

6. Recommendations

Making Use of these Results in Extension Programs:

- The current waterlogging / saline discharge areas can be managed primarily by two different means. Firstly, the discharge areas themselves should be subject to changed management that includes establishment of more suitable plants (waterlogging and salt tolerant species) and minimising of soil disturbance (reduced grazing intensity, pugging etc).
- A recently updated DPI publication 'Greener Pastures for south west Victoria' (editors Zhongnan Nie and Geoffrey Saul, first published in 1997) is a 155-page book that provides information to farmers, students, extension and scientific people. It describes how to establish and graze pastures to improve animal productivity and manage the whole farm system in a productive and environmentally sustainable manner. The 2nd edition includes a complete rewrite of several chapters and new chapters on pastures for saline areas, native grasses, pasture-crop rotation and biodiversity on farms. It is available for \$30.00 (plus postage and handling). Call 5573 0900 or email leanne.arundell@dpi.vic.gov.au.
- Improved plant water use in recharge areas proximal to each site will improve productivity while reducing groundwater recharge. As each location seems to be more 'local GFS' rather than 'intermediate' scale GFS (in a recharge – discharge sense) extension programs should continue to target landholders through both Landcare and farm productivity focussed initiatives. The modelling results suggest increasing perennial planting will suit the hydrogeological nature of the locations and cause declines in watertables in relatively short timeframes (10 years)
- During the current drought period, the higher availability of soil water and groundwater of high watertable areas should be exploited for fodder production. Research conducted under the program 'Sustainable grazing of saline land' points this way and should be investigated to ascertain its application to these areas. The SGSL demonstration site near Yarram should be utilised to promote this approach

Additional Site Investigations:

- On each locality plan, two or three suggested investigation bore sites are proposed. 25 metre deep geologically logged bores constructed as nested piezometers are recommended in order to give a clearer picture of the gradients and behaviour of the groundwater in the vicinity of the three sites.
- Estimated costs of constructing seven single bores to 25 metres are in the order of \$25,000, with licensing, logging, nested shallower bores and subsequent monitoring additional costs.

Urban Salinity Recommendations:

- For each site, investigation for Urban salinity management needs would be partly served by the suggested additional bores (eg bore close to west of Yarram and north of Inverloch). However, additional site specific bores to confirm groundwater status prior to any proposed urban development would also be required.
- The relevant municipalities in West Gippsland should consider developing a Salinity management Overlay for these three localities. A Salinity Management Overlay (SMO) is shown on planning scheme maps for the purpose of:
 - a. Identifying areas subject to groundwater discharge or areas of high groundwater recharge
 - b. Facilitating the stabilisation of areas affected by salinity
 - c. Encouraging revegetation of areas contributing to salinity

- d. Encouraging development to be undertaken in a manner which brings about a reduction in groundwater recharge
 - e. Ensuring developments are compatible with site capability and the retention of vegetation and complies with the objectives of any salinity management plan for the area
 - f. Prevention of damage to buildings and infrastructure from saline discharge and high watertables
- Below is a table that has been proposed in a recent study for the City of Greater Bendigo to manage urban development in Salinity affected areas.

Table 8. Draft urban planning guidelines based upon watertable depth				
Depth to watertable (m)	Capillary fringe relative to land surface	Salinity manifestation	Appropriate Planning response	Potential Salinity issue
0 to 1.5	Intersects the soil surface	Salt tolerant indicator plants dominate, particularly Spiny Rush and Sea Barley Grass	Avoidance Consider uses other than constructed infrastructure	Infrastructure and services bathed in saline groundwater Urban gardens severely salt affected
1.5 to 2.5	Ranges from the surface to a depth of about 1 metre	Saline groundwater in contact with foundations & underground services	Allow development only where construction complies with appropriate geo-technical standards	Potential for infrastructure and services to be bathed in saline groundwater Potential for urban gardens to be severely salt affected
2.5 and greater	1.0 and greater	Not evident at the land surface	Normal planning approval	May be an issue where substantial excavation is required