Protecting Victoria's Environment – Biodiversity 2037

VICTORIA
State Government

Note on referencing

This Plan is supported by a technical document *Protecting Victoria's Environment – Biodiversity 2037: Supporting Technical Supplement* containing references, further reading and sources for all factual statements included in the Plan.

Printed by Doculink, Port Melbourne

ISBN 978-1-76047-396-9 (Print)

ISBN 978-1-76047-397-6 (pdf/online)

Accessibility

If you would like to receive this publication in an alternative format, please telephone the DELWP Customer Service Centre on 136 186, or email customer.service@delwp.vic.gov.au, or via the National Relay Service on 133 677, www.relayservice.com.au. This document is also available on the internet at environment.vic.gov.au/biodiversityplan

Contents

Minister's foreword

Victoria is privileged to showcase some of the world's most breathtaking biodiversity, featuring distinctive plants and animals in their unique natural habitats.

Our natural environment is not only beautiful, it is fundamental to the health and wellbeing of every Victorian. It provides clean air and water, productive soils, natural pest control, pollination, flood mitigation and carbon sequestration – and supports productive activities that underpin our state's liveability and economic advantage.

Despite understanding the importance of our natural environment, not enough has been done to protect it from harm. Victoria's biodiversity is in decline. More than half of the state's native vegetation has been cleared since European settlement, and many native plant and animal species are at risk from a range of pressures, including the impacts of climate change.

The decline of our biodiversity also impacts the future health, wellbeing and prosperity of all Victorian communities.

The Victorian Government has an ambitious environmental agenda and is prioritising the care and protection of our natural environment, which in turn will lead to greater economic stability and healthier communities. We committed to developing a statewide Biodiversity Plan. This Plan, *Protecting Victoria's Environment – Biodiversity 2037*, marks a turning point for Victoria. We are setting a new direction, one that has been developed through a collective effort of many individuals, organisations and communities providing ideas, feedback and submissions on the draft plan.

The passion and enthusiasm of this input made one thing clear – many Victorians have a deep connection with nature and are ready to take on this challenge.

The Plan represents a contemporary approach to managing biodiversity. It brings together the latest conservation science and social science to help achieve the plan's vision: that Victoria's biodiversity is healthy, valued and actively cared for.

The Plan promotes collaboration and improved alignment across government, business, communities, Traditional Owners, Aboriginal Victorians and private land managers, to restore our biodiversity and strengthen our economy. The plan also promotes community participation in caring for biodiversity, and encourages more Victorians to get outdoors and enjoy our natural environment.

We need to work together and enjoy the benefits of our natural environment, recognising that our long term wellbeing and prosperity is inextricably linked to the health of our natural environment. This is not just a plan for action, but a blueprint for our success in stopping the decline of Victoria's unique biodiversity.

The Hon. Lily D'Ambrosio MP

Minister for Energy, Environment and Climate Change

Secretary's statement

As Secretary to the Department of Environment, Land, Water and Planning, I make the Victorian Biodiversity Plan, *Protecting Victoria's Environment - Biodiversity 2037*, the new Flora and Fauna Guarantee Strategy for the purposes of section 17 of the *Flora and Fauna Guarantee Act 1988*.

Victoria's natural environment is richly diverse, unique and precious. Victorians treasure the environment not just for its own sake, but for its indispensable value to individuals, communities, Aboriginal Victorians and society as a whole.

This Plan will ensure that all Victorians can enjoy the benefits of a healthy natural environment now and into the future. It will assist Victorians to recognise the multiple values that biodiversity provides, and to identify the tools, tasks and roles needed to ensure that Victoria's natural environment is healthy and positioned to cope with the effects of future population growth and climate change. It makes a compelling case for why we should invest to care for Victoria's biodiversity.

Adam Fennessy

Secretary, Department of Environment, Land, Water and Planning

Aboriginal acknowledgement

The Victorian Government proudly acknowledges Victoria's Aboriginal community and their rich culture and pays respect to their Elders past and present.

We acknowledge Aboriginal people as Australia's first peoples, and as the Traditional Owners and custodians of the land on which we work and live.

We recognise the strength of Aboriginal people despite the negative inter-generational impacts of past practices and policies, some of which continue to be experienced today.

We recognise and value the ongoing contribution of Aboriginal people and communities to Victorian life, and how this enriches us all.

We recognise that Aboriginal cultures and communities are diverse, and the value we gain in celebrating these cultures and communities. We acknowledge that the land is of spiritual, cultural and economic importance to Aboriginal people.

We also recognise the intrinsic connection of Traditional Owners to Country and acknowledge their contribution in the management of land, water, the natural landscape and our built environments.

We embrace the spirit of reconciliation, working towards the equality of outcomes and ensuring an equal voice.

We have distinct legislative obligations to Traditional Land Owner groups that are paramount in our responsibilities in managing Victoria's resources.

Chapter 1
Introduction

Key point:

- Victoria's natural environment is richly diverse, unique and precious. Victorians treasure the environment not just for its own sake, but for its indispensable value to individuals, communities, Aboriginal Victorians and society as a whole.

Although humans have not always treated nature with the care and respect that it deserves, all of us are consumers and beneficiaries of its riches. At one level we thrill to its beauty, grandeur and complexity; at a more basic level we depend on nature's raw components for our physical health and survival, and for our material prosperity. A healthy natural environment is good for us all, and something to cherish and protect.

What is biodiversity?

Biodiversity encompasses all components of the living world: the number and variety of plants, animals and other living things, including fungi and micro-organisms, across our land, rivers, coast and ocean. It includes the diversity of their genetic information, the habitats and ecosystems within which they live, and their connections with other life forms and the natural world.

Rich though it remains today, Victoria's natural environment is not as healthy as it once was. The wonderful tapestry of plant and animal life that makes up our terrestrial, waterway[1] and marine environments has been under sustained pressure for nearly two centuries, resulting in the degradation and loss of numerous native species and habitats. Victoria is the most intensively settled and cleared state in Australia, with over 50 per cent of the state's native vegetation cleared since European settlement. More recently, climate change has brought new and challenging threats to biodiversity.

As Victorians have become more conscious of the importance of biodiversity – and more active in their efforts to protect it – the rate of native vegetation clearing has slowed. Yet, despite these efforts, many native plant and animal species remain under threat. Victoria's biodiversity continues to decline, and the current level of remedial effort is not sufficient to make up for these losses.

By almost any measure, Victoria is economically prosperous. And while the prosperity we enjoy today has occurred partly at the expense of biodiversity, it has also become clear in recent times that a strong economy need not be in competition with the natural environment. Modern, more strategic approaches to conservation, along with advances in environmental science, have opened the way to better outcomes for nature in an increasingly developed world.

Moreover, there is now widespread acknowledgement that the long-term health of the economy – and, by extension, the welfare of the community – is inextricably linked to the health of the environment.

Protecting Victoria's Environment – Biodiversity 2037 is Victoria's new plan for the future of Victoria's biodiversity. The Biodiversity Plan embraces transformational developments in thinking about conservation and the sustainability of human civilisation and economic development. As such, the Plan is a big step forward for Victoria; it sets the ambitious and achievable task of stopping the decline of our biodiversity. It also marks the start of a long-term pathway for the overall improvement of biodiversity, while sustaining the state's strong economy. Significantly increased effort and investment over a long period is required to achieve these parallel goals. When considering the benefits to current and future generations of Victorians that will flow from improved biodiversity – and the potential consequences of not pursuing such a course of action – the choice is obvious.

1.1 Making the case for biodiversity

There is a long and compelling list of reasons why we should invest to care for Victoria's biodiversity.

Victoria's environment provides life-sustaining services

A healthy natural environment provides vital life-sustaining services for humans, and underpins many of the productive activities that generate value for Victorians. Victoria's diverse and unique mix of plants, animals, soils, seas and waterways function together as ecosystems, which in turn produce some of humans' most basic needs – provisions such as clean air and water, productive soils, natural pest control, pollination, flood mitigation and carbon sequestration. Ecosystems also provide us with food, raw materials for production (such as timber, pastures and fertilizers), genetic resources and pharmaceuticals, while contributing to waste decomposition and detoxification.

The value to humans of these ''ecosystem services'' is immeasurable, and replacing them could be extremely costly, if not impossible. For example, if natural water purification and flood protection benefits were diminished or lost, they would need to be replaced by built infrastructure, leading to potentially large increases in water bills. Protecting the environment avoids the cost of replacing ecosystem services with built alternatives, and represents a least-cost way of ensuring that we can continue to enjoy its benefits into the future.

Victoria's natural environment is our biggest tourist attraction

Victoria's nature-based tourism is built on the quality of the state's natural assets – our national parks, reserves and marine protected areas, along with great natural icons, farmland, wildlife attractions and varied rural landscapes, from beaches to mountains, rivers and lakes. These natural assets attract millions of local, domestic and international visitors every year. Increasingly, a focus on personal, environmental and community wellbeing has helped drive growth in the demand for nature-based experiences. Aboriginal cultural tourism is also expanding to meet the growing international demand for Aboriginal cultural experiences and products (see Chapter 5).

Protecting our natural capital will increase the resilience of key sectors of the economy

The term 'natural capital' is often used to describe the resources provided by nature – minerals, soil, water, ecosystem services, and all living things from which we derive material or financial value. Biodiverse ecosystems are the core component of natural capital. Victoria's agriculture, forestry and fisheries sectors, which directly rely on natural capital, contribute around $8 billion, or 2.8 per cent, to annual Gross State Product.

A study of the economic benefits of Victoria's national parks and conservation reserves showed the range of benefits that parks provide (see panel).

These contributions highlight the potential exposure of the economy if our natural capital is eroded by external impacts such as pollution, overuse, inadequate management of threats and climate change, which can degrade the condition of ecosystems and their ability to generate or support the provision of essential products and services.

Valuation of benefits from Victoria's parks

Tourism: $1.4 billion in spending per year associated with visits by tourists to Victoria's parks, generating $1 billion gross value added to the state economy and 14,000 jobs.

Health benefits: visits to parks are estimated to save Victoria between $80 million and $200 million per year from avoidance of disease, mortality and lost productivity.

Water purification: avoided costs estimated at $33 million per year in metropolitan areas and $50 million per year in non-metropolitan areas.

Flood protection: $46 million per year from avoided infrastructure costs.

Coastal protection: $24 million-$56 million per year from avoided costs (e.g. from erosion and storms).

Carbon sequestration: Victoria's terrestrial parks store at least 270 million tonnes of carbon. Marine parks store at least 850,000 tonnes. In addition, Trust for Nature reserves and covenants are estimated to store a further 12 million tonnes of carbon.

Victoria's natural environment is fundamental to the cultural practices of Traditional Owners and Aboriginal Victorians

As custodians of the land, Traditional Owners attach great social, economic and spiritual value to the plants and animals that have supported their subsistence and economies for thousands of years, and that feature in their Dreamtime and creation stories. Traditional Owners have knowledge of Country, and cultural obligations to manage their traditional lands and waters. In meeting these cultural obligations, they keep Country healthy, which has benefits for their own wellbeing; the natural environment and the wider Victorian community (see Chapter 8).

It is a basic human right for Traditional Owners and Aboriginal Victorians to practise their culture, and to enjoy the economic benefits that flow from healthy ecosystems. Over time it is expected that most of the state will be covered by native title determinations and/or settlement agreements that recognise the special relationship of Traditional Owners with their lands and waters, and that recognise their right to participate as equal partners in Victoria's management of natural resources.

The Victorian Government's Aboriginal Inclusion Framework recognises and respects the value of Aboriginal knowledge and culture, and aims to enable Aboriginal Victorians to be involved in management of land and waters.

Victoria's natural environment is fundamental to the health and wellbeing of every Victorian

Victorians connect with nature in many ways. We enjoy the benefits of nature, and many of us are enriched by the process of taking care of it, including farmers and others who work in natural outdoor environments. Victorians spend much of their recreation time in the outdoors – playing sport, walking, hiking, climbing, sailing, fishing or simply relaxing in the splendid natural surrounds of the bush, the coast or urban parks and gardens.

Research shows that time spent in natural spaces is linked to positive long-term health outcomes. The natural environment provides children with opportunities to develop core skills, including observation, problem-solving, reasoning, creativity and imagination, along with emotional and intellectual development and the acquisition of gross motor skills, such as agility, coordination, and balance (see Chapter 4).

The natural environment also contributes to the *liveability* of our cities and communities (the elements that contribute to quality of life, including built and natural assets, economic prosperity, social stability, and access to educational, cultural, entertainment and recreational opportunities) and to their *resilience* (the capacity of individuals, institutions, businesses and systems to adapt, survive and thrive no matter what kind of chronic stresses and acute shocks they experience).

The natural environment can help reduce the impacts of climate change

The natural environment not only sequesters carbon from the atmosphere, but provides essential 'green' infrastructure services to society at a low cost. Native vegetation can lessen the impacts of extreme weather events (e.g. through vegetation reducing run-off following heavy rainfall, or mangroves buffering storm surge), mitigate climate change by carbon sequestration, and cool cityscapes and provide people respite from heat through shade – while also reducing energy demands for cooling (see Chapter 5).

Victoria's biodiversity is an important part of our identity

Victorians take pride in the state's unique plants and animals. Iconic species and natural sites of historical and cultural significance are highly valued. Biodiversity provides a sense of place: from the Dandenongs and the Grampians, to Port Phillip Bay, the Murray River, our coastlines and the High Country – these are but a few of the wonderful places which, along with the plants and animals that inhabit them, help define our Victorian identity.

Biodiversity has a right to exist

Native plants and animals have an intrinsic right to exist, thrive and flourish. Multiple life forms contribute to biodiversity and have significant intrinsic value. Victorians have a duty to protect biodiversity, regardless of whether it provides tangible benefits to humans.

1.2 Our national and international obligations

The Biodiversity Plan represents the Victorian Government's commitment to ensuring consistency with national and international biodiversity programs and agreements. In 2010, the 196 signatory nations to the United Nations *Convention on Biological Diversity*, including Australia, adopted the international *Strategic Plan for Biodiversity 2011-2020*. This provides an international framework on biodiversity for all partners. One commitment of the Convention for signatory nations is that the framework be translated into national biodiversity strategies and action plans within two years. In 2010, Australia delivered on this commitment by producing the *Biodiversity Conservation Strategy 2010-2030*.

The five strategic goals of the Convention are to:

- Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society.
- Reduce the direct pressures on biodiversity and promote sustainable use.
- Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity.
- Enhance the benefits to all from biodiversity and ecosystem services.
- Enhance implementation through participatory planning, knowledge management and capacity building.

The vision and goals of the Biodiversity Plan are consistent with those of the Convention and of the Australian Strategy, which states: *"The vision of this Strategy is that Australia's biodiversity is healthy and resilient to threats, and valued both in its own right and for its essential contribution to our existence."* This Plan also addresses the three main priorities of the Australian Strategy:

- Engaging all Australians in biodiversity conservation.
- Building ecosystem resilience in a changing climate.
- Getting measurable results.

The Biodiversity Plan establishes priorities for action, and clear targets that will support the government to align its specific priorities and investments within a broader national context.

The Biodiversity Plan also complements the Sustainable Development Goals adopted by the United Nations in 2015, the targets of which include improving biodiversity conservation on land and in water environments.

The 2016 *Paris Agreement*, struck within the United Nations *Framework Convention on Climate Change*, acknowledges the threat of climate change and commits signatory nations, including Australia, to undertake greenhouse gases emissions mitigation and climate change adaptation. The Victorian Government's approach to managing the impacts of climate change across the state is articulated in Victoria's *Climate Change Adaptation Plan 2017-2020*. The approach to managing biodiversity in the face of climate change is described in Chapter 3 of this document.

In fulfilling national and international commitments to biodiversity and climate change, the Victorian Government also commits to fulfilling its obligations under the United Nations *Declaration of the Rights of Indigenous Peoples*, which explicitly recognises the unique relationships that Aboriginal peoples have with their lands and waters.

The Biodiversity Plan is consistent with the 2014 *Charter of the Federation of Victorian Traditional Owner Corporations* – notably, the vision for keeping Country healthy – and with the Federation's Biodiversity Statement. The Statement shares the goals of this Plan, and supports many of its principles. It states in part: *"We view the natural world within an interconnected ecological, cultural and livelihood system. Land and waters managed for landscape and community health require active and adaptive management to be able to restore, maintain and enhance biodiversity and improve its ability to effectively recover from shock and stresses. We take a holistic and landscape view for planning and management, using fire, water and silviculture (gardening) as integral management tools for maintaining a productive and healthy landscape."*

Principles of *Protecting Victoria's Environment – Biodiversity 2037*

The development of the Biodiversity Plan has been informed by the following principles. These principles will guide implementation of the Plan.

Values

Life forms that make up biodiversity have intrinsic value and warrant our respect.

Connections and relationships exist within and between ecological, social, cultural and economic systems.

Biodiversity delivers ecosystem services that are fundamental to the economic prosperity and the physical and mental health of all Victorians.

Living systems

The environment is changing, driven by climate change and population growth. It has a finite capacity to recover from demands and disturbances and must be managed for long-term sustainability.

There will be continuing changes to species numbers and distribution, and to the extent and quality of their habitats.

Biodiversity protection is most efficiently achieved in natural habitats, because the needs of species, and their capacity to persist, are most likely to be met in the ecosystems where they have evolved.

Sharing and collaborating

Citizens and communities are engaged in decisions that affect them.

Contributions to the protection of biodiversity are aligned to a common purpose.

Victorians value environmental justice, which requires equitable access to natural resources and sharing risks and rewards for their use, both now and in the future.

The rights, culture, values, innovations, practices and knowledge of Aboriginal peoples are respected.

Responsibilities are shared by (i) taking collective responsibility for addressing the historical impacts on biodiversity; (ii) collectively investing in conserving biodiversity; (iii) regulating to manage risks of further damage; and (iv) where losses of public benefit occur, holding those responsible to account.

Knowledge

Actions are monitored and evaluated to ensure that they are effective and lead to desired outcomes.

Multiple sources of knowledge (e.g. science-based, traditional, community), are recognised, and knowledge is freely shared and used as a common foundation for decision making.

The limitations and uncertainties of available knowledge are acknowledged, while the knowledge base is continually improved.

Decision making

Decision-making processes are fair, transparent, efficient and consistent.

Decisions consider risk and return and are based on the best available scientific evidence and other sources of knowledge.

Decision making is based on the precautionary principle; that decisions to prevent significant impacts are not avoided because of a lack of scientific certainty.

Decision making consistently accounts for all interventions and changes made to the environment and considers the context across space and time in which assets and issues exist.

Changing environmental circumstances are considered and thinking is adapted to new information.

