Heat Network Technical Assurance Scheme

Existing Heat Networks

Technical Specification

Overview

HNTAS-EX-TS-XX-M0

Version History

Revision	Notes	Date
V0.1	Draft issue	17/12/25

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.

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 provides an overview of the series of Technical Specifications applicable to all Elements within an Existing Heat Network.

This document sits within a series of Technical Specifications for an Existing Heat Network 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 – Existing Heat Networks – Scheme Rules – Assessment Regime (HNTAS-EX-SR-XX-AS) document.

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Shadow Code Management Committee

During the development of HNTAS, a Shadow Code Management Committee has been established, with representation from the Department for Energy Security & Net Zero (DESNZ), the Scottish Government, Ofgem and Heat Trust. The following items have been presented to, and approved by, this committee:

- Structure of Code documents for Existing Heat Networks
- Approach to Technical, Performance Monitoring and Data Protection and Smart Metering Requirements at each Milestone
- KPIs and thresholds at each Milestone

Code Document Structure

Technical Specifications

Document Type	Element		Milestone					
			Overview	Milestone 2	Milestone 3A	Milestone 3B	Milestone 4	Milestone 5
			M0	M2	M3A	M3B	M4	
Technical Specification	Energy Centre	EC	HNTAS-EX-TS-XX-M0	HNTAS-EX-TS-EC-M2	HNTAS-EX-TS-XX-M3A	N/A	HNTAS-EX-TS-EC-M4	HNTAS-NB-TS-EC-P4
	District Distribution Network	DD		HNTAS-EX-TS-DD-M2		N/A	HNTAS-EX-TS-DD-M4	HNTAS-NB-TS-DD-P4
	Substation	SS		HNTAS-EX-TS-SS-M2		N/A	HNTAS-EX-TS-SS-M4	HNTAS-NB-TS-SS-P4
	Communal Distribution Network	CD		HNTAS-EX-TS-CD-M2		N/A	HNTAS-EX-TS-CD-M4	HNTAS-NB-TS-CD-P4
	Consumer Connection	CC		HNTAS-EX-TS-CC-M2		HNTAS-EX-TS-CC-M3B	HNTAS-EX-TS-CC-M4	HNTAS-NB-TS-CC-P4

Table 1: Existing Network Technical Specification structure

Scope

This document provides an overview of the series of Technical Specifications applicable to all Elements within an Existing Heat Network. All Elements are defined in Section 1 below.

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 – Existing Heat Networks – Scheme Rules – Assessment Regime (HNTAS-EX-SR-XX-AS)

Informative references

There are no informative references in this document.

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.

Introduction

HNTAS is a performance-based assurance scheme, which contains impartial assessment and independent certification, to ensure that Heat Network performance outcomes are achieved, and maintained.

An impartial assessment is to be made with regards to claims made by a Responsible Person as to whether HNTAS Requirements have been fulfilled, and Key Performance Indicators (KPIs) will be achieved (validation) or have been achieved (verification), for identifiable Elements of a Heat Network.

The HNTAS Requirements to be fulfilled are contained within Technical Specifications.

The HNTAS Requirements consist of the following technical obligations:

- The Technical Requirements to be met
- The Performance Monitoring Requirements to be met
- The Data Protection and Smart Metering Requirements to be met
- The Key Failures to be avoided
- The Evidence Requirements to be provided, to demonstrate conformity with HNTAS Requirements
- The Key Performance Indicators to be reported on and thresholds to be met
- The Monitoring Points required for the measurement of Key Performance Indicators

There are separate Technical Specifications for Heat Networks Elements at distinct Milestones in the Existing Regime, as highlighted in Table 1.

This document specifically provides an overview of the series of Technical Specifications for an Existing Heat Network. It contains the following:

- A description of the scope of all Heat Network Elements
- An outline of the structure of the series of Technical Specification and of each individual Technical Specification document

More information on HNTAS assessment can be found within the Heat Network Technical Assurance Scheme – Existing Heat Networks – Scheme Rules – Assessment Regime (HNTAS-EX-SR-XX-AS) document.

1. Element Definitions

A detailed definition of all HNTAS Elements in an Existing Heat Network are presented in the Sections below.

1.1. Energy Centre

An Energy Centre is defined as a plant room that contains heat generation equipment; and/or equipment connecting to an energy source; or a Substation which contains heat generation equipment (e.g. Building Connection with heat pumps or top-up boilers).

An Energy Centre typically contains heat generation equipment (e.g. heat pumps, CHPs, chillers), top-up generation equipment (e.g. boilers), plate heat exchangers (PHE), pumps, expansion and pressurisation units, thermal storage, water quality equipment, BMS / control equipment, strainers, control valves, and thermal energy meters.

Where the heat generation is contained in a separate location to the main plant room, both areas are classed as the Energy Centre, despite there being a physical separation. Examples of this include rooftop heat generation plant with separate plantroom containing all other items of equipment (pumps, thermal stores, pressurisation unit etc.). The pipework connecting these areas shall fulfil the applicable Distribution Network requirements. For example, where there is external pipework connecting these two areas, District Distribution Network Technical Requirements shall be fulfilled. Where the pipework is contained within the building, Communal Distribution Network Technical Requirements shall be fulfilled.

