

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)
Water & Internal Plumbing / Drainage Systems	WD1	3	KSAR Workbook Ref 3.1 No evidence was provided to show that all personnel from the commissioning company have been trained in the local water policy and procedures.	NHS Ayrshire & Arran to provide evidence that all personnel from the commissioning company have been trained in their local water policy and procedures.							
Water & Internal Plumbing / Drainage Systems	WD2	3	KSAR Workbook Ref 3.1 No evidence was provided to show how the Health Board are engaging with the Water Safety Group on this project during commissioning.	NHS Ayrshire & Arran to provide evidence on the way in which the boards Water Safety Group have been engaged with this project during the Commissioning stage.							
Water & Internal Plumbing / Drainage Systems	WD3	3	KSAR Workbook Ref 3.1 No evidence was provided to show how content of the site induction, with respect to working on domestic water services and above ground drainage systems, has been agreed with all stakeholders, including the water safety group.	NHS Ayrshire & Arran to show how the content of the site induction has been agreed with all stakeholders including the board's Water Safety Group.							
Water & Internal Plumbing / Drainage Systems	WD4	2	KSAR Workbook Ref 3.1 Arctech water management plan provided (NHS NSAIS Water Management Plan - Rev2), no evidence on how this relates to ongoing works once the project is complete. No written scheme for the building provided, verbally informed by PSCP that a water system risk assessment was completed recently which may contain a written scheme.	NHS Ayrshire & Arran to ensure that a written scheme for the building has been created that specifically details the ongoing maintenance and monitoring works required based on the assets installed at site. The written scheme should also detail the management arrangements that will be in place to ensure that the systems are implemented and operating in a safe manner.							
Water & Internal Plumbing / Drainage Systems	WD5	2	KSAR Workbook Ref 3.2 No designers commissioning brief as noted in SHTM 04-01 Part A was provided to confirm the processes which are to be applied (including reference to relevant British Standards and manufacturers guidelines).	NHS Ayrshire & Arran to provide the designers commissioning brief in line with SHTM 04-01 Part A.							
Water & Internal Plumbing / Drainage Systems	WD6	3	KSAR Workbook Ref 3.2 Whilst evidence of a witnessing program was provided to show those involved in witnessing activities, and ITPs for above ground drainage, domestic water and pipework insulation were provided for review. No evidence was provided of the roles and responsibilities of those involved in specific commissioning activities.	NHS Ayrshire & Arran should provide evidence that all planned activities have been completed with the correct people in attendance who understand / understood their role.							
Water & Internal Plumbing / Drainage Systems	WD7	4	KSAR Workbook Ref 3.2 There was no list provided of the Commissioning documentation and records that will be produced and handed over, therefore it is not clear how the health board and their advisors will assess the documentation as being complete.	NHS Ayrshire & Arran to ensure that they have a definitive list of all of the commissioning documentation that they expect to receive prior to handover.							
Water & Internal Plumbing / Drainage Systems	WD8	2	KSAR workbook Ref 3.2 There is no evidence that manufacturers of system components have been contacted for letters of assurance that the detailed disinfectant will not have a detrimental effect SHTM 04-01 Part A Clause 17.4 states 'Advice should be sought from equipment manufacturers to ensure that proposed disinfection chemicals will not adversely affect performance.'	NHS Ayrshire & Arran to provide evidence of manufacturers letters for the use of Oxy-Pro.							
Water & Internal Plumbing / Drainage Systems	WD9	2	KSAR workbook Ref 3.3 A document named "240118 NSAIS Commissioning Info Review Tracker (002).xlsx" has been updated to show comments on packages of commissioning results. There is commentary noted by AECOM as NEC supervisors / Clerk of works, however, none noted from the MEP designers or NHS Ayrshire & Arran. Whilst this refers to results, it is unclear to what extent the commissioning documents and processes have been reviewed. No evidence was provided to provide assurance that there are processes in place for dealing with out of specification findings. No action plans were uploaded showing items identified and who is / was responsible for any rectification works following commissioning activities. There is an organogram showing the higher level governance structure which notes NHS Ayrshire & Arran, Kier, H&K, Suttons and Aecom but this does not go to the level of detail of defining the roles and responsibilities for specific commissioning activities.	NHS Ayrshire & Arran to ensure that the process to review the commissioning documentation is concluded and documented, including details of roles and responsibilities within the review process. Ensure that the process for managing out of specification findings is documented.							