Chapter 2
Facing the challenge

Key points:

- While all Victorians enjoy the benefits of biodiversity, relatively few are fully aware of its importance, or are prepared to share the cost of – and responsibility for – sustaining it.

- Climate change and population growth are expected to exacerbate existing threats and bring new challenges for Victoria's biodiversity.

As a society, we tend to under-value the benefits of biodiversity, and fail to acknowledge the risks posed by our collective actions. As a result, material yields and other benefits provided by the environment are in decline.

Victorians have allowed the continued decline of biodiversity because:

- The immediate cost of avoiding harm to the natural environment is either hidden or considered to be too high.
- The potential serious impacts of harming the environment are thought to be too far in the future, too uncertain and not of immediate concern.
- The benefits of biodiversity are free, and are therefore taken for granted.
- Biodiversity loss may be too abstract a concept for some to grasp.
- Biodiversity loss can happen slowly and therefore be difficult to notice.

Victoria has seen a continuing legacy of biodiversity loss over almost two centuries. Future generations have been denied the opportunity to see 18 species of mammal, two birds, one snake, three freshwater fish, six invertebrates and 51 plants that have become extinct since European settlement. Today, between one quarter and one third of all of Victoria's terrestrial plants, birds, reptiles, amphibians and mammals, along with numerous invertebrates and ecological communities, are considered threatened with extinction.

Natural environmental processes (such as fire and water regimes and native animal grazing) have undergone significant change due to human impacts including urban, rural and coastal development, agriculture, and efforts to protect people and property from risks of bushfire and flooding. As the population continues to grow, the demands on land, waterways and marine ecosystems are resulting in diminished productivity from Victoria's environment. And the devastating effects of European settlement on the state's Aboriginal population have meant that many traditional methods previously utilised for biodiversity management[2] are no longer known and can no longer be fully employed.

Victoria is the most intensively settled and cleared state in Australia. This has enabled Victoria to become a powerhouse of agricultural production, with huge benefits to the state economy. But it has also left a legacy of loss, degradation and fragmentation of habitats that is evident across the state. The effects of this legacy will continue, creating more pressure on species and increasing their vulnerability to other threats. Although the rate of land clearing has slowed since the introduction of Victoria's native vegetation regulations in 1989, the quality and extent of native vegetation continues to shrink by about 4000 habitat hectares each year.[3] This trajectory is largely the result of activities and entitled uses that are outside the regulatory framework (resulting in loss of extent of native vegetation), together with insufficient management of threats (resulting in loss of quality).

The introduction of exotic plants and animals has had significant consequences for Victoria's native animal and plant species. Many of these introductions have come through the legacy of European settlement and the associated acclimatisation of animals and plants, which have become pests and weeds. Increased globalisation and a changing climate also bring the risk of new invaders.

Marine and waterway environments are threatened by ongoing coastal development and infrastructure, runoff of excessive nutrients and sediments from catchments, high levels of water consumption, altered flow regimes, pollution and the introduction of existing and new marine pests.

The degraded health of Victoria's biodiversity is the result of many individual decisions and actions, or inactions, over two centuries. Under-investment in planning, management, protection, evaluation and reporting for biodiversity and the natural environment has been conspicuous. Even today, decision makers in government, business and land management too often fail to fully consider the impacts of their actions on biodiversity – and are not routinely required to do so.

There is an overwhelming consensus among scientists that the global climate change we are now experiencing is largely the result of human activity producing an increase in carbon dioxide concentrations in the atmosphere. It is predicted that climate change impacts will continue to alter natural processes and regimes in sometimes unpredictable ways, which may mean that current conservation methods become less effective over time. Thus, while we can be certain that climate change will cause significant and widespread changes to biodiversity and natural ecosystems over time, the exact nature and scale of changes, and the degree to which individual species, populations and ecological processes can adapt, is still uncertain.

Climate change will increase the pressure on Victoria's biodiversity, by exacerbating existing threats and introducing new ones, such as:

- increased frequency and severity of extreme weather events
- increased frequency and intensity of bushfires and drought
- rising sea levels
- changes in ocean temperatures, currents and ocean acidification
- changes to waterway flows, levels and regimes
- changes in the range, distribution, abundance and seasonality of species
- changes in the range, distribution and impacts of introduced plants and animals, including the introduction of new pests taking advantage of a changed climate.

In addition to these social and biophysical drivers, there are also problems with the current system of managing biodiversity that this Plan aims to address. Specific issues and over-arching problems include:

- Victoria has many excellent community-based programs (such as Landcare, Land for Wildlife, Conservation Management Networks and local Friends groups). But the whole community has not been effectively engaged in meeting Victoria's biodiversity challenge (see Chapter 4).
- Not all of Victoria's parks, reserves and sanctuaries are well promoted, known or appreciated, and therefore have not been sufficiently valued, or received the support required for maintenance.
- Biodiversity is not accounted for and managed across the economy. Many businesses have no measures or evidence showing the link between good management of natural capital and a productive economy, and as a result fail – or demonstrate limited ability – to account for the full environmental cost of their decisions (see Chapter 5).
- There has been persistent under-investment in programs and measures to address the legacy of biodiversity loss (particularly for terrestrial biodiversity) and to counter-balance the ongoing losses that occur due to decisions and activities today (such as loss of native vegetation outside the regulatory system). Much of the past investment and planning has been short term, rather than long term, and in line with ecological time scales (see Chapter 6).
- The conservation reserve system is comprehensive and adequate for some biodiversity areas such as the Alps, but other areas, such as lowland native grasslands, are poorly represented (see Chapter 9).

Chapter 3

A fresh vision for Victoria's biodiversity in a time of climate change

Key points:

- The Biodiversity Plan presents a long-term vision for Victoria's biodiversity, supported by two goals – *Victorians value nature* and *Victoria's natural environment is healthy.*
- The Plan sets statewide targets and contributing targets for both goals. Contributing targets will be reviewed and updated every five years.
- To get more people engaged with nature and acting to protect biodiversity, we need to better understand the barriers to community involvement – and the opportunities to be involved.
- Biodiversity investment should be more strongly focused on prevention and earlier intervention, rather than just crisis response.
- The impacts of climate change, and the uncertainty it brings, will be considered in all conservation decisions and will significantly influence what can be achieved.

Attempting to stop biodiversity decline presents an enormous challenge.

The Victorian Government will lead the overall response, but it cannot master this challenge on its own. To achieve a higher level of involvement by Victorians, we must first increase collective understanding and appreciation of the importance of biodiversity to the personal wellbeing and prosperity of all Victorians, and share the benefits of healthy biodiversity more equitably. Ensuring that individual Victorians value nature highly is therefore seen as a goal in itself, to be pursued in parallel with (and in support of) the goal of a healthy environment.

Many people, organisations and agencies already contribute to conserving biodiversity. But these contributions don't adequately cover all elements of biodiversity. Most efforts tend to focus on terrestrial systems and, to a lesser extent, on waterway systems.

More work is needed to improve knowledge and understanding of marine systems and ecological processes – such as fire – in order to deliver measureable results.

There are also a number of government programs that do not have biodiversity conservation as a primary objective, but do provide significant benefits for biodiversity. One example is *Water for Victoria*, the government's plan for strategic management of the state's water resources, which commits to protecting and improving the health of our waterways to support environmental values, and will ensure they continue to deliver positive outcomes for biodiversity. In addition, the current range of biodiversity conservation and related programs, some of which date back many years or even decades, do not incorporate and take advantage of more recent advances in biodiversity knowledge, and therefore have not been as strategic or as effective as they could have been in achieving overall biodiversity aims. This Plan acknowledges gaps in knowledge and effort, and attempts to provide a statewide, long-term, strategic approach to achieving its goals.

3.1 Vision and goals of *Protecting Victoria's Environment – Biodiversity 2037*

VISION: VICTORIA'S BIODIVERSITY IS HEALTHY, VALUED AND ACTIVELY CARED FOR

GOAL: Victorians value nature

Victorians understand that their personal wellbeing and the economic wellbeing of the state are dependent on the health of the natural environment.

GOAL: Victoria's natural environment is healthy

Victoria has functioning plant and animal populations, improved habitats and resilient ecosystems, even under climate change.

Goal: *Victorians value nature*

This goal will be achieved by increasing the number of Victorians connecting with nature[4], and who act to protect or enhance biodiversity.

Chapter 4 describes the links between a healthy environment and the health of the general population, and explores how people can act to make significant contributions to the protection of Victoria's environment.

Increasing the number of Victorian organisations that report and manage their performance against measures that support the natural environment also contributes to achieving the goal. The development of business applications based on 'environmental-economic accounting' (see Chapter 5) has the potential to help the community, especially businesses, identify links between efficient decision making and practices, and the social and economic benefits that flow from a healthy natural environment.

Goal: *Victoria's natural environment is healthy*

This goal will be achieved by stopping the **overall**[5] decline of threatened species, securing the greatest possible number of species in the wild, and improving the overall extent and condition of native habitats across land, waterways, coasts and seas. The intent is to see an overall improvement, where the majority of habitats and threatened species will be improved, and habitat gains will outweigh losses. The overall goal for terrestrial native vegetation – 'net gain' – is nested within this concept of overall habitat improvement.

Ecological regimes will be improved and biodiversity supported by preventing the spread and reducing the impact of weeds and pest animals and by ensuring that water flows, fire regimes and nutrient cycles are appropriate and adequate, that resource use is sustainable, and that the roles of important classes of species (e.g. pollinators and native apex predators such as owls, quolls and dingoes) are acknowledged and considered in management planning.

Stopping the overall decline of threatened species and improving habitat condition might not seem overly ambitious. But given legacy issues and the impacts of climate change, achieving these aims will stand as a considerable achievement.

Native Vegetation

The objective for the regulation of native vegetation clearing is to ensure that there is no 'net loss' to biodiversity as a result of the permitted clearing of native vegetation. This is achieved by applying the three step approach: avoid, minimise and offset.

At a broader level, the Victorian Government is committed to achieving an overall 'net gain', expressed as an improvement in the overall extent and condition of native habitats across terrestrial, waterway and marine environments. Not all habitats or vegetation types will need to be improved or increased in order to achieve this goal, but overall gains will need to outweigh losses. Such gains will be the result of investment and other efforts by government, community and land managers. The most important places to achieve gains and to avoid losses are locations with higher relative contribution to biodiversity benefit.

3.2 Setting directions for the goal *Victorians value nature*

Many Victorians already connect to the natural environment and act to protect and manage it. But even more do not. We need more Victorians – individuals and organisations – to be engaged in acting to protect and improve the natural environment.

Connecting with nature refers to time spent in nature where the person has some awareness of their surroundings. Time spent in nature could be for recreational, educational, social, health and well-being purposes, for biodiversity conservation and nature appreciation purposes, or for work. Connecting with nature can also refer to the personal values, beliefs and meanings that underpin people's time spent in nature and the different activities they undertake.

Acting to protect the natural environment refers to activities that directly protect or enhance biodiversity in Victoria. Activities include those relevant to where people work (e.g. corporate volunteering, purchasing green products) and to where they live (e.g. planting native gardens, protecting local waterways, covenanting). It can also occur within communities (e.g. controlling pest species, revegetating local land), or can include supporting the government to protect biodiversity (e.g. contributing information).

The following statewide targets capture the intent and aspirations of the goal of Victorians valuing nature.

Figure 3.1 Statewide targets and enabling actions for the goal 'Victorians value nature'.

Statewide Targets

By 2037

- **All Victorians connecting with nature.**
- **Five million Victorians acting to protect the natural environment.**
- **All Victorian Government organisations that manage environmental assets contribute to environmental-economic accounting.**

Enabling actions

Enabling work will guide the establishment of contributing targets after five years.

In the first five years

- Initiate pilot programs to connect and engage people with nature.
- Establish reliable baselines about Victorians' awareness of biodiversity, connection with nature, and current activities to protect the natural environment.
- Develop a campaign to raise awareness about Victoria's biodiversity, and to increase opportunities to connect with nature and act to protect the natural environment.

So that by 2022

- Additional contributing targets are established, informed by baseline data.
- More people are undertaking effective action for the environment, including through 'citizen science'.
- Environmental-economic accounting is adopted by all environment portfolio agencies and more businesses are engaged in the benefits.

Biodiversity response planning and delivering the targets

Collaborative forums, within a landscape, seascape or other area, will bring partners and stakeholders together to plan a response to the statewide targets (see Chapter 7).

- Biodiversity forums, made up of state government agencies, public land managers, non-government organisations (NGOs), local government, Traditional Owners and other stakeholders, are convened to develop the response(s) to the statewide targets.
- Flagship projects (e.g. focused on less engaged groups).
- Linking opportunities for people to connect with nature to on ground biodiversity management needs (e.g. expanded support for businesses, community groups, Friends groups, citizen science, Landcare, clubs and associations).
- Cross-government partnerships (e.g. nature-based health project or nature-based learning).

The enabling actions recognise the importance of conducting research and collecting data to determine where, how and why Victorians connect to and act for the natural environment, and which Victorians are not engaged in this way. The research will include identification of less engaged groups and assist in the understanding of barriers to engagement.

Collection of this information will help ensure that quantifiable contributing targets for this goal can be set for subsequent five-year periods, and that these targets are both relevant and achievable.

The promotion of existing on-the-ground initiatives together with the investigation and development of new programs to meet particular needs or better engage with certain groups will be an important mechanism for filling key information gaps. Such information, together with the increasing involvement and diversity of people in this process, will enable us to produce map-based products and decision support tools to use in conjunction with similar tools used for the goal *Victoria's natural environment is healthy*.

3.3 Setting directions for the goal *Victoria's natural environment is healthy*

The nature and size of this challenge requires some important shifts in the ways we approach biodiversity conservation.

The game-changing influence of climate change

The fate of species and ecosystems in a changing climate will be determined by a combination of factors: exposure to climate change and associated ecosystem shifts, sensitivity due to particular traits, and capacity to adapt to those changes. Some species and ecosystems will be more resilient than others and be better able to withstand the impacts of climate change, while others will be more sensitive and vulnerable.

Climate change will influence the future location and availability of habitats and the intensity and distribution of threats, and this in turn will influence how different types of management are targeted. The approaches will range from 'letting nature take its course', to helping species and ecosystems adapt and build resilience to change and, where necessary, making intensive interventions.

Traditional conservation tools (e.g. pest control, revegetation, captive breeding) will remain important, but their contributions to biodiversity outcomes will change as ecosystems shift. Habitat management will remain a strong focus, but new types of intervention will be needed. Conservation decisions will all need to be viewed through a climate change lens. Conservation goals and targets will need to evolve as ecosystems change.

Biodiversity conservation can include various approaches, including:

1. Continuing to protect the best of our remaining biodiversity by directly managing key threats such as further loss of habitat, weeds and pest animals, and inappropriate regimes (including fire, water and resource utilisation).

2. Enhancing biodiversity by directly managing native species though actions such as:

    - Increasing habitat quality and extent, creating additional habitat areas and connections.

    - Reinforcing existing populations by increasing the amount of genetic diversity in a population and giving it greater ability to adapt, or 'climate resilience', through artificial introduction of new genetic material to increase fitness, fertility and reproduction. Efforts to save the critically endangered Mountain Pygmy Possum are an example of this approach.

- Translocating species, such as the Guthega Skink, to previously unoccupied habitat more suited to climate change.
- Managing the population levels of native species to create a more appropriate ecological balance, such as through the reintroduction of apex predators.
- Introducing genetic variants or new species from other suitable areas that can continue to play important ecological roles under climate change. An example of this would be fire-hardy replacements for Alpine Ash in wet forests.
- Rescuing critically endangered populations as an emergency response to catastrophic events such as major bushfires or floods.
- Maintaining populations of sensitive species in intensively controlled natural settings, such as small ground-dwelling mammals in the Mt Rothwell Conservation and Research Centre, near Geelong.
- Maintaining individuals, seeds or tissues in intensively controlled settings such as zoos, botanic gardens and aquariums.

3. Identifying where native or even non-native species are recolonising previously disturbed sites, or are substantially established in existing remnants and can provide suitable habitat for species of conservation importance.
4. Promoting benefits for biodiversity that may be delivered in human-dominated and production settings – for example, by using biodiversity-friendly soil conservation practices, undertaking carbon sequestration with native mixed-species plantings, or stocking waterways with native fish for recreational fishing.

Our ability to apply such approaches will need to acknowledge the necessary investment in the capability of land managers to understand, plan and implement appropriate actions.

An adaptive approach to making such management decisions will be an important component of an effective climate change response.

Climate change will also alter the way people use and live in landscapes. Better community understanding of how species and habitats may change will increase the ability of Victorians to consider conservation as they make their own adaptations. Climate change will potentially bring changes to land uses, production areas, water availability and habitats. The community will need to understand how species and habitats may change and what can realistically be achieved. Resolving potential conflicts will require clear understanding of how biodiversity and other land or water issues are integrated, through trials and processes such as 'scenario planning'.

Securing the greatest overall benefit

Conservation management is shifting away from planning for threatened species one at a time. While it will always be necessary to understand each species' specific circumstances and needs, species are embedded in ecosystems and are collectively subject to threats and management responses. Biodiversity management is more effective and efficient if synergies and potential negative outcomes are considered.

