

nhulunbuy corporation



WATER DISINFECTION POLICY **POLICY – RC01**

Title	Water Disinfection Policy
Policy number	RC01
Type	Community
Owner	Chief Executive Officer
Responsible Officer	Manager Strategic Infrastructure
Approval date	February 2025
Next review date	February 2028

1. Purpose

This policy outlines the Nhulunbuy Corporation's responsibilities in relation to the disinfection of the public water supply to the township of Nhulunbuy.

Public water supply systems are vulnerable to a variety of organisms that have the potential to spread diseases such as gastroenteritis, cryptosporidiosis, giardiasis, typhoid, dysentery and cholera to the consumer. Sources of such contamination can include poor quality untreated water in the system, breaks in the reticulation system (and subsequent repairs), construction of new systems or the replacement of existing systems.

Most of these organisms are controllable by disinfection. Disinfection is considered the single most important treatment process in the production and supply of a safe potable water supply.

The water supply for Nhulunbuy is produced and supplied to standards set by the Department of Health, the Australian Government National Health and Medical Research Council (NHMRC) and the guidelines specified within the Australian Drinking Water Guidelines.

2. Scope

This policy extends to the public water supplied to Nhulunbuy (Special Purpose Lease 214) and the Nhulunbuy Industrial Estate (Special Purpose Lease 250).

3. Definitions

Board member means a member of the Nhulunbuy Corporation Board of Directors.

CEO means Chief Executive Officer of the Nhulunbuy Corporation which is interchangeable with the title Town Administrator.

Executive Leadership Team means the Nhulunbuy Corporation's Executive Leadership Team, comprising of the CEO, Manager Corporate Services, Manager Strategic Infrastructure and Manager Community Development.

Nhulunbuy Corporation means the Nhulunbuy Corporation Limited and its employees.

4. Policy

- The Mount Nhulun water storage tank holds 4,550m³.
- The average water usage for Nhulunbuy and the Industrial Estate is 255m³ per hour.
- 30% of the storage capacity is quarantined for fire safety
- The tank holds approximately 13 hours of water based on normal usage.

Process

The Nhulunbuy Corporation must notify the community of any scheduled major works, upgrades or interruptions to the Nhulunbuy or Industrial Estate water supply via social media and on the Nhulunbuy Corporation website.

Nhulunbuy's water supply system consists of the following elements.

1. Bore field
2. Pumps
3. Aerators and dosing system
4. Supply pipeline
5. Chlorination dosing system
6. Water storage tank
7. Water supply telemetry
8. Water reticulation system
9. Meters

Rio Tinto (RTA) supplies water to the water storage tank on Mount Nhulun and the Nhulunbuy Corporation distributes it to properties throughout Nhulunbuy and the Industrial Estate. The Nhulunbuy Corporation levies a water usage charge against each property (either estimated or metered).

The RTA bore field and aerators supply water via the Enalu Road Main where it is dosed with chlorine based on the passing water flow. Water is drawn to supply South, the Industrial Estate and the areas downhill and to the south of the Gove District Hospital.

The water main proceeds to the storage tank at Mount Nhulun. The tank allows for water to gravity feed to surrounding areas of the town. Most of the supplied water bypasses the tank which fills from excess pumped water.

The water reticulation system for the area north of Mount Nhulun is fed from a pipeline on Banyan Road. A pipeline along Mathew Flinders Way also connects the northern and southern distribution areas.

Australian Drinking Water Guidelines

The Australian Drinking Water Guidelines encompass a wide range of measurable characteristic compounds or constituents which can fall into a number of categories. These include, but are not limited to:

- Physical (taste, odour and appearance)
- Microbiological
- Chemical (including inorganic chemicals, organic compounds and pesticides), and
- Radiological

The Australian Drinking Water Guidelines can be found [NHMRC website](#).

Nhulunbuy Corporation employee responsibilities

All Nhulunbuy Corporation employees who work on water treatment and reticulation systems must be appropriately licensed and/or qualified, trained or accredited in the particular type of work being undertaken. They must also be of good health with no known diseases such as typhoid, cholera, etc. All employees who work on the water supply infrastructure must be fully immunised against Hepatitis A and B, Typhoid, Tuberculosis (TB), Polio and Cholera in accordance with Department of Health requirements.

