
SAYERS ADVISORY

New Central Parks West Economic Assessment

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sayers

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About Sayers

Founded in 2020 and backed by Australian and US private capital, Sayers is a specialist advisory and investment business, created with the purpose of being the catalyst for system change through investing in people and technology to accelerate progress for all.

Sayers has engaged a team with deep experience in the delivery of high-quality advisory work to meet the needs of clients through specialist advisory services in strategy and deals, infrastructure, government, financing and technology. We have established with a core philosophy of providing a team with critical capability and hands-on experience, to leverage expertise and technology, not people.

Relationships are our number one priority. And as part of establishing strong relationships, we adopt an open and frank approach to communication with our clients and stakeholders. Each team member is accountable to you, ensuring we achieve your objectives and exceed your expectations.

Our team brings extensive experience assisting clients develop and deliver on their strategy, providing practical and meaningful outcomes.

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Executive Summary

Background

In March 2017 the Victorian government requested the Victorian Environment Assessment Council (VEAC) to carry out an investigation¹ into public land in the central west of Victoria, including the Wombat, Wellsford, Mount Cole and Pyrenees Range forests. The purpose of the Central West Investigation was to:

- identify and evaluate the condition, natural and biodiversity values, and cultural, social and economic values and the current uses of public land
- make recommendations for the balanced use and appropriate management arrangements to conserve and enhance the natural and cultural values.

The final VEAC Investigation recommendations propose an increase in protected areas (national park, conservation park, nature reserve, bushland reserve, heritage river) as well as additional regional parks.

The recommendations also provide a framework to:

- strengthen recognition of the role, cultural values and aspirations of Traditional Owners in public land use and management
- cater for increasing recreational use in a way that minimises conflicts between uses and protects the natural values on which they depend
- protect key areas for threatened species conservation
- improve landscape connectivity, the protection of key headwaters, and buffer the effects of climate change.

The New Central Parks West Economic Assessment (this assessment) outlines estimates of potential costs and benefits from the adoption and implementation of the VEAC recommendations regarding 'New Central Parks West'. The three options assessed implement to varying degrees the Final VEAC recommendations.

Options Assessed

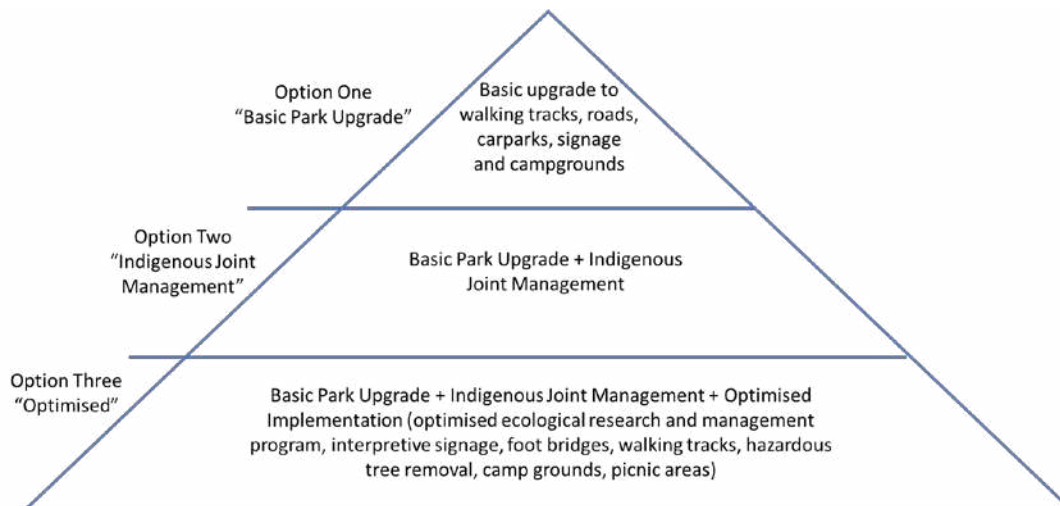
Three implementation options were assessed as outlined below:

- **Option One Basic Park Upgrade:** to establish the new national parks and conservation areas, Option One incorporates the basic upgrade to walking tracks, access roads, carparks, signage and campgrounds, basic staffing government support for forest industry transition. Option One does not include Indigenous Joint Management or Park Optimisation.
- **Option Two Indigenous Joint Management:** incorporates the Basic Park Upgrade with an Indigenous Joint Management which involves the implementation of a Joint Management Board, a Joint Management Plan and additional indigenous Park Rangers. Option Two does not include Park Optimisation.
- **Option Three Optimised Implementation:** developed to optimise the final VEAC Recommendations and includes Option One (above) + Indigenous Joint Management + Park Optimisation (ecological research and management program, additional biodiversity staff,

¹ VEAC (2019), 'Central West Investigation Final Report', June.

enhanced interpretive signage, foot bridges at key locations, walking track upgrades, track clearing, mid-level camp ground upgrades and picnic areas)

Figure One: Options considered within the New Central Parks West Economic Assessment



Approach

This assessment identifies the current use of the area (Current State) and compares that to the impacts resulting from changes (e.g., land use) under each option. The analysis uses the following process:

- identify impacts from the changed land use under the VEAC recommendations
- collect data on costs and benefits for each option on an annual basis over thirty (30) years
- monetise impacts using market-based valuation or equivalency to net benefits
 - Benefits: market-based and survey/willingness-to-pay estimates
 - Costs: financial and willingness-to-pay based
- develop costs for each option to account for increased staffing, joint management, and infrastructure upgrades taking into account population growth figures to reflect real growth as published by the Victorian Treasury
- discount future cost and benefit streams (30 years) to present day values using a discount rate of seven per cent
- conduct sensitivity testing.

As part of this analysis, the benefits of stored forest carbon in new protected areas were also calculated, based on Victorian government data. If the analysis incorporated a carbon price of \$12/tonne (\$456 million) or \$16/tonne (\$ 608 million) it would have a significant beneficial effect on Benefit Cost ratios and project viability. The results demonstrate the potential for forest carbon, but have not been included in the final cost benefit analysis used in this study.

There is also no allowance made for the increase (or decrease) in park visitation relating to changed behaviour associated with COVID 19 use patterns.

A site visit and full survey has not been undertaken as part of this study. Locational and GIS data provided by VNPA has been relied on as provided to be accurate.

Results

The results of the New Central Parks West Economic Assessment are summarised in Table 1 below.

Table 1: Results of the New Central Parks West Economic Assessment

	Option 1 Basic Upgrade	Option 2 Indigenous Joint Management	Option 3 Optimised
Initial Capital Cost	\$8.1M (Real FY20)	\$9.4M (Real FY20)	\$16.8m (Real FY20)
Ongoing Funding Requirement (Operating Costs) <u>Per Annum</u>	\$1.6M pa (Real FY20)	\$3.5M pa (Real FY20)	\$5.1M pa (Real FY20)
Ongoing Funding Requirement (Operating Costs) <u>Present Value</u> over 30 years at 7% discount rate	\$21.6M	\$46.9M	\$68.7M
Benefit Cost Ratio (BCR)	4.8:1	3.2:1	2.3:1

Option One = Basic Park Upgrade

Option Two = Basic Park Upgrade + Joint Management

Option Three = Basic Park Upgrade + Joint Management + Optimised Implementation

The results are indicative of project viability, bearing in mind the limitations in data collection, including the fineness and contemporariness of data used within the economic assessment.

- Option 1 Basic Upgrade: The Benefit cost ratio (BCR) of 4.8:1 above shows that for every \$1 invested there is a potential return of \$4.80 at the societal level.
- Option 2 Basic Upgrade + Indigenous Joint Management: The Benefit cost ratio (BCR) of 3.2:1 shows that for every \$1 invested there is a potential return of \$3.20 at the societal level
- Option 3 Optimised: The Benefit cost ratio (BCR) of 2.3:1 shows that for every \$1 invested there is a potential return of \$2.30 at the societal level.

Preferred Option

Whilst highest in terms of cost, Option Three Optimised is the preferred option as it incorporates the greatest number of final VEAC recommendations including indigenous joint management and ecological management of the areas proposed as new parks and reserves. While the cost benefit ratio in Option Three Optimised is lower than other options, the benefit of \$2.30 to every \$1 of cost highlights that creation of the parks, even with a higher investment, is still of economic benefit to society.



The Optimised Implementation Option combines the following:

- Upgrades of the three main walking tracks the Lerderderg Track (89 kilometres) in Wombat Forest, Beeripmo Track (20.6 kilometres) at Mt Cole and the Endurance Trail (23.5 kilometres) at the Pyrenees, more than 133 additional kilometres in total. Includes design, construction and installation of small number foot bridges at key locations
- Upgrading of nine existing camp grounds and five new camp grounds across the investigation areas including a mid- level upgrade of four of these sites
- Production and installation of signage at key park entrances and more design construction and installation of detailed interpretation signs at select areas
- Picnic area upgrades at existing sites plus new six new sites (some in conjunction with camp grounds or upgrade of existing informal picnic areas)
- Funding for on-going governance and management structure such Land Management Boards
- Planning and Assessments - Boundary surveys, cultural heritage assessment and park planning with in-house support from Park Victoria all need to be done as park of park establishment, plus development of indigenous joint management plan
- Regional development and marketing and interpretation signage around cultural and ecological values
- Resources for management of cultural as well as ecological values and sites
- New staff/ Rangers including a team of 15 staff including a base team of 11 made up of team leaders, Rangers, community engagement staff and an additional program manager to manage community fire wood collection in regional parks, plus three additional Indigenous Rangers (though assume some of base team should be indigenous) and an additional biodiversity program coordinator.
- Upgrades to existing depots and an additional depot and boundary fencing as required between parks and private land
- Significant additional biodiversity program coordinator and enhanced best animal control and specific threatened species recovery program for five key species, including relevant ecological research
- Industry transitional and adjustment package based on Victorian Government Forestry Plan

Recommendations

It is recommended that:

- the Victorian Government move to fully accept and implement the VEAC recommendations for new national parks and conservation areas in the central west.
- as part of implementation of VEAC recommendations the Victorian Government provide sufficient funding to deliver Option 3 Optimised Implementation.
- should the Victorian Government choose to fund Option 1 Basic Upgrade, Indigenous Joint Management options, as outlined in Option Two, should be further developed with the commencement of detailed consultation with relevant traditional owner groups.
- if needed, timelines for the Victoria Forestry Plan, to phase out native forest logging by 2030, should be brought forward in the central west and forest industry adjustment and transition packages be commenced as soon as possible.
- firewood harvesting for domestic and private use be considered in more detail including options for heating, gas connection, renewable (e.g., solar) and small-scale plantation firewood policy to generate environmentally sound outcomes, while domestic fire wood is phased out over the next decade.
- the collection and publication of park and state forest usage data is improved to include detail visitation and public use information ideally at park or forest level via regular surveys
- standard Victorian based conservation benefit estimates are developed using place-based choice modelling and an assessment of economic contribution ecosystem services be undertaken for the proposed new parks in the investigation area.

Background

Literature Review and Data Collection

A number of key background documents have been considered for the purposes of this economic assessment. These include the VEAC Final Recommendations, and recent social economic analysis as outlined below:

- Assessing the Value of Coastal Resources in Victoria, Economics, 2013
- Central West Report, Victorian Environmental Assessment Council, 2019
- Conceptualising the Value of Protected Areas, Tourism and Transport Forum, 2013
- Economic Analysis of the Value of Public Land in Victoria, Marsden Jacobs, 2004
- Economic Benefits of National Parks and Other Reserves in NSW, Dept of Environment, Climate Change and Water NSW, 2009
- Economic Contribution of Victoria's Parks, Price Waterhouse Coopers, 2003
- Economic Cultural and Social Value of Parks, Victorian National Parks Association, 2013
- Economic impact of diminishing natural capital in Victoria, Nous Group, 2014
- Economic Significance of Grampians National Park, Read and Sturgess Associates, 1994
- Economic Value of Vic Parks, Price Waterhouse Coopers, 2005
- Estimating the Value of National Parks to the Queensland Economy, University of Queensland, 2020
- Great Forest National Park: economic contribution of park establishment, park management and visitor expenditure, Nous Group, 2017
- Non-use Values of Victorian Public Land, URS, 2007
- Reconomics, The Economic Impact of Outdoor Recreation, Liverpool John Moores University, 2014
- The Value of Parks, Parks Forum Australia and New Zealand, 2008
- Threatened Species Recovery in Australia Evaluation, Martin F. J. et al, 2010
- Social and Economic Analysis of Final Recommendations for the Central West Investigation Area, Gillespie Economics, 2019
- Valuing Victoria's Parks, Parks Victoria, 2015
- Valuing Victoria's Parks – Accounting for ecosystems and valuing their benefits, Parks Victoria, 2016
- Victorian Visitor Economy Strategy, Victorian Government Department of Economic Development, 2016
- Victorian National Parks Camping and Accommodation Fees Regulatory Impact Statement, State Government Victoria, 2013
- Victoria's Nature Based Outdoor Economy, Marsden Jacobs, 2016.

