ENVIRONMENT AND WATER

PROTECT OUR NATURAL ASSETS AND BETTER PLAN OUR WATER, ENERGY AND WASTE MANAGEMENT SYSTEMS TO CREATE A SUSTAINABLE CITY.

ENVIRONMENT AND WATER

WE WILL

PROTECT OUR NATURAL ASSETS AND BETTER PLAN OUR WATER, ENERGY AND WASTE MANAGEMENT SYSTEMS TO CREATE A SUSTAINABLE CITY.

ISSUES

SUMMARY

Our city's sustainability is defined by the strength, health and beauty of our natural environment and the resilience of our built environment.

Key to sustainability will be the way in which we manage our water, energy and waste resources.

Sustainability will also be reinforced through an urban structure that aligns housing and commercial development with public transport, and locates jobs closer to where people live.

Melbourne depends on a range of natural processes to function. As the city grows, it will be important to maintain the health of urban waterways, enhance our biodiversity values and ensure a balanced approach to coastal protection.

We need to change the way we plan and manage both urban development and water services, to enable a more comprehensive and innovative approach to using stormwater and recycled water.

Demand for energy in Melbourne will continue to grow, presenting challenges in terms of managing electricity prices and improving energy efficiency.

Improving our energy efficiency and developing local energy solutions will become more important, not only for reasons of price and sustainability but also because of rising aspirations within local communities to have more control over their own energy supply and consumption.

OUR PLAN

DIRECTIONS

5.1 Use the city structure to drive sustainable outcomes in managing growth
5.2 Protect and restore natural habitats in urban and non-urban areas
5.3 Enhance the food production capability of Melbourne and its non-urban areas
5.4 Improve noise and air quality to improve human and environmental health
5.5 Integrate whole-of-water-cycle management to deliver sustainable and resilient urban development
5.6 Protect our significant water and sewerage assets
5.7 Reduce energy consumption and transition to clean energy
5.8 Plan for better waste management and resource recovery

SOLUTIONS

Accommodate the majority of new dwellings in established areas within walking distance of the public transport network and ensure settlement planning in growth areas and peri-urban regions responds to natural hazards.

Address threats to the health of Melbourne's waterways as part of the whole-of-water-cycle management planning process including protecting and restoring biodiversity areas, the values of our waterways and the coastlines and waters of Port Phillip Bay and Western Port.

Protect high-quality agricultural land in Melbourne's non-urban areas for food production, and assess and protect strategically significant agricultural land through the development of appropriate planning provisions.

Integrate noise and air-quality guidelines into land-use and transport planning provisions and strengthen mechanisms (such as clearer standards and guidance) to protect separation, buffer and interface distances for existing facilities and uses which create noise and air quality issues.

Develop and implement whole-of-water-cycle management plans in Melbourne's subregions.

Protect our water and sewerage assets and open-space waterway corridors from inappropriate development.

Facilitate the delivery of clean-energy projects.

Establish our city's long-term needs for waste management sites, work in consultation with local governments and key stakeholders to identify areas where these sites may be located and, through planning, secure adequate sites for these purposes by rezoning land in planning schemes.

Protect waste management and resource recovery facilities from urban encroachment and assess opportunities for new waste facilities to meet the logistical challenges of medium- and higher-density developments.

ISSUES

OUR PRECIOUS NATURAL ENVIRONMENT

The government will position Melbourne as a world-leading sustainable city that values and enjoys its natural assets; is innovative in the way that it manages its water, energy and waste resources; and is resilient to environmental changes.

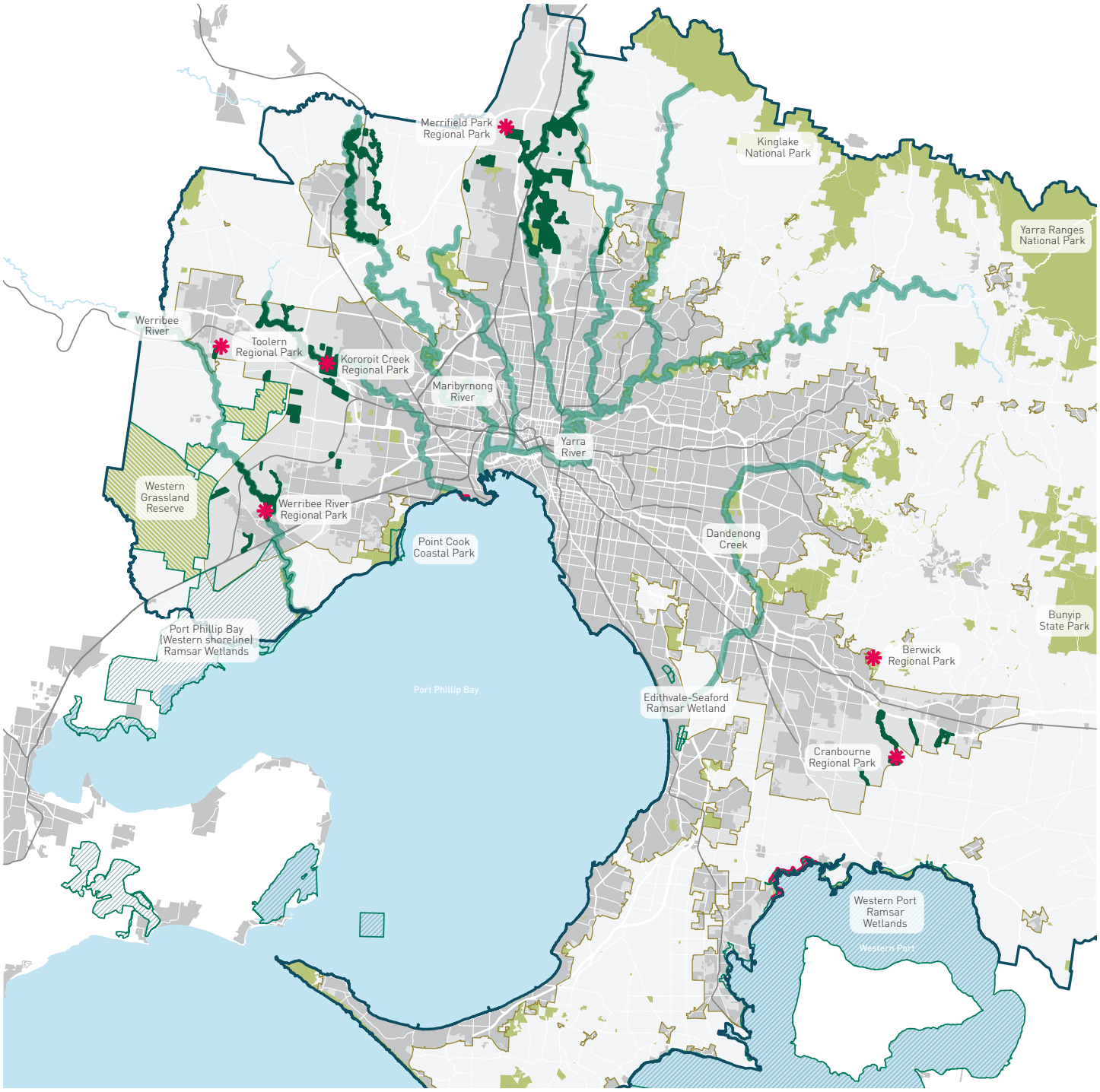
Our city's sustainability is defined by the strength, health and beauty of our natural environment and the resilience of our built environment.

