

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

NEWSLETTER No. 12 – FEBRUARY 2010

EDITORIAL

The SWANS-SIG Management Committee met on 24 September 2009 during the Water NZ Annual Conference in Rotorua. Re committee membership, Ian Gunn advised he was stepping down as Chair, and that Rob Potts of Christchurch was willing to take over this role while Ian remained Editor of the newsletter. John Lavery of Rotorua had left for a new position in Canada, and thus retired from the committee. The key role that John had played on behalf of SWANS-SIG in setting up the establishment procedures for the OSET NTP (on-site effluent treatment national testing programme) and acting as its Technical Manager was acknowledged. It was noted that following John's departure, Ian Gunn had taken over as Acting Technical Manager of the testing programme.

Other matters discussed by the Management Committee included the July SIG Forum held by Water NZ, the introduction of a SWANS-SIG stream on the Water NZ web forum, and the cooperation of SWANS-SIG with the NZ Land Treatment Collective annual conference in Dunedin in March 2010.

The SWANS-SIG AGM which followed the technical sessions in the SWANS-SIG stream at conference that same day was attended by four Committee members plus Susannah (Susy) Peddie (SWANS-SIG Liaison for Water NZ) and three SWANS-SIG members. The meeting elected the following management committee for 2009/2010:

Rob Potts (Chair)	Christchurch
Ian Gunn (Newsletter Editor)	Auckland
Gareth Williams	Auckland
Ray Hedgland	Auckland
James Sukias	Hamilton
Peter Carroll	Auckland
Robyn Floyd	Auckland

The meeting was updated on the OSET NTP trials and organisation, and noted current concerns re the limited number of funding partner supporters from regional and district councils.

Progress with the cooperative venture of SWANS-SIG joining in with the NZ Land Treatment Collective Conference was discussed. It was noted that the NZLTC technical committee had sought the views of the Management Committee on the conference theme, and that an amended theme "Management of wastes in rural and agricultural landscapes" was to be suggested.

Re future conference activity, it was confirmed that SWANS-SIG would hold a paper stream in future Water NZ annual conferences, while from time to time continuing its association with the NZLTC conferences (the last occasion being the cooperative event in Nelson in 2006).

Ian Gunn, Editor
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NOTES from the CHAIR

Hi all and welcome back to 2010. I have taken over the role of Chairman of SWANS-SIG after Ian Gunn decided to step down late last year. Ian leaves big shoes to fill as he has devoted a lot of time, effort and smart ideas to the SIG and to on-site and small wastewater systems as a whole. I thank Ian on behalf of you all. Luckily for us, and particularly me, Ian will remain on the Management Committee as well as the SWANS-SIG representative on the OSET Test Facility Advisory Group and as the Newsletter Coordinator and Editor.

It is also with a sad note that we say goodbye to John Lavery who has moved back to Canada with his young family to be closer to family. John was active in the OSET Technical Team and also as past Technical Manager of NZLTC. He is however, still heavily involved in biosolids and is looking to assist with any projects here in NZ.

Water NZ has introduced a new initiative this year, with one SIG Chair invited along to each Water NZ board meeting to present an update of where the SIG is at and where it is going. I will be attending in mid February, so if you have anything pressing that you would like raise, then please let me know.

Finally, I look forward to catching up with many of you at the NZLTC conference in Dunedin in March, or at Water NZ in Christchurch in September.

Regards

Rob Potts

WATER NEW ZEALAND WEBSITE UPGRADE and NEW SWANS-SIG HOME PAGE

Water NZ upgraded its website before the holiday break and has made helpful changes to accessing information re SWANS-SIG on a new SWANS-SIG home page. [Go to www.waternz.org.nz/swans.html]. This page contains direct links to details of the OSET NTP project, the NZLTC Annual Conference (in cooperation with SWANS-SIG), and all past newsletters.

Two new features have been added this year. One is the addition of a link to a “Directory of On-site Domestic Wastewater Treatment Plant Manufacturers/Suppliers” prepared by On-Site NewZ. The directory lists 34 manufacturer/suppliers with product details and website addresses. Some 12 of these companies have had treatment units tested through the OSET NTP and its TestFac predecessor run by Environment Bay of Plenty (EBOP) and Rotorua District Council. Of the units tested 17 were under the EBOP nitrogen reduction trials, and 4 under NTP oversight. Three units are currently under test. All units which have participated in the Rotorua TestFac trials are highlighted in the directory.

The second feature relates to the on-site wastewater information booklet produced in 2004 under sponsorship of OSW-SIG, the manufacturers’ on-site wastewater special interest group. On-Site NewZ produced this publication entitled “On-site Wastewater Systems – Selecting a System for Your Property” as an information booklet for homeowners, and 5,000 hardcopies were produced for distribution through councils. This booklet has been updated, and an electronic version is now available for free download through the link on the SWANS-SIG home page.

OSET NTP (On-site Effluent Treatment National Testing Programme) – an UPDATE

The OSET NTP is based on the testing facility (OSET TestFac) located at the Rotorua District Council (RDC) Wastewater Treatment Plant in Rotorua. Newsletter No. 11, August 2009, referred to the approvals given by Environment Bay of Plenty (EBOP) for treatment units tested at the OSET TestFac and meeting the Regional Rule requirements for nitrogen reduction performance.