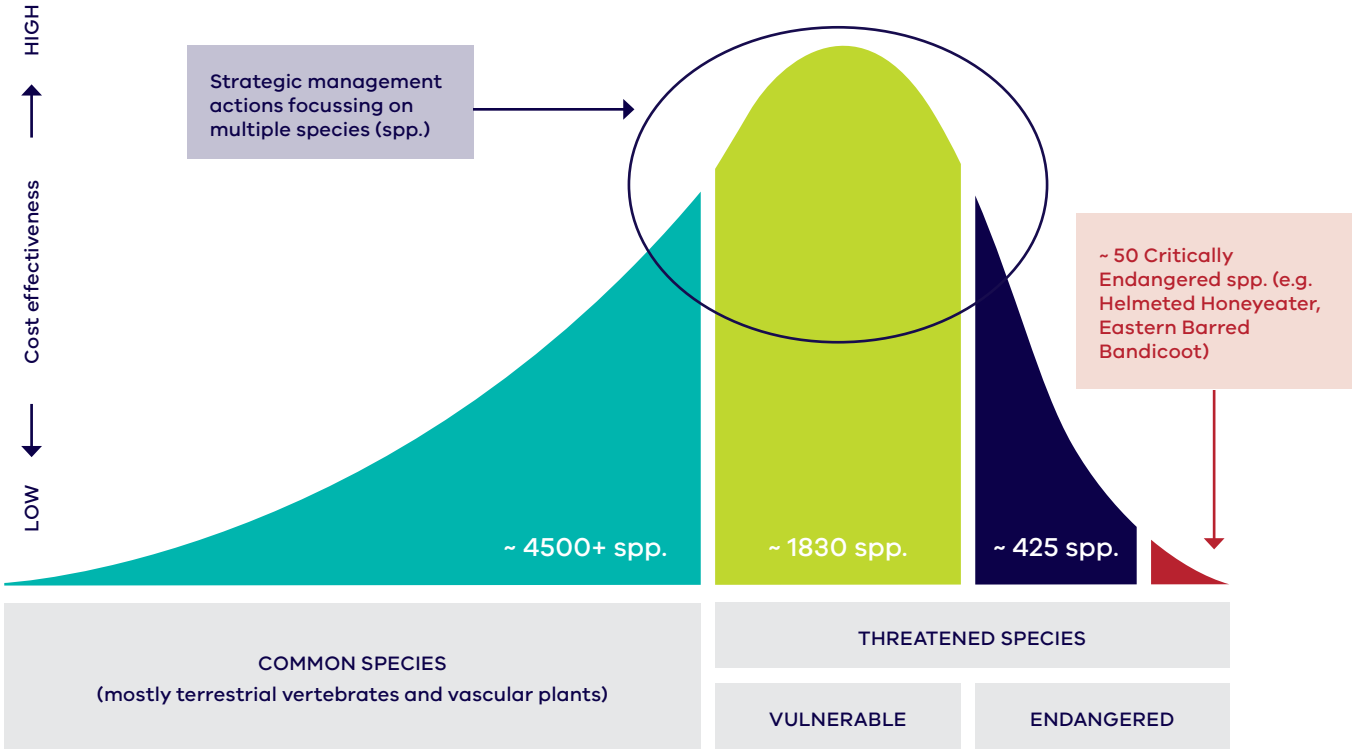
Conservation management is also shifting away from focusing solely on the most endangered species. Focusing only on the 'emergency end' of biodiversity decline is unlikely to be the most effective way of preventing extinctions over the long term, because the necessary management actions are typically high risk and high cost. Instead, the focus of this Plan is more on how ecosystems and ecological processes can be managed for the benefit of all species, particularly given the impacts of climate change. This means re-balancing efforts and investment to increase the focus on prevention, as well as the critical care of biodiversity.

The intent of this Plan is to instigate biodiversity response planning at scales appropriate to how species operate, and to cost-effectively benefit the maximum number of species. Implementation should consist of:

- Broader scale threat management that benefits multiple species and provides a preventative approach, reducing the risk of species becoming more threatened.
- Specific threat management to meet the unique needs of individual species or situations.

A conceptual model of this approach is shown in Figure 3.2.

Figure 3.2 A conceptual model of the new approach – long term, whole of Victoria, and strategically identifying a cost-effective suite of actions that benefit the most species.



Strategic management actions that focus on multiple species can prevent many vulnerable and common species from entering the endangered category, and provide co-benefits to endangered and near threatened species. As a result, these actions can be highly cost effective.

However, some endangered and critically endangered species will not benefit from the wider landscape-scale approach, and will require specialised interventions. Action for these species remains important, but where these interventions are very expensive and/or have a relatively poor chance of success, these options will need to be balanced against what can be achieved for other species. Relevant components of existing threatened species projects will be progressively integrated with landscape-scale partnership approaches, and will continue to facilitate collaboration and community involvement in threatened species recovery.

Enhancing decision support

To enable decision makers to implement planning to benefit the maximum number of species, we need to be able to understand and compare the relative benefits that can be expected for different species from this increasingly wide range of interventions. For example, for a given amount of investment, how many species receive greater benefits from an area of revegetation compared to, say, from an area of invasive species control? Similarly, will a species translocation be more beneficial than the creation of a captive population?

The common measure used to guide future choices, set targets and report progress will be **Change in Suitable Habitat** – a purpose-built, scientific measure developed in 2016 by the Victorian Department of Environment, Land, Water and Planning (the Department), to assess the most effective options for improving the future of native species across the state under climate change. Change in Suitable Habitat considers the type, extent and configuration of habitat for a species, and the factors that influence how much a species can make use of this habitat. Change in Suitable Habitat is the increase in likelihood that a species will still exist at a location at a future time (e.g. 50 years) in response to sustained management of relevant threats. It is expressed as the percentage increase in likelihood when comparing sustained management to no management (see Appendix 1).

Where the necessary maps and information can be generated, net Change in Suitable Habitat can be calculated across the range of a species and can be combined across many species. As part of the Department's NaturePrint[6] approach to statewide spatial analyses for biodiversity conservation, a new decision-support tool, **Strategic Management Prospects** (SMP), has started enabling such calculations. SMP is based on expert estimates of the benefits of different management actions under climate change, consideration of the connections and spatial arrangement of different species and relevant actions, and appropriate representation of options for each species in a strategic ranking. SMP and related tools will be reviewed and improved, as new information is incorporated (see Appendix 1).

Net Change in Suitable Habitat is used in this Plan to drive a hierarchy of targets, linking outcomes to the results of actions on the ground. Based on a sustained period of investment at a plausible, increased level, the long term aspiration is to establish and maintain appropriate management that will deliver (on average) a **100% net positive Change in Suitable Habitat in 50[7] years** for threatened species, with co-benefits for non-threatened species.

This Biodiversity Plan has an intended lifespan of 20 years, so its 20-year statewide target provides an appropriate contribution through the life of the Plan to the 50-year aspiration. Figure 3.3 identifies additional enabling actions associated with the 20-year target.

Figure 3.3 Statewide targets and contributing targets for the goal 'Victoria's natural environment is healthy'

Statewide Targets

Outcome for Victoria's biodiversity using net **Change in Suitable Habitat** as a common scientific measure, and driven by decision support tools.

A net improvement in the outlook across all species by 2037, as measured by Change in Suitable Habitat, with the expected outcomes being:

- That no vulnerable* or near-threatened species will have become endangered.
- That all critically endangered* and endangered species will have at least one option available for being conserved *ex situ* or re-established in the wild (where feasible under climate change) should they need it.
- A net gain of the overall extent and condition of habitats across terrestrial, waterway and marine environments.

* *Based on assessments carried out under the International Union for Conservation of Nature Red List categories and criteria.*

Contributing Targets

Targets for management outputs that will deliver statewide targets (reviewed every five years).

Estimate of relative area required to deliver statewide targets

- 4 million hectares of control of pest herbivores (e.g. deer, rabbits, goats, feral horses) in priority locations.
- 1.5 million hectares of control of pest predators (e.g. foxes, feral cats) in priority locations.
- 1.5 million hectares of weed control in priority locations.
- 200,000 hectares of revegetation in priority areas for connectivity between habitats.
- 200,000 hectares of new permanently protected areas on private land.

Enabling actions

Enabling work will be undertaken in the first five years of the Plan and will lead to identification of further contributing targets.

Enabling actions to identify detailed additional contributing targets, by 2022

- **Waterways:** identify opportunities for alignment of the biodiversity benefit-cost approach of this Plan with existing approaches of the Victorian Waterway Management Strategy.
- **Fire:** identify priority areas relating to interaction of fire regimes and threatening processes (such as invasive species, drought).
- **Climate change:** identify candidates and options for direct manipulation of threatened or keystone species.
- **Marine:** map biotopes and develop a process to assess cost-benefit of management options.

Biodiversity response planning and delivering the targets

Collaborative forums, within a landscape, seascape or other area, will bring partners and stakeholders together to plan a response to the statewide targets (see Chapter 7).

- Biodiversity forums, made up of state government agencies, public and private land managers, NGOs, local government, Traditional Owners and stakeholders, convened to develop the response(s) to the statewide targets.
- Forum contributors pledge their five-year contribution to the statewide targets, with the sum of all pledges making up a collective area-based response to the targets.
- Mix of projects that deliver on government and area priorities.
- Flagship projects (e.g. long term, landscape scale, multiple benefits).
- Annual reporting on specific actions using standardised outputs.

Achieving the statewide targets will require establishment and maintenance of the actions identified by the contributing targets. The targets identify the area of management that needs to be reached, as soon as possible, and maintained over the 20-year life of the Plan. If effort slows or stops, in some cases even for a short time, the gains made over the preceding years of hard work can be lost.

The sooner the actions to deliver the contributing targets are implemented, the more likely it is that the statewide targets will be achieved.

Priority

1. Deliver cost-effective results utilising decision support tools in biodiversity planning processes to help achieve and measure against the targets.

Initiatives by the government to deliver this priority will include:

- Ensure that decision support tools (such as Strategic Management Prospects) – which help assess the most effective options for improving the future of native species under climate change – are continually improved as new information is incorporated. During the first five years of this Plan, enabling actions will be undertaken to clarify contributing targets.
- Establish a cost-benefit framework that enables improved decision making and investment in conservation of endangered and critically endangered species.
- Develop new spatial products and decision support tools, in consultation with the community, to help inform effective options for increasing people's connection with nature and their participation in protecting the natural environment.
- Apply an adaptive management approach, together with supporting policy, to decision making that responds to the dynamic nature of climate change and other uncertainties.

3.4 Measuring progress

The *Monitoring, Evaluation and Reporting Framework* accompanying this Plan describes a collaborative program that will promote learning and guide future actions and refinement of targets. The framework will be established to:

- Describe in detail the key performance indicators on which the targets are based and their monitoring protocols.
- Ensure that the management of Victoria's environment is based on sound evidence and appropriate decision-support tools and processes.
- Collect knowledge on how the environment and Victoria's plants and animals are changing through time, especially given the pressures of climate change, known threats to species, and the impact of an increasing human population.
- Embed continuous improvement into the tools used for modelling, mapping and making decisions.
- Implement adaptive management in complex and often unpredictable circumstances.
- Report on progress towards targets and adapt or improve approaches.

Effective monitoring and evaluation will require increased, systematic and consistent data collection to ensure that management effectiveness and the assumptions built into the program (e.g. the impact of climate change) are clearly understood. As stated in Appendix 1, data will be collected to test, evaluate and verify the assumptions on which the SMP modelling and the subsequent management is based.

A wide range of knowledge and information is available from government agencies, NGOs, researchers, community groups, Traditional Owners and citizen science projects. This information must be current and accurate. Where it is not, there needs to be coordinated effort to fill information gaps, prioritised on the basis of the relative difference it would make to decisions.

Information must be available to all Victorians. Providing the community with practical and equitable access to information, and better sharing information between research and delivery partners, will enable more robust and transparent decision making. For example, interactive information systems can provide opportunities for the community to contribute local biodiversity information to the shared knowledge base.

To ensure that resources are spent well and wisely, all biodiversity management programs should allocate part of the available funding to data gathering, monitoring and evaluation. For all government biodiversity programs, at least five per cent of the total budget will be used for the monitoring requirements of the Plan, consistent with the *Monitoring, Evaluation and Reporting Framework*.

Priority

2. Increase the collection of targeted data for evidence-based decision making and make all data more accessible.

Initiatives by the government to deliver this priority will include:

- Work with delivery partners to identify and progressively fill critical knowledge gaps through targeted research and data gathering, coordinate and share core datasets, and ensure that information is integrated across all marine, waterway and terrestrial environments.
- Provide delivery partners and the community with easily accessible biodiversity data and information products, including new understanding as it develops.

Chapter 4

A healthy environment for healthy Victorians

Key points:

- A healthy environment is fundamental to a healthy society.
- More needs to be done to enable Victorians to access nature, including increasing people's awareness and understanding of of the environment and how they can act to protect it.
- We all need to work together – across government, business and the community – to ensure that we have a healthy environment to support a healthy society.

Victoria's natural environment is valued and enjoyed by many people in many ways, from quiet contemplation in open spaces to walking, camping, hiking, surfing, scuba diving, bird watching, conservation works, nature appreciation, taking photographs, creating art, education and tourism.

As stated in Chapter 1, a healthy natural environment is good for us – for individuals and for society as a whole. People who spend time in nature – be it native, introduced, cultivated or wild – are more likely to recognise its importance to their own wellbeing and to society, and therefore to behave in ways that help to protect and sustain the natural environment.

There is nothing new about Victorians connecting with and caring for the environment. For thousands of years, Victoria's Traditional Owner communities have relied on nature for their survival, prosperity and culture, and have expertly managed natural resources to ensure their sustainability. They have retained important knowledge about how Victoria's environment functions under a range of conditions. As Native Title is resolved across the state, the involvement of Traditional Owners in the management of the public land estate is being restored. This provides an opportunity for Traditional Owners to apply their knowledge and skills in managing and conserving Victoria's natural environment, and enables others to learn from them.

4.1 Raising awareness about the importance of nature

Increasing people's awareness of the benefits and opportunities provided by a healthy environment will bring our society closer to achieving the goal of *Victorians value nature*. There are many ways to increase people's awareness and understanding of the environment, including education, marketing, community engagement and citizen science initiatives, as well as interpretative material and smartphone apps – all in a variety of languages. Parks, sanctuaries, reserves, zoos, botanic gardens and museums provide information on native animals and plants and how people's actions impact on the natural environment.

Schools similarly provide such information, and are an effective avenue to promote biodiversity conservation. Information provided through schools can spread to parents, families, teachers and their networks. *ResourceSmart Schools*, run by the Victorian Government, helps schools embed sustainability in everything they do. Schools with a strong emphasis on sustainability programs report that students have a heightened sense of belonging and greater understanding of how people can effect environmental change.

Together with NGOs, businesses and stakeholders, the government is committed to promoting new and existing community education programs, including those based on the ever-growing capacities of technology, to raise awareness of conservation priorities across the Victorian community.

However, it is important to acknowledge that individual awareness of biodiversity does not always lead to action to protect it. To increase the number of Victorians acting to protect nature, there is a need to increase awareness not just about the issue of biodiversity, but about the actions that people can take in order to protect and sustain it.

Priority

3. Raise the awareness of all Victorians about the importance of the state's natural environment.

Initiatives by the government to deliver this priority will include:

- Undertake research to understand the community's level of awareness of biodiversity and its relevance to them.
- Develop and deliver a dedicated campaign and programs that promote Victoria's rich diversity of plants, animals and natural places and the importance of biodiversity, and that inspire and engage a large number and cross-section of Victorians.
- Develop biodiversity information and products to increase awareness within different government, business and community sectors in collaboration with target groups.

4.2 Connecting with nature is good for us

Evidence shows that connecting with nature is linked to positive long-term health outcomes, but that increasing urbanisation is leading to a decrease in people accessing nature, which in turn has been linked to poorer physical and mental health.

The government's *Victorian Public Health and Wellbeing Plan 2015-2019* highlights the importance of creating liveable neighbourhoods to improve health and wellbeing, and recognises that interacting with nature contributes to a reduction in chronic disease risk factors, increases social inclusion and builds strong communities. Reported health outcomes include physiological benefits from improved fitness, and psychological benefits from improved attentional capacity and stress reduction. The health benefits experienced from contact with nature have been linked to increased work productivity, faster recovery rates from surgery, lowering blood pressure, mitigating the symptoms of hyperactivity disorder, mitigating disease, fewer medications, and a strengthened immune system. The *Healthy Parks Healthy People* approach, created by Parks Victoria some years ago, actively promotes these benefits.

Connecting with nature refers to time spent in nature where the person has some awareness of their surroundings (as described in Chapter 3).

Spending time playing and learning outdoors provides children with developmental benefits including improved mental health, resilience and social connections. Playing in nature – particularly unstructured play – is increasingly recognised as an essential component of child development. Engaging children with nature increases the likelihood that as adults they will be more actively concerned about biodiversity conservation for future generations. Conversely, a lack of connection with and/or appreciation of nature can contribute to the destruction and vandalism of natural environments by children and teenagers.

As discussed in Chapter 8, the government recognises the correlation between Aboriginal health and access to Country. Health and wellbeing are a fundamental concern of Victorian Traditional Owners – when Country is not maintained, health and wellbeing become compromised.

In recent years, we have seen the emergence of concepts such as environmental equity and environmental justice. These concepts hold that all people should have equitable access to nature for enjoyment, recreation, cultural and spiritual reasons, and as a way to enhance their mental and physical health. But there are many reasons why people cannot, or choose not to have daily contact with nature – for example, distance from green spaces, difficulties of access, discomfort, cultural issues and disability.

The natural environment experiences that Victoria offers will be unfamiliar to some. Providing and improving natural spaces, facilities and programs in the right places will give people from multiple cultures more opportunities to experience nature. To achieve this, there also needs to be a better understanding of the barriers to connection with nature faced by people of different socio-economic, cultural and linguistic backgrounds.

Another important aspect of environmental justice is the notion that people with disabilities should have easy access to the benefits of nature. Almost one in five Australians has a disability of some type, and their numbers are expected to increase considerably in the next 10 to 20 years due to the ageing population. Parks Victoria is undertaking work to remove barriers to park access and participation for visitors with disabilities.

There is a need to bring nature closer to where people live, work and travel. *Plan Melbourne 2017-2050* has committed to development of a network of accessible, high-quality, local open spaces, and the preparation of a new metropolitan open space strategy to ensure that Melbourne's growing population is provided with, and has access to, quality open space. The current public open-space planning provision for growth areas and urban infill sites aims to locate local parks within safe walking distance (400 metres) of at least 95 per cent of all dwellings.

The need to connect Victorians to nature has never been greater. The message is clear – connecting with nature enriches our lives, improves our health and wellbeing, and drives positive environmental attitudes and values that can promote a lifelong positive relationship with nature.

Priority

4. Increase opportunities for all Victorians to have daily connections with nature.

Initiatives by the government to deliver this priority will include:

- Establish reliable baseline information about Victorians' current connection with the natural environment.
- Identify less engaged groups, and understand barriers to engagement in order to increase opportunities to connect with nature.
- Implement and promote programs to increase opportunities for people to connect with nature, including programs to get Traditional Owners out on Country.
- Promote opportunities for additional 'greening' in established urban areas through broadening standards for public open-space planning provisions, in the context of long-term change in population and community needs.

4.3 Victorians acting for the natural environment

Getting involved in protecting our natural heritage is easy for individuals, and many Victorians already do so. Many engage in pro-environmental activities – such as recycling or riding to work – which have indirect benefits for Victoria's biodiversity. Others act to provide direct benefits, such as volunteering, or being involved with NGOs, community groups and government agencies that work to benefit our environment. This Plan focuses specifically on promoting actions and behaviours that directly protect or enhance biodiversity.

Simple decisions and actions can have lasting positive outcomes for the environment. For example, the responsible disposal of litter, as encouraged by Zoos Victoria's *Seal the Loop* campaign, protects wildlife from being harmed by plastic waste, makes our beaches and waterways cleaner and more attractive and increases plastic recycling. Responsible pet ownership – which can involve actions such as registering and de-sexing cats and dogs, and keeping them indoors at night – helps to reduce the number of native animals killed by wandering pets.

