GHNF real project rate of return;
  - How the project is to be delivered:
  - How the infrastructure will be procured;
  - How the project will be legally structured;
  - How the project is intended to be financed (including the amount of GHNF grant applied for) and the financial returns forecast[12];

[12] This should be an assessment on returns relevant to the sources of finance proposed. These will differ across investor types. For example, a project seeking finance from private equity would most likely need to have evaluated nominal post-tax cash flows in a full financial model.

- All applicants (both public and private) should seek debt / equity before applying for GHNF funding, such that the amount of grant funding requested is minimised. Evidence of such considerations and of attempts to secure funding will be required to be submitted as part of the GHNF application, assessed and then considered by the Investment Committee. At the early stages of development this is likely to take the form of evidence of engagement with BHIVE or UKIB, or an explanation in the funding plan of the intended source of other finance. Evidence of internal discussions will not satisfy this requirement.
- Justification of tariff structure and comparison to the current tariff structure for existing schemes. The extent to which the tariff has or has not been explored with prospective / existing customers should be discussed.

- Description of the key heat/cooling off-takers (customers) and their level of engagement;
- Approvals for the business case. For the avoidance of doubt, draft business cases should only be submitted if an accompanying letter, signed by a member of the organisation with authority to approve the business case, is provided that:
  - Confirms he/she has reviewed the business case and the implications for the organisation;

    Sets out why the business case has not been approved and the steps necessary for that approval to be given.

REF 1.4 Programme

The applicant should provide a clear programme of works up to the point that all customers included in the application will be connected to the heat network. This should be in the form of a Gantt chart showing the critical path and, as an absolute minimum, milestones which should include:

- Commercialisation stage milestones:
  - Consultants procured
  - Pipework routing access approvals approved
  - Terms to access low or zero carbon heat approved
  - Ownership/lease secured for energy centre location
  - Core customer supply agreements agreed
  - Any bulk heat sale agreements to heat network
  - Planning approval achieved

- Infrastructure delivery contracts agreed
- Commitment of non-GHNF funding

- Construction stage milestones:
  - Construction mobilisation works
  - Construction phase(s) with milestone payment dates for GHNF budgeting purposes
  - Date of first customer connection
  - Date on which all customers in the heat network included in the application will be connected.

Acronyms should be avoided or where used, explanations provided, so that a user unfamiliar with the project can clearly understand the milestones.

Some milestones may be achieved under either commercialisation or construction and applicants should develop their programme to meet the needs of their specific project.

Programmes should be provided as a PDF.

REF 1.5 Customer and tariff note

The customer tariff note should be a word document setting out:

- What the proposed tariffs are (split by domestic, micro-businesses[13] and other customers). The tariffs set out in this note should match those given in the "Customer Tariff" tab in the Application Form.
- The basis on which each tariff was set.
- The basis on which each tariff will be varied over time to account for changing costs.

Bulk Heat Supply

Where projects are providing bulk heat/cooling supplies to multi-building sites, applicant should be aware that assessors will want to be able to understand any constraints that may apply to the site. Examples could include existing CHP or EPC contracts, and information on these should be provided.

Bulk heat/cooling supply to a landlord (e.g., Registered Social Landlord, Local Authority etc.) who then separately on-supplies heat to domestic or micro-business customers, must be treated as sales to customers at risk. In such circumstances, applicants should ask for, and evidence in the tariff note, end customer tariff information in an anonymised form, such as a p/kWh figure, from their bulk heat customer.

The applicant will need to be fully engaged with their potential customer in order to gather the necessary information.

[13] Guidance for Microbusinesses | Ofgem

REF 1.6 Techno-economic feasibility study

Accompanying the business case there should be a techno-economic feasibility study, carried out by an engineering organisation or competent independent engineer, that assesses as a minimum:

- Technology options with preferred option;
- Network routing option with preferred option;
- Energy balances at key stages in the project's build out;
- Customer annual heat loads;
- Carbon saving calculations.

Analysis should include the levelized cost of heat[14] of each option.

Techno-economic feasibility studies should be provided as PDF documents. However, where the study has been delivered through MS Excel-based modelling and technical drawings **only**, a short note summarising the findings of that analysis (in line with the bullets above) should be provided.

Where heating is supplied, the counterfactual heat source for each heat customer should be identified and included in a table.

If a techno-economic study carried out in the past is provided in this section, evidence should be provided as to why the conclusions are still relevant and correct. At the very least a refresh of the techno-economic model would be expected where studies are a year or two old, but more significant evidence around the proposed solutions would be expected where studies are older than this, particularly where new options may have arisen.

REF 1.7 Techno-economic cash flow model

Accompanying the techno-economic feasibility study, there should be a cash flow model(s) (TEM) that reconciles to the cash flows and energy balance summarised in the study. If the user is required to alter scenarios, or other cells within the TEM, in order for the outputs to agree with the study then an explanatory note within the TEM should be provided. As a minimum the TEM should provide the following:

- Annual energy balance, expressed in kWh, for at least 40 years' appraisal;
  - Energy imported by each energy type (e.g., gas, heat from EFW, electricity) for heat generation;

[14] The sum of all project costs (capex, repex and opex) and non-heat related income discounted at the applicant's real pre-tax hurdle rate divided by the sum of all heat delivered to end customers discounted at the applicant's real pre-tax hurdle rate. Evaluation should be over a 40-year period

  - System parasitic electrical consumption (this should **not** include electricity supplied to a form of heat generation – e.g., for heat pumps);
  - Heat generated by each plant type;
  - Distribution losses;
  - End customer demand broken down by customer;
- Capex broken down to provide a sufficient level of granularity – please refer to Annex 2 (Minimum line items for techno-economic models provided to GHNF (ODS) which can be downloaded from the gov.uk website[15]) as the minimum level of granularity expected;
- Repex showing which items of property, plant and/or equipment are to be replaced;
- Opex broken down to provide a sufficient level of granularity – please refer to the spreadsheet which outlines Minimum line items for techno-economic models provided to GHNF (ODS) as an example of the level of granularity expected;
- Undiscounted and discounted cash flow summary over a 40-year period showing:
  - Capex;
  - Repex;
  - Opex;
  - Income;
  - Levelised cost of heat.

TEMs should be provided as MS Excel - .xlsx, .xlsm or .xlsb files. The Model must be provided unlocked: both workbook and visual basic with all sheets visible. All calculations must be visible with no hard coding of any outputs or calculated cells.

It is also expected that the TEM will present cost and income assumptions in Real terms (i.e. excluding nominal inflation) with costs and income stated as at the date of submission of the application. The application form requires information to be input in Real terms and all standing data assumptions within the application form are in Real terms (e.g. the fuel cost curves and other cost information that calculate the notional counterfactuals within the form). The pre and post grant IRRs calculated by the application form are thus also Real. Applicants can submit their Financial Model with nominal inflation included, and ideally this model will include functionality that enables it to be switched between Real and Nominal presentations. Where a Nominal Financial Model is submitted, applicants

[15] Minimum line items for techno-economic models provided to GHNF (ODS). Available: https://www.gov.uk/government/publications/green-heat-network-fund-ghnf

should provide a statement explaining how their nominal IRR as per their Financial Model, converts to the Real IRR within the application form.

REF 1.8 Market Transformation Commitment Statement

All applicants must provide a signed Market Transformation Commitment (MTC) statement – the Market Transformation Commitment Guidance has been annexed in this document[16]. This must be signed by a person with authority to enter into agreements on behalf of the organisation. The Market Transformation Commitment sees the applicant commit their project to enabling actions that will help the Green Heat Network Fund transform the heat network sector. The applicant should also provide any additional supporting evidence regarding MTCs alongside this document. For example, the applicant will commit to an open procurement process that has fair contractual terms, so as to not present an obstacle to new market entrants. See Guidance for market transformation commitments in the Annex for full requirements.

REF 1.9 Technical drawings

Scale layouts and schematics for the energy centre should be provided. These should be of sufficient detail to inform capital cost, space, and utility requirements, as well as an understanding of noise and emissions implications. Outline specifications should be provided for heat/cooling generation plant including product data sheets where available.

Where applicants have indicated in the application form that their energy centre lies within a flood risk area, evidence should be provided here of how such risks will be mitigated through design.

Scale drawings of pipework, including lengths and sizes should be provided.

Drawings, outline specifications and product data sheets should be provided as PDFs.

REF 1.10 Network Diagram

A Network Diagram image should be uploaded into the folder on SharePoint suitable for use with the Project Description provided in the "Publication" tab of the Application Form. **Images should be in JPG or PNG format and be high resolution**.

REF 1.11 Relevant correspondence

This should include but is not limited to, relevant correspondence with:

- Relevant utilities (electricity, water, etc.).

  For the assessment of deliverability, it will be important to understand the extent to which costs to connect to relevant utilities have been evaluated and priced.

[16] See 15. Annex: Guidance for market transformation commitments.

This is particularly important with regard to electrical supply for heat pump schemes. Where heat pumps will be a major generator of heat for a scheme, failure to provide a utility quote or appropriate evidence of correspondence with electrical utility could lead to the scheme being rejected.

- Planners (if application is for construction support).

  All applications for **construction only** funding should show engagement with local planners. The deliverability assessment will assess the extent to which engagement with planners is on the right track and that planning permission for the energy centre and associated heat network infrastructure is or is not likely to be approved (if not already approved).

  Where planning permission has been granted for a development to be served by the proposed district heating scheme, S106 agreements and planning consents should be provided here as well as any such documents relating to the district heating scheme itself.

- Highways (if application is for construction support).

  All applications for **construction only funding that require the use of public highways** to lay pipework should provide evidence of correspondence with the relevant highways team of a Local Authority.

- Developers (if new build connections included);
    - All applications for costs relating to connection of new developments to heat networks will need to provide evidence of relevant correspondence/approved minutes with developers. Relevancy, in addition to the letter of intent/memorandum of understanding/heads of terms (see REF1.12/energy supply agreement (as appropriate)), relates to developer requirements for connection to the network. If there is a large body of correspondence the applicant should provide a short summary.
    - Where a Town and Country Planning Act section 106 agreement has been entered into between the planning authority and the developer, a copy of this should be provided as part of the application.
- Other relevant organisations, examples might include, but are not limited to:
    - Environment Agency (e.g. correspondence about abstraction and discharge licences and associated costs);
    - Coal Authority;
    - Canals & River Trust;
    - Network Rail.

REF 1.12 Energy supply agreements

As projects develop, a key goal is working towards securing legally binding energy supply contracts. It is **not** expected that projects applying to GHNF for commercialisation and construction funding for new heat networks will have secured legally binding contracts. However, it is expected that the project should be able to demonstrate support for the project at that stage. The submission of detailed letters of intent would satisfy this requirement.

Heat Customers

Projects seeking commercialisation funding should provide, at the very least, letters of intent or preferably memorandums of understanding with customers that should ideally demonstrate:

- A clear understanding of the network context;
- The commitment of senior stakeholders within the relevant organisation to work with the project developer and an understanding of the resource and financial consequences of doing so;
- A detailed description of the potential loads and locations
- Confirmation that the project timings, as set out in the programme submitted to the GHNF, would not preclude them for connecting to the network;
- Any key conditionalities;
- An overview of next steps with a clear timeline for delivery.

If possible, the application should include the proposed basis of establishing the heat tariff.

Before drawing down construction funding, successful projects will need to provide copies of legally binding signed energy supply agreements with key customers.

Template heads of terms and contracts can be found on the following webpages:

- Heads of terms[17]
- Legal contracts[18].

Heat Suppliers

Where heat, rather than fuel to enable heat generation, is to be supplied to the heat network (e.g., waste heat from an industrial process or Energy from Waste plant), projects will be expected to provide the *same level* of evidence regarding supply contracts as is required for the sale of heat to network customers.

[17] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/717800/Heat_Network_Heads_of_Terms.docx
[18] https://tp-heatnetworks.org/heat-contract-templates/

REF 1.13 Letters of support from project sponsor

The authors of letters of support will differ depending on the type of applicant. As a general rule, the letter of support should be from a senior responsible officer with the authority / delegated authority to approve the delivery model for the project.

Public Sector Application

Public sector applicants are required to submit a letter from the relevant Section 151 Officer or Finance Director, containing various confirmations that are required by the GHNF Investment Committee. A pro-forma copy of the Letter will be provided as part of the applicant pack which can be requested from enquiries@tp-heatnetworks.org.

In addition, Local Authority Applications should include:

- Councillor responsible for Environment and Climate Change, Place, Economy and Strategic planning, etc. as appropriate; and,
- Senior procurement officer confirming approval for procurement strategy set out in business case procurement strategy.

Local Authorities

All local authority applicants will be asked to provide a limited number of additional confirmations in the above letter. These are:

- That a project has been or will be assessed in line with an Authority's published business case and governance processes and that the project represents Value for Money for the Authority.
- That the Authority has carried out a Minimum Revenue Provision assessment across the Capital Programme in line with applicable guidance.
- That the Authority is eligible to borrow from the Public Works Loans Board (and is eligible to receive the PWLB certainty rate) and is currently not undergoing Exceptional Financial Support measures, nor intends to do so in the near future.
- That the Authority can provide its future capital programme detailing planned borrowing and capital expenditure for the current and ensuing 2 financial years.
- That the Authority is within any applicable debt cap and will remain so after drawing UKIB loan.
- That the Authority can provide accounts for the most recent available two years.

Non-Public Sector Application

- Chief Executive Officer;

- Chief Financial Officer confirming funding is available to the extent that the applicant intends to finance the project (as opposed to procuring a concession for example).

REF 1.14 Risk register and mitigation approach

The project risk register and proposed approaches to manage the key risks must be provided. This can be provided as an MS Word / Excel document or if the software format used by the applicant differs, as a PDF.

Risks should be relevant to the project being applied for and not just a generic list of issues that can arise with heat networks.

REF 1.15 Counterfactual heat

A short (1-3 page) memorandum setting out:

- The heating/cooling technology for the proposed customers were the project not to secure GHNF funding.
- The most applicable alternative low carbon heating/cooling solution for the proposed customers were the heat network not to go ahead and the implications this might have for customer heat price.
- The local context (e.g., planning obligations, customer desire to decarbonise heat, etc.) and the practicalities/impracticalities of alternative low carbon heating solutions. For example, it may simply not be reasonable to assume air source heat pumps being installed in multi-tenanted buildings for a low carbon counterfactual and instead more capital-intensive shared ground loops may be assessed to be necessary to decarbonise building heating if the heat network were not to go ahead.

REF 1.16 CP1 compliance

The applicant must provide a Heat Networks Code of Practice (CP1) checklist (2020) confirming that work-to-date is compliant with CP1 requirements. Additionally, the applicant must provide a written confirmation that the project will continue to be developed in compliance with the requirements of CP1 (2020) and that all contractors appointed will be procured on this basis.

REF 1.17 Confirmation of Heat Trust or equivalence

The applicant must provide written confirmation that, within 1 year of connection of a site containing domestic or micro business customers to the heat network, the applicant will have registered as a participant of the Heat Trust and registered the site with that scheme or have put in place equivalent provisions.

If equivalence provision is to be used:

- A successful applicant will be required, as a condition of construction drawdown, to either provide an independent audit report stating that the standards of the alternative scheme are equivalent to the Heat Trust or seek a determination from the Department that such a report is not required. The audit report must be carried out by a suitably qualified auditor with relevant industry experience. Such a report will not be funded by GHNF.
- The Department may, at its absolute discretion, also allow not-for-profit organisations some flexibility if they are struggling with the provision of customer compensation provided equivalence is otherwise proven and customer protection is still shown to be adequately assured. This will be assessed on a case-by-case basis.

REF 1.18 Applicant Corporate structure and Project Delivery Structure

Please attach a group structure/organisation chart showing the relationship between you (the applicant company) and the other companies within your Group/structure including your immediate and ultimate Parent Company (if different) and their respective relationships to the project and how these relate to other stakeholders in the project.

Please also provide an explanation of the corporate structure being used for project delivery, whether any Special Purpose Vehicles (SPVs) will be used and where the applicant sits in the structure. Please include a structure chart if relevant.

REF 1.19 Applicant Company accounts

Please provide the signed and audited (if applicable) accounts/financial statements for the previous two years for all entities involved in the application. This should include the applicant, the delivery partner (if different from the applicant), parent and ultimate parent.

REF 1.20 Governance

Please provide information regarding the project team and their expertise, experience and capacity to lead the delivery of the project.

Please provide an explanation of your proposed 'supplier of last resort arrangements' to ensure continuity in supply of heat to any residential or micro-business customers supplied by the project in the event that the heat business becomes insolvent, ceases to trade or loses its concession or other contractual right to supply heat for any reason. If not yet decided, please provide information on when you plan to address this issue.

REF 1.21 Applicant Unaudited P&L and balance sheet

Please provide draft P&L from the date of the latest published accounts and balance sheet as close to the date of application is possible.