There are many things that we can do to enhance the beauty and liveability of Melbourne's urban areas, as well as its green wedges and environmentally diverse peri-urban regions. Locking in an urban boundary is crucial. This will also secure the future use of green wedges and the peri-urban regions for agriculture and agribusiness, biodiversity, recreation and open space, tourism, heritage and landscape conservation.

A more sustainable Melbourne will also be innovative in the way it manages its water, energy and waste resources.

The way these resources are secured and managed will have a range of impacts on Melbourne's competitiveness, amenity, environmental sustainability and resilience to extreme climatic conditions. A growing population creates an imperative to manage our resources in a more integrated and efficient way, and to plan them coherently with all other components of the city.

Water, energy and waste resources are often viewed simply as inputs or products of the functioning of a city. This underestimates their potential.



MAP 26 – OPEN SPACE, NATURAL FEATURES AND BIODIVERSITY CONSERVATION

SOURCE: DEPARTMENT OF TRANSPORT, PLANNING AND LOCAL INFRASTRUCTURE, 2014; VICTORIAN ENVIRONMENT ASSESSMENT COUNCIL, 2012; GROWTH AREAS AUTHORITY, 2012

- Metropolitan region
- Metropolitan urban boundary
- Urban area
- Road network
- Rail network
- Waterway corridor
- Major open space
- Conservation area (as identified in the Biodiversity Conservation Strategy for Melbourne's Growth Areas)
- Marine national park sanctuary
- Ramsar sites
- Regional Open Space – future
- Western Grassland Reserve
- Waterway

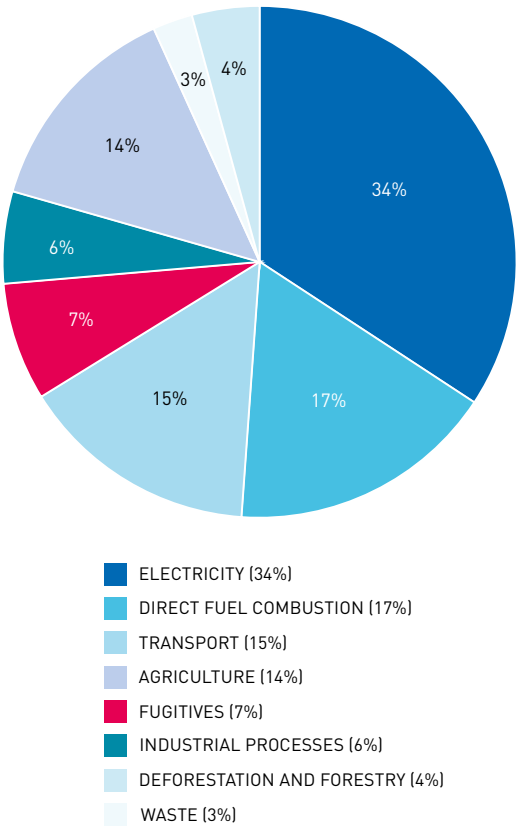
TRANSFORMING TO A MORE SUSTAINABLE CITY

Adapting to a changing climate is about taking deliberate steps to manage the potential impacts of climate variations on our lifestyles, our health and wellbeing, our environments, our infrastructure and our economy. Projections suggest an increased risk of extreme weather events. The nature of the Victorian climate and landscape is such that some neighbourhoods in Melbourne and its peri-urban regions will continue to be threatened by natural disasters.

It is recognised that Australia must reduce its greenhouse gas emissions in line with international efforts to mitigate the risks of climate change. Figure 15 shows the main sources of Australia's greenhouse gas emissions[31].

FIGURE 15 – NATIONAL GREENHOUSE GAS INVENTORY 2011

SOURCE: AUSTRALIAN GOVERNMENT, DEPARTMENT OF CLIMATE CHANGE AND ENERGY EFFICIENCY, AUSTRALIA'S EMISSIONS PROJECTIONS 2012



A SUSTAINABLE URBAN STRUCTURE

A city's level of greenhouse gas emissions is partly a function of its urban structure. In compact cities with shorter travel distances, walking and cycling are easier and the provision of transport infrastructure is more economical.

A number of initiatives in Plan Melbourne will help transform Melbourne into a more sustainable city. We want to reinforce an urban structure that aligns housing, jobs and public transport through urban renewal, transit-oriented development and residential growth zones in close proximity to the public transport network. This has both environmental and economic benefits by reducing trip lengths, travel times and costs. Urban renewal and growth in designated precincts can create a more energy-efficient city.