Acting to protect the natural environment refers to activities that directly protect or enhance biodiversity in Victoria (as described in Chapter 3).

The Victorian Government recognises the role that volunteers have in driving positive environmental outcomes. Victoria's volunteers contribute through a range of activities in many ways to enhance and protect biodiversity. The diversity of activities means that different levels of support are required to maintain motivation and interest from volunteers and achieve positive environmental outcomes. Many individuals participate in volunteer groups (examples include Friends groups, Field Naturalists, BirdLife, Coastcare, Landcare, Land for Wildlife), which hold and share valuable local knowledge, and deliver on-the-ground projects that address local and state conservation priorities. Local and state governments invest in environmental programs, such as Zoos Victoria's 'Fighting Extinction' program, and revegetation and bushland restoration projects. Private landholders set aside land for conservation via permanent conservation covenants or shorter-term management agreements, and manage it to enhance biodiversity values. Others contribute as members of Committees of Management or Conservation Management Networks that carry out conservation works on private and public land.

Victorians contribute to biodiversity protection through citizen science projects (such as Fungimap, ReefWatch, Birds in Backyards, Bowerbird), which collect important baseline information by assisting with biodiversity monitoring. The ever-growing use of technology such as smartphone apps facilitates the collection of environmental observations by individuals.

Empowering more Victorians to act in ways that benefit our natural environment requires:

- Understanding of the barriers that prevent action and taking action to overcome these barriers.
- Knowledge about when, what, where, how and why Victorians value biodiversity.
- Ongoing support for community groups and networks, and for biodiversity programs that educate and engage the community about the values of nature and that encourage them to protect nature.

Priority

5. Increase opportunities for all Victorians to act to protect biodiversity.

Initiatives by the government and partners to deliver this priority will include:

- Promote programs to raise awareness across the Victorian community about actions that they can take to protect and care for biodiversity.
- Establish reliable baseline information about Victorians' (individual, community sector, Traditional Owners, businesses and government organisations) current activities to protect biodiversity, identify less engaged groups/ organisations, and understand the barriers to their taking action.
- Implement and promote programs that increase engagement and employment in activities that protect biodiversity.
- Link opportunities to connect with nature with on-the-ground biodiversity management needs, such as expanding support for volunteers, businesses, community groups, Friends groups, citizen science, Landcare, clubs and associations.

Chapter 5
Linking our society and economy to the environment

Key points:

- By protecting and building the state's natural capital, we can enhance Victoria's ability to generate wealth and to compete on the world stage.
- The use of environmental-economic accounting will help reveal the linkages between natural capital, society and the economy, and identify risks and opportunities for Victoria.
- Victoria will increasingly need to protect and utilise its environmental assets, including its world-class tourism attractions, to deliver co-benefits for the economy and environment, and to help communities become more liveable, resilient and climate adapted.

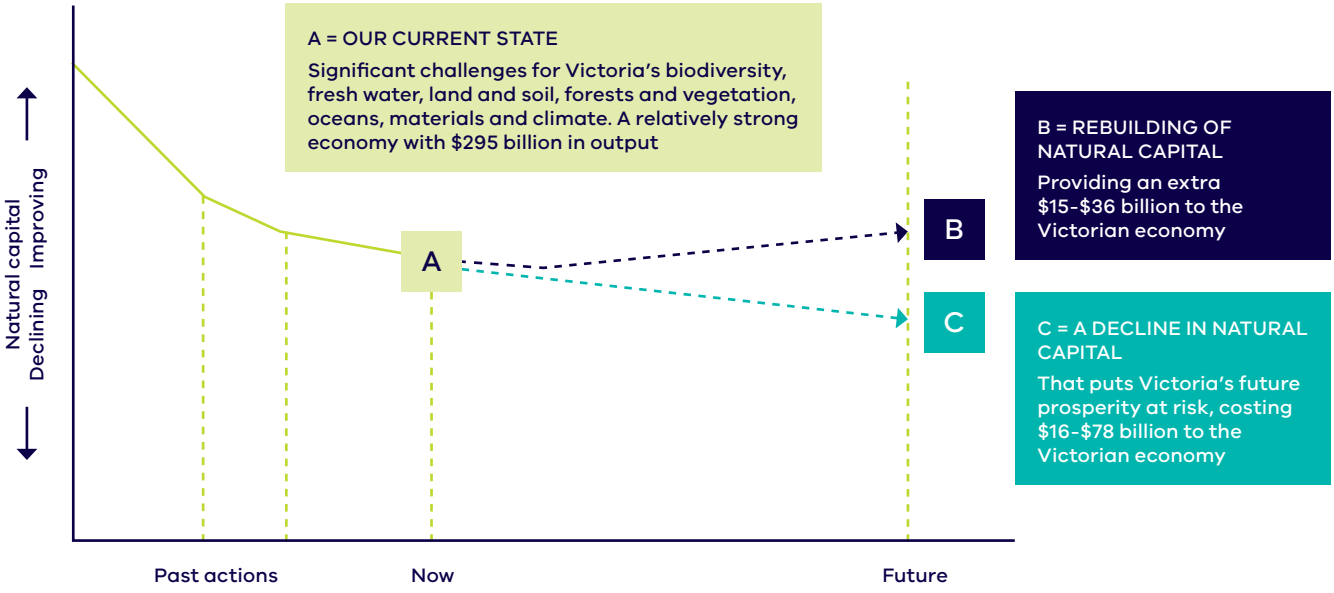
As highlighted in Chapter 1, the protection of Victoria's valuable environmental assets – referred to by economists and others as natural capital – is critically important for the health and cultural identity of communities, and for key sectors of the economy ranging from agriculture to tourism.

The desirability of actively rebuilding Victoria's natural capital has been explored in a report by the Future Economy Group[8] in association with the Nous Group. Modelling conducted by these groups indicates the competitive edge that Victoria can achieve by fostering a prosperous economy while caring about liveability and rebuilding natural capital. The Future Economy Group estimated that by 2028, healthier natural capital could provide between $15 billion and $36 billion in economic benefits for Victoria.

On the other hand, inaction and allowing the continuing decline of natural capital could result in an economic loss of between $16 billion and $78 billion. Recently, a CSIRO Australian National Outlook report[9] similarly predicted that strong economic benefits would be realised by shifting towards policy settings that deliver co-benefits for both environmental and economic performance.

Figure 5.1 is a theoretical depiction of how significant interventions such as regulation, government investment and community action have slowed the decline of our natural capital. It shows that despite this, Victoria's natural capital is still in decline, but that there are significant benefits associated with stopping the decline and choosing a positive trajectory of rebuilding Victoria's natural capital.

Figure 5.1 Choosing a new trajectory for Victoria: natural capital and prosperity.



Projections of future economic impacts are by their nature imprecise because they are based on modelled scenarios. However, as a general indicator, they can provide a powerful demonstration of likely outcomes – in this case, the relationship between natural capital and the health of the Victorian economy.

It is clear from this example that Victoria must adopt a new triple bottom-line objective – a prosperous Victoria that strives for liveability and rebuilds natural capital while continuing to experience long-term economic growth. This can be achieved if our policies and practices drive co-benefits for both the environment and the economy. This requires a shared vision of success across government agencies, communities, Traditional Owner groups, environmental groups, private landholders and businesses.

5.1 Leading the way in accounting for our environmental assets

Currently there is a global effort to account for the many benefits that natural capital provides for society – a necessary precursor to choosing policies and practices that drive co-benefits for both the environment and economy. In 2012, the United Nations launched a new global environmental accounting system known as the System of Environmental-Economic Accounting (SEEA). The SEEA is a conceptual framework designed to support understanding and measurement of the interactions between the economy and the environment, and the stocks of and changes in environmental assets.

The Victorian Government is planning to integrate SEEA into reporting, decision making and evaluation of social, economic and environmental outcomes and trade-offs. The government will publish a set of environmental accounts (see Figure 5.2) for portfolio partners at the state level, including Parks Victoria, Catchment Management Authorities (CMAs) and Melbourne Water. State of the Environment reporting by the Commissioner for Environmental Sustainability will also utilise this framework to inform the community, policy formation and decision making.

The use of SEEA by the Victorian Government has already begun with a collaboration between the Australian Bureau of Statistics and government agencies to develop environmental accounting and valuation frameworks that can inform management decisions. As part of this collaboration, Parks Victoria's *Valuing Victoria's Parks* study assessed a wide range of benefits that parks provide (see Chapter 1). Further implementation of SEEA will involve building capacity across agencies and organisations to contribute towards environmental-economic accounting.

The Victorian Government also intends to partner with the broader business community and industry leaders to promote the increased voluntary adoption of initiatives that incorporate impacts on natural capital into business decision making. Several sectors of the economy are exposed to the risk of degradation of natural capital, so it is critical to engage with businesses to support innovation and improve environmental management. One of the impediments to persuading businesses to consider the environmental consequences of their actions is a lack of readily available methods and evidence to clearly show the links between protecting and building natural capital and a productive economy.

Alongside SEEA, businesses are adopting the 'Natural Capital Protocol'[10]. The Protocol is a complementary initiative that can enable interested businesses to monitor their impacts on natural capital relevant to their operations, risk profiles, customer portfolios, supply chains and business opportunities.

Information products for businesses based on SEEA have the potential to help the business community identify synergies between efficient business practices and a healthy environment.

Leading companies in the financial sector, including National Australia Bank, VicSuper and Bank Australia, are collaborating with agribusinesses, sending a market signal for the protection of natural capital. In doing so they are reducing risks in business portfolios and gaining a competitive edge with an increasingly environmentally-conscious investor base.

Priority

6. Embed consideration of natural capital into decision making across the whole of government, and support industries to do the same.

Initiatives by the government and partners to deliver this priority will include:

- In the short term, prepare and publish a set of environmental accounts for the Department and portfolio partners and contribute to relevant national initiatives.
- In the longer term, integrate the System of Environmental-Economic Accounting into reporting across the whole-of-government, and into decision making and evaluation of social, economic and environmental outcomes and trade-offs.
- Partner with the broader business community and industry leaders to promote the increased adoption of environmental-economic accounting.

Figure 5.2 Accounting for the environment - recognising the benefit our environmental assets contribute to our communities and the economy

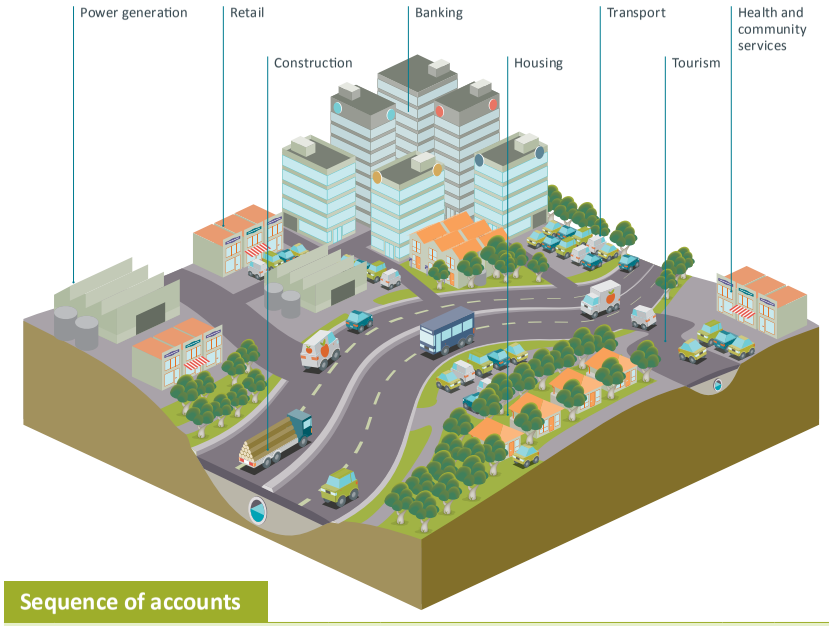
Environmental-economic accounting
A framework for decision-making

Traditionally, our measures of progress have focused on economic activity (e.g. gross domestic product, labour)

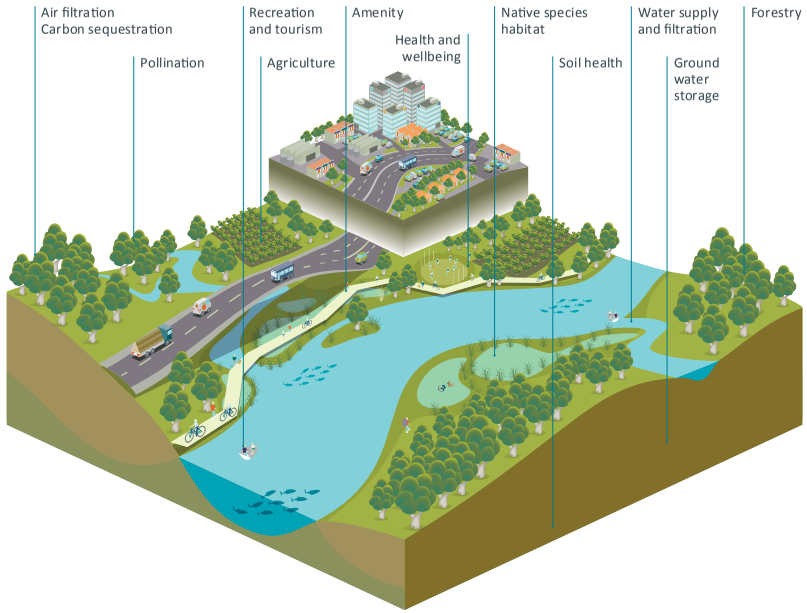
But these measures don't take into account the state of environmental assets and our reliance upon them

To account for environmental assets and the benefits they provide, the System of Environmental-Economic Accounting (SEEA) has been developed as an international accounting standard

Economic accounting



Environmental-economic accounting



Sequence of accounts

1 Asset extent accounts
Report on the area of environmental assets and assess how they are changing over time

2 Asset condition accounts
Report on the health of environmental assets and assess how policies, climate and economic activity are impacting on them

3 Ecosystem service accounts
Report on the flow of goods and services that environmental assets provide and assess how changes in asset extent and condition affect these flows

4 Benefit accounts
Report the market and non-market benefits that people obtain from ecosystem services and support social and economic analysis

North east forest	○○○●○	Air filtration, carbon sequestration and storage, habitat for wildlife, primary production	Clean fresh air, climate change mitigation, biological diversity, timber products
Eastern waterways	○○●○○	Habitat for wildlife, primary production, recreation, water supply	Biological diversity, freshwater food, enjoyment and tourism, water for consumption and irrigation
South west wetlands	○●○○○	Carbon sequestration and storage, flood regulation, habitat for wildlife, water purification,	Climate change mitigation, reduced flood impacts, biological diversity, clean water, reduced pollution
North east catchment	○○○○●	Habitat for wildlife, primary production, water filtration	Biological diversity, local food products, clean fresh water
South east coastal dunes	○○●○○	Coastal protection, habitat for wildlife	Reduced impact of storm surges, biological diversity
South central marine	○○○●○	Amenity, habitat for wildlife, primary production, recreation, waste assimilation	Enjoyment and tourism, biological diversity, fish products, views and relaxation, reduced pollution

Advantages of environmental-economic accounting

- Government and stakeholder decision-making recognises the benefits from protecting and investing in the environment
- Victorians appreciate the interdependencies between our wellbeing and the environment
- Parties active in the natural resource management sector share a common language and improve coordination
- Investors can compare the outcomes of management actions and develop benchmarks
- Planning agencies, businesses and communities improve their management by using a common organising framework to respond to changes in environmental assets
- Communities' decision-making capacity improves with more consistent and coherent information about the environment
- Scientists have access to more coherent data over time and provide access to asset condition measures to a broader audience
- Agencies can identify and better balance trade-offs when making policy, planning and investment decisions, and can better communicate these decisions to others

After accounting for the services and benefits our environment provides it's easy to see why a healthy environment is the foundation of a healthy economy.

VICTORIA State Government | Environment, Land, Water and Planning

5.2 Creating more liveable and climate-adapted local communities

We live in a changing environment which is increasingly affected by climate change and population growth, and has a finite capacity to recover from demands and disturbances.

The government has an overarching role in managing natural capital in this challenging context, but also recognises the critical role played by local governments, NGOs, Traditional Owners, communities and individuals. Programs and activities run by such groups and individuals help communities connect with nature, stay healthy, maintain social support networks and become more climate adapted. As discussed further in Chapter 7, the government will continue to build strong and enduring partnerships to assist Victoria to meet the challenges of climate change.

Victoria's environmental assets play a pivotal role in sustaining, protecting and enhancing our communities, and making them liveable and resilient in the face of climate change. For example, marine and coastal habitats – seagrasses, saltmarshes and mangroves – support high levels of biodiversity, mitigate the effects of storm surges and sea level rise, and sequester carbon. These habitats can bury carbon at a rate up to 57 times faster than tropical rainforests, and can store carbon for thousands of years. It's estimated that vegetated coastal habitats contribute 50 per cent of carbon burial in the oceans (otherwise known as 'blue carbon').

The government is committed to Victoria having a prosperous economy that cares for its liveability and builds its natural capital – and the shared use of information can play an important role in achieving this. The government will bring the latest information about biodiversity and the health of our environmental assets, economic development scenarios (for natural resources, population growth and infrastructure), regionally specific climate change risks, and opportunities for environmental and economic co-benefits together for scenario planning. This approach can help local communities and regions plan for the future, maintain their environmental asset base and make their built environment more liveable.

In urban areas, networks of natural and designed green spaces, or 'green infrastructure,' (such as parks, gardens, street trees, backyards, green roofs, green walls and rain gardens) improve liveability and reduce costs that would otherwise be incurred if we sought to provide the same benefits through other means.

In recognition of the benefits provided by green infrastructure, local governments are planting urban forests and using integrated water management to cool built-up environments by reducing the urban heat island effect, while also removing harmful air pollutants, filtering water and providing opportunities for people to connect with nature, particularly where native plants are used. *Resilient Melbourne*, Greater Melbourne's first resilience strategy developed as part of the 100 Resilient Cities Program, aims to ensure a viable, sustainable, liveable and prosperous city, long into the future, and to enable strong natural assets and ecosystems alongside a growing population.

> The 'urban heat island' effect has been estimated to cost the City of Melbourne $283 million in indirect health costs.

Currently, there is no clear 'ownership' of green infrastructure, so green infrastructure projects have historically been conducted opportunistically, rather than strategically. Local governments are now leading the way in urban greening, but a whole-of-government approach is needed to ensure the broad range of benefits are realised.