REF 1.22 Public Sector Confirmation Letter

This is a folder we sometimes use when a project is asked to confirm support from their local authority. You are not automatically expected to do this, and we would ask specifically if this were needed.

REF 2.1 Innovation and efficiency

If the applicant believes that it will be able to demonstrate innovation and/or enhanced energy efficiency, either with regards to the system to be installed, system operation or customers to be connected, then a short, 1–5-page, memo should be written justifying an enhanced score for this.

While the GHNF will not fund investment in fabric changes, if the project intends on investing in this activity but has excluded the costs from the application (potentially applying for separate central/local funding), such activities could still be eligible to be credited in the scoring if doing so would, for example, enable a lowered network flow temperature. In such cases the memo would need to explain the overall impact of undertaking such measures on the overall performance of the network and its low carbon credentials.

REF 2.2 Future expansion

If the applicant believes that the heat network has good expansion potential, enabling the future expansion and decarbonisation of buildings in the area then a short, 1–5-page, memo should be written justifying an enhanced score for this.

Memos that simply state that there are a large number of buildings in the area will not score well. Applicants will be expected to provide evidence to support their claims regarding future expansion potential. For existing buildings, assessors will be looking for evidence that the project team have had some contact with potential customers and that such customers are receptive to the idea of connecting to a low carbon heat network. For future new build sites, assessors will be looking for a local development plan or similar that clearly indicates the proposed site is designated for development and when this might occur. For sites nearer the start of development proof of discussion with developers will be looked for.

The applicant should make clear what steps are being taken as part of the works associated with the current application to better ensure the ability of the project to expand should the opportunity arise. This might include:

- Building a larger energy centre with a footprint capable of including additional low carbon heating/cooling plant.
- Demonstrating how expansion might technically be achieved. This may potentially have been considered in the techno-economic appraisal report. If so, that should be mentioned here.

REF 2.3 Full financial model

A full financial model may:

- Overlay wider project costs such as overheads, insurances, water, levies and other such costs sometimes omitted from standard techno-economic modelling.
- Evaluate the impact of relevant taxes: business rates, corporation tax, irrecoverable VAT[19], etc.
- Model different sources of capital and the impact on equity returns and debt service cover ratios.
- Consider indexation risk.
- Model accounting requirements and their impact on distributable reserves.
- Calculate post-tax nominal equity returns.

Projects that submit a full financial model will be able to better demonstrate the project's forecast financial profitability post construction. A key consideration within the Deliverability assessment will be an assessment of the project's forecast free cash to finance. A project with a strong level of free cash, that also demonstrates that there is no customer detriment (see section 14), would strongly indicate that the GHNF grant will be used to defray high up-front capital costs and unlock long-term low carbon heating for a project that will be a going concern into the long term.

A template, full financial model for energy networks is available on the gov.uk website: https://www.gov.uk/government/publications/heat-network-template-financial-model

REF 2.4 Credit rating

If your organisation has a credit rating, please provide evidence of this rating – e.g., screenshot of the rating from the credit rating provider. It should be clearly indicated which organisation in the corporate structure provided this evidence relates to.

REF 3.1 Construction-only budget

If a construction-only grant is being applied for then, an MS Excel based budget and accompanying explanatory note should be provided itemising the costs expected to be incurred in completing the construction of the phase(s) of work applied for. The total annual value of the construction costs should fully correspond to the total construction cost values entered into the application form.

The budget should be set out on a monthly basis, in line with fiscal reporting periods (April-March). As with the application form, the budget should correspond to when liabilities relating to works are forecast to be incurred.

[19] Note: The GHNF does not cover recoverable VAT.

REF 3.2 Commercialisation and construction budget

If a commercialisation and construction funding application is made then, an MS Excel based budget and accompanying explanatory note should be provided:

- itemising the costs expected to be incurred up to the point that a Final Investment Decision for the construction of the network is to be taken; and
- itemising the costs expected to be incurred in completing the construction of the phase(s) of work applied for.

The total annual value of the commercialisation and construction costs should fully correspond to the total commercialisation and construction cost values entered into the application form.

The budget should be set out on a monthly basis in line with fiscal reporting periods (April-March). As with the application form, the budget should correspond to when liabilities relating to works are forecast to be incurred.

REF 3.3 Wastewater heat recovery risk allocation principles statement

For all projects seeking to recover heat from wastewater (sewer main or wastewater treatment plant), a signed letter is needed from the senior officer responsible for approving the business case (REF1.3). This needs to acknowledge the approach to risk allocation relating to heat recovery from the wastewater heat source, as set out in this guidance[20]. The letter should also confirm an intent to adhere to this approach in future negotiations with the relevant wastewater company regarding the heat network project set out in the application made to GHNF.

REF 4.1 Communal networks supporting note

Where one or more communal networks are the subject of an application in aggregation, a note must be provided setting out which networks are to be decarbonised, including a map with their locations highlighted. Relevant sections of the local energy strategy or plan (see REF 4.2) should be highlighted to confirm that communal networks are in an area considered for future heat network development.

REF 4.2 Relevant local energy strategy

Where communal heat networks are applying as an aggregated scheme then an appropriate strategy is required to confirm that these buildings are not planned to be part of a wider heat network. Such a strategy could be a local authority heat mapping and master planning report for the area in which the communal systems are located, or it could be a portfolio options assessment for a RSL or similar landlord, showing why low carbon communal heating is the most appropriate solution.

[20] See sub-section *Wider Stakeholder Risk: Wastewater Heat Recovery* in Section: *Scored elements in GHNF applications: Assessment of deliverability*.

REF 4.3 Heat network readiness statement

Confirmation statement that all communal networks included in the application will, as part of the works undertaken, be developed to be ready for heat network connection.

At construction stage, evidence of what provisions have been made to enable future connection to a heat network will need to be provided. This could be in the form of suitable notes and details on the appropriate design drawings.

REF 5.1 Existing network supporting note

Cover note explaining what specific works GHNF are being asked to support. It should also explain what works have been done to address existing performance issues (to the extent they have been identified in the accompanying performance report) and what works are planned.

REF 5.2 Performance report

See section 4.5.1.

REF 5.3 Existing network confirmation statement

A confirmation statement that the key improvement measures highlighted in the performance report have either been undertaken or are planned to be undertaken in advance of, or as part of, the works for which GHNF funding has been sought. In this statement, the applicant must confirm that the costs of such improvement measures have not been included in the application form.

REF 6.1 Rural network confirmation statement of off-gas grid

Only rural networks where customers are not connected to the gas grid are eligible to benefit from the 100 dwellings allowance (as opposed to minimum 2GWh of annual thermal energy generated) – see section *14*. The applicant must provide a written statement confirming that customers connected to the heat network are not connected to the gas grid.

REF 7.1 Technical report assessing z-factor

Where an applicant is seeking to source heat from an energy from waste plant and intends to use a specific, non-default, z factor for the plant, justification of the chosen factor should be provided in the form of a technical report, or reference if contained within a broader feasibility study. The assessment should be undertaken by an engineering organisation or competent independent engineer with relevant skills to carry

out such an assessment with reference to the BRE Technical Note: Modelling Energy from Waste facilities[21].

REF 8.1 Carbon intensity of network above carbon gate

Where an applicant's modelling indicates that the expected carbon intensity of the network will exceed the 100g CO_2e/kWh threshold in the first 1-5 years following connection, submission of additional supporting evidence is required. The applicant must provide a note explaining why the network is breaching the carbon threshold and how it will be brought down to below this threshold successfully by the end of year 3 where temporary fossil plant is being used and by the end of year 5 where low or zero carbon plant is being used from the outset. The note must include a confirmatory statement that the required decarbonisation activities will be undertaken.

REF 9.1 Re-application

Where an application has been rejected and the applicant is seeking to reapply the applicant should provide a supporting note containing a gap analysis highlighting what has changed from the previous application.

Should an applicant that has successfully applied for the Transition Scheme apply to the GHNF for construction funding, this supporting note will also be required.

REF 10.1 New Build Residential Development

Where a heat network connects to new build dwellings and does not have recovered heat (see section 4.6) as its primary heat source, an evidence note, together with supporting evidence, should be provided that sets out how further carbon savings will be achieved though implementing the network. This could be through:

- Future expansion.

  Where this is the case then the relevant information may be provided in REF 2.2, but a note directing the assessment team to REF 2.2 should be included in REF 10.1. Alternatively, evidence can be included in this REF 10.1.

  Applicants will be expected to provide evidence to support their claims regarding future expansion potential. For existing buildings, assessors will be looking for evidence that the project team have had some contact with potential customers and that such customers are receptive to the idea of connecting to a low carbon heat network. For future new build sites, assessors will be looking for a local development plan or similar that clearly indicates the proposed site is designated for development and when this might occur. For sites nearer the start of development proof of discussion with developers will be looked for.

[21] https://files.bregroup.com/SAP/BRE_Technical_Note-Energy_from_Waste_Facilities_%28ERF%29_1.0.pdf

- Changes in low carbon technology, i.e., transitioning from heat pumps to industrial waste heat in future.

  The note provided in Ref 10.1 will be expected to provide evidence that the proposed change is possible such as planning permissions, letters of intent etc and not just refer to potential future plans.

- Where a sleeving application is being made, providing low-carbon heating plant that has a greater capacity then necessary for the new connection(s), thus enabling a proportion of low-carbon heat to decarbonise existing network connections.

  Assessors will be looking for calculations that support the assertion that this is the case and ideally that the excess capacity can deliver at least as much heat to existing connections as is provided to the new build residential connections.

For schemes that fail to save carbon against the blended counterfactual, the scheme must also submit further information in the evidence note showing the strategic value of their scheme. Examples of a strategic network would include networks that:

- Reduce, by a significant amount, the installation of new electric infrastructure capacity to support decarbonisation.

  Supporting evidence such as electrical network capacity reports and calculations showing the difference in electrical network requirements between the heat network and counterfactual should be submitted.

- Offer significant expansion opportunities.

  It would be preferable for future expansion to include existing buildings and not just further new build residential developments.

  Applicants will be expected to provide evidence to support their claims regarding future expansion potential. For existing buildings assessors will be looking for evidence that the project team have had some contact with potential customers and that such customers are receptive to the idea of connecting to a low carbon heat network. For future new build sites assessors will be looking for a local development plan or similar that clearly indicates the proposed site is designated for development and when this might occur. For sites nearer the start of development proof of discussion with developers will be looked for.

  Future phases of the new build development are not considered future expansion as they should be part of your plans for the network and the overall scheme should be designed for such addition. We would be expecting to see expansion outside of the scheme that is the subject of the GHNF application.

- Decarbonise sites that would be difficult to decarbonise using individual ASHP or other stand-a-lone solutions.

  Listed buildings would be one example where individual heating options may not be acceptable but other cases may be evidenced.

- Offer an opportunity to either fully or partially decarbonise an existing heat network.

Assessors will be looking for calculations that support this and that the excess capacity can deliver as much, but ideally more, heat to existing connections as is provided to the new build residential connections.

Applicants should note that the definition of "significant", as used in the above examples, is essentially at the discretion of the Department and supporting evidence needs to be provided as to why they believe their project to be of national significance.

5.4 Submitting the application

When an Applicant is ready to apply, they should alert an Application Manager by emailing apply@tp-heatnetworks.org. Applicants will then receive an email containing sign up details and a link to an individual SharePoint site.

The email will describe a short process to follow, to register and set up the Applicant's SharePoint account. Using these details, the Applicant can log into their account, where they will be granted permission to add documents into pre-defined folders within the site. The folders follow the structure of Table 5: Summary of Evidence required. Within the Application folder, there are sub-folders 'Mandatory,' 'Optional Information,' and so on, with additional sub-folders within. The folder titles indicate the documentation which should be saved in each folder. An example of the folder structure is shown in Figure 3.

Figure 3 - Example of Pre-defined Folder Structure

When an Applicant has finished uploading their documentation, an email confirming completion should be sent to apply@tp-heatnetworks.org. The applicant should have already communicated which funding round they would like to be considered in – either via their Expression of Interest or Application registration email.

When the applicant's submission has been checked by the Application Manager, an email confirmation will be sent by our administrator approving submission. We will endeavour to provide confirmation emails within one working day of receipt. Confirmation emails will include a unique application reference number that must be quoted in subsequent correspondence.

It is therefore strongly recommended that applications are submitted in advance of the deadline to ensure that confirmation emails are obtained in the unlikely event that applications made are, for whatever reason, not received by the mailbox administrator.

When the submission window is closed, the Applicant will no longer be able to upload documentation into the SharePoint site.

5.5 Application assessment

Once the completed application form and accompanying evidence documents have been submitted and it has been confirmed that all pass/fail gates within the application form (i.e., the application gated metrics) have been passed (the applicant will know this on application – see Application Form Guidance (available on request from enquiries@tp-heatnetworks.org), assessment will begin following the closure of a given funding round.

From an applicant's perspective, the application is completed when the form and accompanying supporting evidence are provided to GHNF. However, over the month following the closing date of a given funding round, the GHNF may raise clarifications to which the applicant must respond. Draft papers will then be prepared over the next three weeks for the Investment Committee (IC) which, after reviewing, may raise further clarifications before the final IC reports are produced and a formal meeting to make a final decision on awards is held. It is recommended that key project team members are available during this period to respond to any clarifications raised.

The sequence of clarifications and responses is set out as follows:

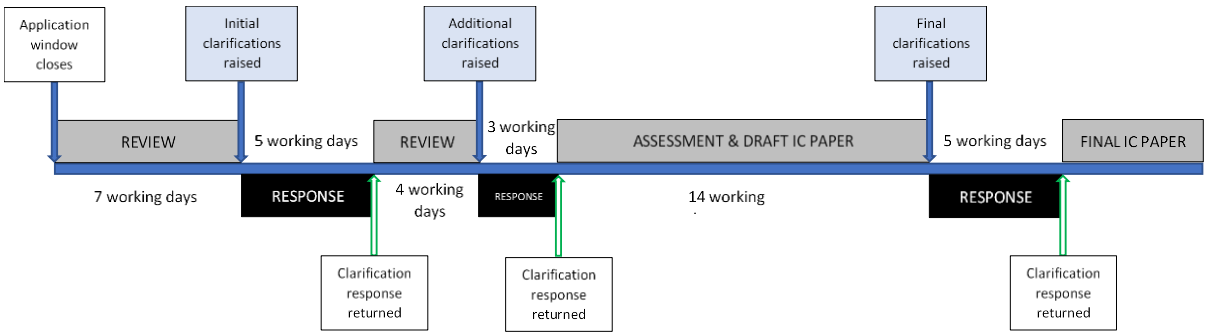

Figure 4 - Illustrative assessment window

It is essential that the applicant and any technical / commercial / legal / financial advisers to the project are available over this period. This is to ensure full and timely responses can be made by the applicant to GHNF.

Clarifications can be uploaded directly to the Applicants SharePoint site. Much like the application process, pre-defined folders have been set up for each round of clarification, for both sent and received clarifications. An example of the Clarification folder structure can be found in Figure 5.

Figure 5 - Example of Clarification folder structure

Please note that there may be multiple clarification rounds. For each round, please use the next set of pre-defined folders.

If, on review of final responses by the applicant, it is assessed that the applicant has failed to materially address issues relating to key aspects of the scheme the application would be failed and notified. On notification, the applicant will be provided with the points that resulted in the failure, and, if applicable, suggestions of how the issue(s) might be resolved. The intention of this early failure and notification is to provide the applicant additional time to address the issue in advance of the next funding round.

Minor issues that remain unresolved, or significant issues that are deemed resolvable, will be collated into Conditions Precedent and a set of activity milestones that will be included in the recommendations to the investment committee and which may then form part of the grant award should it be successful. Drawdown of funds will only be permitted if all relevant Conditions Precedent have been met and adequate progress has been made against the activity milestones.

The process of grant award and draw-down is covered in Section 10 of this guide. Details of the assessment and scoring approach are described in Section 14.

5.6 SharePoint Folder structure

Please note, within SharePoint, the applicant will have access to further folders that are not required at this stage. The applicant should only use the 'Application' folder and its sub-folders when submitting the original application. When submitting clarification documents, the 'Clarification' folder should be used.

Folders named 'Conditions,' 'M&R,' and 'Milestones' will be visible in the SharePoint; however, these relate to later stages of the applicant journey. The function of these folders is described in the relevant sections of the guidance below.

An example of the application SharePoint folder structure available to an applicant can be found in Figure 6.

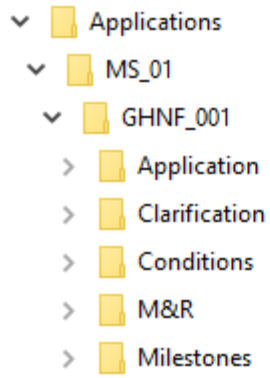

Figure 6 - Example Folder Structure Available to Applicant

Please note that the folders for Conditions, M&R and Milestones are only needed if a project is awarded funding as these are used to exchange information once a project is under contract.

