



# 7

## A greener city

### Direction 7

- 7.1 Ensure that water resources are managed in a sustainable way
- 7.2 Reduce the amount of waste generated and encourage increased reuse and recycling of waste materials
- 7.3 Contribute to national and international efforts to reduce energy usage and greenhouse gas emissions
- 7.4 Reduce the impact of stormwater on bays and catchments
- 7.5 Protect ground water and land resources
- 7.6 Ensure that land-use and transport planning and infrastructure provision contribute to improved air quality
- 7.7 Protect native habitat and areas of important biodiversity through appropriate land-use planning
- 7.8 Promote the concept of sustainability and develop benchmarks to measure progress
- 7.9 Lead by example in environmental management

# Ensure that water resources are managed in a sustainable way



## Water supply

The Government will protect Melbourne’s water catchments and water supply facilities to ensure the continued availability of clean, high-quality drinking water. It will require that reservoirs, water mains and local storage facilities are protected from potential contamination, and that planning for water supply, sewerage and drainage works receives high priority in early planning for new developments.

## Water demand

Water use efficiency will be managed so that existing storages can reliably meet water demand beyond 2030. Sustainable management will ensure that water availability in other parts of Victoria is not adversely affected. Reductions are needed in *per capita* water consumption, which has already fallen by 12 per cent in the past decade, and in leakage rates, which are estimated as 8 per cent of potable water supply to Melbourne.

## Waste-water treatment

High standards of waste-water treatment and management will reduce the impact of treated effluent in the marine environment. EPA Victoria requirements govern the discharge of treated effluent from the Western Treatment Plant at Werribee (into Port Phillip Bay) and from the Eastern Treatment Plant at Carrum (into Bass Strait near Gunnamatta). The latest technology will be used to upgrade these plants to meet future demand and quality requirements. Both plants, located in green wedges, will continue to be protected uses.

## Waste-water recycling

The Government has set a target to increase waste-water recycling from 1 per cent to 20 per cent by 2010 for non-potable uses such as in agriculture, industry and recreation. This aims to reduce demand on the potable water supply and enable new uses for land near sewage treatment plants. To help reach this goal, a water recycling strategy is in preparation. Land has been identified that is suitable and available for water reuse. Development of new urban areas and green spaces will contribute to sustainable urban development by taking advantage of any opportunities for effluent recycling, particularly in the south-eastern and western metropolitan areas near the treatment plants (see ‘Werribee Plains: a vision for sustainable growth’). The opportunities to remove water directly from sewers for local treatment will be assessed (see ‘Water recycling trial in the Domain’).



The Government will protect Melbourne’s water catchments and water supply facilities to ensure the continued availability of clean, high-quality drinking water



# Initiatives

- 7.1.1** Implement programs for sustainable water management to ensure that supply from the existing dams is sufficient to 2030 and beyond in accordance with the Water Resources Strategy for Melbourne
- 7.1.2** Promote water efficiency practices in new and refurbished developments by incorporating the National Water Rating and Labelling Scheme for water-efficient fittings and appliances into the Building Act and Building Code of Australia for all new and refurbished buildings
- 7.1.3** Use planning provisions to protect water supply and treatment facilities, within and outside the urban growth boundary
- 7.1.4** Adopt guidelines to encourage use of alternative water sources such as rainwater tanks, stormwater and recycled water by local government, developers and households
- 7.1.5** Progressively upgrade the treatment of effluent at the Eastern and Western Treatment Plants to meet the demands of a growing population while meeting increasingly stringent EPA Victoria requirements, and encouraging treatment to a level suitable for water recycling
- 7.1.6** Promote business opportunities related to waste-water treatment, including biosolids processing and water recycling
- 7.1.7** Ensure that local treatment and recycling of stormwater for non-potable uses is considered in new developments, in accordance with the *Best Practice Environmental Management Guidelines for Urban Stormwater* (BPEM Guidelines) and EPA Victoria guidelines





## Water recycling trial in the Domain

A water recycling plant and irrigation system was trialled in the Kings Domain gardens in Melbourne from late February to April 2002. This was a joint venture between Melbourne Water, Melbourne City Council and the Department of Infrastructure. It aimed to show that water from sewers can be successfully recycled, at a quality comparable with fresh water, for the irrigation of parks and gardens.

The recycling plant was housed on-site in a portable shipping container, and employed the latest membrane technology to deliver 30,000 litres of high-quality recycled water each day.

It was designed to:

- reduce nutrients from recycled water to avoid the likelihood of irrigation run-off polluting Melbourne's waterways and Port Phillip Bay
- protect trees, shrubs, plants and grasses by providing amounts of salt and major ions at levels comparable with fresh water
- ensure a consistently high quality of recycled water through the trial, consistent with EPA Victoria requirements for the reuse of waste water.

## Werribee Plains: a vision for sustainable growth

The Government's vision for Werribee Plains is a practical demonstration at regional level of the sustainability principles that are fundamental to *Melbourne 2030*.

The Government sees Werribee as a region with:

- an international reputation for its commitment to sustainable development
- a positive economic future built on embracing sustainability as a distinctive competitive advantage
- a culture that reinforces sustainability through involving and developing the community.

