Heat Network Technical Assurance Scheme

New Build Heat Networks

Technical Specification

Communal Distribution Network

Phase 1: Feasibility

HNTAS-NB-TS-CD-P1

Version History

Revision	Notes	Date
V0.4	Draft issue	05/12/25

Disclaimer

The following HNTAS Code document is published in draft format. This document is intended to give the sector early sight of HNTAS requirements in their current stage of development for the purpose of facilitating sector understanding of the scheme.

Draft Code documents, including Technical Specifications and Assessment Procedures, have been reviewed and consulted on through a series of technical workshops with participation from a range of experts from across the heat network industry. The content of this document is still in development and subject to change. Requirements should not be considered as fixed at this stage.

Changes which may be made to this document in future include those to:

- reflect learnings from the New Build and Existing network pilot programmes;
- align with aspects of HNTAS which are subject to public policy consultation;
- align with new requirements in TS1 and MMS;
- align the terminology of this document with that used in other HNTAS documentation;
- rectify errors in this draft version; and
- improve clarity of contents.

The Key Failures set out in the draft Code documents have been identified as a specific area for review, to ensure that:

- all Key Failures enable a binary assessment;
- Key Failures are only included for genuine issues presenting major risks to KPIs, and that moderate or lower risks are considered via non-conformity processes; and
- Key Failures do not duplicate Technical Requirements unless there is a clear justification to do so.

DESNZ will be welcoming feedback on the information in this document via a change management process. This process will run in parallel to the HNTAS policy consultation and DESNZ invites stakeholders to engage with both, once they are open. You can sign up to receive updates on future detailed draft technical documents as they are published by contacting: heatnetworks@energysecurity.gov.uk.

Please be advised that this document references other HNTAS draft Code documents which have not yet been published. References to other documents will also be subject to change following the publication of updated standards. The final version of this document will be released before the launch of HNTAS.

Note on Phase 4: Operation (initial) and Phase 5: Operation (ongoing)

The New Build Technical Specification and Assessment Procedures Overview (Phase 0) documents indicate that there are separate New Build Code Documents for Phase 4: Operation (initial) and Phase 5: Operation (ongoing).

These documents have since been consolidated to reduce the number of Code Documents, so the Phase 4: Operation documents cover requirements for New Build networks during both initial and ongoing operation.

This change does not impact the assessment of New Build networks in operation, which still occurs:

- after 1 year of operation; and
- after 2 years of operation.

Contents

Foreword

This Technical Specification forms part of the UK Government's Heat Network Technical Assurance Scheme (HNTAS, The Scheme) delivered by the Department for Energy Security and Net Zero, in partnership with the Scottish Government and Ofgem. The Department for Energy Security and Net Zero appointed FairHeat as technical author for this document.

The Scheme has been designed and developed in consultation with a range of experts across the heat network industry in the form of Technical Sub-Working Groups, culminating in a series of Technical Specifications and Assessment Procedures to facilitate the validation and verification of performance outcomes of Elements within a Heat Network.

This document specifies HNTAS Requirements for a Communal Distribution Network Element within a New Build Heat Network in Phase 1: Feasibility.

This document sits within a series of Technical Specifications for a Communal Distribution Network, which features within a wider Code documentation structure, as outlined in Table 1.

This Technical Specification has been issued in draft format and will be updated prior to scheme launch.

For further information on the use of this document within the Heat Network Technical Assurance Scheme, please refer to the Heat Network Technical Assurance Scheme – New Build Heat Networks – Scheme Rules – Assessment Regime (HNTAS-NB-SR-XX-AS) document.

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Code Document Structure

Technical Specifications

Document Type	Element		Part/Phase				
			Overview	Phase 1: Feasibility	Phase 2: Design	Phase 3: Construction	Phase 4: Operation
			P0	P1	P2	P3	P4
Technical Specification	Energy Centre	EC	HNTAS-NB-TS-EC-P0	HNTAS-NB-TS-EC-P1	HNTAS-NB-TS-EC-P2	HNTAS-NB-TS-EC-P3	HNTAS-NB-TS-EC-P4
	District Distribution Network	DD	HNTAS-NB-TS-DD-P0	HNTAS-NB-TS-DD-P1	HNTAS-NB-TS-DD-P2	HNTAS-NB-TS-DD-P3	HNTAS-NB-TS-DD-P4
	Substation	SS	HNTAS-NB-TS-SS-P0	HNTAS-NB-TS-SS-P1	HNTAS-NB-TS-SS-P2	HNTAS-NB-TS-SS-P3	HNTAS-NB-TS-SS-P4
	Communal Distribution Network	CD	HNTAS-NB-TS-CD-P0	HNTAS-NB-TS-CD-P1	HNTAS-NB-TS-CD-P2	HNTAS-NB-TS-CD-P3	HNTAS-NB-TS-CD-P4
	Consumer Connection	CC	HNTAS-NB-TS-CC-P0	HNTAS-NB-TS-CC-P1	HNTAS-NB-TS-CC-P2	HNTAS-NB-TS-CC-P3	HNTAS-NB-TS-CC-P4
	Consumer Heat System	CH	HNTAS-NB-TS-CH-P0	HNTAS-NB-TS-CH-P1	HNTAS-NB-TS-CH-P2	HNTAS-NB-TS-CH-P3	N/A

