



Department of Agriculture



Rural Towns Program



KATANNING

To the Katanning Resident

As you may be aware, salinity, caused by rising watertables, is recognised as one of the most severe environmental threats facing Western Australia. While the effects of salinity on our farmland are well-known, many people aren't aware of the damage salinity is causing to our rural towns.

Rising watertables and salinity can threaten key infrastructure and public assets including people's homes, public buildings, roads, bridges, water supplies, schools and recreational areas. If not addressed, this can result in costly repair and maintenance bills.

For example, in Katanning the impact of rising watertables and salt is visible around the town's aquatic centre on Park Street. The protective wall surrounding the local swimming pool's pump shed is showing signs of crumbling brickwork and salt deposit.

Although townsite salinity has the potential to be a serious problem, there are many ways of combating it including surface water control, revegetation, more efficient use of town water, and engineering solutions such as groundwater pumping, drainage and construction of evaporation ponds.

The Department of Agriculture established the Rural Towns Program in 1997 to give towns real help in their fight against salinity. More than 35 towns in WA's agricultural region are now involved in the Program.

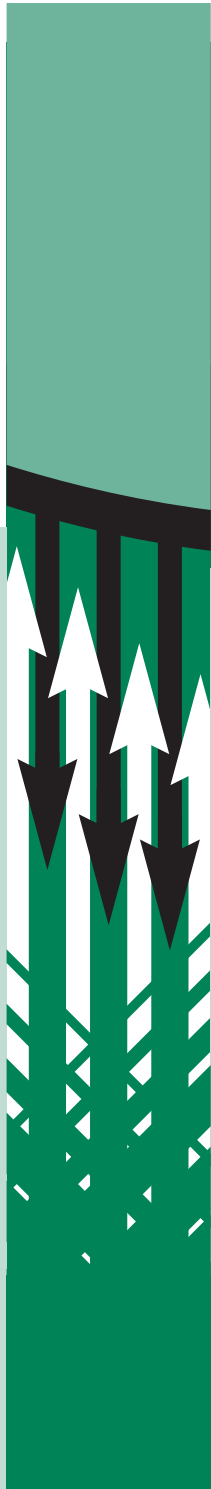
An important part of the Rural Towns Program is an economic impact study conducted with six towns including Katanning to assess the likely economic impact of salinity on town infrastructure. Inside this leaflet you'll find a summary of the results of the study conducted in Katanning. It will explain what the impacts are likely to be, when the damage may occur, the potential costs of treating the problem, and the recommendations forwarded to the Shire council for consideration.

This is designed to help you and your local Shire choose the best ways of managing salinity in your town and start taking the steps necessary to address the problem.

The Rural Towns Program will be working closely with the Shire over the next few years to help them develop and implement the recommendations made in the study.

You can find out more about townsite salinity at your local Shire office, landcare centre or library. Many schools in the district also have information about the Program, including a video on townsite salinity.

Mark Pridham
Rural Towns Program Manager
September 2002





Study Background

The Economic Impact Study was conducted in 2000-2001 by consultants URS (formerly Dames & Moore-NRM), using the following methodology:

- Development of a groundwater model by the Department of Agriculture, which predicts changes in groundwater depth in each town over the following 30 years
- Mapping the townsite, by dividing it into zones of similar infrastructure type
- Estimating the impact of salinity and rising groundwater on general infrastructure, land and property damage costs
- Identifying the critical groundwater depth for the different types of infrastructure, and the times when infrastructure will start to be affected
- Estimating the costs of addressing salinity and rising watertables for each zone over the next 30 to 60 years
- Estimating the costs of damage and the costs of controlling the problem in each town
- Making recommendations on the most cost-effective way to reduce or eliminate the impact of rising groundwater and salinity in the town.