Priority

7. Help to create more liveable and climate-adapted communities.

Initiatives by the government and partners to deliver this priority will include:

- Use environmental-economic accounting business applications to help government, industry and communities understand the benefits of protecting environmental assets in both the built and natural environments.

- Develop guidelines or standards to give government, industry and communities an increased ability to better realise the benefits of green infrastructure.
- Provide information that enables communities to plan for climate change, compare trade-offs and create a vision for their region that delivers a strong regional economy and a healthy natural environment.
- Improve the liveability of Victorian cities and towns – for example, by implementing *Plan Melbourne 2017-2050*.

5.3 Increasing nature-based tourism

The natural environment is Victoria's biggest tourist attraction, contributing billions of dollars to the economy each year. Tourism is worth more than $20 billion annually and employs more than 200,000 people, many in regional areas. More than 1.4 million international nature-based tourism visitors travel to Victoria annually, accounting for more than 35 million overnight stays. About 4.3 million day trips are taken by domestic nature-based tourists. In 2012 it was estimated that the Little Penguins at Phillip Island contributed $125 million to the state economy, with half of that spent in the Bass Coast area. The furthering of Victoria's reputation as a national leader in native wildlife and habitat recovery will be a beacon to interstate and international visitors keen to experience an abundance of unique Australian animals and plants.

According to the 2015 *Valuing Victoria's Parks* study, about $1.4 billion per year is spent on visits to Victoria's parks. This generates about $1 billion gross value added and supports 14,000 jobs. Regional economies that benefit most from park-based tourism include the Grampians, the Great Ocean Road, Phillip Island, the Yarra Valley, the Dandenong Ranges and Gippsland. Melbourne supports a wealth of nature-based tourism, including world-class zoos, the Melbourne Aquarium, the Royal Botanic Gardens Victoria and Port Phillip Bay.

Nature-based tourism and recreational activities such as fishing are not only significant contributors to the Victorian economy, but also provide an important vehicle for people to connect with nature and enjoy its many and varied benefits. While Victoria's nature-based tourism industry is thriving and should be further promoted, it is also highly vulnerable to the future impacts of biodiversity loss. Tourism needs to be managed to ensure that sensitive areas do not receive too many visitors, and that such areas are well managed and resilient. Ultimately, this will ensure future opportunities for further employment in the sector. Tourism Victoria and public land managers such as the Department, Parks Victoria, Alpine Resorts, Traditional Owner Land Management Boards and local councils will work with the community to ensure that Victoria's iconic natural and built assets continue to offer opportunities to connect with nature.

Priority

8. Better care for and showcase Victoria's environmental assets as world-class natural and cultural tourism attractions.

Initiatives by the government and partners to deliver this priority will include:

- Work in collaboration with the community to ensure that Victoria's iconic natural assets keep offering opportunities to connect with nature, and provide support to local economies.
- Develop policies and approaches to ensure that tourism to sensitive areas is sustainable and impacts are minimised.
- Build on existing work to promote Victoria's environmental assets, at statewide, regional and local levels, as world class natural and cultural tourism attractions.
- Continue to provide world class nature-based experiences through Zoos Victoria, Museum Victoria, Parks Victoria, the Royal Botanic Gardens Victoria, Philip Island Nature Park and alpine resorts.

Chapter 6

Investing together to protect our environment

Key points:

- The long-term health of Victoria's natural environment relies not only on a clear future vision, but on financial resources and a collective effort across society.
- The government is committed to initiatives that will result in more sustained and diverse sources of investment to help achieve the targets of this Plan.
- A key to increasing investment in biodiversity conservation will be supporting landholders to significantly increase the amount of native habitat that is protected and managed on private land.

The benefits of healthy biodiversity and natural capital flow to all of us, meaning we have a shared responsibility to ensure that biodiversity management is adequately resourced. As described in Chapter 4, many individuals and groups across the community already make substantial financial and in-kind contributions towards protecting the environment. The Victorian Government and other agencies also commit valuable resources to biodiversity conservation. But despite these efforts, Victoria's biodiversity continues to decline, and this situation threatens to be exacerbated by climate change. As individuals and as a society, we must do more – and we must invest more. Biodiversity conservation requires a collective effort, spanning the voluntary, philanthropic, government and corporate sectors.

The Victorian Government strongly supports a collaborative approach, and is committed to taking a leading role in increasing the overall investment and participation by Victorians in biodiversity conservation. The government recognises that maintaining our natural capital provides substantial public and private benefits in the form of ecosystem services, human health and economic dividends, and will seek to guide investment to where it can achieve the greatest public good. Maintaining natural capital requires the ongoing commitment of resources over the life of this Plan and beyond.

6.1 Creating more sustained funding for biodiversity

The protection and restoration of biodiversity requires secure and sustained investment over the long term from a variety of funding sources. If investment in biodiversity management programs dries up, the gains made over the preceding years of hard work could quickly erode, and previous investment would be largely wasted.

The government has a key role in creating the right conditions that maximise the overall investment in biodiversity, from all possible sources. One essential element of this Plan, therefore, is the development of a Victorian Government-backed funding model that leverages government investment to create more significant investment in biodiversity conservation across Victoria.

The government will analyse and adopt a variety of mechanisms to drive this funding boost. This will promote increased investment from all sectors so that expenditure can be coordinated and directed towards the most strategic and effective biodiversity actions across land, waterways and marine areas. This sustainable funding model should include the following key elements:

- Establishing stable and reliable funding that underpins the investment needed to stop and reverse biodiversity decline.
- Encouraging and directing funding from non-government sources towards biodiversity conservation.
- Adopting a diverse and innovative range of funding tools and mechanisms.
- Ensuring program funding is allocated effectively and efficiently.

Priority

9. Establish sustained funding for biodiversity.

Initiatives by the government to deliver this priority will include:

- Examine, and where appropriate adopt, a variety of approaches to secure sustained funding to achieve biodiversity targets, including exploring the potential to link government biodiversity investment with private sector investment, crowd funding, urban development, tourism and other emerging tools and mechanisms.

6.2 Supporting non-government investment in biodiversity

The government sees significant opportunities for co-investment – through partnerships with businesses, philanthropists and landholders – to help deliver the goals and targets of this Plan. The link between a healthy environment and the economy is becoming part of mainstream thinking, and businesses are responding by becoming increasingly environmentally conscious. Businesses that become actively involved in considering the implications of their actions on water, carbon and biodiversity stand to gain from emerging market opportunities, while also contributing to the long-term health of the natural environment. The philanthropic sector has a long-standing commitment to environmental investment, and the government will maximise opportunities to collaborate with the sector to deliver shared benefits.

In order to better coordinate Victoria's overall investment in biodiversity, the government will engage more with non-government entities to share information about how they can both contribute to, and benefit from, a healthier natural environment. A key task is to strengthen communication and engagement between all investor groups to increase the government's ability to gauge investor preferences and opportunities, and to forge partnerships for biodiversity funding.

A key component of this approach will be the publication of an Investment Prospectus to communicate funded, unfunded and partially-funded priority projects that are important for meeting the targets (see Chapter 7). The projects will represent the most strategic and cost-effective opportunities for investors to partner with landholders, government agencies, Traditional Owners, community groups and other organisations. (See Chapter 8 for discussion of further opportunities for Traditional Owners and Aboriginal Victorians.)

Priority

10. Leverage non-government investment in biodiversity.

Initiatives by the government and partners to deliver this priority will include:

- Publish an Investment Prospectus to communicate to prospective investment partners the funded, unfunded and partially-funded projects that are needed to meet the targets.
- Establish a biodiversity investment roundtable and promote ongoing dialogue between all investor groups, to improve working relationships and better identify investor preferences and opportunities.
- Adopt principles for facilitating good-practice private environmental investment, to ensure probity, public interest, accountability, transparency and fairness.
- Recognise and promote successful cross-sector biodiversity investment partnerships.

6.3 Creating more opportunities for private landholders

Private landholders manage two-thirds of the Victorian landscape, and therefore have a critical role to play in conserving biodiversity. Private land hosts some of the state's most threatened species and some of its most important and irreplaceable native vegetation. Many landholders recognise the importance of protecting and restoring biodiversity on their land – not only for its aesthetic value, but also for the ecosystem services and climate change resilience that it provides. These landholders make significant contributions to nature conservation by protecting and managing their biodiversity to a high standard, participating in private land networks via CMAs and groups such as Landcare and Land for Wildlife, or by entering into voluntary conservation covenants with the assistance of Trust for Nature.

However, to address the ongoing decline of biodiversity, the area and quality of private land managed for conservation needs to be substantially increased to make up for significant ongoing losses of quality and extent of habitats, and for the legacy of past clearing that was promoted by government policies last century. To achieve this, we need to build on current and past efforts and create more opportunities for private landholders to permanently protect biodiversity on private land, to better manage terrestrial, riparian and wetland habitats and species, and to partner with other stakeholders in biodiversity conservation initiatives.

Maintaining and increasing landholder participation in biodiversity protection requires:

- Well-supported engagement, education and stewardship programs.
- Increased structural support for programs that provide long-term biodiversity benefits.
- Understanding of 'duty-of-care'.
- The provision of financial incentives and other market mechanisms that offer alternative management options suited to different landholder groups, motivations and biodiversity outcomes.
- The provision of pathways for landholders to progress through different levels of participation and commitment to biodiversity programs.

Permanent protection of private land for conservation (under provisions such as section 69 agreements under the *Conservation Forests and Lands Act 1987* or covenants under the *Victorian Conservation Trust Act 1972*, or as private conservation reserves by organisations such as Trust for Nature and Bush Heritage Australia), makes a valuable long-term contribution to Victoria's environment, and we need to find ways to increase it. Landholder participation in conservation should also be further encouraged through increased support for agencies, Traditional Owner Corporations, local government and community group programs that encourage community action.

Victoria already has a strong track-record of innovative approaches to conservation on private land, including through the use of conservation auctions (such as BushTender and revolving funds) and stewardship payments (such as through the *Victorian Waterway Management Strategy*). The government intends to develop more diverse mechanisms to make it easier for more landholders to protect biodiversity, particularly for the long-term.

The native vegetation credit market has grown and matured since third-party offsetting was first introduced in Victoria in 2003. Further credit market development will contribute to greater biodiversity protection, particularly on private land, and provide landowners with alternative income options for managing their land. A biodiversity conservation credit market has the potential to promote future interactions with markets for water, carbon and other public benefits that could be traded between producers and beneficiaries.

Establishing consistent and recognisable voluntary standards for biodiversity management on private land is a useful way to increase consistency and effectiveness. Currently, different programs have different standards and there is a need to consider where common standards of management could be used to underpin a suite of related programs. Standard levels will differ depending on whether it is an entry level program such as Land for Wildlife or a contracted arrangement such as BushTender.

Similarly, on protected private land (such as within a conservation covenant), landholders may agree to voluntarily meet land management standards (such as those that are proposed for public authorities in Chapter 9). Such approaches could make things simpler for private landholders and investors, and encourage consistency across programs and between private and public land.

Voluntary land management (or stewardship) standards could also be used in conjunction with incentives. For example, adopting a particular standard in conjunction with a star rating system or similar scheme may appeal to buyers of the land or its agricultural produce who are looking for sustainable or 'clean and green' products. Further investigation of land stewardship standards and their connection to incentives will be conducted during the implementation of this Plan.

Priority

11. Increase incentives and explore market opportunities for private landholders to conserve biodiversity.

Initiatives by the government to deliver this priority will include:

- Encourage greater landholder participation in conservation through increased support for agencies, Traditional Owner Corporations, Landcare, local government and community group programs that encourage community action.
- Develop consistent land management standards and apply them to the various voluntary private land conservation programs.
- Increase the use of conservation auctions and private land stewardship payment schemes, with an increased emphasis on permanent payments.
- Build biodiversity credit markets to promote future interactions with markets for water, carbon and other public benefits, and facilitate private investment.
- Work with partners and stakeholders to investigate other effective incentives for private landholders.

Chapter 7
Biodiversity response planning

Key points:

- Victoria's approach to biodiversity conservation needs to be modernised, with more structured collaboration between stakeholders to drive alignment, accountability and measurable improvement.

- To ensure everyone can participate in this collaborative process, the capacity of all interested parties and stakeholders needs to be supported and enabled.

Many thousands of Victorians are actively involved in looking after the state's biodiversity. They contribute in a variety of ways, from volunteering at the community level – offering time, expertise or money – through to formal roles in long-term protection, land management, investment and environmental regulation. While the capacity of these individuals and their organisations is varied, every one of them plays an important role in protecting and managing Victoria's biodiversity.

The challenge of getting even more Victorians actively involved in caring for the environment is a major theme of this Plan. Arguably of equal importance, however, is the challenge of modernising the way people and organisations work together to achieve the goals and targets of the Plan. This chapter proposes a new approach to improve collaboration and strengthen alignment between government agencies, NGOs and the community, to deliver biodiversity programs, at a range of levels and scales, and to enable Victoria to be more flexible in responding to new issues and changes.

7.1 Making the most of our collective effort

Despite the efforts of thousands of Victorians who are actively engaged in caring for the environment, Victoria's biodiversity is still in decline. This is in part due to the legacy of previous land clearing and the introduction and spread of weeds and pests. It also reflects the size and complexity of the problem. Climate change is only set to exacerbate these issues and create new threats to biodiversity.

But there is another crucial, though less discussed, issue – a lack of adequate alignment, coordination and connection between those involved in the conservation effort across Victoria. While the work of thousands of people and groups contributes to biodiversity conservation, more and better collaborative arrangements are needed, to promote:

- efficiencies by reducing competition for resources
- improved targeting of effort
- shared identification of objectives and priority actions
- increased complementarity of work through improved communication
- an increased ability to report on, and communicate, what has been achieved.

Excellent collaborative models already exist, variously inspired by community or government efforts, such as through conservation management networks, threatened species' Recovery Teams, various 'ark'[11] and 'eden' projects and project alliances that span multiple landscapes and administrative boundaries. To build on these and improve broader collaboration, this Plan proposes an area-based planning approach. The concept of biodiversity response planning will be progressed during the initial stages of implementation, while key features are described below and in Figure 7.1.

The Department will be responsible for ensuring that appropriate processes are in place for biodiversity response planning and that the priorities of existing regional and state strategies (such as Regional Catchment Strategies, *Water for Victoria, Victorian Coastal Strategy*), plans and programs are considered across the whole of Victoria. Different circumstances may require different arrangements, depending on factors such as geographic area management responsibilities, community interests, capabilities and biodiversity priorities. These factors will influence which organisation leads or takes a coordinating role. Catchment partnership agreements, modelled on those identified in the *Our Catchments Our Communities* strategy, may be a useful mechanism for describing these arrangements.

The planning approach will include 'forum' processes to enable all relevant stakeholders and partners in particular areas of land or waters to identify their common purpose through contributing their knowledge and expertise. The operation of the forums will be guided by the Plan's principles, so that stakeholders and partners are engaged in decisions that affect them, and contributions to protecting biodiversity are science-based, complementary and aligned to a common purpose. Forums will include public land managers (such as the Department, Parks Victoria, Traditional Owners, local governments), those who want to have a say in public land management, agencies, organisations and individuals operating on private land (such as Trust for Nature, NGOs, landowners).

The forums will focus on responding to the statewide targets over a five year period and identifying 'pledges' or contributor's statements of intent. The Department's Strategic Management Prospects tool will help to identify priority areas and management actions that provide the highest potential return on investment and contribution to statewide targets. Information gleaned from the Strategic Management Prospects tool will be brought together with other information (such as feasibility, opportunities to partner, risks, new knowledge) to build a suite of priority conservation actions for priority areas.

A valuable part of the collaboration will be a two-way exchange of data and information between central systems and regional and local groups.

The response to the statewide targets will represent the sum of each contributor's pledges, based on their level of commitment and anticipated capacity over the five-year period. Actual project commitments and their contribution to the targets (subject to resource availability) will be documented in an annual biodiversity action schedule to the five-year response.

The annual action schedule will identify committed conservation actions and unfunded or partially funded projects that cost-effectively contribute to delivering the targets. Government investment, including community grants programs, will be directed towards these priority projects. Some contributors may commit to projects that are not a state or area priority, and these contributions should still be acknowledged and accounted for in reporting on progress towards targets. Information on the range of projects will feed into Biodiversity Investment Prospectuses (see Chapter 6), providing new investors the opportunity to partner in the most strategic and effective actions.

To strengthen accountability, each contributor will report standardised output data for their actions to a statewide storage system. The output data will feed into the *Monitoring, Evaluation and Reporting Framework*, and hence measure progress towards the statewide targets.

Planning and actions need to be flexible to address changes and emerging issues, including natural and emergency events (such as drought, fire and flood), new threats or rapid species decline. Agreed priorities and actions will also inform and be informed by other strategic processes (such as land-use planning and urban-growth planning), and provide key directions for biodiversity management in a changing climate.

Priority

12. Adopt a collaborative biodiversity response planning approach to drive accountability and measurable improvement.

Initiatives by the government to deliver this priority will include:

- Establish forums that enable all stakeholders to be involved in planning for biodiversity and to pledge their contribution to the statewide biodiversity targets.
- Develop five-yearly responses to the statewide targets and an annual action schedule.
- Report on annual progress with actions using standard output data.

7.2 Giving everyone a voice at the table

The environment sector is made up of government departments and agencies, businesses, NGOs, Traditional Owners and the community. All of these play very important roles and have varying resources and capacities to deliver. True collaboration involves communicating to build trust and a shared vision of the future. It requires pooling of scarce resources to get the best outcomes for biodiversity, and it takes time. The ability and capacity of community groups, NGOs, some sections of government and Traditional Owner organisations to participate in a collaborative approach needs to be supported and enhanced.

The first step in providing this support is to identify where it is needed most, and what is required to enable participation. This includes providing a support network to build a shared understanding of the statewide targets and how to contribute to them, and to build skills to report data.

By giving everyone an opportunity to be involved in an area-based response to the Plan, we will make the most out of collective knowledge and resources and be better placed to meet the targets.

Priority

13. Support and enable community groups, Traditional Owners, non-government organisations and sections of government to participate in biodiversity response planning.

Initiatives by the government and partners to deliver this priority will include:

- Identify stakeholders who need the most support and what is required to enable their participation.
- Provide support networks to build understanding of the statewide targets, how to contribute to them, and how to report data.

Figure 7.1 Collaborative approach to planning for biodiversity and responding to statewide targets

Flora and Fauna Guarantee Act 1988

***Protecting Victoria's Environment – Biodiversity 2037* (FFG Strategy)**

Biodiversity response planning

Describes the collective cross-tenure biodiversity vision for an area of land or waters, and the five-yearly pledges (i.e. contributors' statements of intent) towards the statewide targets.