Additionally, data has been furnished by the Victorian National Parks Association (VNPA), derived from government and industry sources including various analysis using spatial data, for incorporation into economic assessment modelling.

The studies listed above apply a range of different assumptions and methodologies. Consistently these studies identified positive economic value through park visitation and usage. Additionally, a range of studies identified positive existence value (satisfaction that the community derives from knowing that certain things exist) and ecological values (maintaining the ecosystem).

Gillespie Findings

The most specific and recently completed socio-economic report was 'Social and Economic Analysis of Final Recommendations for the Central West Investigation Area'.² This work identified impacts from land use change and contains estimates of number of visits for recreation purposes. The existing recreational use visitor number estimates have been carried into this document, as the basis for the forecast estimate. When compelling alternative evidence on which a base alternative methodology could be formed, the estimates used were amended in this report. There is also no allowance made for an increase or decrease relating to changed behaviour resulting from COVID 19 use patterns.

The report applied a cost benefit approach to provide a quantitative analysis based on a range of assumptions about visitation levels and changed land uses, as well as benefit transfer of potential conservation values. The results indicate that there may be substantial net benefits from the VEAC recommendations.

Ecosystem Services

Ecosystem Services are the benefits provided by nature to society. They include Provisioning Services such as clean water, Regulating Services such as water purification and climate regulation; and Cultural Services such as amenity and recreation.

The Victorian Government as part of its **Protecting Victoria's Environment – Biodiversity 2037 strategy** aims to “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.”³

Parks Victoria's Valuing Victoria's Parks study assessed a wide range of benefits that parks provide. Some examples for the study show the value of these services the study estimated that the whole Victorian National Park and Conservation estate, generated for example:

- **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).
- **Pollination & honey:** Approximately \$0.6-1 million to honey producers every year and further benefits of \$123-167 million to consumers and producers across 30 crops from pollination services.⁴

In the investigation area, water authority Coliban Water used the Investment Framework for Environmental Resources (INFFER) to assess the social, environmental and economic value of the Upper Coliban River (which is found in the proposed Lerderderg-Wombat national Park). The report identified a positive cost to

² Dumsday R. and Gillespie R. (2019), 'Social and Economic Analysis of Final Recommendations for the Central West Investigation Area', June. <http://www.veac.vic.gov.au/documents/Economic%20Assessment%20Final%20for%20web.pdf>

³ Page 30 <https://www.environment.vic.gov.au/biodiversity/biodiversity-plan>

⁴ <https://www.parks.vic.gov.au/about-us/valuing-victorias-parks#:~:text=Valuing%20Victoria's%20Parks%20is%20based,jobs%20to%20the%20State's%20economy>

benefit ratio from investing in source water protection works within the catchment area and estimated that source water catchment protection will generate \$1.67 worth of benefits for every dollar spent, with additional and potentially significant benefits in investing in long-term source water catchment protection.⁵

Ecosystem services provide an important contribution to society, and new parks in the central west of Victoria would contribute to this, however Ecosystem services are not the focus of this study which estimates the economic costs and benefits of creating new national parks in the central west of Victoria, however a detailed assessment of ecosystem services, could be conducted for the investigation area to properly quantify these benefits.

As part of this analysis, the benefits of stored forest carbon in new protected areas were also calculated, based on Victorian government data. If the analysis incorporated a carbon price of \$12/tonne (\$456 million) or \$16/tonne (\$ 608 million) it would have a significant beneficial effect on Benefit Cost ratios and project viability. The results demonstrate the potential for forest carbon, but have not been included in the final cost benefit analysis used in this study (see section Additional benefits – Forest Carbon Sequestration).

⁵ Coliban Water Submission to VEAC First Investigation Period, 18/08/2017
<http://www.veac.vic.gov.au/investigation/central-west-investigation/submissions>

Approach

This report estimates the economic costs and benefits of the latest round of VEAC recommendations regarding the 'New Central West Parks' proposal for consideration by Government. Investigation has also led to more refined description and estimate of recommendation impacts, for example regarding potential employment impacts in the timber harvesting and allied industries. Where current use data was not available, previously used valuations have been updated using current consumer price indexation in order to calculate net present value of the recommendations.

Incremental uses are considered and incorporated in modelling, including macro-economic population growth projections from Treasury forward estimate periods. Estimate benefits are calculated and compared against estimated costs, then discounted to present day values to allow comparison of cost and benefit streams⁶.

In line with VEAC reporting and previously conducted work, the economic assessment has been broken down into three blocks for consideration:

- Mount Cole – Pyrenees
- Wellsford
- Wombat – Macedon.

Reporting is presented for each of these blocks for detailed examination of proposal sub-components, and also at a tabulated level to allow for assessment of the entire proposal.

Economic concepts

Economic concepts essential to this assessment include the theory and practical application of choice modelling, benefit transfer, contingent valuation of non-market goods, as well as financial concepts including the time value of money and the discounting of net cost-benefit streams into present day values. Such concepts, whilst essential to the mechanics of deriving present day values and expected values, are also crucial to consideration of benefits outside of those captured by the market, the application of which is discussed later in terms of potential societal-level benefits.

Regarding the accrual of benefits from the preservation of native vegetation, the work of Rolfe et. al. (2013) has been incorporated and is discussed further under the 'benefits' section. Such application reflects the provision of current practice, choice-modelled and contingently valued benefit stream, including benefit transfer from peer-reviewed research work.

A broad listing of potential economic costs and benefits regarding the New Central Parks West proposal are presented below:

⁶ Noting the consistency of this approach with key guidance material, for example 'Economic Evaluation for Business Cases Technical guidelines August 2013'.

Table 2: Potential Economic costs and benefits⁷ – New Central Parks West

ECONOMIC COSTS	ECONOMIC BENEFITS
Reduced commercial timber harvest	Increased conservation of native vegetation
Reduced domestic firewood collection	Retention of carbon captured within forest
Reduced livestock grazing operations	Increased conservation of fauna species
Restrictions on existing recreational land use, including exclusion	Enhanced Aboriginal heritage and cultural value
Reduced revenues to Government	Enhanced water quality and hydraulic regulation
Increased costs of operation – forest management	Reduced overheads from timber management

Input – output modelling

Input-output models are commonly used in determining multiplier effects or the flow-on effects (first round, second round and so on) to the economy should a project be implemented. However, input-output multipliers have limitations given necessary assumptions on, for example, the full flexibility of labour resources. Erroneous double and triple counting can result. Additionally, it is challenging to generate effects at a sufficiently fine scale to be meaningful. Given such limitations, input-output modelling has *not* been used within this economic assessment. This is consistent with current Victorian Treasury direction and advice such as the Economic Evaluation for Business Cases Technical guidelines, August 2013.⁸

Evaluation period

In line with estimated infrastructure life and generational change, an evaluation period of thirty years has been applied in the economic assessment.

Discounting

The technical discounting procedure used within investment analysis to determine estimated projected future cost and benefits streams to generate present day values – has been applied within the economic assessment. A discount rate of seven (7) per cent has been used, allowing for the concept of the time value of money, allows for the calculation of the net present value. The discount rate of seven per cent is taken from Department of Treasury and Finance (DTF) recommended discount rates⁹. It must be noted that the current cash rate is lower than seven per cent.

⁷ Noting that estimates of all benefits is subject to data limitations, including bio-physical relationships.

⁸ For example, that contained in 'Economic Evaluation for Business Cases Technical guidelines August 2013'.

⁹ As contained in 'Economic Evaluation for Business Cases Technical guidelines, <https://www.dtf.vic.gov.au/investment-lifecycle-and-high-value-high-risk-guidelines/stage-1-business-case>, accessed 19.01.2021.

Data

Contemporary actual use data has been limited due to asset management practices, and the lack of market for regulating and recording transactions. However, data has been sourced from the latest public information available, complimented with government data including recently conducted investigations. This additional investigation has better informed key elements of the analysis, for example the statistics on areas available for timber harvesting operations¹⁰.

Population

Victoria's population is forecast to grow by 0.2 per cent in 2020-21 due to restrictions on interstate and international movements. But with increased usage from population growth and recent survey and anecdotal evidence suggesting high community support for park establishment and usage¹¹.

COVID19 first started to affect Australia in late January 2020. Victoria suffered 20,433 cases and 820 deaths with the peak of the impact during August 2020.¹² With lockdown restrictions in place, Victorians were limited to holidaying at home and were provided cash incentives to do so.¹³ As a result, Parks Victoria had to close several parks due to the increase in visitor volume and the inability of people to adhere to social distancing laws.¹⁴

With Victoria's population growth driven largely by inflows of international and interstate migrants, it can reasonably be expected that park demand will similarly increase over time. Within the context of the lifting of restrictions imposed by novel corona virus 19, it can be expected that park demand and usage will lift in the future, as international borders re-open and domestic tourism grows and/or interstate flows normalise. Population growth figures have been taken from Victorian Budget Paper No.4¹⁵, over the forward estimates period. Table 3 shows the population projections used in the economic assessment, with the last year of estimate projected forward and applied over the remaining evaluation period.

Table 3: Population assumptions – forecast (forecast % growth rate)

	2019 – 20	2020 – 21	2021 – 22	2022 – 23	2023 – 24
Population	1.60	0.20	0.40	1.10	1.70

¹⁰ For example, in more completely and more accurately describing impacted jobs in the timber industry, for example.

¹¹ For example, Lonegan, VNPA Polling 2020, October, <https://vnpa.org.au/wp-content/uploads/2020/10/2259-VNPA-Polling-PRF-FULL-Report-091020.pdf>, accessed 09.12.2020.

¹² Australian Government, Department of Health, <https://www.health.gov.au/news/health-alerts/novel-coronavirus-2019-ncov-health-alert/coronavirus-covid-19-current-situation-and-case-numbers>

¹³ The Age, <https://www.theage.com.au/national/victoria/victorians-offered-200-vouchers-to-holiday-at-home-over-summer-20201210-p56m6t.html>

¹⁴ The Age, <https://www.theage.com.au/national/victoria/state-authorities-close-parks-over-distancing-fears-20200530-p54xyy.html>

¹⁵ Victorian Treasury (2020), Victorian Budget 2020/21 Statement of Finances (incorporating Quarterly Financial Report No. 1) Budget Paper No. 4, accessed 30.11.2020.