6 Exclusions

6.1 Project costs that will not be supported by the GHNF

Below are the key costs that are **not** supported by the GHNF. The sub-sections in the GHNF eligibility section provide specific cases which would not be clearly captured by the principles-based approach to exclusion from the GHNF.

6.1.1 Staffing costs that will not be supported

The GHNF will not usually fund the costs of existing project staff as these are considered sunk costs.

Where additional staff are brought on to the project team specifically for the purpose of managing the delivery of the project, the project may include their time within the eligible project costs for no more than 3 FTE in any given period. This applies where their work in managing delivery of the project is clearly reflected in their role profile or objectives, and the applicant can demonstrate that it is cost effective to do so.

Additional staff covered by the 3 FTE total are expected to work with an outsourced Project Manager, and spend a minimum of 0.8 FTE (80% of their time) on activities related to managing the project. Within organisation cross charging for the delivery of in-house technical, commercial, financial and legal work specific to the project that might otherwise be commissioned through external consultants may be considered within eligible project costs on a case-by-case basis.

Applicants will be required to provide evidence showing that the staff were hired specifically for activities relating to the GHNF-funded project, including evidence of cost-effectiveness and role profiles / Terms of Reference.

6.1.2 Commercialisation costs that will not be supported

GHNF will **not** fund:

- Any commercialisation costs that have already been incurred prior to a GHNF award notification letter having been issued.
- The cost of any activities **not** directly attributable to bringing the heat network to a state where it is capable of operating in the manner intended in the concept design of the network submitted as part of the application.
- VAT.

Judgement will be required by the applicant as to whether certain costs included within the commercialisation cost budget submitted (see section *REF 3.1* Construction-only budget) meet the overriding principle set out above[22]. The applicant should be prepared

[22] For example, it may be assessed by an applicant necessary to incur part of the legal costs for a key customer to secure a connection agreement and accompanying energy supply agreement. Judgement is applied here by the applicant to associate such costs as *directly* attributable.

to justify specific cost inclusions as being directly attributable if challenged as part of the assessment.

6.1.3 Construction costs that will not be supported

GHNF will **not** fund:

- Any construction costs that have already been incurred prior to a GHNF award notification having been issued.
- Costs associated with constructing heat/cooling sources whose primary function is not the generation of heat/cooling. For example:
  - the cost of constructing an EFW plant would not be eligible, but the cost of interfacing with an existing or planned EFW may be;
  - the cost of constructing a hydrogen electrolyser would not be eligible but the cost of interfacing with the hydrogen facility would be.
  - Costs associated with connecting new or existing heat/cooling sources where there is a legal requirement for those sources to connect to a network.
- The cost of buying and installing tertiary heat distribution systems. A tertiary heat distribution system is defined as pipework and associated plant that sits behind the customer meter / Hydraulic Interface Unit (HIU). For the avoidance of doubt, an HIU is, for the purpose of GHNF, classified as part of the secondary distribution system, not the tertiary system.
- The cost of changes to existing building fabric such as glazing, ventilation and insulation upgrades. However, if it is intended that the provision of such fabric adjustments will be recouped through the charges to be levied for heat, then such costs may be permitted. An assessment of any such proposals will need to be undertaken in the application form <Cost-Benefits> tab to show that they have a positive or neutral impact of the scheme's net present value (NPV). If this is the case, then costs and income can be entered as non-heating or cooling items in the <Main Application> tab.
- The cost of buying and installing plant that uses biogas or syngas, with the following exceptions:
  - Where the heat network is rural (off gas grid), it may be used for primary, secondary and peaking plant, provided the biogas or syngas is manufactured on site.
  - Where the heat network is located in an urban area[23] on gas grid, biogas and syngas may not be used as a fuel for primary plant; however, it may be

[23] https://www.gov.uk/government/statistics/the-rural-urban-definition

used as fuel for secondary and/or peaking plant provided the gas is manufactured on site.

- The cost of buying and installing plant that uses liquid biofuel, with the following exceptions:
    - Where it is used to provide secondary and peaking plant (thermal and/or electrical), provided the biofuel is not sourced from virgin food crops, and can demonstrate that it is sustainably sourced.
- The cost of buying and installing primary, secondary or peaking plant that uses biomass that:
    - Does not adhere to existing regulations (including air quality standards); or
    - Uses fuel made up of virgin construction grade logs or timber; or
    - The biomass fuel is not included in either the Biomass Sustainability List (BSL), the Sustainable Fuel Register (SFL) or any future Government approved scheme.
- Where biogas, bioliquids or biomass is proposed to be used to generate thermal energy, a monitoring requirement will be for the project to confirm annually that these criteria continue to be met.
- The cost of buying and installing primary plant that uses natural gas for which Renewable Energy Guarantees of Origin (REGOs), or equivalent, have been procured.
- The cost of first of a kind technology (FOAK). The GHNF is not intended to fund technology that has not been demonstrated to operate in the conditions proposed by the project and at a capacity similar to that required by the project. Projects looking to generate heat by means other than those listed below will need to adhere to Technology Readiness Levels 8 and 9 as interpreted by the Department for Energy Security and Net Zero Industrial Energy Technology Fund[24] with national/international examples provided. The means of generating heat that are not deemed to be FOAK:
    - Direct combustion with oxidisation;
    - Usable heat recovered from an industrial process (e.g., Energy From Waste);
    - Waste heat recovered from an industrial/commercial process and upgraded via heat pump;
    - Ground, water, air, sewer or mine-source heat pump;

[24] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/959144/ietf-spring-2021-tech-scope-energy-efficiency-studies-deployment-projects.pdf

- Distributed heat pumps on a centrally managed ambient loop;
- Deep geothermal[25];
- Fuel cells; and
- Solar thermal.

- The cost of exclusively agricultural heat networks. The GHNF is intended to help address the decarbonisation challenge associated primarily with space heating and domestic hot water production and potentially certain industrial processes. While a heat network might supply heat to an agricultural process, the heat network will not be funded under the GHNF unless at least 50% of thermal demand is from commercial[26]/multi-residential/public sector buildings or industrial processes.
- VAT. Note that projects are expected to be configured in a way to ensure that most VAT is recoverable.

6.2 Existing network costs that are not supported

Where an existing network applies for GHNF support to decarbonise the heat supplied to its existing customers, the GHNF must ensure that it does not fund the cost of addressing any pre-existing performance issues. The owner/operator should seek support for such costs from other Department schemes such as the Heat Network Efficiency Scheme (HNES).

6.3 Private wire and electrical generation

GHNF will only fund private wire electrical distribution and low carbon electrical generation (such as PV panels or wind turbines) where it is clearly shown that such equipment will have a positive or neutral impact on the project NPV. This should result in a reduction in the award request and therefore make the scheme more competitive. Applicants should use the application form <Cost-benefits> tab to assess their proposals and where they pass the NPV criteria, entre income and costs associated with the electrical equipment in the main application as a non-heat network income and costs.

Any electrical generation proposed for inclusion in the application must be included in the assessment of the carbon intensity of the thermal energy delivered to customers and must not lead to the carbon gate being exceeded.

[25] 500m or deeper – if shallower then classed as ground source
[26] Schools, universities, health, offices, entertainment, garages and shops

7 Relationship Managers and application support

7.1 Overview of business development support in the GHNF

An important part of the GHNF is how the scheme interacts with prospective applicants.

Prospective applicants need to be made aware of the scheme, the extent to which their project does or does not align with the principles of GHNF support, what actions might need to be taken prior to application to ensure best foot forward and how to make a clear and compelling application.

The Relationship Managers (RMs) play an important role in this process. They are not part of the assessment team and there are internal controls to ensure that assessors and RMs do not have access to respective work areas. RM's will be available to brief assessors on projects after applications have been submitted but will not lobby on behalf of projects.

The GHNF Delivery Partner will periodically run application workshops that will highlight the key application requirements and that will run through in more detail, how the application form should be completed. Applicants will be notified of these workshops and are encouraged to attend them.

7.2 When to engage

Relationship Managers are available to discuss projects with potential GHNF applicants at their earliest convenience and we would encourage projects to get in touch as soon as possible. Relationship Managers will endeavour to signpost projects to other support if available or more appropriate.

Please email enquiries@tp-heatnetworks.org to request a call with a Relationship Manager.

7.3 How will the Business Development Team (BDM Team) help?

The BDM Team is comprised of a dedicated Relationship Manager (RM) and a team of specialist case managers available to review specific elements of the application submission. The RM will be able to draw on the expertise of the case managers as and when needed to support the individual requirements of projects and in the preparation of their application:

- A RM will be the main point of contact between the scheme and prospective applicants and will be available to help prospective applicants and wider stakeholders to understand the scheme requirements and rules.
- A RM can review any evidence provided at a high level and consider where additional focus is needed, if at all.

- As each RM has a portfolio of projects she/he supports, they can draw on what they see other projects doing and communicate the kinds of behaviours they are seeing without divulging any specific aspects of other projects. An example might be explaining how another project drafted a cover note tailored to their project to assist assessment, what was included by another project in the innovation and energy efficiency memorandum, and what type of correspondence with a DNO was included in an application where there had been substantial amounts of correspondence, etc.
- A RM can attend certain internal/external meetings to express their thoughts on the project's direction of travel and the extent to which the project has the attributes that GHNF is looking to support.

When a project is ready to make an application, the RM can help the project:

- by clarifying specific questions on the application form to the extent they are not clear to the applicant or relay questions in a timely fashion to a relevant GHNF team member);
- by pointing the applicant to relevant guidance and published examples of good and not so good applications (this will be possible after the first year of the full scheme).

The RM's involvement with a project is to provide guidance only, which will never be in the form of advice. The applicant is under no obligation to follow the guidance provided by the RM but would be expected to always follow published GHNF guidance – i.e., this document and subsequent versions of it.

7.4 What support do RMs provide to applicants following an application?

After an application is made the RM will continue to be the first point of contact for projects until the notification letters have been issued.

If successful, future monitoring and reporting requirements (see section 11) will be managed by the GHNF central team and not by the RM. However, the RM will, alongside our communications team, engage with the successful applicant to develop case studies and materials to publicise the success of the project. Should the applicant be offered a provisional grant award under the full scheme, the RM will support the project in navigating the BHIVE[27] process should that be required.

If unsuccessful the RM will be available to the applicant to help them prepare for reapplication, should they choose to do so.

[27] https://www.gov.uk/government/publications/beis-heat-investment-vehicle-bhive-a-dynamic-purchasing-system-for-heat-networks

8 Project funding requirements

8.1 Project funding requirements proposed for the GHNF

8.1.1 Non-GHNF Funding

Successful applicants for commercialisation and construction funding must be able to demonstrate that they have secured provisional non-GHNF funding sufficient to meet the project's capital costs which were forecast as part of application. For example, if the total project capital expenditure is forecast to be £20m and a grant of £2m has been applied for, then £18m of capital needs to be confirmed as available for investment into the project. Applicants should seek debt / equity before applying for GHNF funding, such that the amount of grant funding requested is minimised. Evidence of such considerations and of attempts to secure funding will normally be required to be submitted as part of the GHNF application.

This need not always be demonstrated as part of the application (see Provisional Awards section below); however, it will always be a requirement that this is in place prior to construction funds being transferred to the successful applicant.

8.1.2 Heat Network Zoning

Heat network zoning regulation is due to be implemented in the near future. Successful applicants will, of course, be required to comply with all applicable legislation. The heat network zoning consultation document will be available at the following link: *https://www.gov.uk/government/collections/heat-network-zoning*.

In view of this, funding agreements will require applicants to confirm that their contractual arrangements and technical specifications do not prevent or impede connection to a future Zone Heat Network[28] (or prevent or impede connection of other heat networks to theirs should it become the Zone Heat Network) and will require them to cooperate with a future Heat Network Zone Coordinator.

8.1.3 National Underground Asset Register (NUAR)

The Geospatial Commission is building a digital map of underground pipes and cables that will revolutionise the way we install, maintain, operate and repair our buried infrastructure - the National Underground Asset Register (NUAR)[29].

An initial private BETA version of NUAR, also called the 'minimum viable product' (MVP), is live across England and Wales. The MVP includes all core functionality to meet the 'safe dig' use case, allowing users to both plan for future adoption and provide valuable feedback to enhance the service further.

[28] Zone Heat Network means a heat network within a heat network zone benefiting from rights granted under laws concerning heat network zones.
[29] https://www.gov.uk/guidance/national-underground-asset-register-nuar

The NUAR service will continue to be iteratively enhanced in line with user feedback with the platform being fully operational by the end of 2025.

Applicants are therefore required to sign up to the NUAR (either the current MVP or fully operational version depending on when assets are to be installed) and to submit underground asset location information (geospatial data).

8.2 Provisional awards

It is acknowledged that, for some projects, it may not be possible to have all sources of funding in place. Further, requiring projects to have all funding in place may limit the pool of potential investors as some investors may be unwilling to engage with a project that cannot demonstrate investible returns and would not want to commit the time and materials necessary to make an application to GHNF that may or may not be successful.

To help manage this, applicants may apply for provisional awards from the GHNF. However, such applications are only permitted in the first funding round of each financial year. Funding must be secured no later than the end of February of the same financial year (April-March).

> For the avoidance of doubt, Local Authorities intending to finance a project from prudential borrowing sources (such as UKIB) would be eligible to submit applications in any funding round through the financial year.

Given that applicants will essentially have 6-9 months to secure funding on the back of a provisional GHNF award having been made, it would be expected that applicants would have already undertaken some form of soft market investor engagement and can evidence positive feedback.

All public sector applicants seeking provisional GHNF awards must notify BHIVE[30] to consider suitability of the project for third party funding and this should be the preferred method for seeking third party finance for such projects.

9 Subsidy control

The Department for Energy Security and Net Zero undertook an assessment of how the GHNF scheme complies with UK-EU Trade and Cooperation principles and cleared the scheme for subsidy control purposes. This clearance will be retained following introduction of the new Subsidy Control Act, under grandfathering rules. Consequently, grant awards made under GHNF will be considered compliant with subsidy control rules provided that the GHNF scheme rules are met. These include:

[30] https://www.gov.uk/government/publications/beis-heat-investment-vehicle-bhive-a-dynamic-purchasing-system-for-heat-networks

- the amount of grant staying under 50% of eligible commercialisation and construction expenditure
- the project staying below the carbon intensity threshold
- the project staying below the investment return threshold
- the project staying below the calculated p/kWh threshold
- works not being required by law

Provided these tests are met, GHNF awards will comply with the following principles:

- The support relates to a specific public policy objective – the decarbonisation of heat through the deployment of heat networks;
- The subsidy proposed is proportionate and limited to what is necessary;
- The subsidy will change the economic behaviour of the beneficiary by enabling them to invest where otherwise they would not have;
- The social benefits of all projects supported outweigh any negative social impacts associated with them.

However, projects might receive subsidy from other sources. This could be funding from other central or local Government funding schemes, for example. Or, less obviously, where the project is receiving land, accommodation, staffing, equipment, consumables, loans, etc from a public body at no or low cost. In either case, the project will need to make sure that this other subsidy is compliant with subsidy control rules, on its own and together with the GHNF funding and any other subsidy. Recipients of GHNF awards will need to confirm that they have taken reasonable steps to satisfy themselves that they are compliant.

10 Application outcome and grant drawdowns

10.1 When will an award letter or rejection letter be received?

As soon as practicable following the Investment Committee and subject to all relevant approvals being received, notifications will be sent to applicants. Applicants that receive a grant offer letter will be required to confirm agreement with any conditions set and reconfirm the point(s) at which drawdown of the award is anticipated to be made within 5 working days of receipt of the notification.

10.2 What is the process for drawing down funds if successful?

For **Local Authority** applicants:

- Cash drawdown up to the value of the grant submitted for a given financial year can be made at the point all conditions precedent attached to the award, which are associated with the financial year applied for, have been met.
- When a request for drawdown for construction grant funding is made, all conditions precedent attached to the construction award must have been met and adequate progress demonstrated against relevant milestone activities.
- Evidence of spend and progress against milestones will be required as part of our monthly reporting requirements when spend is incurred and at the latest by the end of the financial year within which the spend is predicted to be incurred.

For **all other** applicants:

- Cash drawdown, for part or all of the grant, can be made at the point the successful applicant is able to evidence the need for the spend (e.g. invoices, corresponding QS reports etc.), all conditions precedent for funding have been confirmed by GHNF as having been met, adequate progress demonstrated against relevant milestone activities and the applicant can evidence cash payment to contractors (e.g. bank statements showing that the payment has been made) up to the value of the grant requested.
- Evidence for the need for spend can be in the form of receipted invoices from contractors, quantity surveyor reports which evidence milestones being met, and any other relevant documentation that clearly demonstrates payment for relevant work or services.