Water & Internal Plumbing / Drainage Systems	WD10	3	KSAR workbook Ref 3.3 No evidence was provided of the attendance of relevant stakeholders during the pre commissioning and commissioning processes.	NHS Ayrshire & Arran to evidence that all relevant stakeholders were in attendance during the pre commissioning and commissioning processes.							
Water & Internal Plumbing / Drainage Systems	WD11	3	KSAR workbook Ref 3.4 No assurance was provided that the as-installed condition has been validated against the design information, to confirm the flow rates, pressures, temperatures, etc., to be used for Commissioning. No evidence provided that the Health Board representatives have checked this list of criteria before Commissioning commences.	NHS Ayrshire & Arran to evidence how the commissioning evidence has been benchmarked against the design information to validate the design intent.							

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16	Water & Internal Plumbing / Drainage Systems	WD12	3	<u>KSAR workbook Ref 3.4</u> No assurance was provided that the final Commissioning schematics and documents have been signed-off and agreed by the design consultants.	NHS Ayrshire & Arran to provide evidence that the design consultants have signed off the final commissioning schematics and documents.						
17	Water & Internal Plumbing / Drainage Systems	WD13	3	<u>KSAR workbook ref no. 3.5</u> No assurance was provided that pre-commissioning check sheets, in line with the recommendations in SHTM 04-01 Part A (including reference to British Standards for above ground drainage checks) have been prepared and reviewed/accepted by the health board prior to commencing works.	NHS Ayrshire & Arran to provide evidence that the pre-commissioning check sheets have been reviewed / accepted prior to works commencing.						
18	Water & Internal Plumbing / Drainage Systems	WD14	3	<u>KSAR workbook ref no. 3.5</u> No evidence was provided of stakeholder engagement in pre-commissioning processes (IPC / WSG / AE / AP etc.).	NHS Ayrshire & Arran to evidence any stakeholder engagement in the pre-commissioning processes.						
19	Water & Internal Plumbing / Drainage Systems	WD15	4	<u>KSAR workbook ref no. 3.5</u> No evidence was provided in the current upload or signposted to previous upload-to give assurance of ongoing review of protection measures installed in relation to above ground drainage systems, including verification that all drains were appropriately capped during Construction until final connection.	NHS Ayrshire & Arran should evidence any ongoing reviews of protection measures installed in relation to above ground drainage systems, including verification that all drains were appropriately capped during Construction until final connection.						
20	Water & Internal Plumbing / Drainage Systems	WD16	4	<u>KSAR workbook ref no. 3.5</u> No evidence was provided in the current upload or signposted to previous upload to give assurance of a strategy to ensure drains flow freely and are free from any debris or obstructions (e.g., pre-commissioning CCTV surveys). It was verbally confirmed that a CCTV survey has been completed post commissioning. NHSSA has not received a CCTV survey report.	NHS Ayrshire & Arran should ensure that there is a strategy to ensure drains are free flowing and free from any debris or obstructions.						
21	Water & Internal Plumbing / Drainage Systems	WD17	1	<u>Bund protection</u> NHS SA note the FBC drawings had the cold water tanks in a separate space (directly in front of the first floor landing). This is a different location to the as installed. NHS SA was issued a file note during the construction stage by the PSCP that "...no impactful changes on the water and drainage system from the FBC into construction stage" During NHS SA commissioning stage walk round on 06/02/2024 it was observed that there is no bunding installed for protection in the first floor plantroom (around the cold water distribution pumps, water filtration or AHU). SHTM 04-01 Part A Clause 7.34 refers to bunding. It is also unclear whether bunding had been considered around the hot water calorifiers. NHS SA DRF from the FBC stage reference WD7 noted missing drainage drawings.	NHS Ayrshire & Arran to ensure that they have considered and recorded the potential risks caused by water being discharged onto the plant room floors and through to the floor below.						