Key Findings Across All Six Towns

The study revealed that every town is different in the scope and likely impact of the problem, how soon it will occur, what the costs are likely to be and how quickly each community will need to deal with the problem. This means that every town needs to plan its own strategy accordingly. There is no 'blanket' solution that will work equally well for all towns, and what works well for one town won't necessarily work for yours.

The study shows clearly that rising watertables and salinity are causing considerable damage to key infrastructure in Katanning and that money and effort will need to be spent to ensure the future protection of assets within the town.

While some communities have a few years' grace before the problem reaches a critical level, others will have to move very quickly to address their problems. Some hard decisions may need to be made about the cost versus benefit of various approaches.

Averaged over the six there were many variations between towns; roads were the most affected type of infrastructure, representing about 65 per cent of the total damage cost per town. Impact on housing represented about 20 per cent of the total cost, with public buildings,

commercial buildings and other infrastructure such as recreation areas representing the remaining 15 per cent. For Katanning the cost breakdowns are on page four.

Communities face three alternatives in managing townsite salinity:

- i) continually repair the damage caused by salinity;
- ii) abandon the asset; or
- iii) fix the underlying cause of the problem.

Repairs and maintenance strategies are currently the most acceptable, but there may be some circumstances where abandonment is more practical – for instance where a recreation area is already being affected by salt, and it is cheaper to establish a new one on an alternative site rather than maintain the current one in its present location.

Fixing the underlying cause of the problem is more expensive, but is the long term solution to townsite salinity.

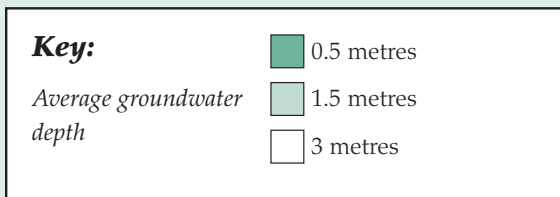
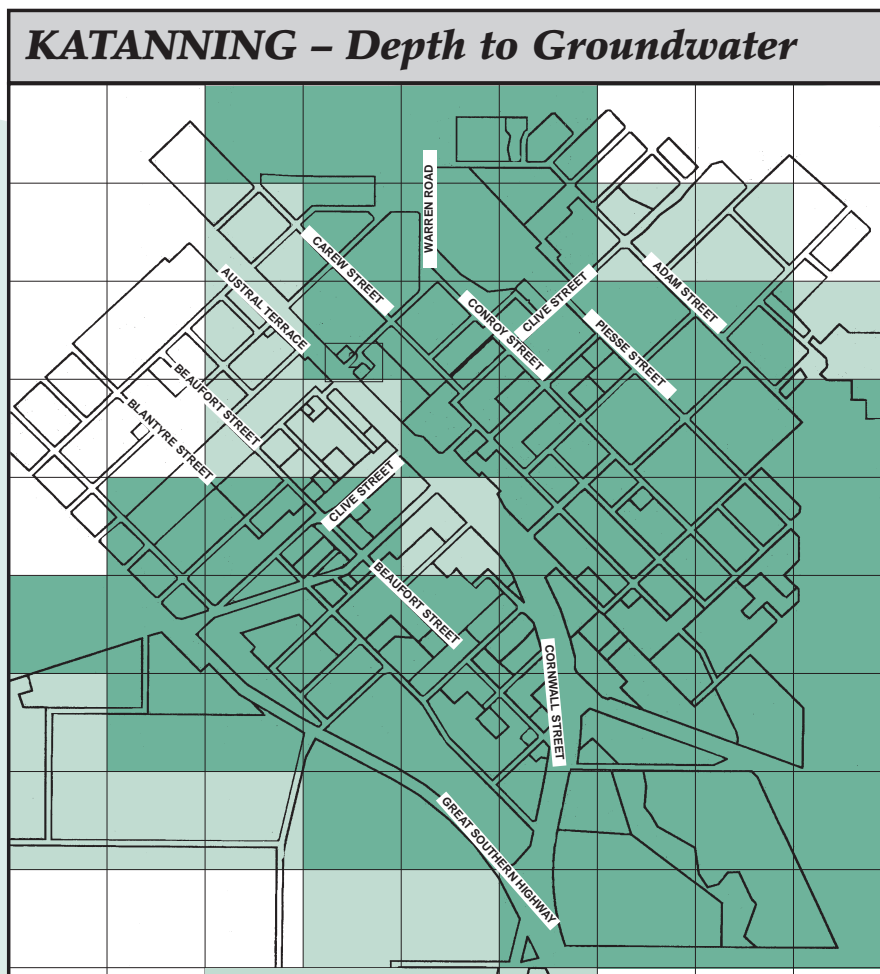


