# Groundwater Preservation

The main source of water in the north western region is groundwater. It is responsible for the preservation of World Heritage habitat and provides water for the local towns and industries. There are two aquifers that provide access to groundwater, an upper unconfined aquifer and a lower confined aquifer. Both provide high quality water.

## What is Groundwater?

Groundwater is water that has permeated through soil until it reaches a porous area or geographic fault. The top level of the groundwater is known as the water table. The water table usually follows the profile of the ground. Groundwater can be visible as wetlands or in springs, or it may be well below the surface and not easily identifiable. In the north western region, it is available to around three quarters of the area through springs and bores.

## Groundwater in the North West

Groundwater can vary in quantity and quality. While salinity and the depth of the aquifer can provide some problems, the majority of the North West has access to clean, drinking quality groundwater. In the North East, groundwater is used for irrigation and town water. Up to 75% of the water needs of the area are satisfied via aquifers.

## Groundwater Issues in the North West

Due to the lack of rainfall over the last few decades, groundwater access has become even more important. The following problems are noted in order of significance.

1. Minimal run off
2. Problematic land management practices
3. Unsuitable waste disposal
4. Spillage of toxic materials

The majority of streams and rivers in the North West rely heavily on rainfall and springs. Degradation of groundwater will lead to untold damage of ecosystems in this region and significantly threaten agriculture. Naturally, the flow on from this is pollution of town water sources and potential health hazards for the local population.

## How can Groundwater Be Protected?

Alpheius Global Enterprises, as one of the major employers in the area, is providing its vast resources to help manage and respond to groundwater issues. They have initiated widespread monitoring programs and have developed education programs to ensure that that Environment Legislation is understood and adhered to. In partnership with the North Western University, they have developed best practice methods that can be adopted by the farming and city communities alike.

Water in the upper unconfined aquifer can be as deep as 70m in places and spreads across much of the North West region. It is the primary source of drinking water for the area and provides much needed respite from the heat where it comes to the surface in the Northern plains area.

Water in the lower confined aquifer varies between 40m and 280m in depth. It is not present in all of the North West but extends as far south as Middleton. Middleton is famous for its hot springs – caused by the lower aquifer being under pressure in that region. Temperatures can reach as high as 40°C near Middleton and up to 30°C at the North West Cape. There has been significant tourist activity near Middleton as a result of these springs. Further north, there is a booming aquaculture industry concentrating on Trout, Salmon and other well known species.

## What Problems do the Aquifers Have?

One of the major threats to the use of aquifers is the salinity, which can vary from around 375mg/L in the south to the equivalent of sea water, or 32,000 mg/L of salt, in specific areas of the north. Plans for a Desalination Plant for Northwood are in the approval phase.

The other main issue is one of pollution from historical farming and industry methods. While legislation now protects the aquifer and prevents dumping of waste and toxic chemicals, there are residual problems from past practices.

## How Can the North West Groundwater be Improved?

Alpheius Global Enterprises has a Research Facility in the North West, located at Northwood. One of its functions is to manage the aquifers. AGE’s key strategies for supervising aquifer usage include:

* groundwater monitoring programs
* risk assessment of groundwater contamination in relation to copper-chrome-arsenate timber treatment plants
* risk assessment of pollution threats to the three lakes in the region
* presence on regional management boards
* community and industry involvement
* development of codes of practice for runoff management
* development of codes of practice for lake management
* monitoring programs targeting key aquifer units
* investigations into long-term trends in phosphates and nitrates.

Groundwater quantity, quality and supply are interdependent in the North West. To understand this relationship, Alpheius Global Enterprises is conducting extensive research in the region and is investing millions to ensure that the water supply to the North West is preserved for future generations.