MAINTAINING HEALTHY ECOSYSTEMS AND BIODIVERSITY FROM CATCHMENT TO COAST

Melbourne, like all cities, depends on a range of natural processes to function. At the same time, the natural systems around the city depend on us caring for the condition of our land, waterways and vegetation, and supporting healthy habitats. This will become more challenging as the city grows. It will be important that we maintain the health and amenity of urban waterways, enhance our biodiversity values, and ensure a carefully balanced approach to our coastal areas that safeguards the environment while allowing a variety of land uses.

Melbourne's peri-urban regions are ecologically diverse and encompass areas of local, state, national and international environmental significance. They include the natural temperate grasslands of the Victorian Volcanic Plain and grassy eucalypt woodland, a number of national parks including the Yarra Ranges, Dandenong Ranges, Point Nepean and Mornington Peninsula national parks, and coastal parks such as Point Cook Coastal Park. They also include internationally recognised wetlands under the Ramsar Convention, such as Western Port and the Western Treatment Plant at Werribee.

REDUCING THE IMPACTS OF POLLUTION

Pollution of our air, water and soil affects our lives, health and wellbeing. Motor vehicles are a major source of air pollution in our city. Emissions from industry can also pose a health risk, with children and the elderly particularly sensitive to air pollution.

Further, environmental noise can impact on people's quality of life through sleep disturbance, reduced productivity at work or school, stress, anxiety and other physical effects. Stormwater pollution is a significant problem for our city's rivers and creeks. Stormwater washes 14,000 tonnes of sediment and 650 tonnes of nutrients (such as nitrogen from fertiliser) into the Yarra River each year, as well as litter, heavy metals and bacteria.

A denser, more contained and compact city will need more water and more innovative ways of capturing and reusing it. At the same time, we need to enable greater permeability of rainwater into the ground to reduce run-off, which pollutes our urban creeks.

USING AND REUSING ALL SOURCES OF WATER

Melbourne's water supply system comprises 157,000 hectares of protected catchments in the Yarra Ranges, which provide some of the best water quality in the world.

In July 2013, the government released for consultation *Melbourne's Water Future*, a new approach to managing the urban water cycle in Melbourne. One of Plan Melbourne's key objectives is to make better use of all available water sources including recycled water, rainwater and stormwater.

The volume of stormwater runoff from Melbourne's rainfall is greater than the amount we actually use from our dams. This volume of water is more than enough to provide both an alternative supply for non-drinking purposes and a healthy flow to our waterways and bays. We need to value and use Melbourne's rain fall to minimise water price increases, improve the health of waterways and bays, reduce urban flooding, enhance our liveability and amenity, and build Melbourne's expertise in whole-of-water cycle management – a key capability of the 21st century.

GETTING ECONOMIC VALUE OUT OF WASTE

The first objective of any citywide waste management strategy should be to avoid or reduce the amount of waste produced. The second is to find ways to recover and productively reuse the waste we do generate. These are the objectives of *Getting Full Value: the Victorian Waste and Resource Recovery Policy*.

These objectives are critical in a land-use context. They minimise the need to find suitable landfill sites to store waste as the city grows, and reduce the transport task of moving waste across the city.

Attracting investment for the right mix of waste management and resource recovery infrastructure is vital for maintaining the environmental resilience and long-term productivity of Melbourne.

But even with greater waste reduction and recovery, there will still be waste products to manage.

The amount of waste we create is increasing and its composition is changing. Despite efforts to recycle more of our waste, technological advances mean that new waste products (such as computers and mobile phones) are now entering the waste system in increasing volumes.

Planning for waste management and resource recovery infrastructure needs to strike the right balance between securing the land and waste streams needed to underpin the commercial viability of infrastructure investment, while providing industry with the flexibility it needs to identify and act on new and emerging markets for recovered resources.

DIRECTION 5.1
USE THE CITY STRUCTURE TO DRIVE SUSTAINABLE OUTCOMES IN MANAGING GROWTH

Plan Melbourne proposes an urban structure that will meet the needs of a growing population and a changing economy. We will use our urban structure to ensure that jobs are located closer to where people live. It also proposes urban renewal and new housing in defined areas that improve accessibility. These combine to produce a more sustainable city by reducing trip lengths and travel times and by improving opportunities for walking, cycling and public transport.

By reforming the public transport fare zones, we can change travel behaviour to alleviate pressure on zone boundary stations. Applying Zone 1 fares across the entire metropolitan network will increase travel choices for commuters and reduce congestion around zone boundary stations. Zone 2 will be retained for travel entirely within that zone.

Melbourne's urban structure and settlement planning also needs to take account of natural hazards and the *Victorian Climate Change Adaptation Plan*.

INITIATIVE 5.1.1

ACCOMMODATE THE MAJORITY OF NEW DWELLINGS IN ESTABLISHED AREAS WITHIN WALKING DISTANCE OF THE PUBLIC TRANSPORT NETWORK

Plan Melbourne seeks to ensure that new dwellings within established areas are located near existing and planned transport network. The plan includes a number of proposals to deliver on this, such as municipal housing strategies to manage population growth and guide the application of reformed zones; delivering housing close to jobs and transport; and designating priority urban-renewal precincts and sites along rail corridors.

In the short term

- Reform and expand the Urban Development Program to report on the application of residential growth zones, urban renewal precincts and sites, national employment clusters, metropolitan activity centres and activity centres within walking distance of the public transport network.

  DEPARTMENT OF TRANSPORT, PLANNING AND LOCAL INFRASTRUCTURE (PLANNING)

INITIATIVE 5.1.2

ENSURE SETTLEMENT PLANNING IN GROWTH AREAS AND PERI-URBAN REGIONS RESPONDS TO NATURAL HAZARDS

The *Victorian Climate Change Adaptation Plan* outlines arrangements to prepare risk-management strategies for public assets and services. It ensures that disaster-resilience strategies are being implemented, and that government policies and programs encourage climate resilience and adaptive capacity. By implementing that plan, and through other strategies, we can continue to strengthen our resilience and responses to climate risks.

