



Delta Environmental Consulting

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We are on the Web!

www.deltaenvironmental.com.au

Delta Environmental Consulting is an independent South Australian consulting business. The company has a policy of continuous improvement in the areas of:

- providing a quality service to our clients
- providing ongoing training and educational opportunities for our consultants
- maintaining high standards in the areas of health, safety and environment both within Delta and while working with our clients

Delta Environmental Consulting is a member of Standards Australia, and is currently working towards third party registration of its Management System, which incorporates the requirements of ISO 9000 (quality assurance) and ISO 14000 (environmental management).

The company provides services in the areas of: biological survey work, environmental education programs, saltfield technology and saline wetland ecology, scientific illustration & desktop publishing, preparation of herbarium and museum specimens, taxonomy and classification, revegetation and rehabilitation, Internet and library research and scientific computer application development.

Directions for 2000

The eighteen months until the end of the year 2000 provide us with an opportunity to set directions for the 21st century. Our major focus is the provision of consultancy services in environmental management, however over the past two years Delta has started to encourage 'street trade' and a wider diversity of contracts. The expansion of laboratory facilities at St Kilda and incorporation of the latest communication and information technology has allowed us to extend the range of products and services we offer to customers. We plan to continue this diversification and to increase the volume of business generated by at least 60% over the next eighteen months.

Our major new initiatives include:

- **Bookmarks on Demand** – This service offers students, environmental managers and researchers a fast and efficient way to find information on the Internet. Within 24 hours of a request for information our customers will receive a list of URLs directly related to their question. The customer is charged for the number of URLs he/she receives, and is able to specify the number of links required and provide a detailed search request. Watch our website (<http://www.deltaenvironmental.com.au>) for more details.
- **Archive and literature searches** – Our personnel are familiar with the major libraries and archives in South Australia and are happy to undertake searches on environmental topics for researchers and for companies requiring information. Collections of appropriate articles can be provided for those clients who require them, or alternatively a bibliography may be prepared for those who do not require the text of articles.
- **Bore water, steam or dam testing** – This service is targeted at farmers, golf courses, Councils and landowners within the Adelaide region. The service is a rapid turnaround service suitable for 'one-off' or repeated testing. As a 'walk-in' service, no written proposal is required. Our written sampling guidelines allow customers to take the water samples themselves for delivery to our laboratory. Alternatively, they can request one of our technicians take the samples or test their water on site. A full list of the tests currently offered and prices for each are available on request, or from our website (<http://www.deltaenvironmental.com.au>).

Please don't hesitate to contact us if you have any queries regarding the services we currently offer or our new initiatives. We welcome customer input and are always happy to tailor our services to suit our customers' needs.



Online changes – new directions target a new century

Delta Environmental Consulting



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12 Beach Road, St Kilda, South Australia 5110

From the desk with a view...

Hello to all our customers at the start of the new financial year. 1998-9 was a busy and productive year and in 1999-2000 we are looking forward to serving you all from Delta's new office and laboratory overlooking the Bay at 12 Beach Road, St. Kilda. Our lab is equipped to undertake a wider range of water, soil, evaporative mineral and biological testing than ever before. The office has expanded and now contains an extensive reference library, high tech data analysis equipment and a separate fax/Internet line.

Changes in the capacity of our Internet service provider (Adam Internet) convinced us in 1999 to migrate our website to its new location at <http://www.deltaenvironmental.com.au> from its old home at Compuserve. The site has had a major facelift in the past year. While the facelift uses 'frames' technology, the site also contains an alternative 'frames-free' version for viewers using older technology. On-line research papers and links to recently published articles are still included in the site for the benefit of students and other researchers, and our new Internet librarian service "Bookmarks on Demand" will assist those of you who need information in a hurry and know that 'it's out there, somewhere...'



"a wider range of testing... than ever before."

Providing opportunities for continual upgrading of staff skills is a major plank in Delta's management policy. Over the past year staff have undertaken formal part-time postgraduate studies, in-house training and private research. Special mention here for Faith, who graduated with her Dip Env Man, as well as obtaining her Queen's Guide award and writing an observation for the International Journal of Salt Lake Research. Well done!

On the publications front Delta personnel have had three recent publications: two in the International Journal of Salt Lake Research and one in the Transactions of the Royal Society of SA. Links and references to these papers can be found on the Delta website.

During the past month we had an addition to our team. Bevan recently graduated in information technology (Western Australia), and we were glad to welcome him aboard on a consulting basis while he looked for a full-time position here in South Australia. Bevan's award-winning programming skills were indispensable during the development of the "Bookmarks on Demand" service.

Part-time members of our team include Ali and Glenys, however Glenys has secured a full time position with PIRSA (congratulations, Glenys!) and so her entomological skills are being supplemented by those of Ron Simms, who is available for small entomology contracts. He specialises in South Australian dry climate ant species.

Best wishes in the year to come,
Peri Coleman

Special points of interest::

- New directions for 2000 – an online research service to make finding information easy.
- Delta now offers a wider range of field and laboratory-based environmental testing services.
- An up-to-date listing of our fees and services can be viewed on our website. Not online? Give us a call and we'll post it to you.

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Bird Lake project – Nutrients, cyanobacteria & brine shrimp

Natural salt lakes and solar saltfields have very specialised ecosystems. Delta's long association with these hypersaline environments is frequently called upon when biological perturbations within lakes cause local environmental impacts. Port Augusta's Bird Lake receives water inputs from various sources, including a phosphate-rich cooling water discharge from a nearby power station. Frothing and odour production at the lake caused the local Council to request a study of the lake to determine the processes that caused the problem.