The Nhulunbuy Corporation's Managers are responsible for ensuring that all the relevant immunisations have been administered and all required documentation is maintained. These immunisations will be paid for by the Nhulunbuy Corporation as required.

In the case of all other personnel (contractors, sub-contractors, etc), working on the Nhulunbuy Corporation's water supply infrastructure, documentary evidence of appropriate immunisations must be available prior to any work being commenced.

Disinfection at the water treatment plants

The disinfection process requires that salt is converted to chlorine through the water treatment plant prior to entering the distribution system and before it enters filtered water storage tanks.

The plants operate on the *weight of chlorine to volume of water* principle. The dose rate must be sufficient to maintain a residual chlorine concentration of 0.2 - 0.6 mg/L throughout the reticulation system. The Australian Drinking Water Guidelines state that 'in clean water, a combined available residual level of 0.5 mg/L should be sufficient to ensure microbial control'.

The dose rate at the South Pumping Station is maintained at between 2.5 and 3.5mg/L, dependent upon the condition of the raw water at the time. The final free chlorine residual level of the water leaving the South Pumping Station is 2.0 – 2.5mg/L.

The Nhulunbuy Corporation maintains a daily monitoring program. This allows the Nhulunbuy Corporation operators to closely observe the quality of water leaving the South Pumping Station.

Monitoring is conducted by the instantaneous 'flow dose' method and the 'daily dose' method for total chlorine. Nhulunbuy Corporation operators record the value and the flow rate in the control room and then calibrate accordingly.

Pipelines and associated infrastructure

The effectiveness of chlorine in the disinfection process depends on the quantities of particular matter within the system. As this material may contain bacteria, it is important to ensure that the pipes and their associated fittings are thoroughly clean prior to any disinfection process occurring.

For this to occur the following must be complied with:

- *Storage*

Pipe lengths and fittings should be stored in a clean environment so as to prevent the entrance of foreign materials.

- *Temporary capping*

During construction, seal all openings in the pipeline at the close of the day's work or at times when the trench is left unattended.

If water accumulates in the trench and it is determined that the seals are ineffective, keep the main dry by dewatering the trench.

- *Flushing of mains*

Prior to any disinfection, mains must be flushed. A complete record of all flushing is maintained with relevant details.

All water mains, whether new, existing or those which have had repairs completed must be flushed and disinfected.

Water required to flush mains shall be supplied from the existing distribution system and the discharge point of the flushing water will be a hydrant or outlet located as close as possible at the other end to the supply point of that section being flushed. The discharge 'stream' of water must be directed so as not to cause any damage to persons or property or the environment.

This is because the discharge flows can be of a high velocity.

If valve and hydrant locations permit, flushing toward the 'work area' from both directions is recommended.

Flushing will commence as soon as the repairs/new work are completed and will continue until discoloured water no longer exists.

Should the flushing not eradicate the contamination, further investigation of that section of main must be performed.

- *Disinfection process*

All mains which have been made/cut into or are new to the water supply infrastructure must be disinfected prior to being brought back into service or becoming part of the reticulation infrastructure. The disinfection process includes flushing.

- *Disinfection after a main break*

After repairs are completed, disinfection of the main is mandatory by way of flushing.

The flushed water is to be directed onto a grassed area or to stormwater drain.

A complete record of all flushing/disinfection must be maintained with relevant details.

- *Disinfection of a new/replacement water main*

All new or replacement water mains equal to or greater than 100mm nominal diameter must be flushed/disinfected prior to being brought into service. When flushing has occurred and the water is at an aesthetically acceptable level (clear, no odours, etc), the section of main can be brought into service.

A complete record of all flushing/disinfection must be maintained with relevant details.

5. Review Process

This policy is due to be reviewed three years from the date of approval.

Date 09 March 2025	Director (Name) Andres Hoffman	Signature <i>Andres Hoffman</i>
Chief Executive Officer (Name) Shane Whitten		Signature <i>Shane Whitten</i>