

## **SWANS-SIG – Small Wastewater and Natural Systems Special Interest Group**

### **NEWSLETTER No. 14 – FEBRUARY 2011**

#### **EDITORIAL**

The SWANS-SIG Management Committee last met 22 September 2010 during the Water NZ Annual Conference in Christchurch, and reviewed current and future activities. This included an update on the SWANS-SIG role in overseeing the OSET NTP (On-site Effluent Treatment National Testing Programme) at the OSET TestFac in Rotorua, our relationship with NZLTC (NZ Land Treatment Collective), and future projects related to information services.

The Committee had determined during the year that there was insufficient business to call an AGM for 2010. Based on very low attendances at past AGMs (usually those committee members available plus one or two members) it is clear that the overall membership seems quite at ease with the committee handling all current and future activity planning. The main opportunities for member gatherings each year are the September Water NZ Conference and the March NZLTC conference. Although members participate actively in both, we have only managed to sustain Management Committee meetings at each meeting, not AGMs.

OSET NTP activity has seen the commencement of Trial 6 at the OSET TestFac in Rotorua – two systems are being tested, a Quantum Eco System (aerated wastewater treatment unit submitted by Quantum Tanks of Levin) and a BOP Regional Council AWTS-NI unit (aerated wastewater treatment plus bark filter nitrogen reduction). Trial 6 runs from November 2010 to July 2011.

This year is also seeing the ongoing relationship between SWANS-SIG and NZLTC being strengthened via our cooperative association in the NZLTC annual conference in Palmerston North 23 to 25 March.

We have also begun a project mooted at the Management Committee meeting in March 2010 to produce an “On-site Wastewater System Maintenance Booklet” for homeowners. This will supplement the “On-site Wastewater Systems – Selecting a System for Your Property” booklet already available through the SWANS pages on the Water NZ website.

Note that the SWANS-SIG web pages were last updated in October 2010 with information on the OSET NTP and a link to the NZLTC 2011 Conference (go to [www.waternz.org.nz/swans.html](http://www.waternz.org.nz/swans.html)).

Re the editorial feature on OSET NTP funding in Newsletter No 13 (August 2010), it is pleasing to report that three more Councils have joined up as as Funding Partners, these being Ashburton District Council, Whangarei District Council and Far North District Council.

For details of the OSET NTP Funding Partner list of 15 members go to [www.waternz.org.nz/swans\\_oseet.html#oseet\\_about](http://www.waternz.org.nz/swans_oseet.html#oseet_about)

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## **NOTES from the CHAIR**

Hello from the Chair

I attended the Water NZ SIG meeting via teleconference link in December 2010. This was a chance for SIG chairs to discuss the projects their groups were working on and what funding may be required for Water NZ. Our group is basically self-funded through the shared conferences we have with NZLTC. However, funding will be requested (when we know how much is required) for the project discussed above in the Editorial. SWANS proposes to produce a booklet to assist home-owners and also to give TLAs' confidence in maintenance and management of on-site systems.

The Water NZ Conference in Christchurch last September had interesting attendance figures for the SWANS Stream (some abstracts are provided in the next section below). The attendance clearly shows the current interest in "natural" treatment systems. Prior to this interest being shown, it was discussed by the Management Committee the lack of up-to-date information on natural systems. We will be investigating what we can do to provide more information on these systems to the group in the future.

<b>Author</b>	<b>Title</b>	<b>Attendees</b>
Nokes	Keeping Waters Apart New Separation Distance Guidelines for Septic Tanks and Bores	30
Tanner	Village-Scale Wetland Wastewater Treatment on the Coral Coast of Fiji - The Wai Votua Project	47
Finnemore	Floating Wetland A Different Way To Treat Your Wastewater	50
Rambeck	Pure by Plants Botanical Wastewater Treatment Systems	50
Hariharaputra	Effects of composting processes on microbial indicators	20
O'Dempsey	Time is of the Essence to a Coliform Reduced Presence	21
Loipersberger	The South Australian approach to rural township Community Wastewater Management	16
Lough	A Successful Solution for the Discharge of Construction Dewatering Water at the University of Canterbury	10

Regards

Rob Potts

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## **SWANS-SIG PAPERS at WATER NZ CONFERENCE STREAM, September 2010**

Abstracts of key papers from this event are reproduced below:

