

GecOz Pty Ltd
Geospatial Consultants Australia
PO Box 42636
Casuarina, NT 0811

Submission to:

**House of Representatives Standing Committee on Science and
Innovation:**

**Inquiry into the coordination of the science
to combat the nation's salinity problem**

Executive Summary

- GecOz are experts in the field of salinity hazard mapping.
- Mapping of salinity hazard is a fundamental component in the holistic approach to salinity management.
- This submission highlights some of the areas where GecOz believe the Commonwealth could improve management and coordination of the application of the best science available in the field of salinity mapping, with regard to the three terms of reference:
 - a) In relation to the development of new technical knowledge in the management, coordination and implementation of salinity programs, we believe that the Commonwealth could be more comprehensive in examining all possible salinity mapping technologies rather than continuing to support the use of one technology only.
 - b) In regards to organisations conducting research and those implementing salinity solutions we are concerned that communication and linkages are weak. This is particularly true in terms of small and medium private enterprises (SMEs) that have conducted their own research and development into salinity mapping technologies. These SMEs have done this research and development at great expense and, in many cases, without government funding, yet government too often overlooks their potential contribution.
 - c) The final term of reference relates to the adequacy of technical and scientific support in applying salinity management options. Currently, some of the best science available to combat the salinity problem is not being utilised. In the case of salinity mapping methods, one technology is being touted by government agencies as the only reliable way to map salinity.
- GecOz believe that these issues may be addressed via the implementation of an independent annual review into the best science available, which should be published and disseminated to the public so people involved in salinity management issues are adequately informed.

GecOz Submission © 2003

GecOz Pty Ltd ▶ Geospatial Consultants Australia ▶ ACN 095 961 569

PH: +61 8 89416500 ▶ FX: +61 8 8941 6511 ▶ PO BOX 42636, Casuarina NT 0811 ▶ Suite 20 The Slipway, 48 Marina Blvd, CULLEN BAY NT 0820

EMAIL: info@gecoz.com ▶ WEB: www.gecoz.com

GecOz Pty Ltd

GecOz has gained significant credibility in the spatial sciences and their application to solving real world problems. Our expertise in imaging radar analysis has been recognised through the winning of the 2001 Australian Information Industry Association (AIIA) Award, and the 2002 Asia Pacific Information Communication Technology Award, both for the SaltSAR technology. We are currently working with the Defence Science Technology Organisation's (DSTO) airborne radar system to map sections of the Northern Territories coastline. GecOz have built up a strong working relationship with the DSTO airborne radar and Business divisions. GecOz continues to enjoy solid support from our major investor, Original IT Investments (OITI), who are part of the Federal Government's Building Information Technology Strengths (BITS) program. GecOz are also in the process of administering a successful COMET grant, used to develop processes and documentation for second round investment.

The combined publication list of the company's principals is in excess of 30 articles, including book chapters.

SaltSAR

SaltSAR is a unique salinity mapping technology, derived from airborne radar, which assesses salinity in the upper soil horizon, primarily the root zone of traditional perennial crops. SaltSAR can provide valuable information to the knowledge base and play an important role in the review and monitoring processes within the life cycle of sustainable salinity management (Figure 1). However, as a new technology, it is subject to the normal pressures of the diffusion process. The aim of this submission is to provide examples of pathways which may streamline the diffusion of new technologies into the salinity management environment.

A Technical Veracity Report for SaltSAR and our submission to the "Review of Salinity Mapping Methods in the Australian Context" is included as appendices 1 and 2 respectively.

Life Cycle of Sustainable Salinity Management

To place salinity mapping into the context of salinity management, it is important to understand the basic sustainable salinity management life cycle. If we are to learn from our science and our mistakes, the process must be cyclical, compounding our knowledge and experience to improve solutions and maintain sustainability. Figure 1 shows a basic diagrammatic representation of this life cycle and where salinity mapping falls within the cycle.

GecOz Submission © 2003

GecOz Pty Ltd ▶ Geospatial Consultants Australia ▶ ACN 095 961 569

PH: +61 8 89416500 ▶ FX: +61 8 8941 6511 ▶ PO BOX 42636, Casuarina NT 0811 ▶ Suite 20 The Slipway, 48 Marina Blvd, CULLEN BAY NT 0820

EMAIL: info@gecoz.com ▶ WEB: www.gecoz.com

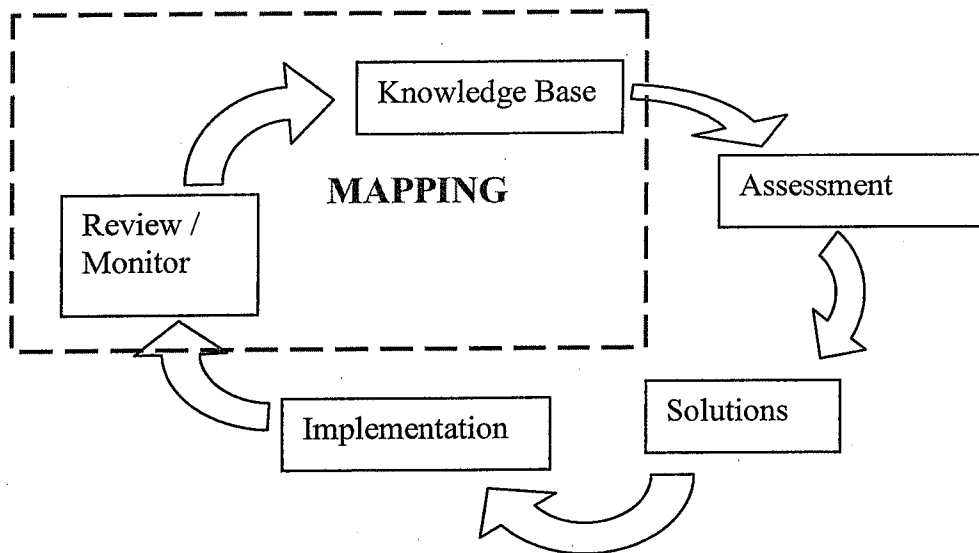


Figure 1. Life cycle of sustainable salinity management.

