

# Valuing Victoria's parks



Healthy Parks  
Healthy People



Environment,  
Land, Water  
and Planning



Victoria's parks are highly valued by the community. They provide open space, stunning landscapes, habitats to protect flora and fauna and areas to conserve cultural heritage. While these values are undoubtedly important in their own right, our parks also play an often unrecognised role in providing benefits that flow beyond park boundaries to contribute to Victoria's health, wellbeing, liveability and economy.

Globally, there is growing evidence that the health of our economic and social wellbeing is directly related to the health of our environment. This is reflected in Parks Victoria's *Healthy Parks Healthy People* approach to park management.

Many of the services provided by Victoria's parks have not been adequately quantified in the past. Improving our ability to measure these services and the benefits for society, will help to raise awareness about the links between healthy parks and healthy people and inform how park services can continue to be delivered to the community.

Valuing the services provided by parks is not about putting a price on nature, but is another way to demonstrate that some of the previously undervalued benefits of parks can be measured with other elements of society, so that these services and benefits can be appropriately factored into park management decision making.

The Victorian Government is working to be an environmental leader both in Australia and globally. One step we are taking to achieve this is using world-leading, best-practice environmental accounting to understand and unlock the value of our parks network.

Parks Victoria and the Department Environment, Land, Water and Planning have used an internationally recognised framework to develop robust methods to quantify the benefits that parks and their ecosystems provide to the Victorian community.

## What are ecosystem services?

Ecosystem services are the benefits of nature to people. While nature has intrinsic value aside from any human views about its worth or importance, nature also provides many essential services and other benefits to people.

Victoria's parks conserve examples of Victoria's natural ecosystems, catchments and open space. They provide a wide range of services and benefits to Victorian industries, such as tourism and agriculture. They enhance the Victoria's liveability and sustainability by providing cost effective clean water, clean air, climate regulation, protection of coastal assets and habitats for species. Our parks also directly contribute to community wellbeing by providing opportunities for improving physical, mental, social and spiritual health.

An initial assessment of selected ecosystem services from Victoria's parks has found that the parks network contribute significantly and in diverse ways to the state's economic and social wellbeing.

## Benefits of parks to the economy

Victoria's parks contribute to the economy through local industries providing goods and services, which in turn generate jobs and income. This includes the contribution of park management by Parks Victoria and the provision of natural resources.

### Tourism

- Tourists spend **\$1.4 billion** per year associated with their visits to parks, which generate **\$1 billion** gross value added and **14,000 jobs** in the State economy. Regional economies that benefit the greatest from park-based tourism include the Grampians, Great Ocean Road, Yarra Valley and Dandenong Ranges and Gippsland.

### Water supply

- Over **one million hectares** of water supply catchments are located within Victoria's parks. These catchments capture water and release it cleaner to infrastructure for drinking, food production and other industries.
- The annual run-off from nine of Victoria's highest water yielding parks is 3,400 gigalitres (**16% of the state total**). This is particularly significant for the economies of eastern Victoria (from the Alpine and Lake Eildon national parks), western Victoria (from the Grampians National Park) and Greater Melbourne (from the Yarra Ranges and Baw Baw national parks).

- The market value of water runoff supplied in nine of the highest yielding Victorian national parks is estimated at **\$244 million per year**. While this value is not directly captured in the economy the water is utilised to generate jobs and income in industries such as agriculture and hydropower.

### Honey production

Beekeeping is a permitted use in some parks and reserves where honeybees access floral resources.

- Beehives are estimated to produce about **1,200 to 1,600 tonnes** of honey products per year.
- The apiary sector attributable to parks produces honey and related products **worth \$3.4–\$4.6 million** per year and payments to beekeepers for pollination services are in the range of **\$0.6–\$1 million** per year.

### Local port management

In addition to managing parks, Parks Victoria manages built infrastructure and recreational services for the Port Phillip, Western Port and Port Campbell local ports.

- The piers and jetties of Port Phillip Bay receive **45 million visits every year**.
- Through the management of Port Phillip, Western Port and Port Campbell local ports, Parks Victoria plays a key role in the contribution these ports make to the State economy, estimated at over **\$300 million GVA** per annum in total.



# Benefits of parks to Victoria's productivity and sustainability

Healthy parks provide the community with a range of regulating services such as water purification, air filtration, climate regulation, pollination of agricultural crops and coastal protection, along with maintenance of habitats for native species, provision of nursery populations and genetic diversity. Healthy parks provide cost effective 'green infrastructure' services that provide additional benefits.