In addition to population growth, proximity of national parks and conservation areas to major population centres is a factor which impacts visitation levels. Parks located close to urban areas are subject to greater use and visitation than areas further away.¹⁶

Melbourne has a lack of large national parks in close proximity to the metropolitan area. Sydney has a number of large parks right on its doorstep, such as Wollemi and the Blue Mountains national parks. By contrast, Melbourne only has small, relatively fragmented places to visit within a short drive. Parks surrounding Sydney (within 100 km) total 1,094,207 hectares, whereas parks surrounding Melbourne total 168,891 hectares or approximately 15 per cent of the Sydney total.¹⁷

Recent polling shows that distance is a factor for half of Melbournians, with 51% saying having parks less than 90 minutes' drive such Wombat forest would make them visit national parks more often.¹⁸

VEAC noted it is final report that "...nature conservation, recreation – and associated tourism – is now the major use of public land in the Central West Investigation area and recreational use is expected to continue to increase, particularly in the light of population growth in Melbourne and regional cities and towns".¹⁹

There is significant evidence that designation of areas as national parks with associated investment in planning and visitor infrastructure lead to increased visitation. This supports regional economic benefit but it also presents a challenge for park managers to appropriately manage the impact of visitation. For example, the Grampians were declared a National Park in 1985. Visitor numbers prior to declaration (data collected over two years) averaged 1.12 million visitor days. Visitor numbers following the park declaration (data collected over eleven years) averaged 1.50 million. That is, the increase in visitors following Park designation was approximately 30 per cent. Murray-Sunset National Park was declared in 1991. Visitor numbers post designation averaged 2.3 times those pre designation (27,200 average compared with 12,000). Statistical analysis revealed that visitation following declaration as a park increased by 32 per cent for the Grampians and 62 per cent for the Murray-Sunset National Park.²⁰

Recent polling at the end of Victoria's second lock down showed that more than half of Melburnians say COVID-19 restrictions have made them value access to natural areas (56 per cent), and national parks (52 per cent), across Victoria more. Nearly half (46 per cent), of those in Melbourne say the COVID-19 restrictions made them visit bushland and parks in their local area. Four in five (81 per cent) Melburnians

¹⁶ Norman, P & Pickering, C (2019). Factors influencing park popularity for mountain bikers, walkers and runners as indicated by social media route data, Journal of Environmental Management

Volume 249, 1 November 2019, 109413 <https://www.sciencedirect.com/science/article/pii/S0301479719311314>

¹⁷ https://www.greatforestnationalpark.com.au/uploads/1/5/5/7/15574924/sydney_melbourne_parks_around_the_cities_-_comparison.pdf

¹⁸ https://vnpa.org.au/publications/covid_parks_polling/ and <https://www.smh.com.au/environment/conservation/nature-starved-melburnians-yeare-for-green-spaces-20201017-p565za.html>

¹⁹ VEAC Central West Investigation Final Report 2019

[http://www.veac.vic.gov.au/documents/VEAC%20Central%20West%20report\(LR\).pdf](http://www.veac.vic.gov.au/documents/VEAC%20Central%20West%20report(LR).pdf) page 5

²⁰ Gillespie Economics, DCA Economics and Environmental & Resource Economics, River Red Gum Forests Investigation – Socio-Economic Assessment Final Report May 2008 http://www.veac.vic.gov.au/documents/352-VEAC_RRGF_FR_appendices-all.pdf

support the proposals to expand national parks in Victoria around Daylesford, Woodend, Bendigo and Ballarat.²¹

Global analysis of trends show increase in usage of public open space post COVID. This data shows how the number of visitors to parks and outdoor spaces has changed relative to the period before the pandemic with over 10 per cent increase in Australia at some points in early January 2021. This includes places like local parks, national parks, public beaches, marinas, dog parks, plazas, public gardens.²² A range Australian and global academics have flagged the trend in urban parks and the importance of nature in a post COVID world for both mental health but also increasing recreational demand.²³

Visitation increases around the creation of new national parks can be significant, especially in close proximity to large metropolitan population, such should be the case with Central Parks West. Visitation in this report has been based on visitation to parks adjacent to the proposed Central Parks West and does not take into account the assumed visitation increases from creating a new national park.

Valuing provision of societal (non-market) forest services

Whilst it is relatively straight-forward to use market valuations to arrive at economic values, due to there not being a market for the provision of non-commercial forest services, there is the need for a surrogate to be used in order to value those benefits. Contingent valuation is the term used where there not a market-based adjustment mechanism for goods, with forestry being a prime example. This relies upon testing through surveyed research to derive a willingness-to-pay (WTP) for the good or service, in this case preservation of native vegetation.

Rolfe et. al. (2013) is relied upon to provide information in this regard. Choice modelling has been used to evaluate WTP for the retention of native vegetation. Given that the survey work reported on was conducted outside of the study area for this economic assessment, the benefit has been transferred to represent the societal value on the ecological benefit of retaining the forest and not harvesting timber.

Choice modelling is a technique applied in both the private and public sector for the quantitative assessment of environmental costs and benefits. In the absence of direct valuation through commercial markets, choice modelling derives costs and benefits using contingent valuation techniques. Bennett (1999), for example outlines the basic approach of using stated preference survey techniques to arrive at contingent valuation by having survey respondents choose between environmental outcomes and state their willingness to pay to achieve those outcomes.

²¹ https://vnpa.org.au/publications/covid_parks_polling/ and <https://www.smh.com.au/environment/conservation/nature-starved-melburnians-yearn-for-green-spaces-20201017-p565za.html>

²² <https://ourworldindata.org/grapher/change-visitors-parks-covid?tab=table&stackMode=absolute&time=earliest..2020-10-04®ion=World>

²³ <https://theconversation.com/a-radical-nature-based-agenda-would-help-society-overcome-the-psychological-effects-of-coronavirus-147324> and <https://theconversation.com/our-cities-are-full-of-parks-so-why-are-we-looking-to-golf-courses-for-more-open-space-147559> and <https://kinder.rice.edu/urbanedge/2020/04/10/covid-19-era-renewed-appreciation-our-parks-and-open-spaces>



For the purposes of modelling, a figure of \$4,012/Ha has been used, and should be viewed within the context of availability of alternate information²⁴. Applying this figure across the conservation area results in an economic benefit estimated at \$203M for this benefit.

²⁴ For example, ideally more exacting matches would be an output of more tailored modelling work, for example in terms of areas modelled using choice modelling approaches. Nevertheless, choice modelling with benefit transfer remains an accepted approach to economic assessment. Additionally, contingent valuation of non-market goods is widely practiced.

Current Use

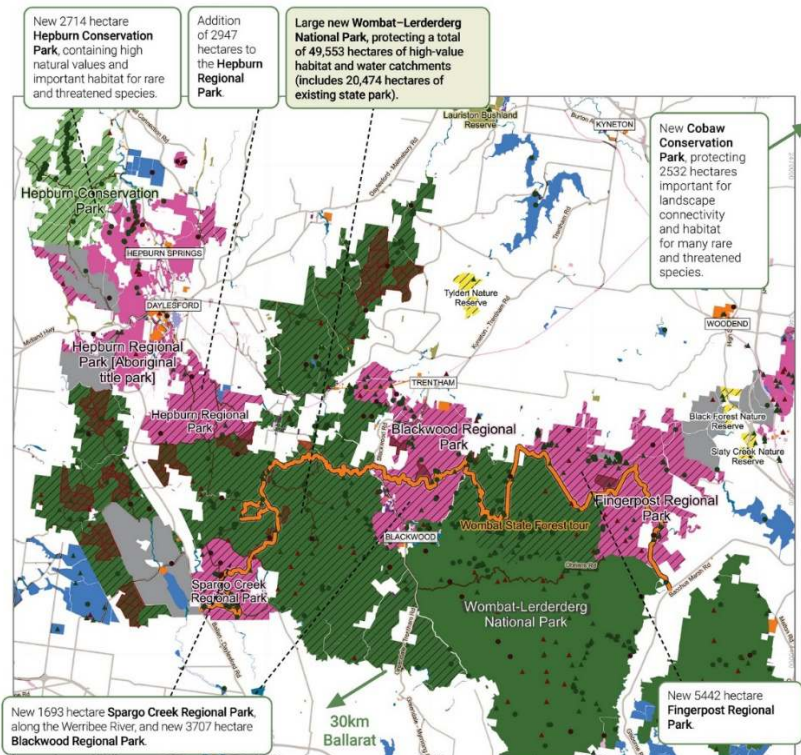
The VEAC Central West Investigation area is 403,815 hectares in total of which 161,215 hectares or 40 per cent is public land. The investigation area is made up of three public land separate blocks.

- The **Mount Cole–Pyrenees** block (165,790 hectares) covers two large tracts of public land on the Pyrenees Range near Avoca and the Mount Cole Range near Beaufort, as well as smaller patches of state forest nearby. Around 33 per cent of this block or 54,760 hectares is public land made up of state forest and state park.
- The **Wellsford** block east of Bendigo contains 7,340 hectares of public land, almost all of which is the Wellsford State Forest.
- The **Wombat–Macedon** block (228,770 hectares) contains the large tract of public land extending from west of Hepburn Springs to Mount Macedon and Long Forest near Melton, and also includes several smaller forest patches. Some 43 per cent (99,110 hectares) of this block is public land and includes Wombat State forest and the existing Lerderderg state parks and Hepburn Regional Park.

The maps below outline the areas to be included in the proposed national park.

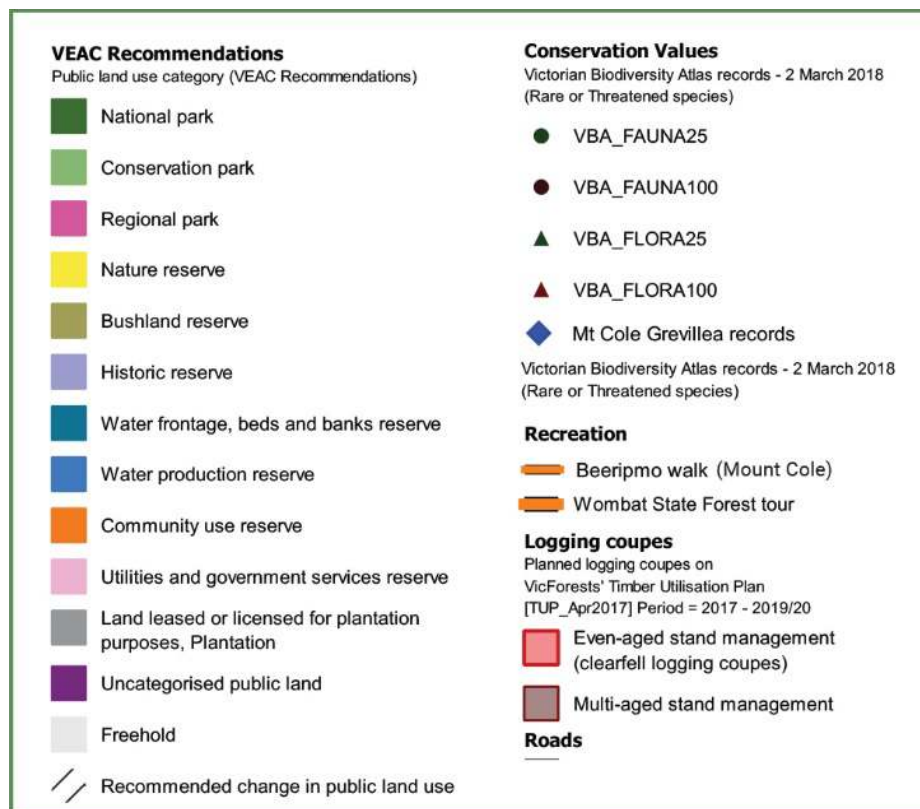
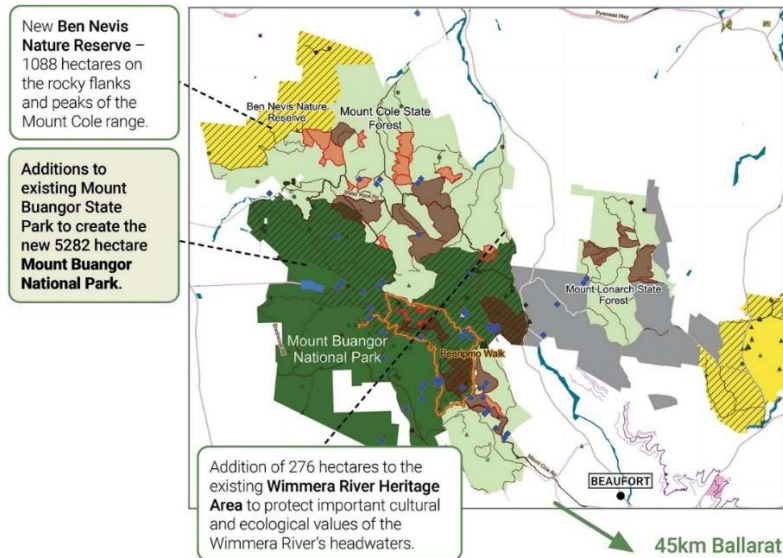
Map 1: VEAC Land Use proposal – Wombat - Macedon

