

Primary Filter Headloss & Runtime Issues / Uneven Media Surface

Introduction

Landers Shute advanced water treatment plant is located at Palmwoods on the Sunshine Coast, Queensland and is an important part of the SEQ Water Grid. Its design capacity is 140 ML per day, it utilises advanced water treatment processes such as ozone (pre ozone, inter ozone) and biological activated carbon filters.



Issues Description

The plants primary dual media filters displayed biological growth on the media granules as well as algae balls affecting the top section of media. This in turn created headloss, and runtime issues with these filters particularly at medium to high plant flows (>1000 L/s). Also, at higher than normal plant flows, due to connection to the Water Grid, inflows into filters created uneven media surface, due to the position of inlet valves allowing currents to affect the media surface.

“Biological growth on media granules”

“Part of the SEQ Water Grid”



Settled Water Finger Weirs



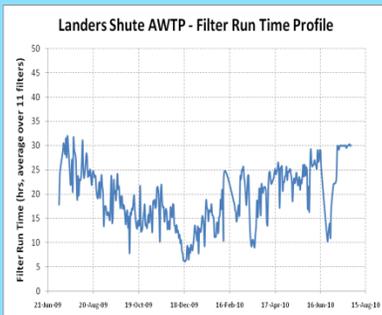
Filter Inspection



Algal Balls

Filter Improvement Programs Implemented

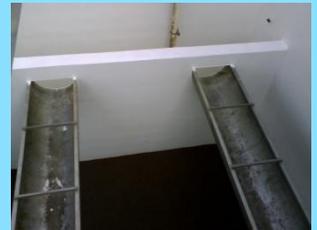
- Pre-ozone had been kept off since the most recent winter maintenance period in the hope of ‘starving’ biological material in the plant. Final filter headloss and filter run times have so far been subsequently more resilient than previous years when ozone was left on after winter maintenance
- Top 300-500mm of ‘fouled’ media was replaced in the worst affected filters.
- Programmed filter cleaning with sodium hypochlorite was introduced. Part of this clean was to super chlorinate media and allow to soak for 24 hours.
- Aluminium covers were fitted to finger weirs located in the sedimentation basins, this addressed algae clumps breaking off walls and forming algae balls, and fouling media surface.
- 90 degree elbow pipe sections fitted to filter inlet valves which diffused inflow currents.
- Programmed weekly filter inspections and performance monitoring introduced. (Backwash profiles etc).



Covered Finger Weirs



90° Elbow Pipe Sections



Media Replacement

Conclusion

As a result of all programs the primary filters are far better at handling high flows and filter clogging algae events. Head loss and runtimes have improved greatly, so to has the operators understanding of filter optimisation. Reductions of algae balls on and in filter media have been witnessed. The media appears cleaner and resists biological growth.

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