

# GREEN IS THE NEW BLACK

WE LOOK INTO NATURAL POOL SYSTEMS AND FIND OUT WHAT SETS THEM APART FROM MORE CONVENTIONAL METHODS. Byline: Veda Dante

As environmental sustainability becomes part of the Australian vernacular, a small yet growing number of swimming pool professionals are adopting a more eco-friendly approach to their work. Environmentally sustainable building materials, Voltaire Power solar systems and energy efficient lights are appearing in more private residential and commercial poolscapes around the country.

Fuelled by a combination of consumer curiosity and Government pressure to reduce our carbon footprint, alternative filtration systems are now being introduced to a market that has long been dominated by chemical-based processes. From microscopic organisms to ocean minerals and oxidation, there are now more ways to clean your pool than ever before.

## LIVING WATER

While biological water treatment has been used in Europe since the early 1900s, it was only two decades ago that the concept of a

The Aquaviva system has been used extensively throughout Europe for more than two decades and is now being implemented in Australia by pool designer and landscape architect, Peter Glass. ([www.peterglass.com.au](http://www.peterglass.com.au))



Even though bio-filtration works best for water temperatures 28° and under, BioNova is successfully working in pools located in southeast Queensland and as far north as Magnetic Island. ([www.bionovanaturalpools.com.au](http://www.bionovanaturalpools.com.au))





BioNova natural swimming pools involve the interaction of water, sunlight, gases, minerals, plants and creatures to ensure that pool water remains clean and balanced. Factors that affect the health of a natural pool include shape, size, location, plant species, all aquatic lifeforms present, and pH levels of the water. ([www.bionova.fr](http://www.bionova.fr))



self-cleaning, natural system was adopted by the swimming pool industry.

Austrian company, Biotop, put bio-filtration on the map in 1985, which then paved the way for companies such as Bioteich and BioNova to cement what would be internationally known as the Natural Swimming Pools market. To date, there are more than 20,000 natural swimming pools installed in Europe alone.

and replaced," says Peter Watson, a former architect who was granted the Australian license for the patented BioNova Natural system in 2002.

"A conventional sanitisation system can discharge anywhere up to six times its volume of water, per year, down the sewer whereas there is zero discharge with the natural process because we maintain the water as living water,"

**"WHILE BIOLOGICAL WATER TREATMENT HAS BEEN USED IN EUROPE SINCE THE EARLY 1900s, IT WAS ONLY TWO DECADES AGO THAT THE CONCEPT OF A SELF-CLEANING, NATURAL SYSTEM WAS ADOPTED BY THE SWIMMING POOL INDUSTRY."**

Described as a meeting between old world technology and new world mentality, bio-filtration uses micro-organisms and plants to clean the water, maintain clarity and create hygienic swimming conditions.

Unlike traditional sanitisers that work on the theory of killing both good and bad bacteria in pool water, natural systems instead use biological processes to clean it.

"Sanitisers, in effect, create dead water, which is why it has to be continuously removed

he explains. "It is regularly circulated – never removed – and the only new water that is required is to replenish the evaporation loss.

"The single biggest evaporation loss for a swimming pool is wind, not water, so if you can shelter your installation with protection then you can further minimise evaporation loss," he adds.

A BioNova Natural pool's ecosystem involves the interaction of water, sunlight, gases, minerals, plants and creatures to ensure that the water is clean and balanced. The health of



## BIO MYTH BUSTERS

**Q.** Does biofiltration meet Australian Standards?

**A.** The water quality and the monitoring of the water's health are done in accordance with the World Health Organisation standards and requirements.

**Q.** Does bio-filtration cost more than a conventional system?

**A.** While it does cost more to establish the two required water zones, zero chemical purchase costs, a 70 per cent reduction in energy consumption and no further annual water charges means that you recoup that money over a period of a few years.

**Q.** Do swimming pools actually need chemicals by law?

**A.** No. While public pools are required to use a certain amount of chemicals by the 'Public Health (Swimming Pools and Spa Pools) Regulation 2000', these guidelines do not apply to private residential swimming pools and spas.

**Q.** Does this mean my pool will look like a green pond?

**A.** Bio-filtration leaves pool water looking crystal clear although you can get varying degrees of water clarity depending on the amount of filtration medium used.