This list has now been updated on the EBOP website at www.envbop.govt.nz/Environment/Rotorua-Lakes-Catchment.aspx to indicate that the following systems are now approved for use within the Rotorua Lakes Catchments:

- Trial 2 (2006/2007):** -Hynds Lifestyle “Ultimate”
 -RX Plastics Airtech 9000 NR
- Trial 3 (2007/2008):** -Oasis Clearwater S2000
 -Waipapa Tanks Maxi-Treat MV-C3000
 -Innoflow AdvanTex AX-20 Mode 3
- Trial 4 (2008/2009):** -Humes FR1 (provisional approval)
 -Waipapa Tanks Econo-Treat VBB C-2200-2 (provisional approval)

Trial 3 and Trial 4 test results are currently being audited by SWANS-MAG (the OSET Management and Auditing Group) formed by SWANS-SIG to oversee the OSET NTP operations on behalf of the Water NZ, SWANS-SIG, EBOP and RDC advisory group.

For Trial 3, cold weather effects from winter operation affected some un-insulated treatment units during the 3 month benchmarking period. In respect of the Innoflow AdvanTex AX-20 Mode 3, the audit process found it was unable to rate its nitrogen reduction performance because of potential temperature impacts, and this unit is being re-tested in Trial 5 (2009/2010) currently under way. Meanwhile EBOP has given approval for the AdvanTex AX-20 Mode 3 use in the Rotorua Lakes Catchments based on its performance record from other testing programmes.

The Trial 4 provisional approvals are in place pending the SWANS-MAG auditing reports due around March 2010.

NZ LAND TREATMENT COLLECTIVE ANNUAL CONFERENCE, DUNEDIN 17 to 19 MARCH 2010, in COOPERATION with SWANS-SIG,

The Otago Museum in Great King Street is the venue for the two days of technical sessions for this Dunedin conference. A one day field tour follows on the third day. The preliminary programme is as follows:

Wednesday 17 March 2010

- Keynote speakers: Selva Selvarajah, Otago Regional Council
 Matt Harcombe, Federated Farmers
 Dave Houlbrooke, AgResearch
- Technical sessions: Otago Museum Hutton Room
- Social Evening: Customhouse Quay, Corner Wharf & Fryatt Streets, 7 pm onwards

Thursday 18 March 2010

- Technical sessions: Otago Museum Hutton Room
 AGM in the Otago Museum Hutton Room
- Conference Dinner: Larnach Castle (transport provided)

Friday 19 March 2010

Field tour (draft: changes might occur)

Morning:

Larnach Castle -On-site wastewater system
 -Remote on-site wastewater systems presentation by Dept of Conservation's Bill Wheeler, in the music room, Larnach castle, (followed by morning tea)

Afternoon:

Balclutha -Korteweg Farm Herdhomes: (Winners of Ballance environmental award)
 -(lunch at Telford Polytechnic)
 -Telford Dairy Farm effluent storage and irrigation system

Drop off at Dunedin airport by 4.30pm

Some 28 technical papers with a good mix of on-site wastewater, agricultural (dairy) wastes, regulations and biosolids topics have been accepted for presentation. For registration and accommodation information, and to download the registration form, go the SWANS-SIG home page at www.waternz.org.nz/swans.html. For updates from the conference organisers go to www.scionresearch.com/general/home and follow the links through 'Working with Scion', 'New Zealand Land Treatment Collective', 'Annual LTC Conference' and 'Next Conference'.

Early Bird registrations close on 26 February 2010, although late registrations will be accepted after that date on payment of a late fee.

SWANS-SIG STREAM at WATER NEW ZEALAND ANNUAL CONFERENCE

Two papers related to NZ wide performance of on-site wastewater systems were presented at conference on 24 September 2009. A summary of these was published in the October 2009 issue 09/4 of On-Site NewZ and is reproduced below for information of SWANS-SIG members.

Septic Tank Failure in NZ – How Serious is the Problem

This was the title of David Ray's paper to the SWANS-SIG stream at the Water NZ annual conference in Rotorua in September. David [of Environmental Management Services Ltd (EMS) in Hamilton] summarised the results of a recent study completed by EMS for the MfE as part of the NES development process relating on-site wastewater management systems. While pointing out that there were shortcomings in the availability of information, he presented four main conclusions as follows:

- Some 42,000 on-site wastewater systems (mainly septic tanks systems) in around 250 small communities were failing.
- Although some failed systems could be dealt with by improved maintenance, others installed in inappropriate conditions (such as high water table areas) could not be remedied by maintenance actions alone.
- Many of these failing systems are likely to be affecting on-lot soil environs as well as local stormwater drains, thus presenting a significant public health risk.
- Some 100 streams and over a 100 coastal sites were judged to be potentially affected by impacts from failing septic tank systems (the number of lakes and rivers potentially affected is much smaller).

David also commented that there was limited information available on the impacts of failing systems on groundwater, mainly because of under-reporting.