- The GHNF will endeavour to remit funds by the end of the calendar month in which the remittance request is made. This must be submitted with accompanying evidence of conditions precedent and progress against milestones plus accompanying invoices (or relevant evidence) and evidence of cash payment to contractors. The request must have been made by the 5th working day in the month to receive payment in the same month.
- In order to better ensure that remittance is made without delay, if the invoice/relevant documentation does not clearly match the remittance requested, a cover note should be provided that clearly reconciles the evidence provided and the remittance request submitted.

10.3 Funding conditions, and reclamation of funds

The GHNF will provide grant funding to the applicant following successful evaluation of the application and subsequent agreement to conditions of funding. Agreement will be demonstrated by the signing of a memorandum of understanding (MoU) or grant funding agreement (GFA), depending on the applicant organisation type, which will be issued alongside the award letter. The MoU/GFA will set out detailed Conditions and Milestones that the applicant will need to adhere to and the circumstances where the grant may be reduced, withdrawn or repayment required. Repayment of grant funds will generally be required in circumstance of misuse or material revisions to the proposed scheme that make the scheme ineligible or that work against the GHNF objectives.

11 Monitoring and reporting requirements

Projects at different stages will have different types of information to report. However, it is also common for a project to be undertaking activities at the same time that are characteristic of commercialisation, construction and operation. Therefore, the approach to reporting reflects this and allows projects to report on any and all progress at the same time.

It is through the M&R report that funds are claimed from GHNF, and so a failure to report will result in no payments being made.

A key benefit of M&R is the ability to showcase project milestones and celebrate successes. Our communications team will liaise with successful projects to promote successful projects and share progress with the market. This could involve developing case studies, organising site visits, presenting at events and providing video and photographic materials for use on our social media and website. It is the project responsibility to inform TPHNIM of any key milestones or achievements that could be showcased.

11.1 Commercialisation and construction stage reporting

Although the activities in commercialisation and construction are different, these phases often overlap for a long period and so the reporting for GHNF is integrated.

Successful applicants will be required to report monthly, providing the following information:

- Project status update; including but not limited to proposed changes to the scheme, technical progress reports received, updated budget forecasts and financial modelling.
- The key project risks and proposed mitigation;
- Spend to date against the budget which was submitted to GHNF as part of the application;
- The anticipated timing of drawdown requests (if not Local Authority applicant).

In order to claim funding, valid invoices from suppliers and proof of payment will need to be presented. To support this process, all the suppliers being used must be listed in the report and their contract award amounts provided. Significant contracts will also need to be provided. Where major suppliers are not invoicing directly, information on these is also requested to support the Market Transformation process.

The following information must be submitted on a one-off basis with the first monthly report and again if any of this information changes:

- Sources of finance and sums committed;
- Confirmation of whether the GHNF standard form contracts have or have not been used. Where they have been used (or will be used), the applicant must highlight where gaps have been identified by legal specialists.

11.2 Operation stage reporting

GHNF applicants will be required to report quarterly providing the following information:

- Monthly kWh heat and cooling demand, broken down by customers and customer types as defined in the Heat Networks (Metering & Billing) Regulations 2014.
- Monthly kWh of fuel or heat imported and / or electricity used;
- Monthly heat output by heat source (heat pumps, back-up plant etc.)
- Average monthly carbon intensity of the network (calculated in the reporting tool);
- Average monthly flow temperature;
- Volume-weighted average return temperature;
- Number and total hours of unplanned primary plant outages by month;
- Number and total hours of unplanned system outage by month.

11.3 Uploading Monitoring and Reporting documentation

Applicants can upload Monitoring and Reporting documentation directly into their SharePoint site. There are pre-defined folders for each year, and within that, sub-folders for each month. Each month has three sub-folders 'Form,' 'Evidence' and 'Other.' The form folder is for uploading the Monitoring and Reporting form. The Evidence folder is for any supporting evidence. The Other folder is for miscellaneous supporting documentation. An example of the folder structure can be seen in Figure 7.

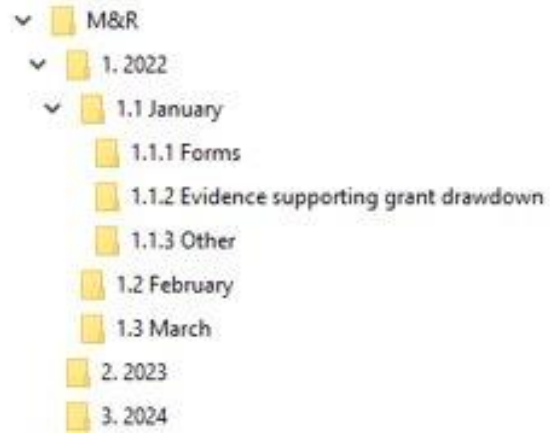

Figure 7 - Example of Monitoring and Reporting folder structure

11.4 Upload of evidence for Milestones and Conditions

Evidence to show progress against Milestones and Conditions should be uploaded directly into pre-defined folders in the Applicants SharePoint site.

12 Continuous improvement

The GHNF will operate with an ethos of continuous improvement and will seek to continuously improve processes and capture learnings from applicants to apply to scheme design. Any proposed changes to the scheme processes or scheme design will be published on the Department website[31] through amendments to this document. An email will also be sent to our mailing list to confirm the changes[32].

13 Queries, complaints and review process

Summary

This section sets out important information for applicants about the basis on which applications are considered and what to do if an application is unsuccessful.

Applicants must bear in mind that awards made by the GHNF are discretionary. There is no automatic entitlement to an award of funding in any amount. Assessors will challenge information submitted by applicants they are not clear about, and they will also be expecting applicants to supply detailed project documentation in support of the completed GHNF application form. The purpose of the detailed project documentation is to ensure applicants provide the requisite evidence in support of their application.

Applicants must ensure that the organisation, project and application all meet the eligibility criteria set out in this application guidance document. It is the applicant's responsibility to make sure that all the eligibility criteria are met. See GHNF Eligibility Criteria more details.

The assessment process will be run as transparently and objectively as possible. Expert judgements will be made within an agreed framework and all assessments will be subject to internal quality assurance.

Applicants that don't meet the eligibility criteria

Applicants who fail to meet the eligibility criteria (including the application gated metrics) will be rejected. An explanation from GHNF will be given as to why the application was rejected which may prove helpful if applicants choose to re-submit an application at a later date. The explanation, however, will not seek to fix any deficiencies in the application.

Eligible applicants are not guaranteed funding

Even if an applicant meets all of the eligibility criteria and scores well, it is not guaranteed an award of funding. GHNF funding will be allocated on a competitive and discretionary basis. The Investment Committee will consider those applications submitted in a given funding round where the applicant meets the eligibility criteria. The scores awarded to the applications by GHNF assessors will be compared. The applications will then be ranked.

[31] https://www.gov.uk/government/publications/green-heat-network-fund-ghnf
[32] Subscribe to the mailing list Join our mailing list – GHNF (tp-heatnetworks.org)

Some may not be awarded funding because their ranking is lower relative to others. Applicants should keep in mind that reducing their application grant request through securing third-party investment could significantly increase competitiveness of their application.

Applicants that are successful will be notified accordingly. Applicants that are unsuccessful will be notified, together with an explanation of why.

Comparability of applications

Every application will contain commercially sensitive information, so it will not be possible to disclose scoring of applications relative to others. Instead, we will aim to draw out themes from successful and unsuccessful applications in each round to help future applicants improve the quality of their applications. We may feed this into future revisions of the Application Guidance, webinars or other published means of disseminating lessons learned.

Re-applying in the future

We want to fund high-calibre, low carbon projects that require GHNF support. If an applicant has been unsuccessful, the applicant is urged to consider working to improve their project and their application and to submit another application in a future round. Applicants should carefully consider how they could improve their application to meet the eligibility criteria (where their application was rejected) or how they could achieve a higher score (where their application was deemed eligible but was not awarded funding).

Reviewing decisions

A decision of the Investment Committee may be reviewed by the Department, if, following a decision on an application, there is strong evidence that there was a failure to follow the published assessment processes and that the failure to do so has had a materially adverse impact on the consideration of the application. If an applicant feels that this applies to their application, they are asked to email enquiries@tp-heatnetworks.org to request a review.

The GHNF will consider the request and tell the applicant if it is felt that the decision is justified. If, on review, it is found that the applicant met the eligibility criteria when it was previously decided that it did not, or that it should have been awarded a higher score, a decision may be made to reconsider the application. New evidence will not be accepted at this point but could be included in a reapplication in a later round. In no circumstance will a review guarantee an award of funding. Applicants will be made aware of the outcome of a review regardless of the outcome.

Privacy and data protection

We are committed to ensuring that your personal and commercial data is protected and will make sure to use it only in accordance with the GHNF privacy policy (see Annex 4 on the gov.uk website) or visit https://tp-heatnetworks.org/privacy-policy/.[33]

[33] https://www.gov.uk/government/publications/green-heat-network-fund-ghnf

Sharing data with UKIB

By applying to the GHNF, applicants agree to their data being processed by UKIB. The GHNF privacy policy applies to UKIB data processing. This includes our instruction to UKIB to process your data, including;

- personal data, for the purpose of considering the suitability of your project for a UKIB loan;
- offering you a loan; and,
- the monitoring of compliance with the terms of the loan if it is agreed.

14 Scored elements in GHNF applications

14.1 Application gated metrics

A key learning from the Heat Network Investment Project (HNIP) has been that applicants need to understand how their project will be assessed. There will always be a degree of judgement with regards to aspirational aspects of the project e.g., future expansion potential and how deliverable or innovative the scheme is.

However, many of the project characteristics that are key to GHNF outcomes can be evaluated using the MS Excel-based information submitted by the applicant. While this will need to be subsequently validated by GHNF assessors, the application gated metrics (see Table 4) are calculated within the application form and are available to the applicant to review. Pass/fail is made clear within the application form and as such an applicant applying to the GHNF does so in the knowledge that their scheme meets the GHNF eligibility criteria (see section 4 and 14.1 *Application gated metrics*) on the basis that the supporting evidence validates the application.

The GHNF Outputs sheet of the application form presents the calculated gated metrics (in rows 10 to 22) once the applicant has completed the input sheets of the application form. The GHNFCalculations sheet contains the calculations that generate the gated metric outputs, and this calculation sheet is visible to applicants to aid understanding of the gated metrics. The application gated metrics are listed and explained in more detail:

- Carbon intensity of network
- Consumer detriment
- Annual thermal demand
- Social IRR
- Subsidy control
- Market transformation

Carbon intensity of network

- All applicants must be able to demonstrate that the scope 1 and relevant scope 2[34] carbon emission intensity of heat delivered to end customers for each year is no greater than 100gCO_2e/kWh. Applicants should come forward with projects that operate at no greater than this threshold from the first year of operation. However, as this may not always be feasible due to project circumstances (for example the use of temporary heating plant, while distribution is being installed), applicants may make the case within their application that additional time of up to 5 years is required by the project to achieve the carbon intensity threshold (see REF 8.1).
- The GHNF does not support primary fossil plant and the GHNF assessors must be confident that this is not the case here, and that the plan set out to bring the project below the carbon threshold is both credible and achievable in the time permitted.
- Reasons for breaching the carbon threshold in the first 3 years from connection could include:
    - where there is a credible third-party heat supply being either constructed or refurbished in a set year, for which the applicant has little or no control with clear evidence that the third-party heat supply will be available within 3 years and that there is sufficient agreement for offtake once built or refurbished;
    - where there is a new build development where you would not install low carbon plant on day 1 because it would be uneconomic to do so with a clear low or zero carbon network connection plan within the first 3 years;
    - where there is a new build development and first connection date for the development does not align with the build out of the heat network, such that temporary plant is needed to supply the development and sufficient agreement for offtake is in place to ensure connection to the low or zero carbon network within 3 years of first connection date.
- Reasons for breaching the carbon threshold in the first 5 years from connection could include:
    - Low or zero carbon plant is installed from year one, but the technology mix used relies on further grid decarbonisation to reach the required carbon intensity threshold and modelling using the Department grid intensity forward curves demonstrates this will be achieved before the end of year 5.
- The carbon intensity of the network is calculated within the application form by taking all fuel inputs (including electricity requirements for system parasitics such as

[34] Guidance on how to measure and report your greenhouse gas emissions https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69282/pb13309-ghg-guidance-0909011.pdf

pumping) and converting them to $kgCO_2e$ using Department for Energy Security and Net Zero/Department for Environment Food and Rural Affairs published emissions factors[35] (for electricity emissions long run marginal carbon emissions for commercial and public sector should be used).

- Carbon emission calculations also include the carbon associated with pumping, system monitoring and general system electricity requirements.
- New and existing EFW carbon intensity will follow the BRE technical note[36] for emissions for EFW emissions relating to heat supply. The application form has a default z-factor if the actual factor is not yet determined. However, where the applicant believes a different z-factor should be used then the value can be updated in the application form; a technical report that justifies the change must be provided as part of the evidence pack – see contingent submission requirements in section 5.3.
- Heat recovery follows a principles-based approach where the applicant would need to evaluate the impact of recovering heat from a given process to supply a heat network.

  Rather than specifying a specific methodology for every conceivable manner of recovering heat from wider processes, instead a principles-based approach to estimating the carbon intensity of the heat imported to a heat network is proposed as follows:

[35] Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal and Greenhouse gas reporting: conversion factors 2020 https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020 (updated annually throughout the scheme in line with publications)
[36] BRE Technical Note – Modelling Energy from Waste Facilities: https://files.bregroup.com/SAP/BRE_Technical_Note-Energy_from_Waste_Facilities_%28ERF%29_1.0.pdf

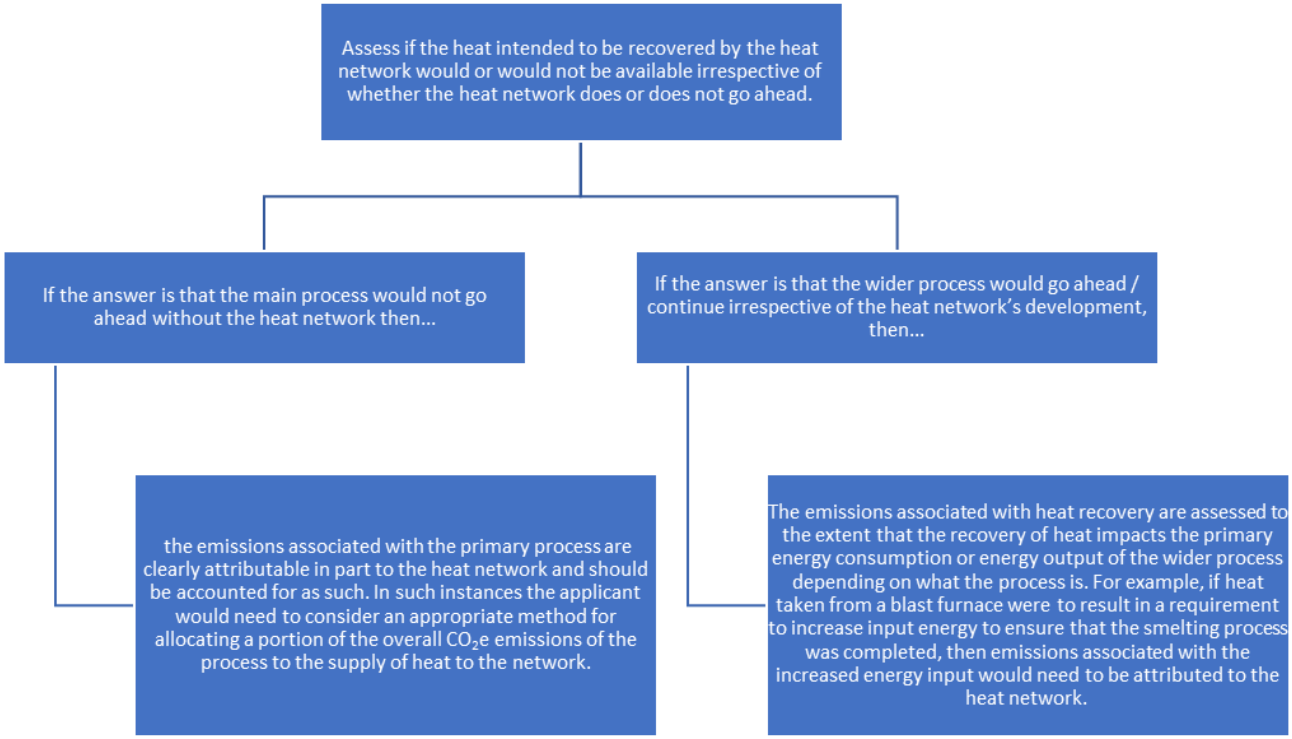

Figure 8 – Principles based approach for estimating the carbon intensity of the heat imported to a heat network

Consumer detriment

Domestic and micro-business[37] customers are customer groups for which customer detriment assessments need to be undertaken.

