

## Land series

# Managing dryland salinity on your property

Methods for managing salt prone areas usually involve a number of strategies and should complement whole property planning.

To manage salinity effectively it is important that you are able to identify which part of the landscape you are dealing with. The following section outlines the three zones found in landscapes subject to salinity.

## Zones of water movement

Figure 1 shows the three zones related to water movement in a catchment. The characteristics of each of these zones are listed in Table 1.

### *Intake or recharge zone*

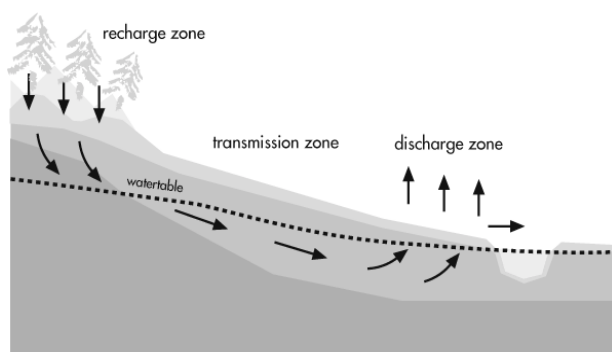
The upper catchment is the intake or recharge zone. Rainwater either runs off or infiltrates into the soil profile.

### *Transmission zone*

Water that is not utilised by plants in the intake zone enters the groundwater system and passes through the transmission zone in the mid slope area.

### *Discharge zone*

Where the water table is high, sites lower in the catchment act as discharge zones and the groundwater either lies close to or on the soil surface causing waterlogging or salinity outbreaks.



**Figure 1 Salinity recharge, transmission and discharge zones**

## Salinity management

Salinity is managed by a combination of revegetation and engineering strategies designed to lower the watertable in salt affected areas. This results in reduced waterlogging, evaporation, salt mobilisation and concentration at the soil surface.

Table 1 lists the management strategies applicable to each zone.

### Using vegetation

#### *Intake or recharge zone*

Maintain existing vegetation in the water intake zone and encourage natural regeneration.

#### *Transmission zone*

Increase groundwater use by planting deep-rooted trees and pastures.

#### *Discharge zone*

Increase groundwater use in salt affected areas by fencing the area to exclude stock until salt tolerant vegetation is established, then allow limited grazing. Switch from cropping to deep rooted, salt tolerant pastures and trees.

More information on the use of vegetation to manage salinity can be found in the following fact sheets:

- L54 *Managing salinity with vegetation*
- L56 *Production from salty lands*.

The Vegetation series of fact sheets also has information on the growth and management of trees in salt affected areas.

### Engineering practices

Engineering strategies for managing salinity include:

- installation of drains, bores and pumps
- irrigating with groundwater of suitable quality.

For more information on the use of engineering practices to manage salinity refer to fact sheet L55 *Managing salinity with engineering*.

**Table 1 Site characteristics and management strategies for saline or potentially saline catchments**

Recharge zone	Transmission zone	Discharge zone
<b>Site characteristics</b>		
<ul style="list-style-type: none"> <li>• Mostly cleared</li> <li>• Shallow rooted pastures / crops</li> <li>• Shallow, well drained (highly permeable) soils</li> </ul>	<ul style="list-style-type: none"> <li>• Groundwater often of useful quality and quantity</li> <li>• Shallow groundwater usually accessible by pumps, trees or deep rooted pastures</li> <li>• Occasional waterlogging</li> </ul>	<ul style="list-style-type: none"> <li>• Seepage, water logging, possible scalding</li> <li>• Prone to erosion</li> <li>• Loss of vegetation</li> <li>• Salt tolerant vegetation evident</li> <li>• Reduced land use options</li> <li>• Soils often impermeable</li> </ul>
<b>Strategies for managing salinity</b>		
<ul style="list-style-type: none"> <li>• Revegetate with trees and/or deep rooted pastures</li> <li>• Revegetate stock routes, fence lines and water courses</li> <li>• Avoid summer fallow</li> <li>• Adopt agroforestry</li> </ul>	<ul style="list-style-type: none"> <li>• Use pumps or windmills to lower the water table</li> <li>• Use trenches (up to 5 metres deep) to harvest the water for farm use</li> <li>• Install subsurface drainage</li> <li>• Irrigate adjacent areas with water from this zone</li> <li>• Establish dense vegetation with high water use characteristics in areas where the groundwater is shallow and of suitable quality</li> </ul>	<ul style="list-style-type: none"> <li>• Establish salt tolerant vegetation</li> <li>• Maintain good vegetation cover by maintaining existing timber and fencing to control stock</li> <li>• Control erosion</li> <li>• Allow seasonal flooding where it naturally occurs</li> <li>• Use surface and subsurface drainage</li> <li>• Pump water if suitable</li> <li>• Limit stock use</li> </ul>

## Making the right decision

The following factors should be considered when choosing salinity management practices:

- short and long term goals
- financial issues such as set up costs
- personal interest in diversification and alternative land uses
- potential impacts on properties down slope in the catchment
- personal attitudes to environmental responsibility
- aesthetic values and wildlife habitat
- activities and attitudes of neighbours and local catchment management groups.

A cost benefit analysis is helpful when evaluating management strategies. Important considerations include the costs of managing the current degraded situation, costs of partial control and the costs of reclamation of salt affected areas.

Some management strategies may reduce the immediate income from productive lands, so long term benefits have to be assessed. At the same time it is important to implement management options as early as possible to avoid future production losses.

## Further information

NR&M website <i>ResourceNet</i>	<a href="http://www.dnr.qld.gov.au">www.dnr.qld.gov.au</a>
<i>The Salinity Management Handbook</i>	Phone NR&M Service Centre, 07-3896 3216
<i>Selecting Trees for the Rehabilitation of Saline Soils in SE Qld</i>	Phone Qld Forest Research Institute, 07-38969713

Other fact sheets available in this series include:

- L51 *Salinity in Queensland*
- L53 *Identifying, monitoring salt affected areas*
- L54 *Managing salinity with vegetation*
- L55 *Managing salinity with engineering*
- L56 *Production from salty land*
- L58 *Brymaroo catchment - salinity case study.*

*The Queensland Government is tackling dryland salinity with the support of the National Action Plan for Salinity and Water Quality – a joint Commonwealth, States and Territories initiative. This seven year program involves priority catchments and the National Dryland Salinity Program which carries out research, development and extension activities to prevent or manage dryland salinity. ■*

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SALINITY  
PROGRAM**



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