It is proposed to transform the western plains of Melbourne into a major 'green region' that highlights sustainable agricultural, industrial and urban development. The sustainable management of natural resources such as energy, water and ecosystems – and associated infrastructure – is vital. This will accord with the relevant directions and policies of *Melbourne 2030*.

The vision is being developed through a mix of private and public actions based on the sustainable development of strategic resources in the region. These include the Western Treatment Plant, the Werribee Technology precinct and the Point Cook precinct, Avalon airport, the agricultural land around Werribee, the urban growth areas and coastal wetlands, and the Werribee tourism precinct.

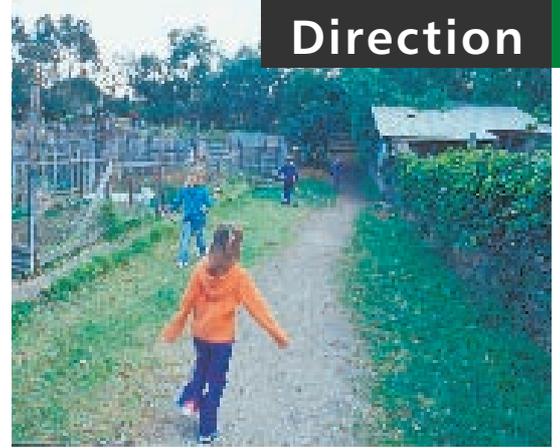
Recycled water from the Western Treatment Plant will be the starting point for action. Potential environmentally sustainable projects driven by recycled water include:

- infrastructure to treat, transport and distribute recycled water to markets
- high value export-based irrigated agriculture, such as vines, stone fruits, cut flowers, forestry and horticulture
- downstream food-processing clusters
- eco-industrial parks and water-intensive manufacturing
- urban developments in designated growth areas that are designed and marketed on sustainability principles
- tourism facilities based on the region's internationally significant wetlands and on opportunities for leisure facilities, such as golf
- landscaping of new developments and existing open space
- energy generation from biomass associated with recycled water production.

*Melbourne 2030* will directly support recycling of water by protecting the green wedges in the region, and its valuable agricultural land. The adoption of Neighbourhood Principles in new developments within the urban growth boundary will mean recycled water can be a viable alternative to potable water for outdoor uses.

In new urban development, transit-oriented development and smart growth principles will reinforce the focus on sustainability by promoting walking, cycling and public transport instead of cars, and by reducing the amount of land and resources required for buildings.

## Reduce the amount of waste generated and encourage increased reuse and recycling of waste materials



Waste management planning in Victoria is based on application of the waste hierarchy (see 'The waste hierarchy'). *Melbourne 2030* aims to ensure that all sections of the community contribute to reducing the amount of household, industrial and hazardous waste generated in the State.

Recycling of municipal waste has improved – increasing from 27 per cent in 1993 to 44 per cent in 1998–99. Victorians have been highly successful in diverting household wastes away from disposal in landfill, but the same gains have not been made in commercial and industrial waste. As this makes up approximately two-thirds of all waste sent to landfill, effective programs are needed to promote more efficient practices by industry.

Programs and strategies will be put in place at State and regional level to reduce the amount of commercial and industrial waste generated. Regional waste management groups will continue to play a key role in establishing programs to plan for municipal waste avoidance and recycling. State and regional waste strategies can be helped by more effective planning of all waste management facilities, and by recognising the need to provide sufficient infrastructure to promote recycling and establish facilities for safe disposal of the residual waste stream. Strategic approaches by State and local government, including investment facilitation and planning programs, could help reduce the amount of waste generated by encouraging waste generators and businesses that might use or recycle these wastes to locate near each other.

Long-term gains will be made by promoting the benefits of product stewardship. Those involved in providing and in buying goods and services must recognise the potential environmental impact of a product from manufacture, through use to disposal.

Planning arrangements must acknowledge the continuing need to safely manage Victoria's solid hazardous waste. Existing landfills for disposal of this waste are rapidly reaching capacity and replacement facilities will be required. The Government is supporting the establishment of new sites and facilities, which must be located for long-term viability and must not adversely affect sensitive land uses. The Industrial Waste Management Policy (Prescribed Industrial Waste) establishes statutory requirements to enable waste to be diverted from landfill to more productive uses.

Programs and strategies will be put in place to reduce the amount of commercial and industrial waste generated

# Initiatives

**7.2.1** Establish resource efficiency and waste minimisation guidelines and targets to be taken up by government agencies, including increased use of environmentally benign materials and products assessed according to sustainability models

**7.2.2** Use State and local planning frameworks to support regional waste management plans and ensure that:

- land-use planning decisions are consistent with and encourage implementation of regional waste management plans
- suitable buffers for waste management facilities are protected and maintained

**7.2.3** Work with industry groups to achieve higher levels of waste minimisation, ‘cradle to grave’ product stewardship and resource efficiency

## The waste hierarchy

Victoria has adopted the waste hierarchy set out below as the foundation of the approach that should be adopted by government, industry and the community for reducing and safely managing wastes. It states that wastes should be managed according to the following order of preference:

- avoidance
- reuse
- recycling
- recovery of energy
- treatment
- containment
- disposal.