**Q.** Do I need to have plants in my pool in order for bio-filtration to work?

**A.** No. The swimming zone and the biological filtration zone are created as two separate vessels. Plants can add an aesthetic component to the pool design, which is especially appealing for people wanting that 'natural' pool look.

**Q.** Is bio-filtration environmentally friendly?

**A.** Absolutely. Not only is there less water loss but also substantial energy savings due to less work for your pump. All of this helps reduce your ecological footprint and turn your pool into a self-sustainable ecosystem.



Unlike public swimming pools, private residential pools are not required to use a certain amount of chemicals, as is enforced by the 'Public Health (Swimming Pools and Spa Pools) Regulation 2000'. ([www.bionovanaturalpools.com.au](http://www.bionovanaturalpools.com.au))



Bio-filtration offers substantial energy savings due to less work required of the pool pump. In addition, reduced water losses helps pool owners reduce their ecological footprint. ([www.bionovanaturalpools.com.au](http://www.bionovanaturalpools.com.au))

this pool water is affected by its size and shape, the acidity or alkalinity (pH level) of the water, the amount of surface exposed to the atmosphere, the plant species and the presence of all forms of aquatic life.

Peter says bio-filtration works best for water temperatures 28 degrees and under because when the pool water gets too warm, conditions for bacteria start to kick in. That said, some of the smarter systems counteract this problem with special design features.

"We do have our system running at much higher temperatures in pools located in south-east Queensland and as far north as Magnetic Island," he says.

"However, because water is warmer at the pool surface, what we do is create a deeper zone at the swimming base so when the temperatures really start to warm up, we can purge the cooler water from this area and utilise

the extensive area of overflow gully around the perimeter so water is always circulating and being mixed from the bottom to the top."

So what kind of homeowner is attracted to natural swimming pools?

"Our customer base is generally aware, either from previous experience or from their understanding of the basic nature of chemicals, that the aggressive utility consumption, waste and costs that can all be associated with chemicals used in swimming water is something that concerns them," he says.

Peter ultimately believes that we can all make our footprint lighter just by the way we behave.

"However, if you want installations like grey water recycling, solar Voltaire panels and bio-filtration pool systems, then you have to be prepared to spend the extra time and money in the first instance to enjoy the ongoing benefits both financially and holistically," he says.





## CHEMICAL-FREE SWIMMING CONDITIONS

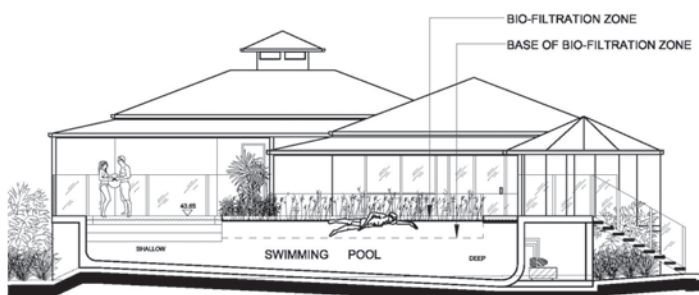
Multi-award winning pool designer and landscape architect, Peter Glass, believes that the environmental conscience of most Australians has grown rapidly in recent years as global warming and related environmental awareness has made sustainability a critical issue. And he should know: back in 1988, Peter won the inaugural National Pool of the Year award from this very magazine (then called *Pools and Outdoor Living: the Lifestyle Series*).

"The use of rainwater tanks, sub-surface drip irrigation, natural mulches and drought-tolerant plant species are a few of the simple, yet responsible measures currently being employed by people in order to work with nature, rather than against it," Peter explains. "To this list can be added the fact that advances in technology have now also made chemical-free swimming pools a plausible reality."

