

# Kiwi Clarifier



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## In this issue

Chairman's message  
EO report  
Operator profile - Alby Shaw  
Lower North Island Operator Forum  
Sludge Bug- Zoogloea  
Otago Southland UV Workshop  
Wastewater Quiz  
IXOM Water Taste  
Retirement - Wayne Brownie  
Moving with the times - Ryan Laurenson

## Chairman's message

This year promises to be a busy but exciting year for WIOG. One of the first tasks the committee tackled early this year was our two day strategic planning meeting, during which we also managed to fit in a regular committee meeting to finalise details and plans for this year's WIOG conference, which as you all know by now is to be in Queenstown from the 3rd to the 5th of May.

The response for papers has been excellent this year and I am happy to tell you that we have a very full technical programme to bring to you at conference. We have a number of highly respected speakers, as well as a bunch of first time presenters, who I am confident will do a fabulous job.

WIOG conferences are about knowledge sharing, personal development, industry best practice and a tiny bit of networking, so keep an eye out for registration details and sign up asap.

Also on the horizon this year is the further development of the professional registration scheme known now as WIPA (Water Industry Professional Association). I hope to have a detailed update available very soon, with a real possibility of a launch at the WIOG conference this year. All parties concerned are working hard to get this project over the line, but as we have said before, we do not intend

to launch it until we are all confident that it is ready.

Keep your eye out for area workshops — we had a busy period up and down the country in the period from June to December last year and I am sure we will have one or two more workshops sometime in this quarter. These are usually targeted to operations staff and are a very practical and useful way of upskilling or getting a bit of refresher training for operators. Most people who attend also enjoy getting together with colleagues from local and surrounding areas and building networks.

I hope you all enjoy this edition and are looking forward to a great year.

Cheers

*Mike Monaghan*  
Chair



Register for the 2017  
Conference now!

[click here](#)

## EO report



*Kia Ora & Hello to all members*

Since the last Clarifier edition before Christmas it has been a busy few months with organising the 2017 conference, future workshops and completion of our strategic planning workshop.

We received great ideas for the Clarifier from the member survey with some people suggesting more frequent editions. Whilst this would be great to see, the Clarifier content relies on input from the committee and WIOG members to send through items such as operator profiles, news from around the country, new technologies and any industry related subjects that would be interesting for members to read.

I would encourage you to send your ideas for future editions to [info@wiog.co.nz](mailto:info@wiog.co.nz).

Here is an update on what has been happening with the WIOG committee over the last few months.

### **Strategic Planning Workshop**

On 17 – 18 February 2017, the committee reviewed the results of the member survey and started to develop the group's strategic plan including succession planning and managing growth. To summarise key areas that will be developed over the next 6 months are:

1. Development of Standard Operating Procedures for conferences, workshops etc.
2. Workshops – workshop content and development in conjunction with Water Industry Professionals Association. and using member engagement as regional representatives.
3. WIOG promotion including revamp of webpage and options of other systems/social media.
4. Conference – Locations and venues for future growth.

### **Workshops**

We are working with training providers, suppliers and manufacturers to bring new content which will be aligned with CPD points for WIPA.

Tony Oschner and I are working towards the development of the reticulation workshop using the ideas from the member's survey and also from meetings with local authority requirements.

If you would like to assist in organising WIOG workshops, please email me at [info@wiog.org.nz](mailto:info@wiog.org.nz).

### **WIOG Queenstown Conference 2017**

Registration for the conference is open now on the webpage. Make sure you book your accommodation and travel early. The programme this year is awesome with great key Note speakers, entertainment and an excellent variety of papers.

We look forward to seeing you all in Queenstown from 3 — 5 May 2017 at the Millennium Hotel.

Hope you enjoy this edition.

*Cheers*

*Craig Hiddleston  
Executive Officer*

## Operator Profile

**Name:** Alby Shaw  
**D.O.B:** 5 November 1989  
**Current Employer:** Palmerston North City Council  
**Current Job Title:** Apprentice Water Treatment Technician  
**Started in industry:** 6 July 2015  
**Previous employers:** James and Kingsbeer, Panel Beaters  
**Where do you live:** Palmerston North  
**What kind of car do you drive:** Hyundai Accent  
**What kind of car would you like to drive:** Already got my dream  
**Favourite's**  
**Beer:** Tui  
**Other drinks:** Water  
**Food:** Whatever is available  
**Movie:** Human Centipede  
**Song:** Comfortably numb (Pink Floyd)  
**Holiday destination:** Anywhere near the sea

What outside of work interest do you have: ?

