

Date: 27/02/2024

Version: V1.0

Category	Ref	Category 1 - 5	NHS Assure KSAR Observation	NHS Assure KSAR Recommendation	Board Response	Board Action	Owner	Target Closeout Date	Actual Closeout Date	Evidence of Closeout	Status (RAG rating)
Ventilation	V1	2	<p><b>KSAR Workbook Question 4.1 - Health Board Policy</b></p> <p>No local ventilation policy requirements provided. There is no assurance that the ventilation systems have been commissioned in line with health board policy requirements, or that engagement with key NHS Ayrshire &amp; Arran stakeholders has taken place.</p> <p>Moreover, there is no evidence of a specific site induction regarding working on the existing closed loop systems on site.</p>	<p>NHS Ayrshire &amp; Arran to provide assurance that commissioning documentation has been reviewed in conjunction with local health board policy requirements.</p> <p>NHS Ayrshire &amp; Arran ensure that evidence of site inductions for working on ventilation and heating systems is documented.</p>							
Ventilation	V2	2	<p><b>KSAR Workbook Question 4.2 - Commissioning Brief</b></p> <p>The designers commissioning brief, in line with the requirements of SHTM 03-01 Part A Clause 11.13, has not been provided in response to the KSAR. This document should confirm the agreed process, standards, and revisions of all relevant documentation to which the commissioning process will adhere.</p> <p>There is no assurance that a process is in place for communicating the relevant design information to those responsible for commissioning.</p>	<p>NHS Ayrshire &amp; Arran to provide the designers commissioning brief in line with SHTM 03-01 Part A or note as a derogation.</p>							
Ventilation	V3	3	<p><b>KSAR Workbook 4.2 - Standards and Guidance</b></p> <p>There was no schedule of the Commissioning documentation and records that will be produced and handed over provided for review. Therefore it is not clear how the health board and their advisors will assess the documentation as being complete.</p>	<p>PSCP to ensure that a list is developed of all Commissioning documentation and records that will be handed over during, and upon, completion of the project.</p> <p>This schedule should consider all Operating and Maintenance manuals, all certification, all installed drawings and information. This list should <del>also</del> include information for all mechanical systems, including all specialist sub-contractor systems such as BMS / controls etc.</p>							
Ventilation	V4	3	<p><b>KSAR Workbook Question 4.3 - Stakeholders Involved in commissioning process</b></p> <p>The evidence of the stakeholders' review process has been received in the following document: '240118 NSAIS Commissioning Info Review Tracker (002)'</p> <p>Following the review of the above document, it is unclear whether the RAMS and ITP documents provided have been fully reviewed and signed off by the relevant stakeholders as per the agreed process ('20231024 NSAIS Testing &amp; Commissioning Governance Structure').</p>	<p>NHS Ayrshire &amp; Arran to provide assurance that ITP and RAMS documentation has been fully reviewed by all stakeholders.</p> <p>Evidence should be provided that clearly defines stakeholders required to be involved in the commissioning process, mapping roles and responsibilities to each commissioning exercise.</p>							
Ventilation	V5	2	<p><b>KSAR Workbook Question 4.3 - Mechanical Witnessing Schedule</b></p> <p>Whilst a witnessing schedule was provided for elements of the HVAC systems 'Mechanical Witnessing - 16-17-23 (signed)', this was limited in detail and it is unclear what specific activities have been witnessed. It is not clear how any issues identified through the witnessing process are being recorded and addressed.</p>	<p>PSCP to ensure that all witnessing activities are documented and provide assurance that all issues identified through the witnessing of commissioning activities are recorded and addressed.</p>							