Table 1: New Build Network Technical Specification structure

Scope

This document specifies the HNTAS Requirements for a Communal Distribution Network within a New Build Heat Network in Phase 1: Feasibility.

A Communal Distribution Network is defined as any pipework system that is wholly within a building and distributes thermal energy from either an Energy Centre or Building Connection to multiple Consumer Connections.

A detailed definition of the Communal Distribution Network is contained within the Heat Network Technical Assurance Scheme – New Build Heat Networks – Technical Specification – Communal Distribution Network – Overview (HNTAS-NB-TS-CD-P0) document.

New Build Heat Networks

There is one stage within Phase 1: Feasibility, which is Stage 1: Concept Design. This is outlined in Figure 1.

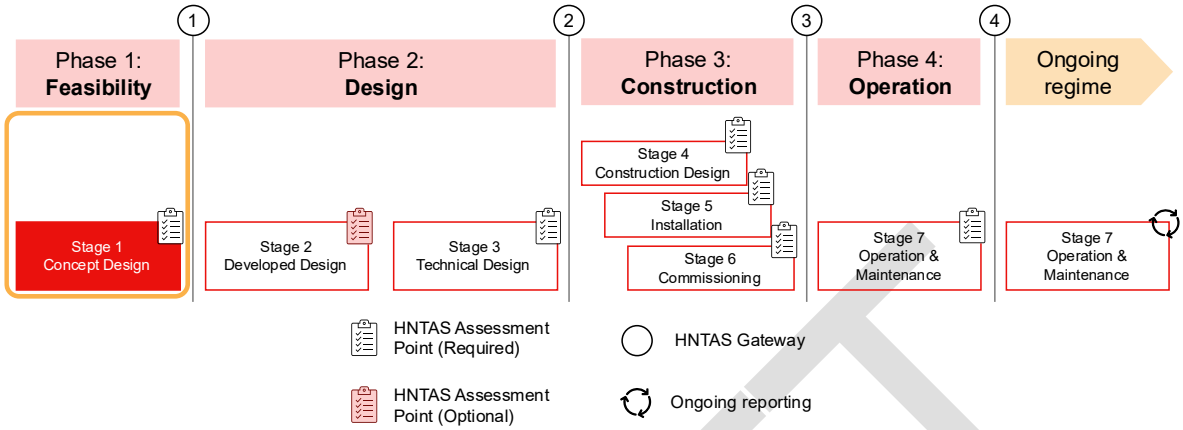

Figure 1: HNTAS New Build regime phases and stages

References

Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

- Heat Network Technical Standard (TS1) (HNTAS, 2025)
- Heat Network Metering and Monitoring Standard (MMS) (HNTAS, 2025)
- Heat Network Technical Assurance Scheme – New Build Heat Networks – Scheme Rules – Assessment Regime (HNTAS-NB-SR-XX-AS)
- Heat Network Technical Assurance Scheme – New Build Heat Networks – Technical Specification – Communal Distribution Network – Overview (HNTAS-NB-TS-CD-P0)

Informative references

The following informative references apply to this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

- RIBA Plan of Work (RIBA, 2020)

Terms and Definitions

For the purposes of this document, the terms and definitions given in the Heat Network Technical Assurance Scheme – Terms and Definitions (HNTAS-XX-TD) document apply.

1. Requirements for Stage 1: Concept Design

1.1. Technical Requirements

The applicable HNTAS Technical Requirements in Table 2 shall be fulfilled.