Where the Energy Centre is connecting to an external energy source (for example, a waste heat source), the external energy source is not within scope of this Technical Specification. The scope of this Technical Specification starts from the equipment connecting the plant room to the energy source, e.g. plate heat exchanger.

Where there is a connection between Distribution Networks which contains heat generation equipment (e.g. top up boiler), this would be defined as an Energy Centre rather than a Substation.

The Energy Centre boundary for the purpose of measuring performance, via Key Performance Indicators, is determined by the overall Energy Centre Monitoring Point (EC3), as outlined in Figure 1.

The physical boundary of the Energy Centre, for where the Technical Requirements in this Technical Specification apply, may not be the same as the performance boundary defined above. The physical boundary may be determined by physical barriers (e.g. walls) or contractual relationships. It is expected that the physical boundary and performance boundary are similar. Pipework downstream of the boundary will fall under the specific Distribution Network (either District Distribution Network or Communal Distribution Network) or Consumer Heat System (where the Energy Centre is a Building Connection containing heat generation).

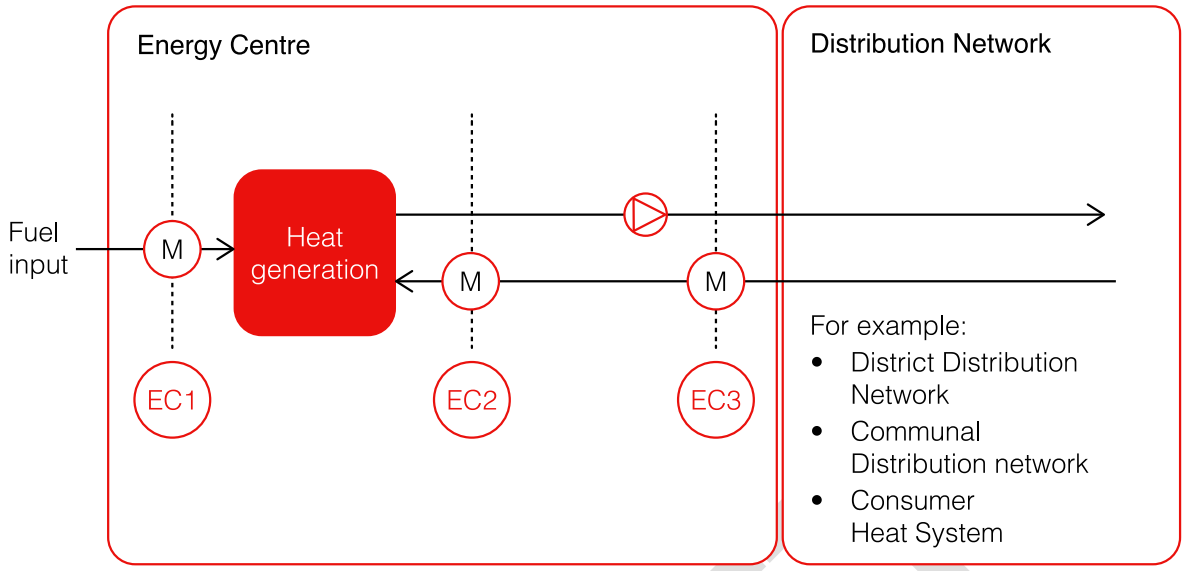

Figure 1: Illustrative drawing of Energy Centre boundary

1.1.1. Equipment in scope of Element

The following equipment is within scope of the Energy Centre Element:

- Heat generation equipment (boilers, heat pumps etc.)
- Heat exchange equipment (plate heat exchangers)
- Pressurisation and expansion equipment (pressurisation unit, expansion vessel)
- Water quality equipment
  - Air and dirt separators
  - Vacuum degassers
  - Dosing pots
  - Side stream filtration units
  - Online water quality monitoring equipment
  - Corrosion prevention equipment (e.g. coupons)
  - Strainers
  - Water softeners
- Pumps
  - Network distribution pumps
  - Shunt pumps
- Thermal storage and buffer vessels
- Pipework
- Pipework expansion provision
- Insulation

- Control and field equipment (valves and actuators, sensors, switches)
- Ancillary equipment
  - Valves, test points, drain points, air vents, orifice plates
- BMS panel
- Metering and Monitoring Systems
  - Monitoring Points (meters and sensors)
  - Automatic and Remote Monitoring Systems

1.2. District Distribution Network

A District Distribution Network is defined as any pipework system that is not within a building and distributes thermal energy from one location within a Heat Network to another. For example, distributing thermal energy from an Energy Centre to a Building Connection underground.

The District Distribution Network is applicable to buried pipework underground and above ground pipework which is external to a building. It typically contains pipework, insulation, valves, and other ancillary equipment.

The District Distribution Network boundary is defined by the initiation and termination points, which are project specific. The initiation point may be an Energy Centre or Substation (e.g. Plot Connection), and the termination point may be a Substation (e.g. Building Connection or Plot Connection) or Consumer Connection.