Without a solid and growing knowledge base solutions will never improve and implementation will continue to be ineffectual. Salinity mapping, and in particular the right mapping for the right area for the right stakeholders, has a very significant part to play in establishing that solid and growing knowledge base and in the monitoring of implemented solutions to assess their effectiveness.

Addressing the Terms of Reference

a) Use of salinity science base and research data (including the development of new scientific, technical and engineering knowledge) in the management, coordination and implementation of salinity programs.

There is a perception that the Commonwealth has been contradictory in its assessment of mapping technologies that can contribute to the country's knowledge base on salinity related issues. The recently released draft document entitled "Review of Salinity Mapping Methods in the Australian Context" illustrates this contradiction. Specifically the document states that no one technology can address the salinity mapping requirements for the continent wide knowledge base. GecOz agrees with this conclusion. Yet the same document purports Airborne Electromagnetics Technology (AEM) to be the main mapping solution that the commonwealth recommends for use by the wider public in salinity management. Current scientific knowledge and commonsensical risk mitigation practices suggest that becoming overly reliant on a single technology may not be the most sensible course of action. Instead a variety of technologies either used on their own or in combination would best address the requirements of salinity management programs.

Investment of the salinity dollar has tended to favour technologies that have been developed by, or in collaboration with, government departments. Often these same government departments have the conflicting role of assessing or approving competing technologies. Despite the fact that many SME's within Australia have developed sound scientific and innovative solutions that can substantially contribute to the salinity knowledge base and review / monitor process, the commonwealth continues to favour AEM. Risk mapping (as AEM is best known for) alone does not address stakeholder requirements for salinity management.

GecOz Submission © 2003

GecOz Pty Ltd ▶ Geospatial Consultants Australia ▶ ACN 095 961 569

PH: +61 8 89416500 ▶ FX: +61 8 8941 6511 ▶ PO BOX 42636, Casuarina NT 0811 ▶ Suite 20 The Slipway, 48 Marina Blvd, CULLEN BAY NT 0820
EMAIL: info@gecoz.com ▶ WEB: www.gecoz.com

b) Linkages between those conducting research and those implementing salinity solutions, including the coordination and dissemination of research and data across jurisdictions and agencies, and to all relevant decision makers (including catchment management bodies and land holders).

The links between those conducting research and those implementing salinity solutions need to be strengthened. To often Research and development is left exactly there, at the development stage. The steps from development to commercialisation and/or implementation have been neglected. This can be achieved through specialised programs facilitating collaborative research to commercialisation and/or implementation within salinity management programs. It is through this framework that much of the innovative research and development conducted by the private sector can be openly assessed and then proceed to implementation, providing the best and most appropriate science to stakeholders. By including stakeholders in these programs, who are the front line in salinity management, a greater degree of ownership or input into the science that they will adopt can be established. Inevitably this results in more successful technology diffusion equating to more efficient salinity management.

SME's cannot compete with the commonwealth on the marketing and dissemination of technical solutions to all levels of stakeholders. This results in the implementation of commonwealth-backed technologies that are often tied to funding allocations. A way to address this imbalance may be to establish an independent technical advisory board that has the resources to provide independently reviewed assessments on technologies from both government and the private sector. Such a committee would ideally have representation from both these sectors and other stakeholders.

Catchment Management Bodies and landholders, and in fact the wider public turn to government agencies for information on current research. It is di We believe that research conducted in the private sector remains in the private domain due to a lack of suitable linkages between government and industry.

c) Adequacy of technical and scientific support in applying salinity management options.

The adequacy of technical and scientific support can be conflicting because often those providing the majority of this support have predetermined views on the best available management options and are not able to easily adopt new and innovative technologies. There has been little attempt to objectively assess or even understand the science behind these new technologies.

Rather than blindly relying on accepted methods, we believe that the commonwealth should be actively encouraging new ways of doing things by conducting collaborative pilot programs. A means of achieving this could be through the establishment of a funding program with the sole purpose of auditing new and emerging technologies in salinity management. The benefits of such a program would be reaped not only in the improved management of our salinity-affected lands, but also in the export of intelligent Australian solutions to the rest of the world. Diversity of ideas and thinking spreads the risk of failure and results in the evolution of improved systems. If Australia does not encourage diversity we risk falling behind the rest of the world in terms of innovative technical approaches, in this case to salinity management.

GecOz Submission © 2003

GecOz Pty Ltd ▶ Geospatial Consultants Australia ▶ ACN 095 961 569

PH: +61 8 89416500 ▶ FX: +61 8 8941 6511 ▶ PO BOX 42636, Casuarina NT 0811 ▶ Suite 20 The Slipway, 48 Marina Blvd, CULLEN BAY NT 0820

EMAIL: info@gecoz.com ▶ WEB: www.gecoz.com

*Sub mas in
closed.
19/1/04*