Technical Requirement		Applicable technical standard(s)	Evidence Requirement(s)
1.1.1.	Peak heat demands, heat demand profiles and annual heat consumption shall be estimated in accordance with the applicable technical standard(s).	TS1 1.1.3 TS1 1.1.4 TS1 1.1.5 TS1 1.1.6 TS1 1.1.7 TS1 1.1.8 TS1 1.1.10 TS1 1.5.1	CD-S1-E01
1.1.2.	Operating temperatures shall be determined in accordance with the applicable technical standard(s).	TS1 1.4.1 TS1 1.4.2 TS1 1.4.3 TS1 1.4.4 TS1 1.4.5 TS1 1.4.6 TS1 1.4.7 TS1 1.4.9 TS1 1.4.10 TS1 1.4.11 TS1 1.10.1 TS1 1.16.1	CD-S1-E02
1.1.3.	A heat network keep-warm strategy shall be selected in accordance with the applicable technical standard(s).	TS1 1.2.10 TS1 1.10.4	CD-S1-E07
1.1.4.	The routing and location of the Communal Distribution Network pipework shall be determined in accordance with the applicable technical standard(s).	TS1 1.3.3 TS1 1.14.1	CD-S1-E04 CD-S1-E05 CD-S1-E06
1.1.5.	Pipe sizes shall be sized in accordance with the applicable technical standard(s).	TS1 1.5.1 TS1 1.5.2	CD-S1-E05 CD-S1-E09
1.1.6.	Working pressures shall be assessed in accordance with the applicable technical standard(s). *Note: it is expected that this assessment is undertaken with consideration for the other Elements present in the Heat Network.*	TS1 1.6.1 TS1 1.6.2 TS1 1.6.3 TS1 1.6.4 TS1 1.6.5 TS1 1.16.1	CD-S1-E03

Technical Requirement		Applicable technical standard(s)	Evidence Requirement(s)
1.1.7.	The lifecycle costs (CapEx, OpEx, RepEx) and revenues for all Communal Distribution Network components, including the Metering and Monitoring System, shall be assessed in accordance with the applicable technical standard(s) and used to inform design decisions.	TS1 1.7.2 TS1 1.7.13 TS1 1.7.17 TS1 1.12.2 TS1 1.15.1 TS1 1.15.2	CD-S1-E10
1.1.8.	A Resilience Strategy shall be developed in accordance with the applicable technical standard(s). *Note: it is expected that this assessment is undertaken with consideration for the other Elements present in the Heat Network.*	TS1 1.9.1 TS1 1.9.2	CD-S1-E12
1.1.9.	A repair and replacement strategy shall be developed in accordance with the applicable technical standard(s). The strategy shall include: • estimated timeframe for replacement of major plant and equipment within the Communal Distribution Network to support long-term planning; • consideration of long-term carbon-reduction implications of repair and replacement decisions.	TS1 1.15.2 TS1 1.15.3	CD-S1-E11
1.1.10.	A Water Quality Statement shall be produced in accordance with the applicable technical standard(s). *Note: it is expected that this is undertaken with consideration for the other Elements present in the Heat Network.*	TS1 1.11.1	CD-S1-E13
1.1.11.	An initial specification for the pipework insulation shall be determined in accordance with the applicable technical standard(s).	TS1 1.13.1	CD-S1-E08
1.1.12.	Network heat losses shall be estimated in accordance with the applicable technical standard(s).	TS1 1.13.1 TS1 1.13.2	CD-S1-E08

Technical Requirement		Applicable technical standard(s)	Evidence Requirement(s)
1.1.13.	The Technical Parameters Schedule shall be completed with accurate information and references to relevant documentation.		CD-S1-E14

Table 2: Technical Requirements for the Communal Distribution Network at Stage 1: Concept Design

1.2. Performance Monitoring Requirements

The applicable Performance Monitoring Requirements in Table 3 shall be fulfilled.

Performance Monitoring Requirement		Applicable technical standard(s)	Evidence Requirement(s)
1.2.1.	A Metering and Monitoring Strategy shall be developed in accordance with the applicable technical standard(s).	TS1 1.12.1	CD-S1-E15
1.2.2.	The KPIs to be measured and reported for the Communal Distribution Network shall be identified. A KPI Schedule shall be produced as part of the Metering and Monitoring Strategy. The KPI Schedule shall contain: 1. the identified applicable KPIs to be measured and reported by the Metering and Monitoring System; 2. the thresholds for each KPI in operation (based on the level of information available at this stage); 3. the Monitoring Points required to measure each KPI.	TS1 1.12.1 MMS 4.1.12	CD-S1-E16
1.2.3.	The Monitoring Points required for measuring the applicable Communal Distribution Network KPIs shall be identified and included in a Monitoring Points Schedule, as part of the Metering and Monitoring Strategy. The Monitoring Points Schedule shall contain: 1. the required Monitoring Points to measure KPIs; 2. the location of each Monitoring Point (which identifies the applicable Element); 3. a unique ID code, which follows a determined naming convention.	TS1 1.12.1 MMS 4.1.13	CD-S1-E16 CD-S1-E17 CD-S1-E18

Performance Monitoring Requirement		Applicable technical standard(s)	Evidence Requirement(s)
1.2.4.	Schematic(s) shall be produced which contain each Monitoring Point in the required location, each labelled with its unique ID code.	TS1 1.12.1 MMS 4.1.14	CD-S1-E05 CD-S1-E18

Table 3: Performance Monitoring Requirements for the Communal Distribution Network at Stage 1: Concept Design

1.3. Key Failures

The applicable Key Failures listed in Table 4 shall not be present.