Annual biodiversity action schedule

Establishes accountability and actions, decisions and projects across the sector. Includes:

1. Committed actions (resourced by contributors).
2. Cost-effective management actions that are unfunded or partially funded.

Provides priorities to direct state government investment, as well as opportunities to leverage other contributions.

Biodiversity forum

Purpose:

To develop common purpose and response(s) to the statewide targets for a specified area. This will help build collaboration, improve alignment of actions, discuss trade-offs and select projects that have the greatest chance of making a measurable improvement.

Participants:

State/local government agencies, public land managers, community groups, NGOs, business and industry, Traditional Owner Corporations and members of Regional Partnerships.

Coordination:

The forums will be established by the Department but be led by a coordinating agency, which could be the Department, Parks Victoria, a CMA, Trust for Nature or a NGO. The lead and geographic area will vary, depending on various circumstances.

Investment Prospectuses

Cost-effective management actions that are unfunded or partially funded which represent strategic opportunities in an area for investors to partner on projects that make a difference for Victoria's biodiversity.

Reporting

Contributors committing to delivering actions will be required to report standard output data (annually).

Data used for monitoring, evaluation and reporting at different scales.

Monitoring Evaluation & Reporting (MER) on Biodiversity Plan progress

System of Environmental-Economic Accounting (SEEA)

State of the Environment Reporting

Chapter 8

Working with Traditional Owners and Aboriginal Victorians

Key points:

- Aboriginal people have profound cultural, spiritual and economic connections to land, biodiversity and resources through their relationship with Country.
- Connectedness to land, biodiversity and resources on Country is fundamental to the health and wellbeing of Aboriginal people.
- Participation in biodiversity planning and management will be supported through consultative arrangements that address the rights and interests of Aboriginal people.
- Improving access to biodiversity and increasing the role of Aboriginal people in biodiversity management provide Aboriginal people with opportunities for economic advancement.

Traditional Owners and Aboriginal Victorians view the natural world within an interconnected ecological, cultural and livelihood system. Land and waters managed for landscape and community health require active and adaptive management to maintain and enhance biodiversity and improve its ability to recover from shocks and stresses. Traditional Owners and Aboriginal Victorians take a holistic and landscape planning and management approach, using fire, water and vegetation management as integral management tools for maintaining a productive and healthy landscape.

The effects of a violent colonial history and the resulting dispossession of Country have significantly curtailed the ability of Aboriginal Victorians to utilise traditional ecological knowledge to protect and promote biodiversity. Sadly some of this traditional ecological knowledge has been lost, and is only now being recaptured, thanks to the collective efforts of many people. Through delivery of this Biodiversity Plan, Traditional Owners and Aboriginal Victorians will be supported to continue rebuilding traditional ecological knowledge so that their knowledge can interact with and add to current science, and their management expertise can be shared with others.

There are opportunities to partner with Aboriginal Victorians in biodiversity planning, policy development, service delivery, governance and representation on boards and committees. These partnerships increase the opportunities for Aboriginal Victorians to access employment, experience cultural enrichment and have greater economic self-determination.

Legal rights and policies

Traditional Owners have legal rights and interests that recognise their roles in and authority for land management, cultural heritage and matters relating to natural resource management. These rights and interests are protected by the Commonwealth *Native Title Act 1993* and the Victorian *Traditional Owner Settlement Act 2010*. Traditional Owners also have responsibilities as Registered Aboriginal Parties under the Victorian *Aboriginal Heritage Act 2006*.

Over time it is expected that most of the state will be covered by native title determinations and/or Traditional Owner settlement agreements that recognise the special relationship of Traditional Owners with their lands and waters, and their right to participate as equal partners in the management of Victoria's natural resources.

The *Victorian Charter of Human Rights and Responsibilities Act 2006* affirms the distinct cultural rights of Aboriginal people, including the maintenance of spiritual, material and economic relationships with the land and waters and other resources with which they have a connection under traditional law and custom.

Traditional Owners are recognised in Victoria's *Constitution Act 1975* as having a unique status, and having made an irreplaceable contribution to the identity and wellbeing of Victoria.

Health and wellbeing

Victoria's Aboriginal population has suffered greatly from the impacts of European colonisation. Traditional Owners define their identity and spirituality by their connection to their Country. When Country is not maintained, health and wellbeing become compromised. Biodiversity that provides a healthy ecosystem in which the living world thrives is therefore central to Traditional Owner wellbeing. The government recognises the correlation between Aboriginal health and access to Country, and has committed to the national *Closing the Gap* agenda, which seeks to address the disadvantages faced by Aboriginal Australians in life expectancy, health and education.

While healthy Country is integral to healthy people, recent evidence extends beyond that to prove that there are positive social outcomes for Traditional Owners engaged in working on Country – either in natural resource management roles or undertaking cultural practices. This has the twin policy outcomes of savings to the health sector from healthier people, and achieving a healthier Victorian environment from the application of Traditional Owner knowledge.

As part of this Plan's approach to adaptive management, the government will work with Traditional Owners to monitor social and biodiversity resilience so that cultural and management practices (including take and use of natural resources) can adapt to change.

8.1 Considering Aboriginal values in biodiversity planning and management

Strengthening an ongoing partnership between Traditional Owners and the government will have a transformative effect on how Victorians work together to manage the state's environment. Traditional Owners aspire to have their philosophy of Caring for Country embraced by all Victorians as the heart of conservation practice.

Traditional Owners want to share their traditional land and water management practices and work with government to have their traditional ecological knowledge recognised in policy decisions to restore, sustain and improve productive landscapes. By engaging with Traditional Owners and Aboriginal Victorians, biodiversity managers will seek to incorporate this knowledge into Victoria's biodiversity management approach. This will give government an opportunity to recognise and protect Aboriginal biodiversity values, improve the sustainable management of biodiversity, and provide more opportunities to support Traditional Owners in their implementation of Country Plans.

The Victorian Government is committed to understanding Aboriginal biodiversity values and uses by working in respectful partnership with Traditional Owners. This Biodiversity Plan gives recognition to the unique role and status of Traditional Owners, and enhances the opportunity for the government to work in partnership with them to benefit the community and the environment. Partnerships with Traditional Owners can be enhanced and facilitated through biodiversity response planning (see Chapter 7). Through the response planning process, the government will ensure that biodiversity policy, planning and operations appropriately consider impacts on Aboriginal interests, including native title rights and cultural heritage.

The intellectual property of Traditional Owners will be protected. The Department's *Aboriginal Inclusion Plan 2016-2020 Munganin-Gadhaba 'Achieve Together'*, takes a best practice approach towards recognition and protection of Aboriginal customary knowledge.

Priority

14. Engage with Traditional Owners and Aboriginal Victorians to include Aboriginal values and traditional ecological knowledge in biodiversity planning and management.

Initiatives by the government and partners to deliver this priority will include:

- Incorporate Aboriginal customary knowledge into biodiversity management, and assist Traditional Owners to plan for and adapt to the impacts of climate change.
- Partner with Traditional Owners and Aboriginal Victorians to include Aboriginal values and knowledge in biodiversity response planning.
- Develop methods to ensure Traditional Owners and Aboriginal Victorians can maintain intellectual property rights over their knowledge.

8.2 Aboriginal access to biodiversity for economic development

While Traditional Owners respect that biodiversity is essential to some of Victoria's most important industries – such as agriculture, fisheries, forestry and tourism – they too have legitimate rights to benefit commercially from their culture and lands. Access to biodiversity has the potential to generate new economic opportunities for Traditional Owners and Aboriginal Victorians, including through biodiversity-related Aboriginal enterprises that can contribute to their economic self-determination.

Potential economic opportunities for Traditional Owners relating to biodiversity might include managing numbers, locations and reproduction in animal populations where there are also benefits from the feathers, skins or meat for commercial purposes, or leveraging biodiversity to generate economic opportunities through tourism and hunting.

Creating strong linkages between biodiversity management and economic development makes effective use of Traditional Owner knowledge and interests. The principle of taking within sustainable limits is relevant to commercial ventures using natural resources, to ensure use does not deplete resources for future generations.

Through *Munganin-Gadhaba 'Achieve Together'*, the Department is committed to increasing Aboriginal employment, building capability and strengthening Aboriginal prosperity through improved economic participation. Aboriginal enterprises are around 100 times more likely to employ Aboriginal people than non-Aboriginal enterprises, so strengthening Aboriginal business will have a significant flow-on impact on Aboriginal employment. There are also opportunities for increasing Aboriginal employment in biodiversity management, for example as rangers or contractors.

The government has established the Victorian Aboriginal Economic Board, to drive job and business opportunities for Aboriginal Victorians. In the spirit of self-determination, the Board brings together Aboriginal community members, business and government to drive the delivery of the *Victorian Aboriginal Economic Strategy 2013-2020*.

Priority

15. Support Aboriginal access to biodiversity for economic development.

Initiatives by the government and partners to deliver this priority will include:

- Deliver the goals and outcomes of the *Aboriginal Inclusion Plan 2016-2020 Munganin-Gadhaba 'Achieve Together'* and of the *Victorian Aboriginal Economic Strategy 2013-2020*.
- Work with Aboriginal communities to provide employment, training and business opportunities in biodiversity management.
- Partner with Traditional Owners and Aboriginal Victorians to identify seed funding and seek business finance opportunities for Aboriginal enterprises to invest in biodiversity.
- Support Traditional Owner corporations to create pathways for greater engagement with and investment from both the philanthropic community and the wider private sector.

8.3 Building capacity

All stakeholders and partners in the biodiversity sector have much to learn from each other. The government is committed to building capacity for increased participation by Aboriginal Victorians in biodiversity management. This will require open discussions that enable collaboration, time for relationships to strengthen and flexibility as knowledge grows.

The government recognises the need to pilot different ways to address Aboriginal values and uses of biodiversity, reflect on these and build these lessons into future action.

Priority

16. Build capacity to increase Aboriginal participation in biodiversity management

Initiatives by the government and partners to deliver this priority will include:

- Support Aboriginal skills and capability development – for example, provide access to and training in the government's biodiversity information systems and data management.
- Support Traditional Owner corporations to develop their own information systems that link to government systems.

Chapter 9

Better protection and management of our biodiversity

Key points:

- Threats need to be better managed across the landscape to ensure that species and ecosystems are conserved, and to give biodiversity the best chance to adapt to the effects of climate change and human population growth.
- The government will demonstrate leadership by significantly increasing investment in targeted biodiversity management across conservation reserves, and other public land, and by transparently reporting on performance.
- The system of conservation reserves requires periodic review to ensure that permanent protection of biodiversity is as effective as possible under changing climate conditions and land uses.

Conserving and enhancing biodiversity requires a sustained and strategic response, involving all land, sea and water managers and users, as well as the broader community. To a significant degree, this necessitates a focus on management – how best to manage our state's biodiversity and the multitude of threats to its preservation, in order to increase species and ecosystem resilience to climate change.

For example, how can we apply more strategic management in our efforts to control introduced plants and animals? Similarly, how can we better manage the state's conservation reserve system to protect species and habitats? At another level, how can we manage bushfire prevention to protect humans and their property while paying due regard to biodiversity?

Answers to such questions inevitably revolve around better and more strategic management of biodiversity. And while the state government must provide the principal leadership and direction on biodiversity management, ultimately a sustained and strategic response to biodiversity threats needs to be incorporated into planning, investment and management of land, sea and water at every level of government – and across public and private land and waters.

9.1 Delivering improved biodiversity management across the landscape

Seventy per cent of Victoria's highest value terrestrial biodiversity areas exist on the forty per cent of land that is publicly owned. These areas include national parks and conservation reserves, and land used for multiple purposes – including State Forests, and smaller public land parcels such as road reserves, rail reserves, local government reserves and water frontages. Approximately 54,000 hectares of Victoria's marine waters are formally protected for nature conservation through 13 marine national parks and 11 marine sanctuaries.

The government understands the need to address the threats that are already exerting or expected to exert major impacts on ecosystems. The interactions between these threats are complex, and are likely to be exacerbated by a changing climate. Taking an adaptive approach to land, waterway and marine conservation management will be a key part of the government's response towards these threats.

Bushfire control and prevention works are essential to reduce risks to the health, safety and assets of the Victorian community. Depending on their frequency and type, fires, including planned burning, can have significant positive or negative effects on biodiversity. Negative impacts on biodiversity can occur when fires are too frequent, intensive or extensive for recovery to occur. The threat of 'too frequent fire' will be exacerbated by climate change. Victoria's risk-based and community-focused approach to fire planning aims to find an appropriate balance between the risk to humans and infrastructure, and to environmental values. It also creates opportunities to align measures for biodiversity and fire that provide better understanding and reporting of biodiversity responses to the total fire regime. This approach will be further developed as part of the implementation of this Plan.

Introduced plants and animals are a primary cause of biodiversity decline in all Victorian environments. Although Victoria has implemented some successful programs to control introduced species, more consistent, sustained and strategic management approaches are needed, along with better planning for biosecurity responses to new and emerging threats.

Human-induced changes to the environment have, in some situations, led to native species such as kangaroos, Noisy Miners, sea urchins, Sweet Pittosporum and Burgan becoming locally over-abundant, often to the detriment of other native species. Coordinated planning and implementation may be needed to address over-abundance where there are significant impacts on biodiversity assets. In some circumstances, however, targeted action at a local level may be sufficient to mitigate the impact.

In urban and rural landscapes, native animals interact with people in many ways. Sometimes these interactions can be negative (for example, when native herbivores consume crops, and when magpies swoop people). A 'living with wildlife' approach encourages positive attitudes to wildlife. It includes understanding wildlife behaviour and ecology, managing wildlife conservation and welfare, and promoting non-lethal methods of managing wildlife impacts.

Altered hydrological regimes and ongoing demands for water are placing increasing pressure on Victoria's marine and waterway ecosystems. Programs delivering environmental flows to priority waterways and managing specific threats to waterway ecosystems will continue as part of the government's *Water for Victoria* plan and the *Victorian Waterway Management Strategy*.

All government agencies will need to consider and act on their 'duty of care' to the land, waters and biodiversity that they manage, as part of their standard management practices. Such actions should include:

- Considering the Biodiversity Plan goals and principles, and relevant information products in decision making.
- Considering how to contribute to the achievement of the targets, and reflecting this consideration in strategies and annual business plans.
- Taking reasonable steps to avoid exacerbating threats to biodiversity, as part of both planning and implementation of programs.
- Reporting on their biodiversity performance, including contributions to biodiversity targets as well as the consequential impacts from public land-use decisions.

The government proposes to assist all agencies to prepare biodiversity standards that are consistent with the legislation under which agencies operate, and to provide guidance on how biodiversity should be managed. The standards could be incorporated into management agreements, and could support monitoring and reporting on biodiversity outcomes by public authorities. These standards will provide a basis for voluntary land stewardship standards on private land.

Priority

17. Deliver excellence in management of all land and waters.

Initiatives by the government to deliver this priority will include:

- Better understand and respond to key threats and opportunities for biodiversity conservation, such control of weeds and pest animals, fire regimes (both too frequent and too infrequent), disease, the role of apex predators, and climate change.
- Develop an enabling environment that allows for the use of novel techniques (such as the active movement of individuals and/or mixing of provenances, to better match future climates) to achieve desired biodiversity outcomes.
- Reduce degradation of waterway habitats through practical threat management action, informed by science.
- Develop biodiversity standards to guide public land managers in exercising their duty of care.
- Develop partnerships and processes to increase the role of Traditional Owners in managing biodiversity across Victoria.
- Improve Victoria's ability to prepare for and respond rapidly to biodiversity emergencies (such as population rescue) and to threatening processes, including via the biodiversity response planning approach.
- Develop a 'living with wildlife' approach to encourage positive attitudes to wildlife, as part of a broader strategy for management of native wildlife in Victoria.
- Publicly report on the benefits and impacts of the Department's and partner agencies' land management activities on biodiversity, including the conservation actions proposed to counter-balance any impacts.

9.2 Maintaining and improving a world-class reserve system

Permanently protected habitats on public and private land and waters – in national parks, conservation reserves and Indigenous protected areas, and under covenants – form the backbone of biodiversity conservation. To maintain and improve biodiversity, the extent and condition of these permanently protected areas need to be enhanced.

A long history of public land-use planning in Victoria by the Victorian Environment Assessment Council and its predecessors[12] means that the government has established a world-class terrestrial reserve system, ranging across most of Victoria's environments and habitats. However, in landscapes that consist mostly of private land – especially in Victoria's most productive landscapes – many ecosystems, habitats and threatened species are inadequately represented in the reserve system and need increased protection. For example, in the Victorian Volcanic Plains (VVP) bioregion, only 1.3 per cent of the native vegetation is in conservation reserves, and the corresponding figure for the Wimmera bioregion is only 1.5 per cent. The additional pressures of climate change underline the need for strategic additions to and re-design of the protected area system, to make Victoria's habitats and species as resilient as possible. The application of strategic land-use planning tools can complement this approach while supporting appropriate land use on private land.

The estimated gap in additional protected areas required to meet Australia's criteria for a comprehensive, adequate and representative reserve system is 2.1 million hectares. In some bioregions such as the VVP, Wimmera, Dundas Tablelands and Gippsland Plain, this can only be achieved by land purchase or additional formal protection of habitat on private land.

To ensure that Victoria's reserve system on public and private land is as effective as possible, formally protected areas need to be well managed and well connected. Improving habitat condition, habitat linkages and reducing threats are all vital actions needed to improve and restore biodiversity values and ecosystem health across protected areas, as across the wider landscape.

Maintenance and improvement of Victoria's system of protected areas requires the following components:

- A comprehensive, adequate and representative protected area system across public land, private land and Indigenous protected areas, that continues to be the cornerstone of conserving biodiversity.
- Management of other public land and waters to also deliver biodiversity conservation which, in turn, will complement the reserve system.
- Use of strategic land-use planning tools to better protect areas of private land that support significant biodiversity values, and to identify opportunities for targeted land purchases.
- Expanded private land stewardship areas (managed under Land for Wildlife, agreements, tenders, incentives, partnerships, native vegetation offsets and other such mechanisms, as discussed in Chapter 6) that complement the reserve system on public and private land by providing increased habitat options and linkages for native wildlife. This effort should be particularly focused on regions and ecosystems where the reserve system is not sufficiently large or representative, and which consist mostly of private land.

In implementing this Plan, the government will give due recognition to the increased importance of the Victorian Environmental Assessment Council in regularly reviewing the extent and adequacy of the terrestrial reserve system in the context of a changing climate, habitat shifts and decisions about appropriate land uses.