For domestic and micro-business customers in **new build developments**[38], a low carbon counterfactual will be used for establishing a benchmark cost for low carbon heat. This assessment will include the cost of asset purchase, maintenance and fuel costs. Where the proposed heat network intends to support new build developments that will be built under the 2025 Future Homes and Future Buildings Standards we will also test the project for additionality against an air source heat pump counterfactual.

For domestic and micro-business customers in **existing buildings**, a gas counterfactual will be used in urban settings and a heating oil counterfactual in rural (off gas grid) or off-gas grid settings.

The levelized tariff[39] proposed in the application must be less than the counterfactual cost of low carbon heat. It should be noted that where a landlord-tenant distinction is anticipated it is the tenant's share of the levelized tariff that must be assessed to be price competitive.

[37] Guidance for Microbusinesses | Ofgem
[38] i.e., developments that have not been built at the time that the GHNF application is made
[39] The discounted value of connection charges, fixed and variable income to customers at risk at a social time preference of 3.5% divided by the discounted heat demanded by customers at risk

Annual thermal demand

In urban settings a minimum threshold of 2GWh of annual thermal load, delivered by a combination of existing and proposed customers, must be forecast to be delivered (i.e., excluding losses) to customers within a 5-year window from date of first connection.

In rural (off gas grid) settings a minimum threshold of 100 dwellings connected or 2GWh of annual thermal load, delivered by a combination of existing and proposed customers, must be forecast to be connected / delivered (i.e., excluding losses) to customers within a 5-year window from date of first connection.

Social Internal Rate of Return (IRR)

A social IRR calculation is performed within the application form. The gated metric is shown in Cell H15 of the GHNFOutputs sheet. Primarily this is based on the project cash flows entered and the fuel imports selected. The calculation of SIRR is undertaken within the block of calculations from Row 343 to 365 within the GHNFCalculations Sheet, and it evaluates the social cost of emissions and air quality impact of the project when compared to a standard counterfactual. All new build residential and micro business customers are compared to an ASHP counterfactual and all other customers are compared with a fossil heating counterfactual. In urban settings this counterfactual is gas and in rural (off gas grid) settings the counterfactual is heating oil.

A social IRR of 3.5% or higher, prior to grant intervention, must be shown in order to demonstrate social value for money in supporting the scheme.

Subsidy control

The GHNF will fund up to but not including 50% of the sum of the initial capex and commercialisation costs. This requirement must be met, and evidence provided, by the date the scheme is fully built out and by the end of the 5th year from the first day of the heat network being in operation at the latest. This is further limited in that the GHNF will not award more than 4.5p/kWh of thermal energy delivered over the first 15 years of operations forecast.

The calculation in the application form takes the total undiscounted grant requested and divides it by the total thermal energy delivered over the first 15 years of operation to give a pence of grant per kWh heat delivered to end customers. If this is greater than 4.5p/kWh or if the grant is greater than or equal to 50% of sum of the construction and commercialisation costs, then this gate will fail.

No grant awards will be made to projects whose real pre-tax project IRR is above the GHNF maximum support level. For commercial sensitivity reasons this value is not disclosed.

Market transformation

Applicants to the GHNF must complete the Market Transformation Commitment (MTC) page of the application form to be eligible for funding. This page includes data to be provided on the projects as well as new jobs, apprenticeships, and R&D activities. Applicants must also confirm their agreement to follow the guidance laid out in this document – see 15. Annex: Guidance for market transformation commitments[40] questions for full detail. The exact questions answered by applicants will vary by their total capex size of all GHNF projects, with smaller projects requiring fewer questions to be answered. No grant awards will be made to projects that do not complete all required MTC questions. GHNF assessors will validate the responses provided.

14.2 Assessment of deliverability

Having passed the application gated metrics, the project will have shown it has the qualities that the GHNF would want to support. On the basis that the evidence provided can justify the values entered into the application form (fundamentally: project costs, energy balance and charges to customer types) then four deliverability assessments remain:

- Is the project described in the application deliverable?
- Will the project be developed in compliance with the CP1 CIBSE Code of Practice for Heat Networks (2020)?
- Will the project register with the Heat Trust or with an equivalent scheme?
- Does the applicant agree to the market transformation commitments that are a provision of GHNF funding (see Section *REF 1.8 Market Transformation Commitment Statement)*

The latter three are a simple yes/no with their implementation by the applicant and contractors to be monitored by GHNF; however, the assessment of deliverability is complex and runs the risk of introducing bias and/or unsubstantiated judgement. In order to better manage this risk, below we set out the assessment guidance for appraising deliverability. This is to help the applicant consider to what extent the evidence they have submitted does or does not address how it will be assessed in the context of project deliverability.

[40] See Annex: Guidance for market transformation commitments

Connection risk assessment

Connecting new and existing buildings to a heat network is one of the largest challenges in developing a heat network. It involves convincing building owners to fundamentally outsource how they provide and manage heating and cooling with substantial perception risks over price (now and into the future), reliability and general customer service. All of these need to be overcome for a heat network project to be successful and as such, connection risk assessment is a core component of the overall deliverability assessment.

- How many organisations / individuals does the project need to successfully negotiate connection and energy supply agreements with, for the project to not incur a financial loss?
    - 0-5 would suggest low risk if non-binding agreements are present;
    - 5-10 while manageable presents greater challenge; however, if more robust non-binding agreements such as heads of terms (see REF 1.12) or a memorandum of understanding that provides some basic principles of tariff, indexation and contract duration (as opposed to a basic letter of support) are present then this could be considered lower risk;
    - 10-15 different stakeholders with whom connection agreements are required in order for there not to be a financial loss starts to represent a more significant risk. Again, if more robust non-binding agreements can be evidenced for sufficient stakeholders, then this could be considered lower risk. Such agreements would be heads of Terms (see REF 1.12) that set out the proposed tariff, the method of escalation, termination and extension;
    - 15-20 as with 10-15 but presenting an even greater challenge and would likely fail if Heads of Terms (see REF 1.12) are not provided;
    - 20+ as with 15-20 but would fail if Heads of Terms (see REF 1.12) are not provided as evidence.

      Mitigation of the above might be where the majority of connections are new build, and the planning environment strongly supports the development of low carbon heat networks.
- **Customer type:** does a high proportion of thermal demand indicate a building that could have occupancy issues or more fundamental future change-of-use?
    - Projects that have a high proportion of commercial customers on short-term tenancies and where the commercial use does not clearly necessitate space heating would represent the highest risk projects. Risk mitigation might be in the form of communicating lease terms of buildings, demonstrating that permissions would not be granted for building change-of-use (e.g., refrigeration unit to warehouse), etc.

- Projects with new build developments where occupancy levels may be a risk (e.g., is the developer marketing the development internationally as second homes), and projects with a significant portion of thermal load, would represent a medium risk. Risk mitigation might be in the form of demonstrating occupancy levels of other new developments in the area, the marketing strategy of the developer, higher proportion of fixed-price charging etc.
- Projects where the use and occupancy shows no apparent reason for change would score well.

- **Thermal load risk:** how well evidenced is the thermal load forecast for existing buildings planned to be connected?
  - Projects that can show that they have estimated a high proportion of the thermal loads to be connected based on half-hourly gas/electric meter readings that cover at least one winter period would score well[41];
  - Projects that have relied heavily on published EPC/DECs on the MHCLG website will score worse than projects that have actual metered data;
  - Projects that have relied predominantly on industry standards (e.g., CIBSE TM46) for existing buildings will score the worst;
  - For new build properties low/very-low risk would be where the project has got detailed building design plans from the developer and can with confidence adopt a relevant industry consumption level and there is a high degree of confidence that the development is going ahead;
  - High/very-high risk would be where the project is not clear what building types are planned to be developed other than perhaps residential vs commercial vs mixed use or where there is substantial doubt over the development's future.
- **Planning policy:** how forceful are the requirements for new developments to connect to a viable heat network?
  - Where a significant proportion of overall thermal load is forecast to relate to new developments, the planning environment is incredibly important for the success of a heat network;
  - Evidence of a Town and Country Planning Act section 106 agreement property requiring connection to a viable heat network where the date of that requirement is not forecast to lapse prior to funding (GHNF and other sources of finance required) being in place would be strong evidence;

[41] N.B. it should be noted that the half hourly meter readings do not need to be provided as evidence, rather the techno-economic feasibility study should make clear the percentage of actual vs. estimated and that at least one winter period was metered at a sufficient granularity to identify peak demand

- If the stage of development is such that a section 106 agreement has not been entered into, evidence of the planning authority's commitment to heat networks, e.g., as evidenced in their Local Energy Plan, would be good evidence of a supportive planning environment;
- In the event of no clear planning support for the development of a heat network:
  - where developers are closely engaged with the project and the proposed terms of connection have been agreed with heads of terms (see REF 1.12) or other forms of non-binding agreements, then this would mitigate the risk of unclear planning support for heat network development;
  - where no such agreements are in place, the planning policy is unclear and the reliance on new developments is high then this would likely fail the deliverability assessment.

Wider stakeholder risk

Certain projects will rely more heavily on wider stakeholders to enable pipework and certain technology types to be installed. Almost all projects will have to work with highways teams within Local Authorities as it is common for roads, pavements and verges to be used for buried pipework.

- Accessing thermal energy

  A number of technology selections will require permits or contracts to be in place to allow for thermal energy to be imported into the managed system. This might include: heat imported from an EFW, abstraction/discharge permits for a body of water, permissions for accessing mineworks, interfacing with a green hydrogen facility, capturing waste heat from an industrial process, etc.

  - Where such requirements exist, the level of engagement with the relevant Authority or asset owner will form an integral part of the deliverability assessment as the low carbon credentials of the project will rely heavily on this relationship.
  - Commercialisation and construction funding applications must demonstrate engagement with the relevant Authority and/or asset owner and that nothing has come to light that would suggest an adverse decision would be forthcoming. Projects unable to demonstrate this and which rely on such a relationship will fail the deliverability assessment.
  - A good score for a commercialisation and construction funding application would be given where the relevant Authority and/or asset owner has provided provisional approval and the terms of accessing the thermal

energy, notably capital and ongoing costs, are reflected in the techno-economic assessment (either directly or clearly within a sensitivity threshold run).

- A poor score for commercialisation + construction (but still not a fail) would be given where correspondence has been evidenced but it is not clear whether permission is likely or the basis on which permission will be granted is not clear.
- For construction-only funding, the application will may fail if both the terms of access and agreement to abstract/import the thermal energy are not in place.

- Engagement with highways

  What evidence is in the techno-economic feasibility study and/or business case that can demonstrate a good level of engagement with the relevant highways team in the Local Authority?

  - For construction-only funding, a failure to demonstrate good communication with the relevant highways team in the Local Authority, or evidence of consultation on proposed routes, could lead to a fail if a substantial portion of the project's pipework routing requires use of the public highway;
  - For commercialisation and construction funding, a failure to demonstrate good communication would be permissible; however, demonstrating sufficient progress on obtaining necessary approvals for access, tariff management, etc would be a requirement to access construction funding.

- Utilities

  Wider utilities, particularly electricity connections, can have a material impact on the overall viability of a project. In grid-constrained areas, the deployment of technologies reliant on the import and/or export of electricity may have substantial implications for reinforcement that applicants may seek to levy onto the project.

  - What engagement has there been with relevant utilities? Has the cost of connection at the required capacity been established and has the cost been reflected in the cost schedule appraised (see REF 1.7).
  - For both commercialisation + construction and construction-only funding it would be expected that utility connection costs will have been established in advance of the GHNF application and reflected in the economic appraisal.
  - Where this has not been established and the project relies on electricity as its primary form of energy import, the project will fail the deliverability assessment if it cannot demonstrate that it has engaged with the

Distribution Network Operator (DNO) and confirmed at least that there is sufficient capacity for the proposed project;

- While natural gas will not meet the scheme eligibility requirements for primary combustion it may be used for winter peak requirements. As such, where this is proposed it will be important for the assessor to understand the cost of connection, and for the applicant to provide supporting evidence of this.

- Wastewater heat recovery

Projects that rely on heat recovered from sewer mains and wastewater treatment plants present new opportunities in England (and more widely) for heat network projects.

As these heat sources are relatively nascent in the context of heat networks, it is important that GHNF-supported projects adopting technologies seeking to extract heat from such heat sources do so in a manner that is consistent with the risk/reward profile that the utilities responsible for such bodies of wastewater are able to accommodate both commercially and within their statutory duties as regulated operators of wastewater systems.

Below are some high-level principles relating to core risk allocation of heat recovered from wastewater that GHNF considers project applicants will need to adopt. If projects do not adopt these principles, they could be in danger of being unsuccessful with their negotiations of abstraction and discharge rights from the wastewater utility, thereby jeopardising GHNF funds:

- Availability of heat

  In most circumstances, a wastewater company will not be in control of the flow rate or temperature of the wastewater. While some wastewater management companies may have good historical data, relevant to the recovery of heat, most will not.

  Therefore, GHNF will not require heads of terms or ultimately contracts to specify minimum flow rates or minimum temperatures. Instead GHNF will expect:

  - Flow and temperature sensors to have been installed either prior to or as a condition of commercialisation funding and at least one winter period to have been measured and analysed to confirm system viability prior to construction;
  - Technology selection evaluation and assessment of the viability of its installation given any local constraints such as space availability for heat extraction infrastructure;

- For sewer source systems: evaluation of the upstream sewer system and the extent to which upstream catchment areas can or cannot be diverted away from the point of abstraction. Analysis should be undertaken to estimate the peak capacity available in different diversion scenarios;
- For sewer source systems: work with the wastewater company to understand the past frequency of any such diversions.

- Heads of terms (HoTs) relating to access rights to the sewer main should be sought that commit the water utility to permit access to the heat network utility to abstract and discharge effluent (either treated or untreated) and to make reasonable endeavours to minimise the amount of effluent that could be diverted away from the point of abstraction.

Projects that apply to GHNF for wastewater heat recovery are therefore required to confirm in writing (see *REF 3.3 Wastewater heat recovery risk allocation principles statement*) that the senior officer responsible for the project's development understands and agrees with the approach to risk allocation relating to heat recovery.

Technical

The technical assessment of a project is not simply an assessment of whether the proposed solution is technically deliverable on paper but that it is deliverable in reality. This requires an understanding of land/building ownership, ownership of the building(s) that will house core plant, the technology selected, routing and customer interfacing.

It is not proposed that projects applying to GHNF for commercialisation + construction funding will have developed proposals to detailed design stage (or equivalent); however, concept designs (RIBA 2 and equivalent for buried pipework) are expected in order to support the technical assessment.

- Applications that fail to provide RIBA 2 designs for the energy centre and RIBA 2 equivalent designs for pipework routing for commercialisation and construction applications will fail the assessment if sufficient design development has not been demonstrated.
- **Energy Centre assessment**. Where projects intend on using centralised plant to distribute thermal energy, securing the location of the energy centre(s) and confirming that the building footprint is sufficient to house all plant necessary is critical. Further, where there will be a local impact on air quality it is important that the assessor is confident that the project will comply with local air quality management area requirements.

- Applicants for commercialisation and construction should have a preferred option for energy centre location and be able to demonstrate engagement with the landowner or building owner (as appropriate);
- construction-only funding should be able to demonstrate that the EC location has been secured and the terms (duration, access and cost) largely in place. Applicants unable to demonstrate this could fail the deliverability assessment.

- **First of a kind technology (FOAK)**

The GHNF is not intended to fund technology that has not been demonstrated to operate in the conditions proposed by the project and at a capacity similar to that required by the project. Projects looking to generate heat by means other than those listed below will need to adhere to Technology Readiness Levels 8 and 9 as interpreted by the Department for Energy Security and Net Zero Industrial Energy Technology Fund with national/international examples provided. The means of generating heat that are not deemed to be FOAK:

- Direct combustion with oxidisation;
- Usable heat recovered from an industrial process (e.g., EFW);
- Waste heat recovered from an industrial process and upgraded via heat pump;
- Ground, water, air, sewer or mine source heat pump;
- Deep geothermal[42];
- Fuel cells; and
- Solar thermal.

GHNF reserves the right to request national/international examples as part of the clarification process if it is considered that the system configuration is potentially first of a kind.

- **Pipe routing.** It is not anticipated that applications for commercialisation + construction will have undertaken ground penetration radar surveys; however, the extent to which the project has assessed routing issues as part of their technical study will be considered.
  - Does the study clearly show that route walks have been undertaken?
  - Has there been an assessment of spare capacity for pipework in existing crossings, underpasses etc of major barriers such as railways, rivers, canals etc.?

