

Reservoir Inspections – Preserve and Protect Water Quality

The Overview-

- First impressions from site
- Site security & safety
- Contamination – bird and vermin
- Drainage
- Inside the tank
- Sediment
- Corroded fixtures
- Other issues

The stepped process...

Site

Turn up on site looking for signs of 'how cared for, is this site?'

1. Compound & security – fence secure, damaged, locks (how many??) climb over points, overhanging trees
2. Vandal access – graffiti, (how far up the wall, stairs, ladders), site damage, security system
3. General appearance of site – rubbish, debris (roofing metal and fixing screws - large debris can be used to bridge the security system), mowed, left over chemical containers, unfinished works on site (eg. exposed valve pits)
4. Bird or vermin activity – faecal material, look and listen
5. Site log book – how often is the site visited by operational staff

Tank

1. How old is it? Commonality to other known problem tanks
2. Maintenance to be done?
3. What are its features – concrete, steel, iron roof, roof joints, vents (mesh)
4. Access points – ladders, security covers, bypass points
5. Antennas – access areas, conduit covers (fixed, secure and don't obstruct access)
6. Overhanging trees / leaf litter
7. Leaks – weep areas on ground or walls, inlet & outlet pipes
8. Overflows - external & vermin proof
9. Ventilation secure and effective – under roof eaves, wall vents, sized appropriately

Roof Area

1. Ridge capping fixed / damaged / loose areas
2. Roof sheets fixed / unsecured / damaged
3. Bird roosting areas – davits, antennas, solar panels, faecal material build up
4. Concrete joints are sealed
5. Debris – leaf litter, rocks
6. Open or unsealed holes / access points allowing drainage to enter tank (Hatches, CP covers, Telemetry conduits)
7. Gutters – box / internal / exposed gutter (clear, draining, joint seals, overflow areas or not connected)
8. Vents – rotating vents (functioning, damaged), fixed, vermin proof
9. Centre pitch sealed
10. Walkways & handrails – sealed kick rails, corrosion points, drain points not connected underneath, corroded
11. Ponding areas & corrosion points
12. Other fixtures – solar panels, antennas, level indicators, telemetry cables, CP covers
13. Antennas & attachment points – sealed, stable, WH&S hazards, debris

Entry Hatch & Platform

1. Locked, secure, effective
2. Sealed raised edge
3. Sealants (silicon, expanda foam)
4. Unsealed platform and drainage areas (gutters, welded joints)
5. Holes allowing drainage to enter tank
6. Ponding and corroded areas
7. Debris – build up areas, maintenance effective
8. BOW Test - Bucket of water test

Inside the tank - from above....

1. Water surface & wall areas– floating debris, staining, algae growth
2. Water height – overflowing, flooding roof rafters (not visited or maintained)
3. Water clarity – clarity to see the floor, sediment patterns & internal fittings
4. Corroded fixtures – ladders, overflows, posts condition (above water level)
5. Disinfection tablet dispensers & debris
6. Look for light entry on water surface
7. Faecal material on ladder rungs, post, wall edges (frogs, birds, lizards, snakes, possums, mice, rats)
8. Birds' nests, possum straw, access points
9. Structural issues – corroded framing, rotted timbers, termites
10. Roof drainage and staining areas on walls

Under water

1. Sediment - depths, type, areas of build-up, inlets, how often cleaned
2. Mixing zones – temps, sediment patterns
3. Walls – high water mark, clear of algae
4. Debris – faecal matter, dead bodies (dog, possums, birds, snakes, frogs, lizards), roofing materials, leaf litter, corrosion material, concrete spalling, foreign materials (eg. horse shoe, mobiles, tools, paint cans, telemetry battery, roof repair offcuts)
5. Corroded fixtures – ladders, platforms, posts overflows, internal pipe work below water level
6. Corroded / Broken structural supports
7. Tree roots
8. Cracks & leaks, water ingress (hydrostatic valves)

Solutions

1. Remove / Recoat corroded fixtures
2. Entry hatch and platform renovations for good sealing and effective drainage (BOW test)
3. Reduce ventilation areas / mesh size
4. Seal off vermin entry
5. Cycle the water in the tank
6. Monitor the disinfection characteristics into, out of, and within the tank
7. External disinfection addition
8. Mixing - directional inlet nozzles, circulatory systems, mixers
9. Regular maintenance - leaf debris removal, gutter clearing, securing fixtures, sealants
10. Cleaning & inspections on a regular basis – Reviewing reports and fixing the identified problems!
11. WQ specific and effective design and use of materials (WQ design awareness, Potable water approved products, non-corroding material)
12. Educate and supervise contract works and sign off at completion (perform a bucket of water test)