

Executive Summary

The Glenelg Hopkins Regional Catchment Strategy (Glenelg Region CaLPB 1997) defines priority actions for sustainable land management and the protection of natural resources and seeks to promote appropriate regional development and changes in land use. Agriculture is particularly important to the long-term prosperity of the Glenelg Hopkins region. Increased agricultural production and diversification is needed to achieve sustainable growth in the region. Wise selection of appropriate land for different uses and the adoption of improved management practices will be essential to manage land use change and ensure that the natural resource base is protected.

This land resource assessment (LRA) project for the Glenelg-Hopkins Catchment Management Authority Region was therefore commissioned to provide both consistent and relevant land resource information to support agricultural development. The project has been funded by the Department of Natural Resources and Environment (DNRE) and Natural Heritage Trust (NHT), and has the support of Advantage South West and the South West Sustainability Partnership. Work commenced in July 1999 and was completed in October 2001.

A Glenelg Land Resource Assessment (LRA) steering committee was appointed to ensure that the outputs of the Glenelg LRA project would meet the objectives set out in the Regional Catchment Strategy. The project was designed to fulfil both long and short-term objectives.

The long-term objectives are to:

1. Provide a regionally consistent information base that can aid and inform the Glenelg Hopkins region in natural resource management and planning.
2. Contribute to further development of land uses in the region to achieve environmental, social and economic goals for the community.
3. Improve options for remediation of land and water degradation issues including salinity and biodiversity.

The short-term objectives were aimed at preparing land resource information products to support the development and management of natural resources at the regional level. The short-term objectives were to:

1. Undertake an inventory of landform, soils, surface water and groundwater and establish key soil data sets for the Glenelg Hopkins region.
2. Provide land hazard information and identify potential on-site and off-site impacts to underpin decision making regarding current and future land use.
3. Compile land capability information designed to attract investors to the region and to ensure that investment takes place in areas where there is low economic and environmental risk.
4. Increase the efficiency and effectiveness of natural resource utilisation in the region.
5. Provide specialist land resource assessment (LRA) training to Catchment and Agricultural Services (CAS) staff and other stakeholders.
6. Ensure that the community has user-friendly access to the information products for decision making purposes.

Consistent and resource information products at 1:100 000 scale have now been developed for the region. The base soil-landform mapping has been generated through the refinement of existing data, the collection of new soil-landform data, and the extrapolation using enhanced resource assessment techniques and modelling approaches.

The base soil-landform mapping has been used a platform to assess the capability of the land to support a range of agricultural enterprises and the inherent risk of land and water degradation. Land capability maps have been developed utilising the Most Limiting Factor (MLF) methodology. This methodology relates soil, landform and climate limitations to the specific production requirements of the agricultural enterprise. This method considers soil, landform and climate criteria to have equal weighting in their assessment. Map products generated by this method for the project include:

1. Land degradation hazard maps

- Mass movement
- Gully and tunnel erosion
- Sheet and rill erosion
- Wind erosion

2. Land capability maps

- Wine grapes
- Dairy
- Blue gums
- Broad acre cropping and areas that would benefit with raised beds

The land degradation analysis has indicated that there are substantial areas at risk from land and water degradation in the Glenelg Hopkins CMA region. Table 1 provides a breakdown of the area (ha) at high risk for the above land and water degradation themes.

Table 1. Land area (hectares) subject to degradation hazard in the Glenelg Hopkins Region

Land and water degradation hazard	Area (ha) of high inherent susceptibility risk	Area (ha) of moderate inherent susceptibility risk	Area (ha) of low inherent susceptibility risk	% Area of high risk in the Glenelg Hopkins region
Mass movement	97 400	1 800	2 117 100	4
Gully and tunnel erosion	298 000	346 300	1 572 300	13
Sheet and rill erosion	2 700	1 020 300	1 193 600	<1
Wind erosion	51 800	629 500	1 538 900	2

In the Glenelg Hopkins region, it is apparent that particular soil landform units are naturally prone to land and water degradation. The Merino Tablelands and older river terraces of the Wannon River are subject to mass movement; Discovery Bay and Nelson Plains and Dunes suffer from wind erosion. Minor segments of the Mount Stavely Block experience sheet and rill erosion; and colluvial sediments/sandstones and siltstones are prone to gully and tunnel erosion.

The land capability analysis has also identified land with a high, moderate and low capacity to support the agricultural enterprises highlighted above. Table 2 provides an area statement (ha) for each capability class and agricultural enterprise.

Table 2 Land area (hectares) capable of supporting identified land uses

Land and water degradation hazard	Area (ha) of high capability rating	Area (ha) of moderate capability rating	Area (ha) of low capability rating	% Area of high capability in the Glenelg Hopkins region
Wine grapes	60 800	1 825 000	330 400	3
Dairy	21 900	1 750 200	444 500	1
Blue gums	15 300	192 600	1 062 100	<1
Broadacre cropping	-	1 138 900	2 022 900	-
Broadacre cropping with benefits of raised beds	@ 175 000			8

As with the risk of land degradation, particular soil landform units are more suited to specific agricultural enterprises than others. For dairy this includes the basalt and scoria country to the north of Heywood, the dissected country of the Digby soil-landform unit and the Koroit Marl soil-landform unit. Wine grapes would be suited to land of the Marl soil-landform unit, and Blue gums to the rich red basalts north west of Portland.

Over time, stakeholders and the wider community will ultimately judge the success of this project on the utilisation of the information products. It has therefore been recognised that the information must be provided in an easy and comprehensible format so that the information can be accessed for regional decision making. Therefore, the information assembled as part of this project has been transferred onto a CD-ROM. This will allow the interrogation of the information via a user friendly GIS or Adobe Reader.

Importantly, it must be recognised that there are some inherent limitations of this study. Recognition that this study is not an encompassing suitability product that covers the issues of hydrology and socio-economics is noteworthy when using this information. Also, the survey intensity and scale of mapping is generally suitable for broadscale planning, rather than specific uses such as property management and development plans.

Recommendations

- That the report and information products generated by this project be available at regional locations to enable stakeholder and community access.
- That analysis of the hydrological implications of potential land use change should be carried out (groundwater and surface water availability for irrigation, surface water quality impacts), using the land capability mapping as a basis for scenario modelling.
- That suitability of land use is determined from the land capability base only after hydrological, economic and social issues have been included.
- That stakeholders and the community be directed to the Victorian Resources Online website (www.nre.vic.gov.au/vro) for additional information on land and water resources in the Glenelg Hopkins region.

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Colin Dunkley	Glenelg Hopkins Catchment Management Authority.
Gordon Duff	Deakin University.
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Martin Bluml	DNRE (Agriculture Victoria) - Centre for Land Protection Research.
Richard MacEwan	DNRE (Agriculture Victoria) - Centre for Land Protection Research.