For the purposes of measuring performance, via Key Performance Indicators, the boundary is determined by the initiation and termination point Monitoring Point locations (DD1 and DD2) as indicated in Figure 2.

The physical boundary of the District Distribution Network, for where the Technical Requirements apply, may be determined by physical barriers (e.g. building/ground entry points) or contractual relationships.

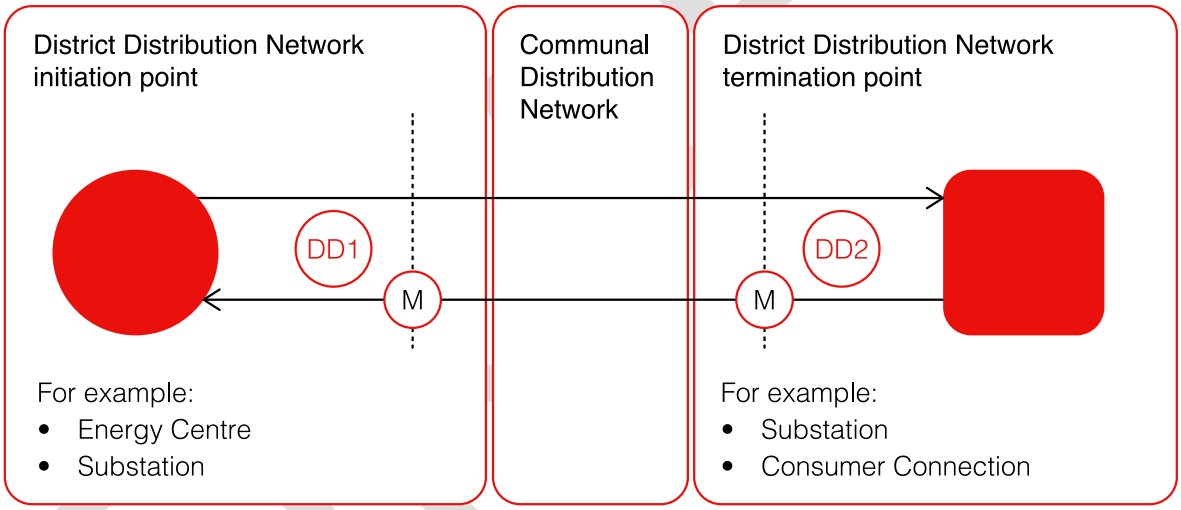

Figure 2: Illustrative drawing of District Distribution Network boundary

1.2.1. Equipment in scope of Element

The following equipment is within scope of the District Distribution Network Element:

- Pipework
- Pipework expansion provision
- Insulation
- Valve chambers
- Control and field equipment (valves and actuators, sensors, switches)
- Ancillary equipment
  - Valves, test points, drain points, air vents, orifice plates

- Surveillance systems
- Metering and Monitoring Systems
  - Monitoring Points (meters and sensors)
  - Automatic and Remote Monitoring Systems

1.3. Substation

A Substation is defined as a connection between Distribution Networks, which contains an exchange of thermal energy (e.g. via plate heat exchangers), together with requisite ancillary equipment.

For example:

- District Distribution Network serving District Distribution Network (e.g. district pumping station);
- District Distribution Network serving Communal Distribution Network (e.g. Building Connection)
- Communal Distribution Network serving Communal Distribution Network (e.g. pressure break in high riser building),

or a connection between a Distribution Network and Consumer Heat System, where the instantaneous hot water system is greater than 70 kW and/or space heating system is larger than 20 kW.

A Substation typically contains plate heat exchangers, pumps, expansion and pressurisation equipment, water quality equipment, strainers, thermal energy meters, and control valves.

Where there is a connection between Distribution Networks which contains heat generation equipment (e.g. top up boiler) in addition to the above, this would not be defined as a Substation. This arrangement would be subject to Technical Requirements under the Energy Centre Element.

Where there is a connection between Distribution Networks which only contains ancillary equipment, such as valves and thermal energy meters, and does not contain either pumps or plate heat exchangers and equipment required for a new hydraulically separated circuit (e.g. water quality equipment, pressurisation equipment), this would not be defined as a Substation. This arrangement would be subject to Technical Requirements under the Communal Distribution Network Element.

The Substation boundary for the purposes of measuring performance, via Key Performance Indicators, is determined by the intake and offtake Monitoring Point location (SS1 and SS2) as indicated in Figure 3.

The physical boundary of the Substation, for where the Technical Requirements apply, may not be the same as the performance boundary defined above. The physical boundary may be determined by physical barriers (e.g. walls) or contractual relationships. It is expected that the physical boundary and performance boundary are similar.