Barry Johnson, the MfE project manager leading the on-site wastewater NES development process, was in attendance at David's presentation and was asked during discussion to comment on the status of the NES proposal. Barry indicated that the cost-benefit study associated with the proposal had returned a result of less than 1.0, which was below the MfE criteria of 1.0 or greater to justify a project. This effectively stalls the NES process, and Barry indicated MfE was now looking at other mechanisms to achieve the results intended by the WOF scheme for on-site wastewater management.

Domestic On-site Wastewater: Real Needs and Relative Risks

Andrew Dakers (of ecoEng Ltd, Christchurch) presented his joint paper on the above topic just prior to David Ray's during the SWANS-SIG stream at Water NZ conference. His co-authors were Andrea Clark (Social Foci Ltd) and Keith Morrison (Sustainable Community Development Research Institute). The key areas outlined in his executive summary dealt with the following:

- Adaptive management of on-site wastewater systems needs to be based on a robust and wide program of information gathering (research), monitoring and evaluation.
- Achieving effective and sustainable service from on-site wastewater systems is challenged by the complexity of on-site servicing (variability in site conditions, technologies, management effort and user waste generation).
- End-users of on-site systems tend to be ignored by the industry, with policies, standards and practices driven by regulators, designers and technology providers.
- "Failures" of on-site systems tend to concentrate on on-lot problems with little effort to translate effects of failure into catchment wide effects and/or cumulative risks. "Failure" modes include design failure, technical failure, management failure and compliance failure.
- Real and relative risks to both public health and environment have rarely been placed in context with on-lot failures. The concern re nitrogen discharge from on-site systems is a case in point, as little catchment scale risk evaluation appears to be behind limits being set on on-site wastewater treatment units.
- High risk of on-lot failure is evident if site assessment is inaccurate.
- Balancing system resilience and resource value of treatment unit performance needs more attention. In practice high nitrogen removal capability may come at the cost of poor resource recovery capability, since denitrification processes may release powerful greenhouse gas emissions.
- End-users (homeowners and occupiers) need greater recognition as key players in achieving successful on-site wastewater management practices.

In relation to risks Andrew referred to David Ray's report to MfE in which it was acknowledged that there was a "paucity of knowledge" of the real risks associated with failure. David suggested that the only evidence for actual failure is mainly anecdotal, thus pointing to "potential" risk. Andrew makes the point that to determine and quantify "real and relative risks" from failure, we need some robust field research.

In relation to impacts of nutrients on the environment Andrew discussed policies related to nitrogen reduction from on-site wastewater systems by reference to a 2001 study for Lake Taupo. The study estimated that some 25 kg/yr of total nitrogen (Tot-N) would enter the lake from each septic tank in the catchment. No apparent allowance appeared to be made for Tot-N attenuation in the on-lot soil system or in travel through to the lake. However, this 25 kg/yr from each on-site system in the lake catchment was not seen as environmentally significant. Andrew, in looking at a modern on-site effluent secondary treatment unit with drip irrigation estimates that the actual Tot-N output from an on-site system would be around 3.8 kg/yr, and compared this with "voided faeces and urine from domestic animals such as one Labrador sized dog (about 5 kg/yr), a horse (approximately 110 kg Tot-N/yr), or a cow at about 90 kg Tot-N/yr".

Andrew and his team also conducted interviews with some 20 end-users of on-site wastewater systems in the Canterbury region. The interviewees were randomly selected from a data base of around 100 end-users, with each of the 20 having worked with an eco engineer for advice and support during system implementation. The key findings of the survey included:

System Information:

More information needed to be provided by regulators and industry re the different types of treatment systems and land application systems. Regulators were seen as a potential source of independent information that link system types to regulatory requirements. Manufacturers needed to provide better information re technical performance and system features — often selection is made on the basis of the best advertising pitch rather than being related to end-user specific needs. An independent evaluation of system performance features and costs would aid significantly in assessing options. Sometimes there were conflicting views from within the industry (drainage contractors vs manufacturers) re effluent quality performance and appropriate use of that effluent. The use of eco engineering advice has benefits in assessing options, selecting the appropriate system and layout, and meeting regulatory requirements.

System Installation:

Good knowledge of the experience and track record of installers is most important in selecting a contractor. It could be advantageous to have an installer certification process as an option to ensure adequate competency levels are met. Clear written briefs from end-user to installer are important.

Operation and Management:

There was a clear preference for minimal mechanical content in systems (such as the use of pumps). Where treatment units were required these should have low power consumption, low noise output, zero odour emissions, be stable under varying waste inputs (such as everyday cleaners), provide reliable effluent quality able to be used for irrigation, and operate with minimal maintenance.

Consent Process:

Sign-off on consents was a “key point of frustration” for end-users. Concerns were expressed re the lack of knowledge of regulators re various systems, their performance features and functions, the lack of information on the process to be followed in gaining consent, the overlapping of consent processing between regional and district councils, and the time and costs involved in gaining consent. There were clear advantages in using a qualified advisor (such as an engineer) in steering through the consents process. However, as for installers, maybe councils should maintain lists of “competent advisors”.