- Fishing
- Hunting

Being new to the industry what has surprised you the most?

- The scale of responsibility we have on public health

What changes in the industry do you see happening in the future?

- Greater emphasis on compliance issues

If you could have a beer with any famous person, living or dead, who would it be?

- David Gilmour



## Lower North Island Operators' Forum

On 10 November 2016 the Kapiti Coast District Council hosted the Annual Lower North Island Operators Forum.

A great turnout of 42 operators and suppliers met and were treated to a wide range of presentations from Kapiti District Council and Wellington Water staff.

The morning's greeting and introductions started with committee member Tony Ochsner, and followed by Bruce Nesbitt from Kapiti WTP with a welcome to their site and the familiar health and safety pointers that we all need to know, but hope to not need!!

The first speaker was WIOG's EO Craig Hiddleston who gave a very interesting talk on the Water Industry Professionals Association (WIPA) framework and setup. He gave an overview of how we would move forward with credits and training to achieve registration, and the benefits to the wider community and our employers. The topic invoked a good discussion with members seeing it as a positive way forward for the Industry.

Tony Attewell from Kapiti WTP then spoke on their lime dosing plant upgrade. The input staff had to the design, layout, choice of equipment and location were certainly key points taken by members. Tony's paper was a fascinating insight to how operational staff can have beneficial input the plant's operation and design, where experience and knowledge come together. He covered all the aspects one expects – from teething issues with new plant, to changes in pump configuration with the design and pumps layout and operation.

Morning tea was supplied by IXOM – it's always worth mentioning the fantastic support our suppliers give in assisting with events.

Chris Kaloyanis gave a very interesting paper on Kapiti Water Treatment Plant's carbon dosing facility. The changes to their water plant are substantial and their new carbon dosing and storage building is no exception. The carbon upgrade improvements have benefitted the operation of the treatment plant and health and safety aspects around handling, bulk storage and filling of hoppers.

All members certainly gained a vast amount of beneficial information on this topic and knowledge for what is possibly shaping to be a warm summer with all the difficulties that brings.

The fourth paper was co presented by Mike Binns from Wellington Water's Porirua Waste Water Plant and Doug Drinkwater from IXOM, on emulsion dosing changes for centrifuges. This was a very interesting look at how chemical addition trials can greatly improve the solids removal and supernatant return quality in waste water. The reduction in loadings to landfill was evident and the future design improvements Mike spoke of were keenly noted. We look forward to hearing of more from Mike on the plant's next phase of development.

As the group broke for lunch, which was kindly provided by Kapiti Coast District Council, members had a lot to digest (excuse the pun) with the topics that had been presented..... and the great food, of course. To break conversation and return to the last paper was a little difficult, as members exchanged conversation on the topics of the morning .

Wellington Water operator and committee member Tony Ochsner spoke on suspended solids removal in lime dosing. He focussed on the issues around suspended solids (sand) in hydrated lime, a product that we are all familiar with in one form or another, and how they have reviewed the methods of CO2 reduction at their Waterloo aquifer treatment site in Lower Hutt. He commented on the cost versus pay back and alternative options for treatment of the low pH water. The outcome of this investigation is likely to be a combination of caustic / lime blending and installation of a Lagos separator coupled with suppliers working towards a higher quality product through processing equipment improvements.

A very interesting tour of the newly upgraded and very impressive water treatment plant by the operators ended another successful forum.

Huge thanks to the guys at Kapiti for hosting a great event.

# Sludge Bug Zoogloea

Zoogloea are very large colonies of immobile floc forming bacteria. These bacteria colonies are characterised by the excessive amounts of polysaccharide coating the bacterial colony. Zoogloea bacteria typically can denitrify.