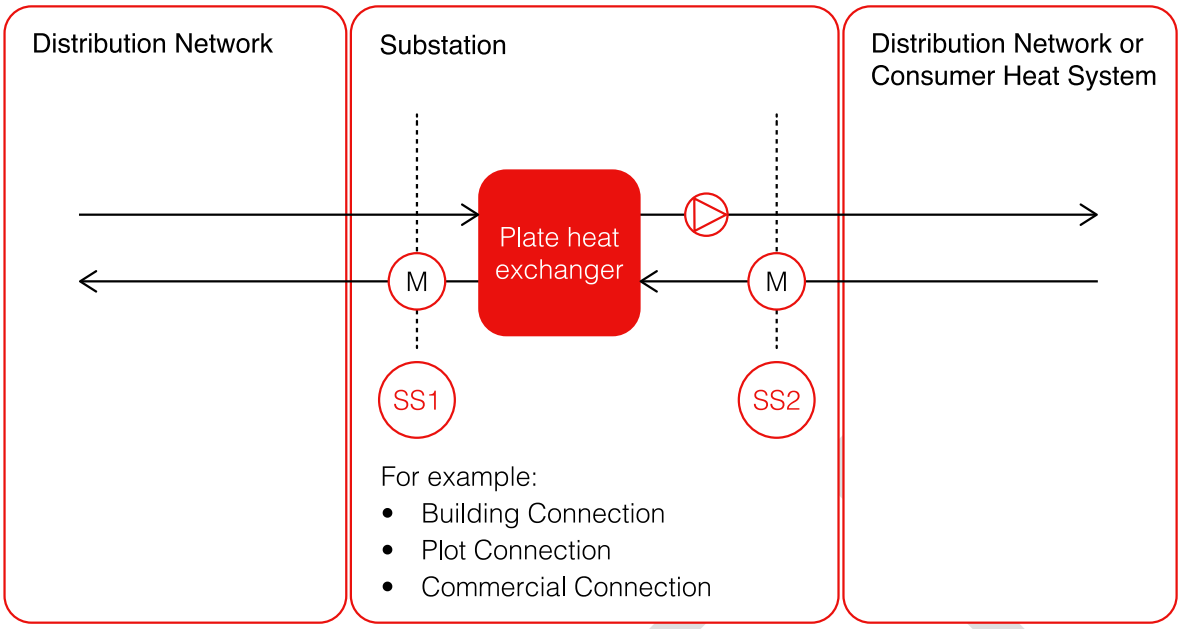

Figure 3: Illustrative drawing of Substation boundary

1.3.1. Equipment in scope of Element

The following equipment is within scope of the Substation Element:

- Heat exchange equipment (plate heat exchangers)
- Pressurisation and expansion equipment (pressurisation unit, expansion vessel)
- Water quality equipment
  - Air and dirt separators
  - Vacuum degassers
  - Dosing pots
  - Side stream filtration units
  - Online water quality monitoring equipment
  - Corrosion prevention equipment (e.g. coupons)
  - Strainers
  - Water softeners
- Pumps
  - Network distribution pumps
- Pipework
- Pipework expansion provision
- Insulation
- Control and field equipment (valves and actuators, sensors, switches)
- Ancillary equipment

  - Valves, test points, drain points, air vents, orifice plates
- BMS panel
- Metering and Monitoring Systems
  - Monitoring Points (meters and sensors)
  - Automatic and Remote Monitoring Systems

1.4. Communal Distribution Network

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. It typically contains pipework, insulation, valves, and other ancillary equipment.

The Communal Distribution Network boundary is defined by the initiation and termination points. For example, the Communal Distribution Network would start following the Energy Centre, Substation or Building Connection exit point and terminate at the Consumer Connection entry point.

This would also be applicable where District Distribution Network pipework enters a building (and there is no hydraulic break creating a Communal Distribution Network). The Communal Distribution Network would start at where the District Distribution Network pipework enters the building and terminate at the Consumer Connection entry point.

Circuits of heat emitters, or a single heat emitter, served directly from a Communal Heat Network shall be treated as a Consumer Heat System and are not covered within this Element.

For the purposes of measuring performance, via Key Performance Indicators, the boundary is determined by the initiation and termination point Monitoring Point locations (CD1 and CD2) as indicated in Figure 4.

The physical boundary of the Communal Distribution Network, for where the Technical Requirements apply, may be determined by physical barriers (e.g. building/ground entry points, connection to Consumer Connection) or contractual relationships.