Strategies for waste management that avoid or minimise waste are the first choice. Where this is not practicable, direct reuse of materials or recycling of wastes should be undertaken. Treatment to reduce the waste hazard or nuisance should be applied wherever feasible and must be undertaken where necessary to ensure the waste can be safely managed. Containment of solid hazardous waste is necessary where none of the preferred options is available.

Disposal is the option of last resort.



## Contribute to national and international efforts to reduce energy usage and greenhouse gas emissions



Climate change due to the greenhouse effect is one of the world's most serious environmental challenges. All countries and communities are vulnerable. The Government is committed to an active role in national and global efforts to address this issue (see the *Victorian Greenhouse Strategy*) and *Melbourne 2030* is another aspect of this commitment. Success will require action from all Victorians – including State and local government, business and the wider community.

Reducing fossil fuel consumption has other benefits for finite natural resources, such as a more secure and diverse supply and a reduced rate of consumption.

As indicated in the *Victorian Greenhouse Strategy*, particular action is proposed on three major fronts:

### Reducing greenhouse gas emissions

The production and use of energy by households, industry and commerce contributes around 72 per cent of Victoria's total greenhouse gas emissions. It is an important focus of our emissions abatement effort. In particular, the *Victorian Greenhouse Strategy* seeks to improve efficiency in energy use. This will require better building design, greater attention to subdivision design, and the choice of more energy-efficient equipment and appliances. The greenhouse intensity of Victoria's electricity supply will be reduced through improved technology in electricity generation from brown coal, and through greater use of renewable energy.

Transport accounts for a further 16 per cent of Victoria's greenhouse gas emissions. We must increase efforts to cut fuel consumption, and to reduce car dependency by building public transport use (to 20 per cent of all motorised trips by the year 2020). The increasing use of larger vehicles and car air-conditioning is offsetting the effect of

improved fuel consumption rates. Many initiatives in other parts of *Melbourne 2030* (on subjects such as integrated land-use and transport planning and improved urban design) will contribute to a reduction in greenhouse gas emissions.

### Protecting and enhancing greenhouse sinks

Forests play a critical role in storing carbon, and when they are felled and not replanted we add to carbon dioxide emissions. As the metropolitan area grows outwards, forests and native vegetation come under increasing pressure from land clearing for development. The Government's land clearing controls (see Policy 7.7) initiatives to contain the growth of metropolitan Melbourne (see Policy 2.1), and revegetation programs identified in the *Victorian Greenhouse Strategy* will ensure Victoria's greenhouse sinks are protected and enhanced.





## Adapting to climate change

Human activities are already interfering with the earth's climate. Melbourne and the surrounding region may face climate change impacts that range from reductions in rainfall and water availability, to extreme weather events and sea level rise (see 'Climate change projections for Victoria'). Through the *Victorian Greenhouse Strategy*, research is being undertaken to gain a better understanding of these impacts and of the steps that will need to be taken to adapt to these changes.

# Initiatives

- 7.3.1** Introduce five-star energy ratings for all new residential buildings into the Victorian Building Regulations, and promote and encourage the inclusion of new energy efficiency standards for commercial development in the Building Code of Australia
- 7.3.2** Implement planning policies on renewable energy, starting with guidelines for wind farms, in order to integrate the Government's policy of support for renewable energy resources across the State with the planning system
- 7.3.3** Support the development of a series of energy-efficient, greenhouse-friendly demonstration projects, for example, Epping North as a sustainable suburb
- 7.3.4** Ensure that all Major Projects Victoria developments incorporate high levels of energy efficiency
- 7.3.5** Update the *Victoria Planning Provisions* and related guidelines to reflect and support the goals and directions of the *Victorian Greenhouse Strategy*
- 7.3.6** Introduce changes to Victoria's planning and building systems that will be needed to help adapt to the impacts of climate change – following the completion of a three-year CSIRO research program funded by the Government





## The Victorian Greenhouse Strategy

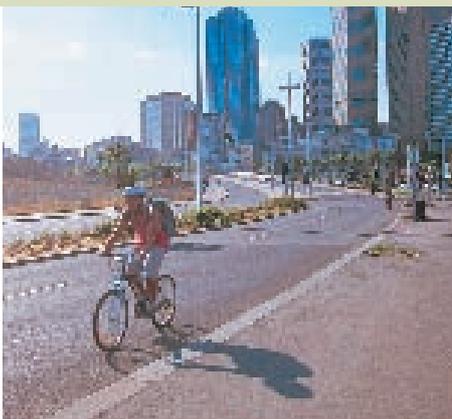
The Government's goals under the *Victorian Greenhouse Strategy* include:

- limiting Victoria's greenhouse gas emissions and enhancing greenhouse sinks
- positioning Victoria to prosper in a future carbon constrained economy
- developing a greater understanding of climate change impacts and, where appropriate, initiating adaptation actions relevant to Victoria.

The *Victorian Greenhouse Strategy* is supported by government funding of \$100 million over three years. It includes 59 actions dealing with a wide range of issues. These include the reduction of greenhouse gas emissions from activities such as energy production and use, transport, waste management and agriculture.

Its actions also address:

- the enhancement of greenhouse sinks
- research into climate change impacts and adaptation
- awareness-raising in the community of climate change issues – including the steps that individuals can take to reduce greenhouse gas emissions.