[42] 500m or deeper – if shallower then classed as ground source

- Have existing buried utility schematics been obtained and overlaid the proposed route to identify network pinch points that may warrant GPR surveys?

- **Overall network efficiency.** The carbon intensity of heat delivered to customers will, with the exception of zero carbon networks, be heavily reliant on the overall system effectiveness of converting energy imported to the network into deliverable heat.
  - For heat pump led schemes that suggest Seasonal Coefficient of Performance (SCOP) in excess of 3.0 (e.g., due to access to non-ambient heat sources, simultaneous heat + cooling can be utilised etc.) it would be expected that technical analysis within the technical feasibility assessment will have been undertaken to justify the SCOP used;
  - Distribution losses should be rationalised and evidenced based on the proposed pipework insulation, flow temperature, pipe diameters, length and other such relevant factors utilising:
    - supplier performance sheets,
    - first principles calculations, or
    - proprietary software;
- For existing networks, the performance report should show a network performance consistent with CP1 expectations of no greater than 20% losses of heat supplied over the primary network. **Where this is not the case,** the performance report should make clear what actions should be taken to rectify this issue and the applicant will need to:
  - confirm that the costs of such rectifications are excluded from the GHNF application.
  - confirm that these actions will be undertaken as part of the works supported by GHNF.
  - confirm that the performance of the network energy balance corresponds to the post-intervention performance in line with the performance report key recommendations.
- **Customer interfacing.** For commercialisation + construction funding it is not expected that detailed customer connection designs will have been undertaken; however, for key customers it would be expected that plant room visits would have been undertaken and a viability assessment for network interfacing considered.

Market transformation

Larger projects (capex of £15m or more) applying to the GHNF will be required to answer MTC questions that lay out what the project plans to do with GHNF funding to deliver the aims of the MTCs – See Annex: Guidance for market transformation commitments[43]. As part of the deliverability assessment applicants will be assessed for completion of these questions. Questions will be assessed as failed if:

- No response has been received.
- The response is assessed to be irrelevant to the question asked.

Project economics

An assessment of the internal rate of return (IRR) of project cash flows is an insufficient assessment of whether a project is likely to be a success. As important, if not more so, is determining whether the project is able to provide long term steady cash flows capable of servicing finance. A project that shows a healthy project IRR due to the presence of a large grant and early period cash surpluses (e.g., connection charges, Local Authority contributions, etc.) but weak operating cash flows may struggle as a going concern to the detriment of customers connected and the wider objective of decarbonising heat.

- Cost base

  The GHNF will not undertake a detailed cost benchmarking exercise; however, a high-level capex cost comparison will be undertaken based on:

  - Technology selection.
  - Energy centre footprint and balance of plant.
  - Network routing (hard/soft dig high level assessment) and distance.
  - Customer interfacing costs.

  Further, the operating costs of the network will be considered with regards to:

  - Operating and maintaining the network.
  - Fuel costs (particularly where assumptions differ to Department for Energy Security and Net Zero published forecasts).
  - Metering and billing costs.

  Projects that differ by more than 20% of the estimate will be clarified for the sources of assumptions used in the capex/opex profiles provided and the

[43] See 15. Annex: Guidance for market transformation commitments

robustness of those assumptions will be considered by GHNF technical experts.

- Loan life cover ratio.

  A basic test that will be performed is to consider whether the operating project cash flows put forward would provide a sufficient cash head room to service at least 50% of the net capex (capex less GHNF grant) with an interest-bearing loan that amortises over a 40-year period.

  - Projects capable of supporting at least half the capex with an interest-bearing loan will score better than those that cannot;
  - Projects that have operating cash flows close to break-even will score poorly and may possibly fail the deliverability assessment if the quality of operating cash flows is deemed to be too weak. Such projects would strongly suggest that they have more fundamental issues with tariff structure which a grant-based scheme would be unlikely to satisfactorily address.

- Proposed funding structure

  - An assessment of the business case's section on the proposed financing structure of the project will be undertaken. Consideration will be given with regards to the sources of finance proposed and the extent to which the cash flows analysed by the applicant are likely to be sufficient in the absence of firm commitments by investors (see section
  -
  - Project funding requirements).
  - Projects seeking third-party finance that have not undertaken post-tax nominal investor returns analysis would not score well.
  - Where projects have undertaken such analysis but issues in the quality of operating cash flows are highlighted (see previous section – Loan life cover ratio), such projects would not score well in this area in the absence of market testing which showed private sector support for the project, and that sufficient information had been provided to allow for a robust assessment by the private sector of the project economics.
  - Projects that have not considered or engaged with private sector investors would not score well in this section. This is because the heat network sector, if it is to deliver substantial volumes of heat to customers by 2050, will need to materially change the pace of investment that has been seen to date. The GHNF, while supportive

of Local Authority led schemes, would want to encourage greater participation of private investors.

Programme

The final section of the deliverability assessment would be the assessment of the project's programme for commercialisation and/or construction to the point that all customers included in the application have been connected.

The key considerations would be:

- How comprehensive is the project's analysis of milestones and its assessment of the interdependencies between project risks and programme slippage?
- How realistic are the timings and how great a risk is there that the proposed GHNF cash drawdown(s) will vary from the programme dates set out in the application?

14.3 Adjustment Metrics

All projects that have passed the application gated metrics and the deliverability assessment are projects that the GHNF would want to fund. However, budget is limited and as such it is necessary to rank applications.

A limited degree of further adjustments is used in the assessment to give credit to projects that show qualities that are aligned with the GHNF objectives. **The maximum impact the adjustment metrics set out below can have on the score is 30%**. As such, projects that score very well may not be impacted by these adjustments; rather, projects that score closely on an unadjusted score would differentiate themselves from the others based on the adjustment metrics:

- Deliverability;
- Carbon abatement;
- Volume of thermal energy;
- Expansion potential;
- Innovation and energy efficiency.

Deliverability

As assessors work through the deliverability assessment section to determine if there are any material issues with the project's ability to deliver the outcomes described in the application, scores against the core components of deliverability, set out in the previous section, will be made.

All projects that are taken through the adjustment metrics will have been assessed to be deliverable (potentially with conditions precedent and adequate progress against Milestones having to be demonstrated prior to grants being drawn down). The deliverability adjustment metric awards credit to projects that are able to demonstrate some of the better practices set out in the deliverability assessment section above. This includes the assessment of approach MTC questions for large projects, as highlighted in the deliverability assessment guidance.

A distinction will be made between projects applying for commercialisation and construction funding vs those applying for construction-only funding due to their having already completed commercialisation activities.

Carbon

This adjustment will score projects on how far below the gated metric of 100gCO_2e/kWh they are. Therefore, a project that has a heat carbon intensity of 75gCO_2e/kWh will score 25% of the maximum carbon adjustment, while a project that has a carbon intensity of 25gCO_2e/kWh will score 75% of the maximum carbon adjustment.

Volume of thermal energy

Volume of heat delivered is a key metric of GHNF with a target of 1.15TWh heat delivered to customers annually. Projects that are assessed to be able to credibly deliver larger volumes of low carbon heat will receive credit for this.

Expansion potential

Applicants may optionally include a short memorandum justifying actions taken by the project to better ensure the project's expansion potential – see section: *REF 2.2 Future* expansion .

Innovation and energy efficiency

Applicants may optionally include a short memorandum justifying actions taken by the project to demonstrate innovation and/or energy efficiency measures – see section: REF 2.1 Innovation and efficiency

15 Annex 1: Guidance for market transformation commitments (MTCs)

15.1 Market Transformation Commitments

Market Transformation Commitment (MTC) Requirements

For the last 10 years we have seen a strong and clear growth of heat networks but to deliver on the Heat and Buildings Strategy and the Net Zero Strategy, it is clear that this growth rate needs to improve dramatically over the coming decade. Action is needed now if we are going to reach net-zero in a timely and cost-effective manner.

We need the sector's supply chain capacity and capability to grow to an annual installation rate of greater than ten times the current activity. Lessons learnt from other sectors show that without parallel action in the manufacturing market, investment in UK infrastructure may instead lead to a greater reliance on imports and little improvement in the overall UK supply chain offer and leaving the UK at risk of supply chain weakness and loss of value.

Therefore, the Market Transformation Commitments (MTCs) set out in this document seek to capture how the GHNF investment benefits the whole market.

As part of the MTCs, applicants to GHNF must show what actions they can take, as part of their projects, to enable growth within the supply chain that will provide a lasting benefit to the wider market through supplying early and quality information about projects coming to the market.

The Market Transformation Commitment process

The market transformation commitments, as set out in this document, along with what and how they will be achieved (action plans), will form part of the GHNF application process and will be assessed alongside other areas of the application form. These commitments will then become part of the grant funding agreement and their delivery will form part of the GHNF monitoring regime.

To encourage best practice and transparency in the sector, the MTC action plans produced from this process will be published. This in effect sets a minimum bar of information sharing but we expect applicants and hopefully the wider industry to highlight their activities more widely to encourage collaboration. The application stage MTCs (Proposed Action Plans) will be assessed, and then monitored, through the following questions and methodologies.

	Question	Type
PROJECT SUMMARY		
A	Short project description	Description
B	Project Milestones	Data
C	Current procurement status	Data
D	Breakdown of project outline costs	Data
INFRASTRUCTURE		
1	Contracting strategy and procurement process	Commitment
2	Strategy for community engagement	Commitment
3	Low carbon footprint in supply chain	Approach
4	Reliability and resilience for energy system	Commitment
5	Investment and growth in project's local economy	Approach
SKILLS		
6	Addressing the supply chain skills gap	Approach
7	Project recruitment and hiring strategy	Commitment
8	UK apprenticeships, trainees, and scholarships	Data & Description
9	Number of new jobs: Local, UK, and Rest of the world	Data & Description
INNOVATION		
10	Investment in UK R&D	Data & Description
11	Continuous improvement	Approach

Assessment and project size

There are three different types of market transformation commitment application questions, and these will be assessed in different ways.

Commitment	These questions will require projects to state their agreement to deliver on the guidance provided by the Department of Energy Security and Net Zero within this document. These are actions that we believe all projects can take to bring about change in the heat network market. Projects must make all reasonable endeavours to meet these commitments and they will form part of the monitoring and reporting regime. If projects are unable to deliver on an aspect of a commitment, then they must inform the Department through their monthly reporting. **These questions form part of the application gated metrics.**
Data	Through GHNF we aim to improve our knowledge of the heat network sector, of the jobs required to deliver individual projects and the investment in skills and R&D. The data provided for these questions (along with a brief description) will help us to deliver for the heat network sector in the future and provide more targeted support and regulation. These numbers will not be marked on scale, and no more points are available for higher numbers of jobs, investment etc. These numbers should reflect, as accurately as possible, a real world understanding of the applicants to GHNF and their projects. **These questions form part of the application gated metrics.**
Approach	These questions are a chance for applicants to tell the Department what they are doing to deliver on the objectives of the market transformation commitments. We know that projects are often best placed to say what interventions are needed to deliver better infrastructure, skills, and innovation and we want to learn from them. These questions will be competitively marked, with points awarded for a greater scale and quality of the planned intervention. **These questions will be assessed as part of the deliverability assessment and scores will form part of the adjustment metrics.**

The GHNF is committed to proportionality and recognises that smaller projects may not have the same resource available as larger projects to deliver market transformation. Those large projects can also leverage more activity from the supply chain, so are rightly expected to deliver more from their action plans. We have therefore split market transformation applications by project size, defined by capex. Small projects are defined as those below £7.5m, medium projects are those that are £7.5m or over but less than £15m, and large projects are defined as £15m or over.

This total also includes any previous projects funded through GHNF to ensure we leverage greater market transformation activity from applicants with multiple projects. For example, an organisation applying for a £10m project (capex) after a previously successful £10m project, would complete the market transformation commitment application as a large project, i.e., completing all questions. This also applies to the GHNF transition scheme.

All projects will need to complete the MTC section of the application form and agree to the market transformation commitments. The level of detail required will vary by application size, the application form will automatically choose the application size by reference to the Capex in the application form. If you are applying having already been successful in a previous round you may need to provide further information per the above.

15.2 Guidance for market transformation commitment questions

This section aims to provide applicants with the detail of what is required for each of the market transformation commitment questions, and how each will help deliver a transformed UK heat network market.

15.2.1 Infrastructure

The heat networks that will be built under GHNF are likely to provide heat for many decades to come and as such will be an important step on our path to achieving net zero. Not only are we going to have to focus on what we're building to deliver net zero, but also on how they are built and by whom. Heat network projects are also a considerable investment in communities and are an opportunity to leverage greater social and economic market benefits. Through the application and delivery process, we can ensure that the public funds invested are used to effectively capitalise on the delivery of the Heat Network through the achievement of wider benefits for the local energy systems, economies, and communities. Overall, this project seeks to present heat networks as an attractive investment for the delivery of low and zero carbon heat in the UK.

The following guidance and recommended approach to procurement are based on the public sector

procurement principles, procedures and best practice and apply to all funding applicants regardless of whether they are from the public or private sector. Specifically, all contract opportunities must seek to achieve effective competition through a process that is fair and transparent and provides equal opportunity to all potential bidders.

This guidance is based on the Public Contracts Regulations 2015 (as amended) and so the Department reserve the right to update this guidance as and when these Regulations, or any resultant policy, are updated in UK legislation. This is to ensure that the expenditure of this funding is optimised both through process and the achievement of indirect benefits.

These objectives are currently to be achieved through the application of the following activities and processes.

Overall Aspirations

We expect that through this Market Transformation Commitment, open procurement processes will become the industry standard.

This in turn will serve to:

minimise supply chain risks by developing a wider and therefore more robust pipeline of suppliers to deliver future heat network projects

- Remove current barriers to market entry;
- Enable all technically competent and cost-effective suppliers to bid for and potentially win contracts;

support a move towards more transparent and competitive pricing amongst suppliers which in turn should reduce the cost of low carbon heat technologies, and therefore minimise the cost to consumers; and

To facilitate innovative product design and delivery methodologies.

Contracting strategy and procurement process

If we are to accelerate delivery of heat network projects, we need to increase capacity in the market, encourage innovation in delivery methodologies, and reduce design and capital costs. To achieve this, we need to increase the number of suppliers so as to increase delivery capacity and resilience, provide more competition and increase the likelihood of innovative delivery approaches being identified.

In support of these aims, we are looking to promote the delivery of Heat Networks in a way that encourages new entrants into the market and gives them

- early sight of what is going to be procured,
- details of when such procurements are going to take place

This is to help ensure that there really is an equal opportunity for new entrants to compete with established firms, through the application of an open and transparent procurement process and the utilisation of standardised procurement documents that include fair and acceptable contract terms.

To achieve this, applicants will be required to facilitate meaningful pre-market engagement, use the

standardised contract templates provided (https://tp-heatnetworks.org/heat-contract-templates/). This is to ensure that the contract terms used are fair and accessible, and that suppliers are identified, and contracts are awarded through an open procurement process. The expectation around each of these activities is set out below.

Meaningful pre-engagement

As part of working to grow the available supply chain and encourage existing suppliers to participate in heat network projects, the heat network scheme, the services, and the material requirements need to be widely promoted and then more specifically, each project and its specific challenges need to be promoted.

Scheme Promotions

We welcome successful applicants to GHNF working together to find ways to promote the opportunities that this funding can create. Specifically, we are looking for applicants to run scheme-level events:

- to inform the market of supply chain requirements;
- to link up organisations who can collaborate to deliver work;
- to help organisations access growth funding
- to update manufacturers of future demand; and
- to find ways to work with training and skill organisations to grow the workforce

These events should ideally be run online so as to minimise supplier time commitments and therefore maximise attendance and participation in the event. Should an in-person event be utilised, it should also be accessible through an online option so as to be inclusive.

It is expected that these events will be interactive discussion between all attendees and will serve to assist suppliers with planning works to maximise available resources efficiently but also to inform the procuring body of enhanced options before the tendering approach is finalised.

These events must be advertised through the portal Heat Network Exchange (www.heatnetworkexchange.co.uk) in time for interested participants to register.

In addition, a potential partner who can assist in organising such events is listed below; however, this is an optional suggestion and not a mandated method for achieving the above objectives.

Built Environment Networking | Property, Construction, Building Sector Events (built-environment-networking.com)

Individual Project Promotions

These events should be project focused and seek to inform the market of a pending opportunity. It should cover the specific resource and delivery requirements and, through interactive participation, seek to optimise competition and efficient delivery.

Each project should hold at least one open-day or equivalent event for each of their main tenders. The event is a chance to outline the project's likely procurement and contracting strategy, including timescales.