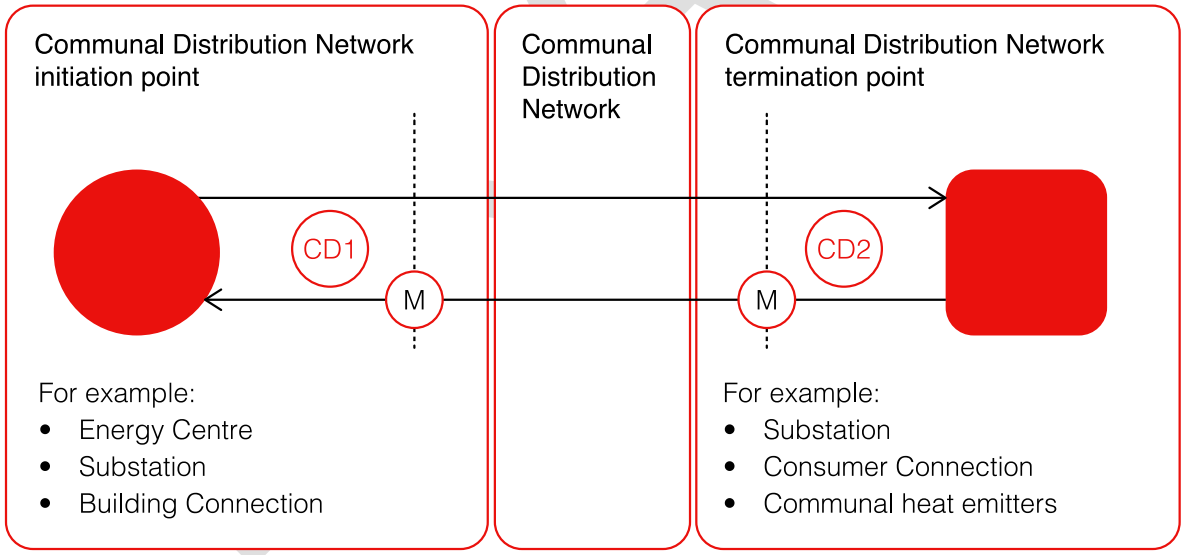

Figure 4: Illustrative drawing of Communal Distribution Network boundary

1.4.1. Equipment in scope of Element

The following equipment is within scope of the Communal Distribution Network Element:

- Pipework
- Pipework expansion provision
- Insulation

- Control and field equipment (valves and actuators, sensors, switches)
- Ancillary equipment
  - Valves, test points, drain points, air vents, orifice plates
- Metering and Monitoring Systems
  - Monitoring Points (meters and sensors)
  - Automatic and Remote Monitoring Systems

1.5. Consumer Connection

A Consumer Connection is defined as a connection between a Distribution Network and a single Consumer Heat System, where the instantaneous hot water system is ≤ 70 kW and/or the heating/cooling system is ≤ 20 kW. A Consumer Connection typically includes HIUs and ancillary hot water storage (where applicable), direct hot water storage, dwelling level heat pumps and ancillary hot water storage (where applicable), CIUs, meters and monitoring equipment and other ancillary equipment.

A Consumer Connection is applicable to residential and commercial heat interface equipment and individual heat pumps, where the maximum instantaneous hot water load is ≤ 70 kW and space heating load is ≤ 20 kW. Where the capacity exceeds these limits, the Substation Technical Specification is applicable.

Examples of a Consumer Connection include Heat Interface Units (HIUs) with direct or indirect heating, Cooling Interface Units (CIUs), potable stored hot water systems (indirect cylinders), and individual heat pumps.

Examples of Consumer Connections are illustrated in Figure 6, with boundaries to surrounding Elements.

The Consumer Connection boundary, for the purpose of measuring performance, via Key Performance Indicators, is determined by the Consumer Connection Boundary Monitoring Point location (CC1) as illustrated in Figure 5.

The physical boundary of the Consumer Connection, for where the Technical Requirements apply, will be determined by physical barriers (e.g. Equipment boundary or isolation valves) or contractual relationships.