## Climate change projections for Victoria

Government and the community need access to the best possible information on likely future climate change to help plan for, and adapt to, changed climate conditions. Future changes in rainfall and temperature patterns and in the frequency of extreme weather events are likely to affect water resources, coastal environments, native flora and fauna, agriculture, forestry and snow cover.

The Government has supported atmospheric research work by CSIRO to develop regional climate change projections for Victoria. This work suggests that by 2030:

- Victoria is likely to be 0.3°C to 1.6°C warmer than in 1990, with the warming expected to be greatest in summer and least in winter
- the frequency of extreme maximum temperatures will increase, with an increase of up to 50 per cent in the number of hot days in some areas of the State

- frosts are likely to decrease in frequency, and even disappear in those parts of Victoria where projected temperature increases will be greatest
- rainfall decreases are likely – in most regions, changes are projected in annual rainfall ranging from -9 per cent to +3 per cent – with projected rainfall decreases strongest in spring through most of the State, and dry springs likely to become more common
- extreme daily rainfall events will become more intense and more frequent in many regions
- warmer conditions will lead to increased evaporation which, combined with reduced rainfall, is likely to increase moisture stress.

On a global basis, the Intergovernmental Panel on Climate Change's Third Assessment report projects a rise in sea level of between 0.09 and 0.88 metres by 2100 (or 0.8 to 8 centimetres each decade).



## Reduce the impact of stormwater on bays and catchments

The quantity and quality of stormwater entering our waterways and bays is an important issue for *Melbourne 2030*. Impervious surfaces in built-up urban areas result in less water being absorbed into the ground and can exaggerate peak flows into a stormwater system. These surfaces affect the quality and quantity of stormwater, often generating significant pollutant loads that are readily washed off and conveyed into the stormwater system.

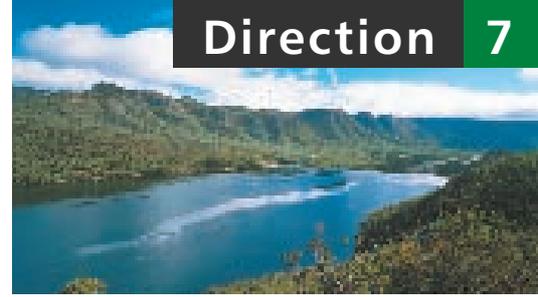
Further, urban development and activity occurring within the catchment, such as the construction of roads and buildings, affects the quality of stormwater, as sediments and pollutants from urban areas are transported to our creeks, rivers, bays and oceans. Measures to manage urban stormwater quality will be critical in maintaining the ecological health of Port Phillip Bay and Western Port, as well as improving the health of our waterways.



The BPEM Guidelines for Urban Stormwater suggest that urban stormwater management should achieve a 45 per cent reduction in nitrogen load, 45 per cent reduction in phosphorus load and an 80 per cent reduction in suspended solids load.

The Government will work with Melbourne Water, local government and other key stakeholders to develop programs to ensure the achievement of best practice performance objectives for stormwater (see 'Water-sensitive urban design'). EPA Victoria runs the Victorian Stormwater Action Program which provides grants to local governments throughout Victoria for the development and implementation of stormwater management plans. Melbourne Water and local government fund the development and implementation of these plans for the metropolitan area. All stormwater management plans developed will be consistent with the BPEM guidelines.

Measures to manage urban stormwater quality will be critical in maintaining the ecological health of Port Phillip Bay and Western Port



In addressing stormwater impacts on urban waterways and their inputs to the bays, it is recognised that the performance objectives in the BPEM guidelines may best be pursued by incorporating measures at various scales:

- water-sensitive urban design techniques such as domestic rainwater collection and increased land permeability may be used on-site for small developments
- these techniques can be incorporated into streetscapes or open space planned at local precinct scale for larger developments, or for retrofitting within local catchments
- larger (catchment) scale measures include constructed wetlands and retrofitting drainage systems.

An integrated approach to the planning of measures at all scales, involving all relevant agencies to ensure sustainable outcomes will be pursued.

## Initiatives

- 7.4.1** Develop measures to achieve best practice performance objectives as outlined in the BPEM Guidelines for Urban Stormwater (prepared for the Victorian Stormwater Committee), in order to ensure water quality objectives are met
- 7.4.2** Support integrated planning of stormwater quality at all scales, through a mix of on-site measures and developer contributions
- 7.4.3** Promote measures to achieve more effective mitigation of stormwater pollution from construction sites in line with the EPA Victoria's *Environmental Guidelines for Major Construction Sites*
- 7.4.4** Work with local government to develop and implement stormwater management plans that incorporate integrated drainage management principles consistent with the BPEM, and include measures for annual monitoring and reporting
- 7.4.5** Introduce appropriate controls in the Werribee and Cranbourne-Pakenham growth areas to ensure that stormwater (and ground water) does not have a detrimental effect on the Ramsar wetlands
- 7.4.6** Include water-sensitive design criteria in an amended Clause 56 (Residential Subdivision Provisions) of the *Victoria Planning Provisions*



## **Water-sensitive urban design**

Water-sensitive urban design integrates urban planning and development with management, protection and conservation through the whole water cycle. It is about a balanced approach – the right applications in the right locations to achieve sustainability. Planned and implemented correctly, its concepts and technologies allow new developments and the water cycle to complement each other.