WOMBAT FOREST



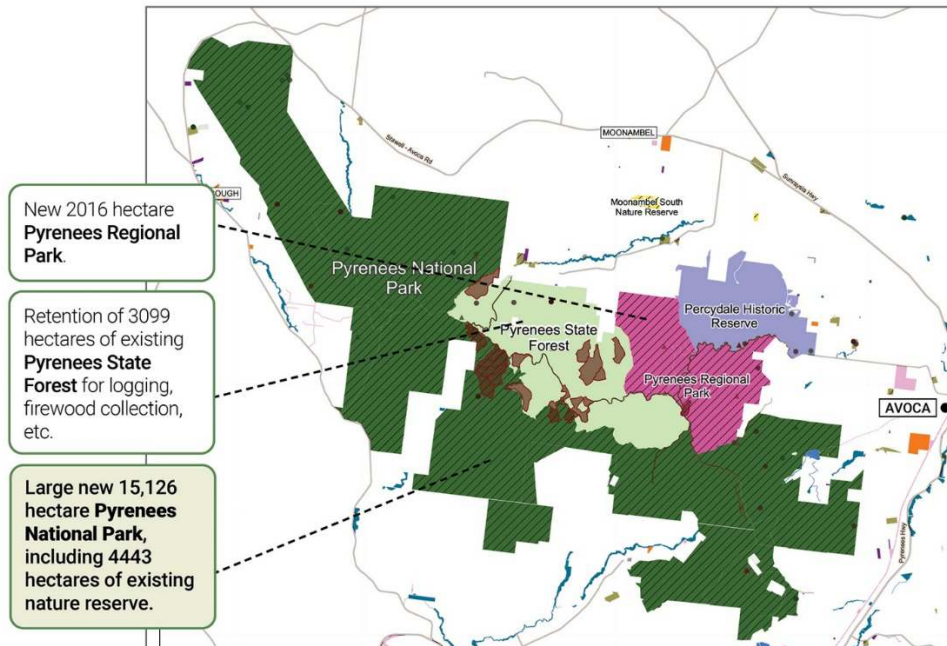
Map 2: VEAC Land Use proposal – Mount Cole

MOUNT COLE FOREST



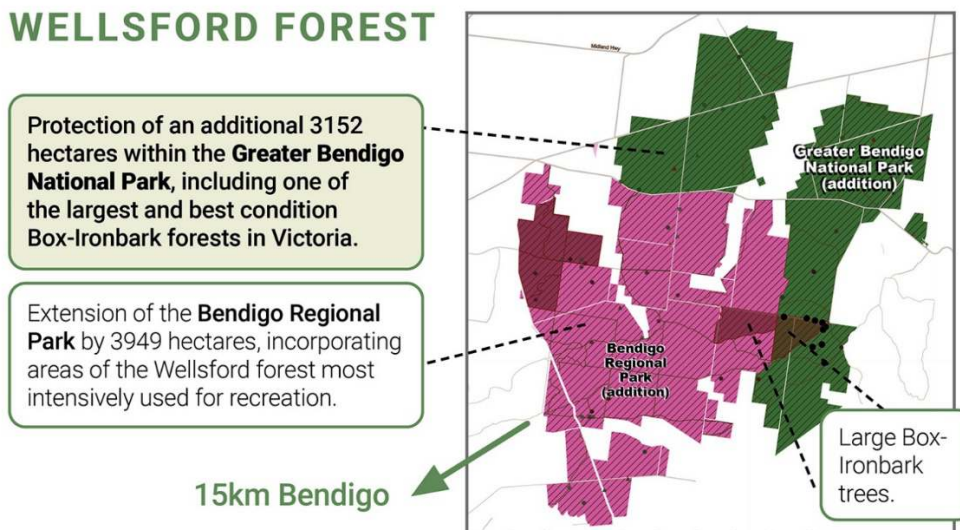
Map 3: VEAC Land Use proposal – Pyrenees Forest

PYRENEES FOREST



Map 4: VEAC Land Use proposal – Wellsford Forests

WELLSFORD FOREST



Current uses for the areas recommended for changes by the VEAC Investigation include the following activities to varying degrees, depending on the tenure change proposed²⁵:

- commercial timber harvesting
- commercial firewood collection
- domestic firewood collection
- livestock grazing
- mining and exploration
- dog walking
- dogsledding
- horse riding
- prospecting
- hunting.

Table 4 below outlines the allowed activities on different categories of public land.

Table 4: Allowed activities on different categories of public land

Activity	National park (incl current state park)	Conservation park	Regional park	Nature reserve	Bushland reserve	State forest
Apiculture ¹	✓	✓	✓	✓	✓	✓
Bushwalking	✓	✓	✓	✓	✓	✓
Camping ²	✓	✓	✓	○ ³	○ ³	✓
Nature observation	✓	✓	✓	✓	✓	✓
Four-wheel driving ⁴	✓	✓	✓	✓	✓	✓
Trail bike riding ⁵	✓	✓	✓	✓	✓	✓
Bicycle riding (including mountain biking) ⁶	✓	✓	✓	✓	✓	✓
Horse riding ⁷	✓	✓	✓	X	✓	✓
Car rallies	○ ⁸	○ ⁸	✓	○ ⁸	✓	✓
Prospecting	X	X	✓	X	✓	✓
Dogs	○ ⁹	○ ⁹	✓	X	✓	✓
Domestic firewood collection	X ¹⁰	X	○ ¹⁰	X	X ¹⁰	✓
Recreational hunting ¹¹	X	X	X	X	X	✓
Timber harvesting	X	X	X	X	X	✓

✓ Allowed ○ Allowed with conditions (see notes) X Not allowed

Notes:

1. At licensed sites.
2. In designated areas where provided and in other areas as specified through management planning.
3. May not be provided in smaller reserves, where there is high day visitor use or where there are ample camping opportunities on adjacent land.
4. In registered vehicles on formed roads that are open to the public and on other formed roads and tracks as specified through management planning; off road driving is illegal on public land.
5. By licensed riders on registered vehicles on formed roads that are open to the public and on other formed roads and tracks as specified through management planning; off road riding is illegal on public land.

6. On formed roads that are open to the public and on other roads, tracks and trails as specified through management planning.
7. On specified formed roads that are open to the public and on other roads and tracks as specified through management planning.
8. Competitive sections of car rallies generally not allowed in national parks, conservation parks and nature reserves; transport sections through these areas allowed subject to events policy and procedures.
9. May be allowed in visitor areas or along a limited number of tracks as specified through management planning.
10. Some current domestic firewood coupes will be allowed to be completed and a phase-out over ten years in some regional parks and additions to regional parks is recommended.
11. Recreational hunting for pest animals will be allowed on other public land if part of an authorised control program at the discretion of the land manager.

Source: http://www.veac.vic.gov.au/documents/VEAC%20CW_Summary_8pp_A3fold_WEB%20small.pdf

²⁵ Taken from VEAC Central West Investigation Final Report (June 2019), [http://www.veac.vic.gov.au/documents/VEAC%20Central%20West%20report\(LR\).pdf](http://www.veac.vic.gov.au/documents/VEAC%20Central%20West%20report(LR).pdf), accessed 08.12.2020.

Changes to Current Use

This report uses incremental change to tenure area to assess and estimate effects. With the adoption of VEAC recommendations, land use would change; this assessment captures that incremental change in the form of reduced activities, prohibited activities and modified activities following from changed land use. In some cases, there is complete exclusion of current uses. For example, removal of current economic activities such as timber harvesting in proposed new parks mean the loss (economic cost) of this activity. Other examples are the exclusion of domesticated animals like dogs from new National Parks areas.

While some activities are restricted, the final reserve design incorporates a range of tenures with varying uses designed to protect native plants and animals including over 370 threatened species from damaging activities. The proposed changes have been developed over a four-year period with significant community consultation and are designed to improve protection for native flora and fauna, integrity of water catchments, storage of carbon and improved recreational activities.

Land Use Changes

With adoption of the VEAC recommendations impacting on land use, there are effects of reduction in traditional extractive industries as well as reductions in certain recreational activities. Given the proposed reduction in State Forest area, there is clearly a reduced footprint for the timber harvesting industry, and this is investigated further later. Other uses and additional activities impacted include modified active uses, extractive industry and uses where economic benefit is currently derived from existing use.

Under VEAC recommendations, there are 58,501 hectares moving from State forest to bushland reserve, conservation park, national park, nature reserve and regional park categories. Headline land use changes are shown in Table 5.

Table 5: Change in area to Public Land Categories²⁶

Public land use category	Total area (ha)		Change
	Current	Recommended	
National park, State park	22,967	73,113	50,146
Conservation park	0	5246	5246
Regional park	5264	24,992	19,728
Nature reserve	6703	8051	1348
Bushland reserve	1047	2808	1761
Historic reserve	1507	1507	0
State forest	89,278	11,901	-77,377
Water frontage, beds and banks reserve	1933	1893	-40
Water production reserve	6635	6514	-121
Community use reserve	1607	1146	-461
Utilities and government services reserve	17,080	17,033	-47
Land leased or licensed for plantation purposes, Plantation	6724	6585	-139
Uncategorised public land	468	424	-44
Total extent of public land	161,213	161,213	0
Total extent of investigation area (private and public land)	403,815	403,815	0

²⁶ [http://www.veac.vic.gov.au/documents/VEAC%20Central%20West%20report\(LR\).pdf](http://www.veac.vic.gov.au/documents/VEAC%20Central%20West%20report(LR).pdf)

Given the amount of land proposed to undergo significant land use change and modified usage from state forest land, including preclusion or restriction of some existing activities and/or phase-out, this assessment concentrates on this land and the impact of its use change. Geographic Information System (GIS) mapping was used to map areas corresponding with recommended transfer from General Management Zone/Special Management Zone (GMZ/SMZ) to a reserve category, and proposed park areas provided for the Wellsford, Mount Cole, Wombat and Pyrenees areas.

Extractive Use

Timber harvesting

The study area is largely a part of the West Regional Forest Agreement (RFA) Area under the current Regional Forest Agreement (RFA), forming one of five regions under current tenure arrangements, as seen in Table 6.

The West region is the smallest in terms of area under tenure arrangements, available for timber harvesting. Relative to eastern Victoria, the volume of native forest harvested across western Victoria is minimal, less than 2% of state wide volume.²⁷ Many of the forest are fragmented with a low intensity forest for timber harvesting, though intensive clear fell methods are still in use at Mt Cole.

Table 6: RFA Regions by gross area²⁸

Region/ Area	Unprotected State forest available for logging GMZ/ SMZ (Excludes SPZ and Code prescriptions) Area (Ha)
Central Highlands	179,709
East Gippsland	318,217
Gippsland	325,882
North East	238,395
West	159,809

Forest Management Zoning Scheme

The Forest Management Zoning Scheme (FMZS) is a long-term planning tool that spatially represents all of the known values that are managed in Victoria's State forests. The FMZS identifies three management zones within State forest including the Special Protection Zone (SPZ); the Special Management Zone (SMZ); and the General Management Zone (GMZ).

²⁷ Deloitte Access Economics, Vic Forests, The economic impact of Vic Forests on the Victorian Community, September 2017 Page 11 <https://www.vicforests.com.au/about-vicforests/deloitte-access-economics-2017>

²⁸ Assessment of matters pertaining to the modernisation of Victoria's Regional Forest Agreements 2019 page 80, https://www.delwp.vic.gov.au/__data/assets/pdf_file/0031/459490/Further-Assessment-of-Matters-Report-2019.pdf

The GMZ is managed for a range of uses, but timber production has a high priority. The SMZ is managed to conserve specific features, while catering for timber production under certain conditions. Timber harvesting is excluded and other activities (such as fuel reduction burning and grazing) are only permitted where they are compatible with maintenance of values of the zone.

The West region includes unprotected management zone and special management zone and excludes special protection zones and areas impacted by code prescriptions available for timber harvesting, with some 159,809 hectares available for logging across the West RFA region, which include all areas in the investigation except the Wellford forest, which is not in a RFA region.

Affected area

To account for land use impacts, geographic information systems (GIS) data was generated to compare forest zoning categorisation areas (excluding existing special protection zones) open for logging *before* VEAC recommendations and areas impacted by *final* VEAC recommendations. Results are shown in Table 7.

Table 7: Land impacted by VEAC recommendation, area by block (GMZ and SMZ only)

Pre-recommendation categorisation	Final recommendation	WOMBAT Ha	WELLSFORD Ha	PYRENEES Ha	MOUNT COLE Ha
State forest	Bushland reserve	106		852	
State forest	Conservation park	808			
State forest	National park	22,100	3,089	5,599	1,807
State forest	Nature reserve				1,248
State forest	Regional park	10,153	3,938	891	
		33,167	7,027	7,342	3,055

Source: Calculated from GIS spatial data.

