Heat Network Technical Assurance Scheme

Existing Heat Networks

Assessment Procedures

Substation

Milestone 4

HNTAS-EX-AP-SS-M4

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

These Assessment Procedures form 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 contains the Assessment Procedures for a Substation Element within an Existing Heat Network required at Milestone 4.

This document sits within a series of Assessment Procedures for a Substation, which features within a wider Code documentation structure, as outlined in Table 1.

These Assessment Procedures have 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.

Authors

Lucy Sherburn (FairHeat)

Jake Adamson (FairHeat)

Gareth Jones (FairHeat)

Joseph Shanley (FairHeat)

Tom Burton (FairHeat)

Technical Sub-Working Group Members

This group was engaged to produce the New Build Phase 4: Operation Substation Assessment Procedures, which was used as the foundation for producing this document.

Adam Al-Azki (Buro Happold)

Dimitrios Anthopoulos (Metropolitan)

Rob Boyer (AECOM)

James Gallimore (FairHeat)

Ewan Jures (WSP)

Gerry McDonnell (Vattenfall)

Ajay Pillai (SSE)

Neil Parry (Armstrong)

Georgia Pringle (Equans)

Christer Frennfelt (SWEP)

Ian Spencer (Vital Energi)

Paul Wightman (Danfoss)

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

Assessment Procedures

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

Table 1: Existing Network Assessment Procedures structure

Scope

This document specifies Assessment Procedures applicable for a Substation within an Existing Heat Network at Milestone 4.

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, or a connection between a Distribution Network and a single 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 detailed definition of the Substation is contained within the Heat Network Technical Assurance Scheme – Existing Heat Networks – Technical Specification – Overview (HNTAS-EX-TS-XX-M0) document.

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 Assurance Scheme – Existing Heat Networks – Scheme Rules – Assessment Regime (HNTAS-EX-SR-XX-AS)
- Heat Network Technical Assurance Scheme – Existing Heat Networks – Assessment Procedures – Overview (HNTAS-EX-AP-XX-M0)

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.

- ISO 17029: Conformity Assessment — General principles and requirements for validation and verification bodies (ISO, 2019)

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.

M4. Assessment Procedures for Milestone 4

M4.1. Assessment of Technical Requirements

For each HNTAS Technical Requirement, the Assessor shall follow the Assessment Procedures and minimum Level of Assessment specified in Table 2.

Technical Requirement	Minimum Level of Assessment	Assessment Procedure
M4.1.1.	4	Review the O&M Manual to confirm the expected documentation is present. Undertake a review of a sample number of items to ensure updated documentation has been included.
M4.1.2.	3	Review the PPM Schedule to ensure that expected items are present and that maintenance is scheduled to minimise disruption.
M4.1.3.	4	Undertake a sample check that the as-built Substation drawings (or other documentation) are reflective of the Substation in operation. Where applicable, undertake a sample check that updates to the as-built Substation drawings (or other documentation) have been made following any Assessed Works.
M4.1.4.	3	Review Document Storage System Statement to ensure that Heat Network documentation is being stored in a manner that facilitates the easy access of information for personnel carrying out operation and maintenance activities on the Substation.
M4.1.5.	4	Undertake a sample check of the Maintenance and Remedial Action Log to ensure maintenance has been carried out in line with the requirement for sampled items. Sample to include specific check that valves have been exercised and recorded within the Maintenance and Remedial Action Log.
M4.1.6.	3	Check photographic evidence of insulation condition to ensure it appears visually in accordance with the HNTAS requirement.
M4.1.7.	4	Undertake a check for a sample number of Operatives to ensure they have received specific training related to the activity being undertaken or previously undertaken.

Technical Requirement	Minimum Level of Assessment	Assessment Procedure
M4.1.8.	4	Undertake a check for a sample number of Operatives and Specialists to ensure they have received an appropriate site induction.
M4.1.9.	4	Review the Operating Risk Register and undertake a sample check that updates to the O&M Manual and PPM Schedule have been made where necessary. Where applicable, undertake a sample check that updates to the Operating Risk Register have been made following any Assessed Works.
M4.1.10.	4	Undertake a check to ensure that a Condition Audit and/or Condition Survey of equipment has been conducted as required by the applicable technical standard(s), and that the Condition Log has been updated to reflect findings. Undertake a sample check of the condition of the Substation equipment, which shall include: • plate heat exchangers; • network distribution pumps; and • pressurisation and expansion equipment; to ensure that the condition of equipment does not present an immediate risk to heat supply. Where applicable, check that remedial actions identified through any previous audit(s)/survey(s) have been completed and the Condition Log has been updated to reflect this.
M4.1.11.	3	Check that, where appropriate, the destructive testing of pipework has been carried out.
M4.1.12.	4	Check that a Resilience Strategy has been produced and includes all content as outlined within the Evidence Requirement. Check that the Resilience Strategy remains relevant to the network and has been reviewed and updated if: • an unplanned interruption has occurred that lasted longer than 12 hours; or • new risks have been identified within the Operational Risk Register. Where applicable, undertake a sample check that updates to the Resilience Strategy have been made following any Assessed Works.