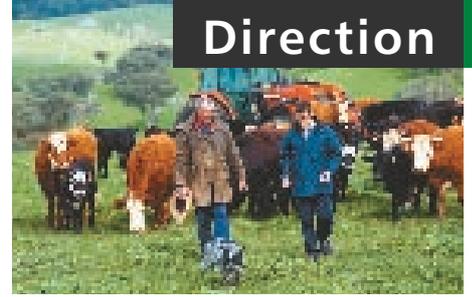
Its key principles are:

- protect and enhance natural water systems
- integrate stormwater treatment into the landscape
- protect quality of water
- reduce run-off and peak flows
- add value while minimising drainage and infrastructure costs.

Techniques available include:

- grass or vegetated swales
- infiltration trenches
- bio-retention systems
- wetlands
- rainwater tanks
- greywater reuse
- rain gardens, rooftop greening, urban forests
- any combination of these and other techniques for the best possible outcome.





## Protect ground water and land resources

Ground water supplies in the Port Phillip region are already heavily committed, which will constrain future development. Pollution of ground water comes from sources that include landfills, quarries, fertilisers and septic tank systems.

Ground water is a vital resource and will be protected.

Although most parts of metropolitan Melbourne are now sewered, a significant backlog of properties awaits connection to sewerage systems in places such as the Mornington Peninsula and the Yarra Valley. At the current rate of funding, this backlog will not be completed by 2030. The time lines for addressing this backlog will be substantially reduced.

Land is a critical resource and to ensure that it is suitable for future use it must be used, managed and protected in a sustainable way. Contamination may be caused by a range of human activities such as industrial activity, agricultural practices and clearing of land. Naturally occurring soil properties – as in acid sulfate soils and high arsenic levels – also need to be considered.

When acid sulfate soils, which generally occur in coastal areas, are exposed to the air by draining or excavation, acidification of the water and land can adversely affect aquatic communities, agricultural practices and engineering works. As outlined in the *Victorian Coastal Strategy 2002*, mechanisms for minimising potential adverse impacts of these soils will include a mapping program, use of overlays and other planning mechanisms, training and awareness raising, and review of other regulations including the Industrial Waste Management Policy (Waste Acid Sulfate Soils).



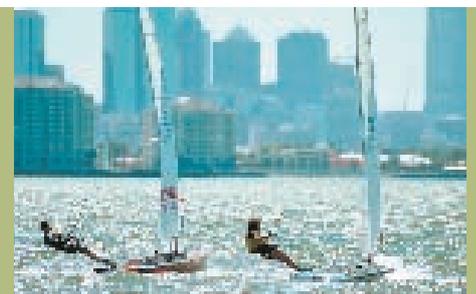
Land is a critical resource and it must be used, managed and protected in a sustainable way

Contamination of land can result from historical activities on or near a site. The State Environment Protection Policy (Prevention and Management of Contamination of Land) 2002 clarifies when planning and responsible authorities must consider whether a site is suitable for use. However, the issue is often the suspicion of contamination rather than known contamination. Sites that are potentially contaminated will be identified and managed in accordance with EPA Victoria policies.

Salinity is a growing concern in urban and rural parts of the region and areas affected within the growth corridors are being mapped. Saline soils can undermine urban infrastructure and increase saline loads in waterways and ground water. Thus, a supply of clean water is vital for communities and industry in the metropolitan area and beyond. Incompatible land uses will be prevented from establishing in aquifer recharge or saline discharge areas, or in potable water catchments.

# Initiatives

- 7.5.1** Review progress towards completing the sewerage backlog program and revise targets for priority areas
- 7.5.2** Reduce the impacts of landfill to ground water and surface waters by encouraging local government to implement the BPEM guidelines for the siting, design, operation and rehabilitation of landfills, through inclusion of appropriate conditions in planning permits
- 7.5.3** Provide better information and training on proper management of septic tanks and tighten enforcement procedures to reduce pollution
- 7.5.4** Complete the mapping of areas that are affected by salinity and acid sulfate soils, and incorporate this information in planning schemes
- 7.5.5** Develop an education program, including a Planning Practice Note, to help local government identify potentially contaminated land and apply the State Environment Protection Policy (Prevention and Management of Contaminated Land)
- 7.5.6** Review planning schemes and, if necessary, develop improved controls to prevent incompatible uses and development in aquifer recharge and saline discharge areas and in potable water catchments



## Ensure that land-use and transport planning and infrastructure provision contribute to improved air quality

While metropolitan Melbourne's air quality has improved in the past 20 years and is relatively good compared with cities of similar size around the world, there are times when air quality standards are not met. Recent studies indicate that premature deaths and hospital admissions are linked to air pollution in Melbourne, particularly for people with existing conditions such as respiratory and heart disease. Other studies demonstrate that people travelling in cars are exposed to relatively high concentrations of air pollutants. Atmospheric deposition of nitrogen oxides also contributes to excess nutrient levels in Port Phillip Bay and Western Port.