Key Failure		Outcome to avoid	Evidence Requirement(s)
1.3.1.	Lack of architectural consideration for the following: 1. spatial requirements within riser cupboards and ceiling voids to ensure insulation requirements will be met; 2. building / floor plate layouts to accommodate multi-riser Communal Distribution Networks; 3. where the Consumer Connection (e.g. HIU) is located within a dwelling, locating this within close proximity of corridor / riser cupboard.	Inadequate space being designated for insulation thicknesses, preventing the specified insulation thickness from being installed, increasing heat losses. Pipework routing being longer than necessary, increasing CapEx costs and heat losses.	CD-S1-E04 CD-S1-E05 CD-S1-E06
1.3.2.	Network routing assessment not undertaken to minimise pipework length.	Long lateral pipework, increasing total pipework length and heat losses.	CD-S1-E04 CD-S1-E05 CD-S1-E06
1.3.3.	Inappropriate selection of temperature profiles.	Network temperatures being set higher than necessary to deliver heat to consumers, resulting in higher heat losses and increased energy consumption.	CD-S1-E02
1.3.4.	Unnecessary hydraulic breaks (i.e. plate heat exchangers that are not required for either contractual separation or pressure breaks).	Hydraulic breaks specified where not necessary, increasing complexity, CapEx, OpEx etc.	CD-S1-E03 CD-S1-E05

Key Failure		Outcome to avoid	Evidence Requirement(s)
1.3.5.	Lack of system working pressure assessment undertaken, specifically in tall buildings.	Working pressures within network exceeding pressure ratings of equipment during operation. In addition, high working pressures within dwellings causing health and safety risks.	CD-S1-E03 CD-S1-E05
1.3.6.	Inappropriate and/or inaccurate methodology used to estimate pipe sizes.	Oversized or less often, undersized pipework. Oversized pipework increases CapEx and heat losses.	CD-S1-E05 CD-S1-E09
1.3.7.	Insulation material and thickness assumed at this stage not sufficient to meet heat loss requirements.	High network heat losses as a result of insufficient insulation specification.	CD-S1-E08
1.3.8.	Monitoring Points required to measure KPIs not identified at Concept Design stage, impacting the ability to accurately estimate spatial and access requirements.	Spatial footprints being developed which do not consider space and access requirements for expected Monitoring Points (e.g. block level thermal energy meters).	CD-S1-E06 CD-S1-E16 CD-S1-E17
1.3.9.	Spatial requirements not accurately determined or inappropriate. Spatial requirements are to consider: 1. space required for all equipment (thermal energy meters, ancillary equipment etc.); 2. maintenance requirements for all equipment; 3. equipment replacement requirements; 4. requirements for insulation (ensuring enough space for required thickness).	As changes to spatial allocations are limited once into the Developed Design and Technical Design stages, the assessment at the Concept Design stage needs to be accurately undertaken to avoid underestimating spatial requirements, which then results in a lack of space for equipment, insulation requirements, maintenance requirements, and health and safety requirements.	CD-S1-E06

Key Failure		Outcome to avoid	Evidence Requirement(s)
1.3.10.	Communal Distribution Network bypasses present, for example: 1. top of riser bypasses; 2. end of lateral bypasses; 3. permanent/fixed flushing bypasses (as opposed to temporary flushing points).	Distribution Network bypasses present, and open or controlled in a way that increases network flow rate or increases return temperature.	CD-S1-E05 CD-S1-E07

Table 4: Key Failures for the Communal Distribution Network at Stage 1: Concept Design

1.4. Evidence Requirements

The applicable Evidence Items listed in Table 5 shall be provided to demonstrate fulfilment with the Technical Requirements, Performance Monitoring Requirements, and avoidance of Key Failures.