Ventilation	V6	2	<p><b>KSAR Workbook Question 4.3 - Witnessing of AHU General Operation and Safety Interlocks</b></p> <p>While a witnessing schedule was provided for elements of the HVAC systems in 'Mechanical Witnessing - 16-17-23 (signed)', no further detail has been provided regarding witness testing of all fire safety interlocks and system safety interlocks. It is not clear if and how the ventilation system and other systems operate during fire alarms and test processes. Furthermore, it is unclear whether plant shutdowns, startups, frost protection, or general operations have been checked as required by SHTM 03-01 and SHTM 05-05.</p>	<p>NHS Ayrshire &amp; Arran to provide assurance that the witnessing schedule details all fire safety interlocks and includes checks for normal operation of the ventilation system and closed-loop systems. Moreover, checks should be undertaken for plant shutdowns, startups, and frost protection, in accordance with the requirements outlined in SHTM 03-01 and SHTM 05-05.</p>							
Ventilation	V7	2	<p><b>KSAR Workbook Question 4.3 - Primary Heating System Testing and Witnessing</b></p> <p>NHSSA note that the document 'Mechanical Witnessing - 16-11-23 (signed)' states: 'Report required for plantroom PHEX primary - no flow on one circuit'. No commissioning certification or other evidence addressing this comment has been provided. It is unclear if the information provided has been re-witnessed to confirm compliance with the design.</p>	<p>NHS Ayrshire &amp; Arran to provide assurance that all LTHW systems are fully commissioned, witness-tested, and that final commissioning certificates are provided.</p>							
Ventilation	V8	3	<p><b>KSAR Workbook Question 4.3 - Information Review Tracker</b></p> <p>The information review tracker '240118 NSAIS Commissioning Info Review Tracker (002)' provides an indication of the process in place for the review and sign off of commissioning documentation by various parties. However, the information packages appear to primarily reference commissioning results, pre-commissioning agreed briefs or certificates have not been included in the tracker, it is not clear if these have been commented on.</p> <p>It is unclear how comments on the commissioning documentation, along with issues or out of spec results from the testing and witnessing process are being monitored and closed.</p>	<p>NHS Ayrshire &amp; Arran to provide assurance that the process for the review of commissioning results is concluded and documented and that the comments arising from the review are documented and actioned.</p> <p>NHS Ayrshire &amp; Arran to ensure that there is a process in place to document, review and action any issues identified during the commissioning activities and that there is assurance that these have been addressed.</p>							
Ventilation	V9	3	<p><b>KSAR Workbook Question 4.4 - Validation of commissioning certificates against the design information</b></p> <p>NHSSA has received the Environmental Matrix version 'NSAIS-INS-XXXX-RD-Z-00-0001_231023 Update', as well as commissioning certificates for the ventilation systems.</p> <p>The final version of signed-off drawings, schematics and schedules was not provided; therefore, we were unable to undertake a cross check exercise of the alignment of the Board's brief with the results shown on the the commissioning certificates.</p>	<p>NHS Ayrshire &amp; Arran to ensure that the relevant design information is documented, allowing the commissioning exercise to be validated against the design information and the client's brief documentation.</p>							