The relevant statutory policies for protecting air quality in Victoria are the SEPP (Ambient Air Quality) and the SEPP (Air Quality Management). The former incorporates national air quality standards, and the latter establishes the statutory policy framework for managing emissions. The air quality improvement plan for the Port Phillip area outlines initiatives to ensure that air quality continues to improve.

Emissions from motor vehicles will be reduced with the phase-in of stricter controls on emissions, to bring Australia into line with Europe by the end of the decade. However, EPA Victoria projections indicate that this will be partially offset by increased vehicle numbers and emissions from other sources.

Emissions from motor vehicles will be reduced to bring Australia into line with Europe by the end of the decade



Although motor vehicles are the major cause of many urban air pollutants, domestic wood heating is the biggest contributor to particles during winter. Reducing these emissions is an important priority of the air quality improvement plan. Reflecting a government commitment, EPA Victoria is developing a statutory policy to prevent the manufacture and supply of wood heaters that do not meet Australian Standards, and to encourage correct installation of wood heaters.

*Melbourne 2030* supports the goals of the air quality improvement plan by focusing on:

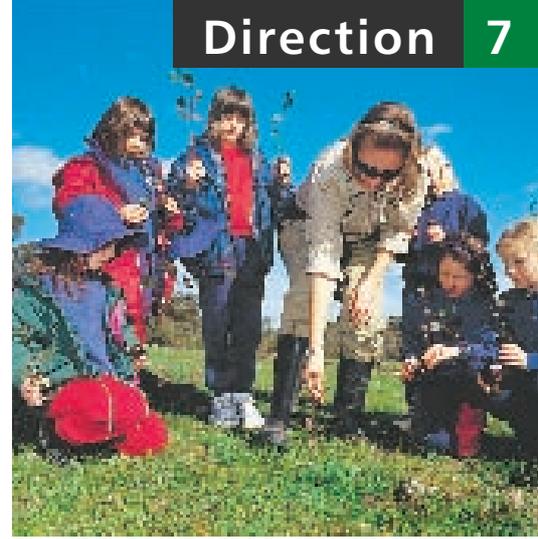
- integrating transport and land-use planning to improve transport accessibility and connections
- establishing an urban growth boundary to help manage urban growth
- locating key developments in Principal and Major Activity Centres
- investing in infrastructure for public transport, walking and cycling
- designing urban neighbourhoods and activity centres to reduce exposure to pollution hot spots.

## Initiatives

- 7.6.1** Ensure that the planning and building systems reflect the principles established in the State Environment Protection Policy (Air Quality Management) and the Port Phillip Region air quality improvement plan
- 7.6.2** Adopt a statutory policy to prevent the manufacture and supply in Victoria of wood heaters that do not meet Australian Standards



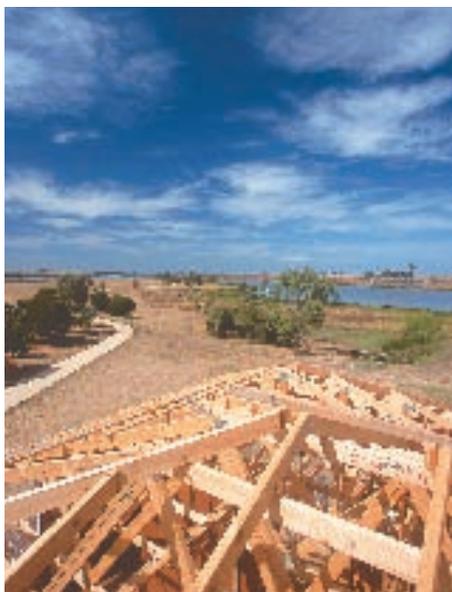
## Protect native habitat and areas of important biodiversity through appropriate land-use planning



The Port Phillip and Westernport catchments constitute one of Victoria's most biologically diverse regions. The protection and enhancement of native vegetation communities are fundamental to State and regional biodiversity, and preserve sinks for greenhouse gases. Native habitat is threatened by the clearing of indigenous vegetation, intensification of land use and development, and sedimentation arising from soil disturbance and construction.

*Victoria's Biodiversity: Directions in Management 1997* (the Biodiversity Strategy) provides comprehensive directions for responding to these threats in managing Victoria's biodiversity assets. These are complemented by actions in regional catchment strategies and are further supported by many municipalities through their planning schemes, and environment or sustainability strategies and plans. Throughout the catchments, individual landholders and community groups, supported by State and Commonwealth funding, are undertaking vegetation and habitat protection and restoration programs.

Regional catchment strategies will guide Landcare projects, local landscape plans – a key tool in implementing the Biodiversity Strategy – and whole farm plans.