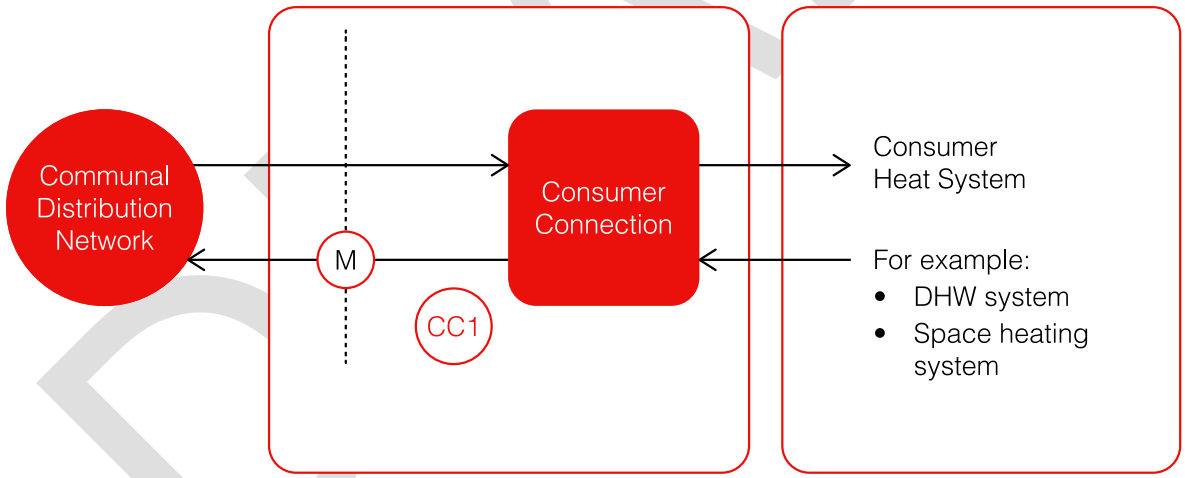

Figure 5: Illustrative drawing of Consumer Connection boundary

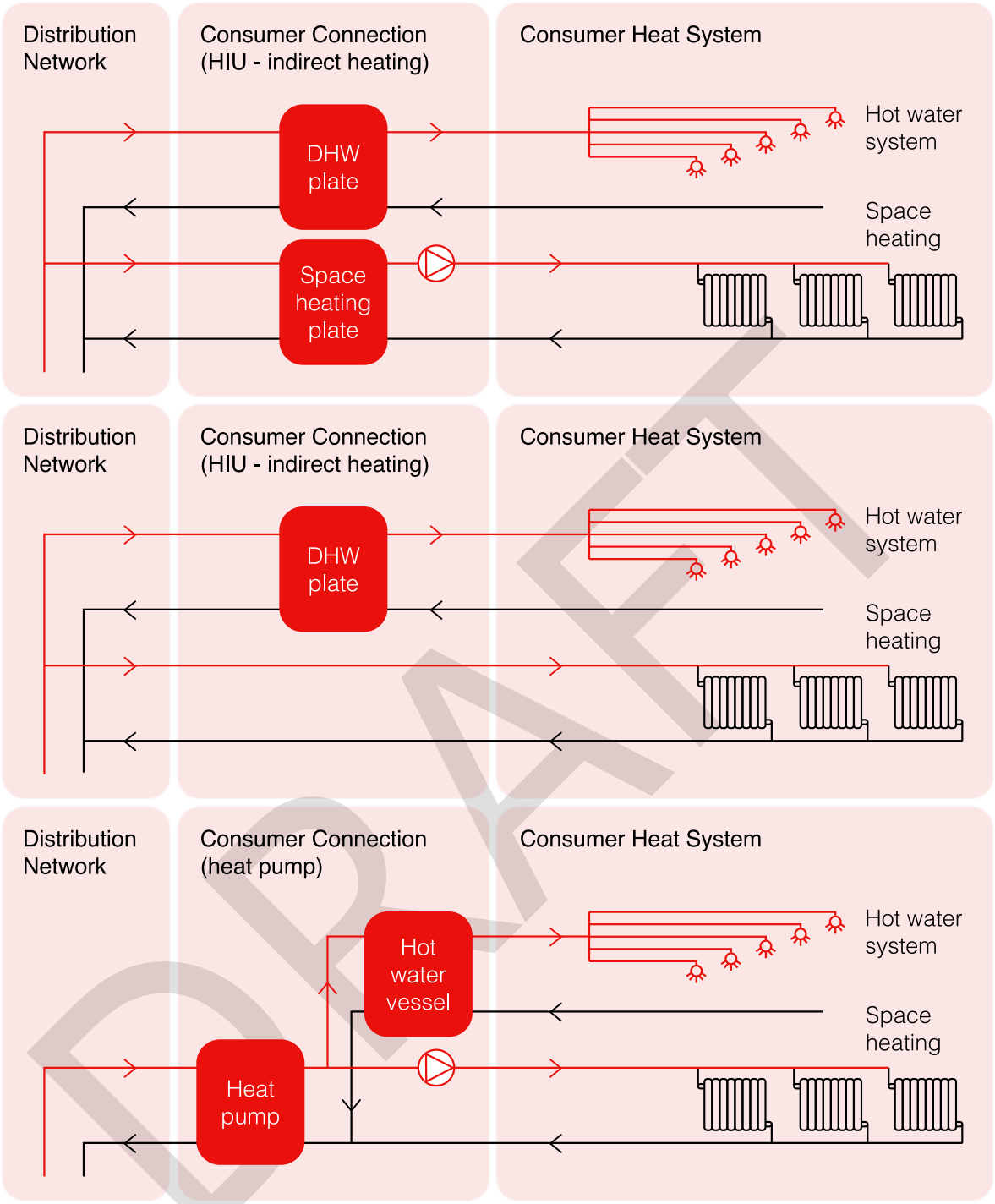

Figure 6: Illustrative drawing of Consumer Connection examples – indirect space heating (top), direct space heating (middle), heat pump system (bottom)

1.5.1. Equipment in scope of Element

The following equipment is within scope of the Energy Centre Element:

- Heat exchange equipment (HIUs, CIUs, heat pumps)
- Storage equipment (hot water cylinder)

- Pumps (where not contained within heat exchange equipment)
- Insulation
- Control and field equipment (valves and actuators, sensors, switches)
- Ancillary equipment
  - Valves, test points, drain points, air vents, orifice plates
- Metering and Monitoring Systems
  - Monitoring Points (meters and sensors)
  - Automatic and Remote Monitoring Systems

2. Technical Specification Structure

2.1. Structure of Technical Specification: Series

This document provides an overview of the Technical Specifications for an Existing Heat Network.

This document sits within a series of Technical Specifications for all Elements in an Existing Heat Network.