By excluding areas currently unavailable for logging due to forest zoning, the total area impacted on by the final VEAC recommendations is 50,592 hectares or 35% less than the total 78,229 hectares. This does not include reduction of available area due regulation under the Code of Practice for Timber Production²⁹ or areas unsuitable for logging or have recently been logged,

In all cases, the recommendations result in reductions to area available to timber harvesting, as shown in Table 8.

²⁹ https://www.forestsandreserves.vic.gov.au/_data/assets/pdf_file/0016/29311/Code-of-Practice-for-Timber-Production-2014.pdf

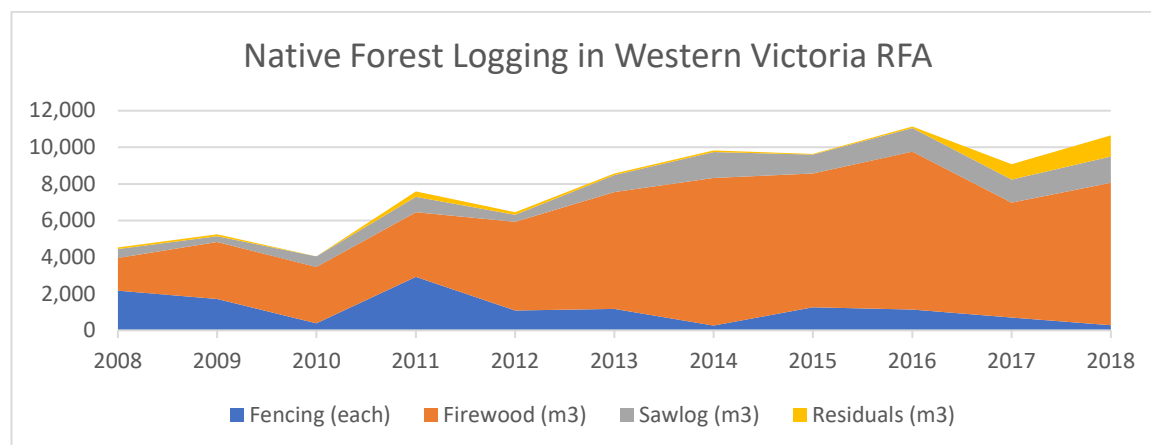
Table 8: Reduction in timber harvest areas

BLOCK	TOTAL CHANGE (HA)
MOUNT COLE – PYRENEES	10,397
WELLSFORD	7,027
WOMBAT – MACEDON	33,168
TOTAL	50,592

Source: GIS spatial data.

To allow for evaluation of the affected area, and estimate its economic costs, harvest volumes were considered in order to estimate production of different timber products, with data taken from recent harvest volume in the West RFA, as shown in Figure 2.

Figure 2: West RFA region timber harvest products, by cubic metres of production – time series



Source: Victoria Forestry data, in State of Victoria and Commonwealth of Australia, 2019. Assessment of matters pertaining to the modernisation of Victoria's Regional Forest Agreements 2019 page 203 (excludes residual logs).

In considering the value of timber harvesting, market values have been estimated, with the prices indicated in Table 9.

Table 9: Price of timber products

Product	Price (\$)
Sawlog, class 1	\$170
Sawlog, class 2	\$130
Firewood	\$80

The estimated value of timber harvesting has been calculated by applying the prices to the areas affected by the proposed new parks, thereby reflecting the opportunity cost of this lost production. Regional forest agreement utilisation plan yield amounts were also considered. For example, with Mount Cole commercial

coupes *inside* proposed parks being 25% of total coupe area, 25% of the yield figure of 1,500 tonnes was used, giving a total impacted yield for Grade 1 logs of 337 cubic metres (sawnlog), multiplied by the estimated market price for saw logs of \$170. For the Pyrenees, the affected coupe area is 38%, with estimated yields of 50 cubic metres (Grade 1) and 150 cubic metres (Grade 2). These yields were multiplied by the estimated sawn log market price³⁰.

Similarly, firewood was calculated by multiplying yields by estimated market value. For example, for Wombat, the estimated yield of 3,000 cubic metres was multiplied by the estimated market price of \$80 to give the estimated annual value. Applying these prices results in the estimated value of timber harvesting per block shown in Table 10. Current available coupe areas (outside of VEAC proposal) are also shown.

Table 10: Estimated annual value of timber harvesting, by block and available coupe areas

Product	Mount Cole – Pyrenees	Wellsford	Wombat – Macedon
Sawn logs	\$85,290	\$46,540	-
Firewood	\$5,280	\$2,400	\$240,000

These values are used to calculate value estimates in net present terms. Results are shown in Table 11.

Table 11: Estimated value of timber, net present value, discounted @7 per cent over 30-year period

	Mount Cole – Pyrenees	Wellsford	Wombat – Macedon
Sawn logs	\$1,143,657	\$624,056	n.a.
Commercial Firewood	\$70,800	\$32,182	\$3,218,170

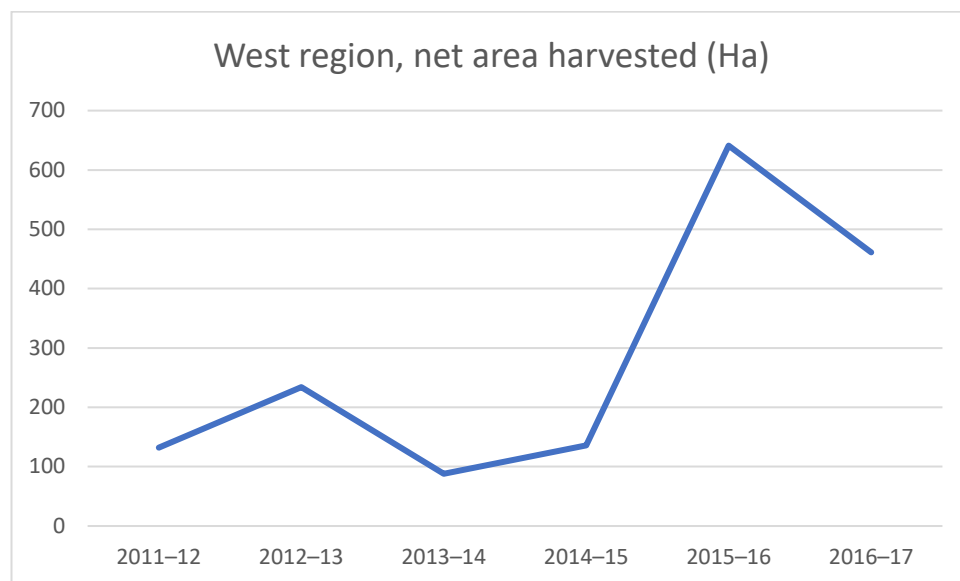
A 30-year period has been used in this analysis, even though the Victorian state government has committed to end native forest logging by 2030, including in the West RFA, which would significantly reduce likely costs.

Assessing impacts

Accounting for bio-physical performance over time (slow growing native hardwoods) in order to achieve sustainability, only a very small portion of available forest are harvested annually (approximately 450 hectares across the whole West region and between 4 – 10 ha in the Mt Cole region annually). Figure 3 shows the net area harvested between 2010-11 and 2016-17 for the West RFA.

³⁰ Similarly, the annual figure for Wellsford of \$46,540 = (grade 1) 52 cubic metres @ \$170/cubic metre (\$8,840) + (grade 2) 290 cubic metres @ \$130/cubic metre (\$37,700).

Figure 3: West RFA region, net area harvested



Source: State of Victoria and Commonwealth of Australia, 2019. Assessment of matters pertaining to the modernisation of Victoria's Regional Forest Agreements 2019, page 182

To further assess the impacts of coupe reductions under the VEAC recommendations, and using the approved Timber Utilisation Plan (TUP) for commencement 19/12/2019, were assessed against the approved TUP GIS layers and Vic Forest interactive maps. This approach calculated the forest available to the logging industry outside of the VEAC proposal in the Mount Cole State Forest, Pyrenees State Forest and Mount Lonarch near Mount Cole. Table 12 shows the scheduled coupes outside the proposed parks, not affected by the proposal and where timber harvesting may continue.

The TUP lists VicForests' planned harvesting and regeneration activities for a period of up to five years. It is updated annually to maintain VicForests' ability to meet supply commitments in the short and medium term. While on paper Wombat forest has the largest number and area of coupes scheduled, the latest estimate of sawlog sustainable yield, no longer contains sawlog harvesting ³¹ which has been absent for more than a decade (since 2006). Any logging in the Wombat forest is largely for commercial fire wood. Mt Cole is the only place in the West RFA which still uses intensive logging practices similar to clear fell (Even Stand Management), the other areas use various selective logging techniques.

³¹ State of Victoria and Commonwealth of Australia, 2019. Assessment of matters pertaining to the modernisation of Victoria's Regional Forest Agreements 2019 page 201 <https://www.delwp.vic.gov.au/futureforests/what-were-doing/victorian-regional-forest-agreements>

Table 12: Scheduled coupes impacted and outside VEAC proposal

Area	# of Coupe areas impacted	Coupe Area Impacts by VEAC recommendations	Coupe Area Outside (Ha)
Mount Cole	13	400.17	1,226.56
Pyrenees	9	241.59	398.03
Wombat	56	2919.72	0
Wellsford	7	575.84	0
TOTAL		4,137.32	1,624.59

Source: GIS derived data rounded

Even with the VEAC recommendations, there are three times the area still available outside the proposed parks at Mt Cole and significant amounts retained in the Pyrenees. Areas outside the main logging areas at Mount Cole and Pyrenees (1,624.59 ha) are equivalent in area of more than 3 years of logging for the whole West RFA. According to public statements by Vic Forests, in 2018/19, only 4.7 hectares were harvested in the region, which is well below the 10 hectares mandated for Mt Cole.³² At these levels (between 5-10 ha) of harvest there are still decades of timber supply (over 100 years) remaining at Mt Cole/ Mt Lonarch on the existing Timber Utilisation Plan, well in excess of the Victorian Governments proposed phase out of native logging by 2030.

Forest Industry Transition

In November 2019, the Victorian Government released the Victorian Forestry Plan to assist the industry as it manages its gradual transition away from native forest harvesting to a plantation-based timber supply, by 2030.

The plan recognised that on a state-wide level, that over the last ten years, the availability of native timber for harvesting has decreased by around half, due to bushfires and wildlife protection measures. At the same time, consumers and retailer demand has grown for plantation timber products.

The area impacted would have increased further with the impact of 2019/2020 landscape scale fires in Eastern Victoria. Under the long-term plan, a \$120 million package will help make sure workers, businesses and communities have the support they need during the transition.³³

Key elements of the transition package will help make sure workers and their families have the support they need. This includes:

- training and re-training programs
- case management and employment assistance
- additional support through the Back to Work program

³² <https://www.theage.com.au/politics/victoria/losing-the-woods-for-the-trees-green-light-for-logging-near-popular-hiking-track-20191228-p53nb0.html>

³³ Victorian Forestry Industry Plan, Victorian Government 2019
https://djpr.vic.gov.au/_data/assets/pdf_file/0008/1924811/DJPR-RRV-Forestry-and-Game-Victorian-Forestry-Plan.pdf
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- top-ups to redundancy payments

For local businesses the plan includes financial assistance to prepare and plan their response to the transition, with assistance to re-tool in order to switch to plantation timber as well as financial compensation, which is supported with grants to grow and create local businesses and jobs, financial support for community projects and funding for local infrastructure.³⁴

In the proposed new central west park areas, a number of factors have combined to diminish direct employment opportunities in the forestry sector. Regional population increase leading to urban encroachment and the increasingly fragmented nature of existing forest tracts have led to declining timber harvesting opportunities, with previous studies noting a decline in direct employment number for affected industries, such as forestry over time. Additionally, in terms of production, no saw logs have come out of Wombat State Forest since 2006.

In conducting background research for this study, investigation indicated that two mills currently use the forests proposed to be impacted, with one employing five full time equivalents (FTEs), and information not available for the other mill. Contractors are used to cut down trees, and it is believed that between one and three people work as crews on a part-time basis. Overall, it is estimated that twenty jobs or less are directly impacted by the proposed new park arrangements, with significant areas still available, at least for the next decade as the phase out of native forestry is implemented.