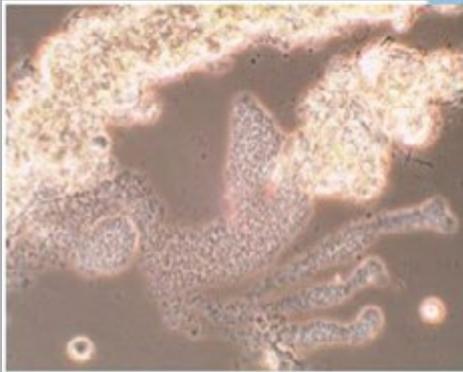


Figure 1: Zoogloea under 10000x magnification

Zoogloea can grow as “fingered organisms” (Figure 1 and 3), or as amorphous clumps (Figure 2). Zoogloea bacteria are typically Gram negative and Neisser negative.

Zoogloea generally play an important role in wastewater treatment as they are capable of lowering BOD and enhancing the formation of activated sludge flocs. Zoogloea also play a role in the formation of poly-B-hydroxybutyrate (PHB) and biosorption of metals. PHB is produced by microorganisms to store carbon as a response to a stressed environment; it is also key substrate in phosphorus removal (EPBR) processes.

Zoogloea tend to form during overloaded events at wastewater treatment plants and can contribute to viscous, non-filamentous bulking and poor sludge dewatering. Many options are available to control levels of Zoogloea in MLSS. pH can be increased to above 7, however nutrient addition is generally recommended. The addition of micronutrients or

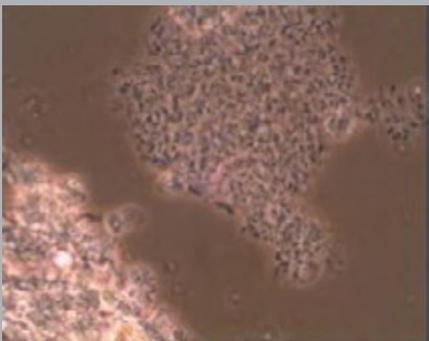


Figure 2: Amorphous Zoogloea

bacterial supplements can be added if high BOD loading is the cause of excessive Zoogloea.

Control of Zoogloea with the use of excessive levels of polymer within the clarifier is not recommended. Dewatering of this sludge is very difficult as large amounts of polymer are required leading to poor water drainage. The use of chlorination to treat excessive Zoogloea concentration is also not recommended as this will only increase the number of slime forming bacteria.



Figure 3: Fingered Zoogloea under Gram Stain

## Have you got interesting bugs?

Send us a photo. Find out what is growing in your treatment plant...

Mott MacDonald New Zealand provides microscopy, optimisation and troubleshooting services for municipal and industrial wastewater treatment, as well as our renowned water industry engineering capabilities.

For more information, see our new website:

<http://wiki.h2knowhow.com/micro/>

or contact us by phone on 09 375 2400, or email [nick.dempsey@mottmac.com](mailto:dempsey@mottmac.com)

## What is a bacteria's favourite type of photo?

**A Cell-fie!**

## Otago / Southland UV Workshop

On Tuesday, 15th November, 42 dedicated and passionate water industry professionals attended the Otago/Southland UV workshop at the South Otago Town & Country Club in Balclutha. Attendees came from throughout the regions — operators of big and small drinking water supplies, council representatives and a DWA. The venue and catering was kindly sponsored by the Clutha District Council and Fulton Hogan Balclutha..

WIOG Committee Member, Martyn Simpson, welcomed everyone and gave quick updates on the Water Industry Professionals (WIP) registration scheme and some initial earthquake damage reports from a water treatment operator in the Hurunui District Council. He also encouraged all who are not financial WIOG members to fill out the application forms that were cunningly placed on their seats.

Greg Gordon, from Filtec, then gave a marvellous in-depth presentation of UVT and Turbidity theory. Everyone was given a multi-choice/short answer form and throughout Greg's presentation they were encouraged to answer the questions as they appeared on the screen. The overall marks were good so the theory didn't go over too many heads.

Dave Hillyard, from Filtec, then gave an equally marvellous in-depth presentation on UV theory for Operators. Judging by the questions, this was of great interest and Dave was able to answer them with clarity. Both Dave and Greg continued to answer questions for the rest of the day.

