8.4.4 Conclusions

Listed below are my opinion on actions to be taken to minimise contamination in the system, and provide future improved sampling results for pseudomonas aeruginosa only.

No.	Consultant's Interpretation and Opinion
8.4.4.1	There are areas of cold water distribution which are stagnant, and have provided high percentage of outlets PSA detected when tested. As soon as system investigation samples have been taken, we would recommend changing the flushing schedule to include flushing all dead legs, outlets and other areas of stagnation which are not currently flushed.
8.4.4.2	The building is currently being flushed to an unwritten procedure, and no assessment of risk has been known to be included in this instruction. A significant amount of large diameter distribution pipework is present in the building which may not be suitably flushed by present flushing programme. We recommend that the flushing programme is changed to flush to designed usage of the building, including if required manual filling and flushing of all baths/birthing pools.
8.4.4.3	The practicability of disinfecting the water coolers should be considered, in my opinion there are too many possibilities for heat gain and stagnation to propose an effective disinfection procedure for the coolers. The coolers which are contaminated should be removed.
8.2.4.4	Chlorine dioxide generator was found to be ineffective at providing a steady dosed level to the cold supply service. The dosed level as shown by records is significantly lower than desired, but also witnessed over allowable dose rate during the visit. My opinion is the unit in current configuration will not be able to provide a suitable and steady dose level. BMS output of dosed reading should be specified for all secondary dosing units. In current configuration it is also not known how the unit will prevent overdosing in fault. A suitable COSHH risk assessment should be carried out to assess risk of overdose in current configuration.
8.4.4.5	Lack of chlorine dioxide at outlets shows the chemical has been used up in the journey through the distribution system. Chlorine Dioxide should be used as indicator of suitable flushing and system disinfection. Chlorine dioxide reserve is expected to be found at all outlets pre-flush if the system is suitably disinfected, and flushed. A weekly test should be undertaken from sentinel outlets in line with current HTM guidance. A pre-flush and post-flush reading should be taken to determine control from all sentinel outlets, and other outlets if required by rotational testing.

[redacted]

[redacted]

8.5 Report HYR44771 – Executive Summary

This summary has been written to answer the initial query - Comparison and commentary on the sampling results to date versus previous results including the level of contamination (comparison), whether any patterns exist, action to be taken in the interim.

This report was written following full issue of outlet sample results, and some further investigation sampling results.

Sampling results from the most recent set of results show significantly less PSA detected than previous results undertaken by the Trust. My opinion is all results taken by Trust Estates, Independent Laboratory and Contractor are valid and likely to be accurate to site conditions at the time they were taken.

Patterns in PSA detected exist and are in my opinion clear showing outlets of different types failing in the recent and historical sampling in different areas.

Current sampling results also show compelling evidence that contamination is presently in the cold water distribution system local to outlets, not the hot water system. Hot water sampling showed no sample PSA detected without exception with matched hot and cold samples from taps, machine connection points and mixer tap inlets.

In order to reduce contamination further, as soon as the investigation sampling is completed, changes should be made to the control programme to include review of chlorine dioxide disinfection dosing system, and addition of all outlets, and dead legs to the flushing programme to ensure the building is flushed in line with at least designed usage of the building. The chlorine dioxide system should be used to provide assurance of ongoing disinfection of the systems by ensuring the cold system retains a reserve of disinfectant.

It is my opinion that changes to the water systems such as fitting isolation and non-return valves including in large diameter pipework are required to maintain suitable water quality within the building. Water system risk assessments should be undertaken as soon as possible, and recommendations from these assessments resolved before the building can be occupied. Free and open access to Trust Estates resources to aid, investigate and remediate contamination and expected risks will expedite occupation of the building for any area and irrespective of decisions taken separately on replacement of outlets, pipework, sanitaryware and drainage.

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