The event should be organised and function as follows:

- The pre-engagement event should ideally occur at least 4 weeks before the tender goes live; this is to enable suppliers time to plan and collaborate as needed; however, this may be reduced where a recent scheme event has been held or project deadlines are prohibitive. The event may also allow changes to be made to the procurement based on feedback to make it more inclusive.
- The event should be advertised widely; ideally including:
    - Using an industry relevant networking event organiser;
    - Advertisement on the portal heat network exchange;
    - Advertisement through multiple methods such as social media, Contracts Finder, Find a Tender, commercial e-tendering portals, organisational websites and industry press magazines is recommended
- The event should serve to:
    - Set out the GHNF objectives by way of a presentation;
    - Detail the project's specific requirements; and
    - Allow organisations to network, for example regarding collaboration opportunities, training, and funding requirements, as well as supply and demand discussions.

Applicants are required to share the event slides, a transcript of the Q&As and clarifications and any process edits resulting from engagement event, with all prospective bidders as part of the procurement process.

Applicants are advised to share with potential bidders and with the GHNF, a draft contracting strategy in advance of the event. This should set out high level process objectives and timescales as well as providing a draft specification.

Applicants/ Suppliers are encouraged to use these events for the benefit of the project and not just as a box ticking exercise. The aim should be to incorporate the market's knowledge and feedback into the design of the pending procurement so as to optimise both the procurement outcome and the delivery of the works.

Data from either of these event types; date, purpose, attendees, resource challenges, product lead times and demand and any other data that may help inform future funding, is to be shared with the Department.

Fair contracting terms and standardisation

As part of encouraging new entrants and SME participation in these projects, applicants are expected to use one of the documents from the suite of draft contract templates that we have produced previously to reduce legal costs and improve transparency in the sector https://tp-heatnetworks.org/heat-contract-templates/.

Applicants may amend these pre-competition, or negotiate as part of the procurement process, the terms and conditions as follows:

- Pre-competition, for both public and private sectors
- Reduce the threshold of any commercial or practical contract obligations (in the favour of the suppliers) to enable SMEs to participate and to ensure effective competition

The Private Sector may

- Negotiate the final delivery requirements with the successful tenderer where doing so would benefit BOTH the procured supplier and the project outcome

The Public Sector may only negotiate

- where permissible under the Public Contracts Regulation 2015 (as amended); and
- the amendments to the terms and conditions will improve the outcome of the project

If a project does not use these contracts, or, if they are amended or negotiated, then the applicant will need to explain why as part of their monitoring and reporting process.

Ultimately, the tendering body and tenderers need to ensure that fair contracting terms are used in their GHNF-funded project; this requirement is based on previous experience that as some terms have been seen to have stifled competition within the sector and presented a significant barrier to new entrants.

In addition, to further facilitate participation from SMEs, applicants are encouraged to share their procurement templates with the GHNF. This is to support working towards a standardised suite of templates that can be used across both the private and public sector for all open procurement processes.

Applicants are required to share any feedback received during the tendering period from suppliers regarding the suite of draft contracts; this is of particular importance if the feedback is that as a result of the contract terms, a supplier cannot/ will not participate in the procurement.

Open procurement

All projects, public and private sector, are expected to follow an open procurement route as far as reasonably practical so as to support new entrants and supply chain growth in the delivery of these works

For the avoidance of doubt, if projects are unable to utilise an open procurement for any procurement in excess of £100,000, they should clearly set out the reasons in their application to the fund or if the decision is made post award of funding the project should seek permission from their allocated monitoring and reporting lead. This includes providing justification of the use of public sector frameworks.

Information about all procurements over £100,000 must be published on Heat Networks Exchange noticeboard (https://www.heatnetworkexchange.co.uk/opportunities/).

An open procurement process involves and requires the following:

- Advertising the opportunity widely and publicly; and at very least:
  - Information about all tenders must be published on Heat Networks Exchange (https://www.heatnetworkexchange.co.uk/opportunities/)
  - If in the private sector – advertise the opportunity on Contracts Finder where the value exceeds £100,000;
  - If in the public sector – advertise in accordance with the Public Contracts Regulations 2015 and any relevant internal/constitution requirements for advertising contract opportunities.
- Allow a reasonable and proportionate amount of time for subcontractors to return tenders.
- Within the suite of tender documents, set out a clear and transparent evaluation requirement around both quality and price that enables equal access and effective competition.

This commitment will form part of monitoring and reporting, and the Department will need to be informed of areas where they cannot follow open procurement.

Applicants will be required to provide tender participation data and any feedback received during the tendering period from suppliers with regards the project requirements and more specifically, the above expectations; this is of particular importance if the feedback is that a supplier cannot/ will not participate in the procurement.

Strategy for community engagement

Heat Networks take time to develop and often require long term customer engagement to make them a success. As a minimum, projects commit to follow the Department stakeholder engagement in heat networks guidance[44]. This guidance can support projects to engage with the correct stakeholders at different stages of a project, and ultimately improve deliverability.

Engaging with customers and the local community can be a challenging aspect of a project but one that is vital for success. As part of this commitment applicants also agree to share their strategy for community engagement, along with lessons learned, with the sector to improve knowledge of what works in community engagement. Ultimately this knowledge will benefit the whole sector as heat networks will be viewed more positively by potential customers.

These community engagement strategies should include

- a description of those to be engaged and any particular concerns or challenges,
- the planned methods of engagement,

[44] If this link does not work, search for "Stakeholder engagement in heat networks: a guide for project managers"

- any novel approaches tested,
- plan for ongoing engagement/engaging concerns, and
- lessons learned and application to other projects.

A Community Engagement case study is provided at the end of this document as an example for applicants.

Low carbon footprint in the supply chain

To reach net-zero it will be essential for projects to understand their embodied carbon in production and transport to enable them to reduce it over time. The Green Heat Network Fund is stimulating the provision of low and zero carbon heat, but we need to drive down the carbon intensity of the design and build stage at the same time. We therefore need to understand carbon impacts from the supply chain choices and make decisions that lower the carbon contribution from each project and its wider supply chain. The information flowing across the industry from this commitment will enable better decisions and approaches in the future.

Projects answering this question must highlight how they are going to analyse the embodied carbon of at least one major component of their supply chain or one activity of their project and provide the embodied carbon data to the Department as part of their reporting. They do not need to do this work before applying to the GHNF but should plan to work on it during the project. Embodied carbon means all the CO2 (and other greenhouse gases) emitted in producing, transporting and installing materials. This includes direct (scope 1) and indirect (scopes 2 & 3) emissions. It is estimated from the energy used to extract and transport raw materials as well as emissions from manufacturing processes.

This calculation should not include operational emissions.

In the report of the analysis provided to the Department, applicants should include detail of the method used to calculate embodied carbon, the component(s) or activity(ies) that are analysed, the data produced, and what impact this analysis had on their current and future projects.

Further detail to support projects in this analysis is provided below.

Conversion factors

The Department publishes annual updates to the Government conversion factors for company reporting of greenhouse gas emissions. The government conversion factors for greenhouse gas reporting are for use by UK and international organisations to report on greenhouse gas emissions. These can be used to convert materials used and activities undertaken for a heat network project into carbon emissions. These can be used to calculate the emissions associated with transport, raw materials, refrigerants, waste disposal and many other aspects of a project. The figures provided represent average emissions and can be used in conjunction with project-specific numbers for the production and transport of specific components.

Environmental Product Declarations (EPDs)

An Environmental Product Declaration (EPD) is an independently verified and registered document that communicates transparent and comparable information about the life-cycle environmental impact of products in a credible way. Applicants can use product EPDs to calculate the embodied carbon of the whole, or aspects of the heat network. The figures provided in EPDs can also be used in place of the average conversion factors provided above. EPDs can also inform the project's procurement approach by comparing between the embodied carbon of different products. This can help to drive down the overall embodied carbon of the network. At the time of writing this guidance there were few if any EPDs available for specific heat network products. However it is hoped and expected that this will change in the near future.

Where EPDs have been used in an embodied carbon analysis these should be shared with the Department to support the analysis provided. Suppliers may choose to create them if enough projects request them.

Carbon calculators

Calculators can be used to support an analysis of embodied or whole life carbon. These are often made for construction projects so may be suited to certain built components of a heat network but not cover the embodied carbon in manufactured components (such as heat pumps and HIUs). Calculators can be used alongside both EPDs and the published conversion factors. Below is a non-exhaustive list of carbon calculators. Other more suitable calculators could be available, and applicants are encouraged to search for the calculator that is most suitable to their project and components to be calculated.

- Environment Agency Carbon Calculator for Construction – MS Excel-based downloadable tool with a focus on construction site energy use
- The Highways Agency Carbon Calculator for Construction – MS Excel-based downloadable tool
- eTool – web-based tool; this and the following examples are mainly used for building analysis but may be useful for heat networks
- FCBS Carbon calculator – downloadable software
- H/B:ERT tool – Revit-based tool
- one click LCA – downloadable software

Project components

As part of this commitment, the GHNF aims to learn as much as possible about the embodied carbon of different aspects of a heat network project. Applicants are therefore asked to consider the depth of their analysis and compare multiple options/suppliers for the component where possible. We would also like projects to coordinate with the GHNF to ensure that a range of components or activities are analysed each funding round. A non-exhaustive list of possible project components and activities to analyse is provided below, and these will be updated as we gain more insight over the life of the GHNF.

Component	What is covered
Piping works	All pipework laid in the project including into properties
Energy centre	The embodied carbon of all energy centre components, including construction and maintenance works
HIUs	Embodied carbon of all HIUs in the project, data likely to come from supplier EPDs and installation works
Trenching	All carbon associated with excavation and filling trenchworks, including an estimate of need to dig again in future
Maintenance work	Estimated over the lifespan of the project and a breakdown of where this maintenance work is
Drilling	Works for drilling of geothermal, ground source heat pumps for example
Heat technologies	This covers heat pumps and other heat source technologies. This must cover the global warming potential of refrigerants
Water treatment	Carbon associated with treatment, pumping etc.
Personnel travel	Transport emissions
Site offices	Temporary office energy use and embodied carbon that can be associated with this project
Procurement	How procurement can take into consideration embodied carbon

Reliability and resilience for the energy system

Ensuring that the UK's energy system remains reliable and resilient as we decarbonise our economy is vital. The transition to a smarter and more flexible energy system is an opportunity, and heat networks are particularly well placed to support this transition and capitalise on its benefits.

Heat networks can support in a number of ways.

- **Utilising waste heat sources** – improves efficiency and reduces the demands on the other energy networks (the gas and electricity grids)
- **Coupling with renewable energy** – heat networks can access other and higher efficiency renewable energy sources (e.g., solar thermal) which can reduce the demand on energy networks.
- **Storing heat to use in peak times** – by storing heat produced at non-peak times and using it at times of high demand, heat networks can alleviate the peak demand on electricity and gas networks when they are most strained and likely to suffer reliability and resilience issues.

- **Variable heat tariffs** - encourage a reduction in peak demand and incentivise the use of storage. This can lower the cost of heat delivered and incentivise better peak load management.

Applicants commit to consider the resilience of the electricity and gas grids and reliability of heat delivered in the design of heat networks supported by GHNF. This includes considering the accumulated benefit of their projects for the grid, for those with multiple projects. Projects are already expected to be CP1 compliant but may pay particular attention to Annex I.

Applicants also commit to share evidence of their design's impact on the resilience of the electricity grid with the Department, including the diversified peak demand against a counterfactual. This should also include how you are planning to control the heat network to maximise benefit to the electricity grid.

Resources

- Ofgem Transitioning to a net zero energy system: smart systems and flexibility plan 2021
- The Department of Energy, Security and Net Zero Optimisation of heat networks: Issues for project sponsors to consider
- CIBSE CP1 Heat Networks Code of Practice for the UK

Investment and growth in the project's local economy

Build Back Better: our plan for growth has been put forward by Government to stimulate UK investment, and the Green Heat Network Fund has an important role to play in re-energising the economy, lowering UK carbon emissions, and stimulating value and jobs for the UK. In this commitment we are expecting applicants to identify ways in which their project can work to deliver the objectives of the plan. In particular through engagement with the local supply chain we see opportunities to stimulate investment and jobs in the local economy.

The jobs, skills, and investment needs of communities varies across the country and the benefit that heat network projects can bring can be tailored to meet those needs. In this commitment we are asking applicants to highlight how their project, and the activities discussed as part of the market transformation commitment action plan, can deliver value locally.

In their response, applicants should provide a description of the local economic strategy, including evidence and/or outcomes of ongoing, planned or completed engagement with local institutions, and research into local needs with measurable action plan to address them. This can include local authorities, mayoral combined authorities, local enterprise partnerships and local industrial strategies. Responses should highlight how their project contributes to this strategy, working in partnership with local institutions to invest in local priorities to support the local economy and improve quality of life.

Applicants can use other aspects of the market transformation commitment application as evidence but must

highlight how deliverables highlighted contribute to the project's local economy.

15.2.2 Skills

While there is a growing heat network market in the UK, supported by government investment, there is a risk that the UK heat network supply chain may not attain the capability and capacity needed at a pace that keeps up with market growth. These commitments will support the heat network supply chain to invest in skills so that skills shortages are minimised. They will also improve our knowledge of jobs and skills in the sector and support future skills delivery. Investment in skills to address the current skills shortages should, in the future, allow further deployment of low carbon heat.

Addressing the supply chain skills gap

The heat networks skills review highlighted clear skills gaps in the industry, while also pointing towards skills needs that are likely to become more important as the sector evolves. Existing gaps will become more acute as the industry grows and are likely to compromise the UK's ability to meet our net zero ambitions. Projects play an important role in building both the skills capability and capacity in the supply chain through their setting of expectations, collaboration with local bodies and procurement strategies.

Applicants are required to highlight areas of existing skills shortages and to consider how they can address them locally within their project and support the delivery of national skills training. Applicants are encouraged to collaborate to deliver economies of scale and provide training opportunities nationally as well as locally. This proposal can include detail on how to deliver the skills for new jobs and apprenticeships which are collected in other areas of the market transformation commitment application.

Data to support novel or project/region-specific skills gaps will enhance an application. Applicants can support their answers by highlighting the qualification level of skills and jobs to be delivered. Applicants are encouraged to share information on their skills plans to drive uptake and reach of their projects.

Project recruitment and hiring strategy

The skills gaps facing the industry is exacerbated by a limited recruitment pool and fierce competition for skills. We need to attract a more diverse pool of talent to the sector if we are to draw on the resources of the whole country. To attract the most talented workers and increase its diversity to better reflect society as a whole, the sector will need to change its recruitment and hiring strategy, among other things. Hiring for projects should be based on merit on the basis of fair and open competition, as defined by the civil service commission.

- **Merit** means the appointment of the best available person judged against the published criteria for the role. No one should be

appointed to a role unless they are competent to do it and the appointment must be offered to the person who would do it best.

- **Fair** means there must be no bias in the assessment of candidates. Selection processes must be objective, impartial, and applied consistently.
- **Open competition** means that appointment opportunities must be advertised publicly. Potential candidates must be given reasonable access to information about the role and its requirements, and about the selection process. In open competitions anyone who wishes must be allowed to apply.

To support the project's local economy, applicants should consider also promoting the opportunities as part of their community engagement and Social Value strategies.

All project sponsors are expected to follow this guidance for filling job vacancies associated with this GHNF-funded project as far as reasonably practicable.

UK apprenticeships, trainees, scholarships, and sandwich year placement

The heat network skills review noted that heat network specific knowledge is generally developed through on-the-job training. It also highlighted that there are weaknesses in both the supply of new entrants to the sector and in progression opportunities. Movement upward in the sector, tends to be solely through experience of complete projects. As such, apprenticeships and other on-the-job training opportunities can support in addressing the skills gap and attracting new entrants.

For completing the apprenticeships table, please count the number of apprenticeships and/or trainee positions for UK, and non-UK, workers that last 6 months or longer. For the number of scholarships, and sandwich year placements, these should be positions sponsored at UK education institutions for 1 year or longer. Please also record the number of apprenticeships and trainee positions to be converted into long-term employment opportunities of 2 years or more.

Please also provide as much detail as you can on the different apprenticeships and training opportunities created as part of this project.

Number of new jobs: local, UK and the rest of the world

By estimating and recording job numbers, projects will support the growth of the heat network sector and the upskilling of the workforce. Creating an understanding of how heat network investment supports job creation will enable the targeting of future interventions and training opportunities. Heat network projects will draw on both local, national, and global supply chains, so it is important that we understand the locations of new jobs.

It is understood that estimating numbers of new jobs at an early stage of the planned works is not an exact science; the aim is to encourage schemes to consider this, and to form a basis to compare the outcomes of the scheme. There is no judgement or scoring

associated with whether the estimates are high or low.

The guidance below should be followed when completing the jobs table in the GHNF application.

This data collected here should cover direct jobs expected to be hired as part of this project (e.g., developers and their contractors) including operation and maintenance. If data on indirect jobs is available then this should be shared with the Department, including the method used to arrive at the figures, but not included in the table.