22	Water & Internal Plumbing / Drainage Systems	WD18	3	<u>Above ground drainage - installation checks</u> BS EN 12056-2 NG.1 General "Inspections and tests should be made during the installation of the discharge system as the work progresses to ensure that the pipework is properly secured and clear of obstruction, debris and superfluous matter and that all work which is to be concealed is free from defects before it is finally enclosed". It is unclear what checks have been made during the installation phase to comply with the above British Standard. The supervisors reports provide limited detail with respect to the above ground drainage system.	NHS Ayrshire & Arran and the PSCP should review their site reports and supervisors reports to obtain assurance of the cleanliness of the drainage system.						
23	Water & Internal Plumbing / Drainage Systems	WD19	3	<u>Above ground drainage - final inspection</u> BS EN 12056-2 NG.2 "On completion, the discharge system should be meticulously inspected to ensure that the recommendations of this British Standard have been observed and that no cement droppings, rubble or other objects are left in or on the pipes and that no joining material projects into the pipe bore. When this has been done, tests for the soundness of the pipework and for the performance should be made". It is unclear what checks have been made at installation completion to comply with the above British Standard. The supervisors reports provide limited detail with respect to the above ground drainage system.	NHS Ayrshire & Arran and the PSCP should review their site reports and supervisors reports to obtain assurance of the cleanliness of the drainage system. The findings should be actioned and documented before the system is put into service.						
24	Water & Internal Plumbing / Drainage Systems	WD20	3	<u>Above ground drainage - tests for self siphonage and induced</u> NHS Ayrshire & Arran provided no evidence of self siphonage or induced siphonage tests in branch discharge pipes. BS EN 12056-2 Section NG.3.2.2 "To test for the effect of self siphonage the appliances should be filled to overflowing level and discharged by removing the plug. WC pans should be flushed. The seal remaining in the trap should be measured when the discharge has finished..."	NHS Ayrshire & Arran and the PSCP to review the test for self siphonage and induced siphonage and table with the WSG.						
25	Water & Internal Plumbing / Drainage Systems	WD21	2	<u>Thermostatic mixing tests</u> HTM 04-01 supplement (D08) Annex F.F.1.1 states "Six to eight weeks after commissioning, carry out test given in clause 11.2.2" also F.1.2 states "Twelve to fifteen weeks after commissioning, carry out the test given in clause 11.2.2" Clause 11.2.2 "in service test procedure". NHS Ayrshire & Arran provided no evidence that this had been considered. It was also noted that the evidence provided for the commissioning of the TMVs does not show that the strainers had been dropped and checked for any signs of debris, the temperature of the mixed outlet was not re-test post "fill safe" being completed and no measurement on the volume of water that came through the tap after the cold water has been isolated was made.	NHS Ayrshire & Arran and PSCP to review the commissioning and further testing as listed in HTM 04-01 supplement D08 and discuss with the WSG.						

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26	Water & Internal Plumbing / Drainage Systems	WD22	2	Kemper system The commissioning document produced by Kemper confirms a once per week system operation irrespective of the temperature being recorded. It is unclear how the turnover of water through this area can be improved should the water not rise above 17°C (current set point) and the valve be operated automatically. In this instance there may be an area of stagnant or low flow water at these slave valves which may cause a concern.	NHS Ayrshire & Arran to confirm acceptance of the programmed once per week opening of the slave valves fitted at site.						
27	Water & Internal Plumbing / Drainage Systems	WD23	3	Emergency Fill Point During NHS SA commissioning stage walk round on 06/02/2024 it was observed that there is a spool piece in the ground floor plant room that would allow for a quick fill connected to a bowser in the event of a loss of mains water to the building. The ends were observed to be open and no defined method for connecting has been provided for review. Also, the horizontal pipe piece did not appear to be foil wrapped.	NHS Ayrshire & Arran to ensure that a method statement is created for the use of the quick fill link should there be a break in the incoming cold water. This should include any disinfection of the spool piece and the storage condition of the fittings prior to their use. The PSCP should check the spool piece for foil wrapping beneath the insulation.						