### **KEEPING WATERS APART – NEW SEPARATION DISTANCE GUIDELINES FOR ON-SITE WASTEWATER SYSTEMS AND WELLS**

**Authors:** Catherine Moore, Chris Nokes, Murray Close, Liping Pang, and Viv Smith (Institute of Environmental Science and Research Ltd, Christchurch), Barry Loe (Loe, Pearce and Associates, Christchurch), and Susie Osbaldiston, Northland Regional Council, Whangarei

#### **ABSTRACT**

The discharge of domestic wastewater to ground and the proximate abstraction of groundwater for domestic purposes can contaminate drinking water. Adequate separation distances between these two activities can reduce the likelihood of well-water contamination. However, none of the existing separation distances used by regional councils are designed to protect against the most infectious pathogens, viruses. The environmental robustness of these organisms means that they may still be viable, and therefore infectious, after travelling substantial distances through the ground. Moreover, present separation distances do not take account of how differing subsurface materials affect contaminant transport. To address these shortcomings, a two-year, Envirolink-funded project developed scientifically defensible separation distance guidelines, based on virus transport through various combinations of hydrogeological settings and using Monte Carlo techniques to take account of uncertainties in the input data. The Guidelines document, with a full technical discussion, is now complete and available on the Envirolink website (<http://www.envirolink.govt.nz/Envirolink-reports/>). This paper briefly describes the guidelines, outlining the approach taken to the modelling and its limitations, and explains the use of the Guidelines.

### **VILLAGE-SCALE WETLAND WASTEWATER TREATMENT ON THE CORAL COAST OF FIJI – THE WAI VOTUA PROJECT**

**Author:** Chris Tanner (NIWA)

#### **ABSTRACT**

Wai Votua is a collaborative participatory project, funded through NZAID to develop sustainable water supply and wastewater treatment solutions for coastal villages in Fiji.

Elevated nitrogen concentrations due to wastewater discharges from tourist resorts, piggeries, local villages and settlements, combined with over fishing, are contributing to proliferation of Sargassum macroalgae in the coastal lagoons and fringing reefs, threatening the health and sustainability of the coral reef. Environmental monitoring around Votua, a village on the Coral Coast of Viti Levu in Fiji, showed discharges of wastewaters by the village, inland housing settlements and local piggeries were contaminating swimming and bathing areas, with potential health risks for both the local community and tourists. This monitoring was important in identifying the sources of the problem, engaging the village (including women and youth) with the issues and mobilising commitment and support for the project. Working closely with the village, a wetland-based wastewater treatment system was developed that builds on the existing village infrastructure for backwaters (flush toilets, partial coverage of septic tanks) and improved options for greywaters were introduced.

The system was constructed using a mix of voluntary and paid village labour, assisted by a local earth moving company and electrician. Local expertise was used to supervise construction, with ongoing capacity-building, supervision and oversight from NZ via periodic site visits and regular remote communication [e-mail; phone; Skype]. This approach has taken time, but built a skilled

local workforce able to construct and manage their own wastewater infrastructure. It has also helped strengthen social cohesion in the village. Details of design and construction of the 350 person blackwater treatment system, incorporating communal septic tanks, vertical and horizontal-flow constructed wetlands, and disposal to a surface-flow wetland treatment garden will be discussed. Options used for on-site household greywater treatment will also be outlined.

## **FLOATING TREATMENT WETLANDS –CULTURAL AND TREATMENT VALUES**

**Authors:** Stephen Finnemore and Anita Lloyd (Harrison Grierson Consultants Limited) and Terry Wearmouth (Kauri Park Nurseries Limited)

### **ABSTRACT**

Wetlands have been utilized in natural environment to treat waste, and this natural technology has been included in wastewater treatment plants as a polishing step in the forms of surface or more commonly subsurface flow wetlands. The success of the wetlands has been varied, with issues related to lack of maintenance and short circuiting.

Floating Treatment Wetlands system have been designed to utilise this natural process whilst incorporating greater flexibility of deeper pond systems to accommodate fluctuations in volume and depth, and ease of maintenance.

This paper presents a comparison of floating wetland systems, including an evaluation of their suitability for wastewater treatment and effluent polishing in the New Zealand context, where natural wastewater treatment process such as oxidation ponds, is more dominant.