## Water purification

Clean fresh water from parks is used for drinking water, food production and other industries. It is also an essential requirement for water-based recreation. The forests, woodlands and wetlands of Victoria's parks improve water quality by naturally purifying and filtering water and reducing the release of soil sediment, pollutants and organic matter that would otherwise reach our waterways and bays.

- National and state parks have a significant role in improving the quality of the Victoria's waterways. In non-metropolitan areas, parks reduce soil sediment entering regulated rivers **by 92%** compared to an alternative land use, such as cleared grazing land.
- The reduced sediment load from nine of the highest water yielding national and state parks is valued at **\$50 million** per year based on the avoided costs of additional water storage required under an alternative land use.

- Metropolitan parks have a significant role in improving the quality of Melbourne's waterways and bays by reducing pollution entering Melbourne's waterways and bays. Melbourne's metropolitan parks reduce nitrogen loads that enter waterways and bays **by 85%**, compared to an alternative land use (i.e. medium density urban development).
- The value of water filtration from metropolitan parks is estimated at **\$33 million** per year, or almost **\$2,150 per hectare per year**, which is based on the avoided cost of maintaining current water quality in metropolitan waterways through alternative infrastructure if the parks were an alternative land use (i.e. medium density urban development).

## Flood and stormwater protection

The native vegetation and wetlands of parks act as important regulators of water movement, protecting community assets from stormwater and flooding.

- Based on the assessment of a selection of national and state parks, the recurrence of peak flows (i.e. likely flood events) would decrease by **more than 20%** across most parks and for some parks **more than 50%**, when compared to an alternative land use. The avoided costs of flood management infrastructure due to national and state parks could not be assessed at this stage and is an area for further research.



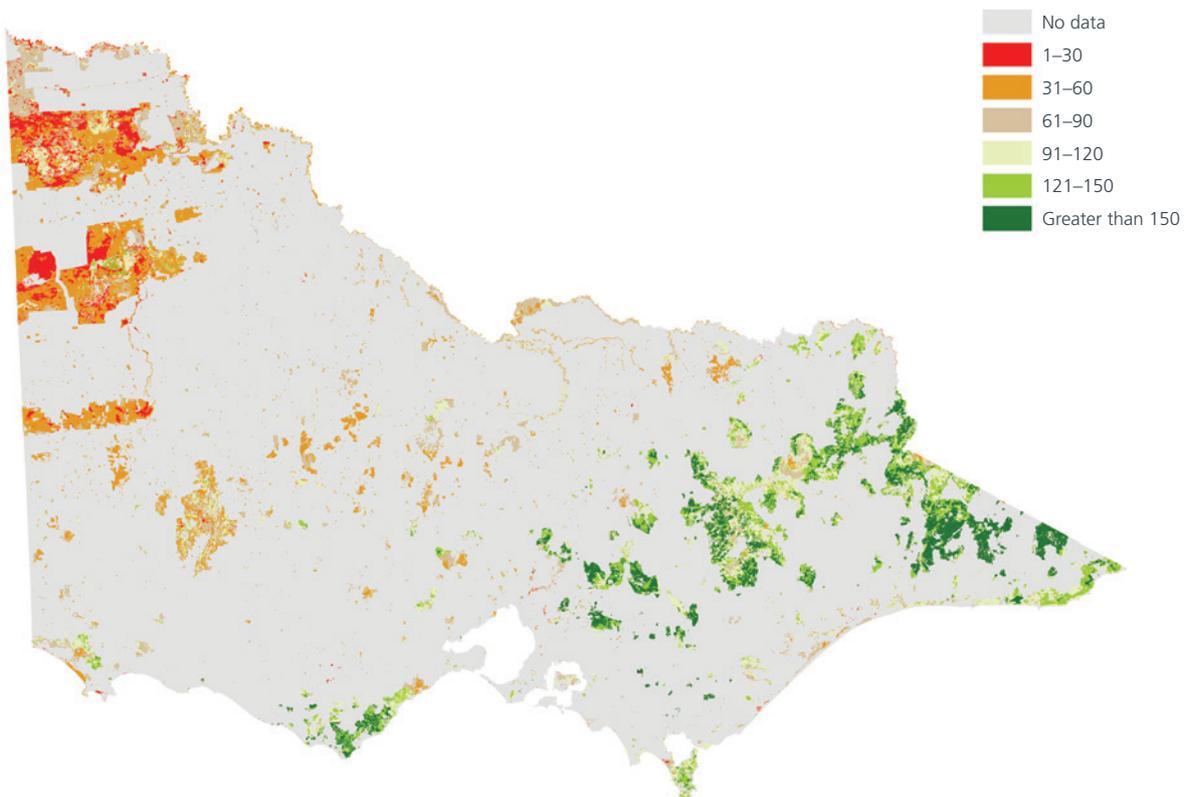
- Melbourne’s metropolitan parks help mitigate damage to community assets from floods and stormwater runoff. Around **35,000 ML** of stormwater is released into metropolitan waterways from parks per year and without these parks, the **volume of stormwater would double**, requiring additional built infrastructure to capture and drain stormwater.
- The benefit of stormwater retention services from Melbourne’s metropolitan parks is estimated at **\$46 million per annum (or almost \$3,000 per hectare per annum)**. This is based on the avoided costs of built infrastructure to deal with additional stormwater.
- The Victorian parks network is a major carbon sink with at least **270 million tonnes** of carbon stored in land-based parks and **850,000 tonnes** in marine parks. This is around nine times the Victoria’s annual greenhouse gas emissions.
- The Alpine National Park accounts for **more than one quarter** of the carbon stocks in the Victorian parks network.
- Over the past fifteen years, approximately 1,000 hectares across 30 parks has been revegetated under the Greenfleet revegetation program. Greenfleet has estimated that carbon sequestration in these parks due to this program could be up **to 350,000 tonnes by year 20 and 500,000 tonnes by year 100** (in tonnes CO2 equivalent, this is 1.3 and 1.8 million respectively).