Based on this assessment of workers currently employed and mills currently active in the area impacted and all native forest logging in the investigation areas was included (not just that impacted by the VEAC proposals) the cost of transition package was calculated, based on the rates outlined in the Victorian Forestry Plan are:

- \$1,080,000 for worker assistance, which include top up of redundancy for worker; training / retraining; relocation support; back to work etc
- \$700,000 for business transition support: Business planning vouchers; plant and equipment redundancy payment; Victorian timber innovation fund; mill site rehabilitation

A total of \$1.78M has been included in the analysis.

This support is also consistent with VEAC Final Recommendation “R3 Government establishes a process to evaluate the impacts on individuals and businesses of implementing recommendations in this report and provides assistance to minimise any effects where required. “

Affected revenues

The reduction in areas available for timber harvesting necessarily implies a reduction in the accrual of revenues to government from management of the regulated asset base of affected state forests. Although there is no specific royalty (stumpage) value for the specific study area or West RFA Region, a proxy figure has been used by apportioning the revenue from VicForests’ Community Forestry operations. Additionally,

³⁴ <https://djpr.vic.gov.au/forestry/forestry-plan>
NEW CENTRAL PARKS WEST ECONOMIC ASSESSMENT

receipts of a state government western community forestry grant to Vic forests have been apportioned. The total value of these is \$253,122 annually, or \$3.4M in net present value, discounted at seven per cent³⁵.

Summary observations on Timber Harvesting

Considering the above, it is worthwhile to make some concluding remarks based on current investigations. Regarding the proceeding analysis of the timber harvesting activities affected by the VEAC recommendations:

- A smaller area than previously assessed is to be affected; roughly two-thirds that previously assessed, and that the amounts of current commercial coupes is less than previously assessed, due to finer scale assessment of area, coupe numbers and updated yield estimates from government sources.
- Subsequently, the estimated economic costs of the recommendation are *lower* than previously assessed
- Investigation to underscore both the declining reliance on West region forest for timber harvesting as well as changing patterns of adjustment in operations, including for example part-time, sub-contracted collection supplying mills
- this analysis does not include changes to domestic firewood as it will continue for approximately another ten years in areas designated as regional park or remaining state forest areas.

From a government policy perspective, the above observations do not placate the role for government involvement in appropriately tailored, implemented and managed industry adjustment schemes as part of the Victorian Government's proposed phase out of native forest logging by 2030.

It is also noteworthy that in response to statements of possible affected production from the proposed new park, the area of state forest has been increased in the final recommendations, and potentially affected coupes form less than the areas identified in previous submissions³⁶.

Indeed, the proposed investment in new central west parks is suggestive of opportunities to manage the forest for ecological outcomes, with the proposal to employ a number of new park management positions³⁷.

Grazing

The loss of area available for livestock grazing operations is shown in Table 13.

³⁵ With amount information drawn from 'Annual Report VicForests 2019 – 20', <https://www.vicforests.com.au/static/uploads/files/vf-annual-report-2020-lowres-v2-1-wfaqfcwlyxydu.pdf>, accessed 15.12.2020.

³⁶ For example, information contained in submission are overstated with 25% of coupes for Mount Cole and 38% of coupes in the Pyrenees now affected – refer to Table 15 for further detail.

³⁷ For example, the basic park implementation proposes that ten (10) positions be allocated and funded. Further proposed development (options two and three) allocate further positions in roles including indigenous and ecology and biodiversity positions.

Table 13: Affected grazing licences and areas

Current Crown land licences	Central West Investigation area	Mount Cole–Pyrenees block	Wellsford block	Wombat–Macedon block
Number and area of all licences	1,968 3,375 ha	1,041 2,041 ha	4 50 ha	940 1,283 ha
Grazing and primary production licences	1,682 2,800 ha	965 1,900 ha	4 50 ha	714 943 ha
Licences affected	85 188 ha	7 17 ha	2 45 ha	76 126 ha

Source: VEAC Central West Investigation Final Report

Only 188 hectares are affected by the VEAC Recommendations. Using an estimated gross margin value of \$43.44/Ha, generates the following estimated cost impacts of park recommendations on livestock grazing operations, as shown in Table 14. This gross margin figure has been taken from a recent socio-economic recent study³⁸ and inflated using consumer price indexing to calculate present value figures.

Table 14: Livestock grazing impacts, by block

BLOCK	Cost impact estimate (\$ p.a.)
MOUNT COLE – PYRENEES	\$738
WELLSFORD	\$1,955
WOMBAT – MACEDON	\$5,473
TOTAL ESTIMATED ANNUAL IMPACT	\$8,166

The estimated cost impact of the VEAC recommendations is estimated at \$8,166 annually, or a present value of \$109,503 discounted at seven per cent. Note this is an upper limit of value due to the use of gross margin within the analysis, coupled with use of a conservative stocking rate. Overhead fixed costs of individual livestock grazing operations are not included.

Grazing and riparian licences on public land are typically renewed every five years. The average licence fees are usually very low, e.g. \$85 for five years, calculated on the productive value of the land but discounted based on weed management and other obligations on the licensee, and would have minimal impact on government revenues.

Mining & Exploration

National parks are exempt from new exploration and mining licences, existing exploration, mining and quarrying tenements would not be affected by VEAC recommendations³⁹ New mining applications would continue to be permitted in all other public land use applications subject to normal approval processes. GIS analysis highlight that approximately 70% of the exiting area proposed for new parks and reserves are cover by mining exploration lease and a very small area of existing (around 3% of area) of existing mining licences. Only small areas of many exploration and mining licences would be impacted by the proposals and

³⁸ Dumsday R. and Gillespie R. (2019), 'Social and Economic Analysis of Final Recommendations for the Central West Investigation Area', June.

³⁹ VEAC Final Report 2019, page 9.

any future development would also be subject to existing environmental regulations, which emphasis avoidance of vegetation clearing. The majority of the identified goldfields in the investigation area lie outside the State Forests. ⁴⁰ Those that may be affected such as the Wellsford forest which is adjacent to existing underground gold mine site, have been considered as part of VEAC final Recommendation A3, which restrict the park tenure to 100 metre depth limit consistent with much of the existing Greater Bendigo National Park and hence allow for underground mining for outside the park boundary.

Likewise, mineral exploration is highly speculative with a low probability of success and there is a large areas available as potential substitute any economic impact is likely to be negligible or at worst modest and have not been include in this analysis.

Recreational Use

Several recreational activities are undertaken within the affected area, including:

- camping/bushwalking
- dog walking and sledding
- horse riding
- prospecting
- hunting.

Depending on the tenure change and the specific detail of the VEAC recommendation, activities may be impacted to varying degrees. For example, dog walking and prospecting is permitted in the almost 20,000 Ha of proposed regional park and horse riding is proposed to be allowed in most of the proposed national parks such as Wombat (Lerderderg National Park on roads/ formed tracks). Hunting is excluded in all park tenures but is allowed in remaining state forest.

Headline recreational activities with estimated annual costs and estimated net present value is shown in Table 15.

Table 15: Indicative recreational impacts of VEAC recommendations – all areas

Recreation activity	Visits p.a.	Estimated cost p.a. (\$)	Net Present Value (\$)
Horse riding	110	\$2,240	\$34,760
Dogs — general	2,700	\$27,486	\$426,594
Dog – Sledding	64	\$13,030	\$202,237
Prospecting	333	\$111,868	\$1,736,238
Hunting	310	\$28,402	\$440,814
TOTAL		\$183,026	\$2,840,643

⁴⁰ Dumsday R. and Gillespie R. (2019), 'Social and Economic Analysis of Final Recommendations for the Central West Investigation Area', June. Page 24

Mount Cole – Pyrenees

Expected visits

For the Mount Cole – Pyrenees block, adoption of VEAC recommendations are expected to affect prospecting and hunting activities.

Horse riding will be allowed in the proposed Mt Buangor and Pyrenees National Parks on specified formed roads that are open to the public and on other roads and tracks as specified through management planning. Overnight camping with horses is not allowed in national parks but is allowed in regional parks as specified through management planning. Only areas designated as nature conservation reserves will horse riding be excluded in these areas (approx. 5,192 Ha). Table 16 shows the estimated impacts modelled.

Table 16: Indicative recreational impacts of VEAC recommendations – Mount Cole – Pyrenees

Recreation activity	Visits p.a.	Estimated cost p.a. (\$)	Net Present Value (\$)
Horse riding	50	\$1,018	\$15,800
Prospecting	33	\$11,086	\$172,060
Hunting	100	\$9,162	\$142,198
TOTAL		\$21,266	\$330,057*

** The impact of ceasing these activities in the Mount Cole – Pyrenees block has been included in the economic analysis. These activities may still be performed in adjoining locations that aren't captured by the proposed park.*

Historically Mount Cole State Forest was designated as a deer sanctuary with hunting excluded. VEAC recommends (recommendation R8) removal of the deer sanctuary status under the Game Act 1915 for the whole of the Mount Cole State Forest, even with the creation of new National Parks and Conservation Reserves at Mount Cole, which increases the area available for hunting of deer.

Wellsford

Expected visits

For the Wellsford block, adoption of VEAC recommendations are expected to affect horse riding, dog walking, dogsledding and hunting activities in the national park.

Horse riding will be allowed in the proposed Bendigo Regional Park and the Bendigo Regional Park on specified formed roads that are open to the public and on other roads and tracks as specified through management planning. Dog walking and prospecting will be allowed in the Bendigo Regional Park (3,949 Ha) but restricted to 'on lead' in visitor areas or along a limited number of tracks as specified through management planning in Bendigo National Park (3,152 Ha). Table 17 shows the estimated impacts modelled.

Table 17: Indicative recreational impacts of VEAC recommendations – Wellsford Block

Recreation activity	Expected visits p.a	Cost p.a. (\$)	Net Present Value (\$)
Horse riding	10	\$204	\$3,160
Dogs — general	2,600	\$26,468	\$410,794
Dog – sledding	64	\$13,030	\$202,237
Hunting	10	\$916	\$14,220
TOTAL		\$40,618	\$630,411*

* The impact of ceasing these activities in the Wellsford block has been included in the economic analysis. These activities may still be performed in adjoining locations that aren't captured by the proposed park.

Wombat – Macedon

Expected visits

For the Wombat – Macedon block, adoption of VEAC recommendations are expected to affect to varying degrees horse riding, dog walking, prospecting and hunting activities. Table 18 shows the estimated impacts modelled.

Dog walking will be allowed in regional parks (approximately 5,400 ha). Dogs may be allowed in certain areas of the Wombat–Lerderderg National Park (49,553 ha) and Hepburn, Cobaw Conservation Parks (5,246 Ha) and most nature reserves on lead in visitor areas or along a limited number of tracks as specified through management planning at a later date, no overnight camping with dog is recommended.

Prospecting will be not allowed in Wombat–Lerderderg National Park (49,553 Ha) and Hepburn, Cobaw Conservation Parks (5,246 Ha) and Nature Reserve's. Prospecting will be permitted in proposed and exiting regional parks (5,400 Ha addition plus existing regional parks).

Table 18: Indicative recreational impacts of VEAC recommendations – Wombat – Macedon

Recreation activity	Expected visits p.a	Cost p.a. (\$)	Net Present Value (\$)
Horse riding	50	\$1,018	\$15,800
Dogs — general	100	\$1,018	\$15,800
Prospecting	300	\$100,782	\$1,564,179
Hunting	200	\$18,324	\$284,396
TOTAL		\$121,142	\$1,880,174*

Note rounding errors exist in this table.

* The impact of ceasing these activities in the Wombat – Macedon block has been included in the economic analysis. These activities may still be performed in adjoining locations that aren't captured by the proposed park.

Additional recreational benefits

Further benefits from use can also be estimated for all blocks.