For recording purposes please use the following definitions

- **New Job** means a new the position that last at least 2 years. The role can be part-time or full-time.
- **Local job** means those which are within a 50km radius of the project
- **National Job** means those created within the UK but outside of the local definition
- **Rest of World** means direct jobs (employees or direct hires) created or maintained by suppliers operating in countries other than the UK as registered companies or with an operating license, expressed as Full Time Equivalent positions
- **One Full Time Equivalent (FTE)** means the amount of work from an individual working full time (more than 30 hours per week) for one year. Employee numbers should be expressed on an FTE years basis by applying the following multipliers to employees in each situation:
    - Employees/hires working a standard 5-day week (i.e., more than 30 hours per week): x1.0
    - As above, working less than 30 hours per week: x0.5
    - Working more than 30 hours per week on a seasonal basis (c 6 months per year): x0.5
    - Part time working (less than 30 hours per week) on a seasonal basis (c 6 months per year): x0.25

... and then multiplying by the number of years that each position will be active in connection with the Project.

The different classifications of jobs are defined by qualification level which are defined here:

- **Professional:** L6/7/8 and member of professional body
- **Technician:** L4/5 and >=2 years relevant work experience, or L6/7/8 but not member of professional body
- **Basic Skill:** L2/3/and =< 2 years relevant work experience

This should then be converted to FTE years in the table depending on the role. Some projects in support of GHNF funding may be expanding through the use of contractors. These roles can also be counted as new jobs, provided they also last at least 2 years.

Apprenticeships can be counted towards new jobs but should also be recorded in

the apprenticeships table (apprenticeships, trainees, scholarships, and sandwich year placements). Apprenticeships can be claimed as new jobs provided, they are either at least 2 years in length, or the apprenticeships will be shorter than 2 years, but the applicant confirms that they plan to retain some of the personnel at the end of the training scheme. Applicants should update GHNF when these new positions are confirmed.

Please also provide as much detail as you can on the different types of jobs created as part of this project.

15.2.3 Innovation

The deployment of more efficient equipment, faster/better installation methods, and new types of procurement and contracting strategies which reduce the cost of developing future heat networks. Innovation will support less established suppliers, helping to bring cost reduction to the supply of low and zero carbon heat. To create the forward-looking and self-sustaining heat network market of the future, projects will need to learn from past mistakes and successes and introduce new solutions to make the UK a world leader in low carbon heat deployment.

Investment in UK R&D

The Green Heat Network Fund is supporting a transition to low and zero carbon solutions. Many of these solutions will benefit from further R&D to bring forward the most suitable, future low-cost low carbon heat solution. We wish to see projects linking up and collaborating with existing R&D activities and investment to enable applied learning.

The activities undertaken need not be first-of-a-kind research but can be innovation new to an organisation.

Applicants should complete the table (R&D table) with activities that will be undertaken by both the heat network developer and their suppliers. This should include the expected outcome of the R&D activity and relevant metrics and KPIs used to measure success. The activities highlighted will not be marked as part of the GHNF deliverability assessment but can support an application as part of the innovation evidence note.

Continuous improvement

The provision of low and zero carbon heat is a significant challenge for the UK's net zero carbon target. It is vital that lessons learnt from previous heat networks and wider sector endeavours are embedded into new projects. The knowledge, insight, and experience that is gained from these endeavours will identify further need for new technologies, approaches, and investment models that will be shared across the industry. This will reduce costs and enable heat networks to become a more attractive investment. To create a self-sustaining and forward-thinking heat network market, lessons learned need to be shared across the industry and new

technologies and business models brought into the market.

In this question, applicants are required to show how they will use lessons learned from past endeavours (by them or otherwise) to inform their current project. This can include lessons learned in other areas of their action plan, e.g., how embodied carbon will be reduced in future. Applicants should also include how they plan to disseminate lessons learned from their GHNF-funded projects, including what has not worked. This can include lessons learned from another aspect of the market transformation commitments.

Applied learnings: Applicants are encouraged to highlight learnings from as wide a range of sources as possible. Lessons learned can come from an organisation's previous projects, previous projects of other organisations, the international heat network sector, and other industries both in the UK and internationally. Particular attention should be given to how these applied learnings will help the current project achieve success, the impact on the wider UK heat network sector and how lessons learned from this project will be applied in future.

New technologies: The technologies highlighted do not need to be new to the UK heat network sector but can be new to the organisation(s) involved in this GHNF project. Applicants should highlight how the new technologies used will support the delivery of low carbon heat and improve the efficiency of the network. Where possible, applicants should also highlight any overlaps with analyses of embodied carbon for these technologies.

Business processes and methods: As with technologies, new business processes and methods used in this project need only be new to the organisation(s) involved and not the heat network sector as a whole. Applicants should highlight how these new processes will help the project to achieve success and the impact on the heat network sector.

15.3 Case study - Strategy for community engagement

Lancaster West Estate, Kensington & Chelsea

Understanding the Community

Notting Dale Ward and Lancaster West Estate are situated in Zone 2, West London. Lancaster West was built in the 1970s and is home to around 3,000 residents. The Estate is undergoing a major refurbishment programme to create 21stC social housing and net-zero carbon neighbourhood. An extensive Resident Co-Design programme is in progress, actively involving residents in the design and decision-making. Lancaster West Estate is a highly diverse community comprising of young families, older residents (+65 years) and over 20 ethnicities. Most residents (80%) are council tenants.

The Notting Dale Heat Network project complements the 'fabric first' refurbishment programme. A 100% renewable energy heat network that will replace two communal gas boilers and 126 gas boilers installed in individual homes. The Heat Network will put residents first, rely solely on renewable heat sources, and provide affordable heating and hot water whilst tackling fuel poverty. The project has benefitted from HNIP funding

Methods and Resourcing

A dedicated Heat Network Team, including a community engagement manager work closely with the Refurbishment and Engagement Teams at Lancaster West. Introducing the heat network concept and raising awareness of the project have enabled discussions with residents on the technology, heating costs, and the transition to new metering systems.

The Resident Co-Design process has used a wide range of engagement methods, including Community Fun Days, Pop-Ups, Vox Pops, online webinars, leaflets, surveys, and social media. Resident focus groups have been held to help shape a Customer Service Guarantee and Resident Price Promise. Over 200 residents and 25% of Lancaster West Estate having been actively engaged so far.

What have we learned from Resident Co-Design?

Resident-Co-Design takes longer but has strengthened the Notting Dale Heat Network project. A heat network is not simply a large engineering and infrastructure project. It will have customers who don't have the ability to switch supplier. 'People on the ground' are the most valuable resource when talking about heating, which can be an emotive and technically complex subject. Sharing resources with the wider refurbishment team made in-person communications and outreach to the whole Estate possible. By keeping the wider internal team informed of the heat network, other opportunities for resident feedback also emerged through the Council's drive for excellent customer service.

The diverse population and housing stock at Lancaster West Estate results in different resident expectations of heating and its costs. The Notting Dale Heat

Network means something different to each household. Acknowledging this and being open about the challenges it poses is important. To do this, comments and opinions were tracked by tenure, to understand which proposals work and which don't for each group. This was particularly helpful when it came to tariff setting, as the existing heating costs varied across tenure and size of home.

Understanding a place, can help inform the project tone, language and content communicated. This was particularly important at Lancaster West given the impact of the Grenfell Tower tragedy. Residents wanted to see objective information, pros & cons, and FAQs. This style of information makes the project more accessible and personal. At various stages in the engagement, residents were invited to participate in focus groups. These groups were advertised as a forum for discussing and testing the finer details of the heat network for those residents who were interested. Topics included the business model and tariff setting. Recruitment to this group was successful, but participation dwindled. In response, the team is using more creative, interactive, and visual means of communicating these important subjects.

16 Annex 2: UK Infrastructure Bank supplementary information on pre-application engagement, full application information sharing and disclaimer.

Where Applicants have opted-in to be contacted by UKIB or have otherwise provided consent for GHNF Relationship Managers to facilitate an introduction, UKIB will work with both private and public sector applicants that may be suitable for debt support at Final Investment Decision (FID) from UKIB.

For private sector projects, UKIB engagement is most likely to be appropriate where projects are likely to be relatively strong on the following characteristics:

- Debt capacity based on high level cover ratio analysis – requirement is for this to be £25m or greater;
- Level of equity provided;
- Sponsor quality – initial assessment of sponsor creditworthiness and experience;
- Off-taker identity, granularity, certainty and credit quality;
- As well as potential for positive impact by delivering the project, both in terms of emissions reductions, and its size, location and types of customers, and the projected end-user low carbon heating cost reductions.

For Local Authority projects, minimum lending requirement is £5m. UKIB's assessment of project level information will be similar to the above, however, note that credit risk assessment will be based on the Local Authority.

Section 8.1.1 requires that projects must provide provisional evidence of non-GHNF funding sufficient to meet the project's capital costs which were forecast as part of its application. Subject to satisfactory demonstration of the characteristics above, UKIB will work with the Applicant to explore potential financing options, including where possible providing indicative terms. UKIB may issue a letter of support to the project as evidence of engagement, subject to successful initial internal approval process, to provide evidence of engagement. Any formal offer of UKIB support will be subject, inter alia, to UKIB's approval processes, completion of satisfactory due diligence and legal documentation. The bank's limited financial capacity needs to be additional. It will not deploy public funds where it is not needed. UKIB scales its investments to best crowd-in private capital, including reducing its commitment if private sector appetite increases.

Please note that the assessment of project proposals for the purpose of obtaining UKIB debt funding will be considered through UKIB's own investment processes and is separate to the process followed by the GHNF Investment Committee in relation to GHNF funding. For the avoidance of doubt, UKIB does not have any involvement in the assessment or award of GHNF funding to applicant projects.

Disclaimer

The information contained in this GHNF application guidance document relating to financing opportunities relating to UKIB[45] may be considered a financial promotion.

This document is solely intended for, made to or directed at high-net-worth companies, investment professionals or any other persons to whom this communication may lawfully be communicated to within the UK (as per Article 49 of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 ("FPO").

The content of this document has not been approved by an authorised person within the meaning of the Financial Services and Markets Act 2000 ("FSMA").

Recipients of this document should obtain independent advice as considered appropriate by the recipient in relation to any financing opportunities referred to in this communication.

High net worth companies

A high net worth company is one of the following: (i) a company which has, or is in a group with a company which has, at least 20 members and share capital or net assets of £500,000, or fewer than 20 members but share capital or net assets of £5m, or (ii) an unincorporated association or partnership with net assets of £5m, or (iii) a trust with cash and investments in accordance with Article 49 of the FPO of at least £10m.

Investment professionals

The term investment professional is defined in Article 19 FPO and includes someone who is either: (i) an authorised person or exempt person within the meaning of the FSMA (provided the exempt person is exempt relation to the financing activities this communication refers to); or (ii) someone whose ordinary business activities involve that person in financing activities this communication refers to. It also includes governments and local authorities in the UK or elsewhere.

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17 Document Change Control

May 2022

- Triple Point Heat Networks contact information added.
- Corrections made to simplify language and addressed formatting errors.
- Role of Relationship Managers and Business Development Team explained.
- Submission dates confirmed for future funding application rounds.
- Reordering of process for drawing down funds.
- Amendment of eligible costs to correct error relating to recovery of VAT.

June 2022

- Contact information updated throughout.
- Clarifications and expansion of points.
- Timescales confirmed.
- Clarification of guidance on aggregation of communal heating systems.
- Addition of text on Shared Ground Loops vs Ambient Loops section.
- Application process update.
- Detail on Energy supply agreements for Heat Suppliers added.
- Further detail provided on heat network readiness statement.
- Information on Private wire and electrical generation added.
- Reordering and expansion of Application Gated Metrics section.
- MTC amendments:
    - Contact information updated throughout.
    - Correction of typos.
    - Expansion on points already included in the previous iteration to provide clarity.
    - Clarification on when activities should be considered specifically in relation to low carbon footprint in the supply chain.

August 2022

- Application submission process updated.
- Addition of sub-sections/text:
    - Expression of Interest
    - Applicant registration
    - Upload of Clarification documentation
    - SharePoint Folder structure
    - Monitoring and Reporting documentation
    - SharePoint Folder structure
    - Upload of evidence for Milestones and Conditions evidence
    - Monitoring and Reporting documentation.
- Supporting evidence requirements added:
    - Ref 1.10: Network diagram
    - Ref 1.20: Governance.
- Edit of sub-sections:

  - Changes to Tariff Note requirements
  - Application form has been renamed to Applicant registration, with detail added
  - Updates to Submitting the Application
  - Combining M&R sections 11.1 and 11.2 to reflect the integrated reporting of commercialisation and construction.
- Clarification added regarding requirements around:
  - Applicants on-granting awards to SPVs
  - Additionality
  - Letters of support from officers with appropriate authority
  - Subsidy control
  - Cover Note.
- Further links added to Triple Point Heat Networks Investment Management website where appropriate.
- Cross referencing updated.
- Clarification regarding incurring eligible expenditure.
- MTC amendments:
  - Addition of BEIS LWE Case study.

October 2022

- Additional information added around UKIB lending and data privacy
  - Section 3.2 UKIB lending to Local Authority applicants
  - Section 5.3 Application Supporting evidence, REF 1.11 Relevant Correspondence, Textbox 'Local Authorities seeking UKIB Lending'
  - Section 8.2 Provisional awards, textbox
  - Section 13 Queries, complaints and review process, 'Sharing data with UKIB.'
- Additional information around
  - Eligibility for Combining grant funds (section 3.1).
- Additional guidance in Section 5.3, under Ref 1.9 regarding supporting evidence where Energy Centres are in areas of flood risk.
- Additional guidance in Section 4.7 'Shared Ground Loops & Ambient Loops,' under sub-heading 'GHNF Applications from ambient and shared ground loop schemes.'
- MTC amendments:
  - Minor wording change to BEIS LWE Case study.

April 2023

- Name change from BEIS to Department for Energy Security and Net Zero, and explanation.
- New section 4.6 added text providing clarity on additionality requirements for new build sites with extended development periods beyond 2025.
- Section 5.3, text added;
  - Ref 1.2: Cover note/ letter
  - Further clarity added regarding requirements for Mandatory evidence
  - Ref 1.5: Bulk heat supply

  - Ref 1.6: Techno-economic feasibility study
  - Ref 1.11: Relevant Correspondence, specifically planning permission.
- Edits in 14.1 Application gated metrics;
  - Consumer detriment, added text around new build developments built under future home standards & additionality against ASHP counterfactual
  - Social Internal Rate of Return – added information around counterfactuals.

June 2023

- Section 3.1 extension of funding to financial year 2026/2027.
- Section 3.1 availability of Commercialisation only support.
- Section 3.1 update to GHNF Funding Rounds (delayed R6 deadline).
- Section 4.6 updated from New Build Development to New Build Residential Development, with detail added.
- Section 4.9 addition of text around recovered heat and the risk from losing the source of heat.
- Section 5.3, text added:
  - Ref 1.3: Obligation for applicants to seek alternative sources of funding before applying for GHNF funding
  - Ref 2.2: Necessary evidence required to support claims of future expansion potential
  - Ref 10.1: Contingent evidence for new build applications.
- Section 6.1. Staffing costs that will not be supported, text added around additional staff costs, recoverable VAT.

October 2023

- Section 8.1 wording updated around heat network zoning and the requirement to collaborate with future Zone Heat Networks.
- Section 3.1 further information about future funding rounds added.

April 2024

- Section 3.1 Following the Government's allocation of additional funding to the GHNF and extension of the scheme, the dates for which funding can be drawn down has been extended to 2027/28.
- Section 3.1 Round 8 closing date confirmed.
- Section 3.2 Text on information sharing with UKIB updated to reflect a revised process (also see Annex 2).
- Section 3.2 Further detail provided on engagement with UK Infrastructure Bank and lending opportunities.
- Section 3.3 Routes to Market added.
- REF 1.7 Clarification relating to techno-economic cashflow model format provided.
- REF 1.12 Clarification to provide further information on elements to include in a letter of support / intent.
- REF 1.22 Clarification added relating to the Public Sector Confirmation Letter.
- Section 6.1.1 Additional information provided regarding staffing costs that will not be supported by GHNF.

- Section 8.1.1 Detail provided on non-GHNF funding and the requirement for applicants to seek debt / equity before applying to the scheme including evidence expectations.
- Section 8.1.3 Added sub-section relating to National Underground Asset Register and applicant requirements.
- Section 14.1 Clarification added in relation to application gated metrics and the GHNFOutput sheets.
- Section 14.1 Further information relating to the Social Internal Rate of Return (IRR) calculation added.
- Annex 1 Market Transformation Commitment Guidance added as an annex to the GHNF Applicant Guidance document.
- Annex 2 Text on information sharing with UKIB updated to reflect a revised process.

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