In the short term

- Continue to apply planning provisions in growth area precinct structure plans and settlement planning in peri-urban regions that best manage natural hazards.

  DEPARTMENT OF TRANSPORT, PLANNING AND LOCAL INFRASTRUCTURE (PLANNING)

DIRECTION 5.2
PROTECT AND RESTORE NATURAL HABITATS IN URBAN AND NON-URBAN AREAS

Melbourne enjoys a rich natural amenity in its landscapes, waterways, foreshores and bays. This legacy exists because earlier generations understood the importance of open space and the relationships between nature, liveability and people's health and wellbeing. As our city continues to grow and change, it is critical that we continue to plan and deliver an integrated network of accessible open space and natural habitats that meets the needs of residents, workers and visitors, while adequately protecting native flora and fauna.

The government's *Biodiversity Conservation Strategy* aims to manage the impacts of development of Melbourne's urban growth corridors for the next 30 to 40 years[32]. It protects species and provides certainty for developers in their planning and decision making.

In addition to implementing the *Biodiversity Conservation Strategy*, there are opportunities to increase connections between natural areas to facilitate species movement and greater genetic diversity within our native flora and fauna populations, and to improve their persistence in areas beyond the metropolitan urban boundary.

INITIATIVE 5.2.1
INCREASE THE PROTECTION AND RESTORATION OF BIODIVERSITY AREAS

There are many areas across the metropolitan area where vegetation can be protected and restored. On public land, these include parks, waterways, road verges and wetlands (such as the western shoreline of Port Phillip Bay, the Edithvale-Seaford Wetlands and at Western Port). On private land, landholders in Melbourne's non-urban areas are already permanently conserving the biodiversity values of their land through voluntary statutory covenants. Over 3000 hectares are already protected and the number of landholders wishing to covenant their land is growing.

The government's *Biodiversity Conservation Strategy* identifies large, permanently protected areas outside the growth corridors and a network of smaller, permanently protected areas both within and outside the growth corridors. It includes objectives to prevent any further deterioration of threatened flora and to maintain sustainable populations of threatened fauna. It also streamlines environmental approvals processes to improve housing markets in these outlying locations.

In the medium term

- Undertake an evidence-based review of the Biodiversity Conservation Strategy in Melbourne's growth corridors.

  DEPARTMENT OF ENVIRONMENT AND PRIMARY INDUSTRIES

INITIATIVE 5.2.2
PROTECT THE VALUES OF OUR WATERWAYS

The health of Melbourne's 8,400 kilometres of waterways and our bays, and the biodiversity and ecosystems that rely on them, are crucial to our liveability and environment. Increasing urbanisation poses a significant threat to the environmental condition of waterways and hence to key waterways values such as the presence and health of platypus, fish, frogs, birds, invertebrates and vegetation. The condition of our waterways is primarily a consequence of the quantity, velocity and quality of urban stormwater run-off, and the discharge of wastewater. The more effectively stormwater and wastewater are managed, the cleaner and healthier our waterways will be.

In 2012, the government released *A Cleaner Yarra and Port Phillip Bay*, which outlines priorities to achieve a healthier Yarra River and Port Phillip Bay.

One of the five objectives of *Melbourne's Water Future* is to protect the environmental health of our urban waterways and bays. For many Melburnians, our relationship with the city is defined, at least in part, by our relationship with our coastal waters and waterways.

In the short term

- Prepare and implement new stormwater requirements to ensure that stormwater in new developments is managed in a cost-effective manner that protects the health and amenity of downstream waterways and our bays.

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INITIATIVE 5.2.3
PROTECT THE COASTLINES AND WATERS OF PORT PHILLIP BAY AND WESTERN PORT

With over 600 kilometres of coast, Port Phillip Bay and Western Port, possess a range of environments including bay and ocean; sand, rock, mangrove and cliff; public land; private land; and different land uses. They include places of significant environmental value (such as Ramsar sites), and places of significant social value (such as recreational beaches).

Coasts contribute to the health and resilience of both marine and terrestrial ecosystems. However, due to our society's propensity to live near water, coasts will continue to be under pressure from metropolitan development.

We will ensure that the environmental quality of Western Port and Port Phillip Bay is protected in the Victoria Planning Provisions.

In the medium term

- Investigate ways that the Victoria Planning Provisions can ensure appropriate protection for the coast and waters of Melbourne's bays.

  DEPARTMENT OF TRANSPORT, PLANNING AND LOCAL INFRASTRUCTURE (PLANNING)

ALTONA RECYCLED WATER PROJECT

SAVING A PRECIOUS RESOURCE

The Altona Recycled Water Project involved designing, constructing and operating an ultra-filtration and reverse-osmosis plant to produce two grades of recycled water from secondary treated water produced at the Altona Treatment Plant.

The Altona Recycled Water Project supplies about 2.5 gigalitres a year of recycled water to industry, golf courses and public open spaces in the Altona area. Nearby plastics manufacturer Qenos uses up to 6 megalitres a day for boiler and cooling tower water. Kooringal Golf Course, Sanctuary Lakes Golf Course and Altona Green use up to 3 megalitres a day, mainly for irrigation.

The project is one of Australia's most complex recycling projects because it produces both industrial-grade and irrigation-grade water. It is uncommon for one plant to produce several grades of recycled water.

The irrigation-grade water (for the golf clubs and open spaces) is demineralised using a single-pass, reverse-osmosis system. This involves using pressure to force the secondary treated water through a semi-permeable membrane or filter to remove excess salt. Industrial-grade recycled water is treated using a two-pass, reverse-osmosis system.