Icon walks – health benefit

Several bushwalk experiences are located in the region, and these include:

- Lerderderg Track (89 kilometres)
- Beeripmo Track (20.6 kilometres)
- Endurance Trail (23.5 kilometres)

In completing tracks such as these, walkers gain health benefits from exercise. Active travel guidance⁴¹ has been used to calculate derived health benefit. For the purpose of this analysis, a short walk has been defined as 5km or less and a long walk defined as more than 5km. This benefit is applied to the estimated user numbers shown in Table 19. Numerous survey studies have been referred to in developing the estimated user numbers. At the broad level, over one million Victorians walk each year for recreation, and it is the most popular recreational activity⁴². For the purposes of this study, a usage rate of five per cent has been applied⁴³ to the most recent available data for specific parks visitation to parks by district, with visitation data taken from annual survey and face-to-face interviews on the subject of visitation to Parks Victoria properties⁴⁴.

Table 19: Estimated user numbers – selected walks and related activities

Area/ walk	Estimated Long walk users	Estimated Short walk users (5km)
Wombat – Lerderderg Track	8,983	14,970
Mount Buangor/Mount Cole – Beeripmo Walk	11,360	16,970
Pyrenees – Endurance Track	6,050	12,160
Bendigo National Park	-	29,423

Using the mid-point of estimated health benefit of \$1.35 per kilometre walked, and assuming short walks conducted as a length of 5 kilometres results in the estimated health benefits shown in Table 20.

⁴¹ For example, Australian Transport Assessment and Planning Guidelines (ATAP) M4 Active Travel, https://www.atap.gov.au/sites/default/files/m4_active_travel.pdf, accessed 12.12.2020.

⁴² https://www.vichealth.vic.gov.au/-/media/ResourceCentre/PublicationsandResources/Physical-activity/VH_Benefits-of-Walking-Summary_final.pdf.

⁴³ At a specific local level, this is also consistent with the levels of “bushwalking” recorded in the 2019 Bendigo Active Living Census; <https://www.bendigo.vic.gov.au/Services/Community-and-Care/Active-Living-Census>, accessed 17.01.2021.

⁴⁴ For example, the latest survey results indicate; medium walk or half day walk: 17%, and long walk or day walk (> 4 hours): 13%.



Table 20: Health benefit walking – estimates for selected tracks, discount at seven per cent

Area/ walk	Long walks (\$)	Short walks (\$)
Wombat – Lerderderg Track	16,738,892	1,567,138
Mount Buangor/Mount Cole – Beeripmo Walk	4,899,603	1,776,508
Pyrenees – Endurance Track	2,976,724	1,272,972
Bendigo National Park	-	3,080,153
TOTAL	\$24,615,219	\$7,696,770

Camping

To estimate the benefit of camping for the Lerderberg Track, the number of users was multiplied by a Willingness to Pay (WTP) of \$45/night (as actual fees for the proposed park do not yet exist), with an assumption made of users camping for two nights on that track due to its length (89km). This gives an estimated annual benefit of \$808,470, and an estimated NPV of \$12,547,791 discounted at seven per cent, over the 30-year evaluation period.

Option Analysis

The following sections present cost estimates associated with a basic park upgrade, Indigenous Joint Management and Optimised Implementation.

Option One – Basic Upgrade

Option One adopts the recommendations from the VEAC Investigation and incorporates a fit for purpose basic upgrade to walking tracks, access roads, carparks, signage and campgrounds, as part of the establishment of new national parks and conservation areas.

Key features of the Basic Park Upgrade include:

- Basic upgrades of the three main walking tracks the Lerderderg Track (89 kilometres) in Wombat Forest, Beeripmo Track (20.6 kilometres) at Mt Cole and the Endurance Trail (23.5 kilometres) at the Pyrenees, more than 133 additional kilometres in total.
- Basic upgrading of nine existing camp grounds and five new basic camp grounds across the investigation areas
- Basic production and installation of signage at key park entrances and more design construction and installation of detailed interpretation signs at select areas
- Picnic area upgrades at existing sites plus new five new sites (some in conjunction with camp grounds)
- Planning and Assessments - Boundary surveys, cultural heritage assessment and park planning with in-house support from Park Victoria all need to be done as part of park establishment
- New staff/ Rangers including a team of 11 made up of team leaders, Rangers, community engagement staff and an additional program manager to manage community fire wood collection in regional parks
- Basic upgrades to existing depots and boundary fencing as required between parks and private land
- Basic ecological management control program targeting pest plants and animals
- Industry transitional and adjustment package based on Victorian Government Forestry Plan.

While park establishment may be 'initiative' funding for initial establishment cost it is important that resources are maintained for park manager in the long term to maintain both built assets but also ecological assets.

The items and relevant costs listed in Table 21 below were derived from examples of previous park establishment advice from land managers. No further escalation has been applied to these cost estimates provided by VNPA. While some of the detail will be subject of detailed Park Management Planning (a requirement of the National Parks Act 1975), key features are outlined below to help establish the parks and associated facilities as quickly should approval be received.



Table 21: Basic Park Upgrade Capital and Operating Costs across all areas

COST ITEM	CAPEX (Real, FY2020)	OPEX (pa)
Basic Walking Tracks Upgrade	750,000	25,000
Basic Carpark upgrades	150,000	15,000
Basic Park Entrance Signage	105,000	150
Interpretation sign	20,000	500
Basic Campground upgrade	5,040,000	15,000
Picnic Area upgrades Stand - alone	600,000	30,000
Park Management Plan	300,000	
Cultural Heritage Assessment	300,000	
Park Boundary assessment	400,000	
Firewood Collection - management in regional parks		126,100
Depot upgrade		100,000
Staff		898,565
Basic Ecological management - pest plants and animal control		400,000
Boundary fencing @ 100 km @ \$5000 per km	500,000	
TOTAL	\$8,165,000	\$1,610,315

Capital Expenditure (Capex) – funds allocated to acquiring or maintaining assets such as land and buildings.

Operating Expenditure (Opex) – funds supporting the day-to-day operation of the entity as advised by VNPA.

Current pricing not checked for validity but have been checked from a calculation perspective.

Estimates of key Option One costs and benefits are shown in Table 22 below.

**Table 22:** Option One— key costs and benefit estimates, NPV, discounted @ seven per cent, 30-year evaluation period

ECONOMIC COSTS	NET PRESENT VALUE (\$)	ECONOMIC BENEFITS	NET PRESENT VALUE (\$)
New park development	29,757,780		
Reduced commercial timber harvest	5,088,865	Increased conservation of native vegetation	202,982,991
Reduced domestic firewood collection	8,691,433	Derived health benefits – walking	32,311,989
Reduced livestock grazing operations	109,503	Derived overnight camping fee benefit	12,547,791
Restrictions on existing recreational land use, including exclusion	2,840,643		
Reduced revenues to Government	3,394,099		
Industry adjustment package	1,780,000		
TOTAL	51,662,323		247,842,770
BENEFIT-COST RATIO			4.8:1

The NPV of Economic Costs associated with Option One is estimated to be \$51.7M. This is calculated as the NPV of the impact of all land use changes and associated park development costs resulting from the VEAC recommendations.

The NPV of Economic Benefits associated with Option One is estimated to be \$247.8M. This is calculated as the NPV of all benefits arising from the land use changes within the VEAC recommendations.

The Benefit-Cost Ratio (BCR) considers all costs and benefits at the societal level and is calculated as Discounted Benefits / Discounted Costs.

The BCR of 4.8:1 above shows that for every \$1 invested there is a potential return of \$4.80 at the societal level for Option One.

Option Two – Indigenous Joint Management

Option Two incorporates the Basic Park Upgrade from Option One with an Indigenous Joint Management model.

The Aboriginal Community Engagement Project undertaken as part of VEAC investigation highlighted that Traditional Owners expressed a preference for park or reserve categories that protect the cultural and natural values of Country and limit activities with major impacts such as timber harvesting and earth resource extraction, while ensuring that the public has access to public land to enjoy low-impact recreational activities.⁴⁵

According to the VEAC Final report, park and reserve categories provide a foundation for Traditional Owners to care for Country, for example through joint management arrangements under Recognition and Settlement Agreements with the State Government. There are number of registered aboriginal parties with interest in the areas proposed for new parks including Taungurung Clans Aboriginal corporation's Recognition and Settlement Agreement (2018) includes the north western slopes of the Cobaw range. The Wurundjeri Land and Compensation Cultural Heritage Council Aboriginal Corporation is the Registered Aboriginal Party (RAP) for the main section of the Wombat–Macedon ranges. The Wathaurung Aboriginal Corporation (trading as Wadawurrung) is the RAP for the southwestern part of the Wombat–Macedon block including the area around Korweinguboora and the Bungal forest.

Dja Dja Wurrung Parks are in some instance adjacent to area proposed for new national parks and conservation areas. The six parks include Hepburn Regional Park; Greater Bendigo National Park; Kooyoora State Park; Wehla Nature Conservation Reserve; Paddys Ranges State Park and Kara Kara National Park. The final VEAC recommendation propose extensions to Hepburn Regional Park and Greater Bendigo National Park.

The Joint Management of the Dja Dja Wurrung Parks is based on strong community engagement, linking Dja Dja Wurrung knowledge with the science of ecological integrity to forge a better future for the Parks with multiple social, environmental, cultural and economic benefits. For example, as a result of the Recognition and Settlement Agreement 2013 (RSA 2013) between the State of Victoria and the Dja Dja Wurrung Clans Aboriginal Corporation (DDWCAC), six Dja Dja Wurrung Parks are owned by Dja Dja Wurrung Clans Aboriginal Corporation under Victorian legislation as Aboriginal Title, but are still subject to the legislated provision of National Parks Act 1975 and Conservation, Forests and Lands Act 1987. As part of this arrangement a Joint Management Plan is established.⁴⁶ This Plan replaces existing management plans for the Park.

⁴⁵ VEAC Central West Final Report, JUNE 2019 page 5

[http://www.veac.vic.gov.au/documents/VEAC%20Central%20West%20report\(LR\).pdf](http://www.veac.vic.gov.au/documents/VEAC%20Central%20West%20report(LR).pdf)

⁴⁶ Dhelkunya Dja Land Management Board. (2018). Joint Management Plan for the Dja Dja Wurrung Parks: Strategy. Melbourne, Australia: Dhelkunya Dja Land Management Board Page xxi <http://www.dhelkunyadja.org.au/the-plan/joint-management-plan>

The Traditional Owner Settlement Act 2010 does not provide for future changes to Aboriginal title parks and reserves through changes to public land use classification of these areas or boundary adjustments. For example, the act does not currently provide for the public land use classification to be changed for Hepburn Regional Park or additions to be made to the park, even with the agreement of the Traditional Owners and the state government.” VEAC recommended (R7) Government considers legislative amendments to the Traditional Owner Settlement Act 2010 that provide for a process allowing future changes to Aboriginal title land by agreement of the parties. Such amendments should include provisions for additions, boundary adjustments and changes to public land use classification.⁴⁷

While VEAC identifies some legal impediments, in the context of the Government’s policy and process towards a treaty with Aboriginal Victorians, it is likely that co-operative management arrangements will operate for the Central West parks. This could be either formalised joint management with recognised Traditional Owner Corporations, or arrangements with non-formally recognised Traditional Owner groups, whether legislated or not.

At and international and national level, social and economic benefits of Indigenous rangers and Indigenous Protected Areas has been studied. A review conducted by Social Ventures Australia for the Department of Prime Minister and Cabinet published in 2016 reported a social return on investment of up to \$3.40 for every dollar spent in Indigenous Protected Areas, at a national level with those areas employing Indigenous rangers demonstrating higher returns. A review by Allens Consulting found the true costs of the Working on Country program were at least 17-23 per cent less than book costs when increased taxation revenue and decreased welfare payments were taken into account.⁴⁸ At a global level a Canadian study showed the high benefits of using Indigenous Rangers where analysis of these two emerging guardians programs found they create approximately \$2.50 of social, economic, cultural and environmental results for every \$1 invested.⁴⁹

A recent report, *Victoria’s Draft 30-Year Infrastructure Strategy*, released by the independent agency Infrastructure Victoria, noted that Aboriginal experiences are increasingly attracting tourist interest and can align with efforts to preserve and promote Aboriginal cultural histories and heritage sites. The number of international tourists taking part in Aboriginal tourism activities, such as visiting an Aboriginal site or community, has increased by over 40 per cent since 2013.