28	Water & Internal Plumbing / Drainage Systems	WD24	3	Leachate flush checklist The contractors leachate flush checklist received starting the 12th oct 2023. NHS SA are aware that there are 2 water connections for a chilled drinking unit (one of which NHS SA has been advised will be removed post completion). However it is unclear from the flushing checklist whether these connections have flushed through. Also, the checklist notes page 6 of 6 "Third flush - After the system have been left filled for 7 days, then it will be drained and refilled with fresh water incoming mains. System shall be untouched for 1 day" - NHS SA are unclear if the water used was "...water incoming mains" or if the water was filtered via the 3 stage filters in the 1st floor plantroom.	PSCP to advise whether these drinking outlet pipe lengths have been flushed through during the leachate process. PSCP to advise if the water used to fill the system during the leachate process was filtered.						
29	Water & Internal Plumbing / Drainage Systems	WD25	3	Pipework foil wrap NHS SA noted during the site visit 07/02/2024 two locations were the protective aluminium foil wrap of the domestic pipework was missing (Spool piece in ground floor plantroom and roof services void pipework for bedroom 2 - both discussed with the PSCP onsite). SHTM 04-01 Part E Clause 3.9 "A protective aluminium foil should be applied to the pipework system under all circumstances prior to insulation."	PSCP to advise that the domestic water pipework system has been checked for foil wrapping for the health boards assurance.						
30	Water & Internal Plumbing / Drainage Systems	WD26	3	Two compartment cold water storage tank warning pipes NHS SA noted during the site visit 07/02/2024 that the twin compartment warning pipes feed into one trap. SHTM 04-01 Part A Figure 1(i) indicates one cistern with a dedicated glass trap.	PSCP to review the trap arrangement and advise the health board of any changes.						
31	Water & Internal Plumbing / Drainage Systems	WD27	4	Outlet hygiene NHS SA noted during the site walk round 07/02/2024 that several outlets had a brown water staining within the WC bowls, and unprotected WHBs/ shower drains with the rectification fabric works. These were discussed with the PSCP onsite.	PSCP to review outlet cleanliness and provide evidence that the outlets have been suitably cleaned and the drainage system has no site debris.						
32	Water & Internal Plumbing / Drainage Systems	WD28	5	HWSR spare pump NHS SA noted during the site walk round 07/02/2024 that the spare hot water return pump wall mounted has open pipe ends. In the same theme as pipe capping when not connected, pipe caps should be considered for hygiene purposes. This was discussed with the PSCP onsite.	PSCP to review spare pump hygiene and provide evidence of action.						
33	Water & Internal Plumbing / Drainage Systems	WD29	5	Cold water storage tanks NHS SA during the site walk round was unclear if there was labelling on the cold water storage tanks as per SHTM 04-01 Part A.	PSCP to provide evidence of tank labelling.						
34	Water & Internal Plumbing / Drainage Systems	WD30	5	Hot water outlets NHS SA during the site walk round 07/02/2024 noted some direct hot water outlets (no TMVs) without a hot water notice, such as the experiment room sinks and ADL kitchen. The notice is noted in SHTM 04-01 Part A	PSCP to review hot water notices for suitable outlets.						
35	Water & Internal Plumbing / Drainage Systems	WD31	5	Ward Kitchen NHS SA during the site walk round 07/02/2024 the Zip water boiler spout sits above the cabinet top rather than the sink drainer. When the Zip water boiler is used, any extra discharged water will sit on the cabinet top rather than get drained.	PSCP to review Zip boiler location and if this could be moved to be above the sink drainer.						
36	Water & Internal Plumbing / Drainage Systems	WD32	3	Asset list and tags It is unclear whether all TMVs have asset tags and whether the domestic water systems components has an asset list.	NHS Ayrshire & Arran and PSCP to review and provide evidence of asset tags and documentation of asset lists.						
37	Water & Internal Plumbing / Drainage Systems	WD33	3	TMVs It is unclear from the site visit the distances between inline TMVs and the outlets.	NHS Ayrshire & Arran and PSCP to advise the distance between the TMVs and the outlets (the mixed water pipe) and that the boards WSG have reviewed.						
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42	Instructions: Please insert additional rows to under the relevant Category heading as required.										
43	1. Action Plan Inception										
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102	2. Action Plan Review											
103												
104	Signed off by (name & position) from Health Board:											