To develop the project, City West Water worked closely with the customers to understand and satisfy their expectations about the quality and availability of the recycled water. It also had to integrate the project plant into the existing Altona Treatment Plant, and implement modelling, monitoring and dispersion measures to minimise the impact of discharges on the environment.

During the project monitoring period, City West Water saw that the quality of the secondary treated water coming into the project plant varied significantly for short periods. This was due to particular discharges into the sewerage system upstream passing through it and contaminating the water that was received by the project plant. This meant that on occasions the water leaving the project plant did not meet agreed standards. City West Water changed the design and management of the plant so its recycled water met required quality standards at all times.

ALTONA RECYCLED WATER PROJECT SHOWS THE BENEFITS OF LOCAL WATER RECYCLING

DIRECTION 5.3
ENHANCE THE FOOD PRODUCTION CAPABILITY OF MELBOURNE AND ITS NON-URBAN AREAS

Together, Port Phillip Bay and Western Port constitute the second-most-productive agricultural area in Victoria, with output-per-hectare roughly four times the state average. Close proximity to Melbourne puts this area in a strong position to take advantage of niche markets and allows for significant local food production close to where most of it is consumed. Many Melburnians now want to source food that is grown locally[33].

A number of global trends are creating new opportunities for Melbourne's food producers. The growing middle classes of Asia are likely to become significant and fast-growing markets for high-quality produce. Melbourne's green wedges and peri-urban regions are well-placed to take advantage of these opportunities, due to a temperate climate, high-quality soils, clean water supply, agricultural skills and quality standards.

INITIATIVE 5.3.1
PROTECT HIGH-QUALITY AGRICULTURAL LAND IN AND AROUND MELBOURNE FOR FOOD PRODUCTION

Some areas around Melbourne with very fertile soil, essential for highly productive agricultural land uses, are under threat from competing land uses such as urban encroachment and rural residential development. There is also the need to support other efficient and resilient food-production techniques (such as intensive greenhouse agricultural production) in addition to traditional open-field agriculture. We must carefully consider the long-term value and environmental sensitivity of high-quality land for food production in Melbourne's non-urban areas and the economic value of these areas for Victoria's food industries into the future. Important areas need to be protected to ensure strategically significant agricultural land is not permanently lost.

In the short term

- Investigate a high-value agricultural food overlay for particular use in protecting high-value agricultural land.

  DEPARTMENT OF TRANSPORT, PLANNING AND LOCAL INFRASTRUCTURE (PLANNING)
- Prepare and implement planning provisions to better identify, protect and manage strategically significant agricultural land. These provisions should acknowledge different land-management requirements and food-production methods.

  DEPARTMENT OF TRANSPORT, PLANNING AND LOCAL INFRASTRUCTURE (PLANNING)
- Ensure localised planning statements for Mornington Peninsula, Bellarine Peninsula, Macedon Ranges and the Yarra Valley acknowledge areas that are important for food production.

  DEPARTMENT OF TRANSPORT, PLANNING AND LOCAL INFRASTRUCTURE (PLANNING)

DIRECTION 5.4
IMPROVE NOISE AND AIR QUALITY TO IMPROVE HUMAN AND ENVIRONMENTAL HEALTH

Our city's environmental quality is greatly valued by both residents and visitors. It gives Melbourne a competitive edge as a location of choice, both regionally and globally.

In the coming decades, it will become more important to manage pollution so that it does not exceed the environment's capacity to absorb it. Melbourne's air quality compares well with cities worldwide but there are occasional days of poor air quality. The Council of Australian Governments sets emission standards through national environment protection measures, which are designed to minimise the potential pollution impacts of urban living (such as motor-vehicle emissions). Victoria will work to ensure that these national measures set emissions requirements to manage pollution levels. The *Environment Protection Act 1970* establishes standards for the management of air emissions and noise through state environment protection policies. Land-use planning controls are another mechanism we can use to minimise urban noise and air pollution.

INITIATIVE 5.4.1
INTEGRATE NOISE AND AIR QUALITY GUIDELINES INTO LAND-USE AND TRANSPORT PLANNING PROVISIONS

As urban renewal progresses, more people could be exposed to air and noise pollution in mixed-use areas, along major roads, at intersections, in popular entertainment areas and near industrial areas. In addition, predicted higher temperatures and more frequent bushfires and dust storms will add to the pressures on air quality that Melbourne faces.

Some sensitive land uses – such as child-care centres – can be located too close to busy roads. Emissions from businesses can also pose health risks unless they are treated or properly dispersed. Co-location of these businesses with residential areas and community facilities requires careful consideration and technical guidance, which is often not readily available.

The Environment Protection Authority is responsible for working with local governments to monitor air and noise emissions, and enforce limits. However, small businesses are generally not licensed through the Environment Protection Authority. Clear guidelines are necessary to ensure that small-scale polluting activities are not located near sensitive uses (such as residential buildings).

Adopting measures to control excessive noise through planning, building and urban design will help to safeguard community health and amenity.