Protection and enhancement of native vegetation communities are fundamental to biodiversity



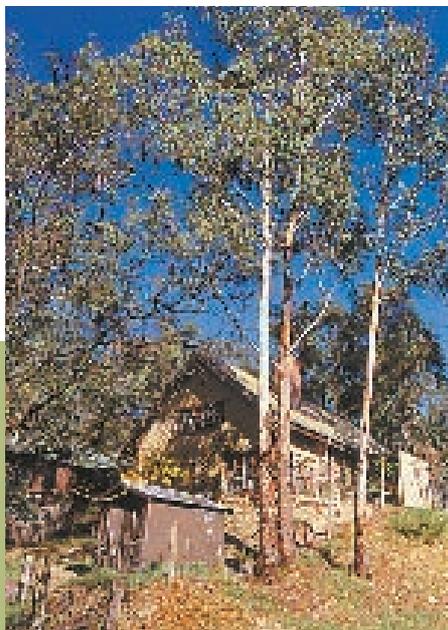
Victoria's native vegetation management framework and native vegetation management plans will guide reversal of the continuing loss of native vegetation, helping achieve a net gain through improvements and habitat creation. Comprehensive regional vegetation maps and bioregional plans will also help.

In many urban areas, land-based and aquatic biodiversity assets have yet to be adequately identified. Local governments will be encouraged to undertake biodiversity audits before initiating protection programs.

The proposed urban growth boundary will ensure the permanent protection of critically important flora and fauna habitat and important landscapes such as the coastlines in the region, the Dandenong and Yarra Ranges, the Yarra Valley, Westernport and the Mornington Peninsula.

# Initiatives

- 7.7.1** Complete mapping of biodiversity assets for existing and future urban areas, and initiate protection and management programs through the planning system
- 7.7.2** Implement the native vegetation management framework to protect remnant vegetation in the metropolitan area through the planning and development process
- 7.7.3** Review the native vegetation clearance control provisions in the *Victoria Planning Provisions* and ensure that local planning schemes protect significant vegetation identified in regional vegetation plans





## Promote the concept of sustainability and develop benchmarks to measure progress

Governments around the world emphasise the importance of sustainable development. While sustainability is an important principle of *Melbourne 2030*, generally our capacity to measure progress towards it in Victoria is limited by a lack of quantifiable data and internationally accepted benchmarks.

Relevant to *Melbourne 2030* are three important concepts that relate to sustainability. The first has been used in developing the Strategy, and all three will play an important part in its implementation. The others hold promise but need to be tested and developed for metropolitan Melbourne.

The concepts are:

- triple-bottom-line reporting, which emphasises integrated assessments according to social, environmental and economic criteria
- the ecological footprint approach, which measures a city's resource utilisation and environmental impact (see 'Sustainability models')
- the urban metabolism method, which assesses the efficiency with which a city uses resources and achieves results (see 'Sustainability models').

Other relevant work includes the Government's proposed establishment of a Commissioner whose roles will include 'state of environment' reporting, strategic auditing of the way environmental management systems are applied across government

agencies, and education and promotion of ecologically sustainable development across the public and private sectors. The Commissioner's work will be important in putting *Melbourne 2030* into practice. It will be complemented, rather than duplicated, by the Strategy's benchmarking and monitoring processes.

At municipal level, many local governments in Victoria are initiating new sustainability strategies and encouraging innovative, environmentally friendly projects and community involvement (see 'Local sustainability initiatives in Victoria'). Networks such as the Metropolitan Environment Forum and the Local Sustainability Partnership (set up by the Municipal Association of Victoria) help councils share information and experiences.



Many local governments are initiating sustainability strategies and encouraging innovative, environmentally friendly projects and community involvement



# Initiatives

**7.8.1** Establish a dedicated multidisciplinary team with the necessary expertise within the Department of Infrastructure to:

- promote the use of sustainability tools to guide planning decisions and project development by State and local government and the private sector
- work with other government agencies and the new Commissioner to establish transparent, consistent decision-making processes based on these sustainability tools
- develop benchmarks for Melbourne’s performance and monitor and report on progress towards sustainability – this work should include the development of an urban metabolism model
- develop criteria for social impact assessment, for decision-making on planning issues
- promote greater understanding of the relationship between statutory policies (such as the *Victoria Planning Provisions* and SEPPs) and non-statutory plans and programs (such as catchment management plans)
- work with local government in implementing local sustainability and community building programs

**7.8.2** Develop ecological footprint methodology as an awareness-raising and educational tool, and test it through pilot studies with a range of organisations, businesses, schools and communities

## Sustainability models

### Ecological footprint

This concept is a way of measuring human impact on natural systems. Footprint analysis works by calculating the area of productive land and water required to sustain the resource consumption and waste discharge of any given population. By estimating the land required to support an individual’s consumption of energy, food, water and built infrastructure, and the waste produced, our dependence on nature can be shown. This is a valuable communications tool to encourage sectors of the community to look at their environmental impact and promote innovation as a way of reducing it.

### Urban metabolism

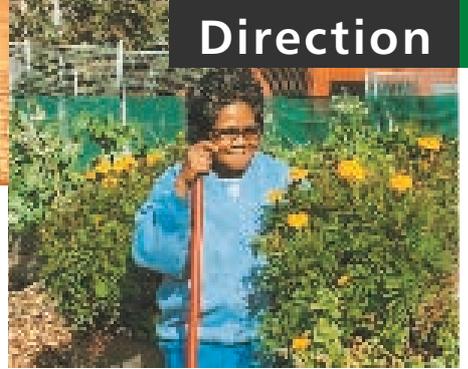
This model assesses sustainability, but rather than calculating the amount of land required to support a defined population, it measures the flow of resources into and waste outputs from settlements. Trends can then be better monitored against desired outcomes.