Priority

18. Maintain and enhance a world-class system of protected areas.

Initiatives by the government to deliver this priority will include:

- Review the extent, representativeness and adequacy of the reserve system to identify key gaps and additional complementary measures required to improve the reserve system on public and private land.
- Work with partners to increase the extent of private land under voluntary permanent protection, and managed under conservation stewardship arrangements to complement the reserve system.
- Identify future reserve system priorities (such as targeted acquisition) through strategic land-use planning.

Chapter 10

Government leadership in delivering the Plan

Key point:

- Success of this Plan will rely on government leadership in its implementation, widespread incorporation of biodiversity into decision making, a best-practice regulatory and accountability framework, and regular evaluation to refine and improve its implementation.

10.1 Implementing this Plan

The successful implementation of this Plan requires a whole-of-government approach. As the principal steward of our environmental, social and economic sustainability, the government will coordinate decision making on biodiversity-related issues across the government sector to ensure that, as far as practicable, the goals and targets of this Plan are given priority in program delivery – particularly where programs result in negative impacts on the environment or sustainability. A key to achieving this objective will be integration of the SEEA into decision making across government.

Delivery of this Plan will also rely on a best practice legislative and regulatory framework. The land use planning framework, for example, provides a good opportunity to ensure that biodiversity is integrated early in decision-making processes. Maps and information from NaturePrint, including Strategic Management Prospects described in Chapter 3, may strengthen a strategic approach to land use planning, particularly as Regional Growth Plans are revised over time and future Precinct Structure Plans (outside the Melbourne Strategic Area) are developed. It is also important to strengthen links between relevant legislation (such as the *Planning and Environment Act 1987,* the *Flora and Fauna Guarantee Act 1988* and the *Climate Change Act 2017*). The establishment of Infrastructure Victoria and Land Use Victoria represents a significant opportunity to foster a coordinated whole-of-government approach to infrastructure planning and strategic environmental approvals. Such an approach can deliver improved results for both the environment and the economy. It is important in this context that options for investment and development be identified early, that regulatory standards are clear and quantifiable, and that compliance with those standards is not too costly. This applies to biodiversity approvals but also to other environmental approvals, such as those undertaken by the Environment Protection Authority and those relating to water management.

The Victorian Government will progressively review the regulatory framework to ensure that it supports achievement of the goals and targets of this Plan, is adaptable to changing circumstances and upholds accountability. This process has already begun with reviews of the *Flora and Fauna Guarantee Act 1988* and Native Vegetation Clearing Regulations. Further work is needed to consider how administrative arrangements and requirements of other legislation can best enable a whole-of-government approach to the efficient and effective implementation of the Plan and its targets.

Accountability will be further underpinned by the *Monitoring, Evaluation and Reporting Framework* for meeting the targets of the two goals of this Plan, and the biodiversity response planning and investment process.

Where actions are taken on public or private land that impact on biodiversity and that fall outside the legislative framework (that is, land or water uses that are not required to be offset by regulation to achieve 'no net loss' of biodiversity), measures will be developed by the government to ensure these impacts are counter-balanced at a whole of state level through investment, management or other means. This will mean all biodiversity losses are accounted for and consistently addressed. This step is important to underpin our progress towards an overall 'net gain' in the extent and condition of native habitats across terrestrial, waterway and marine environments over the life of this Plan.

Environment portfolio agencies, such as Parks Victoria, Royal Botanic Gardens Victoria, Zoos Victoria, Phillip Island Nature Parks, CMAs and Alpine Resort Management Boards will be at the frontline of biodiversity management efforts and engaging and inspiring the community. They will provide critical contributions to biodiversity response planning, and their commitments will be set out in their annual business plans, along with standardised reporting of positive (and negative) contributions to biodiversity goals and targets.

Implementation of this Plan will be guided by a rolling program, which will be updated as required over the life of the Plan. The initial *Implementation Plan* for the Biodiversity Plan will set out the key actions and areas for further examination in the early phase of work, and lay the foundation for achieving full implementation in the mid to longer-term.

Priority

19. Adopt a whole-of-government approach to implementing the Plan.

Initiatives by the government to deliver this priority will include:

- Establish governance arrangements to ensure alignment with the goals and principles of the Plan, and to assist in the application of relevant tools and business applications (e.g. SEEA) in decision making processes, using mechanisms such as Ministerial Statements of Expectation and Memoranda of Understanding.
- Develop policy and accounting mechanisms to ensure that biodiversity losses that occur outside the regulatory system are appropriately counter-balanced at a whole-of-state level.

- Progressively review the legislative framework for biodiversity to ensure it is consistent with best-practice regulatory principles and gives effect to the goals and targets of the Plan.
- Investigate legislative and administrative opportunities and impediments across government, to efficiently and effectively achieve the goals and targets of the Plan.
- Increase the use of strategic risk-based regulatory approaches to biodiversity and other environmental approvals.
- Develop mechanisms to transparently consider natural capital, biodiversity, climate change and ecosystem services in government decision-making.
- Engage environmental portfolio agencies to provide leadership in biodiversity management, in conjunction with key partners such as local governments, Traditional Owners and Landcare.

10.2 Evaluating the Plan

The government is committed to evaluating the success of the Biodiversity Plan over the next 20 years to ensure that biodiversity outcomes are continuously improved and that the Plan is designed and delivered effectively and efficiently. Evaluation of the Plan will be a multi-faceted approach guided by the *Monitoring, Evaluation and Reporting Framework*.

As part of this process, every five years the Victorian Government will conduct an evaluation of progress on delivering the Plan, looking at:

- Organisational arrangements accountable for ensuring that a program of activities is undertaken effectively and successfully.
- Strategic planning and processes that set directions, assign priorities and provide leadership for the Plan.
- Mechanisms for coordinating the efforts of different agencies (and divisions within agencies), organisations and groups to work together in an effective, collaborative and complementary manner.

Examining these key issues periodically will allow the delivery approach to be refined and improved so that the best methods for meeting the goals and targets of this Plan are adopted.

The evaluation will be driven primarily by the Department. However, as this is a whole-of-government plan, key government agencies outside the traditional environment portfolio will provide input on commitments relevant to their portfolios. To support transparency and accountability, the government will publicly report the findings of its five-yearly reviews.

This process will be complemented by the Commissioner for Environmental Sustainability's five-yearly *State of the Environment* report, which will include reporting on progress of the Plan towards its goals and targets. The Department will collaborate with the Commissioner on this task.

Evaluation will be further informed by determining whether the Plan's implementation schedule is on track. An interim report will be compiled two years after the Biodiversity Plan's release to inform the public about the progress on delivering the actions in the *Implementation Plan*, with the outcomes of this evaluation to feed into the development of the ensuing work in the rolling implementation schedule.

The *Monitoring, Evaluation and Reporting Framework* will also be supported by a collaborative biodiversity conservation forum for the sector to be held every two years. This science-focused activity will bring together a range of non-government and agency practitioners from biodiversity conservation management, research and policy. Reports will be prepared following each forum summarising the key achievements, lessons and new science, and identifying areas requiring attention, to further inform future directions in policy, research and management.

Together, these mechanisms will enable Victoria to respond to ideas and directions flagged through the formal review process, as well as to adapt its approach to account for new information, risks or significant events.

Priority

20. Establish a transparent evaluation process to report on progress towards delivering the Plan.

Initiatives by the government to deliver this priority will include:

- Establish and implement a collaborative Monitoring, Evaluation and Reporting Framework to monitor and report on activities, outputs, outcomes and goals of the Plan.
- Host a biodiversity conservation forum every two years to share information and inform future directions.
- Regularly evaluate the implementation of the Plan, including an initial report on implementation progress after two years, and five-yearly evaluation reports.
- Report on progress towards targets and goals every five years, in conjunction with the Commissioner for Environmental Sustainability.

Appendix 1 – Technical background for decision-support measures and tools

Strategic conservation planning requires measures and tools that can help with the making of choices about which actions in which places might deliver the most improvement for the greatest number of species. There is a series of questions in this planning process, each with different information requirements:

- Which biodiversity assets could occur at different places?

  Examples: species habitats and populations, ecosystem types.

- Which threats could occur at these places, and how sensitive are species to them?

  Examples: invasive species, disturbance regimes, resource uses.

- Which actions are feasible and effective enough to address the threats, and how much do they cost?

  Examples: controlling invasive species, modifying disturbance regimes; management or opportunity costs, establishment and maintenance costs.

- How much improvement could be achieved by actions at different places?

  Examples: changes in the condition of habitat for each species and/or changes in the vigour of populations.

- What is the broader context that could influence success at different places?

  Examples: the amount and connectivity of habitat around a place; the ecological regimes (fire, water etc.); the level of vulnerability to climate change; the rarity or depletion of a habitat type; the prior actions that have already been undertaken; the communities of interest, and the partnership opportunities and capabilities these bring.

- How will management options be compared and selected?

  Examples: identifying combinations of the above information to equitably represent different species needs and to maximise net outcomes.

- How will targets be set and progress measured?

  Examples: based on the above information, identifying specific, measurable, achievable, relevant and time-bound targets; using information on which actions are being implemented combined with estimates of improvement, to describe the types and amounts of outcomes our overall efforts can be expected to deliver.

In support of this Plan, the Department used the NaturePrint project to build and bring together whole-of-landscape, fine-grain spatial information relevant to biodiversity.

Inputs

A wide range of data including species and management observations, research insights, field mapping and remote sensing are brought together through shared digital systems. Maps are created by combining and extrapolating this data to provide consistent and comprehensive views across the broad areas relevant to biodiversity conservation. Habitat Distribution Models of many species (including the majority of terrestrial vertebrate animals and threatened plants) are now available and are being continually improved. Models of threats have similarly been prepared, linked to species by their traits, and linked to indicative costs from project managers.

Information on the amount of improvement in response to action (i.e. benefit) is much less developed and has required development of a measure, **Change in Suitable Habitat**, and a method for creating the first version of this data. This measure reflects net improvement for each species, which does not necessarily mean that the situation has moved from an overall downward to an overall upward trajectory (see following page).

The aim of Change in Suitable Habitat is to provide a practical measure for estimating net improvement in the outlook for species from our management actions. Persistence of native species is the fundamental idea of conservation biology.

It depends on the characteristics of:

- individuals (e.g. finding and competing for habitat, food, mates)
- populations (e.g. recruitment and death rates, mobility, genetic diversity)
- ecosystems (e.g. disturbance regimes, interactions between species).

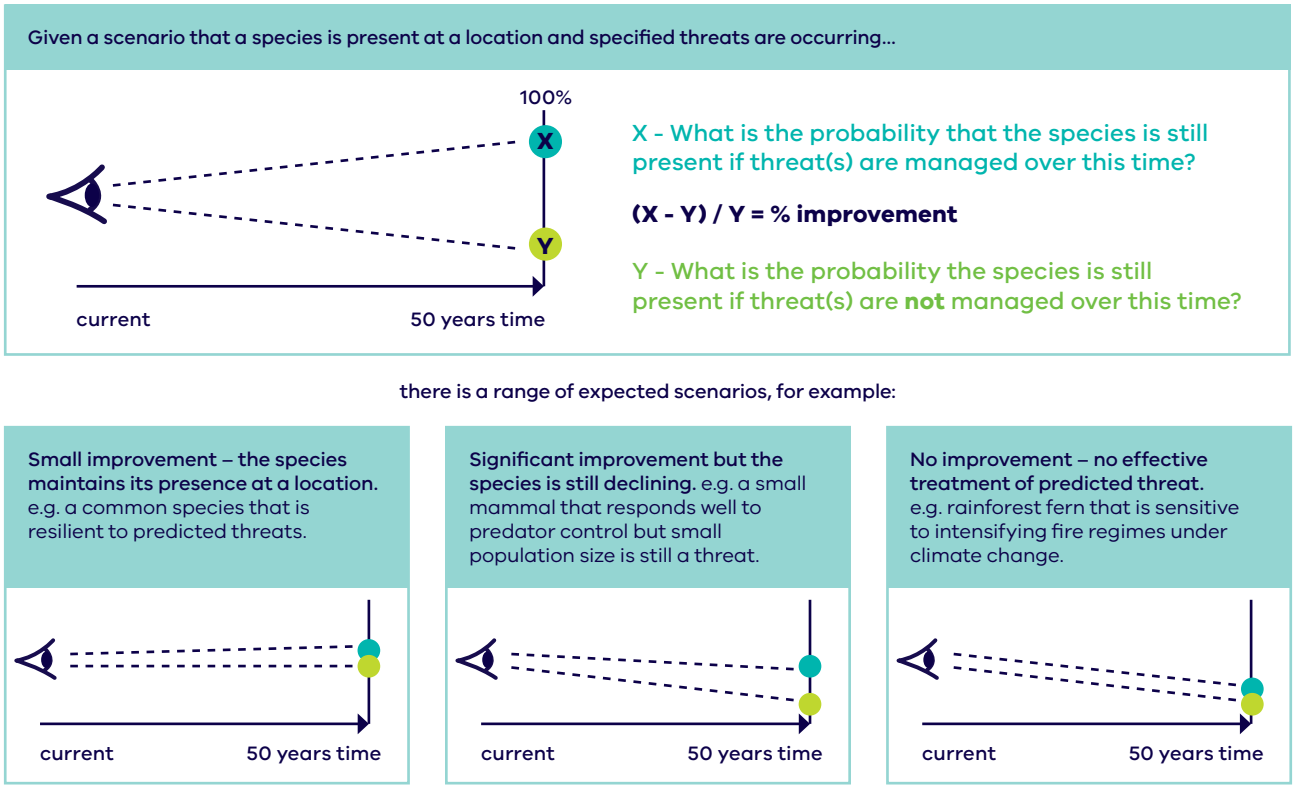
Although each of these characteristics can be described to some extent for some species, typically there is limited data, particularly for understanding the viability of populations. A practical measure of net improvement thus relies on habitat and threat information, often requiring extrapolation from available data. Like persistence or viability, improvement is a current estimate of the likelihood of future outcomes, rather than a snapshot of the current situation. Since the purpose here is to consider what could most effectively be done to make things better, the measure is designed to capture the expected difference between action and no action.

Change in Suitable Habitat at the location level is initially being estimated by an **expert elicitation** approach. Experts were presented with threat and action scenarios for particular populations of species.

The experts answered questions regarding the likelihood of that species still existing at the location if an action (or set of actions) was, or wasn't undertaken. Change is often slow, so the length of time used for estimating change (50 years) was chosen to be long enough to allow for a significant difference, but not so long as to make predictions too uncertain. Experts were asked for their confidence level around each estimate. Different scenarios were presented for different species, but also for the same species in different locations.

The data collected can be calibrated between experts, and in time with known actual situations. Due to the large number of species, threats and varied habitat contexts, experts addressed scenarios for a representative subset of species and contexts. Estimates were based on continuous, sustained management being delivered over the 50-year time period. As depicted in Figure A.1, the probability that species will still be present if sustained investment and management is supplied is **X**. However, if threats are **not** managed, the probability that the species will not be present in the long term is **Y**. The difference between X and Y indicates the likely level of improvement. In the best case scenarios, there is a significant positive change that is sufficient to deliver a reversal of a downward trend. However, there are also several scenarios that achieve less than this.

Figure A.1 Estimates of the likelihood of species persistence.



Based on this elicited data, trait-based modelling was used to infer across all species, extrapolating information regarding the response of species to different scenarios to other species with similar traits.

Current data on Change in Suitable Habitat focuses on treatment of common widespread threats or actions (e.g. invasive species, revegetation) with the expectation that further actions, particularly those requiring direct manipulations to improve adaptation to climate change (e.g. translocations, genetic strengthening) will be progressively assessed using this measure.

Since the measure is applied in an equivalent manner to different species as well as scenarios, this provides an essential contribution to thinking about how to maximise benefits across all species.

Information on broader context is generally in the earlier stages of development. Models showing habitat rarity, depletion, connectivity and vulnerability exist, and are being actively improved. Models of fire and water behaviour also exist, and analyses are being expanded to look at regimes and future scenarios. Information on communities of interest and partnership opportunities is generally based on a variety of qualitative data that is currently less suited to comprehensive analyses.

Measuring and maximising net improvement

The purpose of the Strategic Management Prospects (SMP) approach is to provide guidance on how to best invest in maximising biodiversity outcomes – i.e. what actions to take, and where.

The first step of the analysis takes the Change in Suitable Habitat data layers and identifies, for each mapped cell (225m x 225m pixel), the action or predetermined combination of actions that provides the most cost-efficient benefits for biodiversity. Actions that benefit species most in need or species that are unlikely to benefit from actions elsewhere, are weighted more heavily. This is done to give greater weight to local benefits that represent a large fraction of the maximum potential benefit for a species.

For practicality, weighted local benefit and cost data layers are 'smoothed' by averaging benefit scores over neighbourhoods where the size of the neighbourhood is determined by the minimum area required to undertake an action. This ensures local benefits account for large-scale actions (e.g. fox baiting) and prevents fragmented and unrealistic allocations of actions.

The second step is an optimisation in Zonation software that ranks locations based on the potential contribution of the most cost-efficient (best) local actions to overall species persistence in Victoria.

Only two management scenarios are considered at each location; the 'best action' (or set of actions), or no action. In doing so, this reduces the complexity of the ranking process. Zonation produces a hierarchical ranking by iteratively 'removing' mapped cells in an order that minimises the marginal loss of return on investment for each iteration. The order of removal provides a ranking of actions in the landscape, with those actions removed last offering the highest conservation return on investment. The result is an indication of the predicted areas that provide the highest, and lowest, return on investment for management action.

Dealing with broader context

The prioritisation of management actions in SMP is predominantly based on the estimated return on investment of different actions in different locations, where return on an investment is defined as Total Benefit / Cost. The Total Benefit for a given action (or set of actions) in a particular location is a weighted sum of the estimated benefits of that action to all species. It is also desirable to give additional emphasis to some locations based on broader context. For example, greater weight can be given to actions that improve or maintain important habitat areas for spatially restricted species, including naturally rare species and species that have suffered from past habitat loss. Additional weight can be given to actions that benefit species considered most at risk of extinction in the next 50 years (typically species whose distributions have been much reduced since European settlement, or species expected to lose substantial amounts of habitat in the future in the absence of management actions). Other factors can be considered in this way – for example, connectivity of habitat across the landscape, relative vulnerability of particular environments to climate change, and the level of prior action and progress that has already been achieved.

Continuous improvement to Strategic Management Prospects

The first version of SMP includes information on most terrestrial vertebrates and higher plants (including all rare or threatened species with suitable data), some key landscape-scale interventions for increasing Suitable Habitat, and their indicative costs. Although currently limited in scope, for the first time across Victoria this provides an estimate of the net Change in Suitable Habitat that could be expected by 2037, under a plausible cost-effective investment scenario.