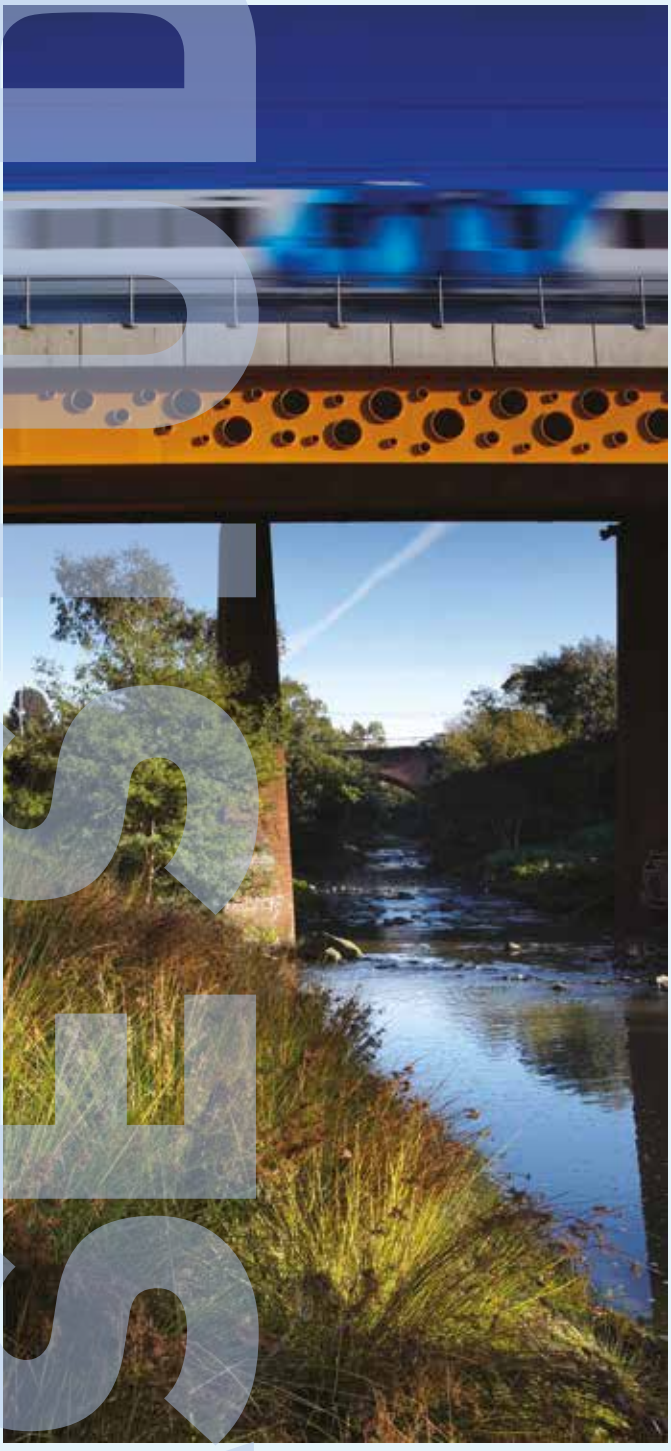
In the medium term

- Review and update relevant guidelines to inform the location of and separation distances for sensitive uses, and provide planning, building and urban design advice about how air emissions and noise exposure can be reduced.

  DEPARTMENT OF TRANSPORT, PLANNING AND LOCAL INFRASTRUCTURE (PLANNING)

RESTORING THE MERRI CREEK

COMMUNITY ACTION FOR A LOCAL WATERWAY



The Merri Creek flows through the northern suburbs of Melbourne. It begins at Wallan, north of Melbourne, and flows south for 70 kilometres to join the Yarra River at Dights Falls.

The landscape around Merri Creek has great spiritual significance to the Wurundjeri people. Before Melbourne was founded and the area developed, the landscape was a complex mosaic of grasslands, grassy woodlands, freshwater meadows and streams, and was home to a multitude of plants and animals. The Merri Creek valley formed a north-south transit route. Wurundjeri elders believe that a journey through this region was important for educating younger members of the tribe about Wurundjeri culture.

Traditionally, the Wurundjeri gathered at places along Merri Creek to perform men's and women's initiation ceremonies, tanderrum (welcome to country) and gaggip (farewell) ceremonies, as well as more secular corroborees. One reference in 1843 records that up to 290 Woi wurrung (Wurundjeri), Taungurong and Bunurong clan members met to collectively participate in a dancing ceremony on the banks of Merri Creek that went on for seven days.

Throughout much of the 20th century, heavy industry, quarries, landfills and factories dominated the creek area, and it became degraded. However, in recent decades the local government and the community have done much to regenerate the creek's ecology and improve its condition.

There are still patches of remnant native vegetation along the creek and weed control and ecological burning has improved their quality. The Merri Creek Management Committee and the volunteer group Friends of Merri Creek have replanted a lot of native vegetation. The Waterways Alliance, on behalf of Melbourne Water, has run a major project to remove invasive weeds including willow trees, desert ash and blackberry. At times of low flow, the creek receives treated water from the Craigieburn Sewage Treatment Plant.

When the state government built a new bridge over the creek, duplicating the rail line between Clifton Hill and Westgarth, work was done below and around the bridge to dramatically improve the landscape. The work included improved cyclist and pedestrian connections, careful revegetation and creating Bridge Park, a play space underneath the bridge.

The improvements won an Australian Institute of Landscape Architects urban design award.

It appears that native wildlife is returning to the creek. Until recently, it was thought that the water quality was not good enough for re-population by platypus but, in September 2010, one was sighted at Coburg.

RESTORING MERRI CREEK SHOWS HOW A LONG-TERM VISION, BACKED BY COMMUNITY AND GOVERNMENT ACTION, CAN RESTORE A NATURAL ENVIRONMENT

DIRECTION 5.5 INTEGRATE WHOLE-OF-WATER-CYCLE MANAGEMENT TO DELIVER SUSTAINABLE AND RESILIENT URBAN DEVELOPMENT

Melbourne has made advances in whole-of-water-cycle management in recent years. For instance, 5 gigalitres per year of stormwater and rainwater is harvested for use in Melbourne, including water collected from the 30 per cent of new households with rainwater tanks. The urban development process is an important means of supporting how we manage and make use of water to improve liveability, protect waterways and minimise the impact of flooding. Plan Melbourne supports implementation of *Melbourne's Water Future* by influencing how urban development occurs across new and established urban areas.