Technical Requirement	Minimum Level of Assessment	Assessment Procedure
M4.1.13.	3	Review the PPM Schedule to ensure that expected activities to maintain the water quality of the Heat Network are present, and that maintenance is scheduled to minimise disruption.
M4.1.14.	4	Undertake a sample check for a number of water quality KPIs to confirm they are within their required thresholds. Confirm that water quality samples are being taken at the required number of locations and required frequency. Confirm that: • For systems without continuous monitoring, a minimum of 2 sets of samples taken 3 months apart has been provided. • For systems with continuous monitoring, a minimum of 3 months of KPI data has been provided.
M4.1.15.	3	Check that the top-up water of Depleted Water systems meets the water quality KPI thresholds outlined. Confirm that: • For systems without continuous monitoring, a minimum of 2 sets of samples taken 3 months apart has been provided. • For systems with continuous monitoring, a minimum of 3 months of KPI data has been provided.
M4.1.16.	2	Check that water quality records are being kept.
M4.1.17.	3	Check that sufficient circulation has been established where stagnant conditions have occurred.
M4.1.18.	3	Check to confirm equipment disconnection where applicable.
M4.1.19.	4	Undertake a review of the Annual Inspection Report and undertake an on-site inspection of a sample number of items in the report to ensure that it is reflective of actual Asset condition and O&M practices. Confirm that the organisation undertaking the annual inspection meets the requirements outlined in the Technical Requirement.

Technical Requirement	Minimum Level of Assessment	Assessment Procedure
M4.1.20.	3	Confirm water quality equipment has been installed in accordance with the applicable technical standard(s).
M4.1.21.	5	Undertake an in-depth review of the working pressure assessment to confirm that the assumptions made, the methodology used to calculate working pressures, and the outputs of the assessment are reasonable given the design characteristics of the system and are in accordance with the applicable technical standard(s). Where required, undertake independent calculations to confirm the accuracy of the working pressure assessment. Confirm that the identification and assessment of risks from the working pressure assessment has been undertaken in accordance with the applicable technical standard(s) and that mitigation measures have been considered and implemented where appropriate.
M4.1.22.	2	Confirm that a Statement of Conformity has been obtained for any applicable Assessed Works.
M4.1.23.	5	Confirm KPI Schedule has been completed (all parameters present, references to correct documents present). Undertake a detailed assessment of all KPIs to confirm appropriateness and accuracy of thresholds.
M4.1.24.	4	Confirm Technical Parameters Schedule has been completed (all parameters present, references to correct documents present). Undertake a review of a sample number of parameters to confirm accuracy of sampled outputs.

Table 2: Assessment Procedures for Technical Requirements for the Substation at Milestone 4

M4.2. Assessment of Performance Monitoring Requirements

For each HNTAS Performance Monitoring Requirement, the Assessor shall follow the Assessment Procedures and minimum Level of Assessment specified in Table 3.

Performance Monitoring Requirement	Minimum Level of Assessment	Assessment Procedure
M4.2.1.	3	Review that the Metering and Monitoring Strategy is in accordance with the applicable technical standard(s) and that it is up to date and reflective of the Heat Network.
M4.2.2.	3	Confirm that the Automatic and Remote Monitoring System (ARMS) has been specified in accordance with the applicable technical standard(s).
M4.2.3.	5	Review the Monitoring Point Specification to confirm that the applicable technical standard(s) have been met. Undertake a detailed review of meter sizing methodology and outputs to confirm that sizing is acceptable.
M4.2.4.	4	Check that Thermal Energy Meter Records are kept which include all detail as listed within the Evidence Requirement. Conduct a sample check that, where required, thermal energy meters within the Substation: • have undergone a successful sampling and testing procedure; • have been recalibrated; or • have been replaced.
M4.2.5.	2	Confirm that KPIs are being reported at the required frequency.
M4.2.6.	3	Check that a minimum of 3 months worth of KPI data has been provided. Check that KPIs are within required thresholds. Check that where a KPI fell outside of its required threshold (if applicable), the root cause(s) have been outlined, remedial actions were undertaken to resolve the issue and there is a low risk of KPIs not meeting their required thresholds in the future.

Table 3: Assessment Procedures for Performance Monitoring Requirements for the Substation at Milestone 4