Regular water quality monitoring, plankton analyses and several field trips were required to isolate the chain of events. Essentially the cooling water travels over the power station's flyash playa on its way to Bird Lake. This reduces the dust that the playa produces, however the water picks up soluble phosphates present in the ash – this is particularly noticeable when there are large numbers of cenospheres in the ash. The changed the phosphate/nitrogen balance in the water favours the development of a cyanobacterial mat on the lake's floor, comprising gelatinous layers of cyanobacteria with a golden layer of diatoms trapped on the mat's surface.

Brine shrimp living in the lake have had to adapt their feeding habits to cope with low planktonic algal counts, but a rich benthic mat. Instead of filter-feeding as they swim, the brine shrimp 'latch' onto the benthic mat and 'brush' diatoms free to be ingested. This brushing also releases the mucilage that binds the mat together, raising the viscosity of the overlying brines and causing the massive increase in foaming.

When is a weed not a weed? When it's an animal...

The salinas of the Dry Creek Saltfields provide fascinating insights into a wide range of saline aquatic habitats. Recent investigations into growths of 'jelly weeds' in the siphons between the ponds led to the publication in the International Journal of Salt Lake Research of Faith's observations on the salinity distribution of the bryozoan in question - *Zoobotryon verticillatum*. Unlike the more commonly known 'lace corals' colonies of this bryozoan do not form hard coral-like structures. Instead they form a network of clear, jelly-filled strands, which in turn provide a platform for microscopic red algae to grow on, giving the colonies the appearance of large red seaweeds.

"They form a network of clear, jelly-filled strands..."

Sound Mound – Research for revegetation

Faith spent some time in summer and autumn working with Penrice Soda Products at Osborne near Port Adelaide, to design and conduct plant species growth trials with Penrice's DBO manufactured fill project team.

Over summer the fill was trialed in a small mound covered with sand, to determine the species most likely to grow on it. Local coastal species from lime-rich shelly dune areas grew rapidly over the medium.

During May the Penrice project team built a 200m sound mound along the Osborne factory's perimeter using their manufactured fill, which was then covered with a thin layer of sandy loam and mulched. The mound was planted with 3500 coastal plain plants endemic to the area and irrigation was installed to prevent plant deaths and minimise dust production.

The selection of plants included trees, bushes, grasses and groundcovers and incorporated a number of unusual or threatened species. The planting was seen as an opportunity to reintroduce some of the native grasses to this urban area. Delta grew many of the plants and sourced the remainder from local native plant nurseries. The project included sourcing planting and irrigation materials, and the training and supervision of the planting team.



Planting out the mound during May 1999

Wetland bioassessment and community education

Over the last fifteen years the City of Salisbury has constructed wetlands to clean the stormwater running into the Barker Inlet from the city. The most recent of the Greenfields' series of wetlands (Stage III Connector Highway wetlands) was completed in 1995.

The City of Salisbury approached Delta during 1997 to undertake a seasonal monitoring program in the Connector Highway wetlands at Dry Creek. Peri, Faith and Ali all worked on this project, which involved taking water, plankton and invertebrate samples at points throughout the wetlands over the course of the project.

Water chemistry was determined, and the living organisms were identified to form a database of lifeforms found through the seasons in these ephemeral wetlands.

Black and white pen illustrations of the inhabitants of the wetlands were included in the final report. The illustrations are for information brochures being provided to community groups like Water-Watch, who are being encouraged by the Council to monitor the health of these urban stormwater wetlands.

Historical archive searches & land suitability assessment

Peri, Faith, Glenys, Barbara and Ali spent some weeks together to produce a preliminary environmental study for the Land Management Corporation and Penrice Soda Products in early 1999. The study looked at land in Gillman owned by the Land Management Corporation.

The preliminary environmental study included literature and archive searches of past land use, flora and fauna surveys, current land use surveys and future land use capability and suitability assessments. Much of the information was uncovered in the history archives of the South Australian Ports Corp, the Maritime Museum, the Lands Titles Office and the Barr Smith Library. Aerial photography from Mapland and from the archives at the Penrice Soda Products Dry Creek Saltfields proved invaluable in tracing a continuous picture of the site over time.

"...corporate and individual commitment to the responsible use of the environment..."

Community - Work experience & an environmental action plan

Delta supports both corporate and individual commitment to the responsible use of the environment and to increasing community awareness of, and involvement with, the environment.

Providing work experience placements for young people interested in working in the environment field has been an ongoing commitment for us. The program has proven beneficial to both the students and to the older staff members. The opportunity to work with enthusiastic students refreshes even the curmudgeonliest of us!

One of the larger community projects Delta personnel have undertaken during the past year was Faith's development of an action plan for Fraser Reserve. Fraser Reserve is a small reserve held by the National Trust of South Australia. It is only a few kilometres west of Victor Harbour and contains a range of unusual ecosystems including a perched peat bog in the centre of the reserve. The entire reserve is in close to pristine condition and the vegetation is extremely dense, making fieldwork difficult. The project included aerial photograph analysis, community and stakeholder consultation, literature searches, water testing and on-site truthing of the data collected.

Faith undertook the project as a component of her Queen's Guide award program with Guides Australia, and Delta provided a range of laboratory materials, office resources and technical revision of the final report. Congratulations, Faith, on providing a well thought-out plan that should ensure the sound management of the reserve into the next century.