INITIATIVE 5.5.1
PREPARE AND IMPLEMENT WHOLE-OF-WATER-CYCLE MANAGEMENT PLANS IN MELBOURNE'S SUBREGIONS

Whole-of-water-cycle management will need to be carried out at three levels: metropolitan, regional and local. The long-term metropolitan water-cycle planning framework will outline current and future citywide infrastructure requirements. Regional water-cycle plans will be based on catchments and groupings of local governments (such as the growth areas and inner-city local governments). These plans will be consistent with the metropolitan framework and be informed by detailed examination of the particular characteristics of each region. Plans will have a 10-year timeframe, with detailed implementation plans to be updated every three years. Our new approach to water-cycle management will secure the water supply needed to keep our city's parks, gardens and street trees thriving; improve the amenity of our suburbs; and protect the ecological health of rivers, creeks and waterway parklands. Local whole-of-water-cycle plans will also be developed consistent with citywide infrastructure planning and relevant subregional plans. These will be based on examination of the characteristics of the municipality, as outlined in *Melbourne's Water Future*.

In the short to medium term

- Update planning provisions to recognise the strategic intent of *Melbourne's Water Future*.

  DEPARTMENT OF TRANSPORT, PLANNING AND LOCAL INFRASTRUCTURE (PLANNING)
- Deliver five demonstration local water-cycle plans, to inform the rollout of additional plans in subsequent years.

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- Examine the costs and benefits of implementing new building controls to improve the water performance of new buildings.

  DEPARTMENT OF TRANSPORT, PLANNING AND LOCAL INFRASTRUCTURE (PLANNING)
- Encourage the use of whole-of-water-cycle management approaches in Melbourne's urban renewal precincts.

  METROPOLITAN PLANNING AUTHORITY

DIRECTION 5.6 PROTECT OUR SIGNIFICANT WATER AND SEWERAGE ASSETS

There are some 7,000 kilometres of waterways in metropolitan Melbourne, and they form an essential component of our city's open-space network. They provide a sense of place and important habitat for maintaining biodiversity. The rivers and creeks of Port Phillip Bay and Western Port are popular recreational destinations for residents and tourists, with around 90 million visits each year[34].

Melbourne's drinking water is sourced from a combination of closed, forested catchments and open catchments that receive water from land in private ownership. Parts of Melbourne's catchments are vulnerable to changes in land use and development. These changes could contribute to pollution of source waters used for Melbourne's drinking water supply if they are not appropriately managed.

These risks may also apply to the drainage catchments of drinking water storage reservoirs such as Greenvale, Silvan and Cardinia reservoirs, located within our green wedges.

INITIATIVE 5.6.1
PROTECT OUR WATER AND SEWERAGE ASSETS

Significant metropolitan infrastructure assets, including Greenvale Reservoir and the Eastern Treatment Plant, are being pressured by encroaching sensitive and incompatible land uses. Some sewerage assets could also be subject to urban encroachment, resulting in risks to urban amenity and health.

In the short term

- Work with water authorities to determine land-area and buffer requirements for significant water and sewerage infrastructure and review planning provisions to ensure the ongoing protection of public health and safety.

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INITIATIVE 5.6.2
PROTECT OUR OPEN SPACE WATERWAY CORRIDORS FROM INAPPROPRIATE DEVELOPMENT

The government has introduced significantly stronger planning protections for Melbourne's two main river corridors, the Yarra and Maribyrnong rivers. These include mandatory height controls; controls in relation to site coverage, vegetation removal and drainage requirements; and discouraging development that intrudes on existing public and private open space adjacent to the rivers.

This approach to protecting rivers from inappropriate development will be extended to other rivers in Melbourne.

In the short term

- In partnership with local governments and stakeholders, prepare and implement planning provisions for major metropolitan waterway corridors, consistent with the approaches adopted for the Yarra and Maribyrnong rivers.

  DEPARTMENT OF TRANSPORT, PLANNING AND LOCAL INFRASTRUCTURE (PLANNING)

DIRECTION 5.7
REDUCE ENERGY CONSUMPTION AND TRANSITION TO CLEAN ENERGY

Clean energy – also known as green energy – is energy obtained from renewable or natural resources and does not create environmental debt. Clean energy can also be energy that creates less pollution, or no pollution at all, or that uses resources that can be easily renewed.

While national energy policy settings and action in national markets for energy generation will largely determine how we reduce energy consumption, state and local initiatives are also important. Such initiatives can provide integrated solutions to water, waste and energy issues and include converting waste to energy, reducing atmospheric emissions and reducing demand for landfill facilities.

However, the main path to clean energy locally is through energy efficiency and local energy generation. This is happening in innovative ways in Melbourne and around the world. Dandenong's Cogeneration Precinct Energy Project is producing low-carbon electricity and thermal heating and cooling for building owners and tenants. The Doncaster Hill Smart Energy Zone includes an energy-efficient facility that will supply heating, cooling and power to the Manningham City Square building and the Manningham Civic Centre via a micro-grid.

INITIATIVE 5.7.1
SUPPORT LOCAL GOVERNMENTS AND THE PRIVATE SECTOR IN THEIR EFFORTS TO PROMOTE ENERGY EFFICIENCY

Many local governments are highly innovative in their approach to energy efficiency and, importantly, adopt the innovations of other local governments. This is common where local government partners with the private sector to pilot innovative ideas. The City of Melbourne has won international recognition for an ambitious program of energy efficiency upgrades to existing commercial buildings. Its environment upgrade agreements provide secure, low-cost finance for building upgrades, with the city acting as an intermediary. We will ensure that other local governments can adopt a similar approach.

In the short term

- Review recently undertaken precinct scale distributed generation projects to identify key barriers to their development.

  DEPARTMENT OF STATE DEVELOPMENT, BUSINESS AND INNOVATION

In the medium term

- Amend the *Local Government Act 1989* so that local governments can use environment upgrade agreements as has occurred with the *City of Melbourne Act 2001*.

  DEPARTMENT OF TRANSPORT, PLANNING AND LOCAL INFRASTRUCTURE (LOCAL INFRASTRUCTURE)

- Investigate ways to facilitate the private sector to voluntarily undertake energy-efficient building upgrades.

