

SUBMISSION TO THE REVIEW OF SALINITY MAPPING METHODS IN THE AUSTRALIAN CONTEXT

FROM CRC LEME AND GEOSCIENCE AUSTRALIA

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20c Lawrie, K. and Coram, J. Terms of Reference 6: Limitations in Using Catchment Characterisation (GFS) Maps as the Basis for Assessing Methods / Approaches of Salinity Mapping in Particular Landscapes. CRC LEME.

20d Lawrie, K., Gray, M., Fitzpatrick, A., Wilkes, P., Lane, R., Pain, C., & Lambert, I., 2003 draft version Assessing cost effective salinity mapping strategies using a landscape – based approach to methodology and technology selection.

Lawrie, K. Gray, M., Fitzpatrick, A., Wilkes, P., & Lane, R. 2003. Reducing the Acquisition Costs of Airborne Electromagnetics Surveys for Salinity and Groundwater Mapping. Preview 106. p 31-38.

20e Wilkes, P., and Beckett, K.,2003 Airborne gamma ray spectrometry and Aero magnetics in salinity mapping,

20f Regolith Logging (Methods and Logging Sheet).

20g Brodie, R., Lane, R., & Gibson, D. Data Interpretation, Correlation and Modelling.

20h Lane, R, 2002. Ground and Airborne Electromagnetic Methods. In: Papp, E. (Ed.), *Geophysical and Remote Sensing Methods for Regolith Exploration*, CRC LEME Open File Report 144, pp 53-79.

20i Chan, R.A. and Gibson, D.L, 2000. Regolith Landforms of the Gilmore Project Area. CRC LEME Open Report 142.

20j Munday, T.J., Reilly, N.S., Glover, M., Lawrie, K.C., Scott, T., Charters, C.J. and Evans, W.R, 1999. Petrophysical characterisation of parna using Ground and downhole geophysics at Marinna, Central New South Wales. *Exploration Geophysics* 31: pp 263-169.

- 20k Munday, T., Green, A., Brodie, R., Lane, R., Sattel, D., Barnett, S., Cook, P. and Walker, G,** 2003. Developing Recharge Reduction Strategies in the Riverland of South Australia using Airborne Electromagnetic Data – A Case Study in Tailoring Airborne Geophysics Given a Particular Target and a Desired Set of Outcomes. Extended Abstracts from the ASEG 16th Geophysical Conference and Exhibition, February 2003, Adelaide.
- 20l Brodie, R. and Lane, R,** 2003. The Importance of Accurate Altimetry in AEM Surveys for Land Management. Extended Abstracts from the ASEG 16th Geophysical Conference and Exhibition, February 2003, Adelaide.
- 20m Lawrie, K.C., Munday, T.J., Dent, D.L., Gibson, D.L., Brodie, R.C., Wilford, J., Reilly, N.S., Chan, R.A. and Baker, P,** 2000. A Geological Systems Approach to Understanding the Processes Involved in Land and Water Salinisation. AGSO Research Newsletter, v. 32, p. 13-32.
- 20n Munday, T., Walker, G., Cresswell, R., Wilford, J., Barnett, S. and Cook, P,** 2003. South Australian Salt Mapping and Management Support Project – An Example of the Considered Application of Airborne Geophysics in Natural Resource Management. Extended Abstracts from the ASEG 16th Geophysical Conference and Exhibition, February 2003, Adelaide.
- 20o Wilford, J,** 1999. Scientific Visualisation and 3D Modelling Applications for Mineral Exploration and Environmental Management. AGSO Research Newsletter, v. 32.
- 20p Wilford, J.R., Dent, D.L., Dowling, T. and Braaten, R,** 2001. Rapid Mapping of Soils and Salt Stores Using Airborne Radiometrics and Digital Elevation Models. AGSO Research Newsletter, v. 33.
- 20q Kilgour, P.L. and Pain, C.F,** 2002. National Regolith Data – Present Status and Work to Be Done. In Phillips, G.N. & Ely, K.S., (eds.), Victoria undercover: Benalla 2002 Conference proceedings and field guide: collaborative geoscience in northern Victoria. p. 167-173. CSIRO Exploration and Mining.
- 20r Lawrie K. C., Pain, C. F., Gibson, D., Munday T. J., Wilford J. & Jones G.,** 2002. Regolith – a missing link in mapping salinity processes and predicting dry land salinity hazards. In Phillips, G.N. & Ely, K.S., (eds.), Victoria undercover: Benalla 2002 Conference proceedings and field guide: collaborative geoscience in northern Victoria. p. 167-173. CSIRO Exploration and Mining.
- 20s Gibson, D.L., Wilford, J., Tan, K.P. & Lawrie, K.C.,** 2002. Palaeogeography, a predictive tool in environmental studies- applications to the margins of the Murray Basin. In Phillips, G.N. & Ely, K.S., (eds.); Victoria undercover : Benalla 2002 Conference proceedings and field guide: collaborative geoscience in northern Victoria. p. 183-192. CSIRO Exploration and Mining.

