



Delta Environmental Consulting

Special points of interest:

- The South Australian Environment Protection Agency has provided a CD (attached to this newsletter) with Ecomapping software for small to medium-sized businesses
- Water Sensitive Urban Design (WSUD) is giving us a whole new way to look at stormwater discharges

From the desk with a view...

Where did the last decade go? The new decade has come in with a rush, hot on the heels of the 'Global Financial Crisis'. The GFC was heralded by a significant decrease in flora and fauna survey requests (possibly due to reduced green field development proposals), however it resulted in an increased focus on water quality monitoring, compliance, waste minimization and strategic policy preparation. This has more than made up for the lack of biodiversity surveys, although we are missing the field work.



Our hard working water tester, "Horrible Horrie"

Our sturdy workhorse when it comes to water quality monitoring is the Horiba U-10, pictured here. "Horrie" is a multi-parameter meter measuring electrical conductivity and salinity, pH, dissolved oxygen and turbidity. Equipped with a 10m cable to make it possible to work from bridges, conduct depth profiling or to be lowered down shallow bores, the U-10 is the first piece of equipment we drop into every water body we visit. Over the last decade the only pieces of equipment to get a bigger workout at Delta have been our eyes and our feet!

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There have been additions to the staff here at St Kilda over the last year. When you ring, you are still likely to have Faith Cook or myself answering the phone, however you are just as likely to speak to Ruth McNeill or Breanne Taylor, who both provide us with support services.

Well, that's all from me for this newsletter—

Best regards

Peri Coleman

Out and about...

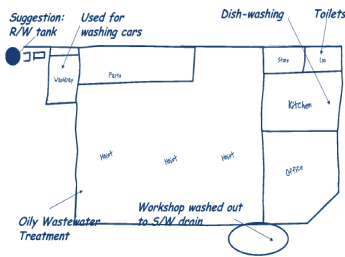
Our outings since the last newsletter have been constrained by several major projects that have kept our noses to the grind-stone. That said, Delta staff have attended a number of events including Stormwater Solution Forums, the Landcare National Forum, Monitoring Cluster workshops, Water Industry Alliance gatherings, book launches, DTED & DEH functions.

As a member of Family Business Australia, Delta invited family, friends, clients and suppliers to join them at the Family Business Hall of Fame Dinner last July. Guest speaker, Dr Chris West, CEO of Zoos SA, provided an entertaining and very visual insight into animal behaviour, drawing peals of laughter (particularly from the biologists at our table) with his comparisons between well known business behaviours and those found in the animal kingdom.

Faith Cook presented a discussion of the natural treasures of the Port Adelaide region, for the Port Adelaide Residents Environment Protection Group, as part of the Port Festival. Other presenters included Mike Bossley (Australian Dolphin Research Centre) and Greg Johnston (Zoos SA). The three speakers gave fascinating talks on their field of expertise, before questions were tendered from a floor of very knowledgeable Port Adelaide residents.



Environmental management resources for business



An example of a water ecomap for a small workshop

If your business is keen to reduce water, energy or waste bills, the CD attached to this newsletter may help. The EPA uses Ecomapping to assist SMEs to reduce their environmental impacts whilst complying with legislation. By reducing the amount of resources needed, there can be significant savings for your company and these savings can increase your competitive edge.

Ecomapping helps you draw up mud maps for the resources used e.g. water, energy, chemicals, plus their impacts e.g. waste, air pollution, dust etc on the neighbours and the greater environment. These mud maps can be as simple or elaborate as you want them to be. As Ecomapping is very cost effective and time efficient to use, it was rolled out to all 25 member states of the European Union!

The Ecomapping process can easily be expanded to create an Environment Action Plan which may lead to EMS Easy, ISO14001 or EMAS certification (if exporting into the European Union for example) – it all depends on how far you wish or need to take the process. There is a possibility for Ecomapping to be linked to HACCP - the food safety standard. A number of SA's food manufacturers are using Ecomapping as a lever to lodge applications for Retooling for Climate Change grants. Grants of up to \$500,000 are available on a dollar for dollar contribution.

The EPA is happy to assist in this process as resource efficiency is achieved and businesses save money. Please contact Sharon Jamieson on 8204 9938 or sharon.jamieson@epa.sa.gov.au if you would like to know more.

Coliform testing in public waters

A potential hazard for all primary contact waters is the transmission of disease due to sewage discharge, stormwater flows and other sources of organic contamination. Primary contact waters include public swimming pools, anthropogenic amenity lakes, creeks, rivers, streams and beaches.

Pathogenic organisms introduced by rotting organic matter (in any form) can cause intestinal infections, dysentery, hepatitis, typhoid fever, cholera, and other water-borne illnesses to those that come in contact with affected waters.

Local government and other water management bodies regularly undertake bacterial testing and general water quality monitoring within public water bodies, particularly where water quality has the potential to effect human health.

Tests to detect the presence of bacterial contamination include testing for total coliforms, *Escherichia coli* (*E. coli*), enterococci and *Salmonella*. Each of these tests have advantages and disadvantages, so selection of appropriate tests is an important part of setting up a water monitoring program.

To assist our clients monitor the presence of bacterial contamination within their waste discharges, or within public water bodies, Delta offers Colilert 18 and Enterolert quantitative enzyme assays for enterococci, coliforms and *E.coli*. Approved by the US EPA, the methods are highly accurate and provide results within 18-24 hours, meaning that we can email you the results the very next business day, at competitive prices (see our web site).

If you wish to take advantage of this service, please call us to obtain sterile sample bottles, and instructions for delivery.