Salinity 'Creep' and its Effect on Katanning

The map below shows how the impact of rising groundwater is affecting the town. The map has been developed by undertaking a detailed study of groundwater conditions, topography, geology, climatic data and aquifer characteristics, then carrying out a computer-based analysis of how groundwater has risen under the townsite.

The map represents average groundwater levels as they are today.

The levels indicated are 3 metres, 1.5 metres and 0.5 metres from the surface. The closer groundwater is to the surface, the greater the likelihood of significant damage occurring to the town's infrastructure. The study suggests that significant damage costs start when groundwater reaches 1.5 metres from the surface. Major damage is likely to occur when groundwater is within 0.5 metres or less from the surface.





What This Tells Us

With nearly two-thirds of the town already experiencing water less than 1.5 metres from the surface, the impact of salinity is quite advanced in Katanning. A large proportion of the townsite area has a groundwater table within 0.5 metres of the surface. The affected area conforms to the low lying areas of town which lay either side of the central ridgeline running NW/SE through the main business area. From the study it can be concluded that the townsite faces some significant costs from high watertables over the next two years.

What is the Predicted Damage Cost?

The report estimated the cost of damage to be \$6.9 million (in today's dollars), over the next 30 years.

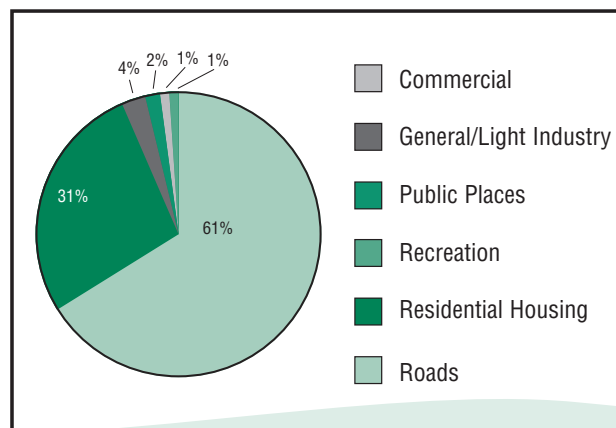
When Will it Occur?

As the watertable is very near the surface over a large area of the town, there is already significant damage throughout Katanning and the local community will need to make an early decision about how best to address the problem.

What are the Likely Maintenance Costs?

The estimated maintenance costs of key infrastructure throughout the town are outlined in the table below.

Proportional Damage Costs



Housing and roads account for over 90 per cent of estimated salinity damage costs in Katanning. Increasing road repair and maintenance costs will make up the majority of costs. The major impact on housing is likely to be for improved drainage around each house with additional costs for fixing damaged mortar and brickwork and rotting house stumps.