### Climate regulation – carbon storage

Across the world, intact terrestrial, wetland and marine and coastal ecosystems of parks play a vital role in regulating the earth’s climate by sequestering carbon dioxide from the atmosphere and storing it in the form of organic carbon in plants and soil. By ensuring that parks are well managed, carbon stocks can be protected, increased and carbon sequestered over time. Carbon stocks can be actively managed through measures to prevent soil erosion, large scale severe fires, vegetation disease, impacts of introduced species and human pressure and by undertaking habitat restoration and revegetation.

- Based on the experience of two major revegetation programs in parks, it is estimated that around **21,000 tonnes** of carbon dioxide equivalent could be sequestered annually. The sequestration through just these two revegetation programs in the first 30 years would be potentially valued at least **\$1 million per annum**, using a market price of \$15 per tonne CO2.

**Tonnes of Carbon per Hectare Stored in Parks**



## Coastal protection

Parks Victoria manages around **70%** of the Victorian coast as national or state parks, coastal reserve or marine national park or sanctuary. Coastal and marine habitats including mangrove, saltmarsh, seagrass and coastal dune systems can be described as 'living infrastructure' that provide important coastal protection services by absorbing wave energy, helping to minimise shoreline areas from storm damage, inundation and erosion. These ecosystems can provide highly cost effective natural buffers against incoming waves. By protecting against storm damage, flooding, and erosion, these habitats protect human populations and help mitigate economic loss of coastal assets.

- Around 285 kilometres of the Victoria's coastal habitats in parks are in and around coastal townships.
- The value of protecting mangrove, saltmarsh and dunes in parks along Victoria's coast is conservatively estimated to avoid costs **of \$24–56 million** per year, based on the estimated replacement cost of a combination of seawall construction and revegetation if these coastal natural assets were severely degraded or lost.

## Pollination

The forests, woodlands and other habitats of the parks network house a range of species such as insects, birds and bats that pollinate plants and trees that are essential for the development of fruits, vegetables and seeds for human use. While further research is required in this area, the role of the 1,235–1,700 honeybee sites in parks supporting agricultural activity is recognised as one component of this service.

- Based on latest studies on the value of pollination services to agriculture across Australia, there are benefits of **\$123–167 million** to consumers and producers across 30 crops from pollination services provided by Victoria's parks.

## Maintenance of genetic diversity and species

Park ecosystems support habitats that support maintenance of Victoria's genetic biodiversity and the cultural role of species. The parks network contains **4,728** of the Victoria's **5,145 flora species** and **1,102** of its **1,405 fauna species**. Land-based parks contain **353 endemic** terrestrial species of which 45 are found nowhere else in the world. Many marine species are not found elsewhere. Maintenance of genetic diversity not only provides the basis for many other services, but also has a direct role in disease prevention, and bioprospecting applications such as development of potential medicines.

- Based on an assessment of 600 national and State parks and the larger conservation reserves these areas provide **888 threatened species with at least 50% of suitable habitat** in the State and more than **500 species with over 80% of suitable habitat**.
- Many people value parks through altruism from knowing others have access, as a bequest for future generations, and/or from simply gaining satisfaction that a species or ecosystem exists. While economists have developed methods to place a monetary value of these services, this is an area for further research.