Evidence Item		Detailed description and requirements
CD-S1-E01	Peak and annual heat demand calculations and schedule	Methodology, calculations, and assumptions used to estimate peak and annual heat demands shall be provided. To include a schedule outlining the expected peak and annual heat demand for the Communal Distribution Network. For annual heat demands, rationale for occupancy patterns shall be outlined.
CD-S1-E02	System operating temperature assessment	Report highlighting the operating temperature design criteria. This shall include rationale for the temperatures specified.
CD-S1-E03	System pressure assessment	Assessment of working pressures in the system. Shall include: • calculation of the System Maximum Working Pressure; • calculation of the Local Maximum Working Pressure; • identification of the risks that arise as a result of calculated working pressures; • assessment of the likelihood and impact of the identified risk; • mitigation of the risks posed by working pressures (where appropriate).
CD-S1-E04	Communal Distribution Network routing assessment	Shall outline justification for route of the Communal Distribution Network within building to Consumer Connections.
CD-S1-E05	Schematic(s)	Communal Distribution Network schematic(s) to the detail required by RIBA Stage 2 (RIBA, 2020) as a minimum. The schematic(s), or a separate schematic(s), shall include the locations of the Monitoring Points as required by the Metering and Monitoring Strategy, with the unique ID code included.
CD-S1-E06	Drawing(s)	Communal Distribution Network drawing(s) to the detail expected at RIBA Stage 2 (RIBA, 2020) as a minimum. This shall include layouts, plan, and elevation drawings.

Evidence Item		Detailed description and requirements
		The drawings, or a separate drawing, shall include the locations of the Monitoring Points as required by the Metering and Monitoring strategy, with the unique ID code included.
CD-S1-E07	Communal Distribution Network keep-warm strategy	Shall outline an indicative overview of the keep-warm strategy selected for the Heat Network.
CD-S1-E08	Insulation thickness selection and heat loss calculations	Shall outline the selected insulation thickness with justification and high-level calculations of Communal Distribution heat losses.
CD-S1-E09	Pipe sizing calculations	Shall outline calculations, methodology and assumptions used to estimate size of pipework.
CD-S1-E10	Cost Model	A cost model and assessment which contains lifecycle costings (CapEx, OpEx, RepEx etc.) used to inform design decisions. All inputs and assumptions shall be outlined. This may be in the form of a techno-economic model.
CD-S1-E11	Repair and Replacement Strategy	Shall include how repair and replacement is considered within the Heat Network to aid justification of routing, access, spatial requirements, and Communal Distribution Network location.
CD-S1-E12	Resilience Strategy	Shall outline the Resilience Strategy for the Heat Network, including: • the key threats to system and equipment failure; • the risk score of each threat without resilience measures in place; • the redundancy and recovery measures implemented across the system; • the risk score of each threat with resilience measures in place; and • any residual risks associated with each threat. Shall demonstrate that suitable provision is made for the required spatial allowances and connection points necessary to successfully implement the Resilience Strategy.
CD-S1-E13	Water Quality Statement	Shall include: • the type of water quality system to be followed; • preliminary selection of fill water source;

Evidence Item		Detailed description and requirements
		• preliminary selection of the material of plant, equipment, and distribution pipework; • initial performance specification for water treatment and conditioning; and • a spatial assessment of the plant room considering the spatial dimensions and maintenance requirements for water quality equipment, transportation and storage of chemicals and equipment and plant room accessibility requirements.
CD-S1-E14	Technical Parameters Schedule	Schedule which outlines all technical parameters in one location, with reference to applicable documents.
CD-S1-E15	Metering and Monitoring Strategy	The Metering and Monitoring Strategy shall contain a high-level description of how data required to calculate KPIs will be measured, extracted, recorded, and stored at the required read frequency, how the raw data will be transformed, and how KPIs will be calculated and reported. The strategy shall also include: 1. a KPI Schedule (item CD-S1-E16); 2. a Monitoring Points Schedule (item CD-S1-E17); 3. a Monitoring Points unique ID code naming methodology (item CD-S1-E18); 4. a Schematic with labelled Monitoring Points.
CD-S1-E16	KPI Schedule	A schedule of all KPIs required to be measured by the Metering and Monitoring System. The KPI Schedule shall contain: 1. the identified applicable KPIs to be measured and reported by the Metering and Monitoring System; 2. the thresholds for each KPI in operation (based on the level of information available at this stage); 3. the Monitoring Points required to measure each KPI.
CD-S1-E17	Monitoring Points Schedule	A schedule of all Monitoring Points required to measure KPIs. The Monitoring Points Schedule shall contain: 1. the required Monitoring Points to measure KPIs;

Evidence Item		Detailed description and requirements
		2. the location of each Monitoring Point (which identifies the applicable Element); 3. a unique ID code, which follows a determined naming convention.
CD-S1-E18	Unique ID code naming convention	Methodology used to label each Monitoring Point with a unique ID code.

Table 5: Evidence Requirements for the Communal Distribution Network at Stage 1: Concept Design