- 20t Dent, D., Munday, T.J., Brodie, R.C. and Lawrie, K.C,** 2002. Implications for Salinity and Land Management – Honeysuckle Creek, Victoria: a Preliminary Interpretation of High – Resolution Airborne Geophysical Data. In Phillips, G.N. & Ely, K.S., (eds.); Victoria undercover : Benalla 2002 Conference proceedings and field guide: collaborative geoscience in northern Victoria. p. 223-233. CSIRO Exploration and Mining.
- 20u Wilford, J., Gibson, D.L., Lawrie, K.C. and Tan, K.P,** 2002. Extending Regolith – Landform Maps into the Third Dimension – Unravelling the Palaeogeography Story for Mineral Exploration and Environmental Applications. In Phillips, G.N. & Ely, K.S., (eds.); Victoria undercover : Benalla 2002 Conference proceedings and field guide: collaborative geoscience in northern Victoria. p. 193-202. CSIRO Exploration and Mining.
- 20v Green, A.** Analysis of Hoistem Calibration Data. CRC LEME Technical Report.
- 20w Pain, C. Wilford, J. and Lawrie, K.** Geomorphology and Salt: What can Landforms Tell Us About Salinity Prediction in Upland Areas?. ICaM 2003 Abstract.
- 20x Lambert, I., Lawrie, K. and Pain, C.** Mapping and Understanding Salinity in the Landscape. CRC LEME Abstract.
- 20y Lawrie, K., Please, P., Pain, C., Grundy, M., & Walker, G.** An Integrated Geoscience Approach to Re-Assessing Regional Groundwater Flow Systems For Salinity Mitigation in the Murray-Darling Basin.
- 20z Lawrie, K., Fitzpatrick, A., Payenberg, T., Wilkinson, K., Maly, B., Lane, R., Gibson, D. & Brodie, R.** Mapping Aquifers and Salinity Systems using an Integrated Geoscience Approach.
- 20aa George, R., Lawrie, K.C., Woodgate, P. & Triantifilis, J.,** 2003. “Convince me all your bloody data and maps are going to help me manage salinity any better ?” A review of remote sensing methodologies for salinity mapping. 9th PURSL (Productive Use of Saline Land) Conference, Yepoon, Qld (Invited paper).
- 20bb Pain, C., Wilford, J. and Lawrie, K.** The Role of Geomorphology in Assessing Salt and Water Movement in Upland Landscapes. ICaM 2003 Abstract.
- 20cc Lawrie, K., Please, P., Fitzpatrick, A., Gray, M. and Pain, C.** An Integrated Geoscience Approach to Groundwater Management and Salinity Mitigation. ICaM 2003. Abstract.

20dd Lawrie, K.C., Pain, C., Wilford, J. and Gibson, D. Regolith: A Critical Component in a Holistic Systems Approach to Mapping and Assessing Dryland Salinity Hazards. CRC LEME Abstract.

20ee Lawrie, K.C., Gibson, D., Wilford, J., Tan, K.P., Pain, C., Munday, T., 2003. Mapping salinity and groundwater systems: a multi-disciplinary approach integrating geophysics and regolith geoscience. 16th ASEG, Adelaide. (Keynote, abs.)

20ff Munday, T., Hunter, D., Brodie, R. and Lawrie, K. Spatial Resolution and Mapping Scales – Matters Pertinent to the Applications of Airborne Geophysics in Salinity Management. Salinity Land Management and New Technology Conference, Bendigo 18-21 Feb, 2001. Abstract.