Selective substrates in Colilert media change colour and fluoresce in the presence of different bacteria

Local Action Planning in the Tatiara

In natural resource management, it can take time for an idea to become reality, both when implementing practical actions, and when undertaking planning. The idea of implementing a Local Action Plan (LAP) in the Tatiara was on the table before Faith went to the South East (2005). This year it has become a reality, with incentives being offered to landholders for environmental 'no-regret' works, and Delta being hired to undertake the Tatiara LAP scoping study. Our congratulations go to the Coorong LAP, for their vision and persistence.

Wet, salty, muddy & carbonaceous...

In November, Faith Cook prepared a literature review on the carbon sequestration within South Australian tidal marshes. Although there was very little Australian data, it appears that these habitats are likely to rate among the world's best ecosystems for sequestering carbon dioxide from the air, and storing it in long-term carbon deposits.

One unique aspect of tidal marshes is the rapid accumulation of sediment, burying organic matter almost as fast as it is produced, which significantly reduces oxidation.

High salinities within the soil inhibit decomposition of carbon into methane, reducing release of this highly effective greenhouse gas to almost nothing.

Although there are no tall trees in salt marshes, which visually demonstrate carbon sequestration within forests, marshes are still very active producers. Algae mats within and around the tidal marshes grow rapidly in response to favourable conditions e.g. nutrient or water availability, maximizing the amount of biomass (and therefore carbon sequestration) that occurs. Disturbances to the system, such as sediment influxes, rapidly bury algal mats and plants alike, encouraging rapid fresh new growth.

Estimates of tidal marsh sequestration rates internationally and from Australian data suggest that sequestration within intertidal habitats could vary from 0.45 – 11.3 t C/ha/annum. The average estimate was approximately 1.9t C/ha/annum.



Spring growth in a saltmarsh

Monitoring the Onkaparinga estuary

Although many of the projects we undertake are short-term intensive activities, with members of our team focusing on a particular aspect of your business from a week to three months, we occasionally have the privilege of working with an organization or in an area on an ongoing basis.

One ongoing project is monitoring the water quality of the Onkaparinga Estuary for the Adelaide and Mt Lofty Natural Resources Management Board. We have been involved in this project for thirty-two months, with another fourteen months proposed. During this period, we have prepared a monitoring program and have conducted fortnightly monitoring of twelve estuarine sites. Parameters measured include electrical conductivity, pH, turbidity, dissolved oxygen, temperature, coliforms and *E.coli*, stormwater-borne nutrients, and a range of visual observations.

Recent buy-in from the Department for Transport, Energy and Infrastructure (DTEI) has seen a short-term increase in monitoring frequency to weekly, with fortnightly inclusion of plankton identification and counts and ammonium monitoring.

The remarkable thing about ongoing monitoring is the strength, or power, of the data sets that are generated. What could otherwise appear as small perturbations in short-run biochemical data can be statistically analyzed and compared to related observations to identify the impacts on estuarine ecology of events such as cutting mud, stormwater-borne pollutants, restricted freshwater flows, ammonia leachates and unsewered houses. These correlations are strengthened when the observations are long-term, covering repeated events.

Simple observations relating to the number of people and birds at each site, noted during every monitoring run, will also supply the data needed to undertake a detailed estuary usage assessment in the 2010 annual report. This assessment will assist in determining the socio-economic value of the estuary, along with the practical considerations of where to place public amenities, education signage, rubbish bins as well as determining the need for shore and other bird management actions.

The longer a monitoring program exists, and the more frequently sampling is conducted, the greater the synergy between the observational and biochemical datasets. This is not evident in short-term or infrequent programs.

“The remarkable thing about ongoing monitoring is the strength, or power, of the data sets that are generated...”



The Onkaparinga estuary



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Wet? Salty? Arid? Muddy? Our element...

Delta Environmental Consulting is an independent South Australian consulting business. We offer services including sampling, monitoring and discharge monitoring programmes for waterways, tidal areas, saline lakes and wetlands, assessment of revegetation projects, flora and fauna biodiversity surveys of terrestrial, shallow aquatic (fresh, brackish and haline) and stygian habitats, site environmental surveys, evaporation basin modelling, GIS habitat change assessments, land use histories, enterprise carbon footprinting, compliance audits and research programs.

Delta Environmental Consulting has a policy of continuous improvement in the areas of :

- Providing a quality product to our clients,
- Providing ongoing training and development opportunities for our consultants (we have InSkill SA certification),
- Maintaining high standards in the areas of health, safety and the environment both within Delta and while working with our clients.



The company's quality assurance management system has been third party certified to the international Q-base standard by SAI Global. A copy of the scope of certification is available on request.



Water Industry
Alliance

Delta is proud to be associated with the Water Industry Alliance

WSUD Warehouses

Another growing area of interest for our clients has been incorporating Water Sensitive Urban Design elements into their existing premises. Peri Coleman and Faith Cook have been providing advice to several clients on ways they can reduce their stormwater discharges, or become less dependant on mains water for process or landscaping purposes.

Through this work, we have identified a ground-swell of small to medium business owners, who want to 'do the right thing' environmentally, but don't know, or don't have the resources to undertake the works required.

Meetings with several warehouse owners have identified a need for a community based action group to assist small business owners with sustainable water management and water use efficiency advice. As a community member, Faith has been investigating the potential for formation of a 'WSUD Warehouse' group, similar to the Local Action Plans found in regional areas. If you are interested in exploring how Water Sensitive Urban Design may be applied to your existing facilities, and the types of benefits for your business, get in contact with Faith on 8280 5910 or email her at faith@deltaenvironmental.com.au

In the meantime, keep watching this space as we will report back regularly on how WSUD is being applied to local industries...



Permeable paving is one component of WSUD