For a Consumer Connection in an Existing Heat Network, this series contains 5 separate documents for distinct Milestones in the Existing Heat Network assurance pathway. Each Technical Specification contains the HNTAS Requirements to be met by the Consumer Connection at the applicable Milestone, this is illustrated in Figure 7.

For all other Elements in an Existing Heat Network, this series contains 4 separate documents for distinct Milestones in the Existing Regime, this is illustrated in Figure 8.

The requirements of Milestone 3A are not Element specific and apply to an entire Heat Network, this is detailed further in Section 2.3.

The requirements of Milestone 3B are only applicable to the Consumer Connection Element, this is detailed further in Section 2.4.

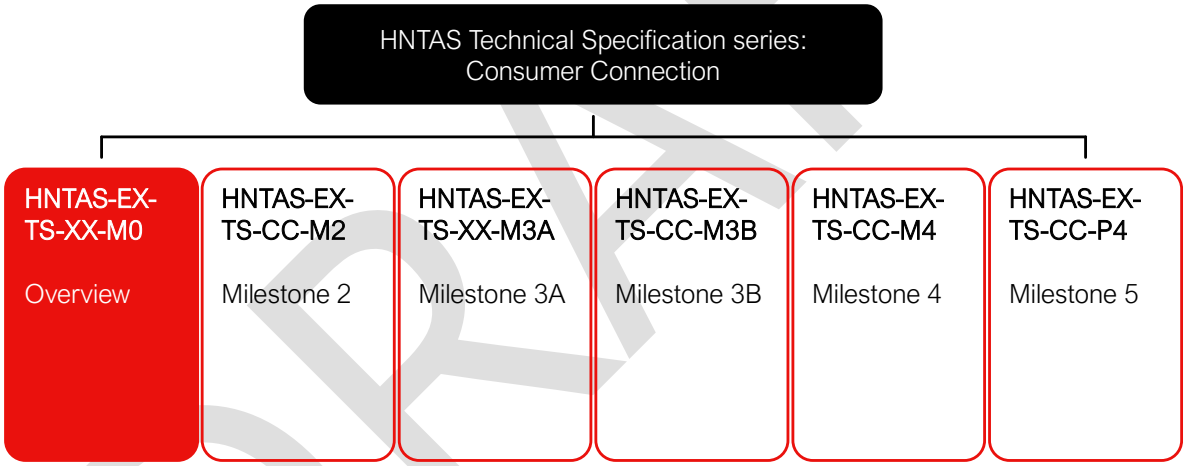

Figure 7: Illustration of Technical Specification series for the Consumer Connection

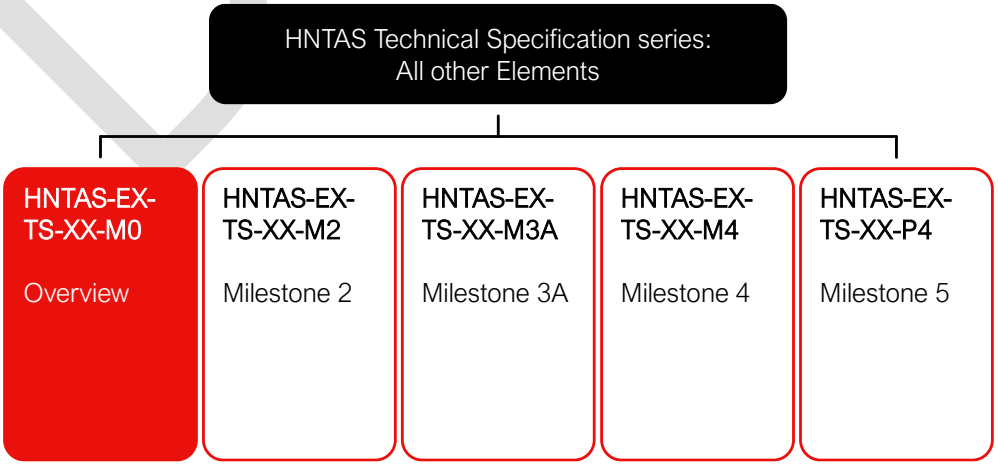

Figure 8: Illustration of Technical Specification series for all other Elements

2.2. Structure of Technical Specifications: Milestone 2 and 4

The Technical Specifications for an Element at Milestones 2 and 4 are split into the same distinct sections.

Each section contains HNTAS Requirements to be met at the relevant Milestone, this consists of the following:

- The Technical Requirements to be met
- The Performance Monitoring Requirements to be met
- The Data Protection and Smart Metering Requirements to be met
- The Key Failures to be avoided
- The Evidence Requirements to be provided, to demonstrate conformity with HNTAS Requirements
- The Key Performance Indicators to be reported on and thresholds to be met
- The Monitoring Points required for the measurement of Key Performance Indicators

2.2.1. Technical Requirements Section

Within each Technical Requirements section, a table is presented which contains a list of the HNTAS Technical Requirements and any applicable technical standards referenced that must be achieved to meet the requirement. For each HNTAS Technical Requirement a reference to the expected evidence item has been outlined.

All Technical Requirements are based on industry documentation and predominantly reference the Heat Network Technical Standard (TS1) and Heat Network Metering and Monitoring Standard (MMS).