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	Ventilation	V10	3	<b>KSAR Workbook Question 4.5 - Pre-commissioning Inspections</b>  No evidence is provided regarding the type of measuring instruments and test procedures to be undertaken. Additionally, there is no evidence of calibration certificates for test instruments completed within the last 12 months.	NHS Ayrshire & Arran to evidence the type of measuring instruments and test procedures undertaken, including the calibration certificates for the test instruments.						
	Ventilation	V11	2	<b>Closed Loop System - Pre-commissioning Cleaning of Pipework</b>  No evidence has been provided for the documentation associated with the flushing, cleaning, and water treatment of the closed-loop system. There is no assurance that any pre-commissioning cleaning of the LTHW pipework has been undertaken, in line with the requirements of BSRIA BG29.  There is no evidence that there has been any engagement with the MEP Designer or the NHS Ayrshire & Arran Estates on the RAMS for pre-commissioning cleaning or the water treatment / biocide chemicals being used and the compatibility of pipework materials.  No details on ongoing (fortnightly) testing of water quality in the period between commissioning and handover, as recommended by BSRIA BG 29.	PSCP to ensure that the certificates for pre-commissioning cleaning of closed-loop pipework is documented, in line with the recommendations of BSRIA BG 29. This should include details of flushing, cleaning, and water treatment, ensuring compatibility with system materials, along with any details of witnessing undertaken. Detailed documentation outlining procedures, frequencies, materials, and treatments should be established and regularly updated.  Additionally, monitoring and testing protocols must be developed to assess and improve the efficacy of these processes over time and included in the O&M Manual information.						
	Ventilation	V12	3	<b>CDU Plantroom - Primary Heating System</b>  Following the site visit (7/22/2024), it is not clear how the installation was initially filled with water and how the system will prevent the accumulation of air within the high-level pipework installation.	NHS Ayrshire & Arran to evidence how the system was filled and detail what measures are in place to prevent the accumulation of air at system high points.						
	Ventilation	V13	2	<b>Emergency Boiler Connection</b>  It's unclear how the emergency strategy involving the connection of a temporary boiler can be executed. There's no clear or obvious way to connect the pipes, figure out the pipe route, or provide the temporary boiler with the needed water, electricity, and drainage.	NHS Ayrshire & Arran should develop a clear and detailed plan for executing the emergency strategy involving the connection of a temporary boiler. This plan should include provisions for connecting the pipes, determining the pipe route, and providing the temporary boiler with necessary resources such as water, electricity, and drainage.						
	Ventilation	V14	4	<b>AHU Filters</b>  No information is provided about whether the filters have been or will be replaced prior to handover. Additionally, type test certificates for filters are not provided (SHTM 03-01 Section 11)	NHS Ayrshire & Arran should ensure clarity on whether the filters have been or will be replaced prior to handover. Moreover, obtain and provide type test certificates for the filters.						
	Ventilation	V15	3	<b>AHU Installation</b>  The air handling unit appeared to be in a different location as show on the design/installation drawings. It is not clear how access will be obtained to louvers from inside the building for easy access and maintenance of the intake/exhaust system. This is a follow up to the point raised at FBC / Construction stage.	NHS Ayrshire & Arran to ensure that the access, maintenance, and replacement strategy for the AHU system should be reviewed and updated. Evidence of change control, including risk assessment, should be provided.						
	Ventilation	V16	3	<b>Commissioning Noise Level</b>  No information is provided related to the commissioning of noise levels, measured in an unoccupied room, as required by SHTM 03-01 Part A Clause 11.51.	NHS Ayrshire & Arran to ensure that commissioning activities include the measurement of noise levels, as required by SHTM 03-01 Part A.						
	Ventilation	V17	3	<b>AC Unit Installation in IT Room</b>  The AC unit extends over the IT cabinets, which reduces the efficiency of air distribution in the room. Additionally, it is not clear whether engineering checks have been undertaken to ensure that the cooling load and resilience strategy provision is suitable for the space.	NHS Ayrshire & Arran to provide assurance that the cooling load and resilience strategy are suitable for the space.						
	Ventilation	V18	3	<b>Building Management Systems - Commissioning and Witness Testing</b>  Limited information provided in relation to the BMS pre-commissioning checks, commissioning, and witnessing activities as required by SHTM 03-01 Section 11.	NHS Ayrshire & Arran to ensure comprehensive documentation and adherence to BMS pre-commissioning checks, commissioning, and witnessing activities as required by SHTM 03-01 Section 11  This includes elements such as BMS controls pre-commissioning checks, location of sensors and accuracy, alarms provided, use of panels connected, system performance measured and compared to design, and safety interlocks checks on ventilation, heating, and air conditioning systems.						
	Ventilation	V19	2	<b>BMS Commissioning and Testing</b>  Records of BMS input and output points for all control panels and outstations have been received. However, it is not evident that the following checks have been conducted and recorded:  Startup/shutdown records for all the plant controlled or enabled via the BMS system Alarm tests, Tests of interlocks Additionally, it would be beneficial to see recordings of environmental data for the agreed period, as specified by the designers. This could include temperature readings on coils and plate heat exchangers. (SHTM 08-05)	NHS Ayrshire & Arran to ensure comprehensive documentation and adherence to BMS pre-commissioning checks, commissioning, and witnessing activities as mandated by SHTM 08-05 such as: Startup/shutdown records for all the plant controlled or enabled via the BMS system. Alarm tests, Tests of interlocks.  Additionally, it would be beneficial to see recordings of environmental data for the agreed period, as specified by the designers. This could include temperature readings on coils and plate heat exchangers. (SHTM 08-05)						

Additional rows to under the relevant Category heading as required.

**1. Action Plan Inception**

Signed off by (name & position) from Health Board:	
Date:	
Signature	

	A	B	C	D	E	F	G	H	I	J	K	L
	<b>2. Action Plan Review</b>											
	Signed off by (name & position) from Health Board:											