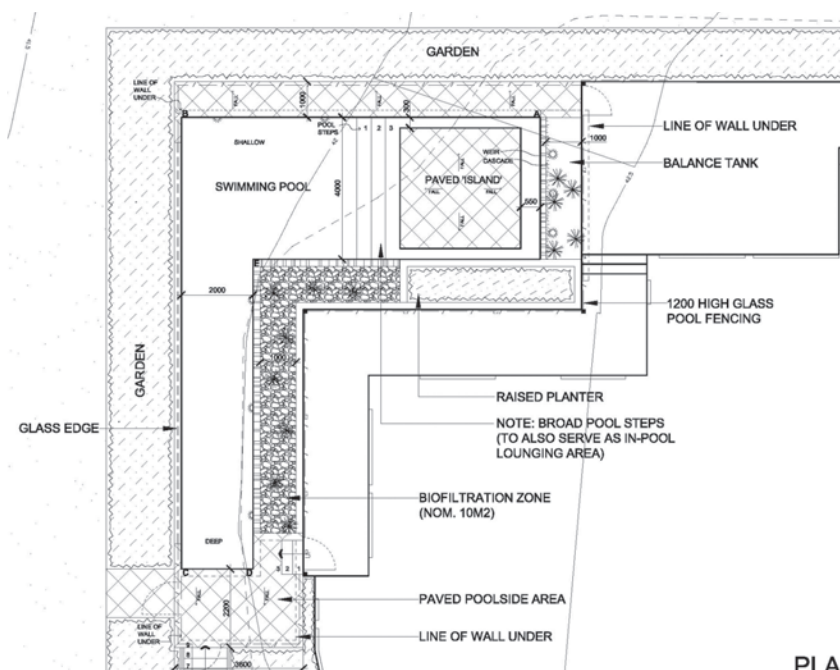
After extensive research into the growing bio-filtration field, Peter has begun integrating the Aquaviva system – one that has been used extensively throughout Europe for more than twenty years – into many of his company's swimming pool designs.

"Even though the concept of bio-filtration was well established overseas, we just weren't ready to design it into our projects until we had seen it operating successfully under Australian conditions and had the opportunity to physically see, feel and taste the quality of the water," Peter says.

Natural Swimming Pools like Aquaviva (above left and right) are designed to blend in with the surrounding environment. Their bio-filtration systems create crystal clear pool water although you can get varying degrees of water clarity.



Aquaviva uses a two-way pump system, combined with a multi-layered Zeolite aggregate filtration zone, to create an optimum environment for 'good' micro-organisms to flourish. (Both images and illustration courtesy [www.peterglass.com.au](http://www.peterglass.com.au))



PLAN





The bio-filtration system can replace existing chlorine, salt or ozone methods as long as there is an adjacent area to locate the bio-filtration zone, which itself can be designed as an attractive water feature. ([www.peterglass.com.au](http://www.peterglass.com.au))

"Last year we went down to Victoria to inspect a number of pools in the Dandenong Ranges area that are using the Aquaviva system," he continues. "Since then, we have been designing them into a number of our upcoming swimming pool projects."

As Peter explains, the construction of a natural bio-filtration pool is much the same as the construction of a conventional pool.

"The fundamental difference is that this system uses a specially designed two-way pump system, combined with a multi-layered Zeolite aggregate filtration zone, to create an optimum environment for 'good' micro-organisms to flourish," he explains. "This in turn feeds off any organic matter, or undesirable bacteria as it's called, in the water."

The first pump is linked to the skimmer, which draws water from the surface of the swimming pool and filters out large debris like leaves, just like in a conventional pool. It then goes through a super fine, secondary filter before being pumped back into the pool.

"The second pump then draws water from a series of inlets, which are located below the water line," Peter continues. "This water is directed to the base of the filtration bed where, under precise pressure, it is pushed up through the filtration medium to the surface and back into the pool."

One of the most exciting aspects of natural filtration from a landscape architect's and pool designer's point of view, Peter says, is that, "not only are we preventing the need for huge quantities of pool chemicals to be added into the pool – and therefore into the environment – but it also has the potential to suit most design styles and situations."

"With bio-filtration systems we can still design magnificent, chemical-free swimming pools that range from sleek, architectural styles to a virtual 'billabong', complete with water that is not only considered drinkable but also suitable for fish and water plants."

The great news is that the bio-filtration system is not restricted to new pool installations. It can generally be installed to replace an existing chlorinated, salt or ozone system, as long as there is an adjacent area to locate the bio-filtration zone, which itself could be designed as a garden area or water feature.

"Of special interest is the fact that the bio-filtration system can be particularly beneficial to



Located on the beachfront in Cairns, this freshwater Barramundi pool stays sparkling clean in the challenging weather conditions that are a daily occurrence in tropical north Queensland. ([www.ecosmarte.com.au](http://www.ecosmarte.com.au))



those who suffer from skin allergies or breathing difficulties associated with chemically treated pools," Peter says. "It can also prevent problems such as the degradation of poolside paving that can result from exposure to pool chemicals."