## **BOTANICAL WASTEWATER TREATMENT SYSTEMS – WETLANDS FOR ON-SITE DOMESTIC WASTEWATER MANAGEMENT**

**Author:** Uli Rambeck, Pure by Plants Lt., Oneroa, Waiheke Island

### **ABSTRACT**

The Botanical Wastewater Treatment System for on-site domestic wastewater management was patented in NZ in 1997. Its concept is well proven by experience in Germany with over 300 wastewater wetland systems installed from 1988 until introduced to NZ. Since 1997 the author has had a range of experience in having the system accepted by local authorities. The performance of local systems indicates it can achieve a high quality secondary effluent. Siting and sizing guidelines are presented along with potential applications and limitations for use of the wetland system. These are discussed in the context of four NZ case studies, including an outline of the construction and planting process, commissioning and maintenance requirements. Effective wastewater servicing can be achieved by giving the owner responsibility for what is a sustainable garden feature with basic maintenance requirements and zero to low energy use

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## **THE NEW ZEALAND LAND TREATMENT COLLECTIVE ANNUAL CONFERENCE, 23-25 March 2011, Palmerston North**

A conference in Co-operation with the Small Wastewater and Natural Systems Special Interest Group of Water New Zealand (SWANS-SIG)

### **Theme: WINDS of CHANGE: LAND TREATMENT in CHALLENGING TIMES**

Paper presentations include on-site wastewater systems, biosolids research, land application of treated wastewater, vermicomposting, dairy effluent and greywater issues. The latter topic is to be covered by a presentation from Louise McCormack under the heading “How to be 'greywater-wise' - a literature review to aid decision making around greywater issues”. Louise is researching this topic in compiling NZLTC Technical Review No 32.

The Friday 25 March field trip will cover

- Manawatu River: Water quality issues;
- Massey Farm No. 4: Latest research;
- Polson Hill subdivision: On-site and decentralised sewage in heavy soils;
- Shannon WWTP: Kauri Park floating wetlands;
- Lunch time discussion: poultry farming and irrigation in the Manawatu;
- Tangimoana Station: Landcorp biosolids project; and
- Sanson land treatment system.

For registration information and details of conference programme go to [www.scionresearch.com/nzltc](http://www.scionresearch.com/nzltc) or email [nzltc@scionresearch.com](mailto:nzltc@scionresearch.com).

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### **BIOLYTIX AUSTRALIA in LIQUIDATION**

The Brisbane Courier mail of 24 January reported as follows:

#### **“RAIN SENDS BIOLYTIX INTO LIQUIDATION**

**BLAMING months of wet weather and floods in key markets, award-winning Brisbane-based sewage systems and irrigation kits manufacturer Biolytix has gone into liquidation.**

In a statement on its website, the company said its Australian entities were placed in voluntary liquidation last week

Biolytix Australia, which has 50 full-time staff, is now controlled by chartered accountants Lawler Partners. Its New Zealand business is unaffected. Customers who paid deposits for systems that now cannot be delivered will join the ranks of unsecured creditors.

Biolytix's patented sewage treatment system, commercialised in 2004, won awards, including Australia's most prestigious Science and Innovation Award, and the company won a Premier's Smart Business Award. Biolytix said rain last year hit sales and administrator Raymond Tolcher said the recent floods proved "the decisive point" when "the phone stopped ringing".

The SWANS-SIG Management Committee was contacted last week re the shutdown of Biolytix Australia, and has since been in contact with the NZ company and confirmed that, as stated in the news release, Biolytix New Zealand Ltd is continuing in business (as at 24 January 2011).

Since the announcement in Australia, internet discussion forum have been active in posting comments on the Biolytix liquidation. Some comment is quite sceptical about the rainfall being the cause of the company failure. Other comment has been quite critical of the technology. However, the “Whirlpool” forum began posting comments on 19 January, the day Raymond Tolcher and Brad Tonks of Lawler Partners were appointed Liquidators. Many comments supported the Biolytix technology but were concerned re future servicing. Already web-forum postings are coming in from plumbing and drainage companies offering services to take over future maintenance. Of note is the fact that Queensland Government approval of the Biolytix BioPad BF6 under the Plumbing and Drainage Act of 2002 was granted by the Department of Infrastructure and Planning on 7 January just two weeks before liquidation.

A question put to SWANS-SIG is that with the original Dowmus system going under and being replaced by the Biolytix which has also now gone under, is enough attention being given to the sustainability of worm based systems by designers and/or approving councils? However, in spite of web critics raising issues of high maintenance costs related to system clogging with worm casts, it is by no means clear that the collapse of Biolytix Australia is due to technology and servicing issues. There appear to be more “good opinion” posts on web forum re Biolytix than “negative opinion” posts, all of Australian origin.

To assist in getting feedback on worm based system performance in NZ a new posting on the SWANS forum pages has been made at <http://forum.waternz.org.nz>.

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