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Bbos Water Treatment Plant Site Inspection 13/05/26

The BBHOA committee recently met with Overstrand Municipality (OM) engineers to investigate the turbid, brown water experienced by residents during April.

Background

Service logs confirm that water leaving the treatment facility in April consistently complied with SANS 241:2015 specifications. These logs have been shown to BBHOA and given to residents who contacted OM directly. Our water is sourced from local groundwater, which contains naturally high levels of dissolved Iron (Fe) and Manganese (Mn). Manganese is a particular problem. To remove manganese, the plant relies on an oxidation process. This requires keeping the water at a high operational pH range of 9.4–9.6 (much higher than our neighbours in locations like Franskraal and Gansbaai, where the value is around pH 6).

The issues experienced appear to occur in the reticulation system. It was confirmed that this consists of PVC piping with metal connections. Some corrosion is possible, but not enough to produce the problems we have experienced.

Sand filters were used previously in Bbos when water was sourced from the river for residents. Although they are still in place, they are no longer used. All water is now filtered at the treatment plant. No sand or grit enters the system.

What happened in April?

During April, operational and seasonal changes caused the plant's output pH to drop to roughly 8.8. While still safe and within SANS 241 legal boundaries (≥5 to ≤9.7), this lower pH allowed trace amounts of dissolved manganese to bypass the plant filters.

Once inside our village reticulation pipes and households, this residual manganese oxidised when exposed to air, precipitating out as a brown sediment. The lower pH most likely also loosened the historical manganese film built up inside the village water infrastructure. Over

days, this environment encouraged the growth of harmless, but unpleasant, manganese-oxidising bacteria, which caused the distinct odour noticed by several homeowners.

Some residents will have noticed that when the pH is low, manganese slowly oxidises over time in water left out for pets or sitting in your sink, shower area and toilet bowl. This water can become orange/brown overnight and is often the first sign that we are experiencing a low pH issue in the water supply.

The solution

The solution to this is to increase the pH and scour/flush the system. Scouring involves running fresh water through the pipe network. No chemicals are added. Where the problem is quite severe, it may be necessary to do this several times. This will result in short water supply outages. The Operations department will shortly install another fire hydrant at the lower end of the reticulation network in River Street to improve scouring ability.

The treatment plant is substantially more automated than during our previous visit in 2023. It now has a permanent generator, which is why no water outage or quality issues were experienced during the recent storm. Many residents will recall the terrible water issues following the September 2023 storm and during the extended loadshedding phase of a few years ago. At least these issues have been resolved.

Going forward, every effort will be made to keep the pH in the correct range for manganese removal in our water, but there will be some occasional issues due to environmental conditions lowering the pH. The situation in April was recognised by the team from OM as being particularly severe.

A potential further concern

The OM staff were frank and helpful, but they cannot pinpoint exactly why these problems occur at certain points in the system. They remain perplexed as to why one house experiences brown water while a neighbour does not. Only a full audit of every property and its connection to the system would clarify this, which would be time-consuming and expensive.

There is one further possibility for consideration by us as residents. If any residents are mixing their treated municipal supply with borehole water or leiwater it will introduce water with high manganese levels into the system from these untreated sources. Backwash into the municipal supply is possible. Following a collab request, OM engineers recently visited a property in the village where the municipal water supply had been altered, with water stored in an underground tank before being recirculated throughout the property. In their opinion, there was a high likelihood that it was becoming mixed with stormwater runoff, likely containing high levels of manganese. The property in question regularly experiences brown water, while neighbouring properties do not.

Immediate Advice for Residents Experiencing Brown Water:

- Always report on collab. If the problem persists, open a new collab request instead of replying to the initial one. The OM staff at the site visit received the various collab requests from residents and had visited some properties in the village in response.
- Note that Veolia is contracted by OM for water quality testing, and their staff are not OM employees. If Veolia collects a sample from your property, always take contact details from them so that you can chase results. It seems OM does not keep records of these samples, and communication between the two organisations may not always be perfect.
- Flush Cold Taps: Run your outside garden tap for 2–3 minutes to see if the line clears.
- Protect Your Geyser: Do not use hot water taps while the water is brown; sediment buildup can damage geyser elements.
- Delay Laundry: Do not wash white clothes or linens when water is discoloured, as manganese causes permanent brown staining.
- Isolate Filters: Bypass home water filtration systems during turbid periods to prevent premature clogging of filter media.
- Borehole or leiwater water should be restricted to outdoor use (irrigation) or via a separate, clearly marked pipe system for toilets/laundry. Mixing municipal and borehole water is prohibited in South Africa. Direct connection is illegal due to contamination risks.
- As discovered by residents recently, staining of sinks can be cleaned with yoghurt, as the lactic acid will break down the manganese deposits. Leave a layer of yoghurt on the affected surface for several hours to accumulate the manganese.
- AVOID BLEACH. Adding chlorine bleach to water high in manganese triggers a rapid chemical oxidation process that instantly converts the dissolved manganese into dark brown or black solid particles. Instead of cleaning surfaces, the bleach forces all the dissolved manganese in the water to precipitate out and bond permanently to the porcelain. Scrubbing with an acid solution will be required to remove this.

Finally, the OM staff member BBHOA spoke with, considered this an aesthetic issue rather than a health concern. Consuming brown, manganese-heavy water over short periods presents minimal risks for healthy adults. However, we would recommend at least boiling water under these circumstances. Boiling water will not remove manganese itself, but the manganese particles can provide a surface for microbes to reside on that will be killed in the boiling process. Realistically, residents should be aware that this could occur periodically in the future,

and keeping a supply of bottled water for drinking/cooking when the problem occurs would be a sensible way forward.