## THERAPEUTIC POOL WATER

"There is a strong trend emerging of how people are buying and thinking, which is called 'holistic buying'," says Vanessa Saleh, Creative Director of Brand Development for MagnaPool.

"The consumer market is starting to care more about the products they are purchasing from a quality and environmental aspect," Vanessa continues. "Many property owners are realising that a pool is a long-term investment in their home, family and lifestyle and that the health and environmental advantages of natural water are important to their overall wellbeing."

A key ingredient in the MagnaPool system is magnesium hydroxide, which not only kills all the bacteria in the pool but also works 24/7 as a natural clarifier. "This mineral substance enriches the water, making it silky smooth and ideal for sensitive skin conditions," Vanessa explains.

The MagnaPool system uses the natural antiseptic and disinfecting qualities of magnesium chloride to clean pool water, greatly reducing the need for chlorine dosing and sanitisers. "This mineral soaks through the skin to a cellular level as you bath and swim," she says. "This can aid in the reduction of stress and anxiety, relieve aches and pains, and help eliminate toxins in the body."

MagnaPool's mineral blend is kind to the environment – when diluted 5:1 in a tank, you can use the water to irrigate your garden around the pool. "When used this way you can also save up to 100 per cent of your water, which saves you money and helps conserve this most precious resource," she says.

In addition, MagnaPool uses Diamond Kleen, which is made from 100 per cent, recycled fused silicon dioxide (glass). "When compared to regular sand, Diamond Kleen filtration media can save up to 65 per cent of water through more efficient backwashing," Vanessa adds.

This is due to the larger spaces between the particles that allows for a more efficient water flow. This efficiency will also result in a considerable reduction of electrical power required, lowering the amount of carbon emissions sent into our environment.

"Our ultimate goal," Vanessa says, "is to be an environmentally responsible company that



Despite the challenging rainforest setting, this Barramundi pool remains crystal clear and algae-free all year round. When in operation, the freshwater system continually oxidises the pool water. ([www.ecosmart.com.au](http://www.ecosmart.com.au))

provides natural eco-friendly water solutions that help save water, reduce energy consumption and promote carbon neutrality."

## FRESHWATER SYSTEMS

While not purporting to be completely natural, there are some systems that significantly reduce the amount of chlorine required to keep pool water sparkling clean.

"Barramundi is a multi-stage, multifunctional freshwater sanitation system for pools that incorporates an oxidation/ionisation chamber and control box with function and level settings," says Penny King from Ecosmart Australasia.

"Ionic metals are produced by electrolysis in the water, much the same way as we produce the oxygen. The one major difference is that ionisation is a sacrificial process where the copper gets used up slowly over time, which is not the case with electronic oxidation."

When in operation the Barramundi continually oxidises the water, then depending on the functions chosen by the client, will automatically switch to ionisation, automatic pH control, or automatic sanitiser additive and return to continuous oxidation in conjunction with the pools pumping and filtration timer setting.

Bathing in fresh, clean, healthy pool water

## "A MEETING BETWEEN OLD WORLD TECHNOLOGY AND NEW WORLD MENTALITY, BIO-FILTRATION USES MICRO-ORGANISMS AND PLANTS TO CLEAN THE WATER, MAINTAIN CLARITY AND CREATE HYGIENIC SWIMMING CONDITIONS."

"You can use this in a number of ways, though its main function is to oxidise the water. This process turns your total chlorine into free chlorine, which means that you won't smell it, taste it, or feel it on your skin."

In a conventional pool, chlorine has a dual function where it acts as a biocide and a powerful oxidising agent. "In our system, we do this by two different technologies," she explains.

"Firstly, it employs an electronic oxidation technique that is based on catalytic principles. Low current and voltage splits the water into its components thereby producing multiple forms of oxygen," Penny continues. "One form is hydroxyl radical, one of the most potent oxidising agents known to mankind.

requires more than just changing sanitation and filtration equipment but rather a shift in the way we interact with our environment. If we can integrate our indoor and outdoor areas, then why not do the same with our poolscapes?

"As we consider our ecological footprint and personal health we are beginning to see many viable alternatives that allow us to live in a more sustainable way," Peter Glass says.

"Whether you live in the city, suburbs or the bush, there are now proven bio-filtration technologies available that can be designed into your project to reduce your impact on the planet. As environmentally responsible landscape architects and pool designers, we find this very exciting." ■