  DEPARTMENT OF STATE DEVELOPMENT, BUSINESS AND INNOVATION

DIRECTION 5.8
PLAN FOR BETTER WASTE MANAGEMENT AND RESOURCE RECOVERY

Victoria has increased its annual waste generation from roughly 8 million tonnes in 2000 to 11.9 million tonnes in 2011, with Melbourne accounting for about 80 per cent of Victoria's solid waste production. As Melbourne grows, we will need to manage waste production and disposal. Our primary objectives will be to reduce the amount of waste produced, get value out of waste by recovering and reusing as much waste as possible and minimise the environmental and public health risks associated with waste disposal.

Getting Full Value: the Victorian Waste and Resource Recovery Policy outlines the government's approach to reducing waste generation and making better use of the resources available from materials that are currently being sent to landfill. It also highlights that waste management and resource recovery facilities need secure, long-term sites and secure, long-term supplies of waste materials to remain commercially viable. They need access to existing freight corridors between transfer stations, recovery facilities and landfills and markets for end products; and to be buffered from incompatible and sensitive land uses.

The planning system must ensure that waste management and resource recovery sites and infrastructure are protected from incompatible nearby land uses. It must also ensure that waste management and resource recovery systems provide adequate infrastructure for new urban developments in a way that ensures the health and amenity of residents are protected.

INITIATIVE 5.8.1
SEPARATE WASTE MANAGEMENT AND RESOURCE RECOVERY FACILITIES FROM URBAN ENCROACHMENT AND ASSESS OPPORTUNITIES FOR NEW WASTE FACILITIES

Waste management and resource recovery facilities are essential parts of our urban infrastructure. Historically, planning for our city's waste and resource recovery infrastructure has been medium-term, focusing on the opportunistic use of old quarries for landfills. This has not always matched the timeframes of urban land-use planning and, as a consequence, conflicts between landfills and residential land uses have occurred.

A lack of long-term land certainty is a barrier to infrastructure investment. Waste and resource recovery facilities need to remain fully operational and productive over the life of the investment. This relies on land and separation distances being secured, and on appropriate zoning of land within designated separation distances surrounding landfill sites and resource recovery sites.

We will create direct links between waste and resource recovery infrastructure planning and land-use planning by applying a combination of statutory measures and clearer guidance to identify and protect waste and resource recovery sites and separation distances.

Co-locating new waste-related infrastructure with complementary activities provides an opportunity to share existing separation distances and facilitate the integration of waste, water and energy management.

Waste-to-energy technologies are an example of advanced resource recovery infrastructure that can be co-located with other complementary infrastructure. The government welcomes investments in waste-to-energy and other alternative reuse technology that can convert waste into useful products and create new business opportunities in reprocessing and reusing waste.

In the short term

- Determine the capacity of existing landfill and waste management sites, and identify potential new locations for additional facilities, if required.

  DEPARTMENT OF ENVIRONMENT AND PRIMARY INDUSTRIES
- Prepare and implement planning provisions to clarify separation distances for all landfill and resource recovery sites listed in the Municipal Solid Waste Infrastructure Schedule and the Metropolitan Landfill Schedule of the *Metropolitan Waste and Resource Recovery Strategic Plan* under the *Environment Protection Act 1970*.

  DEPARTMENT OF ENVIRONMENT AND PRIMARY INDUSTRIES
- Prepare and implement planning provisions to support co-location of allied and non-sensitive industries on or near waste and energy precincts.

  DEPARTMENT OF TRANSPORT, PLANNING AND LOCAL INFRASTRUCTURE (PLANNING)
- Encourage co-location of new resource recovery infrastructure with complementary infrastructure (such as wastewater treatment and other industrial activities). High-priority areas for immediate action include organics processing to service the south-east metropolitan area.

  DEPARTMENT OF ENVIRONMENT AND PRIMARY INDUSTRIES
- Ensure precinct structure plans provide for waste and resource recovery infrastructure identified in the *Metropolitan Waste and Resource Recovery Strategic Plan*.

  METROPOLITAN PLANNING AUTHORITY
- Encourage best practice establishment and operation of resource recovery centres and transfer stations. High priority areas include the south-east metropolitan area and the growth areas.

  DEPARTMENT OF ENVIRONMENT AND PRIMARY INDUSTRIES

INITIATIVE 5.8.2

DEVELOP NEW WASTE SYSTEMS TO MEET THE LOGISTICAL CHALLENGES OF MEDIUM- AND HIGHER-DENSITY DEVELOPMENTS

Most high-rise residential and mixed-use developments, and some medium-density residential developments, lack comprehensive waste and resource recovery infrastructure and services which were not designed into the developments. Owners' corporations currently contract for the provision of waste services on an individual-site basis, with waste services often more costly and not as integrated and comprehensive as waste services provided by local governments. There are also additional costs with the collection of hard waste and recyclable materials from these sites, which often means recycling services are not contracted for, and all waste collected goes to landfill.

At a precinct level, individual-site contracting results in many different waste-collection service providers, bin types and collection schedules, and hence many different vehicles entering the precinct to collect waste.

We will ensure that waste infrastructure and waste service requirements are appropriately dealt with in planning provisions for medium-and-higher-density residential and mixed use developments.

In the short term

- Ensure the new 'good planning guide' better defines the need for, and provision of, waste infrastructure for all multi-unit residential developments.

  DEPARTMENT OF TRANSPORT, PLANNING AND LOCAL INFRASTRUCTURE (PLANNING) AND DEPARTMENT OF ENVIRONMENT AND PRIMARY INDUSTRIES
- Review and streamline regulations and planning provisions for waste and recycling storage and collection in apartment buildings.

  DEPARTMENT OF TRANSPORT, PLANNING AND LOCAL INFRASTRUCTURE (PLANNING) AND DEPARTMENT OF ENVIRONMENT AND PRIMARY INDUSTRIES
- Investigate and encourage precinct-wide innovations in waste management and recycling.

  DEPARTMENT OF ENVIRONMENT AND PRIMARY INDUSTRIES