The report notes the Victorian Government should continue to develop more Joint Management Plans with Traditional Owners, and provide funding support for infrastructure identified within the plans.⁵⁰

⁴⁷ VEAC Central West Final Report, JUNE 2019 page 21

[http://www.veac.vic.gov.au/documents/VEAC%20Central%20West%20report\(LR\).pdf](http://www.veac.vic.gov.au/documents/VEAC%20Central%20West%20report(LR).pdf)

⁴⁸ Cited in <https://treasury.gov.au/sites/default/files/2019-03/360985-Pew-Charitable-Trusts.pdf>

⁴⁹ Moore, M (2020) Decolonizing Park Management: A Framework for the Co-management of National Parks and Protected Areas <https://www.ilinationhood.ca/publications/report-sva-analysis-of-current-amp-future-value-of-indigenous-guardians-work-in-the-nwt>

⁵⁰ Victoria’s Draft 30-Year Infrastructure Strategy, December 2020 Draft recommendation 83

<https://www.infrastructurevictoria.com.au/wp-content/uploads/2020/12/Victorias-Draft-30-Year-Infrastructure-Strategy-Volume-1-1.pdf>

In support of joint management this option provides for implementation of basic park management as outlined in Option One (above) but provides additional resources in-line with precedent examples of joint management. Features of additional joint management include:

- Funding for on-going governance and management structure such Land Management Boards
- Completion of joint management plan
- Three additional indigenous Rangers and a community engagement Ranger, but assume some of the existing Rangers in Option One would also be indigenous
- Additional regional development and marketing and interpretation signage around cultural and ecological values
- Additional resources for management of cultural as well as ecological values and sites.

These figures are indicative only and are based on similar examples, but should be subject to detailed discussions with relevant traditional owners. The estimated cost items for this option are shown in Table 23.

Table 23: Estimated incremental costs – Joint management

COST ITEM	CAPEX (\$)	OPEX (\$)
Indigenous joint management & governance		1,000,000
Joint Management Plans	300,000	
Indigenous Rangers x3		399,100
Community Engagement Ranger		91,000
Regional Development & Marketing Initiative	900,000	
Cultural & Ecological management		400,000
Interpretation signage	30,000	500
TOTAL	\$1,230,000	\$1,890,600

Analysis of Option Two (Basic Park Upgrade with Joint Management) has provided the following results:

- The initial Capital Cost is \$9.4M (FY2020, Real)
- The ongoing Operating Cost is \$3.5M per annum (FY2020, Real) or \$46.9M at a discount rate of seven per cent, over a thirty-year evaluation period
- Total estimated economic benefits are \$247.8 at a discount rate of seven per cent, over the thirty-year evaluation period
- Economic benefits include increased conservation of native vegetation and derived health benefits from increased bush walking



- Total estimated economic costs are \$78.2M at a discount rate of seven per cent, over the thirty-year evaluation period
- Economic Costs include a reduction in commercial and recreational activities, the impact of foregone government revenue (e.g., stumpage and grants) and increased costs associated with Joint Management
- BCR of 3.2:1 shows that for every \$1 invested there is a potential return of \$3.20 at the societal level

Option Three – Optimised Implementation

Option Three incorporates the Basic Park Upgrade from Option One with an indigenous Joint Management model plus additional investment in visitor infrastructure and ecological management. Additional features of Option Three include:

- Additional investment in walking track upgrades including design, construction and installation of small number foot bridges at key locations
- Mid-level upgrades of camp ground and picnic areas and enhanced interpretation signage
- Additional works depot
- Significant additional biodiversity program coordinator and enhanced best animal control and specific threatened species recovery program for five key species, including relevant ecological research

VEAC notes in its final report that it was important that there be enhance ecological program to inform management of regrowth forest and prioritisation be given to biodiversity conservation outcomes, while also identifying opportunities for maximising water production and carbon sequestration co-benefits. As well as providing practical guidance to park managers and recommend (Recommendation R12) that an ecological restoration study be undertaken, which is also consistent with Recommendation R2. The additional estimated costs of Option Three is shown in Table 24.

Table 24: Estimated incremental costs – Optimised Upgrade

COST ITEM	CAPEX (\$)	OPEX (\$)
Enhanced Walking Tracks Upgrade	1,500,000	50,000
Bridges over creeks	600,000	30,000
Enhanced signage	30,000	500
Enhanced and additional campgrounds	2,000,000	24,000
Picnic areas	1,800,000	20,000
Additional depot facility	500,000	50,000
Biodiversity program officer	135,465	
Enhanced ecological management		600,000
Enhanced weed management		400,000
Ecological studies/ Threatened species recovery	800,000	450,000
TOTAL	\$7,365,465	\$1,624,500



Analysis of Option Three has provided the following results:

- The initial Capital Cost is \$16.8M (FY2020, Real)
- The ongoing Operating Cost is \$5.1M per annum (FY2020, Real) or \$68.7M at a discount rate of seven per cent, over a thirty-year evaluation period
- Total estimated economic benefits are \$249.7M at a discount rate of seven per cent, over the thirty-year evaluation period
- Economic benefits include increased conservation of native vegetation and derived health benefits from increased bush walking including a 5% uplift in usage
- Total estimated economic costs are \$107.4M at a discount rate of seven per cent, over the thirty-year evaluation period
- Economic Costs include a reduction in commercial and recreational activities, the impact of foregone government revenue (e.g. stumpage and grants) and increased costs associated with Joint Management
- BCR of 2.3:1 shows that for every \$1 invested there is a potential return of \$2.30 at the societal level.



Additional benefits – Forest Carbon Sequestration

Carbon sequestration has been assessed by considering:

- current volume (tonnes/Ha)
- current value
- estimating future value.

In considering the benefit associated with carbon sequestered in the standing forests, the volume of the standing carbon “locked up” in the existing stands and not available for extraction under the VEAC recommendations were considered. The calculation was based on Environmental Systems Modelling (EnSym) of forest biomass (Department of Environment, Land, Water and Planning (DELWP) 2017) and applied spatially to proposed change areas currently open to logging e.g. the General Management Zone in a state forest. Due to differences in the nature of forests, carbon ranged between 39 and 191 tonnes per Hectare (Ha) and are likely conservative estimates.

The estimates for carbon volume in the existing stands are shown in Table 25.

Table 25: Estimated standing carbon, by block

BLOCK	Affected area (Ha) (GMZ/ SMZ)	Estimated carbon (T/ Ha)	Total carbon estimate (T)	Total Carbon CO2 equivalent
PYRENEES	7,491	71-123	1,434,977	5,257,757
Mt Cole	3,056	123-191	1,171,443	4,292,166
WELLSFORD	7,027	39-47	310,130	1,136,315
WOMBAT – MACEDON	33,168	131-159	7,448,738	27,292,178
TOTAL ESTIMATED STANDING CARBON			10,365,288	37,978,417

A recent Joint Commonwealth and Victorian Government Report used a similar method to value carbon as part of the renewal of the Victorian Regional Forest Agreement. In the absence of a clear carbon price in Australia, this report has derived the following median values from existing international carbon market values:

- Lower bound — \$12 per tonne of CO₂e
- Central — \$20 per tonne of CO₂e
- Upper bound — \$59 per tonne of CO₂e



The current spot price quoted by CommTrade Carbon (around \$16) <https://www.accus.com.au> is often used as a surrogate carbon price. Applying a price for carbon of \$16/T implies a value for carbon of \$608M for new parks and reserves in the investigation area.

Sensitivity

Following calculation of the economic value sequestered carbon using a carbon price of \$16/tonne, sensitivity testing using dollar amounts of \$20 and \$30/tonne was conducted. Results of this testing is shown in Table 26.

Table 26: Carbon sensitivity test using alternate pricing

Carbon price (\$/ T)	Calculated value of carbon (\$M)
\$12	\$456M
\$20	\$760M
\$59	\$2,241M

It is acknowledged that a voluntary carbon market exists, such as air travel passengers offsetting the carbon associated with their trip and electricity consumers offsetting the carbon emissions associated with the production of their electricity. If the analysis incorporated a carbon price of \$12/tonne or \$16/tonne, it would have a significant beneficial effect on Benefit Cost ratios and project viability.

The results demonstrate the potential for forest for carbon, but have not been included in the final cost benefit analysis used in this study.

Conclusions

The results for each option are indicative of project viability in terms of applying a cost-benefit framework, bearing in mind the limitations in data collection, including the fineness and contemporariness of data used within the economic assessment.

Whilst highest in terms of cost, Option Three Optimised is the preferred option as it addresses the greatest number of final VEAC recommendations including indigenous joint management and ecological management of the areas proposed as new parks and reserves.

Key benefits of Option Three include a conservation benefit for native forests in the order of an estimated \$203M. This conservation benefit has been calculated using a benefit transfer method from other studies (i.e., Rolfe et al). There is further opportunity to develop Victorian based benefit estimates using the same approach (i.e. Choice Modelling). Additional benefits include derived health benefits, estimated at \$33.6M, and a willingness-to-pay benefit from camping, estimated at \$13.1M. The present value of all benefits of Option Three is \$249.7M.

Total present costs for Option Three, including affected recreational and extractive uses, foregone revenues, industry adjustment packages, and additional park development and operating costs, have been estimated at \$107.4M.

Key economic costs include loss of timber harvesting area, including reduction of sawn log and firewood collection for commercial and domestic private use. A range of recreational activities are affected by the proposed tenure arrangements, and lead to modifications to behaviour as users seek to relocate where suitable substitutes are available. In some cases, existing behaviours may change resulting in activities, such as dog sledding, being conducted outside of the study area.



Recommendations

It is recommended that:

- the Victorian Government move to fully accept and implement the VEAC recommendations for new national parks and conservation areas in the central west.
- as part of implementation of VEAC recommendations the Victorian Government provide sufficient funding to deliver Option 3 Optimised Implementation.
- should the Victorian Government choose to fund Option 1 Basic Upgrade, Indigenous Joint Management options, as outlined in Option Two, should be further developed with the commencement of detailed consultation with relevant traditional owner groups.
- if needed, timelines for the Victoria Forestry Plan, to phase out native forest logging by 2030, should be brought forward in the central west and forest industry adjustment and transition packages be commenced as soon as possible.
- firewood harvesting for domestic and private use be considered in more detail including options for heating, gas connection, renewable (e.g., solar) and small-scale plantation firewood policy to generate environmentally sound outcomes, while domestic fire wood is phased out over the next decade.
- the collection and publication of park and state forest usage data is improved to include detail visitation and public use information ideally at park or forest level via regular surveys
- standard Victorian based conservation benefit estimates are developed using place-based choice modelling and an assessment of economic contribution ecosystem services be undertaken for the proposed new parks in the investigation area.

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Appendices

Appendix 1: Land Use Change

Land use changes from the VEAC recommendation can be seen in the attached Appendix 1.



Appendix 1: Land Use Change

The following Table shows the proposed VEAC recommendations on land use and tenure, including categorisation, by area.

VEAC Category (before recommendation)	VEAC Category (final recommendation)	Mount Cole - Pyrenees	Wombat	Wellsford	Total
State forest	Bushland reserve	852	106		106
State forest	Conservation park	-	808		808
State forest	National park	7,406	22,100	3,089	25,189
State forest	Nature reserve	1,248			-
State forest	Regional park	891	10,153	3,938	14,091
		10,397	33,168	7,027	40,195
Community use reserve	Bushland reserve	4			4
Community use reserve	National park	-	22		22
Community use reserve	Regional park	-	15		15
Nature reserve	National park	117			117
Uncategorised public land	Bushland reserve	10			10
Uncategorised public land	National park	-	0		0
Uncategorised public land	Regional park	-	0		0
Utilities and government services reserve	National park	-	1		1
Water frontage, beds and banks reserve	National park	-	2		2
Water frontage, beds and banks reserve	Regional park	-	10		10
		130	51	-	182
Bushland reserve	Bushland reserve	-	5		5
National park	National park	0	8		8
Nature reserve	Nature reserve	0			0
Regional park	Regional park	-	38		38
Community use reserve	Community use reserve	-	14		14
Historic reserve	Historic reserve	0	0		0
Land leased or licensed for plantation purposes, Plantation	Land leased or licensed for plantation purposes, Plantation	0	0		0
Uncategorised public land	Uncategorised public land	-	39		39
Utilities and government services reserve	Utilities and government services reserve	7	0		7
Water frontage, beds and banks reserve	Water frontage, beds and banks reserve	1	6		7
Water production reserve	Water production reserve	10	12		23
		18	122	-	140
		10,545	33,341	7,027	50,913