Fact Sheet

8

Land Use

Land

Land Use Issues

'Land use' is the way in which we utilise the land. In South Australia, the major land uses are livestock grazing on native pastures (43.6%), conservation and natural environments (39.2%) and dryland agriculture (10.9%). Land use in areas closer to towns and settlements is generally more intensive, involving bigger changes to the natural environment. If the way in which we use the land is not compatible with the nature of the land, soils, vegetation and water, then in the long-term, major social, economic and environmental problems may occur.

Some land use changes can have a major impact on the environment, especially if it is a change from relatively low intensity use, to a higher intensity use. Over the last 15 years, for example, the area taken up by vineyards in South Australia has increased 170%. The area planted to vineyards in the Mount Lofty ranges has shown the highest growth since 2003 with an increase of 10.4%. If these new land uses are not managed appropriately, then they can place greater pressure on water resources, biodiversity and soils, in comparison to other uses they may have replaced, such as grazing.

Increasing residential development in the Mount Lofty Ranges is placing new pressures on this environmentally sensitive area, and replacing some of our most productive land. Peri-urban areas are those close to, or surrounding, urban areas. Using peri-urban land for residential development increases pressure on biodiversity and water resources.

Other problems can occur when the change in land use is not compatible with the way land was previously utilised. For example, there have been problems where people have built houses on land that was contaminated by industry, and this has had implications for human health and wellbeing.

Trends

Residential land use is **increasing** in peri-urban areas with resulting pressures on biodiversity, water resources and agricultural land.

Change from relatively low intensity to high intensity land use is **increasing** in some areas.

Awareness and acknowledgment of site contamination is **increasing**.

Use of chemicals with residual impacts is **decreasing**.

"Agricultural land uses have significantly changed Australia's and South Australia's landscape."

Land Use

What is the Current Land Use Situation?

Condition indicators

The area of agricultural land susceptible to wind erosion

Current land use in South Australia

Since 1998, land use maps have been developed to provide information to assist in the identification and management of a wide range of natural resource management issues. Of the land that has been mapped, the broad land use categories determined include the following:

- **Conservation and natural environments** (39.2%) – it is important to recognise the conservation of natural environments as a legitimate land use. The majority of this land occurs in the far north. This broad land use category is exposed to low levels of human impact and include National Parks and Wildlife Reserves (about 49% of this category), Aboriginal lands (eg the Pitjantjatjara), protected landscapes, defence and nature reserves.
- **Production from relatively natural environments** (43.6%) – this broad land use category takes up the biggest proportion of all land that has been mapped. Land in this category is exposed to relatively low levels of human impact. The major land use is sheep and cattle grazing on native pastures in the Rangelands region. Over-stocking and grazing by rabbits in the past has led to the degradation of vegetation and soil erosion in many regions. The introduction of rabbit haemorrhagic disease has led to the successful establishment of germinating native species such as Acacia aneura for the first time in 100 years.
- **Production from dryland agriculture and plantations** (10.9%) – this category is based on dryland farming systems where the majority of native vegetation has been cleared. Specific land uses include stock grazing, cropping, plantation forestry and a wide range of horticultural production. In 2005, South Australia produced around a quarter of the gross value (total amount) of Australia's barley crop and 12.3% of the gross value of Australia's wheat crop.

  Agricultural land uses have significantly changed Australia's and South Australia's landscape but land and crop management practices are improving in many regions as a result of farmer education. As an example, soil loss associated with agricultural land use in South Australia has reduced considerably over the last fifty years and continues to decline as a result of better management practices.

  Most **forestry plantations** consist of softwood (mostly pine), but there is an increasing trend towards the establishment of hardwood plantations (generally eucalyptus species). Forestry plantations occupy around 174,018 hectares of land in South Australia. There are concerns that the growth of the forestry industry could impact on water resources and biodiversity in general if it is not managed properly. Carbon offset schemes as proposed in the Australian Government's Carbon Pollution Reduction Scheme are likely to accelerate the establishment of additional forests or carbon sinks (forests planted to permanently store carbon).
- **Irrigated agriculture and horticulture** (0.3%) – consists of irrigated horticulture, viticulture and pastures. These uses can place greater pressures on the environment. In particular, irrigated crops can place greater pressures on surface and groundwater resources due to higher water demand. The drainage of irrigation water from dairy pastures is a concern because of the level of faecal bacteria that pollutes the water.
- **Intensive uses** (1.7%) – are those uses that involve high levels of interference with natural processes and are generally associated with human settlements. Specific land uses include urban and rural residential development, mining, transport and communication, manufacturing and waste treatment and disposal.