## Benefits to Victoria's liveability

A large and increasing body of scientific research has demonstrated that healthy nature and open space can provide an important role in enabling a wide range of health and wellbeing benefits for individuals and communities. With the rapidly increasing incidence of non-communicable or 'lifestyle' diseases such as diabetes, cardio-vascular disease, anxiety and depression, parks provide opportunities for outdoor recreation, spiritual and cultural heritage connection, physical, mental, and social health benefits and neighbourhood amenity.

### Recreation and health

- Victoria's parks enable the community to enjoy diverse opportunities for recreation with more than **50 million visits** to national, state and metropolitan parks every year, **45 million visits** to piers and jetties of the bays and almost **17 million visitor nights** from tourists.
  - The enjoyment that visitors obtain from visiting parks is estimated at **\$600–\$1,000 million per year**. This is an estimate of what they would be willing to pay if there was a market for this service. The estimate is derived from previous studies and based on actual travel expenses, travel time and other visitor costs.
  - Around **23 million** visits to parks per year are primarily for physical activity which can provide a wide range of health benefits. Consistent with Parks Victoria's *Healthy Parks Healthy People* approach, there has been **a 10% increase** in the number of annual visits involving physical exercise since 2007.
- An indicative analysis suggests that the avoided healthcare costs and productivity impacts associated with undertaking physical activity regularly in Victorian parks could be up to **\$200 million per annum**.

### Landscape and neighbourhood amenity

Healthy parks provide significant amenity benefits to surrounding residents.

- There are about **12,000 residences** immediately adjacent to Melbourne parks and **85,000 residences** adjacent to parks outside the Greater Melbourne area.
- A conservative estimate of the amenity value for those residents immediately adjacent to Melbourne's metropolitan parks alone is **\$21–28 million per year**. This is based on international studies on the relationship between urban and peri-urban parks and housing prices, which can be used as a proxy for the value of improving people's welfare or wellbeing.



## Indigenous cultural connection

Parks provide opportunities for Traditional Owners to re-connect with Country.

- There are around **12,000 Aboriginal cultural places** recorded to date in the parks network and around **650,000 hectares** of the parks network is managed with Traditional Owners under joint management or other partnerships. Further work to quantify the economic, social and health benefits of joint and co-management will be undertaken.

## Historic place conservation

- The Victorian parks network includes **177 places of State heritage significance** such as historic buildings, lighthouses and gold mining sites. More than half of the Victorian population had visited a heritage place managed by Parks Victoria within the previous year.
- The value of heritage conservation in Victoria's parks is estimated at up to **\$23 million** per year. This is based on 'willingness to pay' surveys of the Victorian population.

## Social and community cohesion

Volunteering in parks provides social connection, a sense of community contribution as well as personal physical and mental health benefits.

- Parks Victoria records that more than **200,000 hours** of volunteering per year (**equivalent to 120 full time staff**) is undertaken on park related projects, from tree planting to flora and fauna monitoring, heritage conservation and track maintenance.
- A minimum estimate of this service is around **\$6 million per year**. This represents the value of over 200,000 hours of volunteer time spent in parks and does not factor in the value of social and health benefits gained.



### Scientific and educational benefits

- Parks contribute to educational opportunities by immersing primary, secondary and tertiary students in nature to build awareness, real life skills and practical examples for curriculum. More than **180,000 students** visit parks each year to participate in education programs. The monetary benefits of park-based education is an area for further research.
- The parks network provides a major resource for scientific research and provides many opportunities for tertiary studies. Around **200 research projects** are undertaken in parks each year covering biological and social research. Parks Victoria's Research Partners Program , which focuses on applied research to improve park management, has delivered more than **140 projects since 2010**, providing many opportunities for researchers and students to gather knowledge and build scientific skills.
- Valuation of park-based scientific research is an area for further work; however Parks Victoria's Research Partners Program investment has been able to leverage around six dollars for each of its own research dollars through development of collaborative research partnerships.

### Further information and caveats

The information on park values is from the *Valuing Victoria's Parks – Accounting for ecosystems and valuing their benefits, Report of first phase findings* (Parks Victoria and the Department of Environment, Land, Water and Planning) <http://delwp.vic.gov.au>

This first assessment of the Victorian parks network provides both an indicative and conservative estimate of the value of ecosystem services attributable to parks and it provides an applied framework in which to populate new information. Note that some monetary values of benefits from the assessed ecosystem services cannot necessarily be aggregated as services may overlap.





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