Predicted maintenance costs for each common type of infrastructure

Item	Depth of groundwater	Cost (NPV)	Notes
Brick: house on ground	1.5m	Nil	
	0.5m	\$2000 per house in 1st year after groundwater reaches 0.5m	Repair of fretting brickwork, crumbling mortar, assumed to be a once-off expenditure, due to assumed installation of perimeter drains (see below), which would prevent recurrence
		\$6,000 per house in 3rd year after groundwater reaches 0.5m	Construction of perimeter drains around each house block, with slotted pipe and granular fill, to promote discharge of groundwater to surface run-off, such as natural channel, or exiting kerb-side drain; with a sump serving the whole street and a pump to surface channel/disposal route if required
House on stumps	1.5m	Nil	
	0.5m	\$1,000 per house every five years	Jacking and re-stumping where necessary, starting in the first year the groundwater reaches 0.5m
Main road	1.5m	\$145,000/km every seven years	Costs apply to 0.3 of the length of road in the zone every seven years
	0.5m	\$195,000/km every three years	Costs apply to 0.3 of the length of road in the zone every three years
Local road	1.5m	\$70,000/km every seven years	As above, but with lower costs due to reduced traffic carried on local roads
	0.5m	\$100,000/km every three years	



What it Means to the Katanning community

What is the situation?

Katanning faces an estimated damage bill of \$6.9 million over the next 30 years. Nearly two-thirds of the town already experiences water less than 1.5 metres from surface, so the problem is quite advanced. Major costs from the impact of salinity and rising watertables are being experienced now.

What are the major cost impacts?

There are major impacts on roads (damage cost of \$4.2 million) and housing (\$2.1 million), with smaller impacts on recreational facilities (\$262,000) and other public facilities (\$107,000).

Where to from here?

Katanning faces substantial costs to manage the groundwater problem. To live with the problem and meet the damage costs without controlling and lowering the watertables will cost the town approximately \$6.9 million. Alternatively, using current technology, it will cost approximately \$7.6 million to prevent further rise and lower existing groundwater levels.

Options for Fixing the Problem

What can be done to fix the problem and what will it cost?

A major program of salinity control measures has commenced in Katanning with a range of options outlined in the report provided to the Shire.

- A groundwater pumping program to lower groundwater levels in the central, most threatened, area of town.
- A stormwater drainage system, complementing the pumping program
- A new sealed drainage system along creeks within the town; and
- A WaterWise Program, to improve domestic, industrial and public townsite water management. water use in the town and domestic stormwater management and disposal.

Using current technology, it will cost an estimated \$7.6 million to implement these options over the next 30 years. The challenge now is finding more cost effective ways of dealing with the water disposal problem, perhaps by obtaining some financial return from groundwater pumping?



What You Can Do Now To Help

While rising watertables due to a general increase in groundwater levels are causing a lot of damage to infrastructure in Katanning, local recharge may also be contributing to the problem.

You can help by reviewing the way you manage water and reducing the amount of water being discharged into the ground around your home or business.

Better stormwater management around businesses and homes

Poor run-off water drainage is contributing to the problem of rising watertables.

Damage to brickwork of many buildings is often due to poor drainage around the building itself and the inadequate disposal of stormwater run-off from roofs which causes excessive amounts of water near buildings contributing to building damage and soil waterlogging.

There are many ways business and home owners can handle run-off more effectively around buildings through changes to drainage.

The best place to start is by asking your local Shire to see what you can do to change drainage systems at your property to better dispose of run-off water.

Using water more efficiently at home

At home, you can help decrease the impact of townsite salinity in your town as well as saving money by taking a few simple steps.

Inside the home

- Replace your old showerhead with a high efficiency one
- Fit aerators to hand basins
- Install a dual flush toilet
- When buying a new dishwasher or washing machine make sure it is a water efficient model.

Outside the home

- Don't over water your garden, use the Rural Towns Program's watering guide.
- Ensure your garden is well mulched – mulch to 130mm and top up as required.

- Cut down on your lawn area by maximising the use of non-planting treatments such as paving and mulches
- Install a well-designed automatic watering system – it will use much less water than a manual system saving you money
- Consider replacing introduced and high water requirement plant species with low water requirement native species

Have a look at the Rural Towns Program's Water Utilization Program and Revegetation Guidelines (WURG package) and learn to become water wise.

**To find out more,
contact the Katanning Shire
on 9821 4200**



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