### How can these models help achieve a more sustainable city?

Sustainability requires an understanding that the impacts of resources consumed and waste produced by cities must be managed to reduce the impact on natural capital. One way of limiting the impact is to reduce the material flows into cities (such as water, gravel, wood, metals) and to minimise waste outputs (such as discharges to air and water).

Various ways are being used to measure the sustainability of cities, but all require adaptation before they can be applied to Melbourne and other cities in its surrounding region. An extended metabolism model offers the opportunity of assessing the impact of urban inputs and outputs on the ecological health of the catchments and bays as well as the implications for human wellbeing.





## Local sustainability initiatives in Victoria

### Local Agenda 21

This is based on the 1992 United Nations Conference on Environment and Development in Rio de Janeiro, which aimed to establish a global agenda for social, economic and environmental sustainability. Australia joined with 177 other member nations to adopt Agenda 21 and the Rio Declaration on Environment and Development, and subsequently local authorities were encouraged to prepare a 'Local Agenda 21' with their communities. Since then, some 100 local governments throughout Australia have made a commitment to Local Agenda 21 or ecologically sustainable development through municipal plans and strategies. By 2001, at least 20 local councils in Victoria were working towards implementing Local Agenda 21 action plans to help their communities become involved in sustainable development.

### Cities for climate protection

This is a joint initiative of the International Council for Local Environmental Initiatives and the Australian Greenhouse Office. By 2002, 34 local councils in Victoria had joined

the program, which involves councils in preparing inventories of greenhouse gas emissions for their corporate areas and for their broader communities, and in preparing integrated plans to reduce emissions. The plans cover areas such as transport management, building requirements, subdivision planning, community education and urban design.

### Environmental indicators for metropolitan Melbourne

This project involves the Australian Institute of Urban Studies, the City of Melbourne, 13 other metropolitan councils, the Departments of Infrastructure and Natural Resources and Environment, the EPA, the Transport Research Centre (RMIT University) and the Municipal Association of Victoria. It provides practical indicators to help councils measure their progress towards sustainability outcomes.

Since 1998, annual bulletins have been produced that set down environmental indicators and assess progress against each one. The indicators, with case studies as appropriate, cover areas such as air quality, transport, litter, biodiversity, and council priorities and concerns.

### Community sustainability indicators

Several Victorian councils are exploring community sustainability indicators and investigating processes for their development. Much of the work is modelled on the world-renowned 'Sustainable Seattle' program developed in the 1990s in the USA, but Victorian councils are also drawing on more recent work done in New South Wales.

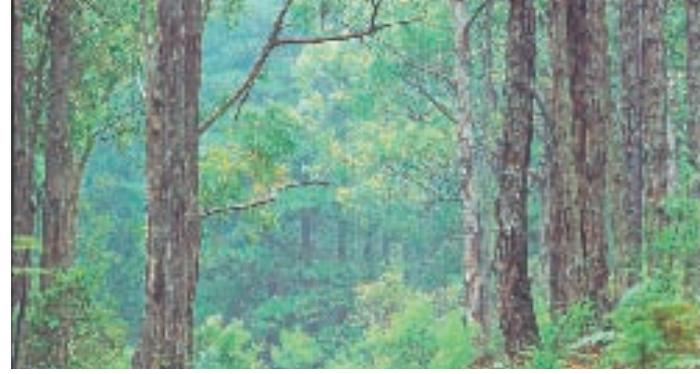
The City of Port Phillip is working with its community to develop indicators that will help it more accurately determine its progress towards cultural, ecological, economic and social goals. Measurement will be undertaken by the council, the community and government authorities.

### Triple-bottom-line initiatives

The Shire of Yarra Ranges has established a sustainability group within council to integrate environmental management, strategic planning and economic development. The group is developing innovative approaches to sustaining the local viticulture and tourism industries.

The City of Melbourne is developing a new contract management system that includes economic, social and environmental considerations at all stages of a project. The City is also developing triple-bottom-line reporting for council reports and budgets.





## Lead by example in environmental management

Although our cities and towns offer a wide range of opportunities and lifestyle choices, they consume natural capital (non-renewable resources such as fossil fuels and natural ecosystems) at an unsustainable rate. Not only are cities the sites of much localised pollution, they also have an environmental impact that reaches far beyond their urban boundaries.

Leading by example, the Government will address the environmental impacts associated with its own activities, including energy use, the use of paper and other materials, the generation of waste, use of water, and transport. Recent commitments include a 15 per cent energy reduction target and a 5 per cent use of renewable energy for government buildings, as well as adoption of a government green purchasing policy. Continual improvements will need to be made to ensure best practice performance is achieved.

Water and energy supply are two of the most important challenges facing Victoria. The Government is encouraging best practice in energy efficiency including the development of new opportunities for renewable energy.

### Initiatives

- 7.9.1** Introduce Best Practice Environmental Management tools into State government activities. All departments will be required to:
- adopt an environmental management system
  - develop an environment improvement plan that includes waste reduction targets
  - comply with a ‘green purchasing policy’
  - report annually on their environmental performance
  - audit their environmental management system and environment improvement plan

Water and energy supply are two of the most important challenges facing Victoria