  South Australia is a highly urbanised state, with 73% of the population living in Adelaide. In comparison, only 45% of Queenslanders live in Brisbane because of the more regionalised settlement of the state. The Adelaide metropolitan area continues to spread into the Mount Lofty Ranges, which negatively affects biodiversity and water quality, together with the loss of prime agricultural land. Residential living is also increasing significantly along the South Australian coastline as more people seek to live closer to the beach.

  Mining occupies only a very small proportion of the state. Major products include copper, gold, iron, gypsum, granite, oil, gas, coal, uranium and opals. These are all non-renewable resources.

Land use in South Australia

	Area (ha)	% of the State
Conservation and Natural Environments	38,511,184	39.2
Production from Relatively Natural Environments	42,828,863	43.6
Production from Dryland Agriculture and Plantations	10,728,136	10.9
Production from Irrigated Agriculture and Plantations	264,461	0.3
Intensive Uses (including Human Settlement)	1,633,737	1.7
Water	4,207,673	4.3
Unmapped Areas	3,520	0.004

Source: Department for Water, Land and Biodiversity Conservation

Land Use

What is the current land use situation?

Pressure indicators

Pesticide use

The use of pesticides has brought us lots of benefits by increasing food production, controlling disease and providing high quality food at a reasonable price. However, there are also many environmental impacts from the use of pesticides and the potential to cause contamination of soil and water. Australia and South Australia have very low levels of pesticides by world standards and this is reflected by the low levels of pesticides detected in food samples.

There is an increasing awareness of the importance of environmentally friendly and sustainable agricultural production. Farmers now use 'soft' chemicals which are only active on specifically targeted species at (or immediately after) the time of application.

Site contamination

Site contamination may occur as a result of introducing chemical substances to a site. For a site to be considered contaminated the introduction of chemical(s) must pose a risk to human health and/or the environment, taking into account current or possible future land uses. The types of activities that can lead to soil contamination include industrial and some commercial land uses; the disposal of wastes and chemicals; leakage during storage or transport; accidental spillage of wastes and chemicals; the spreading of sewage sludge; and the use of pesticides.

> **"South Australia is a highly urbanised state, with 73% of the population living in Adelaide."**

Responding to Land Use

The **Planning Strategy for Metropolitan Adelaide (2007)** introduced the idea of an urban boundary for metropolitan Adelaide. The purpose of this urban boundary is to protect viable agricultural land; promote more compact urban forms; define the extent of urban growth; provide open spaces for the Hills Face Zone; and protect the watersheds of the Mount Lofty Ranges from further intensification. Similar strategies have also been developed for the Outer Metropolitan Adelaide Region and the Yorke Peninsula. These aim to integrate natural resource management with land use planning, and improve the integration of environmental issues with planning policy and sustainability.

Taking Action about Land Use

- Think about your local area and write a list of the changes in land use you have noticed in the last few years. Some things might include the clearing of land for new houses, or a new industry being built in your area.
- Ask your family and neighbours about the changes that they have seen too.
- Write a list of the possible environmental impacts that might happen from these changes

Impacts of

Land use

Inland Waters

As land use changes towards higher intensity agricultural uses, there is increased pressure on water resources. In some areas, water resources are already being used above estimated sustainable limits. Stormwater run-off from the increasing intensification of urban land use will threaten water quality.