2.2.2. Performance Monitoring Requirements Section

Within this section, the requirements in relation to Key Performance Indicators and the Metering and Monitoring System are outlined.

It is expected that the Metering and Monitoring System for an Element will also cover multiple other Elements within a Heat Network. For example, for a communal Heat Network, it would be likely that the Metering and Monitoring System covers the Energy Centre, Communal Distribution Network, and all Consumer Connections. As a result, the evidence provided for the Metering and Monitoring System will likely contain multiple Elements.

Whilst the evidence can be provided which covers multiple Elements, all KPIs are to be assessed on an Element basis.

2.2.3. Data Protection and Smart Metering Requirements Section

This section is only applicable to a Consumer Connection Element.

Within this section, the requirements in relation to:

- the obligations of a Responsible Party to protect Personal Data; and
- the software, infrastructure and associated equipment that enables two way communication between Heat Network suppliers and consumers,

are outlined.

Requirements are based on industry documentation and reference the Heat Network Metering and Monitoring Standard (MMS).

2.2.4. Key Failures Section

Within each Key Failures section, a table is presented which contains a list of Key Failures, the outcome to avoid, and a reference to the expected evidence item to demonstrate that the key Failure is or has been avoided.

2.2.5. Evidence Requirements Section

Within each Evidence Requirements section, the expected evidence item, which is referred to within Key Failures and Technical Requirements is detailed.

A table is presented which contains a description and the requirements of each evidence item to provide clarity as to what evidence is expected to prove fulfilment of HNTAS Requirements.

The evidence is expected to be appropriate for the scale of Heat Network and project specifics.

It is understood that the evidence items referenced in each table may be presented in different formats or multiple evidence requirements may be contained together within larger reports.

It is also expected that evidence items may be applicable to multiple Elements across the Heat Network. Therefore, evidence does not need to be provided on an Element specific basis where it covers multiple Elements.

Further evidence may be required by the Assessor to demonstrate conformity with HNTAS Requirements.

2.2.6. Key Performance Indicators Section

The Key Performance Indicators (KPIs) to be reported on and thresholds to be met for an Element in an Existing Heat Network differ between Milestones 2, 3B and 4. As such, within each KPI section a table is presented which contains the KPI thresholds to be met and reported by the Element at the relevant Milestone.

A minimum period of 3 months worth of KPI measurement is required at Milestone 2, 3B and 4 to demonstrate conformity.

2.2.7. Monitoring Points Section

Within each Monitoring Points section, a table is presented which contains the required Monitoring Points for the measurement of KPIs within an Element, along with the data required from each Monitoring Point at the relevant Milestone.

2.3. Structure of Technical Specifications: Milestone 3A

Within the assurance pathway for Existing Heat Networks, Milestone 3A involves the production and assessment of the Performance Improvement Plan (PIP). This plan details and evidences how a Responsible Party intends to improve network performance and reliability to the thresholds required to achieve Certification (Milestone 4).

To minimise complexity, the PIP is to be completed on a network-level, including detail on all applicable Elements, rather than on an individual Element basis.

Within the PIP, the individual Elements within a network shall be identified, to ensure consistency with the rest of the Scheme.

This Technical Specification consists of the following:

- The Technical Requirements to be met
- The Evidence Requirements to be provided, to demonstrate conformity with the Technical Requirements

2.4. Structure of Technical Specifications: Milestone 3B

The Milestone 3B Technical Specification is only applicable to a Consumer Connection Element.

The structure of this Technical Specification is as per Section 2.2.

2.5. Structure of Technical Specifications: Milestone 5

Within the assurance pathway for Existing Heat Networks, Milestone 5 involves the demonstration of continued conformity with Stage 7: Operation and Maintenance requirements, for a period of 2 years.

The Technical Specifications to be used to demonstrate conformity with Milestone 5 requirements are the New Build Phase 4: Operation Technical Specifications, as all of the:

- Technical Requirements to be met;
- Performance Monitoring Requirements to be met;
- Key Failures to be avoided; and
- Evidence Requirements to be provided,

are identical between Certificate 1 and Certificate 2 regardless of whether Elements are within the New Build Assurance Pathway or the Existing Network Assurance Pathway.

As such within this Technical Specification the details of each section are as per Section 2.2.

The KPI thresholds to be met by an Element within an Existing Heat Network at Milestone 5 are the same as at Milestone 4. This is detailed in the New Build Phase 4 Technical Specifications.

3. Statement of Applicability

The applicability of HNTAS Requirements within the Technical Specifications for an Element will depend on the specific Heat Network characteristics. This includes heat generation technology type, the typology of Heat Network, the temperature of the Heat Network.

At each assessment point a Statement of Applicability shall be produced, which determines the applicable HNTAS Requirements for the specific Heat Network.

Further requirements on the Statement of Applicability are outlined in the Heat Network Technical Assurance Scheme – Existing Heat Networks – Scheme Rules – Assessment Regime (HNTAS-EX-SR-XX-AS) document.