This was followed by a short forum chaired by Martyn. There was general discussion about UVT and UV sensor validation/compliance involving the DWA Rosemarie Nelson and operators. The main topic, not surprisingly, was the Havelock North outbreak and the significance that UV disinfection may have as an outcome. There was some interesting in-depth discussion about whether UV/Chlorine disinfection should be made mandatory even with secure bores instead of letting the ill-informed rate payers dictate Local Authority (LA) policies. Some interesting comments were made that the general public will soon forget about the seriousness of Havelock North outbreak and will most likely continue to direct LA's to not 'ruin' their drinking water by putting chemicals into it. Also there seemed to be general agreement that the decrease of Government funding in recent years for water supply upgrades needs to be sufficiently increased if there is to be serious response to the flawed NZ drinking water strategy. The number of recorded and un-recorded outbreaks since the strategy was first developed proves that it's not working.



After lunch everyone made their way to the nearby Balclutha Water Treatment Plant which has a UV process. Attendees were split into 2 groups, one doing actual UVT testing of various samples and turbidity unit calibration, the other doing UV sensor verification. When finished the groups swapped. This practical hands-on session was much appreciated by everyone and perfectly augmented all the theory presented in the morning.

Thankyous and goodbyes were made with great feedback from all. It was pleasing to hear that more WIOG workshops are wanted. It was another marvellous day for all.



# Wastewater Quiz

Can you name the Algae in the photos below??

Send your answer to [info@wiog.co.nz](mailto:info@wiog.co.nz)  
with the subject line  
"Wastewater Algae Quiz March2017"





# WATER TASTE TEST 2017

HOSTED BY WATER INDUSTRY OPERATIONS GROUP NEW ZEALAND

## ARE UP FOR THE CHALLENGE?

The Grand Final of the **WIOG New Zealand Taste Test** will be conducted at lunch time on Thursday, 4th May at the **2017 WIOG Conference, Queenstown**. All New Zealand water service providers are invited to compete to earn the title of the **Best Tasting Tap Water in New Zealand**.

### HOW TO ENTER

Enter your sample at the venue by 10am on Wednesday, 3rd May 2017.

For more information on the competition, see the WIOG website

[www.wiog.org.nz](http://www.wiog.org.nz)

### Winner 2016

Palmerston North City  
Council



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# IXOM

## Retirement - Wayne Brownie

After 42 years of service to the water industry, Wayne, or Brownie as everybody knows him, has decided to hang up his boots and retire.

Wayne started in the industry in 1975 working in Water treatment and reticulation in Featherston. After a round or two of amalgamations, the job expanded and Brownie was looking after supply for three local towns. In 2003 he took on a fresh challenge as a Treatment plant technician at the Palmerston North Turitea Water Treatment Plant.

I am sure you will all join us all from WIOG in sending Brownie best wishes for a well earned retirement.



## Moving with the times- from water reticulation to Utilities maintenance – Ryan Laurenson

In 2013, Ryan Laurenson completed a Modern Apprenticeship in Water Reticulation and was named as WIOG Young Operator of the Year. Today he manages a team of 10 staff, and is leading by example, continuing to gain further qualifications, including upgrading from Water Reticulation to Utilities Maintenance.



The Level 4 New Zealand Certificate in Utilities Maintenance is the new version of the expiring Water Reticulation qualifications, and can lead to registration as a Certified Civil Tradesperson.

Ryan says, "In this industry it's essential to keep your skills and qualifications up to date. In the not too distant future, Utilities Maintenance will replace Water Reticulation as a requirement to work on council assets and in the wider industry in general. Several of my team are currently working towards this qualification, so as the team leader it's important that I set the right example by achieving it too."

Because Ryan already holds Level 3 and 4 qualifications in Water Reticulation he has been able to cross-credit a lot of the unit standards. He explains, "Out of whole qualification I only had to do an additional eight units – everything else came from my existing qualifications. I now just have one unit standard left to complete."

Waikato District Council is highly unusual in that its technicians work on both Water and Wastewater assets. Ryan explains, "The type of work and the terrain we work in varies hugely, so the guys need to be flexible enough to adapt to different situations. Gaining an industry-recognised qualification is the best way for them to gain the skills they need. Each team member will achieve both qualification strands – Water, and Wastewater and Stormwater – so they have the technical expertise to work on any job that comes up."