Many of the inputs to SMP will be refined and expanded through time, so SMP will be reviewed and improved as new information is incorporated.

Appendix 2 – List of priorities

	Priority	Initiatives to deliver each priority, undertaken by government and (where appropriate) partners, will include:
1	**Deliver cost-effective results utilising decision support tools in biodiversity planning processes to help achieve and measure against the targets.**	• Ensure that decision support tools (such as Strategic Management Prospects) – which help assess the most effective options for improving the future of native species under climate change – are continually improved as new information is incorporated. During the first five years of this Plan, enabling actions will be undertaken to clarify contributing targets. • Establish a cost-benefit framework that enables improved decision making and investment in conservation of endangered and critically endangered species. • Develop new spatial products and decision support tools, in consultation with the community, to help inform effective options for increasing people's connection with nature and their participation in protecting the natural environment. • Apply an adaptive management approach, together with supporting policy, to decision making that responds to the dynamic nature of climate change and other uncertainties.
2	**Increase the collection of targeted data for evidence-based decision making and make all data more accessible.**	• Work together with delivery partners to identify and progressively fill critical knowledge gaps, through targeted research and data gathering, coordinate and share core datasets, and ensure that information is integrated across all marine, waterway and terrestrial environments. • Provide delivery partners and the community with easily accessible biodiversity data and information products, including new understanding as it develops.
3	**Raise the awareness of all Victorians about the importance of the state's natural environment.**	• Undertake research to understand the community's level of awareness of biodiversity and its relevance to them. • Develop and deliver a dedicated campaign and programs that promote Victoria's rich diversity of plants, animals and natural places and the importance of biodiversity, and that inspire and engage a large number and cross-section of Victorians. • Develop biodiversity information and products to increase awareness within different government, business and community sectors in collaboration with target groups.

	Priority	Initiatives to deliver each priority, undertaken by government and (where appropriate) partners, will include:
4	**Increase opportunities for all Victorians to have daily connections with nature.**	• Establish reliable baseline information about Victorians' current connection with the natural environment. • Identify less engaged groups, and understand barriers to engagement in order to increase opportunities to connect with nature. • Implement and promote programs to increase opportunities for people to connect with nature, including programs to get Traditional Owners out on Country. • Promote opportunities for additional 'greening' in established urban areas through broadening standards for public open-space planning provisions, in the context of long-term change in population and community needs.
5	**Increase opportunities for all Victorians to act to protect biodiversity.**	• Promote programs to raise awareness across the Victorian community about actions that they can take to protect and care for biodiversity. • Establish reliable baseline information about Victorians' (individual, community sector, Traditional Owners, businesses and government organisations) current activities to protect biodiversity, identify less engaged groups/organisations, and understand the barriers to their taking action. • Implement and promote programs that increase engagement and employment in activities that protect biodiversity. • Link opportunities to connect with nature with on-the-ground biodiversity management needs, such as expanding support for volunteers, businesses, community groups, Friends groups, citizen science, Landcare, clubs and associations.

	Priority	Initiatives to deliver each priority, undertaken by government and (where appropriate) partners, will include:
6	**Embed consideration of natural capital into decision making across the whole of government, and support industries to do the same.**	• In the short term, prepare and publish a set of environmental accounts for the Department and portfolio partners and contribute to relevant national initiatives. • In the longer term, integrate the System of Environmental-Economic Accounting into reporting across the whole-of-government, and into decision making and evaluation of social, economic and environmental outcomes and trade-offs. • Partner with the broader business community and industry leaders to promote the increased adoption of environmental-economic accounting.
7	**Help to create more liveable and climate-adapted communities.**	• Use environmental-economic accounting business applications to help government, industry and communities understand the benefits of protecting environmental assets in both the built and natural environments. • Develop guidelines or standards to give government, industry and communities an increased ability to better realise the benefits of green infrastructure. • Provide information that enables communities to plan for climate change, compare trade-offs and create a vision for their region that delivers a strong regional economy and a healthy natural environment. • Improve the liveability of Victorian cities andtowns – for example, by implementing *Plan Melbourne 2017-2050*.
8	**Better care for and showcase Victoria's environmental assets as world-class natural and cultural tourism attractions.**	• Work in collaboration with the community to ensure that Victoria's iconic natural assets keep offering opportunities to connect with nature, and provide support to local economies. • Develop policies and approaches to ensure that tourism to sensitive areas is sustainable and impacts are minimised. • Build on existing work to promote Victoria's environmental assets, at statewide, regional and local levels, as world class natural and cultural tourism attractions. • Continue to provide world class nature-based experiences through Zoos Victoria, Museum Victoria, Parks Victoria, the Royal Botanic Gardens Victoria, Philip Island Nature Park and alpine resorts.
9	**Establish sustained funding for biodiversity.**	• Examine, and where appropriate adopt, a variety of approaches to secure sustained funding for biodiversity, including exploring the potential to link government biodiversity investment with private sector investment, crowd funding, urban development, tourism and other emerging tools and mechanisms.

	Priority	Initiatives to deliver each priority, undertaken by government and (where appropriate) partners, will include:
10	**Leverage non-government investment in biodiversity.**	• Publish an Investment Prospectus to communicate to prospective investment partners the funded, unfunded and partially-funded projects that are needed to meet the targets. • Establish a biodiversity investment roundtable and promote ongoing dialogue between all investor groups, to improve working relationships and better identify investor preferences and opportunities. • Adopt principles for facilitating good-practice private environmental investment, to ensure probity, public interest, accountability, transparency and fairness. • Recognise and promote successful cross-sector biodiversity investment partnerships.
11	**Increase incentives and explore market opportunities for private landholders to conserve biodiversity.**	• Encourage greater landholder participation in conservation through increased support for agencies, Traditional Owner Corporations, Landcare, local government and community group programs that encourage community action. • Develop consistent land management standards and apply them to the various voluntary private land conservation programs. • Increase the use of conservation auctions and private land stewardship payment schemes, with an increased emphasis on permanent payments. • Build biodiversity credit markets to promote future interactions with markets for water, carbon and other public benefits, and facilitate private investment. • Work with partners and stakeholders to investigate other effective incentives for private landholders.

	Priority	Initiatives to deliver each priority, undertaken by government and (where appropriate) partners, will include:
12	**Adopt a collaborative biodiversity response planning approach to drive accountability and measurable improvement.**	• Establish forums that enable all stakeholders to be involved in planning for biodiversity and to pledge their contribution to the statewide biodiversity targets. • Develop five-yearly responses to the statewide targets and an annual action schedule. • Report on annual progress with actions using standard output data.
13	**Support and enable community groups, Traditional Owners, non-government organisations and sections of government to participate in biodiversity response planning.**	• Identify stakeholders who need the most support and what is required to enable their participation. • Provide support networks to build understanding of the statewide targets, how to contribute to them, and how to report data.
14	**Engage with Traditional Owners and Aboriginal Victorians to include Aboriginal values and traditional ecological knowledge in biodiversity planning and management.**	• Incorporate Aboriginal customary knowledge into biodiversity management, and assist Traditional Owners to plan for and adapt to the impacts of climate change. • Partner with Traditional Owners and Aboriginal Victorians to include Aboriginal values and knowledge in biodiversity response planning. • Develop methods to ensure Traditional Owners and Aboriginal Victorians can maintain intellectual property rights over their knowledge.
15	**Support Aboriginal access to biodiversity for economic development.**	• Deliver the goals and outcomes of the *Aboriginal Inclusion Plan 2016-2020 Munganin-Gadhaba 'Achieve Together'* and of the *Victorian Aboriginal Economic Strategy 2013-2020*. • Work with Aboriginal communities to provide employment, training and business opportunities in biodiversity management. • Partner with Traditional Owners and Aboriginal Victorians to identify seed funding and seek business finance opportunities for Aboriginal enterprises to invest in biodiversity. • Support Traditional Owner corporations to create pathways for greater engagement with and investment from both the philanthropic community and the wider private sector.
16	**Build capacity to increase Aboriginal participation in biodiversity management.**	• Support Aboriginal skills and capability development – for example, provide access to and training in the government's biodiversity information systems and data management • Support Traditional Owner corporations to develop their own information systems that link to government systems.

	Priority	Initiatives to deliver each priority, undertaken by government and (where appropriate) partners, will include:
17	**Deliver excellence in management of all land and waters.**	• Better understand and respond to key threats and opportunities for biodiversity conservation, such as control of weeds and pest animals, fire regimes (both too frequent and too infrequent), disease, the role of apex predators, and climate change. • Develop an enabling environment that allows for the use of novel techniques (such as the active movement of individuals and/or mixing of provenances, to better match future climates) to achieve desired biodiversity outcomes. • Reduce degradation of waterway habitats through practical threat management action, informed by science. • Develop biodiversity standards to guide public land managers in exercising their duty of care. • Develop partnerships and processes to increase the role of Traditional Owners in managing biodiversity across Victoria. • Improve Victoria's ability to prepare for and respond rapidly to biodiversity emergencies (such as population rescue) and to threatening processes, including via the biodiversity response planning approach. • Develop a 'living with wildlife' approach to encourage positive attitudes to wildlife, as part of a broader strategy for management of native wildlife in Victoria. • Publicly report on the benefits and impacts of the Department's and partner agencies' land management activities on biodiversity, including the conservation actions proposed to counter-balance any impacts.
18	**Maintain and enhance a world-class system of protected areas.**	• Review the extent, representativeness and adequacy of the reserve system to identify key gaps and additional complementary measures required to improve the reserve system on public and private land. • Work with partners to increase the extent of private land under voluntary permanent protection, and managed under conservation stewardship arrangements to complement the reserve system. • Identify future reserve system priorities (such as targeted acquisition) through strategic land-use planning.

	Priority	Initiatives to deliver each priority, undertaken by government and (where appropriate) partners, will include:
19	**Adopt a whole-of-government approach to implementing the Plan.**	• Establish governance arrangements to ensure alignment with the goals and principles of the the Plan, and to assist in the application of relevant tools and business applications (e.g. SEEA) in decision making processes, using mechanisms such as Ministerial Statements of Expectation and Memoranda of Understanding. • Develop policy and accounting mechanisms to ensure that biodiversity losses that occur outside the regulatory system are appropriately counter-balanced at a whole-of-state level. • Progressively review the legislative framework for biodiversity to ensure it is consistent with best-practice regulatory principles and gives effect to the goals and targets of the Plan. • Investigate legislative and administrative opportunities and impediments across government, to efficiently and effectively achieve the goals and targets of the Plan. • Increase the use of strategic risk-based regulatory approaches to biodiversity and other environmental approvals. • Develop mechanisms to transparently consider natural capital, biodiversity, climate change and ecosystem services in government decision-making. • Engage environmental portfolio agencies to provide leadership in biodiversity management, in conjunction with key partners such as local governments, Traditional Owners and Landcare.
20	**Establish a transparent evaluation process to report on progress towards delivering the Plan.**	• Establish and implement a collaborative *Monitoring, Evaluation and Reporting Framework* to monitor and report on activities, outputs, outcomes and goals of the Plan. • Host a biodiversity conservation forum every two years to share information and inform future directions. • Regularly evaluate the implementation of the Plan, including an initial report on implementation progress after two years, and five-yearly evaluation reports. • Report on progress towards targets and goals every five years, in conjunction with the Commissioner for Environmental Sustainability.

Notes

1 'Waterway environments' include rivers, streams, wetlands and estuaries. **(page 4)**

2 Throughout this Plan, the term 'biodiversity management' includes sustainable use of natural resources, managed under appropriate legislation. **(page 10)**

3 'Habitat hectares' is a method for assessing native vegetation, in terms of both quality and extent. Quality is assessed by scoring habitat attributes at a site in comparison to a reference point (benchmark) for the relevant vegetation type - this provides a 'habitat score'. The number of habitat hectares of a stand of native vegetation is determined by multiplying the score by the area of vegetation. For example, 10 hectares with a habitat score of 100 per cent is counted as 10 'habitat hectares', whereas 10 hectares of vegetation with a score of 50 per cent would be scored as five 'habitat hectares'. **(page 10)**

4 'Nature' in this context means any green open spaces and water bodies that support living things. These could be in urban or rural areas, in highly modified or constructed landscapes through to pristine wilderness areas, on land, or in waterway and marine environments. **(page 13)**

5 See Appendix 1 for further explanation of overall change. **(page 14)**

6 'NaturePrint' is a suite of decision-support tools designed to help inform conservation planning and action to protect Victoria's biodiversity. It is based on a sophisticated and comprehensive analysis of biodiversity conservation needs that combines our best information about biodiversity values, threatening processes and ecosystem function at the landscape scale. NaturePrint provides a consistent basis to help us make more informed decisions in biodiversity policy and operations. NaturePrint is most developed for terrestrial landscapes, where the majority of decisions and actions occur, and will be progressively expanded to include waterway and marine environments where appropriate. **(page 19)**

7 Fifty years is considered to be an appropriate time scale to make reasonable estimates of substantive changes, and SMP models have been developed on this basis. See Appendix 1 for further explanation. **(page 19)**

8 The Future Economy group comprises environment and business leaders from organisations including Bank Australia, VicSuper, Sustainable Business Australia, Australian Ethical Investment, Whole Kids Organic Foods, Pacific Hydro, Intrepid Travel, Third Ecology and Environment Victoria. **(page 29)**

9 Hatfield-Dodds *et al.* (2015) Australia is 'free to choose' economic growth and falling environmental pressures. *Nature* 527, 49–53. **(page 29)**

10 The Natural Capital Protocol is a framework to help businesses incorporate natural capital into their decision making by identifying, measuring and valuing their impacts and dependencies on natural capital. The protocol is the key product of the Natural Capital Coalition, a group of organisations (businesses, universities, research institutes, NGOs, etc.) that aims to raise awareness of, and harmonise and standardise, business approaches to natural capital. **(page 30)**

11 'Ark' projects (e.g. Southern Ark) are landscape-scale, multi-partner projects to reduce fox numbers across large areas of the state, to benefit wide ranges of native mammals, birds and reptiles. 'Eden' projects are similar, but focus on the detection and removal of high risk weeds that threaten biodiversity values. **(page 39)**

12 Land Conservation Council and Environment Conservation Council. **(page 48)**

Image Credits

Page	Description	Photographer/Credit
Cover	Couple at Reed Lookout	Rob Blackburn / Tourism Victoria
1	New Holland Honeyeater *(Phylidonyris novaehollandiae)* – Royal Botanic Gardens, Cranbourne	Salahuddin Ahmad
3	Mosses and lichens – Lake Gorrie	Melissa Doherty
3 (triangle)	Eucalyptus blossoms – Royal Botanic Gardens, Cranbourne	Salahuddin Ahmad
5	Spot-tailed Quoll *(Dasyurus maculatus)*	Andrew Murray
7	Spear-grass and Grey Box – Avoca Plains	Vanessa Craigie
8	Spotted Pardalote *(Pardalotus punctatus)*	James Mustafa
9	Coastal view of Aireys Inlet	Salahuddin Ahmad
9 (triangle)	Golden Wattle *(Acacia pycnantha)* – Royal Botanic Gardens, Cranbourne	Salahuddin Ahmad
10	Melbourne	Parks Victoria
11	Sun setting at the grassfire in Donnybrook area	Keith Pakenham – CFA Communities & Communication
12	Couple watching Gelantipy at sunset – Gippsland	Gary Moore / Tourism Victoria
12 (triangle)	Rainbow Lorikeet *(Trichoglossus haematodus)*	David Paul / Museum Victoria
14	Murray Explored Bioscan team, Spur Island, Gunbower National Park	Mark Norman / Parks Victoria
15	Landcare volunteers in Lara	John Robinson
16	Mountain Pygmy Possum *(Burramys parvus)*	DELWP
17	Guthega Skink *(Liopholis guthega)*	Zak Atkins
18	Eastern Barred Bandicoot *(Perameles gunnii)*	Melissa Doherty
19	Dolphins in Port Phillip Bay	Tourism Victoria
21	Releasing fish	DELWP
22 (triangle)	Leadbeater's Possum *(Gymnobelideus leadbeateri)*	Zoos Victoria
22	Bunurong Marine National Park Bioscan, Three Shack Bay, Cape Paterson	Museum Victoria
23	Canoeing in Lake Carpul	Kathryn Parker
23 (triangle)	Peron's Tree Frog *(Litoria peronei)*, Gippsland Lakes	Museum Victoria
25	Students in an urban park	Parks Victoria
26	Junior Ranger at Yarra Bend Park	Parks Victoria
27	Friends of Fabbro Fields	Shae Allen
28	Hay roll – Werribee River	Salahuddin Ahmad
28 (triangle)	Southern Blue Devil *(Paraplesiops meleagris)*	Bill Boyle
30	Patrick Honan and jersey cows, Cohuna, Gannawarra Shire	Parks Victoria
32	Green roof	Broderick Street
33	Penguin Parade at Phillip Island	Matt Jackson
34	Dockers Plains	Doug Robinson / Trust for Nature
34 (triangle)	Imperial Blue Butterfly *(Jalmenus evagoras)*, Mitchell River National Park	Museum Victora
36	Gippsland Lakes area	Parks Victoria
37	Revegetation site	DELWP
38	Dockers Plains Pastoral Company Covenant	Trust for Nature
38 (triangle)	Weedy Sea Dragon *(Phyllopteryx taeniolatus)* - Flinders, Mornington Peninsula	Stephen Colquitt
41	Emu *(Dromaius novaehollandiae)*	Kah-May Foong
42	Aboriginal women, Murray-Gannawarra	Parks Victoria
42 (triangle)	Basalt Sun-orchid *(Thelymitra gregaria)*	Vanessa Craigie
43	Kangaroos	Parks Victoria
44	Esther Kirby, Black Swamp	Kathryn Parker
45	Bushfire	CFA photo library
46	River Red Gum, Cohuna	Museum Victoria
46 (triangle)	Globefish *(Diodon nicthemerus)*, Portsea Pier	Museum Victoria
49	People on the Great Ocean Walk	Parks Victoria
50	Errinundra National Park	Stephen Colquitt
50 (triangle)	Gippsland Water Dragon *(Intellagama lesueurii howitti)*, Mitchell River National Park	Museum Victoria
53	Native grasslands – Wickliffe-Willaura Road, Victorian Volcanic Plains	Vanessa Craigie
57	Buchan Caves Reserve	Parks Victoria
59	Scarlet Robin *(Petroica boodang)*, Native Dog Flat, Alpine National Park Victoria	Heath Warwick / Museum Victoria
63	Chinaman's Hut in Port Phillip Bay	Anna Cuttriss

delwp.vic.gov.au