Biodiversity

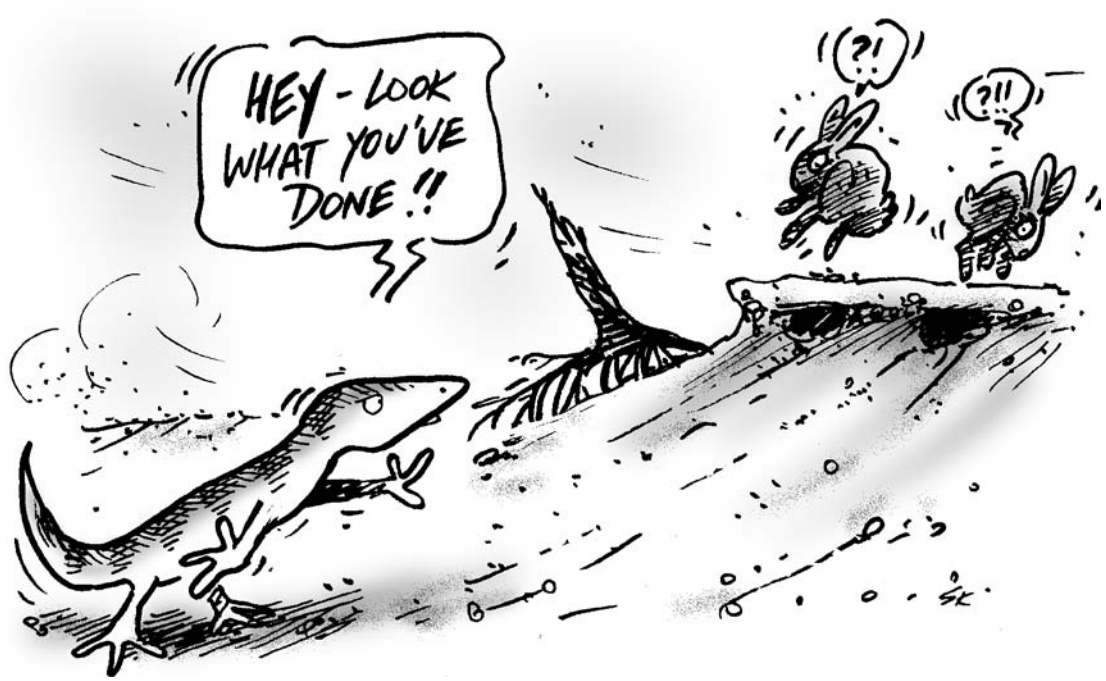
Clearance of native vegetation to make way for housing in the Mount Lofty Ranges has the potential to significantly affect biodiversity.

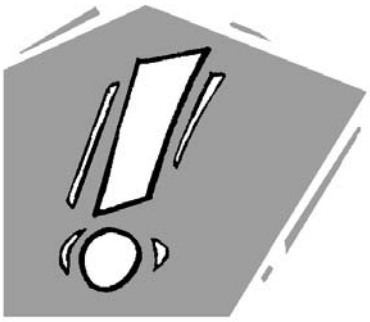
Human Settlements

Site contamination of some urban areas as a result of past land uses (eg tanneries) poses an immediate and long-term hazard to human health.

Economic

Loss of highly productive agricultural land to increased residential development will ultimately have an impact on the economy as a result of reduced productivity and economic resources.





Attention!!

Can plants help to rehabilitate contaminated land?

Plants can play an important role in rehabilitating (fixing) altered landscapes. Some of the common ways that plants can help include:

- reducing the water table height and salt damage,
- increasing species variation, including supplying other species with food and shelter and increasing indigenous biodiversity,
- purifying water (eg wetlands), and
- modifying soil chemistry.

Some plants have also evolved to survive on metal rich soil and these are called Metallophytes. They have the ability to take in metal contaminants from the soil. These metals can then be harvested from the plants and taken away, removing the metal contaminants from the area. The use of these plants in South Australia is not common, but they have the potential to help site remediation processes following mine closures. The use of Metallophytes could shorten the time required to return the site to a more natural state.

References

ABS (2007a). South Australia at a glance. Australian Bureau of Statistics Catalogue No. 1306.4, www.abs.gov.au

Whiting, S.N., Reeves, R.D., Richards, D., Johnson, M.S., Cooke, J.A., Malaisse, F., Paton, A., Smith, J.A.C., Angle, J.S., Chaney, R.L., Ginocchio, R., Jaffre, T., Johns, R., McIntyre, T., Purvis, O.W., Salt, D.E., Schat, H., Zhao, F.J., and Baker, A.J.M. (2004). Research Priorities for Conservation of Metallophyte Biodiversity and their Potential for Restoration and Site Remediation. Restoration Ecology. Vol. 12, no. 1, pp 106 – 116.

Resources

For more detailed information on the issue and actions you can take see the State of the Environment report for South Australia 2008. This is available at: www.epa.sa.gov.au/soe

Research Ideas

about Land Use

1 What is meant by 'land use'?

2 How does the way we use land affect the environment?

3 How have human activities impacted on land use in your community, South Australia, Australia and globally?

4 What does the State of the Environment report tell us about land use issues in South Australia?

5 What might happen in the future if things continue as they are?

6 What are government, business and industry doing to address land use issues?

7 What can we do individually, or in communities, to reduce our impact on land use?

This fact sheet is part of a set of 20 fact sheets about the key environmental issues identified in the State of the Environment report 2008, produced for the Environment Reporting Education Resource. You can access the fact sheets and learn more about taking action for the environment at the Education Resource website: www.epa.sa.gov.au/soe.
For more information call the Environmental Education Unit of the Department for Environment and Heritage (08) 8463 3911.

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